Evaluation of an educational intervention for the promotion of health-enhancing physical activity in Europe

Matolić, Tena

University of Zagreb

FACULTY OF KINESIOLOGY

Tena Matolić

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DOCTORAL THESIS

Zagreb, 2024.

Sveučilište u Zagrebu

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Vrjednovanje edukacijske intervencije za promicanje zdravstveno-usmjerene tjelesne aktivnosti u Europi

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Supervisors:

A/Prof Danijel Jurakić, PhD

Prof Željko Pedišić, PhD

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DOKTORSKI RAD

Mentori:

izv. prof. dr. sc. Danijel Jurakić

prof. dr. sc. Željko Pedišić

Zagreb, 2024.

Declarations

I, Tena Matolić, hereby declare that this dissertation entitled "Evaluation of an educational intervention for the promotion of health-enhancing physical activity in Europe" is my original work, and that it does not contain any material previously written or published by me or any other person, apart from the published articles presented in Chapters 5, 6 and 7. In the thesis, I have acknowledged assistance that I had received in this work, and I have presented all relevant sources of information.

This doctoral research is comprised of three studies with interconnected research aims. The studies resulted in three scientific articles published in international peer-reviewed journals that are included in this thesis. All three articles were published after my enrolment in the doctoral programme.

In the thesis, I used the American Psychological Association (APA) 7th edition style of referencing. References from all chapters (including the references from the published journal articles in chapters 3, 4 and 5) are presented alphabetically in the "References" chapter.

All three studies were conducted in accordance with the Declaration of Helsinki. The protocol of the first study was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (ref: 102/2016), while the protocols of the second and third studies were approved by the Ethics Committee of the Faculty of Kinesiology, University of Zagreb (number: 10/2021).

Supervisor information

Associate Professor Danijel Jurakić, PhD

Danijel Jurakić is an Associate Professor of Physical Activity and Health and Kinesiological Recreation, and the leader of the Laboratory for Physical Activity Epidemiology and Promotion. Since 2006, he has been employed at the Faculty of Kinesiology, University of Zagreb, Croatia, where he leads courses at the graduate, master, and postgraduate doctoral levels.

His research interests revolve around physical activity epidemiology, investigating the correlates of physical activity in different population groups, evaluating physical activity promotion interventions, and exploring the broader health implications of physical activity at the population level.

He has actively participated in various campaigns and projects for physical activity promotion, including a number of institutional projects, the National Program "Healthy Living," national campaigns, and several competitive international projects.

He has authored or co-authored more than 50 scientific papers, which have been cited 462 times in the Scopus database, 358 times in the Web of Science database, and 1,366 times in the Google Scholar database. He has presented his work at numerous national and international scientific and professional conferences. As a member of the organizational and program committees, he has been involved in organizing nine international scientific conferences and numerous national conferences. According to university surveys, his teaching has been rated between 4.81 and 4.95 over the past 15 years.

Professor Željko Pedišić, PhD

Željko Pedišić is a Professor of Active Living and Public Health and the President of the International Network of Time-Use Epidemiologists (INTUE). His research is centred around chronic disease prevention and promotion of well-being through healthy use of time. His research interests span: prevalence, determinants, and outcomes of unhealthy time use; statistical and measurement methods in time-use epidemiology; and public health surveillance, policies, and interventions.

He is the author of the framework for Viable Integrative Research in Time-Use Epidemiology (VIRTUE) and the framework for Comprehensive Analysis of Policy on Physical Activity (CAPPA).

He has published 108 articles in peer-reviewed journals (62 as the first, corresponding and/or senior author and 18 as the second author), 4 books, 16 book chapters, 10 pop-sci articles and infographics, 5 academic reports, and >70 conference papers and abstracts.

He has been cited >9,700 times; H-index = 50; Field Weighted Citation Impact (FWCI) = 3.13.

As a supervisor or methodological consultant, he contributed to 4 bachelor, 25 master, and 17 PhD research theses.

Since 2020, he has been included in the Elsevier's list of top 1% researchers globally. He is currently ranked among the top 0.38% of researchers globally in all fields of science.

In his free time, he enjoys spending time with family and friends, playing piano, composing music, doing sports, cycling, skiing, and eating pizza.

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The perspectives and viewpoints presented solely represent the authors' own, and they may not necessarily align with those of the European Union, the European Education and Culture Executive Agency (EACEA), or the Croatian Science Foundation.

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Mojim roditeljima.

Abstract

Although sports clubs are a suitable environment for the promotion of health-enhancing physical activity (HEPA), only 12% of European Union (EU) citizens are involved in sports and recreational activities within sports clubs. There is a lack of quantitative evidence on the factors related to the commitment of sports organisations to the promotion of HEPA and limited evidence on Sports Club for Health (SCforH), the largest European initiative for the promotion of HEPA in the sports setting. This doctoral research was designed to address the evidence gap. The thesis is comprised of three interconnected studies with the following objectives: 1) to determine the level and correlates of the commitment of sports organisations in Europe to HEPA promotion (Study 1), that is, evidence needed to justify and inform Study 3; 2) to develop the EDUcational Course Assessment TOOLkit (EDUCATOOL), that is, a measurement tool for evaluation of educational HEPA promotion initiatives that is needed for Study 3, and to determine its measurement properties (Study 2); and 3) to assess participant engagement in the SCforH online educational course for HEPA promotion and perceived quality of the course, and to explore differences by stakeholder type, EU residency status, region of Europe, and prior awareness of the SCforH guidelines (Study 3).

To achieve the objective of Study 1, the representatives of 536 sports organisations from 36 European countries were included in a survey. A multiple regression analysis was conducted with the commitment of sports organisation to HEPA promotion (0 [“not at all”] – 10 [“most highly”]) as the outcome variable and organisation type (“national sport association” reference group [ref], “European sports federation”, “national umbrella sports organisation”, “National Olympic Committee”, “national sport-for-all organisation”), headquarters in a EU member state (“no” [ref], “yes”), region of Europe (“Western” [ref], “Central and Eastern”, “Northern”, “Southern”), commitment to elite sports (“low” [ref], “medium”, “high”), and awareness of SCforH guidelines (“no” [ref], “yes”) as explanatory variables.

In Study 2, the development of EDUCATOOL encompassed: (1) a literature review; (2) drafting the questionnaire through open discussions between three researchers; (3) Delphi survey with five content experts; and (4) consultations with 20 end-users. A subsequent validity and reliability study involved 152 university students who participated in a short educational course. Immediately after

the course and a week later, the participants completed the EDUCATOOL post-course questionnaire. Six weeks after the course and a week later, they completed the EDUCATOOL follow-up questionnaire. To establish the convergent validity of EDUCATOOL, the participants also completed the "Questionnaire for Professional Training Evaluation."

Study 3 included 840 participants from 34 European countries, who completed the SCforH online course. Using web trigger events, we gathered information on the number of course parts they completed and time in course. Course quality was assessed using the EDUCATOOL post-course questionnaire, asking about participant's reaction, learning, behavioural intent, and expected outcomes, where scores on the evaluation components were expressed on a scale from 0 to 25 points. The overall evaluation score (0 – 100 points) was calculated as the sum of evaluation components.

Study 1 indicated that approximately 75.2% (95% confidence interval [CI]: 71.5, 78.8) of sports organisations were highly committed to elite sports. Only 28.2% (95% CI: 24.4, 32.0) of sports organisations reported a high commitment to HEPA promotion. A higher commitment to HEPA promotion was associated with the National Olympic Committees ($\beta = 1.48$ [95% CI: 0.41, 2.55], $p = 0.007$), national sport-for-all organisations ($\beta = 1.68$ [95% CI: 0.74, 2.62], $p < 0.001$), location in Central and Eastern Europe ($\beta = 0.56$ [95% CI: 0.01, 1.12], $p = 0.047$), and awareness of SCforH guidelines ($\beta = 0.86$ [95% CI: 0.35, 1.37], $p < 0.001$).

Two complementary questionnaires have been developed in Study 2: the post-course questionnaire and the follow-up questionnaire, intended to be completed immediately after the course and sometime (preferably, one to six months) after the course, respectively. Both questionnaires include 12 items grouped into the following evaluation components: (1) reaction; (2) learning; (3) behavioural intent (post-course)/behaviour (follow-up); and (4) expected outcomes (post-course)/results (follow-up). In confirmatory factor analyses, comparative fit index (CFI = 0.99 and 1.00), root mean square error of approximation (RMSEA = 0.05 and 0.03), and standardised root mean square residual (SRMR = 0.07 and 0.03) indicated adequate goodness of fit for the proposed factor structure of the EDUCATOOL questionnaires. The intraclass correlation coefficients (ICCs) for convergent validity of the post-course and follow-up questionnaires were 0.71 (95% CI: 0.61, 0.78) and 0.86 (95% CI: 0.78, 0.91), respectively. The internal consistency reliability of the evaluation components expressed using Cronbach's alpha ranged from 0.83 (95% CI: 0.78, 0.87)

to 0.88 (95% CI: 0.84, 0.92) for the post-course questionnaire and from 0.95 (95% CI: 0.93, 0.96) to 0.97 (95% CI: 0.95, 0.98) for the follow-up questionnaire. The test–retest reliability ICCs for the overall evaluation scores of the post-course and follow-up questionnaires were 0.87 (95% CI: 0.78, 0.92) and 0.91 (95% CI: 0.85, 0.94), respectively.

The results of the Study 3 demonstrated that the vast majority of SCforH online course participants (92%) completed all 28 parts of the course, and that the median time in course was 27.60 minutes (95% CI: 26.93, 28.27). The medians of all EDUCATOOL evaluation components were ≥20.00, while the median overall evaluation score was 82.50 (95% CI: 81.11, 83.89). Some aspects of course quality were rated slightly lower by residents of EU countries (compared with residents of non-EU countries), participants from Western Europe (compared with Central and Eastern Europe), and students (compared with representatives of sports clubs and associations; $p < 0.05$ for all).

Based on these findings, it can be concluded that most sports organisations in Europe are primarily focused on elite sports. Coordinated actions at the EU and national levels are needed to improve the promotion of HEPA through sports organisations. In this endeavour, it may be useful to consider National Olympic Committees, national sport-for-all organisations, and relevant sports organisations in Central and Eastern Europe as role models and to raise the awareness of SCforH guidelines. Awareness of the SCforH guidelines may be increased by disseminating the SCforH online course among stakeholders in the European sports sector. Suitability of the SCforH online course for the promotion of HEPA in Europe is supported by the high participant engagement in the course and high perceived quality of the course. Lastly, to inform future improvements of the SCforH online course, it is essential to keep assessing course quality. EDUCATOOL questionnaires can be used for this purpose, as they have adequate factorial validity, convergent validity, internal consistency, and test–retest reliability. The studies conducted as part of this PhD dissertation have provided valuable information needed to improve understanding and advance the promotion of HEPA in the European sports sector.

Key words: Health-enhancing sports, HEPA, sport setting, exercise, Kirkpatrick framework, educational programmes

Extended abstract in Croatian language (Produženi sažetak na hrvatskom jeziku)

Iako su sportski klubovi pogodno okruženje za promicanje zdravstveno-usmjerene tjelesne aktivnosti (ZUTA), samo je 12% građana Europske Unije uključeno u sportske i rekreacijske aktivnosti unutar sportskih klubova. Nedostaju kvantitativni dokazi o čimbenicima vezanim uz posvećenost sportskih organizacija promicanju ZUTA-e i ograničene su spoznaje o „Sports Club for Health (SCforH)“ pokretu, najvećoj europskoj inicijativi za promicanje ZUTA-e u sportskom okruženju. Ovo je doktorsko istraživanje osmišljeno kako bi se nadomjestio nedostatak navedenih spoznaja. Disertacija se sastoji od tri međusobno povezana istraživanja sa sljedećim ciljevima: i) utvrditi razinu i odrednice posvećenosti sportskih organizacija u Europi promicanju ZUTA-e (Studija 1), što predstavlja dokaz potreban da bi se opravdala i informirala Studija 3; ii) konstruirati „EDUcational Course Assessment Toolkit” (EDUCATOOL), odnosno mjerni instrument za vrjednovanje edukacijskih intervencija za promicanje ZUTA-e potreban za Studiju 3, te utvrditi njegove mjerne karakteristike (Studija 2); i iii) procijeniti razinu uključenosti sudionika u SCforH online edukacijski tečaja za promociju ZUTA-e i percipiranu kvalitetu tečaja, te istražiti razlike s obzirom na tip sudionika, pripadnost Europskoj Uniji, regiju Europe i prethodnu upoznatost sa SCforH smjernicama (Studija 3).

Metode:

U presječnoj Studiji 1 sudjelovalo je 536 predstavnika sportskih saveza i olimpijskih odbora iz 36 Europskih država, uključujući tadašnjih 28 članica Europske Unije, 4 države kandidata (Albaniju, Sjevernu Makedoniju, Srbiju i Tursku), te Island, Monako, Norvešku i Švicarsku. Upitnikom su prikupljeni podaci o: i) tipu organizacije kojoj sudionik istraživanja pripada, ii) državi u kojoj je smješteno sjedište organizacije, iii) upoznatosti pojedinih predstavnika organizacije sa SCforH smjernicama, te iv) posvećenosti pojedine organizacije promociji različitih tipova tjelesne aktivnosti (0 [“uopće nije posvećena”] – 10 [“u potpunosti je posvećena”]). Tipovi tjelesne aktivnosti uključivali su: i) elitni sport, ii) zdravstveno-usmjereni sport (ZUS), iii) zdravstveno-usmjereno tjelesno vježbanje (ZUV) i iv) ostale oblike ZUTA-e (ZUO). Posvećenost promociji ZUTA-e izražena je kao aritmetička sredina posvećenosti promociji ZUS, ZUV i ZUO. Izračunati su postotci i njihovi 95%-tni intervali povjerenja za nisku (0-3), srednju (4-6) i visoku (7-10) razinu posvećenosti ZUTA-i u cijelom uzorku i stratificirano prema tipu organizacije, članstvu države u

Europskoj Uniji, pripadnosti europskoj regiji, posvećenosti promociji elitnog sporta i upoznatosti sa SCforH smjernicama. Provedena je i multipla regresijska analiza u kojoj je *posvećenost promociji ZUTA-e* bila zavisna varijabla, a nezavisne varijable su bile: i) *tip organizacije* ("nacionalni sportski savez" kao referentna grupa [ref], "europska sportska federacija", "nacionalna krovna sportska organizacija", "nacionalni olimpijski odbor", "nacionalna organizacija sporta za sve"), ii) *sjedište u državi pripadnici Europske Unije* ("ne" [ref], "da"), iii) *regija Europe u kojoj se sjedište organizacije nalazi* ("Zapadna" [ref], "Središnja i Istočna", "Sjeverna", "Južna"), iv) *razina posvećenosti elitnom sportu* ("niska" [ref], "srednja", "visoka") i *upoznatost sa SCforH smjernicama* ("ne" [ref], "da"). Rezultati analize su predstavljeni u obliku nestandardiziranih regresijskih koeficijenata te njihovih 95%-tnih intervala povjerenja i *p*-vrijednosti. Dodatno su provedene tri multiple ordinalne logističke regresije s prethodno navedenim skupom nezavisnih varijabli, te posvećenosti promociji ZUS, ZUV, i ZUO kao zavisnim varijablama.

Konstrukcija evaluacijskog mjernog instrumenta EDUCATOOL u Studiji 2 se odvila kroz četiri faze. Prva faza podrazumijevala je pregled 150 objavljenih radova i knjiga u području konceptualnih okvira i upitnika za evaluaciju edukacijskih tečajeva od kojih je 40 bilo relevantno za daljnju izradu mjernog instrumenta. Druga faza uključivala je razvoj inicijalne verzije upitnika putem otvorenih rasprava koje su uključile tri istraživača, i to na temelju diskusija vođenih nalazima prethodnog pregleda literature. Treća faza uključivala je tri kruga Delphi metode u kojoj je sudjelovalo pet stručnjaka iz područja vezanih uz problematiku rada (izrada anketa i psihometrija, evaluacija edukacijskih tečajeva, obrazovanje, psihologija te engleski jezik), a koji su revidirali inicijalnu verziju EDUCATOOL-a. U četvrtoj fazi provedene su konzultacije o mogućnostima daljnjeg unaprjeđenja revidirane verzije upitnika, u kojima je sudjelovalo 20 potencijalnih krajnjih korisnika EDUCATOOL-a iz područja: 1) razvoja, provedbe i evaluacije obrazovnih tečaja, 2) srednjeg i visokog obrazovanja, 3) znanosti i 4) upravljanja privatnih organizacija koje provode edukacijske tečajeve. Kako bi se utvrdila valjanost i pouzdanost mjernog instrumenta, 152 sveučilišna studenta sudjelovala su u SCforH online edukacijskom tečaju. Neposredno nakon tečaja i tjedan dana kasnije, sudionici su ispunili EDUCATOOL upitnik namijenjen za primjenu neposredno nakon tečaja („post-course" upitnik). Šest tjedana nakon tečaja, te tjedan dana nakon toga, ispunili su EDUCATOOL upitnik namijenjen za naknadnu primjenu („follow-up" upitnik). Za potrebe utvrđivanja konvergentne valjanosti EDUCATOOL-a,

sudionici su također ispunili „Questionnaire for Professional Training Evaluation“ u svim vremenskim točkama. Kako bi se procijenila faktorska valjanost predloženog 4-faktorskog modela EDUCATOOL upitnika, provedena je konfirmatorna faktorska analiza. Interna konzistencija evaluacijskih komponenata izražena je Cronbachovom alfom i njenim 95%-tnim intervalima povjerenja. Konvergentna valjanost i test-retest pouzdanost izraženi su putem intra-klasnih koeficijenata korelacije (tip [A,1], slučaj 3A prema McGraw i Wong (1996)) i njihovih 95%-tnih intervala povjerenja.

Konačno, Studija 3 uključila je 840 sudionika iz 34 Europske države koji su pripadali sljedećim kategorijama: i) istraživači i nastavnici u visokoškolskim ili istraživačkim institucijama u području sporta, tjelesnog odgoja i promocije zdravlja, ii) predstavnici vladinih tijela, iii) predstavnici instituta za javno zdravstvo i/ili nacionalne kontakt osobe za tjelesnu aktivnost, iv) predstavnici sportskih saveza, v) predstavnici sportskih klubova, vi) studenti visokih učilišta u području sporta, tjelesne i zdravstvene kulture i zdravlja, te vii) ostali dionici u sektorima sporta i javnog zdravstva. Sudionici istraživanja su uključeni u SCforH online edukacijski tečaj. Razina uključenosti sudionika istraživanja u tečaj praćena je putem automatski zabilježenih radnji koje su sudionici izvodili tijekom tečaja i izražena je putem vremena provedenog u tečaju i broja pregledanih sadržaja. Neposredno nakon tečaja, sudionici su ispunili EDUCATOOL „post-course“ upitnik kako bi se procijenila kvaliteta tečaja u pogledu *reakcije*, *učenja*, *namjere ponašanja*, i *očekivanih učinaka*. Ocjene evaluacijskih komponenti izražene su na skali od 0 do 25 bodova, a ukupna kvaliteta tečaja (0-100 bodova) izračunata je kao zbroj evaluacijskih komponenti. Multivarijatne razlike u četiri evaluacijske komponente i vremenu provedenom u tečaju po tipu sudionika, pripadnosti Europskoj Uniji, regiji Europe i prethodnoj upoznatosti sa SCforH smjernicama testirane su neparametrijskom multivarijatnom analizom varijance „C-sample test of location“. Kruskal-Wallis ANOVA je korištena za testiranje univarijatnih razlika između grupa, dok su post-hoc usporedbe provedene korištenjem Mann-Whitney U testa s Bonferroni korekcijom.

Rezultati:

Studijom 1 je utvrđeno da je približno 75,2% (95%-tni interval povjerenja [IP]: 71,5; 78,8) sportskih organizacija jako (visoko) posvećeno promociji elitnog sporta, te da je samo 28,2% (95% IP: 24,4; 32,0) sportskih organizacija jako (visoko) posvećeno promociji ZUTA-e. Rezultati multiple regresijske analize pokazali su da je veća posvećenost promociji ZUTA-e povezana s

nacionalnim olimpijskim odborima (β = 1,48 [95% IP: 0,41; 2,55], p = 0,007), nacionalnim organizacijama sporta za sve (β = 1,68 [95% IP: 0,74; 2,62], p < 0,001), lokacijom sjedišta u Središnjoj i Istočnoj Europi (β = 0,56 [95% IP: 0,01; 1,12], p = 0,047) i upoznatošću sa SCforH smjernicama (β = 0,86 [95% IP: 0,35; 1,37], p < 0,001). Rezultati multiple ordinalne logističke regresije pokazali su da su u odnosu na nacionalne sportske saveze, europske sportske federacije više posvećene promociji ZUS-a, nacionalni olimpijski odbori ZUV-a i ZUO-a, a nacionalne organizacije sporta za sve svih tipova ZUTA-e. Organizacije koje su bile upoznate sa SCforH smjericama također su bile više posvećene promociji svih tipova ZUTA-e. Konačno, u odnosu na organizacije iz Zapadne Europe, organizacije iz Središnje, Istočne i Južne Europe su bile više posvećene promociji ZUO.

U okviru studije 2 razvijen je EDUCATOOL; alat za evaluaciju edukacijskih tečajeva koji se sastoji od dva upitnika („post-course“ i „follow-up“), kalkulatora za izračun rezultata i uputa za primjenu. Svaki od EDUCATOOL upitnika sadrži po 12 čestica grupiranih u sljedeće evaluacijske komponente: i) *reakcija*; ii) *učenje*; iii) *namjera ponašanja* („post-course“)/*ponašanje* („follow-up“); te iv) *očekivani učinci* („post-course“)/*rezultati* („follow-up“). Konfirmatornom faktorskom analizom potvrđena je adekvatnost pretpostavljene četiri-faktorske strukture oba EDUCATOOL upitnika, gdje je komparativni indeks „Comparative fit index“ (CFI) iznosio 0,99 za „post-course“ i 1,00 za „follow-up“ upitnik. „Root mean square error of approximation“ (RMSEA) iznosio je 0,05 za „post-course“ i 0,03 za „follow-up“ upitnik, a „Standardised root mean square residual“ (SRMR) iznosio je 0,07 za „post-course“ i 0,03 „follow-up“ upitnik. Intra-klasni koeficijenti korelacije (IKK) za konvergentnu valjanost iznosili su 0,71 (95% IP: 0,61; 0,78) za „post-course“ i 0,86 (95% IP: 0,78; 0,91) za „follow-up“ upitnik. Interna konzistencija evaluacijskih komponenti izražena Cronbach-ovim alfa koeficijentom kretala se od 0,83 (95% IP: 0,78; 0,87) do 0,88 (95% IP: 0,84; 0,92) za „post-course“ upitnik i od 0,95 (95% IP: 0,93; 0,96) do 0,97 (95% IP: 0,95; 0,98) za „follow-up“ upitnik. Intra-klasni koeficijenti test-retest pouzdanosti iznosili su 0,87 (95% IP: 0,78; 0,92) za „post-course“ i 0,91 (95% IP: 0,85; 0,94) za „follow-up“ upitnik.

U Studiji 3, velika je većina sudionika (92%) pregledala svih 28 sadržaja tečaja, a medijan vremena provedenog u tečaju iznosio je 27,60 minuta (95% IP: 26,93; 28,27). Sudionici su u prosjeku dali izvrsne ocjene za sve evaluacijske komponente kvalitete tečaja (medijan ≥ 20,00), pri čemu je evaluacijska komponenta *reakcija* imala najveći medijan od 21,67 (95% IP: 21,26; 22,07). Medijan

ukupnog rezultata kvalitete tečaja iznosio je 82,50 (95% IP: 81,11; 83,89). Određene komponente kvalitete tečaja bile su nešto bolje ocijenjene od strane sudionika istraživanja iz zemalja izvan EU (u usporedbi sa sudionicima iz država članica EU), te Središnje i Istočne Europe (u usporedbi sa sudionicima iz Zapadne Europe), dok su studenti (u usporedbi s predstavnicima sportskih klubova i organizacija) ocijenili određene evaluacijske komponente niže ($p < 0,05$ za sve razlike).

Zaključak:

Na temelju rezultata ove doktorske disertacije može se zaključiti da je većina europskih sportskih organizacija primarno usmjerena na elitni sport. Stoga su potrebne koordinirane akcije na nacionalnoj i Europskoj razini za unaprjeđenje promicanja ZUTA-e unutar sportskih organizacija. Kako bi se osigurala učinkovitost budućih intervencija, bilo bi korisno podići svijest o SCforH smjernicama, te razmotriti aktivnosti nacionalnih olimpijskih odbora, nacionalnih organizacija sporta za sve i relevantnih sportskih organizacija u Središnjoj i Istočnoj Europi kao primjere dobre prakse u promociji ZUTA-e. Podizanje svijesti o SCforH smjernicama moguće je napraviti kroz diseminaciju SCforH online tečaja među dionicima u europskom sportskom sektoru. Prethodna tvrdnja utemeljena je u nalazu o visokoj uključenosti i visoko percipiranoj kvaliteti tečaja od strane različitih tipova dionika u sektorima sporta i javnog zdravstva iz 34 europske zemlje. Osim toga, nalazi ove studije mogu se primijeniti i za daljnje unaprjeđenje SCforH tečaja i poboljšanje učinkovitosti diseminacije budućih SCforH i ostalih intervencija za promociju ZUTA-e. U svrhu budućeg unaprjeđenja SCforH tečaja, važno je kontinuirano evaluirati učinkovitost tečaja. U tu svrhu mogu se koristiti novo-kreirani EDUCATOOL „post-course“ i EDUCATOOL „follow-up“ upitnici. Oba upitnika su pokazala zadovoljavajuću faktorsku valjanost, konvergentnu valjanost, internu konzistenciju i test-retest pouzdanost. Kao takvi, mogu se koristiti za procjenu *reakcije*, *učenja*, *namjere ponašanja* ili *ponašanja*, te *očekivanih učinaka* ili *rezultata* u evaluaciji edukacijskih tečajeva. Njihovoj vrijednosti pridonosi općenita formulacija čestica, sažetost, jednostavnost primjene i dostupnost, što će omogućiti primjenu u različitim područjima istraživanja i prakse.

Istraživanja provedena u okviru ove doktorske disertacije su pružila vrijedne spoznaje potrebne za unaprjeđenje razumijevanja i promocije ZUTA-e u europskom sportskom sektoru.

Ključne riječi: tjelesna aktivnost, Sportski klub za zdravlje, sportsko okruženje, evaluacija intervencije, Kirkpatrickov model, edukacijski program, obrazovni tečaj

References of included studies

Chapter 5

Matolić, T., Jurakić, D., Podnar, H., Radman, I., & Pedišić, Ž. (2023). Promotion of health-enhancing physical activity in the sport sector: a study among representatives of 536 sports organisations from 36 European countries. *BMC Public Health*, *23,* Article 750. https://doi.org/10.1186/s12889-023-15589-9

Chapter 6

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Chapter 7

Matolić, T., Jurakić, D., & Pedišić, Ž. (2024). Raising awareness about the Sports Club for Health (SCforH) guidelines in the sports, higher education, and health promotion sectors: evaluation of educational online intervention in 34 European countries. *Acta Gymnica, 54*(1), Article e2024.005. https://doi.org/10.5507/ag.2024.005

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Glossary of terms

Health-enhancing physical activity (HEPA)

Sports Club for Health (SCforH)

EDUcational Course Assessment TOOLkit (EDUCATOOL)

Zdravstveno-usmjerena tjelesna aktivnost (ZUTA)

Zdravstveno-usmjereni sport (ZUS)

Zdravstveno-usmjereno tjelesno vježbanje (ZUV)

Ostali oblici zdravstveno-usmjerene tjelesne aktivnosti (ZUO)

Light-intensity physical activity (LPA)

Moderate-intensity physical activity (MPA)

Vigorous-intensity physical activity (VPA)

Moderate- to vigorous-intensity physical activity (MVPA)

World Health Organization (WHO)

Health-enhancing sports activity (HESA)

Health-enhancing exercise (HEXE)

Health-enhancing lifestyle physical activity (HELPA)

United Nations (UN)

Cardiovascular disease (CVD)

Non-communicable disease (NCD)

Physical inactivity (PI)

International dollar (INT$)

Global Action Plan for Physical Activity (GAPPA)

European Union (EU)

Enlarged Partial Agreement on Sport (EPAS)

International Sport and Culture Association (ISCA)

The Association for International Sport for All (TAFISA)

European Federation for Company Sport (EFCS)

European Non-Governmental Sports Organisation (ENGSO)

Reach, Efficacy, Adoption, Implementation and Maintenance framework (RE-AIM framework)

Return On Investment (ROI)

Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA)

United Kingdom (UK)

The Global Advocacy for Physical Activity (GAPA)

Confidence intervals (CIs)

Odds ratio (OR)

European Education and Culture Executive Agency (EACEA)

Comparative fit index (CFI)

Root mean square error of approximation (RMSEA)

Standardised root mean square residual (SRMR)

Intraclass correlation coefficients (ICCs)

Thesis outline

This thesis consists of eight chapters. **Chapter 1** introduces the scientific background, outlining basic concepts and definitions. **Chapter 2** presents a systematic scoping review of previous quantitative and qualitative research in the field. **Chapter 3** outlines research problems. **Chapter 4** describes the research objectives and corresponding hypotheses. **Chapter 5** presents the first publication. **Chapter 6** presents the second publication. **Chapter 7** presents the third publication. **Chapter 8** provides a general conclusion that synthesises the findings from all three studies, it identifies their strengths and limitations, and offers perspectives for future research, as well as recommendations for policy, research and practice. The references are listed afterward, and appendices provide supporting information for the studies.

Chapter 1: Introduction

1.1. Physical activity and its benefits

1.1.1. Definition and types

For the purpose of terminology standardisation, in 1985, physical activity was defined as "any bodily movement produced by skeletal muscles that results in energy expenditure" (Caspersen et al., 1985). Physical activity can be further differentiated based on the domains in which it is practiced, so the total amount of physical activity can be distributed throughout: i) occupational physical activities, ii) household activities, iii) commuting or transport-related activities, and iv) leisure-time physical activities (Caspersen et al., 1985; Physical Activity Guidelines Advisory Committee, 2008; World Health Organization, 2020b).

i) *Occupational physical activities* encompass activities performed during the voluntary or paid workhours and can result in a range of energy expenditure levels from minimal to extremely high (Shala, 2022; World Health Organization, 2020b).

ii) *Household activities* are undertaken for domestic purposes, such as gardening, floor mopping, vacuuming, home repair, washing, cleaning, and lawn mowing (World Health Organization, 2020b).

iii) *Commuting or transport-related activities* involve engaging in physical activity with the purpose of transportation to and from various places, including cycling, walking, rowing, rollerblading, or kick scootering (World Health Organization, 2020b).

iv) *Leisure-time physical activity* is among the most represented domains in research (Samitz et al., 2011) and encompasses recreational activities performed during free time (World Health Organization, 2020b). Dancing, exercising, walking, swimming, hiking, running, playing sports, doing yoga, and tai-chi are all considered leisure-time activities. A significant subset within leisure-time physical activity is the sports domain, which is of particular interest in this thesis and will be extensively explored in the following chapters.

Physical activity can be differentiated according to its intensity into:

i) *Light-intensity physical activity (LPA)*, during which energy expenditure is 1.5 to 3 times higher than while sitting at rest. Examples include walking slowly and other light activities that do not require substantial increase in breathing and heart rate (U.S. Department of Health and Human Services, 2018; World Health Organization, 2020b).

ii) *Moderate-intensity physical activities (MPA)*, during which energy expenditure is 3 to >6 times higher compared to sitting at rest. Examples include playing light tennis, brisk walking, mowing the lawn, or dancing. These activities require more than 40-59% of heart rate reserve and a noticeable increase in breathing rate (U.S. Department of Health and Human Services, 2018; Warburton et al., 2007; World Health Organization, 2020b).

iii) *Vigorous-intensity physical activity (VPA)*, which demand more than 6 times higher energy expenditure than sitting at rest, and involves activities such as running, cycling, and participating in high-intensity fitness classes. Typically, these activities require a significant increase in breathing rate, and 60% or more of heart rate reserve (U.S. Department of Health and Human Services, 2018; Warburton et al., 2007; World Health Organization, 2020b).

iv) *Moderate- to vigorous-intensity physical activity (MVPA)* is a combination of MPA and VPA and includes all activities where energy expenditure is at least 3 times higher than during sitting at rest (Pedišić, 2022).

Health-Enhancing Physical Activity (HEPA), is defined as "any form of physical activity that improves health and has the fewest possible undesirable side effects" (Oja, 2008). HEPA encompasses physical activity across various domains, activities of various types (aerobic, strength, balance) and diverse intensities (from low to vigorous), that produces health benefits (Füzéki et al., 2017; Koski et al., 2017; Oja, 2008; Pratt et al., 2020; World Health Organisation). On contrary, activities detrimental to health are termed as "non-health enhancing physical activities" (Pedišić, Podnar, Radman, et al., 2022).

A group of researchers in the field of sport and health has further classified HEPA into three categories (Koski et al., 2017; Pedišić, 2022) (Figure 1):

i) "Health-enhancing sports activity" (HESA) involves any sports-related activity that promotes health without significant health and safety risks. It encompasses various activities conducted within or outside sports clubs and the health benefits may vary based on factors such as frequency, intensity, duration, and an individual's fitness level.

ii) "Health-enhancing exercise" (HEXE) includes exercises performed to enhance or maintain different aspects of health and fitness. These activities can be performed in various locations such as gyms, fitness centres, parks, and at home.

iii) "Health-enhancing lifestyle physical activity" (HELPA) encompasses various non-structured physical activities undertaken in everyday settings, including the workplace, during transportation or leisure, and at home, separate from organised sports and exercise routines.

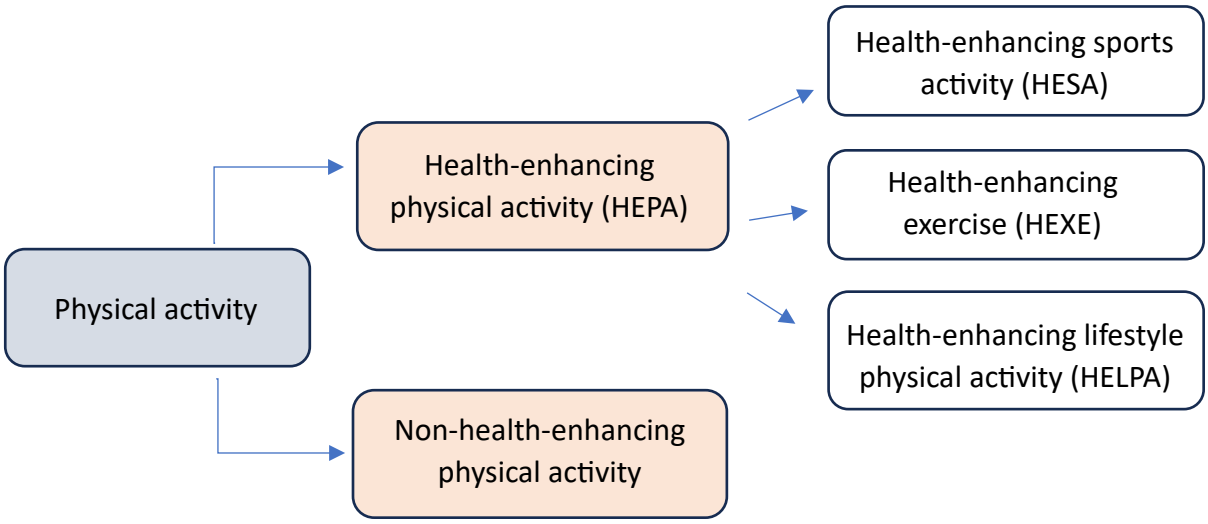

Figure 1: Classification of physical activity types, adapted from Pedišić, Podnar, Radman, et al. (2022)

Over the years, HEPA research and promotion has gained prominence, leading to the establishment of the "HEPA Europe Network" in 2005 (World Health Organisation). This network comprises of 11 specialised working groups, each dedicated to HEPA promotion in different areas. One of these groups, titled "Sports Club for Health", focuses specifically on promotion of HEPA within the sports sector. HEPA Europe is guided by various important policies and governmental documents

related to physical activity promotion, including WHO policy statements, United Nations (UN) sustainable development goals, Global action plan for physical activity (GAPPA) 2018-2030, and European Commission documents (World Health Organisation).

1.1.2. Benefits

Participating in physical activity provides benefits for both individuals and communities across various dimensions, including health, psychological well-being, economic benefits, environmental advantages, and social aspects (Centers for Disease Control and Prevention, 2020). Another way to look at the benefits of physical activity is through a human capital model, which encompasses intellectual, financial, physical, social, individual, and emotional benefits for individual (Netz et al., 2005). All these benefits are interconnected and form a complex network of positive outcomes. For instance, an increase in work productivity not only contributes to economic impact but also enhances individual, and emotional "capital". Given the broad influence of physical activity, the following text will highlight a few selected examples illustrating its significant effects, or conversely, the consequences of its absence.

Health benefits

Physical inactivity contributes to 7.2% of all-cause mortality worldwide (Katzmarzyk et al., 2022). This is even more pronounced in middle- income countries, where 69% of overall deaths can be associated to physical inactivity (Katzmarzyk et al., 2022). Systematic umbrella review revealed that physical activity is associated with decrease in all-cause mortality and cardiovascular disease (CVD) mortality (Kraus et al., 2019). Another systematic review of reviews supported that regular physical activity reduces the risk of all-cause mortality and additionally indicated reduced risk of all-cancer mortality (Warburton & Bredin, 2017). Both, resistance exercise and aerobic activities contribute to lower mortality risk, whereas their combined effect produce an additive risk reduction in mortality rates: 30 - 45% for all-cause mortality, 45 - 60% for CVD mortality, and 30 - 40% for cancer mortality (Brellenthin et al., 2022). A meta-analysis of dose-response relationship between physical activity and all-cause mortality across various domains unveiled that the highest levels of

total physical activity are associated with a 35% lower mortality risk compared to lowest physical activity levels. Specifically, engaging in the highest amount of sports and exercise, resulted in all-cause mortality risk reductions of 34% compared to the lowest physical activity in this domain (Samitz et al., 2011). Moore et al. (2012) found that any amount of MVPA per week leads to a gain of 1.8 years of life, while only 5-6 minutes of MVPA per day is associated with approximately a 30% reduction in mortality risk. Arem et al. (2015) found that any intensity of physical activity results in a 20% mortality reduction. Similarly, in adults aged 60 and above, even a low dose of MVPA resulted in a 22% reduction in mortality risk (Hupin et al., 2015). Ekelund et al. (2019) found that any physical activity type and intensity significantly reduce risk of premature mortality, with 73% risk reduction for the highest levels of overall PA, 48% for the highest levels of MVPA, and 62% risk reduction for the highest levels of LPA, compared to the lowest physical activity in each category. A recent study suggested that even a slight increase in non-occupational physical activity reduce all-cause, CVD, and cancer mortality risk (Garcia et al., 2023). Adopting a weekly routine half of current recommendations could potentially prevent one in 10 premature deaths (Garcia et al., 2023), and produce clinically relevant benefits (Warburton & Bredin, 2017).

Physical activity is essential not only for reducing premature mortality but also for the primary and secondary prevention of at least 25 chronic health conditions (Warburton & Bredin, 2017). Non-communicable diseases (NCD) are responsible for 74% of all global deaths, with leading causes including ischemic heart disease, stroke, chronic obstructive pulmonary disease, lung cancer and diabetes (Institute for Health Metrics and Evaluation (IHME), 2024; World Health Organisation, 2023b). An inadequate level of physical activity is important risk factor contributing to mortality from NCDs (Brauer et al., 2024). Research has shown that physical inactivity is accountable for different proportions of global NCD, ranging from 1,6% for hypertension to 8.1% for dementia, highlighting the significant global burden associated with physical inactivity (Katzmarzyk et al., 2022). In line with this, a large meta-analysis of prospective studies and the incidence of 26 types of cancer demonstrated that the higher physical activity levels correlate with a lower risk of various cancers, ranging from 10% for breast cancer to 42% lower risk for oesophageal cancer compared to lower activity levels (Moore et al., 2016). For the lung cancer specifically, risk reduction was 26%. Furthermore, even low- to moderate-intensity activities like walking, with benefits observed at around 3h/week, show an inverse association with CVD risk (Hamer & Chida, 2008). Another study indicated that the highest benefits are often achieved at lower activity levels, and that

engaging in at least 600 MET minutes/week in total physical activity reduces the risk of ischemic heart disease by 23%, ischemic stroke by 19%, and diabetes type II by 25%, compared to insufficiently active individuals (Kyu et al., 2016). Similarly, another meta-analysis found that high levels of physical activity, compared to low levels, reduced the risk of type II diabetes by 35%. It has been proven that combining both resistance exercise and aerobic activities contribute to lower NCD rates: around 40 - 67% reduced risk for diabetes type II, 35 - 50% reduced risk of obesity, 25% reduced risk of metabolic syndrome, and 21% reduced risk for hypercholesterolemia (Brellenthin et al., 2022)

Psychological benefits

The Global Burden of Disease study from 2019 highlights mental disorders as seventh leading cause of disability-adjusted life-years, with depressive and anxiety disorders being among the most prevalent (Ferrari et al., 2022). Data from the World Health Organisation (2022) showed that 970 million people globally are living with some form of mental disorder, a number that has increased by 48.1% from 1999 to 2019 (Ferrari et al., 2022). However, regular physical activity has been found to significantly decrease the prevalence of major depression and anxiety disorders (Goodwin, 2003). Moreover, across different age and demographic groups, physical activity has been shown to protect against depression (Schuch et al., 2018) and anxiety (Schuch et al., 2019). Adults who were active for at least 1 hour/week had around 50% smaller odds of developing various anxiety disorders and phobias, in comparison with inactive individuals (Ten Have et al., 2011). Additionally, both adults and children/adolescents reporting higher levels of physical activity had 26% lower odds of developing anxiety, 58% lower odds of agoraphobia and a 43% lower odds of posttraumatic stress disorder (Schuch et al., 2019).

Likewise, participation in physical activity provides various psychological health benefits (Hardman et al., 2022; Paluska & Schwenk, 2000). The meta-analysis from 2017 showed a significant positive association between physical activity and mental health (White et al., 2017). In children and adolescents, physical activity has been linked to improved self-esteem, and cognitive functioning (Biddle & Asare, 2011). In older adults, moderate-intensity aerobic activity has been shown to be most beneficial, with the strongest effects on self-efficacy, well-being and self-

perception (Netz et al., 2005). A systematic review on the impact of different types of physical activity on psychological stress found that higher-intensity exercise yields the most significant benefits, with aerobic activities and yoga providing the greatest stress relief (Azofeifa Mora, 2018). This positive effect on perceived stress was supported by another study, which also demonstrated improvements in psychological well-being and positive affect (Farris & Abrantes, 2020). Additionally, physical activity has been found to induce changes in brain and gene expression, leading to improvements in cognitive abilities and mood (Mandolesi et al., 2018). Two meta-analyses further revealed that MVPA is linked to better cognition, higher academic performance, processing speed, and executive functions (Erickson et al., 2019), as well as the subjective well-being (Buecker et al., 2021).

Economic benefits

The economic burden of physical inactivity can manifest in various ways, including direct healthcare costs, indirect productivity losses (often due to presenteeism or absenteeism), and household cost (Cadilhac et al., 2011). In 2013, the consequences of physical inactivity on five noncommunicable diseases and all-cause mortality accounted for over INT$67,5 [1] billion globally, covering both direct and indirect costs (Ding et al., 2016). Direct costs of physical inactivity represented 0,64% of global healthcare economic expenditure (Ding et al., 2016). Indirect cost associated with absenteeism ranged from 0.44 to 0.86 days annually, while presenteeism accounted for the loss of 2.6 to 3.71 working days per year among nonactive individuals compared to their active counterparts (Ding et al., 2016). Engaging in sufficient physical activity has been shown to reduce productivity losses, with greater benefits for higher physical activity levels (Hafner et al., 2020). Study in Canada elucidated that even a 1% relative reduction in physical inactivity, tobacco smoking and overweight would lead to an immense amount of savings in economic burden (Krueger et al., 2014). Global projections estimated that by 2050, each adult who increases their physical activity could contribute to annual economic gains ranging from US$3060 to US$4409. Also, achieving a 15% relative reduction in global physical inactivity by 2030, as suggested in GAPPA, could add US$25.0 to US$36.5 billion annually to the global gross domestic product (Hafner et al., 2020). GAPPA accentuated that integration of the physical activity, sport, recreation,

[1] International dolar

and active transport into all settings, could serve as a catalyst for tourism, employment, and infrastructure enhancement, leading to economic, environmental, and social advantages (World Health Organization, 2019).

Environmental and social benefits

While less scientifically supported, certain environmental and social benefits of physical activity do exist. Active modes of travel, when they replace motor vehicles, have been found to significantly reduce air pollution and prevent traffic-related death and injuries (Xia et al., 2015). Similarly, walking and cycling play important roles in reducing congestion in cities worldwide (Koska & Rudolph, 2016). Engaging in physical activity in natural environments not only produces numerous health and social benefits but also contributes to nature protection and species preservation, fostering the awareness and connectedness with nature (Gladwell et al., 2013). Similarly, the UN acknowledged that sport can significantly contribute to climate action (United Nations Climate Change), whereas the Green Sport Expert group has developed a "playbook" of sports contribution to the European Green Deal (European Commission: Directorate-General for Education Youth Sport and Culture, 2023). This playbook highlights the sport's potential to influence climate change through various pathways, including organising sustainable sport events, building eco-friendly infrastructures, raising awareness, promoting behavioural change, supporting biodiversity, or promoting multisectoral collaboration (European Commission: Directorate-General for Education Youth Sport and Culture, 2023). From a social perspective, physical activity could contribute to social integration and acceptance, promote equality, community cohesion, various social norms, reduce juvenile delinquency and crime, and can serve as an agent for social change (Bailey et al., 2016; Wankel & Berger, 1990).

1.1.3. Prevalence

The high prevalence rates of physical inactivity have let to its classification as a "pandemic" (Kohl et al., 2012) and its recognition as one of the major public health and health policy concern (Pratt et al., 2014). Data reveals that approximately 27.5% or 1.4 billion adults (Guthold et al., 2018) and

81% of adolescents (Guthold et al., 2020) worldwide do not meet the recommended levels of physical activity. The physical activity levels vary across different demographic groups with an evident trend of higher inactivity prevalence among women (8.3% higher) and girls (7.1% higher) than in men and boys, respectively (Guthold et al., 2018, 2020). Inactivity levels are also found to increase with age (Sallis et al., 2016). Additionally, higher-income countries present more than double the rates of insufficient physical activity compared to lower-income countries (Guthold et al., 2018). According to the Health Behaviour in School-aged Children study in Europe and Canada, only a small percentage of children meet the recommended physical activity levels (World Health Organization, 2020a). Specifically, among 11-year-olds, 21% of girls and 27% of boys achieved at least one hour of MVPA daily. For 13-year-olds, it's 15% of girls and 23% of boys, and for 15-year-olds, it's 11% of girls and 19% of boys in Europe and Canada (World Health Organization, 2020a). Similarly, a Global Matrix Physical Activity Report Card covering 57 countries suggested that on average only 27 - 33% of children and adolescents achieve the recommended amount of MVPA (Aubert et al., 2022).

Given the substantial number of insufficiently active individuals and the well-documented health and other benefits of physical activity, promoting physical activity is clearly one of significant public health priorities.

1.2. Sport participation

1.2.1. Definition and types

Sport encompasses "any form of physical activity which, through casual or organised participation, aims at expressing or improving physical fitness and mental well-being, forming social relationships or obtaining results in competition at all levels" (Council of Europe, 2001). Sport, as a highly popular type of leisure-time physical activity, should be accessible to everyone and is commonly referred to as "recreational" sport, "amateur" sport, "sport-for-all" or "grassroot" sport (Koski et al., 2017; Pedišić, 2022; van Bottenburg, 2002). Recreational sports can be played in various settings, and they include, for example: i) recreational sports programmes offered by sports

clubs and associations in sports setting, ii) extra-curricular physical activities in schools and universities, known as school or academic sports, iii) company sports, iv) non-organised sports activities practiced at home, parks, sporting facilities. Furthermore, recreational sports that provide health benefits with no or minimal risk can be considered as health-enhancing sports activities or "HESA", while those opposite would be termed as "non-HESA" (Koski et al., 2017).

In addition to sport-for-all, high-performance sport has emerged as a broad category encompassing sports at the high or elite level globally. It is often referred as elite, top performance sport, or as "professional" sport (van Bottenburg, 2002), encompassing athletes and teams competing at national or international levels with a focus on achieving excellence and success (Sotiriadou & De Bosscher, 2018; Swann et al., 2015). Elite sport it is influenced by various macro-, meso- and micro-level factors such as community dynamics, social, cultural and economic conditions, attracting interest from the business community, media, and consumers (Sotiriadou & De Bosscher, 2018; van Bottenburg, 2002). Nowadays, it involves a complex network of athletes, coaches, physiologist, psychologists, managers, performance analysists and numerous other stakeholders within the sports sector (Sotiriadou & De Bosscher, 2018).

1.2.2. Benefits

The benefits of physical activity in general can also extend to benefits of sport as a type of physical activity, especially considering that some studies have included the sports domain into the assessment of physical activity levels and benefits (Booth et al., 2012; Samitz et al., 2011; White et al., 2017). However, previous studies have also analysed specific benefits of sports participation that are independent of the overall physical activity level.

A systematic review of observational and intervention studies explored the association of 26 different sport disciplines with various health and functional outcomes (Oja et al., 2015). The strongest evidence was found for recreational football and running in improving aerobic and metabolic fitness, cardiovascular function, muscular or running performance, and adiposity, with additional cardiac adaptation benefits observed in football (Oja et al., 2015). Another review from 2020 demonstrated the significant benefits of running for reducing cardiovascular, all-cause and

cancer mortality, evident even with minimal doses of less than 50 minutes per week (Pedišić et al., 2020). The latest review of 136 intervention and longitudinal studies across 19 different sport disciplines confirmed previous findings and demonstrated a 23%, 21% and 24% decrease in all-cause mortality risk associated with running, cycling, and swimming, respectively (Oja et al., 2024). Running and cycling were also associated with lower risk of cancer and cardiovascular mortality, whereas cycling also showed a positive effect on reducing risk of coronary heart disease (Oja et al., 2024). Additionally, in the same study, various positive body changes and adaptations were observed for football, handball, running, and swimming, including improvements in body composition, cardiorespiratory and metabolic fitness, cardiovascular functions at rest, and additional bone strength noted for football only (Oja et al., 2024).

Sport generally can contribute to mental health of diverse population groups. For instance, youth that actively engage in sports reap significant mental benefits, including better body image, life satisfaction, better physical functioning, increased happiness, reduced pain, fewer physical complaints, and decreased likelihood of alcohol and drug consumption (Brettschneider, 2001; Ferron et al., 1999; Snyder et al., 2010). Evidence concerning the adult population indicates that participation in sport is associated to better mental health, including improved self-esteem, greater life satisfaction, lower levels of depression, anxiety, and stress (Eather et al., 2023). Active involvement in sports clubs is shown to be significantly important for mental well-being (Stenner et al., 2020), while participation in sporting events elevates overall wellbeing (Nowak, 2014) of older adults. The advantages of sport participation surpass those of other forms of leisure-time PA, with team sports exhibiting larger effects than individual ones (Eime et al., 2013).

There are also proven economic and social benefits of sport participation. For example, playing in sport together with company colleagues can increase group cohesion, work performance, and productivity (Brinkley et al., 2017). Research suggests that greater social integration and friendship formation are found in sports clubs than in fitness centres (Ulseth, 2004). Similarly, sports participation has a potential to inclusively engage physically disadvantaged people into community (Hutzter & Bar-Eli, 1993; Soundy et al., 2015), providing them with support, a safe place for social engagement, play, and psychological well-being, tailored to their needs and abilities. Sports unique nature can boost community development and relationships by fostering a sense of belonging and cooperation among participants (Skinner et al., 2008), by increasing social capital (Darcy et al.,

2014), inclusion of diverse populations (Breuer et al., 2015; Schaillée et al., 2019; Spaaij, 2012), and by enhancing other aspects of mental and social health (Eigenschenk et al., 2019). Besides already mentioned, the literature discusses numerous other social, economic, and indirect or direct benefits of sports (Coalter, 2005; Khan et al., 2012; Sanderson et al., 2001).

1.2.3. Prevalence

Prevalence studies on physical activity generally include sports as part of leisure-time physical activities (Guthold et al., 2018, 2020), making it challenging to specifically interpret sport participation globally. However, the most recent Eurobarometer survey conducted across 27 EU countries found that 45% of adults never engage in sports or exercise, while only 6% do so regularly (European Commission, 2022; Rakovac & Pedišić, 2022). In Northern countries, particularly Finland, the lowest rates of inactivity in sport or exercise were observed, with 71% of individuals in Finland being active on at least one day per week. In contrast, Portugal, Greece, and Poland showed the highest percentages of those who never participated in sports or exercise. According to the same survey, the percentage of men who never engage in sport or exercise is 9% lower compared to women. Almost half of the respondents reported engaging in outdoor physical activity and sports, while 12% reported doing so at sports clubs, with a 5% higher participation rate in sports clubs among men. Sport and exercise participation rates decrease with age, dropping from 54% in 15 - 24 years age group to 21% in the ≥55 age group (European Commission, 2022). According to the Global Matrix, encompassing 57 countries globally, approximately 40 - 46% of children and adolescents engage in organised sport and physical activity (Aubert et al., 2022). The same study also stressed sociodemographic variances, with the lowest participation grades identified in China, Indonesia, and Uruguay, and highest in Denmark.

Differences in popularity of specific sports disciplines are evident worldwide, with adults mostly favouring running, cycling, swimming, walking and resistance training, globally (Hulteen et al., 2017). In Europe, football emerged as the most popular among adults (10% of all participating adults), followed by running (7.9%) and swimming (7.8%) (Hulteen et al., 2017). Same study showed that adolescents worldwide had similar preferences, with swimming and running being

among top five in each region. However, European adolescents preferred football (29%), and swimming (9%).

1.2.4. Structure of European sports sector

Structure and sports organisations

The specificity of sport setting is characterised by its well-defined structure and system. Throughout the years, European countries and their national sport systems were adapting in response to political situations and demands, social and cultural shifts, resulting in a variety of different constitutions, legislative frameworks and organisational structures across different nations (Breuer et al., 2015; Hallmann & Petry, 2013; Hartmann & Benedičič Tomat, 2022; Scheerder et al., 2017). However, there are certain foundational aspects that are common across countries that will be outlined.

At the national level, non-governmental sport organisations, specifically *national sport associations, federations, or organisations* serve as the main actors in sports sector (Hartmann & Benedičič Tomat, 2022). These organisations usually represent only one sports discipline within the nation and encompasses sports clubs or regional/local associations in that particular sports discipline. In certain sports systems, there may be regional sport federations and even confederations operating at lower hierarchy levels. Additionally, some countries have *"other" sports organisations* at the same hierarchical level representing school sport, company sport, or sport-for-all. National sport-for-all associations are nationwide, they can represent various sports disciplines and support grassroot sports. Both national and "other" sports organisations generally operate under umbrella sports organisations, or autonomically.

The umbrella sports organisations can be divided into two categories: *national sport confederations/umbrella organisations* and *National Olympic Committees* (Hartmann & Benedičič Tomat, 2022). These entities are sometimes interconnected, and both are aligned with national sports associations. National Olympic Committees encompass national sports organisations while national umbrella sports organisations encompass not only national sports organisations but can

also encompass sport-for-all associations, and potentially even organisations at regional/local level and sports clubs. Together they collectively represent national sport organisations globally.

Finally, the basis of the sports structure is comprised of *sports clubs*, usually nonprofit organisations that generally operate at the community level (Breuer et al., 2015). They can differ in terms of membership rates, governance, facility availability, the range of sports disciplines offered, equipment, programmes, professional staff, and other.

In line with the non-governmental governance, countries may adopt more or less interventionist sport legislation models, influencing the degree to which sports organisations depend on the governmental organisations within sports. These include parliaments or ministries at the national level, ministries at the regional level, or their local administration (Figure 2).

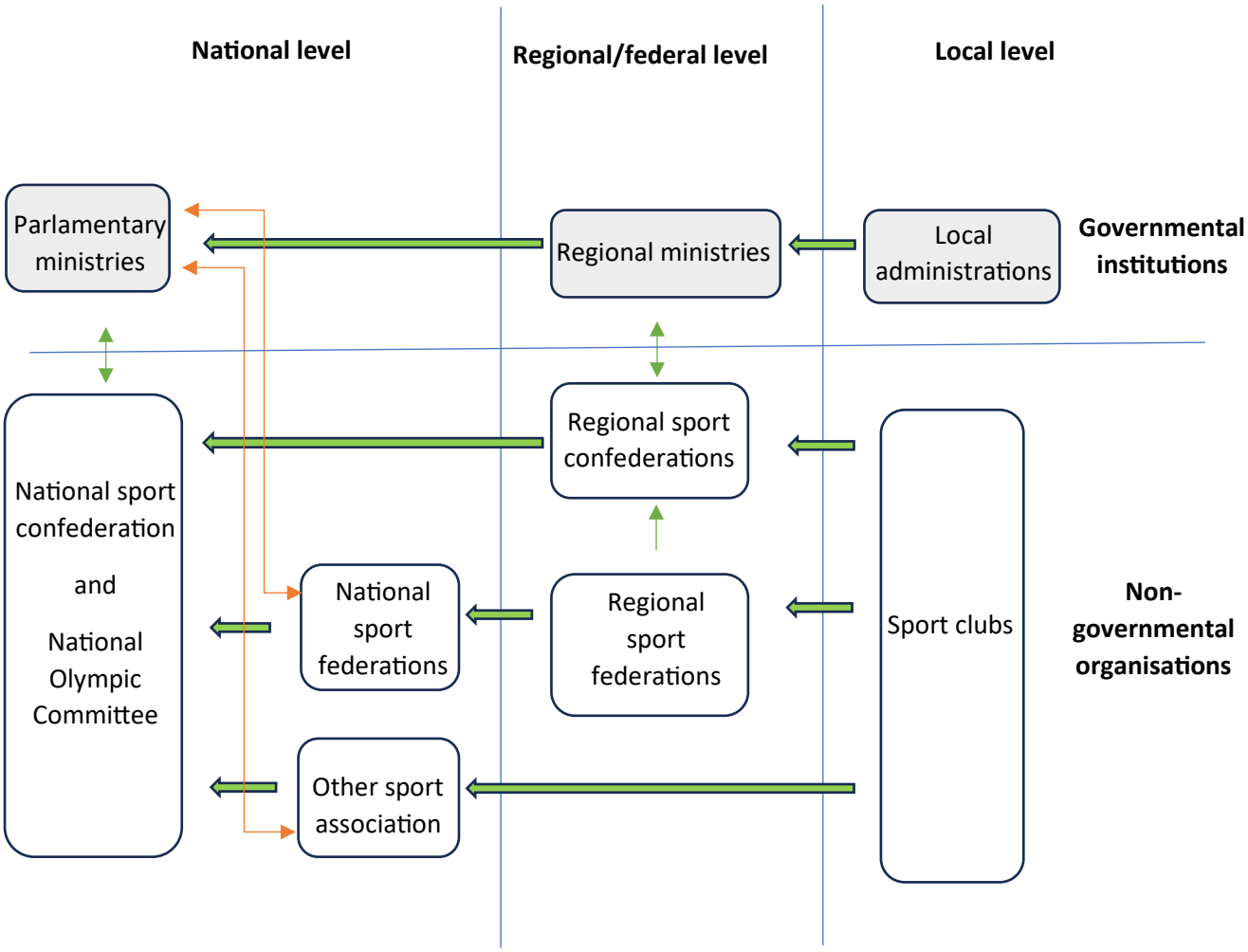

Figure 2: Sport structure at national level, adapted from Hartmann & Benedičič Tomat (2022)

Likewise, at the European level, the organisational structure mirrors the national one but is more complex due to the involvement of higher-level entities at the European governmental level (Hartmann & Benedičič Tomat, 2022; Scheerder et al., 2017; Tokarski et al., 2002), namely:

a) The European Union (EU) with the European parliament, European Council, and European Commission on one side,
b) The Council of Europe with national sport ministers, Conference of Sport Ministers, and the Enlarged Partial Agreement on Sport (EPAS) on the other side.

At the non-governmental level, analogous organisations to those found at the national non-governmental level operate at the European level (Hartmann & Benedičič Tomat, 2022; Scheerder et al., 2017; Tokarski et al., 2002). These include:

a) ***European sports federations*****,** comprising national sports federations in specific sport,
b) ***European umbrella sports organisation*** like the European Olympic Committee, whose members are generally National Olympic Committees and/or national sport confederations, but may also encompass ministries of sport,
c) ***Sport-for-all associations at European or International level***, such as International Sport and Culture Association (ISCA), The Association For International Sport for All (TAFISA), European Federation for Company Sport (EFCS), European Non-Governmental Sports Organisation (ENGSO), whose members can be similar organisations at national level and/or National Olympic Committees globally, not necessarily limited to Europe.

As already mentioned, cross-national differences exist in different domains such as centralisation, coordination of various actors, state, voluntary and private sector involvement, financing, aims and main orientation. Some authors have even proposed a model categorising different national sports systems into the ones with a dominant "social configuration", "missionary configuration", "bureaucratic configuration" or "entrepreneurial configuration" (Breuer et al., 2015; Jean et al., 2004; Scheerder et al., 2017).

The sports structure in the EU can be simplified using a pyramid model, with umbrella organisations at the top and individuals as a base (Figure 3). According to data collected, within the EU alone, there are over 60 umbrella organisations, more than 2,500 national sports

organisations (Pedišić, Matolić, et al., 2021), over 950,000 sports clubs (Koski et al., 2017), and >53 million participants (European Commission, 2022; Pedišić, Matolić, et al., 2021). However, while the number of individuals may seem large at first, it represents only 12% of the EU population, indicating its massive potential for further expansion.

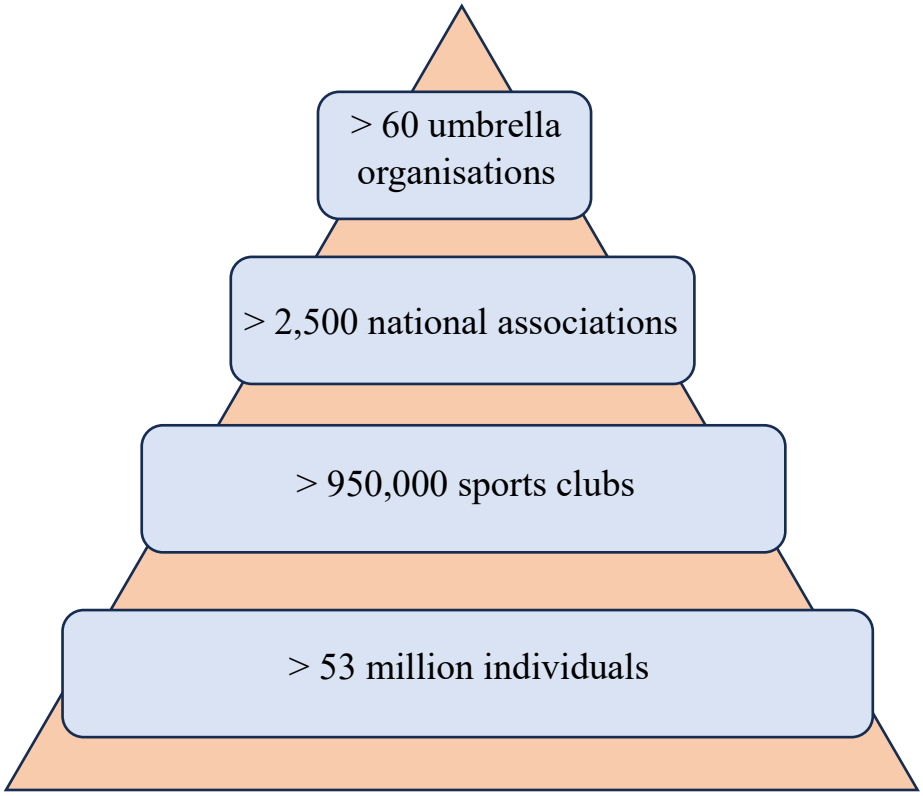

Figure 3: Pyramid model of the European sports structure

1.2.5. Stakeholders in the sports sector

There is a multitude of stakeholders relevant for making changes within the sports sector and a wide array of the ones that benefit from those changes, coming from different backgrounds beyond just sports. Moreover, to fully realise the potential of sports setting, collaboration among different sectors and stakeholders is advocated (Breuer et al., 2015; Hämäläinen et al., 2016).

Key actors in the sports sector include athletes, coaches, paid officials, and various representatives from sports clubs such as volunteers, instructors, parents/guardians, and other club members. At a next level, stakeholders within the sports setting encompass sport clubs, regional/national and European sports associations/federations, umbrella sports associations, Olympic committees, and sport-for-all associations at various levels. Furthermore, significant stakeholders from outside the sports domain include governmental bodies (ministers of sport, education, and health, as well as public health institutions interested in promotion of physical activity, sport, and health). They may include organisations like the WHO, United Nations, HEPA Europe Network, and focal points dedicated for physical activity promotion, among others. Researchers in the field of public health, physical activity, and sport can also significantly contribute to sports setting. Furthermore, stakeholders that are very important in advancing sports environment comes from educational institutions, those are physical educators, teachers, and academics teaching subjects related to health, physical activity, sport and physical education, as well as their students (Lane et al., 2022; Mirzaei Kalar et al., 2019; Pedišić, Koski, et al., 2021; Sports Club for Health Consortium, 2020a; Titze et al., 2022). Moreover, there are numerous other potential stakeholders and promotors (Mendizabal et al., 2020), including the media, advertising companies, and commercial sport providers whose influence on success of specific initiatives within the sports setting is significant (Filo et al., 2015; Goldlust, 2013; Lever & Wheeler, 1993; Scheerder et al., 2017).

1.2.6. Suitability of sports setting for health promotion

Sports setting is indeed a suitable environment for health promotion. Organised sport in sports clubs significantly contribute to achieving health-enhancing levels of physical activity across all age groups (Eime et al., 2015; Kokko et al., 2019). Study on Australian children and adolescent reported that sport contributed to 45% of MVPA daily, which accounts for around 43 minutes and 17% daily energy expenditure (Maher et al., 2009). Similarly, children active in sports clubs accumulate around 25 minutes more in MVPA on training days compared to non-training days. Whereas those engaged in at least one training session per week doubled the odds of achieving sufficient physical activity levels for health (Mooses & Kull, 2020). On days involving sports, boys achieved significantly more moderate- and vigorous-intensity activities and less sedentary time

than on non-sport days (Wickel & Eisenmann, 2007). The same study found that youth sport participation contributed to a higher percentage of daily MVPA compared to physical education classes and breaks (Wickel & Eisenmann, 2007). In a long run, playing organised sport and participating in sports competitions at a younger age serve as important predictors of higher physical activity levels later in life, thereby ensuring physical, mental, and social health benefits while aging (Kjønniksen et al., 2009; Pfeiffer & Wierenga, 2019; Pfeiffer et al., 2006; Telama et al., 2006).

Unique advantages of sports setting in the context of health promotion also include access to specialised equipment, adaptive facilities, educated staff, and evidence-based programs (Downward et al., 2021; Koski et al., 2017). Sports clubs as an environment attract individuals based on their preferences and voluntarily participation (Kokko, 2014; Kokko & Baybutt, 2022) fostering a positive and motivating atmosphere that encourages adherence to physical activity.

Additionally, the appeal of sports is enhanced by organising sporting events, which have been found to stimulate interest and increase engagement in sports during and around their occurrence (Bauman et al., 2021; Frawley & Cush, 2011; Kokolakakis & Lera-Lopez, 2020). Harnessing this enhanced inspiration and enthusiasm surrounding sports events could be leveraged to popularise sports among the masses and increase physical activity levels (Bauman et al., 2021; Frawley & Cush, 2011; Kokolakakis & Lera-Lopez, 2020). Finally, sports athletes frequently serve as role models, especially among youth, and their popularity gives them the ability to influence opinions and change behaviours, potentially serving as spokespersons for health (Payne, 2003). Therefore, the public presentation and achievements of athletes (Mutter & Pawlowski, 2014) have the potential to promote health-related topics (Payne, 2003).

Based on arguments from previous chapters, it is evident that the sport sector receives significant political recognition, its structure is well-developed and comprehensive, it encompasses various stakeholders, it is popular, massive, represented in media, stimulating, voluntary and has necessary equipment. Therefore, stakeholders at all levels – macro, meso and micro – recognise the significant health promotion potential of sports clubs (Kokko et al., 2013; Kokko et al., 2006; Van Hoye et al., 2022) and advocate its further funding and development (Van Hoye et al., 2022).

1.3. Physical activity and sport promotion initiatives

1.3.1. Definition and types

Physical activity and sport promotion initiatives are actions and processes taken to alter various intrapersonal (physiological, psychological, behavioural), interpersonal (social, cultural), ecological, environmental, organisational, educational, political, or multiple factors that could influence physical activity and sport participation levels. The popularity of physical activity initiatives research began in 1996 and have gained more popularity over the recent years (Varela et al., 2018). However, it is still among the least represented topic in physical activity and health research field, with only 7.1% studies accumulated until 2015 (Varela et al., 2018). Because of its complexity, physical activity initiatives can be classified based on several criteria such as comprehensiveness, difference of the aims, population to which are directed, settings in which they operate, delivery ways, and measurement tools. Existing studies have built upon each other and created different classification pathways and models of physical activity and sport initiatives.

A review of physical activity initiatives (Dishman & Buckworth, 1996) has differentiated between several initiative approaches:

a) *Behaviour modification* – behavioural changing approach.
b) *Cognitive-behaviour modification* – decision making initiatives.
c) *Health education* – mass-media campaigns, educational initiatives, any initiative related to health awareness and education.
d) *Health risk appraisal* – short initiative assessments of health and fitness levels.
e) *Exercise prescription* – initiatives of prescribing physical activity based on individual or group needs.
f) *Physical education* – initiatives applied to schools, mostly during physical education classes.
g) *Combined* – initiatives that include combination of two or more approaches.

The authors also differentiated between initiatives according to settings in which they were applied (home, school, community, workplace, health-care); social context (group, individual, family, combined); participants (gender, age, race, heath status); delivery mode (face-to-face, media

provided, combined); research/initiative team supervision; physical activity (type: aerobic, strength, active leisure, aerobic & other activities; frequency, duration, intensity, measurement), and according to research design conducted (Dishman & Buckworth, 1996).

Historically, physical activity and health initiative research has primarily centred around psychological models related to behavioural and cognitive modifications (Marcus et al., 1992; Marshall & Biddle, 2001; McLeroy et al., 1988; Prochaska et al., 1994; Stokols, 1996). Later there has been growing interest towards a more comprehensive influence pathway emerged from the (Socio-)Ecological model (McLeroy et al., 1988). This model advocates that health behaviour is affected by multiple levels of influence: intrapersonal, interpersonal, institutional/organisational, community factors, and public policy levels.

Sallis and Owen (1999) adapted initiative approaches defined by Dishman and Buckworth such as behavioural, cognitive-behavioural, educational, to fit within the Ecological model framework. This resulted in initiatives ("programs") of various levels of influence:

a) *Individual-level influence***,** which involves promotion of home-based physical activity, lifestyle physical activity, programs in health care, programs for specific populations (obese, clinical, elderly), or initiatives for families and youth.
b) *Community and population influence*, such as school and worksite settings, community and mass media campaigns, initiatives targeting specific ethnic groups and minorities, as well as environmental and policy-based initiatives.

Initiatives that encompass both levels of influence may utilise one or more approaches defined by Dishman and Buckworth. Sallis et al. (2006) later refined the Ecological model from the physical activity perspective, presenting physical activity behaviour across four "*active living domains*" as main outcome: active recreation, active transport, household activities, and occupational activities. According to them, initiatives can affect changes in physical activity behaviour across these active living domains through one or multiple "environments" (levels), including:

1.) *Intrapersonal*: This level includes knowledge, skills, attitudes, perception, and individual behavioural changing practices.
2.) *Behavioural setting***:** This level involves environments or domains where active living behaviours occur, some of which are: recreational environments (including sports clubs),

homes, healthcare facilities, neighbourhoods, workplaces, outdoor spaces, schools, sports stadia.

3.) *Public policy*: This level includes any political and public health actions, incentives, funds, documents, factsheets, guidelines, programs, and other created with the aim at increasing physical activity or sport participation levels.
4.) *Social and cultural:* Initiatives at this level affect interpersonal relations, social support, social climate, social capital, norms, families, peer interactions, or partners. Thes level can be interconnected to all other levels.
5.) *Information environment:* Similar to social and cultural level, the information environment, as defined by Sallis et al. (2006), is interconnected with others.
6.) *Natural:* This environment is also interrelated with previous ones and includes ecological variables of behavioural influence like air quality, temperature, topography.

Similarly, there is another approach that adopted Ecological model and similarly emphasises achieving health benefits through physical activity promotion within settings rather than focusing on individuals directly. Known as the "Settings-based approach" (Kokko & Baybutt, 2022), this strategy acknowledges the diverse determinants and layers of influence present in various environments (Kokko, 2014). Through the years, this approach has been used within the sport setting (Van Hoye, Johnson, Geidne, et al., 2021).

One of the most cited approaches to initiative classifications is the "Logic framework" provided by Kahn and colleagues (2002). This approach shares similarities with and builds upon both Dishman and Buckworth's initiative approach types and the Ecological model. The logic framework categorises initiatives according to the approach used:

1.) *Informational*: This approach aims to change attitudes, knowledge, perception about the benefits, opportunities, principles, methods and other of physical activity and sports.
2.) *Behavioural and social*: Initiatives under this category focus on changing behavioural and social environments such as tailored initiatives or physical activity support groups.
3.) *Environmental and policy:* This approach involves changing the environment and policy to support for physical activity promoting behaviours, such as building outdoor parks and implementing land-use regulations.

This framework has been frequently used in recent literature (Guide to Community Preventive Services, 2022; Heath et al., 2012; Powell et al., 2018; Sallis et al., 2016). Initiatives suggested to have the largest potential and effect are the ones that: i) address multiple factors of influence as defined in the Ecological model (Sallis et al., 2006), ii) address some of the acknowledged "best investments for physical activity" (Ding et al., 2020), iii) are multisectoral and multidisciplinary (Ding et al., 2020; Heath et al., 2012; Sallis et al., 2016), iv) have scaled-up impact, and consider vulnerable minorities (Ding et al., 2020), v) have informational outreach, are community-wide but also use behavioural changing approaches for individuals (Heath et al., 2012; Kahn et al., 2002; Sallis et al., 2016), and vi) are using electronic delivery channels (Powell et al., 2018). Since the initiative used in this PhD research falls under the category of informational approach, the following text will provide a more detailed description of this type of initiatives.

1.3.2. Informational approach initiatives

Initiatives employing an *informational* approach to physical activity promotion encompass the dissemination of information across various "communication environments". These initiatives are usually designed to educate, enhance knowledge, influence attitudes, shape perceptions, or increase awareness among individuals and communities (Dishman & Buckworth, 1996; Kahn et al., 2002; McLeroy et al., 1988; Sallis et al., 2006). The aim is to empower individuals to make informed decisions regarding the integration of physical activity into their daily lives and to provide guidance on how to maintain these behaviours (Kahn et al., 2002). They can include mass-media campaigns (e.g. leaflets, posters, billboards, advertising, tv shows), community educational campaigns (e.g. workshops, courses, talks, presentations), point-of-decision prompts, physical literacy, health and classroom-based education campaigns, various online courses, and resources, among other (Dishman & Buckworth, 1996; Kahn et al., 2002; McLeroy et al., 1988; Sallis et al., 2006).

Current evidence has demonstrated effectiveness of point-of-decision prompts (Heath et al., 2012; Kahn et al., 2002), mass-media campaigns (Heath et al., 2012), and community-wide campaigns in promoting physical activity (Heath et al., 2012; Sallis et al., 2016). However, due to the diversity in methodologies and evaluation methods used, future research on effectiveness of initiatives

within the informational approach is needed (Sallis et al., 2016). Particularly, to the best of current knowledge, there is lack of consistent evaluation of educational and training courses for physical activity promotion. Potential reasons and challenges contributing to the generally insufficient evidence on educational initiatives include: i) difficulty in conclusively determining their influence and benefits, ii) inability to fully evaluate or to attribute observed changes exclusively to the initiative's impact (Ding et al., 2020; Ebrahim & Smith, 1997; Kahn et al., 2002), or iii) lack of funding (Ding et al., 2020).

1.4. Evaluation of educational initiatives

1.4.1. Evaluation methods

Evaluation research is defined as the "use of scientific method for collecting data concerning the degree to which some specific activity achieves some desired effect" (Suchman, 1977). It typically involves assessing various factors, including the attributes of the activity or initiative, the characteristics of the exposed population, the context or setting of the initiative, conditions affecting results, and the range of outcomes produced by the initiative. Evaluating physical activity initiatives is a diverse and complex problem (Collins et al., 2005; Drummond et al., 2008; Fynn et al., 2020; Shadish & Cook, 2009; Wilkes & Bligh, 1999) with scientifically grounded frameworks often being underused or misused in the majority of studies (Fynn et al., 2020).

For instance, in the field of behavioural and multi-component initiatives, complex frameworks are usually applied. One such framework that has evolved over the past 25 years is the "Reach, Efficacy, Adoption, Implementation and Maintenance" (RE-AIM) framework (Harden et al., 2015; Kwan et al., 2019). The RE-AIM framework encompasses five evaluation "levels": Reach, Efficacy, Adoption, Implementation and Maintenance (Gaglio et al., 2013; Glasgow et al., 2019; Glasgow et al., 1999). While widely utilised in practice (Gaglio et al., 2013; Glasgow et al., 2019; Harden et al., 2015; Kwan et al., 2019), studies often cover some, but rarely all evaluation dimensions (Gaglio et al., 2013; Glasgow et al., 2019; Harden et al., 2015; Kwan et al., 2019). Evaluating using RE-AIM is highly complex (Gaglio et al., 2013; Glasgow et al., 2019), with data often being challenging to obtain (Kwan et al., 2019) and interpret (Harden et al., 2015; Kwan et

al., 2019). A lack of user-friendly evaluation tools additionally complicates the matter (Glasgow et al., 2019). For educational initiatives, the RE-AIM lacks specific evaluation tools and detailed suggestions for evaluating important outcomes. These outcomes encompass changes in behaviour or attitudes, the knowledge acquisition, formative or summative results, and identification of potential negative results (Cook, 2010; Suchman, 1977).

According to Wilkes and Bligh (1999), evaluation of educational initiatives can be oriented towards different actors in education, such as students, programmes, institutions, stakeholders or towards specific immediate or long-term outcomes. Evaluation efforts of educational programmes across different countries worldwide have also utilised a wide array of approaches and assessed diverse initiative characteristics (Cook, 2010; Stake, 1976; Wilkes & Bligh, 1999). These varied evaluation actions have involved the application of many different evaluation tools and strategies (Cook, 2010; Wilkes & Bligh, 1999), and have influenced the creation of numerous frameworks and models for evaluation (Brewer, 2011; Glasgow et al., 1999; Guskey, 2000; Holton, 2005; Kirkpatrick & Kirkpatrick, 2006; Passmore & Velez, 2012; Phillips & Phillips, 2016; Stufflebeam, 2000). Consequently, evaluation of educational initiatives has also become a complex process, constraining direct comparisons between initiatives due to the diverse methods, tools and models employed.

One of the most used frameworks for evaluating educational initiatives is the Kirkpatrick's evaluation framework. This four-level model is based on the work of Raymond Katzell (Kirkpatrick, 1956) and further developed by Donald Kirkpatrick (Kirkpatrick, 1959a, 1959b, 1960a; Kirkpatrick, 1960b). The framework is modified and upgraded in several later studies (Kirkpatrick, 1996; Kirkpatrick & Craig, 1970; Kirkpatrick & Kirkpatrick, 2006; Kirkpatrick & Kirkpatrick, 2007; Kirkpatrick & Kirkpatrick, 2016). It is one of the most commented, upgraded, criticized, and evaluated frameworks in the field (Alliger & Janak, 1989; Holton III, 1996; Wang & Wilcox, 2006; Wang et al., 2002). The original Kirkpatrick classification model proposed four levels of evaluation: *Reaction*, *Learning*, *Behaviour* and *Results*. Throughout the years, many new models have emerged with quite similar levels, steps, or evaluation segments as in the Kirkpatrick's framework (Alvarez et al., 2004; Hamblin, 1974; Holton, 2005; Kaufman et al., 1996; Molenda et al., 1996; Phillips & Phillips, 2016; Reio et al., 2017; Stufflebeam, 1971; Tamkin et al., 2002; Tannenbaum et al., 1993; Wang & Wilcox, 2006; Warr et al., 1970; Watkins et al., 1998). However,

not many other models have gained popularity, and the Kirkpatrick's framework remained the simplest and most widely used one. However, it should be noted that many evaluators who have utilised this framework often limited their evaluation to the first two levels, neglecting the comprehensive assessment across all four levels (Ho, 2016; Hughes et al., 2016; McColgan et al., 2013; Reio et al., 2017). Several factors contribute to this limitation including the misunderstanding of the levels, time constraints, lack of belief in the evaluation process, complexity of analysis, high cost, insufficiently experienced or educated evaluators, and inadequate tools (Reio et al., 2017). In response to some previous critiques of the original model, such as neglecting intervening variables, misunderstanding of the causal chain between levels, and facing the difficulties with *Behaviour* and *Results* evaluations (Moreau, 2017), the "New World Kirkpatrick's model" has been developed (Kirkpatrick & Kirkpatrick, 2016). Modern version of the original Kirkpatrick's framework, metaphorically referred to as "hammer in the toolbox" by Moreau (2017), aims to address these shortcomings and maximize evaluation effectiveness. However, while it provides valuable recommendation on which evaluation components to assess, challenges remain in its practical application. Specifically, there is lack of user-friendly measurement tools, their simple instructions, and information on psychometric properties, preventing its widespread adoption, comparability, and effectiveness in real-world setting (Reio et al., 2017).

1.4.2. Kirkpatrick's four evaluation components

The four evaluation components defined in the New World Kirkpatrick's Model (Kirkpatrick & Kirkpatrick, 2016) are as follows:

1. *Reaction* is defined as "the degree to which participants find the training favourable, engaging and relevant to their jobs". Important educational course components considered at the Reaction level include "customer satisfaction" with the course, the perceived "relevance" of the course, and the "engagement" of participants in the learning process throughout the course.
2. *Learning* is defined as "the degree to which participants acquire the intended knowledge, skills, attitude, confidence and commitment based on their participation in the training".

Components under the Learning evaluation level include participants' increased knowledge and skills, as well as their attitude, confidence, and commitment to apply "to the job" what they have learned in the course.

3. *Behaviour* is defined as "the degree to which participants apply what they learned during training when they are back on the job". Elements considered important to observe at this level include "critical behaviours" that affect the desired results, "required drivers" that reinforce the appraisal of critical behaviours, and "on-the-job learning" as the accountability of learners to maintain learned behaviours.
4. *Results* is defined as "the degree to which targeted outcomes occur as a result of the training and the support and accountability package". At this level, it is important to define "desired training outcomes" at both the narrow and broader levels, and "leading indicators" as short-term observations that indicate the desired outcomes are on track to produce the desired results.

1.5. Sports Club for Health (SCforH)

1.5.1. Definition

The "Sports Club for Health" (SCforH) is a well-established movement for HEPA promotion, rooted in empirical evidence and systematically developed by numerous experts in sport, health, and physical activity promotion (Pedišić, Oja, et al., 2022). Its primary aim has been to enhance the availability and quality of health-promoting sports activities across Europe, ensuring inclusivity for all (Koski et al., 2017; Pedišić, Koski, et al., 2021; Pedišić, Oja, et al., 2022). SCforH operates by assisting sports organisation and clubs to identify, embrace and/or enhance the inherent health promotion potential of their respective sports discipline. It offers guidance and helps orchestrate the integration and management of HEPA within their environments. As an integral component of the broader strategy for HEPA promotion in Europe, SCforH plays a vital role in promoting HEPA within the sports setting (World Health Organisation, 2023a).

1.5.2. History

The rich history of SCforH in Europe spans over many years and highlights its significance and widely acknowledged impact. The seed of this highly promising idea was planted in Finland in 2008 by the group of experts known as the "SCforH consortium" (Pedišić, Oja, et al., 2022). During the 1st conference organized by European network for the promotion of health-enhancing physical activity (HEPA Europe Network) held that year, a symposium on sport for health led to the establishment of the SCforH working group under the HEPA Europe Network. Over the last 16 years, numerous actions have been undertaken by the SCforH movement. In 2009, driven by the aim to support sports organisations and clubs in enhancing promotion of HESA within their settings, the SCforH consortium published the first version of guidelines, known as "the SCforH guidelines". Shortly after its inception, the SCforH approach gained recognition and received EU funding for the first "SCforH 2009-11" project, which was part of the "Preparatory Actions in the Field of Sport" and involved 18 organisations. This project facilitated the publication of the second version of SCforH guidelines book, the creation of a network spanning institutions from different fields, and the implementation of the conceived dissemination plan. A significant event in the history of the SCforH movement occurred in 2013 when the European Commission acknowledged the implementation of the SCforH guidelines as one of the 23 indicators of HEPA levels and policies in the EU countries (The Council of the European Union, 2013).

In 2015, funding for second project, entitled "Promoting National Implementation for Sports Club for Health (SCforH) Programmes in EU Member States" (SCforH 2015-17 project), was secured from the Erasmus+ Collaborative Partnership grant. This project engaged 20 organisations and aimed to expand and update the SCforH guidelines (Koski et al., 2017), making them more inclusive and understandable for wider audiences. The guidelines were translated into 4 languages and disseminated to 1,743 sports organisations representatives, and 137 HEPA Europe Network members (Pedišić, Matolić, Bělka, et al., 2022). Additionally, throughout the project the SCforH website (Sports Club for Health Consortium, 2020b), SCforH Electronic Toolkit, and social media accounts were created. These comprehensive actions led to the recognition of the project as a success story and an example of good practice by the European Commission (Pedišić, Oja, et al., 2022).

In 2020, the third project "Creating Mechanisms for Continuous Implementation of the Sports Club for Health Guidelines in the European Union" (SCforH 2020-22 project) was initiated after receiving another EU funding. This project involved 17 participating organisations from 14 countries and focused on updating the website (Sports Club for Health Consortium, 2020b), expanding dissemination efforts to other stakeholders in sports, and creating different intellectual outputs. One of the main outputs of the project was development and dissemination of the SCforH online learning course. The course is translated into 24 European languages (Jurakić et al., 2022; Sports Club for Health Consortium, 2020a) and was disseminated to potential stakeholders including: sports organisations, researchers and promotors in public health field, governmental bodies, and higher education academics leading courses on physical education, health promotion and sports science. Due to the snowballing effect, the course reached many more participants.

In summary, the SCforH movement has involved actions from 38 partner institutions across 18 countries over the past 15 years (Pedišić, 2022; Pedišić, Matolić, et al., 2021).

1.5.3. The SCforH guidelines and SCforH guiding principles

The SCforH guidelines book was developed in 2009, with its final version updated during the second SCforH project in 2015 (Pedišić, Matolić, et al., 2021). The book is available in English, Finnish, French, German, and Swedish languages. These guidelines offer comprehensive directions for implementing the SCforH approach in sports clubs and settings, predominantly in Europe. They provide a flexible structure that can be adapted to the unique requirements of any club, regardless its location, context, sports discipline, or specific needs. The book outlines the guiding SCforH principles, emphasizes the benefits of integrating SCforH and HEPA into sports club environment, highlights the specific advantages for individuals and sports club, and presents a model for its practical implementation (Koski et al., 2017). One of the main focuses of the SCforH movement and its three funded projects has been the dissemination, implementation, and popularisation of these guidelines in diverse formats.

The SCforH approach is grounded in seven guiding principles crucial for the successful implementation of SCforH and similar initiatives in the sports setting (Koski et al., 2017; Pedišić,

Koski, et al., 2021; Sports Club for Health Consortium, 2020a). Based on these principles, the SCforH initiatives should:

1.) promote HESA;
2.) follow evidence-based practices that have previously been well established;
3.) be implemented by competent and qualified staff;
4.) promote the sport(s) that is/are part of the standard programme of the sports club (e.g., wrestling in a wrestling club, water polo in a water polo club);
5.) pose no or only minimal safety and health risks;
6.) be carried out in 'healthy' environments;
7.) include commitment to ensure social and motivational climate that is enjoyable, empowering and engaging for all participants.

In essence, this implies that the SCforH approach advocates for the implementation of any form of HESA, prioritising those that align with the sports club's core activities and resources. This approach is stressing the use of well-established practices, appropriate equipment, and safe environmental conditions to optimise effectiveness and mitigate any potential health risks. To achieve this, the SCforH related initiatives should be performed by competent personnel, equipped with proper education and experience, and should take place in an environment conducive to promoting a healthy lifestyles and social inclusivity and acceptance. The SCforH prioritises an environment that fosters motivation, support, and encourages continuous participation and the adoption of HEPA among both current and prospective members.

1.5.4. The SCforH online course

The SCforH online course was developed in a three-phase process spanning over nine months. Led by three researchers, the development process involved a collaborative engagement of over 40 individuals including sport and health experts, software engineers, web designers, and language specialists (Jurakić et al., 2022). In the initial phase, three researchers conducted a comprehensive literature and internet search of existing courses and initiatives while also analysing outputs and materials from previous SCforH projects, to identify relevant features contributing to course

success. This phase lasted for approximately four months and resulted in the creation of initial version of the SCforH online course (Jurakić et al., 2022; Matolić, 2023). The subsequent phase engaged 30 stakeholders and experts specialised in health, sport, and education from 15 countries. Their suggestions were used in refining the initial course version (Jurakić et al., 2022; Matolić, 2023). Following this, the revised course was pilot tested among national focal points for the promotion of physical activity across 27 EU countries, involving 57 experts in total. Their feedback and recommendations were incorporated into the final version of the course. In the third phase, 20 translators were engaged to translate the course into 24 European languages, covering all official EU languages, and Serbian (Matolić, 2023; Pedišić, Oja, et al., 2022).

The SCforH online course (Sports Club for Health Consortium, 2020a), grounded in the SCforH guidelines book, comprises of seven educational units featuring videos, interactive infographics, downloadable resources, and quizzes with multiple question formats. Completing the course takes around 30 minutes. The first unit introduces attendees to the course and the SCforH approach. Second unit provides a background on SCforH, detailing its history. Third unit explains the guiding principles of the SCforH approach. Unit four explores the benefits of adopting the SCforH approach from individual and organisational perspectives. Unit five explains recommendations for physical activity. Specific benefits of sports and physical activity are topic of unit six. Finally, unit seven educates participants on the application model for sports clubs and associations. Additional resources include downloadable SCforH textbook (Pedišić, Koski, et al., 2021), and SCforH guidelines book (Koski et al., 2017). It also includes voluntary online survey on course quality and satisfaction, along with an SCforH survey on the awareness and implementation of SCforH-related ideas in participants' organisations.

1.5.5. Awareness and implementation

Throughout the years, the continuous effort and multiple actions conducted to promote SCforH ideas resulted in increase in SCfor awareness and SCforH guidelines implementation (Pedišić, Matolić, Bělka, et al., 2022; Pedišić, Podnar, & Radman, 2022; Pedišić, Rakovac, et al., 2022). These efforts encompassed a range of activities, including comprehensive dissemination of SCforH

concepts across multiple and multi sectoral channels, organisation of events and meetings, symposia, workshops, seminars and conferences, publication of literature and press releases, creation and constant updating of website, as well as numerous presentations at HEPA-Europe and other conferences.

In a most recent study conducted during the SCforH 2020-22 project involving 705 stakeholders from the sports sector across 36 European countries (Pedišić, Matolić, Bělka, et al., 2022), including policymakers, promoters, researchers, representatives from sports clubs and associations, and academic staff teaching courses related to physical education, sports and health promotion, several key findings emerged:

i) In comparison to other included stakeholders, governmental bodies were the least active in promoting the use and implementation of SCforH guidelines (56.7%).
ii) Almost 90% of countries had SCforH-related initiatives implemented by at least one institution, including governmental bodies, national sports organisations, educational institutions, public health organisations, SCforH partners, and others.
iii) Over half (53%) of sports associations representatives were aware of SCforH guidelines.
iv) In Austria and Germany, sports clubs exhibited the highest awareness of the SCforH guidelines (41-50%). However, in 61.1% of countries, less than 10% of clubs were aware, and in 5.6% of countries, sports clubs had no awareness of the guidelines at all.
v) In Latvia, Romania and Slovenia, sports clubs had the highest implementation rates of the SCforH guidelines (30-40%). In contrast, in 66.7% of countries, less than 10% of clubs implemented the guidelines, and in 11.1% of countries, no sports clubs implemented them at all.

Additional two reports on awareness and use of SCforH ideas were published (Lane et al., 2022; Titze et al., 2022). One report included 146 representatives of the HEPA Europe network, EU National physical activity points, governmental bodies (ministries of health and sports), other HEPA promotors and researchers and individual policymakers (hereafter: “HEPA promotors, researchers, and policymakers”; Titze et al., 2022). Another report included 322 higher education students (hereafter: “students”) and teachers in courses related to health, physical education, sport,

and exercise (hereafter: “academic staff”; Lane et al., 2022). Both reports covered 36 European countries. Their results were as follows:

i) Among HEPA promotors, researchers, and policymakers, 52.5% are aware of SCforH guidelines;
ii) 68% of HEPA promotors, researchers, and policymakers claimed that their organisation did use or implement SCforH guidelines;
iii) 54.8% of academic staff are aware of the SCforH guidelines, while 58.8% reported the use and implementation of the guidelines by their research institution;
iv) 38.8% of academic staff reported having implemented SCforH guidelines, while 25.9% included the SCforH online course in the curricula of the subjects they teach;
v) More than 50% of academic staff have the intention to implement both SCforH guidelines and the SCforH online course in the curricula of the subjects they teach.

Chapter 2: Promotion of health-enhancing physical activity in the sport sector in Europe: a systematic scoping review of quantitative and qualitative evidence

2.1. Introduction

The recognised importance of settings-based approach to health promotion, as outlined in the Ottawa charter (World Health Organization, 1987), has led to the acknowledgement of the sports setting as one of the most potent domains for promoting various aspects of health and healthy lifestyles on both global and European scales (Hartmann & Benedičič Tomat, 2022; Kokko & Baybutt, 2022; Mansfield & Piggin, 2019). Considering that the core objective of the sports setting is provision of sports activities and the organisation of competitions (Kokko, 2014), it is clear that this setting holds significant potential for promoting HEPA and is crucial for achieving more active society (Ding et al., 2020). This significance has also been recognised by labelling sport as one of the "best investments that work" for the promotion of physical activity (Milton et al., 2021).

Research on HEPA promotion initiatives in sports setting has been the subject of several systematic reviews. Previous Cochrane reviews research on initiatives for increasing organised sports participation (Jackson et al., 2005a) and the effectiveness of policy initiatives employed through sports associations (Jackson et al., 2005b), failed to find any studies eligible for inclusion. Another study systematically mapped the health-promoting initiatives in sports clubs and reported 58 studies on 33 specific initiatives (Geidne et al., 2019). However, this review focused on a broad scope of health-promotion including various health topics such as sun protection, hydration, injury prevention, smoking, alcohol consumption, or safety. Only nine initiatives targeted sport and physical activity participation, and the majority of initiatives (27/33) were conducted in Australia and Oceania. Similarly, a systematic review of interventions for increasing organised team sport participation in younger females in United Kingdom (UK) included four eligible intervention documents, all from grey literature searches (Allison et al., 2017). Systematic review from 2022, reported on the effectiveness of health-promoting interventions in sports setting, but included only six randomised controlled trials, all adaptations or original versions of one particular intervention – the "Football Fans in Training", which primarily targeted white male adults (George et al., 2022). Finally, most recent study (Lim et al., 2023) systematically reviewed process evaluations of various types of health-related initiatives, once more encompassing a wider scope beyond solely focusing

on physical activity promotion. This study included 32 eligible process evaluations with less than half of them (14) conducted in Europe.

Based on the previously presented reviews, it is clear that numerous health promotion initiatives were conducted in sports settings, with varying degrees of effectiveness. However, there are either very broad studies encompassing initiatives focused on different aspects of health promotion, or very specialised e.g. focusing only on team sports for women. Both, the overly general and very narrow approaches may unintentionally result in possible overlook of initiatives specifically aimed at HEPA promotion. Additionally, we found no reviews that primarily focus on HEPA initiatives in European sport context. Since European sports settings have unique cultural, structural, and policy-related factors that influence the success of HEPA initiatives, a review of literature focusing on this context can provide insights that are directly applicable and relevant to Europe.

Therefore, the aim of this study was to conduct a comprehensive scoping review focusing specifically on HEPA promotion initiatives within European sports settings. Such a literature review was needed to help identify current research focuses, applied methodologies, participant demographics, and research designs, as well as the prevalence of HEPA promotion initiatives across European countries, regions, and EU member states. Also, such review was needed to provide detailed information about the initiatives themselves, including the approaches utilised, target groups, main activities promoted, and the key organisations responsible for their initiation, funding, or delivery. The summarised findings of existing research in European sports context could provide a valuable understanding of pressing issues, research gaps, and the current knowledge in the field. Consequently, it could inform future research and facilitate the development of efficient initiatives to address the inactivity gap prevalent across sports clubs in Europe, potentially contributing towards achieving some of the physical activity targets for 2030 (World Health Organization, 2019).

2.2. Methods

This scoping review was conducted according to the five-stage framework developed by the Arksey and O'Malley (2005) and modified by the Peters et al. (2015) guidelines, while the

reporting was done in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist extension for scoping reviews (Tricco et al., 2018).

The research questions of this scoping review were:

1. Which research methods have been used in the studies on HEPA promotion in the European sports sector?
2. Which research topics related to the promotion of HEPA in the European sports sector have been studied and what are the key findings?

2.2.1. Search strategy

The relevant studies were searched for across various databases, including PubMed/MEDLINE, Scopus, SPORTDiscus (through EBSCOHost) and Web of Science (including Social Sciences Citation Index, Science Citation Index Expanded, Emerging Sources Citation Index, Conference Proceedings Citation Index – Social Science & Humanities, Conference Proceedings Citation Index – Science, Arts & Humanities Citation Index, Book Citation Index – Social Sciences & Humanities). The key search terms outlined in Table 1 were searched in titles, abstracts and keywords of the indexed publications.

The initial search was conducted in January 2024, encompassing all document types published from the inception of the database to that date. Additionally, a supplementary search was conducted by examining the reference lists of all included studies and websites of HEPA promotion initiatives within European sports settings.

Table 1: Search syntax

Web of Science	TS=(HEPA OR sport* OR HESA OR “physical activity” OR "health promoti*") AND TS=(intervention* OR initiative*) AND TS=(“sport* setting” OR “sport* club” OR “sport* organisation” OR “sport* association”)

Scopus	TITLE-ABS-KEY (HEPA OR sport* OR OR HESA OR "physical activity" OR "health promoti*") AND TITLE-ABS-KEY (intervention* OR initiative*) AND TITLE-ABS-KEY ("sport* setting" OR "sport* club" OR "sport* organisation" OR "sport* association")
PubMed/MEDLINE	(HEPA OR sport* OR HESA OR "physical activity" OR "health promoti*") AND (intervention* OR initiative*) AND ("sport* setting" OR "sport* club" OR "sport* organisation" OR "sport* association")
EBSOHost	(HEPA OR sport* OR HESA OR "physical activity" OR "health promoti*") AND (TS=(intervention* OR initiative*)) AND ("sport* setting" OR "sport* club" OR "sport* organisation" OR "sport* association")

2.2.2. Study selection

The original research studies that met the following criteria were included in this scoping review:

(i) published in English,
(ii) conducted in the European sports setting,
(iii) assessed the implementation, feasibility, effectiveness, prevalence, characteristics, determinants, outcomes, process, reach, adoption, facilitators, barriers or scaling of a HEPA promotion initiative.

Conference abstracts, commentaries, and reviews were not considered as eligible for inclusion.

2.2.3. Data analysis

The literature search and article selection processes are presented in the PRISMA flow chart (Page et al., 2021). Data were systematically extracted by analysing the full texts of each included research paper. Extracted data encompassed the following elements:

i) Study author(s) and year;
ii) Study type (*quantitative, qualitative,* and *mixed method*);

iii) Study design (*cross-sectional, longitudinal, intervention, interview, focus group, case study, document analysis, observation,* and *other*);

iv) Study sample (*participants, leaders,* or *deliverers of HEPA initiative, parents/guardians*, and *local/national stakeholders*);

v) Country where the HEPA promotion initiative was conducted;

vi) Whether the initiative was based in the EU (*yes* or *no*);

vii) European region where the HEPA promotion initiative was conducted (*Northern, Western, Southern,* or *Central and Eastern*);

viii) Study research topic (*HEPA initiative outcomes, effectiveness and maintenance, implementation and reach, prevalence and adoption, feasibility – including facilitators and barriers, initiative characteristics and process development, initiative scaling,* and *determinants of participant' involvement in HEPA initiative*);

ix) HEPA promotion initiative name;

x) Main sport promoted within the initiative;

xi) Setting(s) of the HEPA promotion initiative (*sports association, sports club, school, healthcare, or community*);

xii) Leading organisation(s) involved in initiating, delivering, or funding of the HEPA promotion initiative (*sports association, sports club, governmental body, public health institute, academic institution,* or *other*);

xiii) Type of HEPA promotion initiative (*behavioural, informational, social, campaign, policy, settings-based*, or *transdisciplinary,* including combination of approaches);

xiv) Target group of the HEPA initiative (by age: *children/youth, adults, older adults*; by sex: *male, female*; by other characteristics: *healthy, with mental, intellectual* or *physical disabilities and illnesses*, *overweight and obese, socially deprived, club fans, supporters, staff,* or *athletes*);

xv) Description of the HEPA promotion initiative;

xvi) Key study findings.

For variables "ii" to "xiv", sums and percentages were calculated using Microsoft Excel. Furthermore, the most frequently mentioned topics from variables "xv" and "xvi" were categorised. The categories included: i) main focus of the HEPA promotion initiative (the primary objective of

the implemented HEPA initiative), ii) concepts covered (topics mentioned within the research papers), iii) facilitators of implementation of the initiative (factors important for the success and/or feasibility of the HEPA promotion initiative), iv) barriers for implementation of the initiative (factors that hinder the execution, success and evaluation of the HEPA promotion initiative), v) benefits for participants in the initiatives (various types of benefits that participants gained from participating in the initiative), vi) facilitators of participant engagement in initiatives (factors important for enhancing participant involvement and retention in the HEPA initiative), and vii) barriers to participation in initiatives (factors reported as preventing engagement and continuous participation in the initiative). The topics mentioned within the categories were summed in Microsoft Excel. These sums were represented using the world cloud figures, whereas topics with the highest sums were depicted with larger words. Word clouds were created using R (version 4.2.2, R Foundation for Statistical Computing, Vienna, Austria) and RStudio (version 2022.12.0.353, Posit, Boston, MA, USA) utilising the "wordcloud" package (Fellows, 2022).

The included studies on HEPA promotion initiatives in European sports settings were grouped according to their research methodologies. The synthesis of results from one group included elements such as study type, design, sample, country, EU membership status, and specific European region where the studies were conducted. Another grouping of studies was based on the research topics encompassed within the included studies. The synthesised results included characteristics of the initiative, and elements such as settings, involved organisations, target groups, types, nomenclature, descriptive details of the initiative, as well as research topics and key findings.

2.3. Results

2.3.1. Search information

After eliminating duplicates, a total of 1,067 citations were identified through searches of electronic databases. Upon title and the abstract screen, 947 studies were excluded, leaving 120 full-text articles for further eligibility selection. Out of these, 39 articles were included in the synthesis. After the first backward citation screening of 39 included articles, and review of additional 10

websites, a 47 full-text articles were found and assessed for eligibility. From those, 37 were included in review synthesis. Altogether, 3480 references were screened through backward citation tracking of all included studies. Reasons for exclusion were various: 20 initiatives were not conducted in Europe, 11 were not related to sports setting, 22 studies did not report specific initiative, and six initiatives were not related to HEPA promotion. Additionally, 12 reviews, 9 study protocols, 4 duplicate reports, 3 abstracts, and 3 studies in German language were excluded. One study was excluded due inability to retrieve the full text. Finally, five records were added from a private source, totalling 81 included studies (Figure 4).

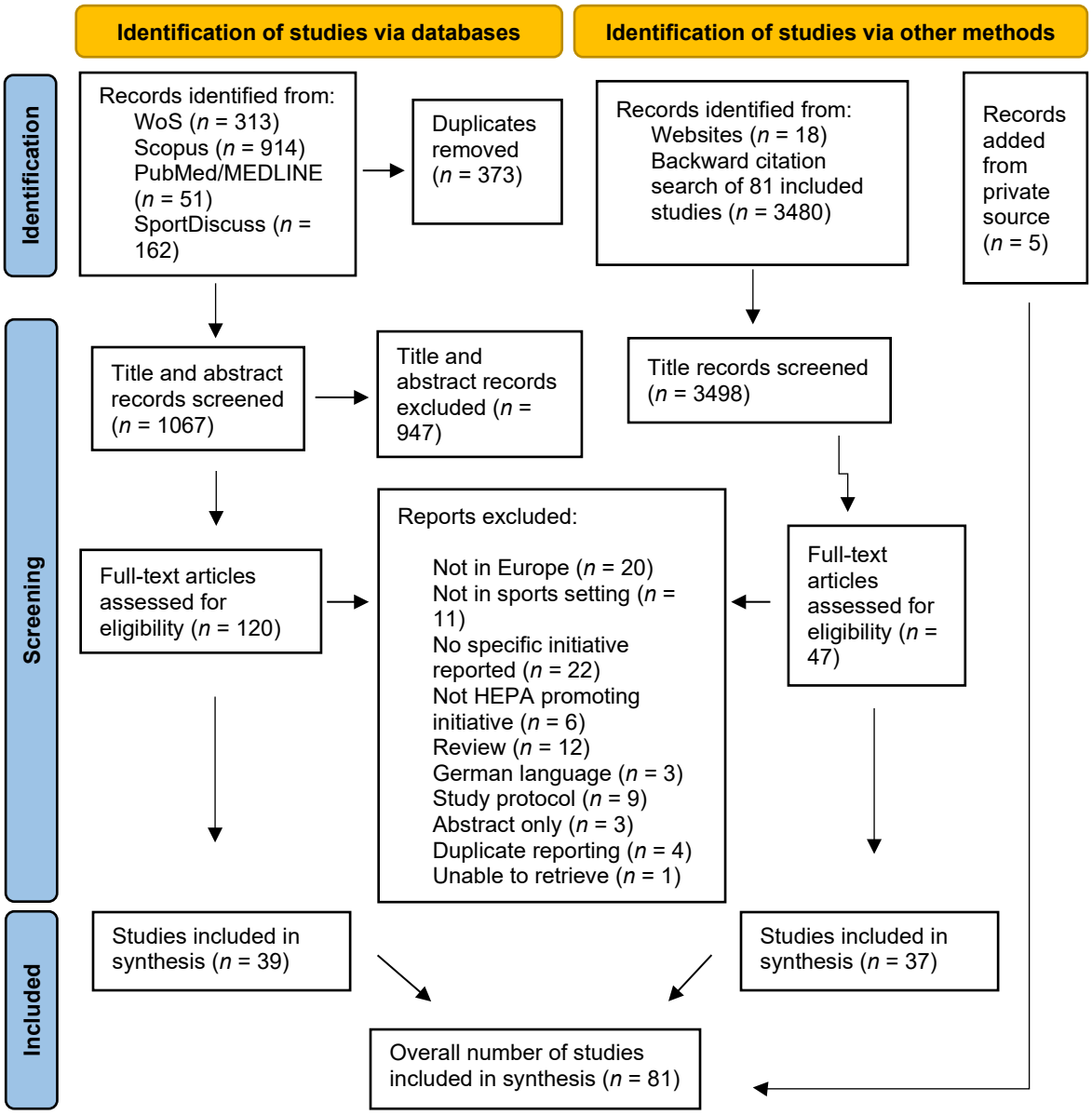

Figure 4: Flow diagram of the search and resource inclusion process.

2.3.2. Research methods of included studies

Quantitative research methods were utilised in 35 (43%), while mixed method approaches in 31 included studies (38%). One-fifth of studies (19%) constituted of qualitative methodologies only. Among the included studies, 68% employed a single research method, while 23% utilised two, and 8% combination of three or more methods (Table 2).

The most prevalent study designs encompassed intervention studies (47%), interviews (21%), case studies (17%) and focus groups (16%). Regarding the study sample, 85% of the studies involved individuals participating in HEPA initiatives, from which in 52 studies HEPA initiative participants alone and in 17 studies in combination with initiative deliverers or leaders. Specifically, deliverers of HEPA initiatives were included in 31%, while leaders in 20% of included studies. Moreover, 4% initiatives included parents of participating children, and 11% of studies involved other relevant stakeholders. Remarkably, while 69% of studies focused only on one participant type, one study included multiple various stakeholders and end-users (Table 2).

Geographically, approximately half of the studies (51%) were conducted in one of the 27 EU member countries. Furthermore, the studies were primarily conducted in Western European region (70%). Five studies covered multiple regions, with three encompassing all four EuroVoc regions: Western, Northern, Southern, and Central and Eastern (Publications Office of the European Union, 2014 (updated 2024-02-15)) (Figure 5). In terms of individual countries, the highest percentage of studies (41%) originated from the UK. Among these, 18 (22%) studies were conducted only in England, and 10 (12%) in Scotland. Together with Switzerland (1 study), UK was the only non-EU member country reported. Denmark followed the UK closely with 12 studies. Moreover, six studies were conducted across multiple countries, with three of them spanning 11 countries. Among these, one study focused on a global initiative, specifically exploring the "special Olympics movement" (Myśliwiec & Damentko, 2015) (Table 2).

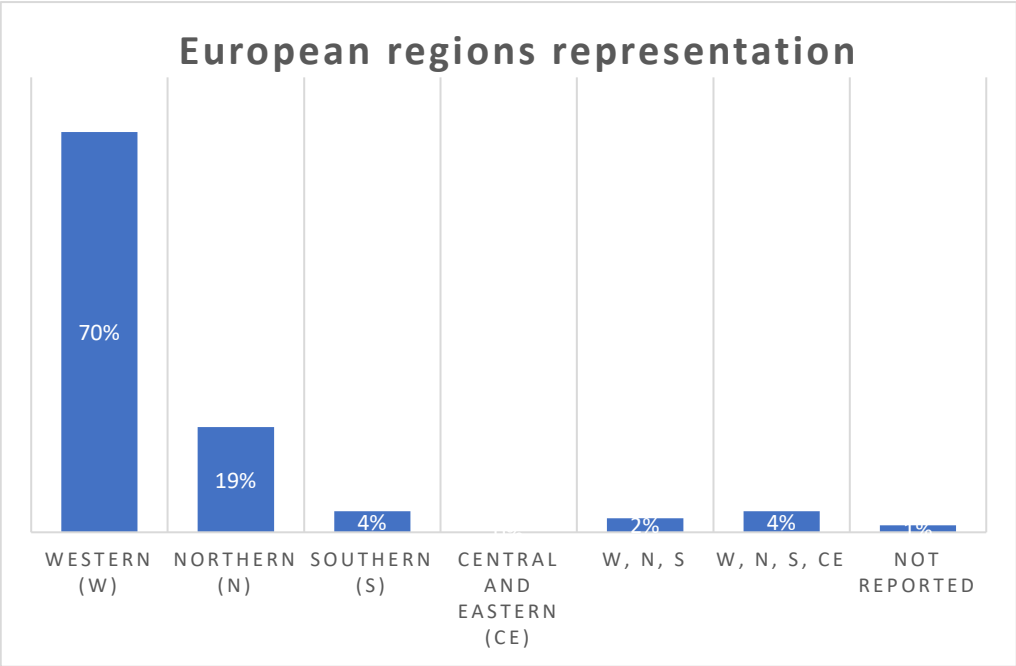

Figure 5: Representation of studies across European regions

2.3.3. Research topics of included studies

Through data synthesis, eight different research topics were identified and encompassed in the included studies:

i. HEPA initiative outcomes were addressed in 65% of studies,
ii. HEPA initiative effectiveness and maintenance, was covered in 58% of studies,
iii. HEPA initiative implementation and reach was examined by 42% of the studies,
iv. HEPA initiative prevalence and adoption in 38% of the studies,
v. HEPA initiative feasibility including facilitators and barriers were covered in 37% of included studies,
vi. HEPA initiative characteristics and process development were addressed in 27% of the studies,
vii. HEPA initiative scaling was considered in 11% of the studies, and

viii. Determinants of participant's involvement in HEPA initiative were analysed in 4% of the studies, totalling three studies (Audrey et al., 2012; Bullough et al., 2015; Dodsley, 2010).

It's worth noting that 65% of the included studies included combination of two to three of the aforementioned topics (Table 2).

Among the 81 included studies, 38 different HEPA promotion initiatives were reported, including three without specific names (Figure 6). The majority of those studies were attributed to the "Football Fans in Training (FFIT)" initiative, featured in 15 studies. This initiative, originally from Scotland, also included variations such as the England FFIT initiative (Rutherford et al., 2014), the German FFIT version (Pietsch et al., 2020), the Swedish FFIT (Leijon et al., 2019; Skagerström et al., 2021), FFIT pilot programme (Gray et al., 2013), FFIT for women (Bunn et al., 2018) and FFIT scaling efforts (Hunt et al., 2020; Wyke et al., 2015). The "Health Promoting Sports Club" initiative followed with 9%, while the "Danish 11 for Health" with 7% of the studies. Additionally, both the "Football Fitness" and the "Premier League Health programme" initiatives each comprised of 5% of the studies (Figure 6). Football was the predominant sport, represented in 37 studies, followed by the initiatives that provided various sports and exercises in 32 studies. Sports represented in the remaining studies included Gaelic games (3), hockey (2), rugby (2), swimming (2), athletics (1), cycling (1), gymnastics (1), tennis (1), and golf (1; Table 2).

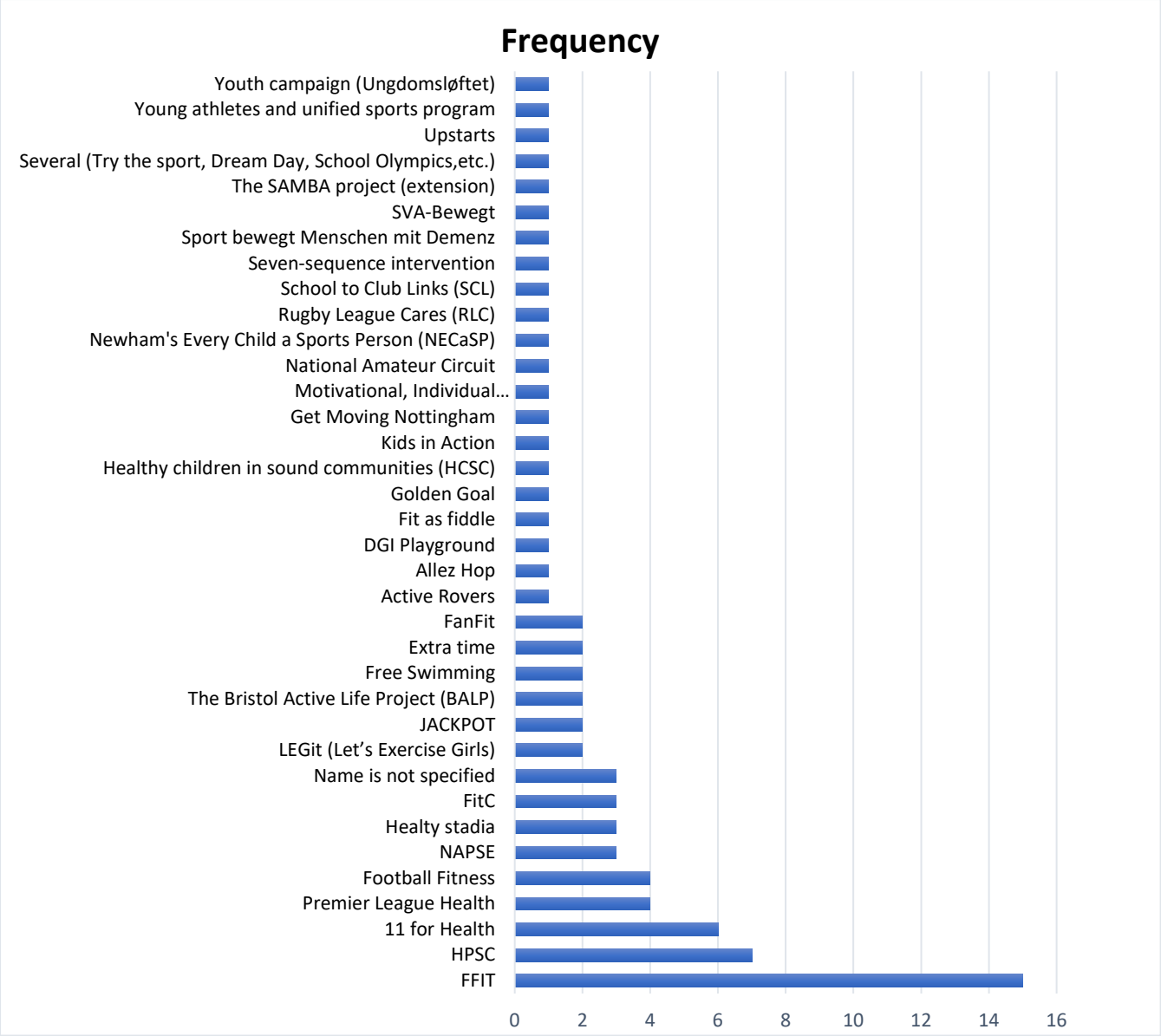

Figure 6: Reported HEPA initiatives in sport setting

Regarding settings, the majority of HEPA promotion initiatives (73%) were implemented in sports clubs. Within both sports associations and community settings, the same percentage of initiatives (19%) were implemented. Additionally, 16% of initiatives were based in school setting, with another five percent in healthcare settings, and two initiatives implemented online. Notably, all initiatives predominantly implemented in non-sporting setting were carried out in collaboration with sports setting, sports association, sports club coaches, sports club's facilities, or sports club

equipment. Almost equal percent of studies reported initiatives led in one (49%) and across two different settings (47%). For example, six initiatives were simultaneously led in both the sports club and sports association settings, while 12 were led in both community and sports club setting (Table 2).

The scoping review uncovered a range of leading organisations involved in initiating, delivering, or funding specific initiatives. In most initiatives, organisations involved were sports clubs (64%) and umbrella, national or local sports associations (62%). Governmental organisations were among leading organisations in 40%, while other organisations such as charities and funds, health services, local networks or municipalities were involved in 41% of the initiatives. Additionally, the public health organisations and academic institutions contributed to 30% of the initiatives. Notably, only one study included all organisations mentioned as actors in HEPA initiative (Tézier et al., 2022), while the majority included two (47%) or three (30%) different types of organisations involved in the initiation, funding, or delivery phase of the HEPA promotion initiative (Table 2).

According to the information presented, 65% of initiatives employed a behavioural, 33% informational, and 22% social approach to HEPA promotion. Only four studies (3%) were policy initiatives, while 21 (16%) were identified as campaigns. Seven studies specifically differentiated HEPA initiatives as "settings-based". Almost half (44%) of the initiatives included combination of two or three different initiative approaches, from which 31% utilised combination of behavioural and informational approaches (Table 2).

The most often target population in HEPA initiatives were adults (70%), followed by 34 (42%) initiatives focused on children and youth, and 26 (32%) on older adults. Sixteen initiatives were tailored to two age groups simultaneously, while 10 (12%) encompassed all age groups. Healthy participants were targeted in 53% of the studies, overweight or obese individuals in 25%, and those at high risk of disease in 17% of HEPA promotion initiatives. Individuals with intellectual disabilities or dementia were focus in 9% of studies, those with low cardio-respiratory fitness in 4%, and individuals specifically defined as "inactive" in 7% of studies. Twenty-six initiatives (32%) targeted fans of specific sports club, five (6%) targeted representatives of specific sports club (coaches, managers, athletes), while eight (10%) of studies included socioeconomically deprived children and youth. Regarding gender, the majority of initiatives were oriented towards

both males and females (67%), while the initiatives targeting females only were the least represented with six studies (Table 2).

The main focus of the HEPA initiatives was promoting HEPA and sports. This was followed by promotion of various other aspects of health, such as nutrition, health literacy, body composition, weight loss, alcohol use prevention, lifestyle behaviour, psychological/mental health, and health policy inclusion. Furthermore, initiatives focused on socialisation of participants, and attracting new members to sports clubs (Figure 7).

Figure 7: Initiative focus

The concepts predominately addressed in the included studies were HEPA initiative attendance, reach, attrition, retention, increased sports club membership, and inclusivity. They also addressed the utilisation of applications such as the "FanFit" (Fenton et al., 2022; Fenton et al., 2019), "MatchFIT" and "SitFIT" mobile applications (Bunn et al., 2023; Wyke et al., 2019). Additionally, three studies mentioned two different evaluation frameworks: one initiative-specific, known as the "Health Promoting Sports Club framework", and another general for evaluating health-promoting initiatives, the "RE-AIM framework". Furthermore, two studies covered the initiative development, while two others an online course (Figure 8).

Figure 8: Concepts covered

Concepts presented as facilitators, feasibility factors, or important for the success of HEPA promotion initiatives mainly included increased partnerships, collaboration, and creating networks with relevant stakeholders. Additionally, alignment with the club's core objectives and the specificity of the sports discipline, as well as shared and recognised values among all stakeholders involved, were also addressed as essential. Other commonly discussed facilitators included support from higher-level organisations, government, and system support. These were followed by importance of extensive promotional and side activities, and tailored programmes to participant's needs. In contrast, the main barriers to the implementation and success of initiatives, as well as their evaluation, included issues related to resources, volunteers, availability of finances, funding, and suitable facilities. This was followed by the absence of objective evaluation methods, lack of evaluation knowledge, and easy-to-understand evaluation tools (Figures 9 and 10).

Figure 9: Facilitators of implementation of initiatives

Figure 10: Barriers for implementation of initiatives

In terms of benefits for HEPA initiative participants, most studies reported increases in various physical activity, exercise and sports levels, including total physical activity, light-, moderate- and vigorous-intensity activities, as well as in minutes spent in walking, swimming, and playing various sports. These benefits were followed by psychological benefits, improvements in quality of life, increased self-esteem, enhanced well-being, and positive lifestyle changes. Many studies and initiatives were also oriented towards reducing BMI, body weight, and improving body composition (Figure 11).

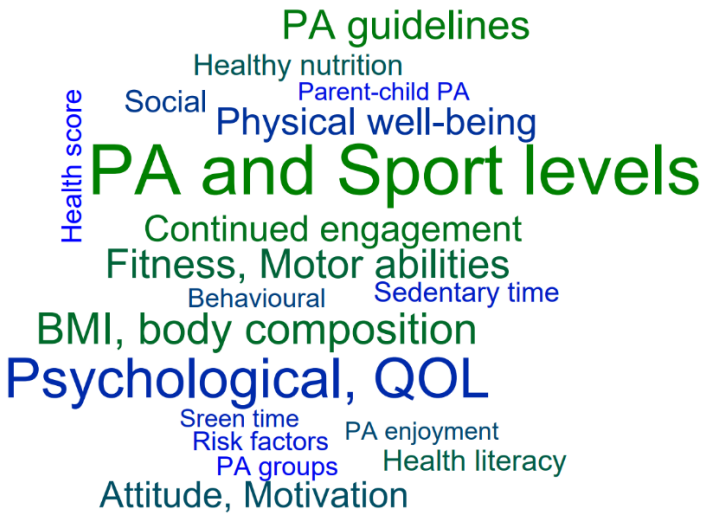

Figure 11: Benefits for participants in initiatives

Among initiative participants, factors important for engaging and sustaining in participation included mainly social support, and socialising with peers. Other important facilitators involved integration into their favourite sports club, the availability of tailored and enjoyable activities, as well as recognised value of the initiative (Figure 12). Conversely, the most mentioned barriers included sessions perceived as too complex or performance-oriented, lack of time due to various obligations, financial costs of the initiative, and participant's health problems (Figure 13).

Figure 12: Facilitators of participant engagement in initiatives

Figure 13: Barriers to participation in initiatives

Table 2: Results of included studies

Study author(s) and year / Country	Research topic	EU / European region	Study type / Study design	Study sample	Name [1]/ Description[2]	Setting(s)[3] / Target group(s)[4] / Type[5]	Leading organisation(s) [6]	Key findings
(Agergaard et al., 2016) **Country**: Denmark	Integration through organised sport initiative	**EU:** Yes **European region:** Northern	**Study Type:** Mixed method **Study Design**: Case study	Six focus groups with 28 initiative informants, and >50 interviews with children and adolescents from six deprived areas	**Name:** DGI Playground **Description:** A three-year initiative involved delivering organised leisure and sport activities during school vacation. The initiative was funded by the government as part of programmes aimed at integration of minorities.	**Setting):** Sports association **Target group:** Children and youth from socially disadvantaged areas, 6-15 years old **Type:** Campaign	**Funding**: Government grant **Delivering**: Regional umbrella organisations for sports clubs (DGI)	Youth were usually engaged in already familiar activities rather than trying new ones, they preferred enjoyment and socialising with friends over the program's intended goals of promoting integration. It was challenging to isolate the sole influence on sport participation levels. Coaches in sports clubs reported being mostly interested in rising physical activity levels among youth, but also in attracting youth to their sports clubs. Project employees suggested that encouraging youth to become a club members should be emphasized in future initiatives.

(Audrey et al., 2012) **Country**: UK	Effects of health- and social-based swimming initiative	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Longitudinal	13881 citizen of Bristol city that attended swimming lessons, HEPA initiative participants	**Name**: Free Swimming **Description:** Participants received "Everyone Active" free card that allowed them to attend swimming lessons.	**Settings**: Sports club, Community **Target group:** Youth and children ≤16 years old in Bristol **Type:** Behavioural	**Initiation and Delivering**: Bristol City Council (BCC) and Sport and Leisure Management Ltd. **Funding**: Government	The swimming initiative engaged children from both, deprived and affluent areas of the city. Girls were taking more swimming lessons than boys, and proximity to pool was a predictor of uptake of swimming lessons, especially in deprived areas.
(Barrachina et al., 2023) **Country**: Spain	Sports proximity as a sustainable initiative for children	**EU:** Yes **European region:** Southern	**Study Type:** Mixed method **Study Design:** Cross-sectional + Interview	147 children HEPA initiative participants + 10 stakeholders and decision makers (parents, school leaders and representatives of sports clubs)	**Name:** Kids in Action **Description:** Engagement in different sports each month, organised by sports organisations and provided in schools. Participants received KIA passport which was filled upon completing different activities. After completion of seven different sports, they received a gift as a reward.	**Settings**: Sports association, School **Target group:** Children 3-11 years old **Type:** Behavioural	**Initiation**: European Project "Kids in Action" **Funding**: European Commission, Erasmus+ Sports Programme **Delivering**: Zaragoza schools, Zaragoza Deporte Municipal and other sport organising entities	Increase in sport participation among participants, along with increased interest in joining sports club afterwards. Overall, there was a notable increase in interest in sports in general.

(Bennike et al., 2014) **Country:** Denmark	A concept of football initiative for adults	**EU:** Yes **European region:** Northern	**Study Type:** Mixed method **Study Design:** Cross-sectional + Interview, Focus group, Document analysis	475 chairpersons of Danish football clubs and 62 representatives of Football Fitness (FF) teams + Three interviewees, FF steering committee, and 7 focus groups (regional FF leaders, football development officers, clubs that offer FF)	**Name:** Football Fitness **Description:** The programme is a flexible approach to football, focused on health and enjoyment, and offered at a reduced fee.	**Settings:** Sports club **Target group:** Primarily adults >25 years old **Type:** Campaign	**Initiation**: Danish Football Association (DFA) and Sports Confederation of Denmark **Delivering**: Danish football clubs	The majority of teams consisted of women, while mixed-gender teams were least common. Around 90% of teams practiced once a week. 46% of stakeholders agreed that there was a positive influence on membership rates in sports clubs. It was argued that connections between sports clubs, and organisations are potent in dealing with some important health-related concerns.
(Brady et al., 2010) **Country**: UK - Scotland	Sustained benefits of health initiative for Glasgow Rangers supporters	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	20 HEPA initiative participants (M^7) from each club	**Name:** Glasgow Celtics and Glasgow Rangers health initiative. Grounded in FFIT initiative. **Description:** 12 weeks of 12 weekly sport and exercise sessions held at football stadia, complemented by	**Settings:** Sports club **Target group:** Overweight and obese male adults, 40-60 years old, fans of the Clubs	**Initiation**: Royall College of Physicians and Surgeons of Glasgow (RCPSG), Celtic Football Club, Rangers Football Club **Delivering**:	Significant improvements in cardiovascular health markers, together with increase in exercise, weight loss and lifestyle change. The effects were held at the follow up, 15 months later. Participation in programme was 100%, and some participants even created small

					classroom educational activities, behavioural-changing exercises, and social support through "MatchFIT" mobile application. Another application provided for self-monitoring daily steps was the "SitFIT" app.	**Type:** Campaign	Coaches of Celtic and Rangers FC	groups after the programme for mutual support.
(Bullough et al., 2015) **Country**: UK	Impact of community swimming initiative for young	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Cross-sectional + Longitudinal	4077 HEPA initiative participants + Baseline: 1341 HEPA initiative participants Third measurement: 359 HEPA initiative participants	**Name**: Free Swimming **Description:** Participant received their free-swimming card which they could use anytime.	**Settings:** Sports club, Community **Target group:** Youth and children <19 years old in deprived areas **Type:** Behavioural	**Initiation, Funding and Delivering:** English local authorities	33% of eligible population activated their swimming cards. Ones who were using cards more were ones that were already swimming prior to the initiative, white British males, and participants with >11 years. 52% reported increase in swimming participation once they received swimming cards, and 64% reported being generally more active since. They also reported to continue swimming at same frequency (35%) or increased (61%). However, 40% of participants were not interested in swimming habitually, but only during school holidays.

(Bunn et al., 2018) **Country**: UK - Scotland	Feasibility of football weight management initiative for women	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Focus group	123 HEPA initiative participants (F^{8}) + Five Focus groups (with mean of six participants)	**Name:** Football Fans in Training for Women (FFIT) **Description:** 12 weeks of sport and exercise (pedometer-walking) sessions provided at football stadia, accompanied by classroom educational sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in fun competitions.	**Settings:** Sports club **Target group:** Overweight and obese female adults, 35-65 years old **Type:** Transdisciplinary (Behavioural, Social, Informational)	**Funding**: Scottish Government **Delivering**: Scottish Professional Football League (5)	76% of women completed at least 6 sessions. There was a significant increase in overall physical activity levels after the initiative compared to baseline. Women highly valued physical activity programme, find it inclusive, enjoyable, and sociable. They especially enjoyed the pedometer walking activities. Other health benefits and behavioural changes were also evident.
(Bunn et al., 2023) **Countries**: Netherlands, Norway, Portugal, UK - England	Process evaluation of EuroFIT initiative	**EU:** Yes/No **European region:** Western, Northern, Southern	**Study Type:** Mixed method **Study Design:** Intervention + Interview +	500 HEPA initiative participants (M^{7}) at **baseline, 12-week and 12-month** + Interviews with 15 club representatives,	**Name:** European Fans in Training (EuroFIT). Grounded in FFIT initiative. **Description:** 12 weeks of 12 weekly sport and exercise sessions held at football stadia, complemented by classroom educational	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old	**Initiation and Funding**: University of Aberdeen, European Union, Scottish Government Health Directorates **Delivering**: 15 Professional football clubs (ADO Den	80% of clubs persisted in the initiative, citing financial and other priorities as main reasons for dropout. All 15 clubs engaged at least two coaches for EuroFIT program delivery. Various participant recruitment methods were employed, all proving efficient as there were more interested individuals than available

			Focus group + Observations + Document analysis	15 coaches, and club representatives interested in participation + 12-week and 12-month post programme focus groups with 30 HEPA initiative participants (M^7) + 30 sessions observed	activities, behavioural-changing exercises, and social support through "MatchFIT" mobile application. Another application provided for self-monitoring daily steps was the "SitFIT" app.	**Type:** Campaign	Haag, FC Groningen, PSV, Vitesse, Rosenborg BK, Strømsgodset IF, Vålerenga Fotball, Futebol Clube do Porto, Sporting Clube de Portugal, Sport Lisboa e Benfica, Arsenal FC, Everton FC, Manchester City FC, Newcastle United FC, Stoke City FC)	spots in each club. Mean attendance ranged from 8.1 to 9.8 sessions. Around 65% and 36.8% of participants used SitFIT and MatchFIT "a great deal". Almost 90% of EuroFIT tasks were delivered by coaches, who also adapted the programme if needed. Participants joined mostly to get fit (91.3%), lose weight (87.3%), and improve lifestyle (74.5%). Facilitating factors included club access, engagement with peers, and coach interactions. After completion, men walked 1208 additional steps/day, reported increased activity, and even formed groups for physical activity.
(Cardona et al., 2023) **Country:** Germany	Evaluation of physical activity initiative for individuals with dementia	**EU:** Yes **European region:** Western	**Study Type:** Qualitative **Study Design:** Interview	Six project leaders and 15 representatives of four sports associations involved (n = 21)	**Name:** Sport bewegt Menschen mit Demenz **Description:** Four sports associations provided various adapted sports sessions for individuals with dementia and their families.	**Settings:** Sports association, Community **Target group:** Individuals with dementia	**Initiation**: German Olympic Sports Confederation, and German Alzheimer's Society. **Funding**: Federal Ministry for	All participants viewed the initiative as an advantage for their sports associations and higher positioning of their clubs. Most of them reported that the initiative was compatible with sports association's values, needs, and objectives. Majority

	using CFIR					and their relatives **Type:** Transdisciplinary (Behavioural, Social, Informational)	Family Affairs, Senior Citizens, Women and Youth **Delivering**: The German Table Tennis Association, the German Sports Associations of Lower Saxony, the German Sports Associations of North Rhine-Westphalia, and the German Gymnastics Association.	reported being confident in implementing the initiative and found that execution of the initiative went well. However, the many also perceived barriers to implementation, and evaluation, and emphasized networking as important for sustaining initiatives.
(Carless & Douglas, 2015) **Country**: UK - England	Evaluation of physical activity and mental health initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Case study	HEPA initiative participants, representatives of partner stakeholders, initiative staff, coaches	**Name:** The Bristol Active Life Project (BALP) **Description:** Initiative was primarily focused on mental health. It lasted for six years, during which each participant was referred to one of the sports or physical activity groups. Over 3000 sessions were held, covering more than 30	**Settings:** Sports club, Community **Target group:** Individuals with serious mental illness **Type:** Campaign	**Initiation**: UK National Health Service **Funding**: The Football Foundation **Delivering**: Avon and Wiltshire Mental Health Partnership NHS Trust (AWP)	Overall attendance to sessions exceeded 150,000 demonstrating the provision of various opportunities for physical activity. The successful inclusion of more female participants was achieved by actively listening to their needs. Coaches were valued as accepting, friendly, respectful, supportive, encouraging, positive. Initiative yielded mental and

					different activity types. Some sessions were linked with sports clubs, and various sport events, and educational sessions were offered. Additionally, a buddy system was implemented as part of the initiative.		and Bristol City Council (BCC)	social health benefits, too. Building trust and reducing cost are important factors for attendance after referral.
(Crespo et al., 2022) **Country**: Spain	Innovation programmes in Tennis Federation	**EU:** Yes **European region:** Southern	**Study Type:** Mixed method **Study Design:** Cross-sectional + Interview	205 RFET representatives: 15 board volunteers, 33 executive staff, and 157 other stakeholders (coaches, referees, researchers, players, event-organisers) + 10 interviews with RFET Board of Directors representatives and RFET staff	**Name:** National Amateur Circuit **Description**: Launched by the Royal Spanish Tennis Federation (RSTF), the initiative aimed to attract new potential amateur players while retaining current ones by providing professional competitions adapted to individual's skills. This approach emphasizes the importance of having fun on and off the court.	**Settings:** Sports association **Target group:** Amateur current and potential future tennis players **Type:** Transdisciplinary (Behavioural, Social)	**Delivering**: Royal Spanish Tennis Federation (RFET)	Stakeholders expressed a positive attitude toward innovation in sports associations and preferred those related to the core sport provided by the organisation, such as tennis in this case. They expressed a need for more stimulation of innovation from management levels, while at the organisational level, associations should strive for innovation to foster positive changes in their partnerships, and culture. One of the most cited initiatives from the RSTF was related to increasing the base of members and players.

(Curry et al., 2016) **Country**: UK - England	Process evaluation of school- and community-based initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Document analysis + Observation	HEPA initiative participants from three schools: **Baseline**: 557 (241 F[8]) **Follow-up**: 356 (168 F[8]) + 192 parents from five schools. Physical education teachers from 14 schools.	**Name:** Newham's Every Child a Sports Person (NECaSP) **Description:** Initiative included following components: 1) introduction in schools and physical education (PE) classes with coaches from sports clubs, 2) coaching sessions covering 5 different sports held at sports club, 3) changing PE curriculum to allow attendance of 6 days/week sports sessions in the preferred sport, for a duration of 6 weeks.	**Settings:** Sports club, School **Target group:** Youth 11-13 years old **Type:** Behavioural	**Delivering**: 17 secondary schools in East London, and local sports clubs	At follow-up, no significant increase in meeting physical activity guidelines was found. However, physical activity levels on weekends were significantly higher, and 66% of participants expressed their intention to continue participation in a sports club as a result of the initiative. Moreover, after the initiative, students reported they are feeling "more sporty" and "more healthy". Approximately 34% of parents reported that programme changed their child participation in physical activity or sport in the last month. Only 38% of schools completed all 3 phases, while 60 sports clubs, and 25 clubs coaches were included. Key barriers included cost, limited spaces and not being able to fit initiative into curriculum schedule.

(Dodsley, 2010) **Country**: UK - England	Development and evaluation of "Get Moving Nottingham" campaign	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Cross-sectional and consultation + Intervention + Document analysis	Local HEPA initiative providers, and 141 HEPA initiative participants (87 F^{8}) + 149 HEPA initiative participants, and 50 professionals that work with older adults	**Name:** Local Exercise Action Programme: Get Moving Nottingham **Description:** Extensive informational campaign highlighting the benefits of physical activity benefits, as well as funding awards to support provision of sports and other physical activity programmes. Additionally, mentoring programmes and ongoing support was provided.	**Settings:** Community, Healthcare **Target group:** Adults and older adults >50 years old **Type:** Campaign	**Funding:** Department of Health, Sport England and the Countryside Agency **Delivering**: Specialised physical activity advisors, coaches, volunteers	Participant experienced increases in physical activity levels, and improvements in health. The main barriers to participation included health problems, lack of time and suitable venues, lost skills, low confidence, safety concerns, and cost. To facilitate participation, they emphasised the need for more activity provision, better promotion, and increased support. The initiative attracted many women and people from ethnic minorities. Training sessions focusing on physical activity knowledge and skills for professionals working with older adults proved highly effective, with 85% of participants rating the training as very good, 74% finding it relevant, 50% changed attitude towards physical activity, while 60% changed their lifestyle. Furthermore, 65% reported being able to apply skills and knowledge gained from the

								training in their work. Some of the main barriers in implementing and evaluating the initiative included participants' frailty, difficulty fitting initiative into daily schedule, lack of knowledge to conduct evaluations (e.g., IPAQ and other), and lack of support.
(Douglas & Carless, 2015) **Country**: UK - England	Outcomes and evaluation of golf initiative	**EU:** No **European region:** Western	**Study Type:** Qualitative **Study Design:** Other + Interview	HEPA initiative participants and mental health professionals	**Name:** Golf programme. Provided in Bristol Active Life Project. **Description:** A primarily mental-health initiative, the nine-week golf programme, conducted in public golf environments at a reasonable cost.	**Settings:** Community **Target group:** Male individuals with serious mental illness **Type:** Transdisciplinary (Behavioural, Social)	**Initiation**: University of Bristol **Funding**: Charity **Delivering**: Professional Golfers Association coach	The overall attendance rate to the programme was 80%. Any level of involvement in the initiative can be beneficial from both psychological and physical activity engagement perspectives. Some participants continued, and some new applied for playing golf.
(Drygas et al., 2011) **Countries**: UK - England	Practices and policy analysis in "Healthy Stadia" project	**EU:** Yes/No **European region:** Western,	**Study Type:** Mixed method **Study**	88 representatives of stadia in 10 European countries	**Name**: Healthy Stadia **Description:** A well-recognised initiative with more than 300 members and partnerships. Healthy	**Settings:** Sports club, Sports association **Target**	**Initiation**: Heart of Mersey **Funding**: European Union	Involving 88 stadia from 10 European countries across 30 different sports, the data revealed that 47% of the stadia had implemented some physical activity promotion

and Northern Ireland, Finland, Georgia, Greece, Ireland, Italy, Latvia, Poland, Spain, Sweden		Northern, Southern, Central - Eastern	**Design:** Cross-sectional + Other		stadia initiative focuses on promoting health-related actions within sport stadia, encompassing a range of activities such as food and nutrition actions, promotion of physical activity, smoking cessation programmes, mental health and environmental care actions, social awareness policies, or community actions.	**group:** Fans, supporters, and staff of sports club **Type:** Campaign, Settings-based	**Delivering**: European Healthy Stadia Network, Heart of Mersey, partners from 8 European countries, UEFA, European Public Health Alliance, the European Heart Network, the World Heart Federation	actions. These actions ranged from establishing physical activity policies for club members, visitors, community, and stadia staff. For example, staff had a free access to sport facilities during lunch breaks. Additionally, stadia organised open events for the public, offered free sports sessions, and provided discounted gym memberships for younger individuals. Furthermore, a majority of sports stadium offered specialised sports programmes tailored for people with disabilities.
(Ecroys UK & Centre for Social Gerontology, 2020) **Country**: UK	Evaluation report of initiative for older adults	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Cross-sectional + Longitudinal +	221 stakeholders involved in the project (volunteers, partners, regional and project coordinators) **Baseline:** 881 HEPA initiative	**Name:** Fit as fiddle **Description:** The promotion of healthy aging from 2007 to 2012 focusing on encouraging healthy eating habits, physical activity, health literacy, and addressing mental health through a series of projects across nine English regions. These initiatives were	**Settings:** Community **Target group:** Adults and older adults >50 years old **Type:** Campaign	**Initiation:** Age Concern England and Help the Aged **Funding**: Big Lottery Fund **Delivering**: Health, sports and leisure clubs, community or voluntary organisations, freelance	From survey respondents, 60% were involved in some physical activity or exercise during the initiative. There was an increase in MVPA minutes/week from the beginning to the end of the programme, as well as in minutes dedicated to "strength and endurance" activities and walking per week during and three months after the programme. Additionally,

			Case studies + Interview + Document analysis	participants (665 F[8]) **Three-months post-initiative:** 514 HEPA initiative participants + 20 case studies + Interviews with 11 trainers, 27 HEPA initiative participants, and 20 local and national stakeholders	developed in collaboration with diverse stakeholders and volunteers, and some included sports associations.		instructors, Amateur Swimming Association, Nordic Walking UK	participants significantly changed their attitudes toward physical activity in a positive manner. Partnership were shown important for feasibility and sustainability, whereas common values are shown important. Almost all (97%) of partners in providing the initiative agreed with effectiveness of partnering. Stakeholders believed that this initiative helped strengthening strategic influence by developing network of national and regional stakeholders.
(Farmer et al., 2020) **Country**: Ireland	Effectiveness of Gaelic4Girls initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline and 10-week follow up:** IG[9]1: 44 HEPA initiative participants (F) IG[9]2: 43 HEPA initiative participants (F) CG[10]: 33 participants	**Name:** Research informed Gaelic4Girls (G4G) initiative. **Description:** Initiative comprised of three groups of participants: Group 1 attended research led 10-week initiative consisting of: 1) Participant components	**Settings:** Sports club, Community **Target group:** Female children 8-12 years old **Type:** Transdisciplin	**Initiation and Funding:** Ladies Gaelic Football program and The Gaelic4Girls project **Delivering**: Ladies Gaelic Football Association	Significant increases in weekly reported MVPA levels, and overall FMS proficiency scores were observed in group 1. Compared to other groups, initiative group 1 had significantly higher attitudes to physical activity, and physical activity enjoyment.

					sessions focusing on PA, Functional Movement Screen (FMS), and psychological aspects; 2) Coach components including education and workshops; and 3) Parental support and engagement. Group 2 attended already existing 10-week G4G programme. Group 3 was control group.	ary (Behavioural, Social, Informational)		
(Fenton et al., 2019) **Country**: UK - Scotland	Development and implementation of digital health-promoting initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Case study	Survey responses were collected from 123 HEPA initiative participants, while mobile app data were gathered from all users who utilised it.	**Name:** "Footy Fit", later "Fan Fit" mobile app. **Description:** The FanFit mobile app, created in 2018, allowed fans to track their walking and running activities. Users could compete for prizes and badges by logging their activity and participating in fan leagues and monthly competitions. The application also provided news and updates from the club.	**Settings:** Sports club, Community **Target group:** Club fans **Type:** Transdisciplinary (Behavioural, Social, Informational)	**Funding**: Scottish Government and Nesta - Healthier Lives Data Fund **Delivering**: Rugby league club "Salford Red Devils"	Approximately 77% of app users were male, with the highest usage observed among individuals aged 25-44 years old. Participants expressed that engagement of club team players in using the app, would serve as a motivation factor for them to increase their usage.

(Fenton et al., 2022) **Countries**: Primarily UK, Scotland, but anywhere where sports club fans are living	Outcomes and barriers of digital health-promoting initiative	**EU:** No **European region:** Western	**Study Type:** Qualitative **Study Design:** Case study	30 HEPA initiative participants (11 F^{8})	**Name:** FitBears ("FanFit") mobile app. Supported by the Football Fans in Training (FFIT) initiative. **Description:** Participants were recruited through "Football Fans in Training" purposeful samplings, allowing the inclusion of various people, including those usually hard to engage. The FanFit mobile app customed to Glasgow Rangers Football club, enabled fans to track their walking and running activities. Users could compete for prizes and badges by logging their activity and participating in fan leagues and monthly competitions. The application also provided news and updates from the club.	**Settings:** Sports club, Community **Target group:** Fans of Glasgow Rangers Club **Type:** Transdisciplinary (Behavioural, Social, Informational)	**Initiation and Funding:** University of Salford and the Rangers Charity Foundation (RCF) **Delivering**: Glasgow Rangers Football club	Participants reported increased motivation to achieve higher levels of physical activity in order to compete and win competitions. Men were inspired to be more active when women reported high results, and both genders experienced great social and psychological health benefits, and community connections.

(Football Foundation, 2009) **Country**: UK - England	Evaluation report of initiative for older adults	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Cross-sectional + Case study	459 (238 F[8]) registered HEPA initiative participants, with 250 responses to "Starting Survey" + 5 case studies data	**Name:** Extra Time **Description:** A two-year physical activity delivery programme. Five clubs were evaluated.	**Settings:** Sports club **Target group:** Adults and older adults >55 years old **Type:** Behavioural	**Funding:** The Football Foundation, the "Sport Relief", and Age UK **Delivering:** 15 Premier League Football clubs	Around 500 individuals engaged in the programme, with equal gender rates, and predominantly of White ethnicity (around 90%). The programme also included 9,4% disabled participant. Most learned about it through recommendations (41%) and local organisations (26%). A survey found that 16% of previously inactive (not any physical activity in past 12 months) participants joined, and many not meeting recommended physical activity levels. The primary motive for engagement was to "make new friends and have fun". Key factors contributing to the success included effective communication and understanding, provision of a variety of activities tailored to participants' needs, flexible planning of activities and environments, high-quality and suitable facilities, and establishing strong

								partnerships with key local stakeholders. The initiative demonstrated a strong positive impact on participating individuals.
(Frydendal et al., 2022) **Country**: Denmark	Perspectives of male Football Fitness participants	**EU:** Yes **European region:** Western	**Study Type:** Qualitative **Study Design:** Focus group	Seven focus groups with 26 (M^7) HEPA initiative participants	**Name:** Football Fitness **Description:** The programme is a flexible approach to football, focused on health and enjoyment, and offered at a reduced fee.	**Settings:** Sports club **Target group:** Men 24-76 years old **Type:** Campaign	**Initiation**: Danish Football Association (DFA) and Sports Confederation of Denmark **Delivering**: Seven Danish voluntary football clubs	Participants expressed feeling like outsiders due to stigmas and patronising from "regular" football players but appreciated the inclusive environment without harsh masculinity. They valued the lack of obligations, expectations, and demands, and prefer group workouts. Socialisation was the primary reason for participation, with health benefits seen as a bonus. Many enjoyed fun, light-hearted competition.
(Fuller et al., 2017) **Country**: Denmark	Outcomes of European FIFA initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 402 (192 F^8) HEPA initiative participants., CG[10]: 144 (85 F^8) **12-week follow-up**:	**Name:** 11 for Health in Denmark (Scaled up "Fifa 11 for Health") **Description:** Two weekly football sessions and health discussions about PA, nutrition, well-being, hygiene, drugs, alcohol	**Settings:** School **Target group:** Danish schoolchildren, boys and girls 10-12 years old	**Initiation**: Danish Football Association and the University of Southern Denmark **Delivering**: Nine Danish schools	The mean attendance rate for the initiative was 98.5%. During the follow-up, 72.4% of participants gave a positive rating to the initiative. There was a significant increase in health literacy within the initiative group compared to the control group, particularly in areas related to physical

				*Valid health questionnaires – IG[9]: 377 (185 F[8]), CG[10]: 137 (82 F[8]) *Valid well-being questionnaires – IG[9]: 355 (175 F[8]), CG[10]: 127 (75 F[8])	and tobacco led by football coaches and researchers in schools for 11 weeks.	**Type:** Transdisciplinary (Behavioural, Informational)		activity, hygiene, well-being, and nutrition knowledge. Additionally, the initiative group rated the social health dimension significantly higher than the control group.
(Gray et al., 2013) **Country**: UK - Scotland	Pilot study of the FFIT initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Focus group	**Baseline:** IG[9]: 51 (M[7]) HEPA initiative participants, CG[10]: 52 (M[7]) **12-week follow-up:** IG[9]: 44 (M[7]), CG[10]: 42 (M[7]) **12-month follow-up:** IG[9]: 40 (M[7]) + 26 (M[7]) HEPA initiative participants (4 focus groups)	**Name:** Football Fans in Training pilot (p-FFIT) **Description:** 12 weeks of sport and exercise (pedometer walking) sessions provided at football stadia, accompanied by classroom educational sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in fun competitions.	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Delivering**: Scottish Professional Football League clubs (2)	Significant weight loss in comparison with control group, which was sustained for 12 months. Additionally, there was an increase in MPA, VPA, and total levels of physical activity over 12 weeks, with general maintenance observed at 6 and 12 months later. The most effective promotion strategy was found to be advertising through the club's website; however, participants expressed that the recruitment efforts could be enhanced with better publicity, such as advertising during football matches.

(Gray et al., 2018) **Country**: UK - Scotland	Long-term outcomes of FFIT initiative and its cost-effectiveness	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Longitudinal	**Baseline**: IG[9]: 747 (M[7]) **12-month follow-up:** IG[9]: 688 (M[7]) **3.5-year follow up**: IG[9]: 488 (M[7])	**Name:** Football Fans in Training (FFIT) **Description:** A 3,5 year follow up of the initiative conducted in 2011 and 2012. Initiative consisted of 12 weeks of sport and exercise (including pedometer walking) sessions held at football stadia. These sessions were complemented by classroom educational sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in enjoyable competitions.	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Initiation**: Scottish Professional Football league Trust **Funding**: Scottish Government, The Football Pools **Delivering**: Scottish Professional Football League clubs (13)	Both groups of participants in the initiative, including those with the option to undertake another FFIT programme after 2,5 years, and those without, demonstrated similarly significant weight loss sustained after 3,5 years. Additionally, both groups experienced significant increases in self-reported physical activity, including total physical activity, VPA, MPA and walking minutes, during the 3,5-year follow-up period. Many other health benefits were also found to be significant. The estimated cost-effectiveness of initiative was £1790–£2200 through participants' lifetime.
(Hart & Leary, 2015) **Country**: UK - England	Health-promoting initiatives in Millwall football club	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study**	HEPA initiative participants	**Name:** Millwall FC initiatives (FitClub, V-football) **Description:** Various projects that were offered by medical services within	**Settings:** Sports club **Target group:** Members and supporters of	**Initiation**: The Millwall Medical Service **Delivering**: Millwall Athletic Football Club	60% of participants in FitClub maintained their exercise levels for at least 4 years after the initiative.

			Design: Case study		sports club, mostly during match-days. For example, V-football was a health application for supporters and players that monitored their healthy lifestyle behaviours (sucha as PA, alcohol intake). Another programme, FitClub, offered physical activity programmes for male fans.	the Millwall football club **Type:** Transdisciplinary (Behavioural, Social, Informational)	volunteer group and the Millwall Medical Service	
(Hunt et al., 2013) **Country**: UK - Scotland	Perceptions of walking part of the FFIT initiative	**EU:** No **European region:** Western	**Study Type:** Qualitative **Study Design:** Interview	27 HEPA initiative participants from three clubs (M^7)	**Name:** Football Fans in Training (FFIT), walking part of the initiative. **Description:** A 12-week incremental pedometer walking program was implemented at football stadiums as part of a larger initiative.	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Initiation**: Scottish Professional Football league Trust **Funding**: Scottish Government, The Football Pools **Delivering**: Scottish Professional Football League clubs (11)	Almost all participants expressed enthusiasm and positive thoughts about the FFIT initiative and the pedometer-walking component. Key factors contributing to the initiative's acceptability included the setting of their favourite club and the engagement of club coaches in delivering the program. Additionally, the benefits of pedometer technology, fast fitness and weight changes, and the promotion of masculinity in the context of a sports club were identified as key

								facilitating factors for the walking program. Men were thrilled with the pedometers, adapting them for daily use.
(K. Hunt et al., 2014) **Country**: UK - Scotland	Reach and perceptions of the FFIT initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Cross-sectional + Focus group	747 HEPA initiative participants (M^7) + 63 HEPA initiative participants in 13 focus groups (M^7)	**Name:** Football Fans in Training (FFIT) **Description:** 12 weeks of sport and exercise (pedometer walking) sessions provided at football stadia, accompanied by classroom educational sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in fun competitions. Following the 12-week period, six post-initiative emails were sent, and the group reconvened six months after the initiative concluded.	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Initiation**: Scottish Professional Football league Trust **Funding**: Scottish Government, The Football Pools **Delivering**: Scottish Professional Football League clubs (13)	Men participating in the initiative were classified as being at extremely and very high health risk. The primary reasons for engagement included the opportunity to participate in activities associated with their favourite football club, as well as a recognition of the need to change their weight and physical activity behaviour due to family and health concerns. Participants expressed feeling reassured when they saw others similar to them practicing, which encouraged their continued engagement in the initiative.

(Kate Hunt et al., 2014) **Country**: UK - Scotland	Outcomes of the FFIT initiative	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 374 HEPA initiative participants (M[7]), CG[10]: 374 men who engaged in the initiative 12-months later **12-week follow-up:** IG[9]: 330 HEPA initiative participants (M[7]), CG[10]: 347 men **12-month follow-up:** IG[9]: 333 HEPA initiative participants (M[7]), CG[10]: 355 men	**Name:** Football Fans in Training (FFIT) **Description:** Initiative was conducted in 2011 and 2012, and comprised of 12 weeks of sport and exercise (pedometer walking) sessions provided at football stadia, accompanied by classroom educational sessions cover	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Initiation**: Scottish Professional Football league Trust **Funding**: Scottish Government, The Football Pools **Delivering**: Scottish Professional Football League clubs (13)	High retention (around 90%) at both follow-up time points. Significantly improved weight, body fat, BMI, levels of self-reported PA, psychological and physical well-being, blood pressure in IG[9] at 12-months assessment. Programme is shown to be cost-effective and efficient.
(Hunt et al., 2020) **Countries**: Germany,	Scaling of the FFIT initiative	**EU:** Yes/No **European region:**	**Study Type:** Mixed method	-	**Name:** Football Fans in Training (FFIT) - scale up **Description:** The FFIT initiative was scaled up to	**Settings:** Sports club **Target group:**	**Initiation**: Scottish Professional Football league Trust	For scaling up the initiative important considerations include: initiative effectiveness, reach, sustainability, adaptability,

Canada, England, Scotland, Belgium, Netherlands, Hungary, New Zealand, Australia, Portugal, Norway		Western, Northern, Southern, Central - Eastern	**Study Design:** Other		36 clubs in Scotland and an additional nine "early adopter" English clubs through the development of a coach license franchising model. Scaling out of the initiative was observed in other countries worldwide under similar names, usually requiring minor adaptations for specific country. The original FFIT initiative was comprised of 12 weeks of 12 sport and exercise (pedometer walking) sessions provided at football stadia, accompanied by classroom educational sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in fun competitions.	Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Delivering**: 36 Scotland football clubs, and nine English football clubs	alignment with contextual factors, staff and workforce, evaluation, and delivery. Due to the success and sustainability of the scaled-up initiative, England and Wales announced plans to offer FFIT initiative on an even broader scale, under the name "FIT FANS". For scaling out of initiative, it's important to maintain its core elements and underlying mechanisms while receiving adequate organisational and system support. The FFIT initiative has been successfully scaled out to various regions and sports, including: Germany (male) - "Fussball Fans im Training", Canada Ice hockey (male) - "Hockey-FIT", England rugby (male) - "Move like a Pro", Scotland football (female) - "FFIT for women", Belgium, Netherlands,

								England, Germany, Hungary football (male and female) - "Active Fans", New Zealand Rugby (male) - "RU-FIT NZ", Australia football (male) - "Aussie FIT", England, Norway, Netherlands, Portugal football (male) - "Euro-FIT"
(Lackinger et al., 2017) **Country**: Austria	Adherence and outcomes of HEPA initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Longitudinal	**Baseline**: IG[9]: 71 HEPA initiative participants (53 F[8]) **2-month follow-up:** IG[9]: 47 HEPA initiative participants **6-month follow-up:** IG[9]: 35 HEPA initiative participants	**Name:** SVA-Bewegt **Description:** 33 exercise classes (gym-based or aqua-fit) conducted at 12 different locations, facilitated by sports clubs, their coaches, and equipment.	**Settings:** Sports club, Community **Target group:** Overweight and obese health insurance patients, 18-85 years old with insufficient levels of physical activity. Those suffering from NCD, hypertension or diabetes	**Initiation**: SPORTUNION umbrella organisation, the Social Insurance Authority for Business **Delivering**: Local Vienna sports clubs	From the initial pool of 720 eligible participants, 49% withdrew from the initiative before its beginning. Of those who participated, 66% remained engaged after two months, with 49% becoming members of sports clubs and continuing regular programs after six months. Approximately 53% of participants engaged in one or more exercise sessions per week after two months, with a slightly reduced percentage (49%) after six months. The majority (70%) signed for a gym-based programme. Significant improvements were observed after two

						type 2 were also eligible **Type:** Behavioural		months in various health variables, including muscular endurance, cardiorespiratory variables, body weight, BMI, waist circumference, and quality of life measures. Despite efforts from multiple stakeholders, the enrolment of potential patients remained low.
(Lane et al., 2010) **Country**: Ireland	Engaging women into physical activity following mass sports events	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 85 HEPA initiative participants (F[8]), CG[10]: 91 **3-week follow-up**: IG[9]: 64 **6-week follow-up**: IG[9]:55, CG[10]:57	**Name:** LEGit ("Let's Exercise Girls"), implemented after two mass sporting events for women. **Description:** Two printed booklets were delivered to physical activity relapsers after the 3-month period following mass sports events they participated in. One booklet was titled "Time to Get Moving" about benefits of PA, physical activity guidelines and steps to increasing motivation. Another booklet "Keep Moving" was sent to	**Settings:** Sports association, Community **Target group:** Women that participated in two mass community events, but decreased their physical activity levels at 3-month follow up to not meeting physical activity	**Funding**: The Irish Sports Council. **Delivering**: The Local Sport Partnership network.	After three weeks, 90% of respondents found the booklet useful, and 50% reported an increase in physical activity. After six weeks, both groups of women showed a significant increase in total minutes spent on physical activity per week, along with a significant increase in the percentage of participants meeting the physical activity guidelines. The highest increase was observed in group of women insufficiently active at baseline. Even small nudges, such as providing nutrition guidelines, were sufficient to motivate women to engage in physical activity.

					participants that were already active, and included motivational readings messages, how to overcome barriers and tips of being active at home. Control group received only booklet about healthy nutrition.	guidelines **Type:** Transdisciplinary (Behavioural, Informational)		
(Lane et al., 2013) **Country**: Ireland	Leveraging the mass sports event initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline**: IG[9]: 193 HEPA initiative participants (F[8]), CG[10]: 209 **9-week follow-up:** IG[9]: 125, CG[10]: 159	**Name:** Upgraded LEGit initiative implemented following two mass sporting events for women. **Description:** The initiative lasted for 9 weeks. Each women received a package including information sheet of available community physical activity sessions, motivational booklet designed to influence readiness for PA, pedometer, instructions for writing physical activity diary, tips, case studies, entry form for	**Settings:** Sports association, Community **Target group:** Women that participated in two mass community events, but decreased their physical activity levels at 3-month follow up to not meeting physical activity guidelines	**Funding**: The Irish Sports Council. **Delivering**: The Local Sport Partnership network.	Initiative was evaluated using RE-AIM framework. Reach: The participation rate was 63%. Effectiveness: After nine weeks, both initiative and control groups showed significant increase in total physical activity minutes/week, and overall activity days/week. A significantly higher proportion of women in the initiative group achieved sufficient activity levels compared to the control group. Adoption: Follow-up response rate is 64,8% among IG[9], and 76,1% among CG[10] participants. Implementation: About 65%

					5km run, and training plan, among other sources. Notably, provided booklets were entitled "Time to Get Moving", and "Keep Moving". Control group received only a healthy eating leaflet.	**Type:** Transdisciplinary (Behavioural, Informational)		of participants reported using pedometers at follow-up, while 30% reported contacting local providers of PA, such as sports clubs or leisure centres. However, discerning clear initiative effects is challenging due to the other factors that could affect physical activity levels.
(Lane et al., 2018) **Country**: Ireland	Overview of two physical activity initiatives of the GAA Healthy Club Project	**EU:** Yes **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention (Whole project) + Intervention (PA initiative) + Focus group + Interview	**Baseline**: IG[9]: 14 clubs Phase 1, 41 clubs Phase 2, CG[10]: 27 clubs **12-week follow-up:** IG[9]: 7 clubs Phase 1, 23 clubs Phase 2, CG[10]: 10 clubs + HEPA initiative participants from three participating clubs - at **baseline**: 82, at **12-week follow-**	**Name:** Men on the Move. Physical activity initiative, part of the Phase 2 of GAA HCP. **Description:** Three clubs of Healthy Club Project participated in 12-week programme of providing two weekly sessions of physical activity and educational workshops on healthy eating and well-being.	**Settings:** Sports club **Target group:** Men >30 years old **Type:** Transdisciplinary (Behavioural, Informational)	**Initiation**: The Gaelic Athletic Association (GAA), the Health Service Executive (HSE), Irish Life **Delivering**: The Gaelic Athletic Association (GAA), Healthy Club Project team	Following the initiative, initiative clubs showed increased health promoting policy, practice and environment scores. Around 97% of clubs prioritised health post-initiative, with 100% reporting its benefits and willingness to support future projects, and 83% reporting more people are joining. The most reported barriers were lack of finances (60%), time constraints (60%) and social support (43%). In terms of physical activity initiative part, responses rates declined from 100% at baseline, to 40% at 12 weeks,

				up: 47, and at **26-week follow-up**: 16 + 12 focus groups with club representatives + Three Healthy Club Officers				and 20% at 26 weeks. Significant improvement in weight-related variables were noted at both 12- and 26-week follow-ups but meeting physical activity guidelines only improved at 12-week follow-up, compared to baseline. Local Sport Partnership Officers (LSP) acknowledged the benefits of the initiative in attracting new members and expressed interest in clubs' programme ownership and continued implementation. Club representatives recognised the positive impact of the initiative within the club setting and noticed increased physical activity participation among new members.
(Lane et al., 2020) **Country**: Ireland	Phase one of the GAA Healthy Club Project	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	The Healthy Club Officers of 16 clubs at baseline, and 12 clubs at follow-up	**Name:** Phase 1 of Gaelic Athletic Association's (GAA) Healthy Club Project (HCP). Grounded in Health	**Settings:** Sports club **Target group:** Various GAA sports clubs	**Initiation**: The Gaelic Athletic Association (GAA), the Health Service Executive (HSE) **Delivering**: The	A total of 72 initiatives reported by 12 sports clubs. 13% of initiatives were related to physical activity promotion, of which around 70% were deemed as low impact, meaning they only included

					Promoting Sports Club (HPSC) initiative. **Description**: Implemented in 18 clubs. Emotional health, diet and nutrition, social inclusion, anti-alcohol, anti-smoking, anti-drugs, anti-bullying, first aid and physical activity promotion initiatives were provided. Clubs were evaluated according to Healthy Club Framework (HCF) that has four pillars - planning, club environment, partnering and implementing activities.	**Type:** Settings-based	Gaelic Athletic Association (GAA), Healthy Club Project team	two or fewer pillars of HCF out of four possible (governance, environment, partnership, programmes). Membership in participating clubs increased by 34.8%, with 16.4% being new playing members.
(Lane et al., 2021) **Country**: Ireland	Phase two of the GAA Healthy Club Project	**EU:** Yes **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Focus group	The Healthy Club Officers (HCO) from clubs: **Baseline:** IG[9]: 41, CG[10]: 26 **Follow-up:**	**Name:** Phase 2 of Gaelic Athletic Association's (GAA) Healthy Club Project (HCP). Grounded in Health Promoting Sports Club (HPSC) initiative. **Description:** Delivered to	**Settings:** Sports club **Target group:** Various GAA sports clubs with some previous activity in	**Initiation**: The Gaelic Athletic Association (GAA), the Health Service Executive (HSE), Irish Life **Delivering**: The Gaelic Athletic Association (GAA),	Around 108 initiatives reported by 23 clubs at follow-up. Significant overall increase in the health promotion score for HC compared to the baseline, and to the control group. The majority of clubs delivered physical activity initiatives (91%), with most

				IG[9]: 23, CG[10]: 10 + 53 HCO from 37 clubs	41 clubs at baseline. Desginated "healthy clubs" (HC) received support to form a HC project team and "HC officer" for leading implementation of healthy actions. They were advised to incorporate the "GAA Healthy Club Statement" (encompassing PA, healthy food and beverages, mental health and other) into their club's policies, and to conduct initiatives on these and other health-related topics. Clubs were educated on the Healthy Club Framework (HCF) comprising four pillars - planning, club environment, partnership and implementing activities. They were encouraged to also include their own aims into this framework while implementing health initiatives.	health promotion **Type:** Settings-based	Healthy Club Project team	including all or at least three pillars of HCF. However, the scores for the implementation practice of HC remained in the middle category, and similar to those of the control clubs.

(Larsen et al., 2021) **Country**: Denmark	Outcomes of a health education football initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline**: IG[9]: 5251 HEPA initiative participants., CG[10]: 881 **12-week follow-up** IG[9]: 3046, CG[10]: 771 (1532 F[8])	**Name:** 11 for Health in Denmark (Scaled up "Fifa 11 for Health") **Description:** Two weekly football sessions and health discussions about PA, nutrition, well-being, hygiene, drugs, alcohol, and tobacco led by football coaches and researchers in schools for 11 weeks. Control group participated in regular physical education classes.	**Settings:** School **Target group:** Danish schoolchildren, boys, and girls 10-12 years old **Type:** Transdisciplinary (Behavioural, Informational)	**Initiation**: Danish Football Association, University of Southern Denmark **Delivering**: 154 Danish schools	Total health knowledge increased as a result of the initiative with significantly higher scores in initiative group (difference in 7,2% higher points). Additionally, initiative group had significantly higher knowledge rates for physical activity questions after the initiative (9,6% - 13,3% higher scores) and in comparison, with control group (5,9% higher scores). Higher scores initiative group had also in hygiene, nutrition, and well-being questions. After the initiative, both boys and girls increased their positive view on football, for around 33,8%.
(Leijon et al., 2019) **Country**: Sweden	Feasibility of weight-loss and healthy living initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	HEPA initiative participants (M[7]): **Baseline**: 22 **12-week follow-up**: 21 **52-week follow-up**: 17	**Name:** VIktiga Supportrar I Träning (ViSiT) Grounded in FFIT initiative. **Description:** Initiative consisted of a) 12 weeks of educational lectures and 30 minutes of activity	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old	**Delivering**: Two Swedish professional sports clubs (Ice hockey and football)	Almost all participants completed the 12-week program. Significant reductions in weight, body fat and BMI reduction were observed at 12 and 52-week follow-ups. Participants reported that the ViSiT program had a high impact on increasing exercise, improving

					conducted in one football and one ice hockey club, complemented with constant support, and b) 40-week maintenance less intensive initiative phase	**Type:** Campaign		lifestyle, enhancing knowledge and boosting motivation. They also expressed the importance of exercise sessions within the program.
(Lewis et al., 2018) **Country**: UK - England	Outcomes and reach of mental health and well-being initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Interview	80 HEPA initiative participants (M^7)	**Name:** Active Rovers **Description:** Weekly physical activity programmes included football, walking football, Tai Chi, and yoga. Programs were led at FC Rovers stadium.	**Settings:** Sports club **Target group:** Male adults >45 years old, "hard-to-reach men" **Type:** Behavioural	**Delivering**: Tanmere Rovers Football Club in cooperation with National Health Service	In eight years more than 15000 participants have registered for the initiative. Mental well-being significantly improved during the programme. Following the initiative, participants reported increased fitness levels. Being part of the club was important for participants and potentially motivated them to remain engaged in the initiative.
(Lind et al., 2017) **Country**: Denmark	Outcomes of European FIFA pilot initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG^9: 838 (472 F^8) HEPA initiative participants., CG^{10}: 93 (52 F^8) **12-week follow-up**: IG^9: 759-772,	**Name:** 11 for Health in Denmark (Scaled up "Fifa 11 for Health") **Description:** Two 90-minute football sessions per week over 11 weeks. Each session comprised 45 minutes of playing football and 45 minutes	**Settings:** School **Target group:** Danish schoolchildren, boys and girls 10-12 years old	**Initiation**: Danish Football Association, University of Southern Denmark **Delivering**: 26 Danish schools	The IG^9 demonstrated significant improvements in psychomotor function, attention, and working memory compared to the CG^{10}.

				CG[10]: 69-73	dedicated to "play fair" activities, which included health education components.	**Type:** Transdisciplinary (Behavioural, Informational)		
(Lozano-Sufrategui et al., 2017) **Country**: UK	Experiences of weight management initiative	**EU:** No **European region:** Western	**Study Type:** Qualitative **Study Design:** Interview	14 HEPA initiative participants (M[7])	**Name:** Weight management programme, part of Healthy Stadia initiative **Description:** Weekly sport sessions and educational lectures.	**Settings:** Sports club, Sports association **Target group:** Overweight and obese male adults and older adults >50 years old **Type:** Transdisciplinary (Behavioural, Informational)	**Initiation and Delivering**: Weight management programs, Wigan Borough Healthy Stadia, Sports Club Network	Inclusion, competitions suitable to all, social relationships, acceptance, and autonomy are identified as important factors for engaging older men in sports programmes.
(Madsen et al., 2020) **Country**: Denmark	Well-being outcomes of the 11 for Health in	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study**	**Baseline**: IG[9]: 2533 (1274 F[8]) HEPA initiative participants., CG[10]: 528 (260	**Name:** 11 for Health in Denmark (Scaled up "Fifa 11 for Health") **Description:** Two weekly	**Settings:** School **Target group:** Danish	**Initiation**: Danish Football Association, University of Southern Denmark	Physical well-being, peer relationships, social support, and perceptions of the school environment significantly improved post-initiative, with greater improvements

	Denmark initiative		**Design:** Intervention	F[8]) **12-week follow-up** IG[9]: 3046, CG[10]: 771	football sessions and health discussions about PA, nutrition, well-being, hygiene, drugs, alcohol and tobacco led by football coaches and researchers in schools for 11 weeks. Control group participated in regular physical education classes.	schoolchildren, boys and girls 10-12 years old **Type:** Transdisciplinary (Behavioural, Informational)	**Delivering**: 111 Danish schools	observed among female participants compared to males. The physical nature of the initiative likely led to increased physical activity during break times and leisure, although exact measurements were not provided.
(Mickelsson, 2022) **Country**: Sweden	Feasibility of social- and health-promoting initiative	**EU:** Yes **European region:** Northern	**Study Type:** Qualitative **Study Design:** Interview	12 sports club representatives	**Name**: Not mentioned **Description**: Sports inclusion: initiatives of 12 sports clubs in attracting and retaining migrant participants and potential future club members.	**Settings:** Sports club, Sports association **Target group:** Children and youth from socioeconomically deprived groups **Type:** Transdisciplinary (Behavioural, Social)	**Delivering**: 12 sports clubs from Swedish Sports Confederation	Inclusion and long-term participation of migrant youth can be achieved through multisectoral collaboration, especially between SC, SA and schools. Sports associations must act as allies to sports clubs to support the success of the initiatives, although sometimes governmental requirements of SA may further distance SC and SA.

(Myśliwiec & Damentko, 2015) **Countries:** Global	Special Olympics initiatives for people with intellectual disabilities	**EU:** Yes/No **European region:** -	**Study Type:** Qualitative **Study Design:** Document analysis	-	**Name:** Young athletes; Unified sports program **Description:** "Young athletes" involves providing sports programmes to intellectually disabled children aged 2.5 to 8 years old; "Unified sports program" includes organising training sessions and competitions between healthy and intellectually disabled participants.	**Settings:** Sports club, Sports associations **Target group:** Adults and children with intellectual disabilities **Type**: Transdisciplinary (Behavioural, Social)	**Initiation**: Special Olympics movement **Funding and Delivering:** Special Olympics, Union of European Football Associations (UEFA), International Basketball Federation Europe (FIBA), Euro league Basketball, International Federation of Adapted Physical Activity (IFAPA), European Swimming League (LEN), European Tenpin Bowling Federation, European Cycling Federation, specific Sports Resources Teams	Initiatives were beneficial for physical fitness and functioning, social inclusion, self-esteem, and quality of life.

(Naul et al., 2012) **Countries**: Germany and Netherland	Outcomes of children's community initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Longitudinal	Initiative participants at both time points: 261 in Germany (118 F^{8}), 296 in Netherlands (148 F^{8})	**Name:** Healthy children in sound communities (HCSC/gkgk) **Description:** Multicomponent programme that provides physical, nutritional and health education classes. It also promotes active transportation and participation in sports clubs.	**Settings:** Sports club, Community, School **Target group:** School children 6 - 10 years old **Type:** Campaign	**Initiation**: "Runder Tisch" - a local network of various stakeholders for active living **Delivering**: 12 Dutch and German municipality moderators, Willibald Gebhardt Research Institute (WGI)	Improvements in physical fitness and motor abilities, as well as changes in BMI.
(Nordhagen, 2021) **Country**: Norway	Leveraging the Youth Olympic Games	**EU:** No **European region:** Northern	**Study Type:** Qualitative **Study Design:** Case study	Interviews with 16 representatives from 13 organisations involved in leveraging the Youth Olympic Games 2016	**Name:** Try the sport; Dream Day; Active Mind-Active Body; School Olympics; School Prize; Youth Hall **Description:** Leveraging the Youth Olympic Games with integration of sport programmes for Youth and building sports venues.	**Settings:** Sports association, Community **Target group:** Youth **Type:** Transdisciplinary: Behavioural, Policy	**Initiation**: Norwegian Olympic Committee and Confederation of Sports (NIF), The Norwegian Paralympic Committee **Funding**: Norwegian Government - Ministry of Cultural Affaris (Department of Sports Policy) and International Olympic Committee	More than 20,000 children participated in the initiative. Initiative resulted in new hockey and curling hall that attracted new members and ensured availability of "open ice time", a free activity for participants of all ages.

							Delivering: National Federations and District Sport Associations under NIF	
(Nowicka et al., 2009) **Country**: Sweden	Outcomes of a sports camp initiative for obese children	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Longitudinal	**Baseline and 6-month follow-up**: IG[9] - 38 HEPA initiative participants, CG[10] - 38 (All together 36 F[8])	**Name**: Not mentioned **Description**: A week of sports camp followed by 6-month of free participation in their preferred sports club.	**Settings:** Sports club **Target group:** Obese children 8 - 12 years old **Type:** Behavioural	**Initiation**: Childhood Obesity Unit, Lund University, Verona University **Delivering**: Sports clubs members of the Swedish Sports Confederation	After the free and supported 6-month period, 25% of children continued their participation in the sports club. However, at the 12-month follow-up, no significant BMI, lifestyle, or body composition changes were observed in the initiative group compared to the control group.
(Obling et al., 2019) **Country**: Denmark	Effectiveness of the MILE initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline**: HEPA initiative participants: 115 (48 F[8]), Routine care group: 117 (44 F[8]) **12-month follow up:** HEPA initiative participants: 71, Routine care group: 58	**Name:** Motivational, Individual and Locally anchored Exercise initiative (MILE) **Description**: Participants received a six month "Primary care package" consisting of motivational interviews, GPS-watch, website, and free sports sessions in local gymnastic sports club.	**Settings:** Sports club, Healthcare **Target group:** Adults with low cardiorespiratory fitness, 30-49 years old **Type:**	**Initiation**: Department of Public Health, Aarhus University, "Check Your Health" prevention programme **Delivering**: Randers Gymnastic Club, Randers Health Care Centre	Significant improvements in cardiorespiratory fitness observed in both the initiative group and the routine care group after 6 and 12 months, without significant difference between the two groups. However, accelerometer-measured and self-reported physical activity levels did not change significantly over the same period.

						Transdisciplinary (Behavioural, Informational)		
(Ooms et al., 2013) **Country**: Netherlands	Effectiveness of Start To Run initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 244 (171 F[8]) HEPA initiative participants, CG[10]: 950 (665 F[8]) **6-week follow-up:** IG[9]: 123 **6-month follow-up:** IG[9]: 100, CG[10]: 100	**Name:** Start to Run - part of National Action Plan for Sport and Exercise (NAPSE) **Description:** Six weeks of running trainings at sports club, with three sessions/week. Each session included educational part on various health promotion topics, and prevention of risks, as well as practical part.	**Settings:** Sports club **Target group:** Adult novice runners **Type:** Transdisciplinary (Behavioural, Informational)	**Initiation and Funding:** Dutch Ministry of Health, Welfare and Sport **Delivering:** Dutch Athletics Organisation	70% of the study's participants were female. Significant increases were observed in light- and VPA, physical activities in all domains except household, and compliance with various physical activity guidelines in the initiative group after six weeks. After six months, significant increases compared to baseline were observed in compliance with guidelines, levels of VPA, overall time spent in physical activity, and physical activity performed in sports settings and during transportation. At the six-month follow-up assessment, 69% of participants reported they were still engaged in running, and 41% of initiative participants became members of sports clubs

(Ooms et al., 2015) **Country**: Netherlands	Implementation and feasibility of sporting initiatives	**EU:** Yes **European region:** Western	**Study Type:** Mixed method **Study Design:** Cross-sectional + Interview + Focus group	12 NAPSE programme coordinators + 14 interviews with 12 and focus group with eight NAPSE programme coordinators	**Name:** National Action Plan for Sport and Exercise (NAPSE) 14 sporting programs: Initiatives in sports setting are: "Trendy Weeks for Masters" "Fit Hockey" "Working by Walking" "Through 4 days Marches" "Judo in school" "My Swimming Coach" "Cycle-Fit" "Start2run" "Thinking and Doing" "Cycle & Enjoy Nature" "Trio-Triathlon" "Beach volleyball" "Cool Moves Volley" "Ultimate Volley Xperience" **Description:** Initiatives initiated by the Dutch Ministry of Health, Welfare and Sport as National Action Plan for Sport and Exercise	**Settings:** Sports club, Sports association **Target group:** Various **Type:** Campaign	**Initiation and Funding:** Dutch Ministry of Health, Welfare and Sport **Delivering**: Dutch National Sports Federations	Majority of participants enjoyed the programmes offered (87-99%). Out of 14 programmes, three resulted in significantly increased physical activity levels, four had no significant changes, while seven did not have enough data. Some of the most important facilitating factors for HEPA initiatives include: i) Matching the needs of participants, sports organization policies, and sports club core objectives. ii) Collaboration with others. iii) Internal and external support of the program. iv) Availability of materials and funds. v) Ease of local implementation. Funding, collaboration, resources and continuous support through sports association's policies are found

					(NAPSE), with the aim of increasing Dutch people that meet recommended physical activity levels. National sports associations (n=10) were guided to organise and conduct sporting programmes in their sports clubs. This included walking, athletics, judo, gymnastics, hockey, swimming, cycling, triathlon, volleyball and bridge sports clubs.			to be important for programme continuation.
(Ooms et al., 2017) **Country**: Netherlands	Effectiveness of Start2Bike initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 141 HEPA initiative participants., CG[10]: 940 **6-week follow-up:** IG[9]: 101 **6-month follow-up:** IG[9]: 79 (26 F[8]), CG[10]: 79 (26 F[8])	**Name:** Start2Bike, - part of National Action Plan for Sport and Exercise (NAPSE), previously called "Cycle-Fit" **Description:** Six weeks of cycling trainings provided by cycling coaches, with three sessions/week, one group and two individuals. Each group session included	**Settings:** Sports association, Community **Target group:** Inactive adults and beginner cyclists **Type:** Campaign	**Initiation and Funding:** Dutch Ministry of Health, Welfare and Sport **Delivering**: Netherlands Tour Cycling Union (NTFU)	67% of the study's participants were male. Significantly increased light- and VPA, physical activities in sports, work, and school domain, as well as overall time spent in physical activity, and compliance with various physical activity guidelines in initiative group after six weeks. After six months, significantly increased compared to baseline were: compliance

					educational part on various health promotion topics, equipment, prevention of risks, as well as of practical part. Individual sessions were practical.			with different physical activity guidelines, levels of VPA, and physical activity performed in sports setting. At the six-month follow-up assessment, 76% of participants reported they were still engaged in cycling, and around 33% of initiative participants became members of cycling club offering the programme.
(Ørntoft et al., 2016) **Country**: Denmark	Outcomes of European FIFA initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline**: IG[9]: 402 (192 F[8]) HEPA initiative participants., CG[10]: 144 (85 F[8]) **12-week follow-up:** IG[9]: 386, CG[10]: 140	**Name:** 11 for Health in Denmark (Scaled up "Fifa 11 for Health") **Description:** Two weekly football sessions and health discussions about PA, nutrition, well-being, hygiene, drugs, alcohol and tobacco led by football coaches and researchers in schools for 11 weeks.	**Settings:** School **Target group:** Danish schoolchildren, boys and girls 10-12 years old **Type:** Transdisciplinary (Behavioural, Informational)	**Initiation**: Danish Football Association and the University of Southern Denmark **Delivering**: Nine Danish schools	The initiative group experienced significant positive impacts on fat percentage, lean body mass, BMI scores, blood pressure, 20m sprint performance, and scores in yoyo intermittent recovery level one test.

(Parnell et al., 2012) **Country**: UK - England	Implementation and effectiveness of football initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Observation + Focus groups	Two focus groups with 10 HEPA initiative participants in each	**Name:** Football in the Community (FitC) **Description:** Initiative delivered by the coaches educated by Premier League Football clubs. Coaches were leading 16-week initiative, one hour football session per week delivered in school setting.	**Settings:** School **Target group:** Primary school children (8-11 years old) **Type:** Behavioural	**Initiation**: National Football in the Community (FitC) programme **Delivering**: Premier League Football clubs	The initiative experienced a 54% dropout rate, with many children expressing dissatisfaction with the coaches and length of technical and tactical sessions. However, the initiative successfully engaged previously active children. To maximize benefits, future initiatives should focus on improved coaching education with a health-oriented approach, coaching methods centred on fun and enjoyment, and inclusion of more inactive children and hard-to-reach populations. Additionally, gaining support from club managers requires demonstrating the value of the program and aligning it with the club's core objectives.
(Parnell et al., 2013) **Country**: UK - England	Implementation and adoption of football initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study**	Observation of four participating schools + Interviews with HEPA initiative	**Name:** Everton in the Community (EitC), part of "Football in the Community" (FitC) **Description:** Initiative delivered by the Everton	**Settings:** School **Target group:** Primary school	**Initiation**: National Football in the Community (FitC) programme **Funding**: Greggs Northwest Plc	The initiative successfully maintained the activity levels of already active children. However, there was a high attrition rate, with 31 out of 57 children dropping out. Reported problems included

			Design: Case study	participants and coaches	Football club coaches. Coaches were leading 16-week initiative, one hour football session per week delivered in four schools.	children (8-11 years old) **Type:** Behavioural	(Greggs) **Delivering**: Everton Football Club, Liverpool John Moores University, School of Sport and Exercise Sciences	the overly structured nature of the sessions, which were too performance-oriented and resembled standard football training without adaptations for inexperienced participants. Sessions were also too long and focused on skill learning rather than fun and play. Coaches lacked sufficient education to adapt sessions to all, highlighting the need for improved coach training in future initiatives.
(Parnell et al., 2014) **Country**: UK - England	Reach and effectiveness of football initiative for older adults	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Case study	54 HEPA initiative participants (31 F^{8})	**Name:** Golden Goal **Description**: Provision of weekly MVPA sessions featuring various sports in the Burton Albion Football Club.	**Settings:** Sports club **Target group:** Adults ≥55 years old **Type:** Behavioural	**initiation**: National Premier League Men's Health programme **Funding:** 'Award for All' National Lottery grant **Delivering:** Burton Albion Football Club and Burton Albion Community Trust (BACT)	No significant benefits were evident after the initiative compared to baseline. However, the initiative showed potential to recruit older adults of both genders, including those with some ill-health conditions. The mean attendance was approximately 8 out of 12 sessions.

(Parnell et al., 2015) **Country**: UK - England	Reach, adoption and implementation of the "Extra Time" initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Interview	**Baseline and 12-week follow-up:** 486 (290 F[8]) HEPA initiative participants + 18 HEPA initiative participants from five clubs and seven initiative deliverers	**Name:** Extra Time **Description:** Weekly sessions of football or other physical and social activities, accompanied by ongoing support, were provided free of charge for two years.	**Settings:** Sports club **Target group:** Adults and older adults >55 years old **Type:** Behavioural	**Funding**: The Football Foundation, the "Sport Relief", and Age UK **Delivering**: 15 Premier League Football clubs	The initiative, assessed using the RE-AIM framework, reached 985 participants, with 486 actively attending. Both men and women attended 75% of the sessions, with slightly more women engaged (59.7%). Participants reported increased happiness, healthiness, and fitness, as well as improved socialization. Linking the initiative with a sports club enhanced its visibility and appeal, with over 80% of participants expressing this statement. Key factors for adherence and adoption included social support, activity variety, program reputation, link with the club, offering fun and enjoyable experience, and responsiveness to participant needs.
(Parnell et al., 2018) **Countries**: UK - England	Overview of the Healthy Stadia initiative	**EU:** Yes/No **European region:** Western,	**Study Type:** Mixed method **Study**	Various	**Name**: Healthy Stadia **Description:** A well-recognised initiative with more than five funded projects and many actions	**Settings:** Sports club, Sports association **Target**	**Initiation, Funding and Delivering:** European Healthy Stadia Network, UEFA, European Public Health	Health checks conducted at cricket stadia are convenient for club fans and staff. The football club initiative improved well-being and

and Northern Ireland, Finland, Georgia, Greece, Ireland, Italy, Latvia, Poland, Spain, Sweden		Northern, Southern, Central - Eastern	**Design:** Case studies		that encompass various strategies, including engaging fans, disseminating health-related messages at large screens at stadia and other sports club channels, conducting health screening before/after matches, offering healthier food options, utilising club brand, engaging people through club channels for health, and sport promoting initiatives, targeting specific health risks among fans/supporters/staff. Additionally, the initiative has produced many guidelines and toolkits to support its aims.	**group:** Fans, supporters, and staff of sports club **Type:** Campaign, Settings-based	Alliance, European Heart Network and World Heart Federation, and more than 300 members	altered perceptions of alcohol among initiative participants, reflecting the positive impact of sports-based initiatives on health behaviours. The construction of artificial grass pitches increased stadium usage, community access, and participation in sports.
(Phillpots & Grix, 2014) **Country**: UK - England	Feasibility of School to Club Links initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study**	19 interviewees (eight from golf and athletics associations, one former athlete, and other 10	**Name:** School to Club Links (SCL) **Description:** Connecting sports clubs and schools to increase levels of sports participation.	**Settings:** Sports club, School **Target group:** School children	**Initiation and Funding:** The National strategy "Physical Education, School Sport and Club Links" (PESSCL)	The initiative was found to be highly politicised over the years, with a clear top-down structure of policy delivery. Even though increase in academic standard and engaging more children and

			Design: Case study	stakeholders from government, project leaders, and school sport representatives)	Case studies of the Golf Foundation and England Athletics associations.	**Type:** Policy	**Funding**: Department for Education and Skills and Department for Culture Media and Sport **Delivering**: National Governing Bodies, Department for Education and Skills, Sport England, the Youth Sport Trust, County Sport Partnerships, Partnership Development Manager	youth in sports activities were main aims, sports associations were controlled by higher-level organisations. Funding for initiatives was dependent upon meeting criteria set by these organisations, and there were even threats to withdraw funds if School-to-Club Links were unsuccessful. In 2010, the funding for the initiative was stopped, and shift towards professionalisation in the sports was evident.
(Pietsch et al., 2020) **Country**: Germany	Outcomes of German FFIT initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline**: IG[9]: 477 HEPA initiative participants from 15 clubs (M[7]), CG: 84 **12-week follow-up:** IG[9]: 386 HEPA	**Name:** Fußballfans im Training (FFIT-G) **Description:** 12 weeks of sport and exercise (pedometer-walking) sessions provided at football stadia, accompanied by classroom educational	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old	**Initiation**: University of Glasgow **Delivering**: German Bundesliga	Significant difference of IG compared to CG[10] in terms of reduced sedentary time, weight loss, lower BMI level, and increased vegetable and fruit intake, among other factors. However, physical activity levels were not assessed.

				initiative participants (M^7), CG^{10}: 78	sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in fun competitions.	**Type:** Campaign		
(Pringle et al., 2013) **Country**: UK - England	Adoption and effectiveness of football initiative	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	Adopters (pre- or post-initiative data): 1342 (M^7) Completers (pre- and post-initiative data): 204 (M^7)	**Name**: Premier League Health 3-year programme **Description:** Free 90-minutes weekly sessions of football, exercise, badminton, walking in football stadia or community venue, complemented with health educational sessions over a 12-week period. Additional, health checks events were provided at match-days.	**Settings:** Sports club, Community **Target group:** Male adults with increased risk of ill-health, 18-35 years old ("hard-to-reach" men) **Type:** Behavioural	**Initiation**: English Premier Football League (EPL) and Premier League Health (PLH) **Funding**: Football Foundation **Delivering**: 16 EPL football clubs	After three months, both adopters and completers experienced a significant increase in weekly physical activity, daily consumption of fruits and vegetables, and decreases in sedentary time, alcohol consumption, and BMI. The effects were significantly stronger in the completers group.
(Pringle et al., 2014) **Country**: UK - England	Implementation and outcomes of football initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:**	HEPA initiative participants (M^7) at: Match-day events: 1056 Weekly classes: 2964	**Name**: Premier League Health 3-year programme **Description:** Free 90-minutes weekly sessions of football, exercise, badminton, walking in	**Settings:** Sports club, Community **Target group:** Male adults with	**Initiation**: English Premier Football League (EPL) and Premier League Health (PLH) **Funding**: Football	73.7% of men participating in the evaluation reported attending weekly classes, while 26.3% attended match-day events. After 12 weeks, a significant increase in physical activity and other health

			Intervention + Interview	+ 57 HEPA initiative participants (M^7) from 14 clubs	football stadia or community venue, complemented with health educational sessions over a 12-week period. Additionally, health checks events were provided at match-days.	increased risk of ill-health, 18-35 years old ("hard-to-reach" men) **Type:** Behavioural	Foundation **Delivering**: 16 EPL football clubs	benefits were evident. The initiative was appealing to all, including fans of the providing club, non-football fans, and even fans of opposing clubs. The club setting was acceptable as it served as a 'hook' and promoted masculinity. The availability of various physical activity programs was seen as a positive aspect.
(Ricour et al., 2023) **Country**: Belgium	Theory-based evaluation approach of youth sport initiatives in Flanders	**EU:** Yes **European region:** Western	**Study Type:** Qualitative **Study Design:** Case study	Focus group with 19 representatives of Flemish sports federations	**Name**: Not mentioned **Description**: Two initiatives were related to physical activity promotion: a) Youth trainings and activities that included sport packages, collaborations with other settings, "start to" programmes, media promotion, various training opportunities. b) Promotion of sports for all, including reduced participation rates, organising camps,	**Settings:** Sports association **Target group:** Youth **Type:** Campaign	**Funding**: "Sport Vlaanderen", the ministry for sport **Delivering**: 41 Flemish sports associations with approved sports project for youth in 2020	Six participating associations were multisport, while 35 were unisports. Most sports associations focus on the quantity of training sessions to attract and retain participants, and believe that promotional and side activities, collaborating with partners, and social media communication help increase participation rates. Almost all associations provide sport-for-all, with a quarter offering opportunity for youth not interested in highly competitive levels. Enjoyable tournaments and

					activities for disadvantaged and disabled individuals, and youth of different genders, as well as promotion through flyers, or informational sessions. Additionally, there were other five types of initiatives not strictly related to increasing participation rates or attracting new members.			positive session experiences are assumed to help retain existing members. All associations are focused on attracting new members.
(Riley, 2015) **Country**: UK - England	Overview of mental health initiatives in rugby clubs	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Case study	Various	**Name:** Rugby League Cares (RLC) **Description:** It was two-year long project that included various campaigns primarily focused on mental health. Clubs offered a range of actions including provision of educational materials, inclusion of vulnerable groups, leading social, mental and physical activity programmes.	**Settings:** Sports club **Target group:** People with higher risk of mental illnesses **Type:** Campaign	**Initiation**: "Rugby League Cares" (including Rugby League Foundation, Heritage Trust, and Benevolent Fund), Leeds Metropolitan University, NHS Confederation **Funding**: Sport Relief **Delivering**: Various Rugby League	Some clubs reported increased engagement, attendance, and positive mental health changes among participants. Many participants continued health-related physical activity programs after the initiative, while others explored alternative activities. Participants recognized importance of joining the initiative and reported increased awareness of where to seek help post initiative. At one match, 58% of fans strongly agreed on RLC's role

							Clubs, Super League Clubs	in promoting mental well-being. The project-built community-club links and formed partnerships with 64 stakeholders. Key facilitators included participant identification, partnerships, tailored activities, effective communication, and recruitment strategies.
(Rutherford et al., 2014) **Country**: UK - England	Outcomes of a football weight loss programme in individuals with CVD risk factors	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	292 HEPA initiative participants (98 F^{8})	**Name:** "Motivate" Grounded in Football Fans in Training initiative **Description:** The initiative offered free 12-week mixed-gender health-promoting sessions. These sessions included six physical activity classes along with various educational and behavioural-changing sessions covering various health topics.	**Settings:** Sports club, Community **Target group:** Nottingham overweight citizens >18 years old **Type:** Transdisciplinary (Behavioural, Social, Informational)	**Initiation**: Nottingham Trent University, City of Nottingham **Delivering**: Notts County Football in the Community (NCFIT)	At week 12, both men and women reported significant weight and waist circumference reduction, as well as improved cardiovascular fitness. Almost half men, and 37% women achieved desired 5% body weight reduction. During the exercise sessions, they spent approximately half time in VPA according to accelerometers. Mixed-gender initiative was proven effective.

(Ryom et al., 2022) **Country**: Denmark	Outcomes of Danish "11 for Health" initiative	**EU:** Yes **European region:** Northern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline and 12-week follow-up:** IG[9]: 944 (437 F[8]) HEPA initiative participants, CG[10]: 178 (89 F[8])	**Name:** 11 for Health in Denmark (Scaled up "Fifa 11 for Health") **Description:** All Danish schools participated. Two weekly football sessions and health discussions about PA, nutrition, well-being, hygiene, drugs, alcohol and tobacco led by football coaches and researchers in schools for 11 weeks. Control group participated in regular physical education classes.	**Settings:** School **Target group:** Danish schoolchildren from ethnic minorities, boys and girls, 10-12 years old **Type:** Transdisciplinary (Behavioural, Informational)	**Delivering**: Danish Football Association and the University of Southern Denmark	The initiative group exhibited a significant increase in health knowledge of physical activity compared to the control group (4.4% higher points for IG[9]). Another health-related benefit included improvements in general health literacy, psychological benefits, physical fitness and performance test improvements among participants inactive in sports clubs prior to the initiative.
(Sacchetti et al., 2015) **Country**: Italy	Outcomes of school-based initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** Third-year pupils: 224 (104 F[8]) Parents: 342 (181 F[8]) **Follow-up:** Fifth-year pupils: 227 (106 F[8])	**Name:** The SAMBA project (extension) **Description:** Provision of various activities, including educational sessions, motor activities, unstructured and structured games, dog walking, active commuting to school, and	**Settings:** Sports club, School, Community **Target group:** Third year (8-9 years old) and fifth (10-12 years old) year	**Initiation**: Bologna Local Health Unit experts **Delivering**: Bologna Local Health Unit experts, graduates in exercise and Sport Sciences, Sport association	BMI significantly improved post-initiative. Despite fewer children playing outside post-initiative, there was a notable increase in those engaging in sports. More parents reported doing physical activity with their children, and child's activity time increased from 65 to 111 minutes per week. Exposure to computer and

				Parents: 334 (185 F[8]) Available data at both time points: 210 pupils	were provided with didactic materials. Parents also participated in sensory and cookery workshops, received homework assignments to engage in physical activity with their children.	primary classes schoolchildren in Bologna **Type**: Campaign	instructors (UISP), teachers, university experts, parents, school catering operators, municipal staff	video games decreased significantly in the afternoon following the initiative.
(Sandercock et al., 2012) **Country**: UK	Outcomes of multicomponent initiative	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Longitudinal	**Baseline, 2-month, 4-month and 6-month follow-up**: 115 HEPA initiative participants from three local primary schools	**Name:** Upstarts **Description:** Community-wide initiative including 20 weeks of activities provided by local sports clubs.	**Settings:** Sports club **Target group:** Socio-economically deprived children **Type:** Transdisciplinary (Behavioural, Social)	**Funding**: National Health Service **Delivering**: 36 sports clubs from the Essex County	Participants initially experienced improvements in aerobic capacity, handgrip strength, and BMI. However, the long-term sustainability of these benefits showed heterogeneous results.
(Skagerström et al., 2021) **Country**: Sweden	Experiences of ViSiT initiative	**EU:** Yes **European region:** Northern	**Study Type:** Qualitative **Study Design:** Focus group	Three focus groups with 22 HEPA initiative completers (M[7])	**Name:** VIktiga Supportrar I Träning (ViSiT) **Description:** 12 weeks of educational lectures and 30 minutes of activity conducted in one football	**Settings:** Sports club **Target group:** Overweight and obese male adults,	**Initiation and Delivering**: Östergötland Sports Federation, public health practitioners, and staff from two Swedish sports	Participation and continuation were influenced by involvement in the participant's favourite sports club and the group format. The initiative is perceived as a potential driver for behavioural change and has led

					and one ice hockey club, complemented with constant support.	35-65 years old **Type:** Campaign	clubs (ice hockey and football)	to increased health knowledge. Individual coaching is recommended and desired for future initiatives.
(Strittmatter & Skille, 2016) **Country**: Norway	Implementation of youth sport policy	**EU:** No **European region:** Northern	**Study Type:** Qualitative **Study Design:** Interview + Observation	Interviews with seven representatives from organisations involved in implementation of youth sport policy	**Name:** Youth campaign (Ungdomsløftet) **Description:** Implementation of national youth sports policies during big sporting events.	**Settings:** Sports association **Target group:** Youth **Type:** Policy	**Initiation**: Norwegian Olympic Committee and Confederation of Sports (NIF), The Norwegian Paralympic Committee **Funding**: Norwegian Government - Ministry of Cultural Affaris (Department of Sports Policy) and International Olympic Committee **Delivering**: National Federations and District Sport Associations under NIF	Most of the implementation focus was on increasing the involvement of "young leaders", while efforts to increase the number of youths participating in sports and in sports coaching were neglected.

(Tézier et al., 2022) **Country**: France	Relevance and development of the PROSCeSS MOOC initiative	**EU:** Yes **European region:** Western	**Study Type:** Qualitative **Study Design:** Interview + Other	Two interviews with two researchers and leaders of health-promotion initiatives. Four interviews with two coaches and two managers of two sports clubs + Three workshops with 16 participants (representatives of French health promoting organisations, French Olympic Committee, sports clubs' representatives - managers and athletes) + 17 participants (research team, representatives of sports clubs,	**Name:** PROSCeSS MOOC. Grounded in HPSC initiative. **Description:** Development of massive open online course focused on the socio-ecological approach to health promotion in sports clubs.	**Settings:** Sports club (online) **Target group:** Club representatives **Type:** Settings-based - informational	**Initiation and Delivering**: Santé publique France, the Université of Lorraine, and The Université Côte d'Azur (researchers from the "Health Promoting Sports Club" initiative)	Two initiative leaders identified key needs for sports club implementation, including financial support, alignment with core responsibilities, and minimizing paperwork. Resources, recognition, and partnerships are also vital, along with finding time for coach participation. Stakeholders emphasized understanding specific sports demands, encouragement from organisations, and providing easy-to-understand measurement tools and knowledge-enhancing resources like infographics. Beta testing of the online course revealed the need to address content quality, comprehensiveness, visual clarity, and navigation. The developed MOOC comprises four 3-hour sessions including videos, case studies, guidelines, success stories, quizzes. Involving various stakeholders facilitated a

				sports association, and health promoting organisations)				comprehensive understanding of the problem.
(Tézier et al., 2023) **Country**: France	PROSCeSS MOOC evaluation using RE-AIM framework	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline**: IG[9]: 430 HEPA initiative participants (210 F[8], eight missing) **Post-course:** IG[9]: 72 HEPA initiative participants (36 F[8])	**Name:** PROSCeSS MOOC. Grounded in HPSC initiative. **Description:** Massive open online course focused on the socio-ecological approach to health promotion in sports clubs, incorporating examples of practice and strategies.	**Settings:** Sports club (online) **Target group:** Club representatives **Type:** Settings-based - informational	**Initiation and Delivering**: Santé publique France, the Université of Lorraine, and The Université Côte d'Azur (researchers from the "Health Promoting Sports Club" initiative)	Initiative was evaluated using RE-AIM framework. One-fifth of participants (19%) completed the course. Among those who completed both pre- and post- surveys, 80.3% were members of sports club, with 36.1% belonging to the club that is implementing health promoting actions. Participants were primarily health promotion professionals (27.8%) and sports club representatives (20,8%). The majority participated out of curiosity about the subject, and after the course, their confidence to implement similar actions significantly increased. However, 7% of participants were not satisfied with the course, stating that the topic was too broad, theoretical, and not relatable to real-life situations.

(Thing et al., 2017) **Country**: Denmark	Feasibility perception of female Football Fitness participants	**EU:** Yes **European region:** Western	**Study Type:** Qualitative **Study Design:** Focus group	Six focus groups with 32 (F^8) HEPA initiative participants	**Name:** Football Fitness **Description:** The programme is a flexible approach to football, focused on health and enjoyment, and offered at a reduced fee.	**Settings:** Sports club **Target group:** Women 27-56 years old **Type:** Behavioural	**Initiation**: Danish Football Association (DFA) and Sports Confederation of Denmark **Delivering**: Danish football clubs	Women expressed that they have limited time for themselves due to family, work, and household obligations. Those working part-time found it easier to allocate time for football practice. Some reported receiving support from family members for childcare to participate in football activities. However, even when they found free time, they often felt too exhausted for football, as the prior obligations planning are energy consuming. Football was seen as a pleasurable activity, providing a space to "breathe" and step away from everyday roles, serving as a form of "me time" for the participants.
(Thing et al., 2020) **Country**: Denmark	Perspectives of female Football Fitness participants	**EU:** Yes **European region:** Western	**Study Type:** Qualitative **Study Design:** Focus group	Six focus groups with 32 (F^8) HEPA initiative participants	**Name:** Football Fitness **Description:** The programme is a flexible approach to football, focused on health and	**Settings:** Sports club **Target group:** Women 27-56 years old	**Initiation**: Danish Football Association (DFA) and Sports Confederation of Denmark	Women perceived football fitness as more inclusive and accessible, open to everyone regardless of skill level. They also felt a stronger sense of obligation to attend the sessions because of the others

					enjoyment, and offered at a reduced fee.	**Type:** Behavioural	**Delivering**: Danish football clubs	in the team. In comparison with fitness centres, participants appreciated the ability to "laugh or talk" with each other, and not having a pressure of remembering specific choreography.
(Titze et al., 2018) **Country**: Austria	Process evaluation of JACKPOT initiative	**EU:** Yes **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Other	**Baseline** IG[9]: 445 HEPA initiative participants, CG[10]: 140 **2nd physical activity assessment:** IG[9]: 183 (88 F[8]), CG[10]: 55 (30 F[8])	**Name:** JACKPOT **Description**: Initiative spanned from October 2015 to February 2017. Individuals staying at health resorts received a voucher for 12 sports activities sessions at sports clubs. During their stay at health resorts, participants in the initiative group also received individual physical activity and health counselling.	**Settings:** Sports club, Healthcare **Target group:** Adults with risk of cardiovascular, metabolic, or musculoskeletal disease, from residential stay, 30-65 years old **Type:** Behavioural	**Initiation and Delivering**: Three Austrian health insurance companies, 30 Austrian health resorts and 13 sports club coaches	76.1% of contacted health resorts agreed to participate in the project. Of the participants, 49% attended at least one initiative session, while 54% attended three-fourths of the sessions. About 39% dropped out before the ninth session due to health reasons, lack of time, training intensity, or preference to continue independently. Although only 54% of coaches dedicated time to learning how to improve physical activity behaviour efficiently, they delivered 82% of key components in 13 sessions.

(Titze et al., 2019) **Country**: Austria	Short- and long-term effectiveness of JACKPOT initiative	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline** IG[9]: 167 (825 F[8]), CG[10]: 50 (28 F[8]) **4-month follow-up** IG[9]: 128, CG[10]: 41 **12-month follow-up** IG[9]: 148, CG[10]: 46 (103 participants from IG[9], and 37 from CG[10] completed all three measurements)	**Name:** JACKPOT **Description**: Initiative spanned from October 2015 to February 2017. Individuals staying at health resorts received a voucher for 12 sports activities sessions at sports clubs. During their stay at health resorts, participants in the initiative group also received individual physical activity and health counselling.	**Settings:** Sports club, Healthcare **Target group:** Adults with risk of cardiovascular, metabolic, or musculoskeletal disease, from residential stay, 30-65 years old **Type:** Behavioural	**Initiation and Delivering**: Austrian health insurance companies, 51 Austrian health resorts and 15 sports clubs	Initiative retention at the 4-month assessment was 78%, increasing to 89% at the 12-month assessment. Of the participants, 58% attended all 12 free JACKPOT sessions, while 75% attended more than half of them. Significant increases in MVPA levels were observed after 4 and 12 months in the initiative group. Moreover, 17% of initiative completers continued with the JACKPOT program for an additional six months with payment.
(Van Hoye, Johnson, Lemonnier, et al., 2021) **Country**: France	Process evaluation of the French sports clubs' health-	**EU:** Yes **European region:** Western	**Study Type:** Mixed method **Study Design:** Other	Interviews with eight representatives (employees, coaches, directors) of eight French sports clubs	**Name:** Eight different health promoting settings-based initiatives. Grounded in Health Promoting Sports Club (HPSC) initiative.	**Settings:** Sports club **Target group:** Various club representatives	**Initiation**: The "Health Promoting Sports Club" group **Delivering**: French sports clubs	Initiatives were evaluated using the "Health Promoting Sports Club (HPSC) initiative planning framework". The conducted initiatives aimed at various populations and individuals at different organisational levels such as

	promoting initiative				**Description:** Eight sports clubs, each with at least one year of implementing health-promoting initiatives according to settings-based approached were studied. The participants were representatives from football, cycling, track & field, and multisport clubs. 13 initiatives were led by sports clubs and included: educational after-school homework, injury prevention, and healthy eating programmes, programmes involving older adults, and inclusion in sports.	**Type:** Settings-based		coaches, managers, or athletes. Clubs included two or more partners in their initiatives. These initiatives were usually focused on specific topic like healthy eating, injury prevention, promoting sports participation among older adults and other similar. However, they did not encompass comprehensive settings-based health promotion strategy due to its complexity. Policy initiatives were not targeted in any of the clubs. Initiative leaders emphasized the importance of resources and adaptability of implementing initiatives, as well as the need for more objective evaluation methods to assess the effectiveness of the initiatives.
(Wagner et al., 2010) **Country**: Germany	Effectiveness of initiative for	**EU:** Yes **European region:** Western	**Study Type:** Quantitative **Study**	**Baseline**: IG[9]: 117 (70 F[8]) HEPA initiative participants, CG[10] "regular	**Name:** Seven-sequence initiative **Description:** Initiative included one 90-minute	**Settings:** Sports club **Target group:**	**Initiation and Delivering:** Institute of Sport Science, University of	During the initial year, 85% of participants remained engaged in the program, with 73% attending at least 67% of sessions. Over the subsequent

	sedentary adults		**Design:** Longitudinal	active": 40 (28 F[8]), CG[10] "inactive": 32 (20 F[8]) **1-year follow-up:** IG[9]: 99 (58 F[8]) **3-year follow-up:** IG[9]: 107 (63 F[8]), CG[10]: 76 (46 F[8])	session per week of low to moderate intensity practices. Each session encompassed seven components: preparation, warm-up games, endurance (walking or jogging), strength and flexibility, relaxation, stimulation through games with music, and health education. The initial initiative lasted for 12 months, after which participants had the option to continue in the same sports club for an additional two years or switch to a different sports club.	Sedentary adults and adults with increased risk of ill-health **Type:** Behavioural	Bayreutli, sport club in Erlangen	three years, 76% continued their involvement in the program. The initiative group experienced various health benefits after one year, including improvements in fitness levels, reduction of risk factors, enhancement of subjective health status, and positive changes in psychological variables. The highest benefits were evident in the group with most health risk factors. Remarkably, the control group, consisting of initially non-active participants, exhibited increased physical activity levels after receiving the initial health assessment and fitness status information.
(Wanner et al., 2011) **Country**: Switzerland	National physical activity programme overview	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention +	**Baseline**: IG[9]: 2157 (1924 F[8]) HEPA initiative participants. **12-week follow-up:** IG[9]: 1587	**Name:** Allez Hop **Description:** National physical activity promotion programme, implemented from 1997 to 2004. Allez Hop licensed instructors facilitated a range of sports sessions	**Settings:** Sports association, Community **Target group:** Inactive and insufficiently	**Initiation, Funding and Delivering**: Swiss Olympic Association, Swiss umbrella organisation for the health insurance companies, Swiss Federal Office of	Following the initiative, proportion of meeting physical activity guidelines significantly increased from 33,1% to 42,3%. Additionally, 36% of the participants reported engaging in at least one additional Allez Hop course, while around 5%

			Cross-sectional	participants **Subsample for 3-month follow-up:** IG[9]: 169 participants (78.2% of respondents) + **Swiss Health cross-sectional surveys:** 1997: 13004 participants aged >15 years 2002: 19706 participants aged >15 years 2007: 18760 participants aged >15 years + **Sports cross-sectional surveys:** 1999: 2064 participants aged 14-74 years	(walking, tennis, gymnastics, Nordic walking, running, Fitgym) over a period of 12 weeks approximately.	active adults **Type:** Transdisciplinary (Policy, Campaign)	Sport and Health Promotion Switzerland foundation	joined sports club after completing the course. During the first year of the initiative, only 8% Switzerland population were aware of it, while by the end of 2004, that percentage had increased to 26%. According to a cross-sectional national survey, the rate of individuals participating in any sport in Switzerland increased from 1999 to 2007, with an even larger increase of the individuals playing at least one sport per week (increase from 62,9% to 66,7% in 2007).

				2007: 10262 participants aged 15-74 years				
(Wyke et al., 2015) **Country**: UK - Scotland	Process evaluation and outcomes of FFIT initiative	**EU:** No **European region:** Western	**Study Type:** Mixed method **Study Design:** Intervention + Other	**Baseline**: IG[9]: 374 HEPA initiative participants (M[7]), CG[10]: 374 men **12-month follow-up**: IG[9]: 333 (M[7]), CG[10]: 355 (M[7])	**Name:** Football Fans in Training (FFIT) **Description:** Initiative was conducted in 2011 and 2012 and comprised of 12 weeks of sport and exercise (pedometer walking) sessions provided at football stadia, accompanied by classroom educational sessions covering health-related topics and behavioural change techniques. Additionally, participants received the club's merchandise and engaged in fun competitions.	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Initiation**: Scottish Professional Football league Trust **Funding**: Scottish Government, The Football Pools **Delivering**: Scottish Professional Football League clubs (13)	Significant increase in self-reported overall, vigorous, and moderate physical activity levels per week, along with an increase in minutes spent walking after both 12 weeks and 12 months from initial measurements in the experimental group, compared to controls. Other health benefits were also evident, including reduced sedentary time after 12 weeks, improvements in self-esteem, quality of life, healthy food intake at both 12 weeks and 12 months, and significant weight loss after 12 months, in comparison with control group. Concerns about health, being part of the club, and participating in activities withing the club's setting motivated the participants.

								Individuals from diverse socio-economic backgrounds were engaged. High acceptance and feasibility, as well as cost-effectiveness of initiative were evident.
(Wyke et al., 2019) **Countries**: Netherlands, Norway, Portugal, UK: England	Outcomes and adoption of EuroFIT initiative	**EU:** Yes/No **European region:** Western, Northern, Southern	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 560 HEPA initiative participants, CG[10]: 553 men **12-week follow-up:** IG[9]: 464 HEPA initiative participants, CG[10]: 471 men **12-month follow-up:** IG[9]: 451 HEPA initiative participants, CG[10]: 470 men	**Name:** European Fans in Training (EuroFIT). Grounded in FFIT initiative. **Description:** 12 weeks of 12 weekly sport and exercise sessions held at football stadia, complemented by classroom educational activities, behavioural-changing exercises, and social support through "MatchFIT" mobile application. Another application provided for self-monitoring daily steps was the "SitFIT" app.	**Settings:** Sports club **Target group:** Overweight and obese male adults, 35-65 years old **Type:** Campaign	**Initiation and Funding:** University of Aberdeen, European Union, Scottish Government Health Directorates **Delivering**: 15 Professional football clubs (ADO Den Haag, FC Groningen, PSV, Vitesse, Rosenborg BK, Strømsgodset IF, Vålerenga Fotball, Futebol Clube do Porto, Sporting Clube de Portugal, Sport Lisboa e Benfica, Arsenal FC, Everton FC, Manchester City FC, Newcastle	Approximately 86% of men attended at least six lessons. Significantly improved total physical activity levels, and around a 90% or higher likelihood of achieving sufficient physical activity levels in the initiative group after both 12 weeks and 12 months, compared to baseline. However, its' worth noting that men had relatively high levels of physical activity at baseline.

							United FC, Stoke City FC)	
(Zwolinsky et al., 2013) **Country**: UK - England	Effectiveness of football initiative	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	**Baseline:** IG[9]: 2214 HEPA initiative participants (M[7]) **12-week follow-up:** IG[9]: 130 HEPA initiative participants (M[7])	**Name**: Premier League Health 3-year programme **Description:** Providing weekly sports sessions over a 12-week period, accompanied with educations and seminars about health and the disadvantages of unhealthy behaviour such as alcohol consumption, unhealthy diet, and smoking.	**Settings:** Sports club, Community **Target group:** Male adults with increased risk of ill-health, 18-35 years old ("hard-to-reach" men) **Type:** Behavioural	**Initiation**: English Premier Football League (EPL) and Premier League Health (PLH) **Funding**: Football Foundation **Delivering**: 16 EPL football clubs	From 2214 individuals that adopted initiative, only 9.4% of participants completed it. The main areas that showed improvement after 12 weeks was diet and physical activity levels.
(Zwolinsky et al., 2016) **Country**: UK - England	Effectiveness of football initiative	**EU:** No **European region:** Western	**Study Type:** Quantitative **Study Design:** Intervention	1667 HEPA initiative participants (M[7]) at **baseline** and **12-week follow-up**	**Name**: Premier League Health 3-year programme **Description:** Free 90-minutes weekly sessions of football, exercise, badminton, walking in football stadia or community venue, complemented with health	**Settings:** Sports club, Community **Target group:** Male adults with increased risk of ill-health, 18-35 years	**Initiation**: English Premier Football League (EPL) and Premier League Health (PLH) **Funding**: Football Foundation	Participants were predominately white British males. Prior to the initiative, the two major risk factors combined low physical activity levels and poor diet in 77% of participants, and a similar percentage remained after the initiative (74%). However, individually,

					educational sessions over a 12-week period. Additionally, health checks events were provided at match-days.	old ("hard-to-reach" men) **Type:** Behavioural	**Delivering**: 16 EPL football clubs	physical activity significantly improved after the initiative, with 15% of men increasing their activity, and almost 3% of them meeting the physical activity guidelines. Positive effects were found on other risk factors as well. Social support and networks established were potentially important drivers for initiative sustainment.

1 Name, of HEPA promotion initiative
2 Description of HEPA promotion initiative
3 Setting(s) of HEPA promotion initiative
4 Target group(s) of HEPA promotion initiative
5 Type of HEPA promotion initiative
6 Leading organisation(s) of HEPA promotion initiative
7 Male
8 Female
9 Intervention group
10 Control group

2.4. Discussion

This study identified 81 studies on HEPA promotion initiatives in the European sports setting, which is a very high number of included studies compared to previous reviews encompassing a broad scope of health initiatives in the sports setting (Geidne et al., 2019; Jackson et al., 2005a; Lim et al., 2023). Moreover, previous reviews specifically focused on HEPA promotion initiatives in the sports setting included even fewer studies, with a maximum of six eligible studies (Allison et al., 2017; George et al., 2022; Jackson et al., 2005a). The reason for this could stem from the specific research objectives of certain studies, such as those focused only on initiatives targeting team sport participation (Allison et al., 2017) or examining changes in organised sport participation (Jackson et al., 2005a). Another contributing factor could be the emphasis on studies employing rigorous methodologies, such as randomised controlled trials (George et al., 2022).

2.4.1. What are the characteristics of studies on HEPA promotion initiatives in the European sports setting?

The most often employed research methods in studies on HEPA initiatives included quantitative or mixed methods approaches, with interventions, interviews, case studies, and focus group study designs being prevalent. Studies were mainly conducted on HEPA initiative participants, with only nine of the included studies providing quantitative data from local or national representatives of organisations involved as leaders, deliverers, or supporters of the initiative. It is recognised that relevant public health changes require a longer time frame for manifestation (Ding et al., 2020). Moreover, there is a limited prevalence of scaled-up physical activity promotion initiatives globally, especially in terms of "sport-for-all" (Reis et al., 2016). Therefore, future research should prioritise long-term physical activity promotion initiatives, scaling up the initiatives, and conducting longitudinal studies rather than primarily focusing on short-term behavioural interventions. Besides longitudinal studies, increasing the amount of cross-sectional quantitative data could also support a large number of qualitative interviews and focus groups, especially among HEPA initiative stakeholders. Thus, a future research stream could go towards inclusion of various multidisciplinary HEPA initiative stakeholders in the study sample (Ding et al., 2020). The

inclusion of opinions from various-level stakeholders is important due to the acknowledged significance of multisectoral, multidisciplinary partnerships, and networking for the implementation, success and continuation of the conducted initiatives (Casey et al., 2009; Ding et al., 2020; Ooms et al., 2019; Ooms et al., 2015; Reis et al., 2016). Further support for this is evident in our study, with "partnership" being among one of the most represented initiative facilitators (Figure 9).

Slightly over half of the studies (51%) were conducted in EU countries. Over the past 25 years, sport has been recognised and valued as a setting for health promotion by the EU's governing bodies. Consequently, sport was receiving financial support through funding projects, initiatives, creation of new networks, campaigns, and development of various policy initiatives, among others (Hartmann & Benedičič Tomat, 2022). This support likely contributed to a slightly higher number of initiatives originating from EU countries compared to non-EU countries. Notably, the only non-EU member countries included were Switzerland and the UK, with the UK being an EU member until 2020 (Álvarez López, 2024). Moreover, the majority of studies and initiatives came from Western Europe, with none reported from Central and Eastern European countries. Only five studies were conducted across multiple countries, while only one study included a global HEPA initiative. Considering that the Western European region encompasses the initial EU member countries (Belgium, Germany, France, Italy, Luxembourg and the Netherlands), it may help explain the higher ratio of research in this region (European Commission, 2023). Similarly, in a recent book chapter describing HEPA promotion initiatives in sports setting across European countries, predominantly including grey literature examples, the highest number of initiatives were also from Western European countries (~40%) and conducted within single country rather that across multiple countries simultaneously (Benedičič Tomat et al., 2022). However, in this study Western Europe was followed by Central and Eastern European countries, with approximately 30% of reported initiatives. This suggests that HEPA initiatives in Central and Eastern European region exist but lack empirical support, highlighting the need for more scientific validation of such initiatives in the future. Evidently, there is a need for more international studies in Europe, including various countries from all European regions, especially from regions such as Central and Eastern, as well as Southern Europe, and countries that are not members of EU.

2.4.2. Which research topics are covered in HEPA promotion studies in the European sports setting?

As previously highlighted, there is a need for increased investment of time and resources into researching what could really make population-level changes and long-term differences (Ding et al., 2020). One of the least represented and potentially important topics in this field, as indicated with this scoping review, is the understanding of the determinants of participation in HEPA initiatives. Furthermore, there are no included studies that would report on the factors influencing the commitment of organisations and stakeholders to support and implement HEPA initiatives in sports settings, despite their important role in this context. There are potentially many factors that can influence their willingness and ability to incorporate additional HEPA promotion initiatives. For example, sports organisations often have to compete for governmental, political, community, and media recognition and funding in order to remain active (Thibault et al., 1993), and they may implement initiatives solely to secure funding, regardless of belief in their efficiency (Ricour et al., 2023; Scheerder et al., 2017). Moreover, sports organisations/federations usually have diverse organisational structures and management across different countries (Tokarski et al., 2004), and they may face conflicting situations between governmental (national or European) expectations on one side and the preferences of their sports club members on the other (Scheerder et al., 2017). Other important determinant of initiative's implementation, scaling, and efficiency could be the high diversity of the political demands in different European countries (Breuer et al., 2015). Given the absence of research on what determines HEPA promotion in the European sports sector, and the limited number of studies on factors influencing participants' engagement with the initiative, as well as the relatively low number of studies on topics such as policy or initiatives scaling, it is advisable to cover these topics in future research and practice.

The initiatives most frequently represented in this review have demonstrated successful scaling-up methods by extending their implementation beyond Europe to multiple continents (Barriguete Melendez et al., 2014; Blunt et al., 2017; Fuller et al., 2014; Fuller et al., 2010; Fuller et al., 2011; Fuller et al., 2015; Kwasnicka et al., 2020; Maddison et al., 2019), and to different sports. For example, "Football Fans In Training" initiatives were transferred to rugby and hockey. This suggests that once an initiative gains recognition, it may be adopted in other sports too, facilitating

its spread across the sports setting. Although the high representation of these initiatives in research and their implementation in practice may seem correlated, to the best of my knowledge, there are no studies that supported that claim, warranting further investigation in future. Given the predominance of studies and initiatives focused on football in this review, it is plausible that initiatives focused on highly visible, and economically profitable sports like football may receive greater funding and support from rich organisations. Consequently, this increased support could enhance the efficiency, visibility, media coverage, and scientific interest of these initiatives (Dima, 2015; Dobson & Goddard, 2001). Nonetheless, recent research has demonstrated the health benefits of various sports (Oja et al., 2024) highlighting the need of developing and promoting initiatives involving multiple sports, particularly those proven to be beneficial for health.

Many initiatives are represented by only a single study (Figure 6), indicating a substantial gap in empirical support for numerous active initiatives. This underscores the fact that while many initiatives are or were operational, they lack comprehensive scientific documentation. Hence, it would be wise to scientifically support other active initiatives, including those found in grey literature (Benedičič Tomat et al., 2022; Comic Relief; England Football; National Health Service). One such noteworthy initiative in the sports sector is the SCforH movement, for which no empirical studies met the eligibility criteria for inclusion in this review. However, a book chapter on "SCforH and similar initiatives in Europe" revealed that more than half of various sports-related initiatives at the European level are conducting projects or activities aligned with the SCforH, with 28% of them specifically incorporating SCforH-related principles into their practice (Benedičič Tomat et al., 2022). In Europe, the SCforH initiative has a long history and has been acknowledged as a success story (Pedišić, Oja, et al., 2022). That could enhance its credibility and trust among stakeholders and end users, thereby facilitating acceptance and adoption of the SCforH-related initiatives (Lim et al., 2023). Therefore, future research should aim to empirically validate SCforH initiatives, exploring whether the implementation and awareness of the SCforH ideas and guidelines influence the promotion of HEPA in the sports sector and the effectiveness of specific initiatives.

The review found that only two initiatives were delivered online. Acknowledging the current trend towards increased usage of online setting, as well as the acknowledged potential, appeal and effectiveness of internet-delivered physical activity initiatives (Davies et al., 2012; Jahangiry et al.,

2017; Marcus et al., 2000), it is important to continue developing and evaluating e-HEPA promotion initiatives.

While organisations from various sectors were involved in developing and conducting initiatives, they were rarely included as study samples compared to HEPA initiative participants. Therefore, future studies should evaluate initiatives from the perspectives of diverse stakeholders. Moreover, only two studies involved five or six different organisations simultaneously. However, prior research showed that diverse resources and skills within partnering organisations aid initiative implementation, recruitment, and long-term sustainability (Ooms et al., 2019; Ooms et al., 2015). Similarly, in this review, "networking", "partnership" and "support" were the most represented initiative facilitators, while "resources" and "funding" were the most represented barriers. Thus, involving more organisations from various sectors in future initiative development and implementation could prove beneficial and help overcome barriers.

The mostly commonly used initiative approach was behavioural, which has provided valuable findings in the past (Kahn et al., 2002), but it has limited generalisability (Ding et al., 2020). Given the dominance of behavioural initiatives (Ding et al., 2020), and the low representation of other approaches, this should be addressed in future studies.

The least number of initiatives were directed to all age groups, with only two initiatives targeting individuals with various demographic and socioeconomic characteristics. While initiatives focused on specific groups could facilitate commitment and engagement (K. Hunt et al., 2014; Hunt et al., 2013; Pringle et al., 2014), so does the inclusion of various genders (Fenton et al., 2022) or individuals with different sociodemographic characteristics (Audrey et al., 2012; Mickelsson, 2022; Naul et al., 2012). Previous research has also emphasised the importance of offering new opportunities and modifying existing structures to ensure inclusion and persistence of different populations in physical activity initiatives (Jenkin et al., 2017). However, besides developing initiatives tailored to all, certain groups such as are women or girls, and older adults, should be more represented in future initiatives, especially due to their higher inactivity prevalence rates (Guthold et al., 2018, 2020) and increased health risks (Sallis et al., 2016).

Finally, this review highlighted several key concepts that require attention for future actions: i) improving the evaluation of initiatives, ii) developing simple evaluation tools, and iii) increasing the utilisation of evaluation frameworks in future research. Moreover, consistent with previous

studies (Lim et al., 2023; Ooms et al., 2019), it was found that for an initiative to be successful, it needs to be aligned with the core activities of the club and emphasize common values among all stakeholders involved. Initiatives should avoid being too broad and complex and should be well established in theory to minimise the need for additional adjustments and potential interference from higher-level or political organisations. Additionally, initiatives need to remain focused on the goal of HEPA promotion and avoid becoming politicised.

2.4.3. Strengths and limitations

This review has multiple strengths. Firstly, a thorough search was conducted through various bibliographic databases, including studies from the inception of each database, as well as references from included studies and relevant websites of European initiatives promoting HEPA within sports settings. This approach ensured that no relevant publications were overlooked. Secondly, the review employed a comprehensive search syntax and broad inclusive criteria that enabled covering a wide range of topics related to HEPA promotion in the sports sector in Europe. Thirdly, it included empirical studies on wide array of initiatives from different European countries, supported with references from grey literature, providing a clear overview of current research strategies and relevant topics in this field in Europe.

However, this study also had some limitations. Firstly, the search and extraction processes were carried out by one researcher, which may result in omission of relevant publications or misinterpretation of study results. However, it is important to note that this review was conducted as part of a doctoral theses, which explains why all this work was not performed in duplicate. Secondly, the inclusion criteria were limited to studies published in English, potentially overlooking relevant studies in other languages. Thirdly, a critical appraisal of methodological quality of each specific source of evidence was not conducted, as a wide array of different study methods and designs were employed, making such assessment of study and evidence quality challenging. However, critical appraisal is optional for scoping reviews and is conducted only if it is feasible (Tricco et al., 2018). Finally, an in-depth analysis of key results from specific studies was not conducted, as the primary aim of this scoping review was to provide an overview of the

study methods, research topics, and gaps in the literature. Therefore, such analysis was beyond the scope of this review.

2.5. Conclusion

This scoping review sheds light on the current situation of research in the field of HEPA promotion initiatives in European sports sector. It highlights a need for more longitudinal studies incorporating diverse study sample characteristics, including relevant stakeholders. The geographical representation is predominantly skewed towards Western European region, and EU countries, with a focus on single-country initiatives, indicating a necessity for broader representation across all regions, especially Central and Eastern, non-EU countries, and international initiatives. Future research topics should investigate the determinants of HEPA promotion and initiative participation, as well as explore scaling methods and process development. Currently, there is a high representation of football-related initiatives. Thus, future endeavours should include other sports or multisport initiatives. Additionally, there is a need to explore existing "grey literature" initiatives that lack empirical support. The call for comprehensive settings-based initiatives, encompassing various actor levels and initiatives delivered through the e-based settings, is evident, along with the importance of targeting all population groups, especially those at higher risk of diseases and inactivity. Multisectoral networking and partnerships are recognised as facilitating factors, as well as the alignment with core activities of sports clubs and associations and should be considered in development of future initiatives. Moreover, there is a recognised need for improved initiatives evaluation processes, which should be central to future research actions. These summarised findings provide valuable insights to guide future research in the field of HEPA initiatives in sports setting, aiming to increase understanding and success of future initiatives in addressing high inactivity rates and improving health outcomes.

Chapter 3: Research problems

The systematic scoping review conducted in the field of HEPA promotion within the sports sector in Europe has highlighted several research gaps that need to be addressed in future research and practice endeavours. Despite existing research efforts, many topics remain either unexplored or underrepresented, hindering thorough understanding and efficient implementation of HEPA promotion initiatives. Moreover, an extensive examination of previous research in the evaluation of physical activity promotion initiatives highlights the pressing need for improvement in evaluation methods. Thus, based on findings of scoping review findings and arguments presented in the introduction section, the research problems of this doctoral dissertation are defined and presented below, together with their corresponding explanations.

1. *There is a lack of evidence on the level and correlates of commitment of European sports organisations to promoting HEPA*

The Global Advocacy for Physical Activity (GAPA) (Titze & Oja, 2013) prioritises sport-for-all, and the White Paper on Sport (European Commission, 2007) puts emphasis on HEPA promotion in sports organisations. However, there is a lack of quantitative evidence on the actual commitment of European sports organisations to HEPA promotion. Furthermore, previous studies have primarily focused on determinants and correlates of participation in HEPA initiatives, examined from a perspective of participants in the initiatives. However, there is limited evidence on the correlates of HEPA promotion at the organisational level. Evidence on levels and correlates of HEPA promotion at the organisational level would help inform the development of targeted policies and strategies that are needed to improve the implementation of HEPA promotion initiatives in European sports organisations.

2. *There is a lack of comprehensive and easily applicable instruments for evaluation of educational courses for HEPA promotion*

Various educational HEPA promotion initiatives have been implemented in the European sports sector. However, there is a lack of a comprehensive instruments for evaluation of the quality of such initiatives. While Kirkpatrick's comprehensive framework for evaluation of educational trainings and courses is well accepted in research and practice, a lack of instruments that would enable to apply it in a simple way limits its uptake. Developing such an instrument would enable researchers and practitioners to easily assess different aspects of quality of educational courses, from participant reactions and learning to behaviour change and long-term outcomes. Such an instrument could be applied not just for evaluation of educational HEPA promotion initiatives but also for educational interventions in other domains.

3. *There is no evidence on the participant engagement in and quality of SCforH online educational course for HEPA promotion*

SCforH is the largest European initiative for the promotion of HEPA in the sports setting. However, despite its 15-year-long history, the implementation of SCforH guidelines among European sports organisations is still relatively low. The SCforH online educational course has been developed, to facilitate dissemination of SCforH guidelines by utilising technological advantages and wide accessibility of digital platforms. Although the course has been widely disseminated, no previous studies have evaluated its quality. Also, no previous studies have assessed participant engagement in the course. Insights into participant engagement and quality of the course are needed to inform strategies to make further improvements to the course. In addition, information on differences between participant groups in their engagement in the course and perceived quality of the course would help understand to whom such improvements should be tailored.

Chapter 4: Objectives and hypotheses

The aims of this PhD research project were to:

1. determine the level and correlates of the commitment of sports organisations in Europe to promoting HEPA,

2. develop a simple and generic EDUcational Course Assessment TOOLkit (EDUCATOOL) and determine its measurement properties,

3. evaluate the recently developed SCforH online course through participant's engagement levels and their subjective assessments of the course's quality, and to explore differences by stakeholder type, EU residency status, region of Europe, and prior awareness of the SCforH guidelines.

In relation to the first objective, the following hypotheses were formulated:

- H1: Commitment to promoting HEPA is low in most sports organisations in Europe.

- H2: The type of sports organisation, level of commitment to promoting elite sports, EU membership status, region of Europe in which the organisation is located, and the awareness of SCforH guidelines are significantly associated with the level of commitment to promoting HEPA.

In relation to the second objective, the following hypotheses were formulated:

- H3: The factorial validity of the newly developed questionnaire for evaluation of educational courses is satisfactory.

- H4: The internal consistency reliability of the newly developed questionnaire for evaluation of educational courses is satisfactory.

- H5: The test-retest reliability of the newly developed questionnaire for evaluation of educational courses is satisfactory.

- H6: The convergent validity of the newly developed questionnaire for evaluation of educational courses is satisfactory.

In relation to the third objective, the following hypothesis was formulated:

- H7: Most participants are highly engaged in the SCforH online educational course.

- H8: The quality of SCforH online educational course as perceived by participants is high.

- H9: There are significant differences in participants' engagement in the course and perceived quality of the course among stakeholder types, EU membership statuses, participants from different regions of Europe, and prior awareness of the SCforH guidelines.

Chapter 5: Research study one

Article title

Promotion of health-enhancing physical activity in the sport sector: a study among representatives of 536 sports organisations from 36 European countries

Author names and affiliations

Tena Matolić[1], Danijel Jurakić[1], Hrvoje Podnar[1], Ivan Radman[1], Željko Pedišić[2]

[1]University of Zagreb Faculty of Kinesiology, Zagreb, Croatia

[2]Institute for Health and Sport, Victoria University, Melbourne, Australia

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5.1. Abstract

Background: It is a common belief that most sports clubs and organisations are primarily focused on elite sports while placing less emphasis on the promotion of health-enhancing physical activity (HEPA). However, there is a lack of evidence on this topic in the scientific literature. Therefore, the aim of this study was to determine the level and correlates of the commitment of sports organisations in Europe to HEPA promotion.

Methods: Representatives of 536 sports organisations from 36 European countries responded to our survey. A multiple linear regression analysis was conducted with the commitment of sports organisation to HEPA promotion (0 [“not at all”] – 10 [“most highly”]) as the outcome variable

and organisation type ("national sport association" reference group [ref], "European sports federation", "national umbrella sports organisation", "National Olympic Committee", "national sport-for-all organisation"), headquarters in a EU member state ("no" [ref], "yes"), region of Europe ("Western" [ref], "Central and Eastern", "Northern", "Southern"), commitment to elite sports ("low" [ref], "medium", "high"), and awareness of Sports Club for Health (SCforH) guidelines ("no" [ref], "yes") as explanatory variables.

Results: Approximately three out of four (75.2% [95% CI: 71.5, 78.8]) sports organisations were highly committed to elite sports. Only 28.2% (95% confidence interval [CI]: 24.4, 32.0) of sports organisations reported a high commitment to HEPA promotion. A higher commitment to HEPA promotion was associated with the National Olympic Committees (β = 1.48 [95% CI: 0.41, 2.55], p = 0.007), national sport-for-all organisations (β = 1.68 [95% CI: 0.74, 2.62], p < 0.001), location in Central and Eastern Europe (β = 0.56 [95% CI: 0.01, 1.12], p = 0.047), and awareness of SCforH guidelines (β = 0.86 [95% CI: 0.35, 1.37], p < 0.001).

Conclusion: From our findings, it seems that most sports organisations are primarily focused on elite sports. Coordinated actions at the EU and national levels are needed to improve the promotion of HEPA through sports organisations. In this endeavour, it may be useful to consider National Olympic Committees, national sport-for-all organisations, and relevant sports organisations in Central and Eastern Europe as role models and to raise the awareness of SCforH guidelines.

5.2. Keywords

Europe, Health-enhancing sports, Physical activity, Sports association and sports club, Sports Club for Health Guidelines

5.3. Background

Physical activity has a wide range of benefits for health and well-being (Warburton & Bredin, 2017). It reduces the risk of various chronic diseases, such as coronary heart disease, type 2 diabetes, metabolic syndrome, obesity, and several types of cancer (Warburton & Bredin, 2017).

Even just one hour of MPA per week is associated with a 33% lower risk of mortality (Sabia et al., 2012). Despite these benefits and global efforts to promote physical activity, the global prevalence of not meeting the recommended levels of physical activity is still very high; approximately 27.5% among adults (Guthold et al., 2018) and 81% among adolescents (Guthold et al., 2020). Physical activity promotion is, therefore, one of the key public health priorities globally.

Different settings provide opportunities to engage in physical activity, with sports clubs being among the most represented ones (Koski et al., 2017). While common reasons for participation in sports are enjoyment, social interactions, and weight management (Allender et al., 2006), sports club members may also be elite athletes focused on training at a high load and achieving top-level results in competition (Šmela et al., 2017). In this study, we generally refer to sports participation for recreational purposes.

Epidemiological research has shown a range of health benefits associated specifically with recreational sports participation, including improved aerobic and metabolic fitness, improved cardiovascular function at rest, reduced adiposity, reduced risk of all-cause mortality, and improved psychological health and social well-being (Eime et al., 2013; Oja et al., 2016; Oja et al., 2015; Pedišić et al., 2020). The individuals who play sports in a sports club are more likely to regularly engage in physical activity than others (Eime et al., 2013; Kokko et al., 2019; Nagel et al., 2020), and the participation in sports activities, therefore, significantly contributes to achieving recommended levels of physical activity (Downward et al., 2021; Khan et al., 2012; Kokko et al., 2019). Other benefits of sports for the society include better integration of minorities (Breuer et al., 2015) and people with disabilities (Wicker & Breuer, 2013), as well as improved socialization of older adults, children and adolescents (Eime et al., 2013).

The implementation of sports programmes in the community is considered as one of the “best investments” for population health (Global Advocacy for Physical Activity & the Advocacy Council of the International Society for Physical Activity and Health (ISPAH), 2011). A study conducted in England suggested that encouraging participation in activities of higher intensity among females, preventing reduction in exercise intensity associated with ageing among males, and providing adequate facilities are key policy challenges for HEPA promotion through sports (Downward & Rasciute, 2015).The sports clubs may play an important role in addressing these and other challenges in health promotion, because of their high population reach (Kokko et al., 2006;

Meganck et al., 2017) and a range of health benefits associated with sports club participation (Barbry et al., 2022; Eime et al., 2010). Therefore, sports clubs are deemed as a suitable setting for HEPA promotion (Kokko, 2014; Koski et al., 2017).

In some countries, such as the UK, sport and physical activity policies seem to have a twofold focus on top-level performance in competitions and 'active citizens' (Green, 2006). Activities that generate more economic benefits are likely to receive more funding, and elite sport is often perceived as more "valuable" in this regard (Downward, 2010; Green, 2006). Such perception may facilitate the development of professional sports clubs (Houlihan & Green, 2011), while limiting opportunities for mass sport participation. Complementarity between elite sport development and the promotion of 'sport-for-all' is often discussed, especially at the political level (Grix & Carmichael, 2012) but it should not necessarily be assumed. Even in countries with national policies that promote such complementarity, sports clubs and organisations at the grass-root level may encounter a range of difficulties when trying to achieve and maintain a good balance between elite sports development and HEPA promotion, such as lack of funding, inadequate facilities and equipment, shortage of staff and volunteers, and insufficient "how-to" knowledge (Eime et al., 2010; Green & Houlihan, 2005; Grix & Carmichael, 2012; Hartmann-Tews, 2006; Koski et al., 2017; Wicker & Breuer, 2013).

To help overcome these difficulties, the largest EU initiative for the promotion of HEPA through sports clubs – *Sports Club for Health* (SCforH) – has been in place since 2008. The principles of the SCforH approach and recommended steps for its implementation in sports clubs have been described in the SCforH guidelines (Koski et al., 2017), textbook (Pedišić, Koski, et al., 2021), and online course. In 2013, the Council of the EU recognized the importance of implementing the SCforH guidelines in sports clubs and listed it as one of 23 indicators for evaluation of HEPA promotion in the EU countries. In the White Paper on Sport, the European Commission supported the promotion of sports to achieve a healthy society and emphasized the importance of HEPA promotion as an integral part of sports organisations (European Commission, 2007). Despite the recognition of sports clubs as an important setting for HEPA promotion at the highest political level in the EU (International Olympic Committee, 2020; World Health Organization, 2007, 2016), a recent study found that only 12% of EU citizens are involved in sports and recreational activities within sports clubs (European Commission, 2017).

It is widely considered that most sports clubs and organisations are primarily focused on elite sports and achieving top results in competitions, while placing less emphasis on sport-for-all and HEPA in general (Breuer et al., 2015; Enjolras, 2002; Hartmann-Tews, 2006; Kokko et al., 2011; Nagel et al., 2020). However, no recent quantitative evidence is available to corroborate this widespread assumption, and the actual commitment of sports clubs and organisations to HEPA remains to be elucidated. Such evidence is important from a public health perspective, as it would inform future HEPA promotion policies and initiatives in the sports sector. Therefore, the aim of this study was to explore the level and correlates of commitment of sports organisations in Europe to promoting HEPA.

5.4. Methods

5.4.1. Study design and participants

In 2016/17, we conducted a questionnaire-based, cross-sectional study among representatives of sports organisations from 36 European countries, including 28 EU member states at the time, 4 candidate countries (Albania, North Macedonia, Serbia, and Turkey), Iceland, Monaco, Norway, and Switzerland. Our study sample did not include regional- and local-level organisations. Out of 1717 invited representatives of sports organisations, 536 agreed to participate in the study and responded to the survey. All participants gave informed consent before responding to the survey. The sample included representatives of: European umbrella sports organisations, National Olympic Committees, national sport associations, national sport-for-all organisations, and national umbrella sports organisations. Sample characteristics are presented in Table 1. The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (ref: 102/2016).

5.4.2. Measures

We collected the following data in relation to the participating sports organisations: the type of organisation, the country in which their headquarters are located, the awareness of SCforH guidelines among their representatives, and their level of commitment to promoting different types of physical activity. The awareness of SCforH guidelines was assessed with the question *"Prior to this survey, as a representative of your sports organisation, were you aware of the 'Sports Club for Health Guidelines'?"*. The level of commitment to promoting different types of physical activity data were assessed with the questions: "*Please estimate how much is your sports organisation committed to the promotion of:"* (a) *"Elite sports"*, (b) *"Health-enhancing sports, recreational sports or 'sport-for-all'"*, (c) *"Health-enhancing exercise (for example, Nordic walking, aerobics, gym workout)"*, and (d) *"Health-enhancing lifestyle physical activities (for example, gardening, walking or cycling for transport, stair climbing)",* with the response scale from 0 ("*Not at all*") to 10 ("*Most highly*"). The questions were developed through discussion between three authors (ZP, HP, and IR), and their *a priori* validity was confirmed by 11 experts in physical activity research and promotion, members of the SCforH Consortium. Based on the responses to these four questions, we created two summary variables: commitment to the promotion of elite sports (question "a") and commitment to HEPA promotion (calculated as the arithmetic mean of responses to the questions b, c, and d), with satisfactory inter-rater reliability (intraclass correlation coefficient [ICC] = 0.72 and 0.81, respectively). We additionally determined the EU membership and region of Europe in which the organisation is located. According to EuroVoc (Publications Office of the European Union, 2014 (updated 2024-02-15)), we classified the countries into four regions: Central and Eastern, Western, Southern, and Northern Europe.

5.4.3. Data analysis

We calculated percentages and their 95% confidence intervals (CIs) for "low" (0 – 3), "medium" (4 – 6), and "high" (7 – 10) levels of commitment to HEPA promotion in the overall sample and stratified by the type of organisation, country membership in the EU, region of Europe, commitment to elite sports, and the awareness of SCforH guidelines. Fisher's exact test was used

to test the difference between levels of commitment of sports organisations to HEPA promotion across the strata. The categorisation of commitment to HEPA into "low", "medium", and "high" was used only for the descriptive purposes and tests of differences.

The multiple linear regression analysis was used to examine the relationships between the level of commitment to the promotion of HEPA expressed on the scale from 0 to 10 (dependent variable) and the type of organisation (reference group [ref] = national sport associations), commitment to the promotion of elite sports categorised as "low" (0 – 3), "medium" (4 – 6), and "high" (7 – 10) commitment (ref = "*low commitment*"), EU membership (ref = non-member), region of Europe (ref = Western), and the awareness of SCforH guidelines (ref = "*No*"). We presented unstandardized regression coefficients alongside their 95% confidence intervals (CIs) and p-values. The regression model was checked for normality of residuals using the normal probability plot, for multicollinearity using the variance inflation factors, and for heteroscedasticity using the predicted vs. residuals plot. The statistical significance was tested at $p < 0.05$.

Additionally, we conducted three multiple ordinal logistic regression (proportional odds) analyses, with the above-mentioned set of independent variables and the commitment to the promotion of: (i) HESA; (ii) HEXE; and (iii) HELPA as outcome variables. The dependent variables in these analyses were expressed on the scale from 0 to 10. The ordinal logistic regression analyses were conducted because the multiple linear regression models with these three dependent variables did not meet assumptions for linear regression analysis, particularly in regard to the normality of residuals. For each ordinal regression model, we assessed proportional odds assumption and goodness of fit using the Hosmer-Lemeshow, Brant, Lipsitz, and Pulkstenis-Robinson tests. The descriptive analyses, Fisher's exact tests, and multiple linear regression analysis were performed using RStudio (version 1.4.1103) with "stats" (R Core Team), "pastecs" (Grosjean et al., 2018), and "performance" (Lüdecke et al., 2022) packages. The ordinal regression analyses were performed in RStudio (version 2022.12.0+353 "Elsbeth Geranium" Release) with "MASS" (Ripley et al., 2023), "brant" (Schlegel & Steenbergen, 2022), and "generalhoslem" (Jay, 2022) packages.

5.5. Results

Approximately three out of four (75.2% [95% CI: 71.5, 78.8]) sports organisations reported a high commitment to elite sports. Less than one third (28.2% [95% CI: 24.4, 32.0]) of sports organisations reported a high commitment to HEPA promotion (Table 1). We found significant (unadjusted) differences in the commitment to HEPA promotion by the type of organisation ($p < 0.001$), the level of commitment to elite sports ($p = 0.031$), and the awareness of SCforH guidelines ($p < 0.001$). The highest percentage of sports organisations with a low commitment to HEPA promotion was found among national sport associations (34.8% [95% CI: 30.4, 39.2]), European umbrella sports federations (38.5% [95% CI: 12.0, 64.9]), the organisations that were highly committed to the promotion of elite sports (34.0% [95% CI: 29.4, 38.6]) and the organisations whose representatives were not aware of the SCforH guidelines (35.7% [95% CI: 31.1, 40.3]).

Table 1: The commitment of sports organisations in Europe to the promotion of health-enhancing physical activity (HEPA)

Category	*n*[a] (%)	Commitment to HEPA promotion; % (95% CI)[b]			*p*[c]
		Low	Medium	High	
Overall sample	536 (100)	32.1 (28.1, 36.0)	39.7 (35.6, 43.9)	28.2 (24.4, 32.0)	< 0.001
Type of organisation					
National sport associations	451 (84.1)	34.8 (30.4, 39.2)	42.1 (37.6, 46.7)	23.1 (19.2, 26.9)	
European umbrella sports federations	13 (2.4)	38.5 (12.0, 64.9)	30.8 (5.7, 55.9)	30.8 (5.7, 55.9)	
National umbrella sports organisations	12 (2.2)	25.0 (0.5, 49.5)	25.0 (0.5, 49.5)	50.0 (21.7, 78.3)	< 0.001
National Olympic Committees	20 (3.7)	20.0 (2.5, 37.5)	25.0 (6.0, 44.0)	55.0 (33.2, 76.8)	
National sport-for-all organisations	40 (7.5)	7.5 (-0.7, 15.7)	27.5 (13.7, 41.3)	65.0 (50.2, 79.8)	
European Union					
No	68 (12.7)	32.4 (21.2, 43.5)	45.6 (33.8, 57.4)	22.1 (12.2, 31.9)	0.430
Yes	468 (87.3)	32.1 (27.8, 36.3)	38.9 (34.5, 43.3)	29.1 (24.9, 33.2)	
Region[d]					
Western Europe	148 (27.6)	37.2 (29.4, 44.9)	35.8 (28.1, 43.5)	27.0 (19.9, 34.2)	0.089
Central and Eastern Europe	145 (27.1)	26.2 (19.0, 33.4)	42.1 (34.0, 50.1)	31.7 (24.1, 39.3)	

Northern Europe	155 (28.9)	34.2 (26.7, 41.7)	44.5 (36.7, 52.3)	21.3 (14.8, 27.7)	
Southern Europe	88 (16.4)	29.5 (20.0, 39.1)	34.1 (24.2, 44.0)	36.4 (26.3, 46.4)	
Commitment to elite sports					
Low	55 (10.3)	25.5 (13.9, 37.0)	29.1 (17.1, 41.1)	45.5 (32.3, 58.6)	
Medium	78 (14.6)	26.9 (17.1, 36.8)	41.0 (30.1, 51.9)	32.1 (21.7, 42.4)	0.031
High	403 (75.2)	34.0 (29.4, 38.6)	40.9 (36.1, 45.7)	25.1 (20.8, 29.3)	
Awareness of SCforH[e] guidelines					
No	420 (78.4)	35.7 (31.1, 40.3)	41.0 (36.2, 45.7)	23.3 (19.3, 27.4)	< 0.001
Yes	116 (21.6)	19.0 (11.8, 26.1)	35.3 (26.6, 44.0)	45.7 (36.6, 54.8)	

a Number of sports organisations
b Percentage of sports organisations with a low, medium, or high level of commitment to the promotion of HEPA and its 95% confidence interval
c P-value from the Fisher's exact test
d Region of Europe according to EuroVoc
e Sports Club for Health

The multiple linear regression analysis, adjusted for all independent variables in the model, showed that the commitment of sports organisations to HEPA promotion is associated with the type of organisation, the region of Europe in which the organisation was located, and the awareness of SCforH guidelines (Table 2). The National Olympic Committees (β = 1.48 [95% CI: 0.41, 2.55], p = 0.007) and the national sport-for-all organisations (β = 1.68 [95% CI: 0.74, 2.62], $p < 0.001$) were significantly more committed to HEPA promotion than national sport associations (ref). The sports organisations in Central and Eastern Europe were significantly more committed to HEPA promotion, compared with the sports organisations in Western Europe (β = 0.56 [95% CI: 0.01, 1.12], p = 0.047). The awareness of SCforH guidelines was associated with a higher commitment of the sports organisation to HEPA promotion (β = 0.86 [95% CI: 0.35, 1.37], $p < 0.001$).

Table 2: Correlates of the commitment of sports organisations in Europe to the promotion of health-enhancing physical activity (HEPA): results of a multiple linear regression analysis

Independent variables	*B* (95% CI)[a]	*p*[b]
Type of organisation		
National sport associations	*Ref*[c]	
European umbrella sports federations	0.86 (-0.48, 2.20)	0.206
National umbrella sports organisations	0.51 (-0.87, 1.89)	0.471
National Olympic Committees	1.48 (0.41, 2.55)	0.007
National sport-for-all organisations	1.68 (0.74, 2.62)	< 0.001
European Union		
No	*Ref*[c]	
Yes	-0.17 (-0.79, 0.44)	0.577
Region[d]		
Western Europe	*Ref*[c]	
Central and Eastern Europe	0.56 (0.01, 1.12)	0.047
Northern Europe	0.11 (-0.43, 0.65)	0.696
Southern Europe	0.40 (-0.23, 1.03)	0.216
Commitment to elite sports		
Low	*Ref*[c]	
Medium	0.10 (-0.80, 1.00)	0.834
High	-0.42 (-1.23, 0.38)	0.305
Awareness of SCforH[e] ***guidelines***		
No	*Ref*[c]	
Yes	0.86 (0.35, 1.37)	< 0.001

a Unstandardized regression coefficient adjusted for all independent variables listed in the table and its 95% confidence interval
b P-value for the unstandardized regression coefficient
c Reference group
d Region of Europe according to EuroVoc
e Sports Club for Health

Compared with national sports organisations, European umbrella sports federations had a higher commitment to the promotion of HESA, while National Olympic Committees had a higher commitment to the promotion of HEXE and HELPA (Table 3). National sport-for-all organisations and organisations whose representatives were aware of the SCforH guidelines had a higher commitment to all three types of HEPA. Compared with sports organisations from Western Europe, the organisations from Central and Eastern Europe and Southern Europe had a higher commitment to the promotion of HELPA.

Table 3: Correlates of the commitment of sports organisations in Europe to the promotion of health-enhancing sports activity (HESA), health-enhancing exercise (HEXE), and health-enhancing lifestyle physical activities (HELPA): results of three multiple ordinal logistic regression analyses

Independent variables	HESA		HEXE		HELPA	
	OR (95% CI)[a]	*p*[b]	OR (95% CI)[a]	*p*[b]	OR (95% CI)[a]	*p*[b]
Type of organisation						
National sport associations	*Ref*[c]		*Ref*[c]		*Ref*[c]	
European umbrella sports federations	3.70 (1.26, 11.71)	0.019	0.85 (0.29, 2.48)	0.771	1.61 (0.54, 4.69)	0.380
National umbrella sports organisations	1.72 (0.58, 5.28)	0.332	2.14 (0.73, 6.08)	0.156	0.95 (0.35, 2.53)	0.913
National Olympic Committees	2.06 (0.89, 4.86)	0.092	3.02 (1.31, 7.09)	0.010	2.82 (1.27, 6.32)	0.011
National sport-for-all organisations	3.17 (1.52, 6.78)	0.002	3.56 (1.74, 7.43)	0.001	2.44 (1.19, 5.04)	0.015
European Union						
No	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Yes	1.03 (0.66, 1.61)	0.884	0.84 (0.54, 1.30)	0.435	0.81 (0.52, 1.29)	0.376
Region[d]						
Western Europe	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Central and Eastern Europe	1.21 (0.80, 1.82)	0.371	1.36 (0.90, 2.05)	0.142	1.75 (1.16, 2.64)	0.008
Northern Europe	1.40 (0.93, 2.11)	0.103	0.98 (0.65, 1.46)	0.908	0.95 (0.63, 1.42)	0.787
Southern Europe	1.06 (0.66, 1.69)	0.817	1.13 (0.71, 1.81)	0.610	1.67 (1.03, 2.69)	0.037
Commitment to elite sports						
Low	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Medium	0.79 (0.40, 1.57)	0.503	0.87 (0.44, 1.70)	0.675	1.15 (0.60, 2.20)	0.681
High	0.94 (0.49, 1.75)	0.837	0.65 (0.35, 1.20)	0.173	0.64 (0.35, 1.15)	0.133
Awareness of SCforH[e] **guidelines**						
No	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Yes	1.48 (1.01, 2.19)	0.047	1.82 (1.24, 2.67)	0.002	1.78 (1.21, 2.61)	0.003

a Odds ratio adjusted for all independent variables listed in the table and its 95% confidence interval
b P-value for the odds ratio
c Reference group
d Region of Europe according to EuroVoc
e Sports Club for Health

5.6. Discussion

5.6.1. Key findings

The main finding of our study is that less than one third of sports organisations in Europe are highly committed to HEPA promotion. We also found that a higher commitment to HEPA promotion is associated with the National Olympic Committees, national sport-for-all organisations, sports organisations from the Central and Eastern Europe, and the awareness of SCforH guidelines. Most findings for the commitment of sports organisations to specific types of HEPA were in accordance with the findings for overall HEPA.

5.6.2. Level of commitment to HEPA promotion

Our findings suggest that the potential for health promotion through sports organisations is still underutilized. It may be that sports clubs lack the necessary resources, such as funding, adequate facilities, volunteers, and staff, to effectively implement both HEPA and elite sport programmes (Downward & Rasciute, 2015). Consequently, they may be unable to provide the necessary opportunities for widespread community involvement in their activities (Downward & Rasciute, 2015). It has been suggested that prioritising investments in elite sports may have a negative impact on investments in 'sport-for-all' (Green & Houlihan, 2005). Also, the historical orientation of sports organisations to professional sports and achieving their core "obligation" of winning medals in competitions (Green & Houlihan, 2005; Hartmann-Tews, 2006) may limit their commitment to 'sport-for-all'.

With sports for health becoming more and more important topic on the political agenda, the complementarity between elite sport development and the promotion of 'sport-for-all' is increasingly discussed (Grix & Carmichael, 2012). The complementarity of elite sports and 'sport for all' assumed in the "virtuous cycle of sport" and the "pyramid theory" has been questioned (De Bosscher & van Bottenburg, 2011; Grix & Carmichael, 2012). While some authors have put forward arguments for a divergent development of elite sports and 'sport-for-all' (De Bosscher &

van Bottenburg, 2011), others suggest there is evidence of some complementarity between the two (Grix & Carmichael, 2012). Nevertheless, striking the right balance between the investments in elite sport and 'sport-for-all' is needed to improve HEPA promotion, regardless of the level of their complementarity.

Previous research has shown that SCforH programs were implemented in only seven EU countries in 2015 (Breda et al., 2018) and in only six EU countries in 2018 (Whiting et al., 2021), which may partially explain the relatively low percentage of European sports organisations in our sample that were highly committed to HEPA promotion. While EU policies emphasize the importance of HEPA promotion through sports clubs and organisations, it may be that this has not been adequately addressed in national-level policies in all member states. Improvements in national physical activity policies may be needed to facilitate the promotion of HEPA through sports organisations. It is worth emphasising that several factors may influence the development, implementation, and impact of sport policies in a given country, and that they may differ between countries, making policy convergence a challenging task (Houlihan, 2012). Differences in national policies and structure of the sports system may explain variability in sport participation rates across different countries (Hallmann & Petry, 2013). Therefore, when developing national policies relevant to HEPA promotion through sports clubs, policymakers should consider examples of good policies and organisational structures from the countries with higher sport participation rates.

5.6.3. Correlates of the commitment of sports organisations to HEPA promotion

We found that the organisations from Central and Eastern Europe have a higher overall commitment to HEPA promotion than the sports organisations from Western Europe, while the organisations from Southern Europe had a high commitment to HESA. This is in contrast to the findings of Breuer et al. (2015) study suggesting that the Central and Eastern European as well as Southern countries are oriented more towards elite sports and less towards other benefits and values of sports, compared with the Western European countries. However, it should be noted that the Breuer et al. (2015) study included only four Central and Eastern European countries; namely, Czech Republic, Hungary, Poland, and Slovenia, and only three Southern countries: Greece, Italy, and Spain. It may be that our findings are different because they reflect the situation in a wider

range of countries in the region. During the communist era in these countries, sport was controlled exclusively by the governments, and, according to Breuer et al. (2015), they favoured elite sport and used it to build their country's international reputation. However, after the World War II, the "Soviet concept of physical culture" was also very popular in this European region (Foldesi, 1991). The concept addressed population health and recreation through physical education, health literacy, hygiene, competitive sport, and sport-for-all (Riordan, 1986). It is possible that sports organisations in Central and Eastern Europe inherited these historical values, which would explain their higher commitment to HEPA promotion found in our study. From our analyses, it seems that the higher overall commitment of sports organisations from Central and Eastern Europe to HEPA is mainly due to their higher commitment to HELPA.

Our findings also suggest that the National Olympic Committees and sport-for-all organisations have the highest overall commitment to HEPA promotion, while the European umbrella sports federations had a high commitment to the promotion of HESA. This was expected due to their jurisdiction and scope of activities. For example, the primary vision of TAFISA, which is reflected in the visions of many national sport-for-all organisations, is that all people should have access to physical activity that is necessary to achieve a healthy lifestyle (TAFISA General Assembly, 2017). The National Olympic Committees operate in accordance with the recent Olympic agenda that recommends to strengthen the role of sports in reaching the UN Sustainable Development Goals by supporting social and health development through increased sports participation (International Olympic Committee, 2020). Another possible explanation for the higher commitment of National Olympic Committees to HEPA promotion is that for larger organisations it may be easier commit to both elite and recreational sports, due to their available resources (e.g. membership, funding, and employed staff) (Casey et al., 2012). A similar assumption was also made when comparing HEPA promotion in larger and smaller sports clubs (Breuer et al., 2015). There is a widely held belief that hosting major sporting events and having national teams that perform well at such events would facilitate higher sport participation in the population (Grix & Carmichael, 2012). However, the empirical evidence to support this belief is questionable (Grix & Carmichael, 2012). In their attempt to increase sports participation in the population, it is possible that Olympic committees therefore put increased emphasis on alternative strategies, such as promoting HEPA through sports clubs.

The association between the awareness of SCforH guidelines and a higher commitment of sports organisations to HEPA promotion indicates the importance of disseminating the SCforH guidelines in Europe and confirms the significance of this indicator in the Council Recommendations. This is in accordance with previous findings from the public health sector showing that practical guidelines and initiatives can lead to positive changes (Pronk, 2021; Schuster et al., 2008). Policymakers should aim to improve the commitment of sports organisations to HEPA promotion by issuing policies and increasing funding that would support a wide adoption of the SCforH approach.

5.6.4. Implications for policy and practice

Our findings may inform the development and/or refinement of EU- and national-level physical activity policies and practices of sports organisations in relation to HEPA promotion. In specific, National Olympic Committees and sport-for-all organisations can be used as models for HEPA promotion in other types of sports organisations. This should be done by taking into consideration that their approaches to HEPA promotion may need to be adapted to better align with the aims and scope of other types of sports organisations. A number of examples of good practice of HEPA promotion through sports organisations are likely to be found among the countries in Central and Eastern Europe. However, it should be taken into account that the way HEPA promotion through sports organisations is facilitated should be tailored to the specific political, socioeconomic, and cultural context in the given country. The commitment of sports organisations to HEPA promotion could also be increased by raising the awareness and utilisation of SCforH guidelines among their representatives. The recommended approaches for implementation of SCforH guidelines in sports organisations have been described elsewhere (Koski et al., 2017; Sports Club for Health Consortium, 2020a).

5.6.5. Strengths and limitations

The key strengths of this study include: (1) quantitative assessment of the commitment of sports organisations to promoting different types of physical activity, which allowed us to analyse its

correlates; (2) study sample that included the representatives of sports organisations, which ensured that the participants have adequate knowledge and/or access to information needed to complete the survey; and (3) large and diverse sample size including 536 sports organisations from 36 European countries, which allowed us to make comparisons by the type of organisation and by the region and EU membership of the country in which the organisation is located.

The study had four key limitations. First, its cross-sectional design prevented drawing conclusions about the direction of causality between the variables. For example, it is possible that a higher awareness of SCforH guidelines was either a cause or a consequence of a higher commitment to the HEPA promotion, or that the relationship between these variables was bidirectional. Our findings should therefore be taken with caution and further investigated in longitudinal and intervention studies. Second, other characteristics of sports organisations that were not assessed in our survey may be associated with the commitment to HEPA promotion. Therefore, there is a possibility that our findings are affected by residual confounding. Future studies on this topic should aim to include a wider range of explanatory variables in their analyses. Third, the study sample did not include sports organisations from all European countries, which may limit the generalizability of our findings. Fourth, the level of commitment to specific types of physical activity may vary across different countries. However, we could not include all countries as independent variables in the regression model, because our sample was too small and that would significantly increase the probability of type 2 error. Therefore, we grouped countries into four regions.

5.7. Conclusion

From our findings, it seems that most sports organisations are highly committed to elite sports. Only one third of sports organisations in Europe are highly committed to HEPA promotion. Given that increasing the population levels of physical activity is one of the key public health priorities in Europe, coordinated actions at the EU and national levels are needed to improve the promotion of HEPA through sports organisations. This should include various stakeholders in the sports sectors, such as representatives of sports clubs and associations, HEPA researchers and promoters, policymakers in the areas of health and sport, and tertiary education teachers and students of sport

and exercise science, physical education, and health promotion. In this endeavour, it may be useful to consider National Olympic Committees, national sport-for-all organisations, and relevant sports organisations in Central and Eastern Europe as role models and raise the awareness of SCforH guidelines among the representatives of sports organisations. Future research should examine other possible strategies to facilitate HEPA promotion through sports clubs, especially initiatives by policymakers at the EU and national levels aimed to improve sport policies and ways to ensure a better balance between funding for elite sports and 'sport-for-all'.

5.8. Declarations

5.8.1. Ethics approval and consent to participate

The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (ref: 102/2016). The participation in the study was voluntary and all participants gave informed consent before responding to the survey. The study was conducted in accordance with the Declaration of Helsinki.

5.8.2. Competing interests

The authors have no conflicts of interest relevant to this article.

5.8.3. Funding

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5.8.4. Authors' contributions

Željko Pedišić, Danijel Jurakić, and Tena Matolić conceptualised the study. Željko Pedišić, Hrvoje Podnar, and Ivan Radman designed and conducted the survey. Tena Matolić and Željko Pedišić analysed the data and interpreted the results. Tena Matolić drafted the manuscript. All authors contributed to writing the manuscript and approved all its versions.

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5.8.6. Author disclaimer

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Chapter 6: Research study two

Article title

Development and validation of the EDUcational Course Assessment TOOLkit (EDUCATOOL) – a 12-item questionnaire for evaluation of training and learning programmes

Author names and affiliations

Tena Matolić[1], Danijel Jurakić[1], Zrinka Greblo Jurakić[2], Tošo Maršić[3], Željko Pedišić[4]

1 Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia

2 Faculty of Croatian Studies, University of Zagreb, Zagreb, Croatia

3 Faculty of Kinesiology, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia

4 Institute for Health and Sport, Victoria University, Melbourne, Australia

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6.1. Abstract

Introduction: The instruments for evaluation of educational courses are often highly complex and specifically designed for a given type of training. Therefore, the aims of this study were to develop a simple and generic EDUcational Course Assessment TOOLkit (EDUCATOOL) and determine its measurement properties.

Methods: The development of EDUCATOOL encompassed: (1) a literature review; (2) drafting the questionnaire through open discussions between three researchers; (3) Delphi survey with five content experts; and (4) consultations with 20 end-users. A subsequent validity and reliability study involved 152 university students who participated in a short educational course. Immediately after the course and a week later, the participants completed the EDUCATOOL post-course questionnaire. Six weeks after the course and a week later, they completed the EDUCATOOL follow-up questionnaire. To establish the convergent validity of EDUCATOOL, the participants also completed the "Questionnaire for Professional Training Evaluation".

Results: The EDUCATOOL questionnaires include 12 items grouped into the following evaluation components: (1) reaction; (2) learning; (3) behavioural intent (post-course) / behaviour (follow-up); and (4) expected outcomes (post-course) / results (follow-up). In confirmatory factor analyses, comparative fit index (CFI = 0.99 and 1.00), root mean square error of approximation (RMSEA = 0.05 and 0.03), and standardised root mean square residual (SRMR = 0.07 and 0.03) indicated adequate goodness of fit for the proposed factor structure of the EDUCATOOL questionnaires. The intraclass correlation coefficients (ICCs) for convergent validity of the post-course and follow-up questionnaires were 0.71 (95% confidence interval [CI]: 0.61, 0.78) and 0.86 (95% CI: 0.78, 0.91), respectively. The internal consistency reliability of the evaluation components expressed using Cronbach's alpha ranged from 0.83 (95% CI: 0.78, 0.87) to 0.88 (95% CI: 0.84, 0.92) for the post-course questionnaire and from 0.95 (95% CI: 0.93, 0.96) to 0.97 (95% CI: 0.95, 0.98) for the follow-up questionnaire. The test-retest reliability ICCs for the overall evaluation scores of the post-course and follow-up questionnaires were 0.87 (95% CI: 0.78, 0.92) and 0.91 (95% CI: 0.85, 0.94), respectively.

Conclusion: The EDUCATOOL questionnaires have adequate factorial validity, convergent validity, internal consistency, and test-retest reliability and they can be used to evaluate training and learning programs.

6.2. Keywords

Training evaluation, Course quality, Learning effectiveness, Kirkpatrick model, Educational programs

6.3. Introduction

Learning is one of the key components of daily time use across the world (Charmes, 2015). According to time-use surveys conducted in 37 countries, between 15% and 69% of adults aged 25 – 64 years participate in learning programs (OECD, 2023). Training, learning, and educational courses and programs (hereafter referred to as "educational courses") have multifaceted benefits for individuals and organisations (Kraiger, 2008). Educational courses are commonly developed to improve subject-specific knowledge, increase work productivity, promote healthy lifestyle, or encourage pro-environmental behaviours (Arthur et al., 2003; Beinicke & Bipp, 2018; Cavallo et al., 2014; Dusch et al., 2018; Hauser et al., 2020; Hughes et al., 2016; Kahn et al., 2002; McColgan et al., 2013).

Educational courses need to be evaluated, to determine their quality and potential areas of improvement (Arthur et al., 2003; Kraiger, 2008; Wilkes & Bligh, 1999). The recommended ways of evaluating educational courses have evolved over time (Bell et al., 2017), and they now involve complex processes necessitating the use of scientifically grounded and standardised methods (Guskey, 2000). For this purpose, over the past 80 years, various frameworks for the evaluation of educational courses have been developed (Moseley & Dessinger, 2009; Perez-Soltero et al., 2019; Shelton, 2011; Stufflebeam & Coryn, 2014; Tamkin et al., 2002).

The Kirkpatrick's evaluation framework (Kirkpatrick & Kirkpatrick, 2006) is widely used to guide the assessment of educational courses, both in research and practice (Moreau, 2017). Its most recent version, "The New World Kirkpatrick model" (Kirkpatrick & Kirkpatrick, 2016), incorporates evaluation of participants' reactions to education, learning quality, behavioural change, and the effects/results of education.

The available instruments that can be used to evaluate educational courses based on Kirkpatrick's model are often highly complex and specifically designed for a given type of training (Kraiger, 2008; Thielsch & Hadzihalilovic, 2020). Therefore, their application may require a substantial amount of time while being limited in scope (Grohmann & Kauffeld, 2013). In addition, literature reviews have shown that educational course evaluation commonly focuses only on the first two "levels" of Kirkpatrick's framework, that is, reaction and learning (Hughes et al., 2016; McColgan et al., 2013; Reio et al., 2017). This is also supported by the data in the "*Association for Talent*

Development's report" from 2016 where talent development professionals reported that reaction was evaluated in 88%, learning in 83%, behaviour in 60%, and results in 35% of their organisations (Ho, 2016). Possible reason for this is a lack of generic instruments that would be applicable to a wide spectrum of educational courses.

Therefore, the aims of this study were to: (1) develop a simple and generic questionnaire for the evaluation of educational courses by assessing respondents' reactions to education, learning quality, behavioural change, and the effects/results of education; and (2) determine its validity and reliability.

6.4. Materials and methods

6.4.1. Development of EDUCATOOL

The EDUCATOOL was developed in four stages, from March to November 2021.

Literature review

In the first stage of EDUCATOOL development, we conducted a comprehensive literature review to identify existing conceptual frameworks and questionnaires used to evaluate educational courses. This included searches in five bibliographic databases: SPORTDiscus (through EBSCOHost), APA PsycInfo (through EBSCOHost), Web of Science core collection (including Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Conference Proceedings Citation Index – Social Science & Humanities, Book Citation Index – Social Sciences & Humanities), Google Scholar, and Scopus. Full-texts of 150 publications were reviewed, and findings from 40 relevant books and studies were summarised and considered before drafting the questionnaire (Appendix B2: Relevant studies from the literature review that were considered in the development of EDUCATOOL).

Drafting the questionnaire

Based on discussions guided by the literature review, in the second stage, three researchers (TM, ŽP, DJ) created the first draft of EDUCATOOL. The toolkit consisted of two complementary questionnaires (post-course and follow-up questionnaires) (Pedišić et al., 2023b), user guide (Pedišić et al., 2023b), and a Microsoft Excel spreadsheet for data cleaning and processing (i.e. EDUCATOOL calculator) (Pedišić et al., 2023a). The post-course questionnaire was designed to capture participants' immediate feedback, and it is meant to be administered immediately upon the completion of the educational course. The follow-up questionnaire was designed to evaluate longer-term impacts of the course, and it is meant to be administered preferably 1 - 6 months after completing the course.

Delphi survey with content experts

The Delphi method ─ a systematic, iterative process aimed at achieving expert consensus ─ was used in the third stage of questionnaire development, to improve the initial version of EDUCATOOL. The Delphi panel included five experts in the following fields: (1) survey design and psychometrics; (2) evaluation of educational courses; (3) education and training; (4) psychology; and (5) English language. An independent researcher, who was not involved in the Delphi panel, served as a moderator of the process. Before each round of the survey, the moderator distributed anonymous questionnaire and supplementary files (i.e. EDUCATOOL instructions, questionnaires, and calculator) to the panel members. Between the survey rounds, the moderator carefully considered suggestions from the panel and modified the documents accordingly. Three rounds of Delphi survey were conducted, before achieving a consensus among the experts on the purpose, content, and wording of EDUCATOOL.

Consultations with end-users

In the fourth stage, we initiated a consultative process aimed at further refinement of EDUCATOOL. The consultations involved 20 individuals, potential end-users of EDUCATOOL, including: (1) professionals involved in the development, delivery, and evaluation of educational courses; (2) educators in secondary and tertiary degree courses (3) researchers; and (4) managers

of private businesses that conduct educational courses. The potential end-users were asked to review the EDUCATOOL questionnaires, instructions, and calculator and provide suggestions on how to improve them. Based on their feedback, we made final modifications to the documents.

6.4.2. Assessing reliability and validity of EDUCATOOL

Study design

To simulate a scenario in which individuals attend an educational course and then evaluate it using EDUCATOOL, we asked the participants in our study to engage in the SCforH online course (Sports Club for Health Consortium, 2020a). The topic of SCforH online course is how to improve the quality and availability of health-enhancing sports programmes through sports clubs and associations. The course consists of seven units, including videos, interactive infographics, and quizzes. It usually takes between 20 and 30 minutes to complete the course. The SCforH online course has been included in the curriculum of several tertiary degree courses in Europe.

In October 2022, the participants completed the SCforH online course. Immediately after the course, they completed the EDUCATOOL post-course questionnaire. One week later, the post-course questionnaire was re-administered to participants to enable evaluating its test-retest reliability. Six weeks after the course, the participants completed the EDUCATOOL follow-up questionnaire. A week later, the participants were asked to complete the follow-up questionnaire again, to enable assessing its test-retest reliability. On all four survey occasions, the participants were also asked to complete the "Questionnaire for Professional Training Evaluation" (Grohmann & Kauffeld, 2013), to enable evaluation of convergent validity of EDUCATOOL post-course and follow-up questionnaires.

Participants

We invited all third-year students from the Faculty of Kinesiology, University of Zagreb, Croatia to participate in the study. They were selected purposefully as the study population, because the SCforH online course is intended for the current and future stakeholders in the sports sector, and it

is one of the learning topics at the third year of Master's of Kinesiology programme at the University of Zagreb. Our goal was to include at least 90 participants in the sample, to ensure a satisfactory width of the 95% confidence interval (CI) of the intraclass correlation coefficient (ICC ± 0.075), assuming an ICC of 0.80, according to the Bonnett's calculation (Bonett & Price, 2002). The final sample consisted of 152 participants. Prior to participation in the study, all participants provided an informed consent. Through the consent form, the participants were informed that: (1) the participation in the survey is voluntary; (2) they are not required to respond to all questions; (3) they may withdraw from the study at any time without providing a reason for withdrawal and without any consequences; (4) we will not collect any personal information other than their email address; (5) their individual responses will be kept confidential; and (6) the collected data will only be used for research purposes and published collectively, that is, as a summary of responses from all participants. The study protocol was approved by the Ethics Committee of the Faculty of Kinesiology, University of Zagreb (number: 10/2021).

Measures

The EDUCATOOL post-course and follow-up questionnaires included 12 items each, asking about: (1) satisfaction with the course; (2) relevance / usefulness of the course; (3) level of engagement in the course; (4) acquisition of new knowledge through the course; (5) retention of knowledge acquired through the course; (6) development of new skills through the course; (7) retention of skills that were developed through the course; (8) increase in the interest in the subject of the course; (9) use of the knowledge acquired in the course; (10) use of the skills developed in the course; (11) improvements in personal performance; and (12) wider benefits of the course. The items were grouped into the following evaluation components: (1) reaction (items 1-3); (2) learning (items 4-8); (3) behavioural intent (post-course) / behaviour (follow-up; items 9-10); and (4) expected outcomes (post-course) / results (follow-up; items 11-12). All items (i.e. statements) in the questionnaire were positive, to avoid possible issue with double negation in responses.

The Questionnaire for Professional Training Evaluation included 12 items asking about six factors (i.e. satisfaction, utility, knowledge, application to practice, individual results, and global results) grouped into four evaluation components: reaction; learning; behaviour; and organisational results. Details about the questionnaire can be found elsewhere (Grohmann & Kauffeld, 2013). Previous

research has shown that the Questionnaire for Professional Training Evaluation has good discriminant validity and internal consistency reliability (Cronbach's α = 0.79 to 0.96) (Grohmann & Kauffeld, 2013). For the purpose of this study, we slightly modified the original wording of the items, so that the questionnaire can be administered immediately after the course.

In both questionnaires, participants were asked to provide their responses on an 11-point Likert scale ranging from 0 ("completely disagree") to 10 ("completely agree"). The evaluation component scores for both questionnaires were calculated as the arithmetic means of the respective questionnaire items, while the overall evaluation score was calculated as the sum of evaluation components. The questionnaires were administered in English, because we were interested in the measurement properties of the original, English version of EDUCATOOL.

Data analysis

To evaluate the factorial validity of the proposed 4-factor model, we conducted a confirmatory factor analysis using weighted least squares means and variance adjusted estimation. This method has been proposed for ordinal Likert-type data and it does not assume normal distribution of data (Beauducel & Herzberg, 2006; Brown, 2015). The model fit was assessed based on the following fit indices: (i) the scaled chi-square test; (ii) the comparative fit index (CFI); (iii) the root mean square error of approximation (RMSEA), and (iv) the standardised root mean square residual (SRMR). The chi-square test p-value < 0.05 was considered to indicate a lack of good fit (Bollen & Stine, 1992; Kline, 2023), while CFI ≥ 0.95 (Hu & Bentler, 1999), RMSEA ≤ 0.06 (Steiger, 2007), and SRMR ≤ 0.08 (Hu & Bentler, 1999) were considered to indicate adequate model fit. We also calculated factor loadings for all questionnaire items and assessed them against the conservative threshold of 0.60 (Matsunaga, 2010). The internal consistency reliability of evaluation components and overall score was expressed using the Cronbach's alpha coefficient and its 95% CI. Convergent validity and test-retest reliability were expressed using the two-way mixed model intraclass correlation coefficient, type [A, 1], case 3A according to McGraw and Wong (McGraw & Wong, 1996) (single measure, absolute agreement) and its 95% CI. The data were analysed using RStudio (version 2022.07.1, Build 554) (Posit, 2022) using the packages "lavaan" (Rosseel et al., 2023), "lavaanPlot" (Lishinski, 2022), "MVN" (Korkmaz et al., 2022), "energy" (Rizzo & Szekely, 2022), "psych" (Revelle, 2022), and "boot" (Canty & Ripley, 2021).

6.5. Results

6.5.1. The final version of EDUCATOOL

During the three rounds of Delphi process, 39 changes have been made to EDUCATOOL. At the end of the process, the Delphi panel has reached a complete consensus on its content. EDUCATOOL underwent additional 10 changes as part of the consultations with end-users, and its final version includes: post-course questionnaire (Pedišić et al., 2023b) [(27)]; follow-up questionnaire (Pedišić et al., 2023b); user manual (Pedišić et al., 2023b); and Microsoft Excel spreadsheet for data processing (Pedišić et al., 2023a).

Reaction

For the purpose of the current study, we defined reaction as the degree to which participants find the educational course satisfactory, relevant/useful, and engaging. In the EDUCATOOL questionnaires, satisfaction is assessed with the item *"Overall, I am satisfied with this course"*, relevance with *"I find this course useful"* (post-course questionnaire) or *"This course has been useful to me"* (follow-up questionnaire), and engagement with *"I was fully engaged in this course".*

Learning

For the purpose of the current study, we defined learning as the degree to which participants gain and retain knowledge, develop, and retain skills, and increase their interest in the subject as a result of attending the course. In the EDUCATOOL questionnaires, knowledge acquisition is assessed with the item *"I acquired new knowledge in this course",* knowledge retention with *"I will be able to retain this knowledge over the long term"* (post-course questionnaire) or *"I still possess the knowledge I acquired in this course"* (follow-up questionnaire), skill development with *"This course helped me develop skills"*, skill retention with *"I will be able to retain these skills over the long term*" (post-course questionnaire) or "*I still possess the skills developed in this course"* (follow-up questionnaire), and attitude change with *"Taking this course increased my interest in the subject"*.

Behavioural intent / Behaviour

For the purpose of the current study, we defined behavioural intent and behaviour as the degree to which participants utilise or intend to utilise the knowledge/skills gained in the course. In the post-course questionnaire, utilisation is assessed with the items: "*I will use the knowledge acquired in this course"* and *"I will use the skills developed in this course".* In the follow-up questionnaire, the items are worded: *"I have used the knowledge acquired in this course"* and *"I have used the skills developed in this course".*

Expected outcomes / Results

For the purpose of the current study, we defined expected outcomes and results as the degree to which participation in the course resulted in or is expected to result in improvement of personal performance and other benefits. In the post-course questionnaire, they are assessed with the items: *"Participation in this course will improve my performance (e.g., work performance, academic performance, task-specific performance)"* and "*My participation in this course will result in other benefits (e.g., benefits for my business, institution, or community)*", respectively. In the follow-up questionnaire, the wording of these items is: *"Participation in this course has improved my performance (e.g., work performance, academic performance, task-specific performance)"* and "*My participation in this course resulted in other benefits (e.g., benefits for my business, institution, or community)*".

6.5.2. Measurement properties of EDUCATOOL

Factorial and convergent validity

In the confirmatory factor analysis of the proposed model with four factors including: (1) reaction; (2) learning; (3) behavioural intent (post-course) / behaviour (follow-up); and (4) expected outcomes (post-course) / results (follow-up), all goodness of fit statistics except the scaled chi-

square test indicated adequate fit for the EDUCATOOL post-course and follow-up questionnaires (Table 1). The factor loadings in the confirmatory factor analysis for all items were above the 0.60 threshold, ranging from 0.66 to 0.92 for the post-course questionnaire (Table 2) and from 0.87 to 0.98 (Table 3) for the follow-up questionnaire. Furthermore, when assessed against the Questionnaire for Professional Training Evaluation, the convergent validity of the post-course and follow-up questionnaire was 0.71 (95% CI: 0.61, 0.78) and 0.86 (95% CI: 0.78, 0.91), respectively.

Table 1: Goodness of fit statistics for a four-factor structure of the EDUCATOOL questionnaire items

Goodness of fit	Post-course questionnaire	Follow-up questionnaire
χ^2 (p)*	71.53 (0.015)	97.52 (<0.001)
RMSEA†	0.05	0.03
SRMR‡	0.07	0.03
CFI§	0.99	1.00

* Scaled chi-square (p-value)

† Robust root mean square error of approximation

‡ Standardised root mean square residual

§ Robust comparative fit index

Internal consistency and test-retest reliability

The internal consistency reliability of the EDUCATOOL evaluation components ranged from 0.83 to 0.88 for the post-course questionnaire and from 0.95 to 0.97 for the follow-up questionnaire. The internal consistency reliability of the overall evaluation score from the post-course and follow-up questionnaires was 0.93 and 0.98, respectively (Tables 2 and 3).

The test-retest reliability of the EDUCATOOL post-course questionnaire items ranged from 0.55 (95% CI: 0.39, 0.67) for *knowledge retention* ("I will be able to retain this knowledge over the long term") to 0.77 (95% CI: 0.67, 0.84) for *knowledge utilisation* ("I will use the knowledge acquired in this course"; Table 2). The test-retest reliability of evaluation components ranged from 0.73 (95% CI: 0.62, 0.81) for *expected outcomes* to 0.81 (95% CI: 0.72, 0.87) for *learning*. The test-retest reliability of the overall evaluation score was 0.87 (95% CI: 0.78, 0.92).

The test-retest reliability of the EDUCATOOL follow-up questionnaire items ranged from 0.75 (95% CI: 0.63, 0.83) for *satisfaction* ("Overall, I am satisfied with this course") and *skill retention* ("I still possess the skills developed in this course") to 0.85 (95% CI: 0.77, 0.90) for a*ttitude change* ("Taking this course increased my interest in the subject"; Table 3). The test-retest reliability of evaluation components ranged from 0.80 (95% CI: 0.70, 0.87) for *reaction* to 0.88 (95% CI: 0.82, 0.93) for *learning*. The test-retest reliability of the overall evaluation score was 0.91 (95% CI: 0.85, 0.94).

Table 2: Factor loadings, internal consistency, and test-retest reliability of the EDUCATOOL post-course questionnaire

	Factor loading*	**Cronbach's *α* (95% CI)†**	**ICC (95% CI)‡**
Questionnaire item			
(1) Overall, I am satisfied with this course.	0.82	-	0.72 (0.60, 0.81)
(2) I find this course useful.	0.82	-	0.64 (0.46, 0.76)
(3) I was fully engaged in this course.	0.74	-	0.68 (0.55, 0.77)
(4) I acquired new knowledge in this course.	0.67	-	0.70 (0.58, 0.79)
(5) I will be able to retain this knowledge over the long term.	0.66	-	0.55 (0.39, 0.67)
(6) This course helped me develop skills.	0.77	-	0.75 (0.65, 0.83)
(7) I will be able to retain these skills over the long term.	0.72	-	0.57 (0.42, 0.69)
(8) Taking this course increased my interest in the subject.	0.69	-	0.58 (0.41, 0.70)
(9) I will use the knowledge acquired in this course.	0.87	-	0.77 (0.67, 0.84)
(10) I will use the skills developed in this course.	0.88	-	0.69 (0.56, 0.78)
(11) Participation in this course will improve my performance.	0.92	-	0.69 (0.57, 0.78)
(12) My participation in this course will result in other benefits.	0.87	-	0.66 (0.53, 0.76)
Evaluation component			
Reaction	-	0.84 (0.78, 0.88)	0.74 (0.61, 0.83)
Learning	-	0.83 (0.78, 0.87)	0.81 (0.72, 0.87)
Behavioural intent	-	0.87 (0.81, 0.91)	0.78 (0.68, 0.85)
Expected outcomes	-	0.88 (0.84, 0.92)	0.73 (0.62, 0.81)
Overall evaluation score	-	0.93 (0.91, 0.94)	0.87 (0.78, 0.92)

* Factor loadings on Reaction (items 1-3), Learning (items 4-8), Behavioural intent (items 9-10), and Expected outcomes (items 11-12) from the confirmatory factor analysis

† Internal consistency reliability expressed using Cronbach's alpha coefficient and its 95% confidence interval

‡ One-week test-retest reliability expressed using intraclass correlation coefficient type (A,1) case 3A, according to McGraw and Wong (1996) and its 95% confidence interval

Table 3: Factor loadings, internal consistency, and test-retest reliability of the EDUCATOOL follow-up questionnaire

	Factor loading*	Cronbach's α (95% CI)†	ICC (95% CI)‡
Questionnaire item			
(1) Overall, I am satisfied with this course.	0.92	-	0.75 (0.63, 0.83)
(2) This course has been useful to me.	0.98	-	0.81 (0.71, 0.88)
(3) I was fully engaged in this course.	0.88	-	0.76 (0.64, 0.84)
(4) I acquired new knowledge in this course.	0.87	-	0.77 (0.66, 0.85)
(5) I still possess the knowledge I acquired in this course.	0.92	-	0.84 (0.75, 0.89)
(6) This course helped me develop skills.	0.93	-	0.81 (0.71, 0.87)
(7) I still possess the skills developed in this course.	0.92	-	0.75 (0.63, 0.83)
(8) Taking this course increased my interest in the subject.	0.92	-	0.85 (0.77, 0.90)
(9) I have used the knowledge acquired in this course.	0.95	-	0.81 (0.70, 0.88)
(10) I have used the skills developed in this course.	0.98	-	0.76 (0.64, 0.85)
(11) Participation in this course has improved my performance.	0.98	-	0.78 (0.66, 0.86)
(12) My participation in this course resulted in other benefits.	0.95	-	0.79 (0.68, 0.86)
Evaluation component			
Reaction	-	0.95 (0.93, 0.96)	0.80 (0.70, 0.87)
Learning	-	0.96 (0.95, 0.97)	0.88 (0.82, 0.93)
Behaviour	-	0.97 (0.95, 0.98)	0.81 (0.69, 0.88)
Results	-	0.96 (0.95, 0.97)	0.81 (0.70, 0.88)
Overall evaluation score	-	0.98 (0.97, 0.98)	0.91 (0.85, 0.94)

* Factor loadings on Reaction (items 1-3), Learning (items 4-8), Behavioural intent (items 9-10), and Expected outcomes (items 11-12) from the confirmatory factor analysis

† Internal consistency reliability expressed using Cronbach's alpha coefficient and its 95% confidence interval

‡ One-week test-retest reliability expressed using intraclass correlation coefficient type (A,1) case 3A, according to McGraw and Wong (1996) and its 95% confidence interval

6.6. Discussion

6.6.1. Key findings

The literature review, open discussions between three researchers, Delphi survey with five content experts, and consultations with 20 end-users have informed the development of the EDUCATOOL post-course and follow-up questionnaires. These 12-item questionnaires can be used to evaluate training and learning programs through the assessment of participants' reaction, learning, behavioural intent / behaviour, and expected outcomes / results.

The key finding of this study is that the EDUCATOOL questionnaires have good measurement properties. In specific, our confirmatory factor analyses found a good fit for the proposed factor structure of EDUCATOOL questionnaire items. For both EDUCATOOL questionnaires, we also found adequate convergent validity, internal consistency, and test-retest reliability.

6.6.2. Factorial and convergent validity

Our analyses have confirmed the hypothesised 4-factor structure of EDUCATOOL questionnaire items. The number of factors is in accordance with the Kirkpatrick's evaluation framework (Kirkpatrick & Kirkpatrick, 2006; Kirkpatrick & Kirkpatrick, 2016) that is widely used as a guide for the assessment of educational courses, and with the factor structure of some previous questionnaires in this field (Cassel, 1971; Johnston et al., 2003). In comparison, a previous study found a six-factor structure of the Questionnaire for Professional Training Evaluation, with the factors representing participant satisfaction, perceived utility, gained knowledge, application to practice, individual organisational results, and global organisational results (Grohmann & Kauffeld, 2013). The difference between the two questionnaires in the factor structure is likely due to the differences in the wording and content of their items. For example, unlike the Questionnaire for Professional Training Evaluation, the EDUCATOOL questionnaires ask about the engagement in the course, skill development and utilisation, knowledge and skill retention, and attitude change.

Despite these differences, the convergent validity of EDUCATOOL established against the Questionnaire for Professional Training Evaluation is relatively high, indicating that the

questionnaires assess a similar construct. The convergent validity was higher for the follow-up questionnaire, compared with the post-course questionnaire, which may be attributed to the fact that the original version of the Questionnaire for Professional Training Evaluation is intended to be administered at least four weeks after the educational course. In comparison, the convergent validity of the FIRE-B questionnaire (Thielsch & Hadzihalilovic, 2020), that was developed based on the Kirkpatrick's evaluation framework, was somewhat lower than for EDUCATOOL, ranging from 0.45 to 0.69.

6.6.3. Internal consistency and test-retest reliability

Both EDUCATOOL questionnaires have adequate internal consistency and test-retest reliability, comparable with other questionnaires for course evaluation (Aleamoni & Spencer, 1973; Byrne & Flood, 2003; Niemann & Thielsch, 2020; Royal et al., 2018). The test-retest reliability varied across EDUCATOOL questionnaire items, with the lowest (albeit still satisfactory) ICCs found for the items on knowledge retention, skills retention, and attitude change in the post-course questionnaire. It is possible that some participants overestimated or underestimated their knowledge/skills retention and attitude change immediately after the course (i.e. at the time of the first survey), while they were able to estimate it more accurately a week later (i.e. at the time of the re-test survey). This possible explanation is supported by the fact that the respective questions in the follow-up survey have somewhat higher test-retest reliability. This explanation is also supported by previous findings on a relatively high level of participant knowledge immediately after the training, which then reduces over time (Ritzmann et al., 2014). Importantly, the resulting evaluation component (*learning*) from the EDUCATOOL post-course questionnaire seems to have a higher test-retest reliability (ICC = 0.81) than the belonging individual items.

In our study sample, the overall evaluation score, the four evaluation components, and all individual items of the EDUCATOOL follow-up questionnaire have shown somewhat higher test-retest reliability, compared with the post-course questionnaire. It is possible that the outcomes of course attendance stabilise over time, making participants more likely to respond to the questionnaire in a consistent manner. It could also be that the follow-up questionnaire captures more stable aspects of educational experience which are less likely to change over time. These possible explanations are in accordance with the findings of previous

methodological studies indicating that the questions about the past generally have higher reliability than the questions pertaining to the present and future (Tourangeau, 2021). The overall evaluation score and four evaluation components of the EDUCATOOL follow-up questionnaire also seem to have somewhat higher internal consistency reliability, compared with the post-course questionnaire.

6.6.4. Implications for research and practice

The generic wording of EDUCATOOL questionnaire items will enable its use for the evaluation of different types of educational courses (e.g. online or face-to-face, professional or recreational, long or short) across various fields and settings. An additional advantage of EDUCATOOL is its brevity, making it a practical choice for collecting valuable course evaluation data even in situations with limited time available. While EDUCATOOL can provide a good insight into participants' reactions to education, learning quality, behavioural change, and the effects/results of education, for a more comprehensive evaluation, the use of additional methods and evaluation tools may need to be considered. For example, researchers and practitioners may find it relevant to examine different types of interactions in the learning process (Moore, 1989), instructor's effectiveness (Kuo et al., 2014), transfer of learning (Blume et al., 2010), and monetary benefits of course attendance (Phillips & Phillips, 2016), which cannot be assessed directly or in detail using EDUCATOOL.

6.6.5. Strengths and limitations of the study

Our study had the following strengths: (1) a systematic approach used to inform the development of EDUCATOOL; (2) a diverse group of experts involved in the Delphi panel; (3) a large number of potential end-users of the questionnaire who have contributed to the consultation process; and (4) a relatively large number of participants involved in the study of validity and reliability.

Our study had several limitations. First, the study was conducted in a convenience sample, limiting the generalisability of our findings. Future studies should examine measurement

properties of EDUCATOOL in representative samples of various population groups, such as students from various colleges. Second, due to the differences in the factor structure of EDUCATOOL and the Questionnaire for Professional Training Evaluation, in this study we were only able to examine the convergent validity of the overall evaluation score. Future studies should consider exploring the convergent validity of EDUCATOOL also against other questionnaires for evaluation of educational courses. Third, in the study of validity and reliability, the EDUCATOOL questionnaire referred to a single online course; thus, it would be beneficial to further investigate the application of EDUCATOOL in other training areas and with other types of courses. Fourth, the EDUCATOOL questionnaire used in this study was in English and the participants were non-native English speakers. Despite the fact that all participants in our sample had at least nine years of formal education in English as secondary language, it might be that the measurement properties of EDUCATOOL would be somewhat different if the study was conducted among native English speakers.

6.7. Conclusion

The EDUCATOOL post-course and follow-up questionnaires can be used to evaluate training and learning programs through the assessment of participants' reaction, learning, behavioural intent / behaviour, and expected outcomes / results. The novel questionnaires have adequate factorial validity, convergent validity, internal consistency, and test-retest reliability. Given the generic wording of their items, the questionnaires can be used to evaluate different types of courses in various fields. Future studies should examine measurement properties of EDUCATOOL in representative samples of different population groups attending various courses.

6.8. Declarations

6.8.1. Ethics statement

The study was approved by The Ethics Committee of the Faculty of Kinesiology, University of Zagreb (number: 10/2021). The study was conducted in accordance with the local legislation

and institutional requirements. The participants provided their informed consent to participate in this study.

6.8.2. Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

6.8.3. Funding

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6.8.4. Authors' contribution

Tena Matolić: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Validation, Writing – original draft, Writing – review & editing. Danijel Jurakić: Conceptualisation, Methodology, Software, Supervision, Validation, Writing – review & editing. Zrinka Greblo Jurakić: Software, Validation, Writing – review & editing. Tošo Maršić: Software, Validation, Writing – review & editing. Željko Pedišić: Conceptualisation, Methodology, Software, Supervision, Validation, Writing – review & editing.

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6.8.6. Author disclaimer

Views and opinions expressed are those of the authors only and do not necessarily reflect those of the European Union or The European Education and Culture Executive Agency (EACEA). Neither the European Union nor the granting authority can be held responsible for them.

Chapter 7: Research study three

Article title

Raising awareness of the Sports Club for Health (SCforH) guidelines in the sports, higher education, and health promotion sectors: evaluation of an educational online intervention in 34 European countries

Author names and affiliations

Tena Matolić[1], Danijel Jurakić[1], Željko Pedišić[2]

1 Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia

2 Institute for Health and Sport, Victoria University, Melbourne, Australia

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7.1. Abstract

Background: Sports Club for Health (SCforH) is among the largest European initiatives that promotes health through sports clubs. The recently developed SCforH online course has never been empirically evaluated.

Objective: The aims of this study were to: (i) assess participant engagement in the course and course quality; and (ii) explore differences in the engagement levels and subjective assessments of course quality by stakeholder type, EU residency status, region of Europe, and prior awareness of SCforH guidelines.

Methods: The study sample included 840 participants from 34 European countries, who attended the SCforH online course. Using web trigger events, we gathered information on the number of course parts completed and time in course. Course quality was assessed using the 12-item EDUcational Course Assessment TOOLkit (EDUCATOOL) post-course questionnaire, asking about participant's reaction, learning, behavioural intent, and expected outcomes, where scores on the evaluation components were expressed on a scale from 0 to 25 points. The overall evaluation score (0 – 100 points) was calculated as the sum of evaluation components.

Results: The vast majority of participants (92%) completed all 28 parts of the course, and the median time in course was 27.60 minutes (95% confidence interval [CI]: 26.93, 28.27). The medians of all evaluation components were ≥20.00, while the median overall evaluation score was 82.50 (95% CI: 81.11, 83.89). Some aspects of course quality were rated slightly lower by residents of EU countries (compared with residents of non-EU countries), participants from Western Europe (compared with Central and Eastern Europe), and students (compared with representatives of sports clubs and associations; $p < 0.05$ for all).

Conclusions: The level of participant engagement in the SCforH course and quality of the course are high, which demonstrates that this course is an adequate tool for dissemination of SCforH guidelines among various stakeholders in the European sports sector.

7.2. Keywords

Online course, educational course, sport setting, physical activity, exercise, EDUCATOOL

7.3. Introduction

Physical activity is associated with a range of benefits for individuals and society (Warburton & Bredin, 2017). Globally, numerous initiatives have been implemented to raise awareness of the importance of physical activity for health and to promote different types of physical activity. Such initiatives cover different settings, such as workplace, schools, universities, healthcare, community, environment, and sports.

Sports setting has a great potential for physical activity promotion (Koski et al., 2017), because specialised equipment, facilities, skilled staff, structured training programs, and financial support that can be used for this purpose are already available in sports clubs (Downward et al., 2021). Several initiatives have been launched in Europe with the aim to promote physical activity through sports clubs (Lane et al., 2020; Madsen et al., 2020; Ooms et al., 2017), and SCforH is one of the largest such initiatives (Pedišić, Matolić, Bělka, et al., 2022).

By increasing the quality and availability of "sport-for-all" programs in sports clubs, the SCforH initiative may contribute to improving population health in Europe (Koski et al., 2017).

The initiative targets the stakeholders in the sports sector, such as sports club managers, sport coaches, sports promoters, policymakers, physical educators, and sports club members. It relies on the existing resources in sports clubs and associations, including their infrastructure, personnel, and 'know-how', to maximise the potential of the European sports sector to promote HESA among all age groups. Since 2008, when the SCforH idea was publicly presented for the first time, the EU co-funded three large international SCforH projects that involved a total of 38 partner institutions from 18 countries (Pedišić, Oja, et al., 2022). In 2009, the first version of SCforH guidelines were published to provide guidance to stakeholders in the sports sector on promoting HESA through sports clubs. The guidelines were updated in 2011 and 2017 (Pedišić, Oja, et al., 2022), and the latest book of guidelines has been made publicly available in five languages. In 2013, the EU Council has listed the implementation of SCforH guidelines as one of the 23 key indicators for evaluation of the promotion of HEPA in the EU member countries (Pedišić, Oja, et al., 2022). Since 2009, the SCforH guidelines have been extensively disseminated among European sports clubs and organisations (Pedišić, Matolić, Benedičič Tomat, et al., 2022). However, data collected in 36 European countries, including all EU member states, EU candidate countries, Iceland, Norway, and Switzerland, revealed that less than 10% of European sports clubs (Pedišić, Matolić, Bělka, et al., 2022) and 17% of national sports organisations (Pedišić, Koski, et al., 2021) have integrated the SCforH guidelines into their programs. Such implementation rates could be explained by a lack of awareness and knowledge about SCforH guidelines.

Awareness of SCforH guidelines among representatives of sports associations has increased from 22% in 2016/17 to 53% in 2021/22 (Pedišić, Matolić, Bělka, et al., 2022) which is expected to lead to their increased implementation in the future. However, these findings also indicate that additional efforts are needed to further increase the awareness of SCforH

guidelines. A recent study conducted among 536 sports organisations in Europe found that awareness of SCforH guidelines is associated with a higher commitment to HEPA promotion (Matolić, Jurakić, Podnar, et al., 2023) It is, therefore, important to continue raising awareness of SCforH guidelines in the European sports sector.

As part of the ongoing shift towards a greater utilisation of online platforms, various internet-based physical activity interventions have been developed (Jahangiry et al., 2017; Marcus et al., 2000). Following this trend, to continue increasing awareness of SCforH guidelines, in 2020/21 the SCforH online course was developed (Sports Club for Health Consortium, 2020a). It leverages the wide reach, accessibility, interactivity, and cost-effectiveness of the highly popular and fast evolving digital landscape (International Telecommunication Union, 2023; Marcus et al., 2000). As part of the latest international EU funded SCforH project, the course was disseminated among stakeholders in the European sports sector.

Knowledge about the course quality is essential for making improvements in the course. However, no previous study has evaluated the SCforH online course. Therefore, the first aim of this study was to evaluate the SCforH online course by analysing participant engagement in the course and course quality as perceived by participants. It is also important to gain insight into suitability of the course for different audiences. Thus, our second aim was to explore differences in the engagement levels and subjective assessments of course quality between: (i) different types of stakeholders in the sports sector; (ii) residents of EU and non-EU countries; (iii) participants from different regions of Europe; and (iv) those with and without prior awareness of the SCforH guidelines.

7.4. Methods

7.4.1. SCforH online course

The SCforH online course presents key messages from the SCforH guidelines in plain language. It was developed in three stages. The first stage included a literature review and internet search conducted by three researchers, with the aim to develop course content and get insight into the newest trends and technologies in online educational courses. In the second stage, the three researchers developed the first version of the course in collaboration with IT professionals,

graphic designers, and an English language editor. The course was then reviewed and pilot-tested for functionality by an independent assessor. In the third stage, the course underwent a thorough review by 30 experts specialising in physical activity, sport, health, and education from 27 EU countries. Their feedback was implemented, and the final version of the course was translated into 24 European languages by language professionals. The course includes: (i) 7 units with a total of 28 content items (hereafter: "course parts") encompassing textual, pictorial, and video learning materials, interactive exercises, and in-course quizzes; (ii) links to additional SCforH online resources; (iii) course evaluation survey; and (iv) SCforH survey. A certificate is issued to participants after completion of all seven units of the course. This is currently the only educational course on SCforH guidelines. To the best of our knowledge, it is also the only online course aimed at physical activity promotion in the sports setting that is accessible in all official EU languages, facilitating its uptake among diverse audiences. The course is user friendly and tailored to various stakeholders in the sports sector.

7.4.2. Study design and participants

In this course evaluation study, the SCforH course and SCforH online survey were disseminated from June 2021 to November 2022. Direct email invitations to participate in the course were sent to 3809 participants from 36 European countries, including all EU member and candidate countries, Iceland, Norway, Switzerland, and the UK (Figure 1). All contacted individuals were encouraged to share the course invitation with their organisation members, students, and other potential participants.

All participants in the course were invited to complete the course evaluation and SCforH surveys. The final study sample included 840 participants from 34 European countries (Table 1). The participation in the course and surveys was voluntary. Prior to responding to the questionnaire, participants provided their informed consent. The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology

(reference number: 10/2021). The study was conducted in accordance with the Declaration of Helsinki.

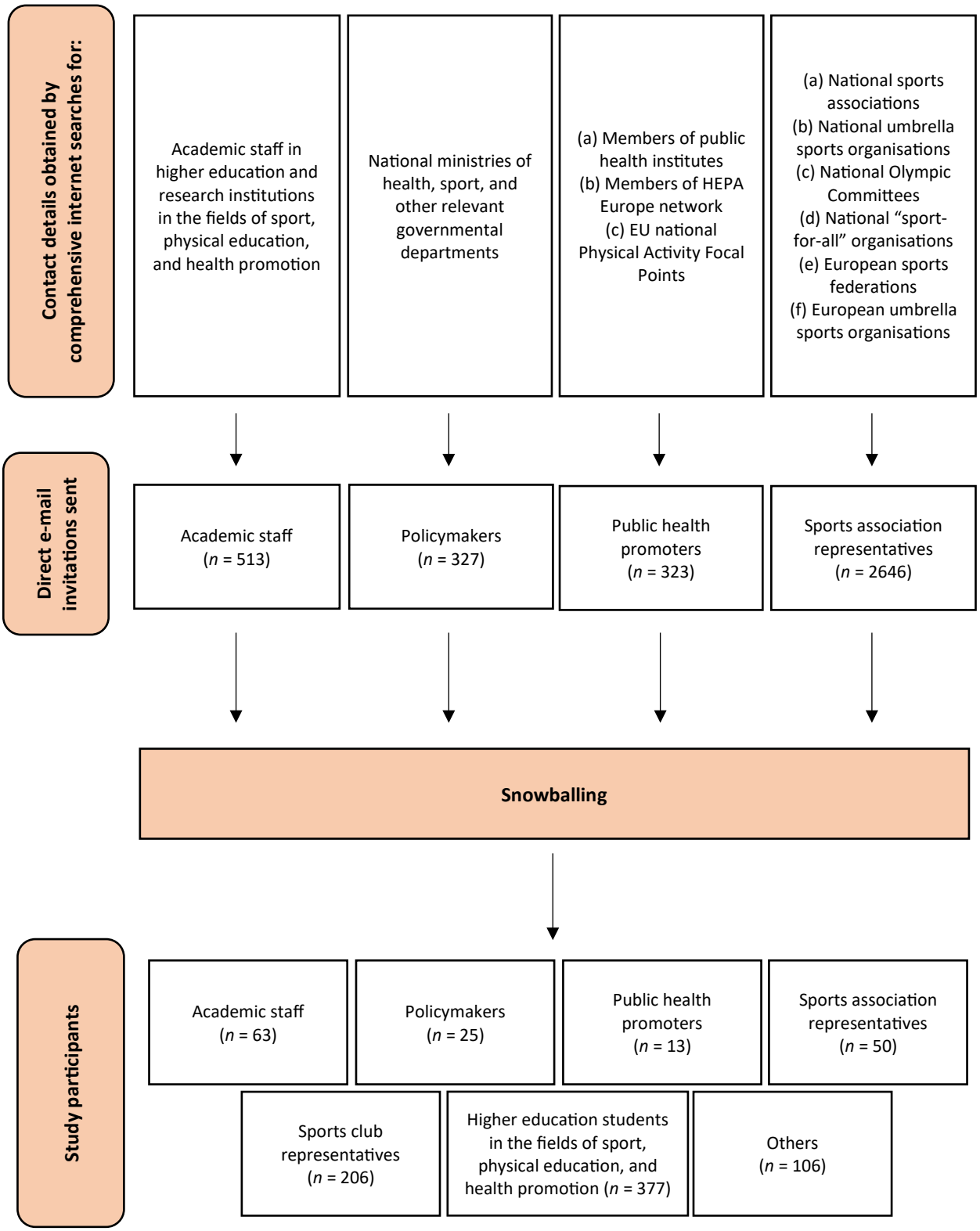

Figure 1: Flowchart of the sampling process

Table 1: Characteristics of the study sample

Category	*n*	%
Stakeholder type		
Academic staff[a]	63	7.5%
Policymaker	25	3.0%
Public health promoter	13	1.5%
Sports association representative	50	6.0%
Sports club representative	206	24.5%
Student[b]	377	44.9%
Other	106	12.6%
European Union residency		
Yes	758	90.2%
No	82	9.8%
Region[c]		
Central and Eastern Europe	506	60.2%
Northern Europe	29	3.5%
Southern Europe	219	26.1%
Western Europe	86	10.2%
Awareness of SCforH[d] **guidelines**[e]		
Yes	161	54.4%
No	135	45.6%

a Academic staff in higher education and research institutions in the fields of sport, physical education, and health promotion
b Higher education students in the fields of sport, physical education, and health promotion
c Region of Europe according to EuroVoc
d Sports Club for Health
e Surveys for students and "other" did not include the question on awareness of SCforH guidelines. Also, not all of the remaining participants responded to the question.

7.4.3. Measures

The level of the participants' engagement in the course was assessed by analysing web trigger events associated with actions taken by participants during their course attendance. In specific, we gathered information on their overall time spent in the course and the number of course parts they completed.

Course quality was assessed using the EDUCATOOL post-course questionnaire (Matolić, Jurakić, Greblo Jurakić, et al., 2023). The questionnaire has 12 items asking about participant's: (i) *reaction* (items on satisfaction, relevance and engagement); (ii) *learning* (items on knowledge acquisition, knowledge retention, skill development, skill retention, and attitude change); (iii) *behavioural intent* (items on utilisation of knowledge and utilisation of skills);

and (iv) *expected outcomes* (items on improved personal performance and other benefits). Participants provided their responses on an 11-point Likert scale, ranging from 0 ("completely disagree") to 10 ("completely agree"). Using the EDUCATOOL Calculator (Matolić, Jurakić, Greblo Jurakić, et al., 2023), the total score in each of the evaluation components (i.e. *reaction*, *learning*, *behavioural intent*, and *expected outcomes*) was calculated as the arithmetic mean of responses to the respective questionnare items, linearly transformed to a scale from 0 to 25 points. The overall evaluation score (0 – 100 points) was calculated as the sum of participant's scores in the four evaluation components. Higher scores denote better course quality. The questionnaire has adequate validity and reliability (Matolić, Jurakić, Greblo Jurakić, et al., 2023). More details about the questionnaire and its measurement properties can be found elsewhere (Matolić, Jurakić, Greblo Jurakić, et al., 2023).

We also collected data on participant's: type of involvement in the sports sector (i.e. stakeholder type); country of residence; and prior awareness of the SCforH guidelines. Based on their type of involvement in the sports sector, the participants were classified into the following categories: (i) academic staff in higher education or research institutions in the fields of sport, physical education, and health promotion (hereafter: "academic staff"); (ii) representatives of governmental bodies (hereafter: "policymakers"); (iii) representatives of public health institutes and/or national Physical Activity Focal Points (hereafter: "public health promoters"); (iv) sports association representatives; (v) sports club representatives; (vi) higher education students in the fields of sport, physical education, and health promotion (hereafter: "students"); and (vii) others. Based on the country of residence, we classified participants into residents of EU countries and non-EU countries and four regions according to EuroVoc, including Central and Eastern, Northern, Southern, and Western Europe (Publications Office of the European Union, 2014). Prior awareness of SCforH guidelines was assessed using a binary (yes-no) question.

7.4.4. Data analysis

We checked the normality of distributions of time in course and course quality variables using Shapiro-Wilk test, histograms, and Q-Q plots. Given that the distributions were not normal, we used non-parametric statistics.

We calculated medians, their 95% confidence intervals using the method proposed by Bonett and Price (2002), and interquartile ranges for course quality and time in course variables in the

overall sample and by stakeholder type, EU residency, region of Europe, and prior awareness of the SCforH guidelines.

Multivariate differences in four evaluation components and time in course by stakeholder type, EU residency, region of Europe, and prior awareness of the SCforH guidelines were tested using the c-sample test of location. This was followed by a set of Kruskal-Wallis tests of univariate differences between the groups. Post-hoc pairwise comparisons were performed using Mann-Whitney U test with Bonferroni correction. In all the analyses, p-value of less than 0.05 indicated a statistically significant difference. We did not analyse differences in the number of completed course parts, because this measure of engagement in the course had very low variability.

The data analysis was performed using R (version 4.2.2, R Foundation for Statistical Computing, Vienna, Austria) and RStudio (version 2022.12.0.353, Posit, Boston, MA, USA) with "dplyr" (Wickham et al., 2023), "stats", and "MNM" (Nordhausen et al., 2018) packages.

7.5. Results

7.5.1. Engagement in the course and assessments of course quality

The vast majority of participants (92%) completed all 28 parts of the course, and the median time in course was 27.60 minutes. In the overall sample, the medians of all EDUCATOOL items were high, ranging from 8.00 to 9.00 (Table 2). Reaction was the evaluation component with the highest median (21.67), while the sample medians of all three remaining evaluation components were equal (20.00). The median overall evaluation score was 82.50.

Table 2: Evaluation of the Sports Club for Health (SCforH) online course: quality and participant engagement

Measure	Median (95% CI)[a]	IQR[b]
EDUCATOOL[c] questionnaire item		
(1) Overall, I am satisfied with this course.	9.00 (9.00, 9.00)	2.00
(2) I find this course useful.	9.00 (9.00, 9.00)	2.00
(3) I was fully engaged in this course.	8.50 (8.01, 8.99)	3.00
(4) I acquired new knowledge in this course.	8.00 (8.00, 8.00)	3.00

(5) I will be able to retain this knowledge over the long term.	8.00 (7.51, 8.49)	3.00
(6) This course helped me develop skills.	8.00 (7.51, 8.49)	3.00
(7) I will be able to retain these skills over the long term.	8.00 (8.00, 8.00)	3.00
(8) Taking this course increased my interest in the subject.	9.00 (8.51, 9.49)	3.00
(9) I will use the knowledge acquired in this course.	9.00 (8.51, 9.49)	3.00
(10) I will use the skills developed in this course.	8.00 (8.00, 8.00)	3.00
(11) Participation in this course will improve my performance.	8.00 (8.00, 8.00)	4.00
(12) My participation in this course will result in other benefits.	8.00 (8.00, 8.00)	3.00
EDUCATOOL[c] evaluation component		
Reaction	21.67 (21.26, 22.07)	5.83
Learning	20.00 (19.76, 20.24)	6.00
Behavioural intent	20.00 (19.39, 20.61)	7.50
Expected outcomes	20.00 (20.00, 20.00)	7.50
EDUCATOOL[c] overall evaluation score	82.50 (81.11, 83.89)	23.94
Time in course (min)	27.60 (26.93, 28.27)	14.32

a 95% confidence interval for median calculated using the method proposed by Bonett and Price (2002)
b Interquartile range
c EDUCational Course Assessment TOOLkit

7.5.2. Multivariate differences

There were significant multivariate differences in course quality and time in course between stakeholder types, EU and non-EU residents, and participants from different regions of Europe ($p < 0.001$ for all three comparisons; Table 3). However, we did not find statistically significant multivariate differences in course quality and time in course by prior awareness of SCforH guidelines ($p = 0.260$).

7.5.3. Univariate differences

We found significant differences between stakeholder types in reaction ($p = 0.002$), learning ($p < 0.001$), behavioural intent ($p < 0.001$), expected outcomes ($p = 0.003$), and time in the course ($p = 0.002$; Table 3). A post-hoc analysis revealed several pairwise differences between stakeholder types. For example, compared with sports club representatives, students provided lower ratings for learning ($p < 0.001$), behavioural intent ($p < 0.001$), and expected outcomes

($p = 0.018$). Students also provided lower ratings for behavioural intent, compared with sports association representatives ($p = 0.016$). Policymakers spent more time in the course than academic staff ($p = 0.033$).

Compared with EU residents, participants from non-EU countries provided higher ratings for all four evaluation components ($p < 0.001$ for all), while spending less time in the course ($p = 0.007$).

Significant differences in all four evaluation components were also found between participants from different regions of Europe ($p < 0.001$ for all). A post-hoc analysis revealed several pairwise differences by region of Europe. For example, compared with participants from Central and Eastern Europe and Southern Europe, participants from Western Europe provided lower ratings for reaction, learning, behavioural intent, and expected outcomes ($p < 0.001$ for all eight comparisons). Participants from Northern Europe provided lower ratings for reaction than participants from Central and Eastern Europe ($p = 0.014$) and higher ratings for learning than participants from Southern Europe ($p = 0.019$).

We did not find significant differences in any of the evaluation components and time in course between the groups of participants by prior awareness of SCforH guidelines ($p > 0.05$ for all).

Table 3: Evaluation of the Sports Club for Health (SCforH) online course: between-group differences

Category		Median ± IQR[a] (95% CI)[b]				
		Reaction	**Learning**	**Behavioural intent**	**Expected outcomes**	**Time in course**
Stakeholder type	Academic staff[c]	21.67 ± 5.00 (20.05, 23.28)	20.00 ± 7.75 (17.82, 22.18)	20.00 ± 7.50 (18.18, 21.82)	18.75 ± 8.13 (16.33, 21.17)	24.34 ± 16.06 (20.08, 28.61)
	Policymaker	22.50 ± 5.00 (20.08, 24.92)	20.50 ± 4.50 (18.80, 22.20)	21.25 ± 5.00 (18.83, 23.67)	21.25 ± 6.25 (19.43, 23.07)	29.30 ± 8.83 (25.90, 32.70)
	Public health promoter	22.50 ± 3.33 (21.07, 23.93)	22.00 ± 4.50 (19.42, 24.58)	22.50 ± 5.00 (19.82, 25.18)	21.25 ± 3.75 (19.10, 23.40)	32.08 ± 8.29 (26.02, 38.14)
	Sports association representative	22.50 ± 5.63 (20.97, 24.03)	19.25 ± 6.88 (16.95, 21.55)	24.38 ± 6.25 (22.08, 26.67)	20.00 ± 8.75 (17.13, 22.87)	28.78 ± 15.48 (25.48, 32.08)
	Sports club representative	22.50 ± 5.83 (22.09, 22.91)	21.50 ± 5.50 (20.52, 22.48)	22.50 ± 6.25 (21.89, 23.11)	21.25 ± 7.50 (20.64, 21.86)	27.13 ± 15.01 (25.44, 28.81)
	Student[d]	20.83 ± 4.17 (20.02, 21.65)	19.50 ± 6.00 (19.01, 19.99)	20.00 ± 7.50 (19.39, 20.61)	20.00 ± 7.50 (19.39, 20.61)	28.32 ± 12.67 (27.57, 29.06)
	Other	22.50 ± 5.00 (21.70, 23.30)	21.00 ± 4.88 (20.04, 21.96)	21.25 ± 6.25 (20.05, 22.45)	20.00 ± 7.50 (18.80, 21.20)	22.99 ± 16.18 (19.58, 26.40)
	p[e]	0.002	< 0.001	< 0.001	0.003	0.002
	p[f]	< 0.001				
European Union residency	Yes	21.67 ± 5.00 (21.26, 22.07)	20.00 ± 6.00 (19.51, 20.49)	20.00 ± 7.50 (19.39, 20.61)	20.00 ± 6.25 (20.00, 20.00)	27.81 ± 13.38 (27.08, 28.53)
	No	24.17 ± 3.96 (23.00, 25.33)	22.25 ± 7.00 (20.62, 23.88)	23.75 ± 5.00 (22.59, 24.91)	22.50 ± 6.25 (21.34, 23.66)	22.16 ± 17.85 (17.25, 27.07)
	p[e]	< 0.001	0.001	< 0.001	< 0.001	0.007
	p[f]	< 0.001				
Region[g]	Central and Eastern Europe	22.50 ± 5.83 (22.09, 22.91)	20.00 ± 6.50 (19.51, 20.49)	21.25 ± 7.50 (20.03, 22.47)	21.25 ± 7.50 (20.64, 21.86)	27.58 ± 15.41 (26.46, 28.70)
	Northern Europe	20.00 ± 5.00 (18.69, 21.31)	18.50 ± 5.00 (17.19, 19.81)	18.75 ± 7.50 (16.13, 21.37)	20.00 ± 10.00 (17.38, 22.62)	29.17 ± 12.54 (25.03, 33.31)
	Southern Europe	21.67 ± 4.17 (20.85, 22.48)	21.00 ± 4.50 (20.51, 21.49)	22.50 ± 6.25 (21.28, 23.72)	20.00 ± 5.00 (19.39, 20.61)	27.66 ± 12.97 (26.12, 29.20)
	Western Europe	20.00 ± 5.42 (18.81, 21.19)	17.00 ± 5.50 (16.28, 17.72)	18.13 ± 6.25 (16.93, 19.32)	16.25 ± 6.25 (15.06, 17.44)	27.24 ± 10.17 (25.32, 29.16)
	p[e]	< 0.001	< 0.001	< 0.001	< 0.001	0.180
	p[f]	< 0.001				
Awareness of SCforH guidelines	Yes	22.50 ± 5.00 (21.68, 23.32)	21.00 ± 6.50 (19.78, 22.22)	22.50 ± 6.25 (21.89, 23.11)	21.25 ± 7.50 (20.03, 22.47)	27.19 ± 15.98 (25.24, 29.15)
	No	21.67 ± 5.00 (21.26, 22.07)	21.00 ± 5.50 (20.02, 21.98)	22.50 ± 6.88 (21.28, 23.72)	20.00 ± 7.50 (18.78, 21.22)	28.25 ± 13.81 (26.36, 30.14)
	p[e]	0.392	0.216	0.329	0.079	0.153
	p[f]	0.260				

a Interquartile range
b 95% confidence interval for median calculated using the method proposed by Bonett and Price (2002)
c Academic staff in higher education and research institutions in the fields of sport, physical education, and health promotion
d Higher education students in the fields of sport, physical education, and health promotion
e p-value from the Kruskal-Wallis test
f p-value from the c-sample test of location
g Region of Europe according to EuroVoc

7.6. Discussion

7.6.1. Key findings

The main findings of this study are that the stakeholders in the European sports sector: (i) were highly engaged in the SCforH online course; and (ii) provided excellent ratings for all aspects of course quality. The course scored particularly high in the reaction component, that is, the degree to which it is satisfying, useful, and engaging to participants. The time spent in course and assessments of course quality were generally similar between those with and without prior awareness of the SCforH guidelines. However, some aspects of course quality were rated slightly higher by residents of countries outside the EU and in Central and Eastern Europe, and slightly lower by students, compared with other course participants.

7.6.2. Engagement in the course

The high number of completed course parts and high median time in the SCforH online course may be suggestive of active engagement and good retention of participants, aspects often identified as challenging in the context of online learning courses (Allen & Seaman, 2013). Previous research on massive open online courses has revealed that completion rates for self-assessment tasks across different topics range from 8.0% to 23.1% among learners with different educational backgrounds (Gomez Zermeño & Aleman de la Garza, 2016). In another study, 44.8% of students reported that they plan to complete all activities of an online course (Engle et al., 2015). These figures are considerably lower than the observed engagement in the SCforH online course. A possible reason for such large differences in engagement may lie in the fact that the SCforH online course was distributed only to potential participants with presumably high interest in the topic.

7.6.3. Course quality

Reaction

The aspects of SCforH course quality pertaining to *reaction* (i.e. satisfaction, relevance, and engagement) received similar or higher ratings, compared with online courses evaluated in previous studies (Ludwikowska, 2021; Tratnik et al., 2017). High satisfaction with and perceived relevance of the SCforH online course may facilitate the learning processes, thereby increasing the likelihood of substantial improvements in knowledge, skills, and attitudes (Chong & Songan, 2016; Ludwikowska, 2021). High self-reported engagement in the SCforH online course corroborates the conclusions drawn from the objective measures of engagement (i.e. the number of completed course parts and time in course).

Learning

Previous research has shown that a positive attitude towards change is important for successful implementation of new initiatives (Hower et al., 2019; Rafferty et al., 2013). The SCforH online course scored very high in *attitude change*, which indicates its excellent potential to motivate implementation of new SCforH initiatives. The scores for *knowledge acquisition* and *skill development* in the SCforH online course were somewhat lower, compared with previous studies (de Araujo Guerra Grangeia et al., 2016; Ludwikowska, 2021). Despite that, they can still be considered as very high. Previous research suggested that the perceived level of knowledge acquisition is an important driver of student satisfaction with a course (Tratnik et al., 2017), which may partially explain high satisfaction with the SCforH online course. In terms of *knowledge/skills retention,* the SCforH online course scored higher than courses evaluated in a previous study (Diamantidis & Chatzoglou, 2014). However, it should be noted that the corresponding questionnaire items used in the current study refer to participant's perceived future ability to retain knowledge and skills acquired in the course (i.e. envisaged knowledge and skills retention). Hence, they may not adequately reflect the true retention of knowledge and skills that could only be assessed over the long term.

Behavioural intent

In the two *utilisation* items, the SCforH online course scored similar to or higher than educational courses evaluated in previous studies (Diamantidis & Chatzoglou, 2014; Ludwikowska, 2021). It should be noted that the two *utilisation* items in the EDUCATOOL questionnaire asked about behavioural intent as opposed to the actual behaviour that could only be assessed over the long term. However, given that behavioural intentions are strongly related to behaviour (Conner & Armitage, 2006), it may be that the SCforH online course would receive similarly high scores also for the actual behaviour. Furthermore, a previously evaluated educational "game", received somewhat higher ratings for utilisation (Diehl et al., 2017) than the SCforH course. To improve scores in the utilisation items, future editions of the SCforH online course could considered gamification as an additional educational strategy.

Expected outcomes

In terms of *expected outcomes*; namely, *improved personal performance* and *other benefits,* the SCforH online course scored similarly high as educational courses evaluated in previous studies (Aoun & Johnson, 2002; Chiu & Wang, 2008). It is important to note that these scores refer to predicted benefits of course attendance as opposed to true benefits that could only be assessed over the long term, as in some previous studies (Diamantidis & Chatzoglou, 2014; Doyle et al., 2012).

7.6.4. Overall evaluation score

The overall evaluation score for the quality of SCforH course (82.50 out of 100 points), slightly exceeded the average quality score for online courses, that is, around 76% of the maximum score, and matched the average score for, generally higher-rated, face-to-face courses, that is, around 81% of the maximum score (Lowenthal et al., 2015). Two prominent online educational course platforms, Coursera and edX, have received average ratings for content, interactivity, instructor presence, and course design ranging 4.36 – 5.86 and 4.51 – 5.78 out of 7 points, respectively (Glory et al., 2019; Hanifa et al., 2019). The SCforH online course received an overall evaluation score that falls at the top of these ranges, highlighting its high quality. However, it should be noted that due to methodological differences (e.g. different course quality

assessment methods, follow-up periods, and analytical approaches), our results may not be directly comparable to the results of previous studies.

7.6.5. Between-group comparisons

Differences in the engagement in SCforH course and assessment of course quality between various types of stakeholders in the sports sector may be explained by differences in professional roles and responsibilities. It was previously suggested that learners with higher task value tend to remain longer engaged in the course (Chiu & Wang, 2008). Due to possible sense of being directly responsible for sports promotion, policymakers may have a high subjective task value (Eccles, 1983) for participating in the SCforH online course, which could explain their longer engagement in the course, compared with academic staff. Another reason could be the official recognition of the importance of SCforH guidelines by governmental bodies in the EU (Pedišić, Oja, et al., 2022), which could have provided additional motivation for policymakers for high engagement in the SCforH online course. Lower time in SCforH course among academic staff may be explained by potentially lower level of interest in the topic or time constraints. Research also shows that courses tailored to trainees' job demands are more likely to facilitate the application of acquired knowledge and/or skills in their respective workplaces (Diamantidis & Chatzoglou, 2014). Representatives of sports clubs and associations are likely to have direct opportunities to implement SCforH initiatives as part of their work (Geidne et al., 2019). This may be the reason why they provided higher ratings for the SCforH course in the behavioural intent items, compared with students. It could also be that the task value of SCforH course is lower among students, compared with representatives of sports clubs and associations, due to competing academic obligations and possibly less developed time management skills (Shaikh & Asif, 2022).

Interesting results were obtained when comparing EU and non-EU residents; while EU residents spent more time in the SCforH online course, residents of non-EU countries provided higher ratings for the quality of the course. The fact that the course was available in all 24 official languages of the EU may have positively affected the level of engagement in the course among EU residents. By contrast, the course was available in the official languages of only three non-EU countries included in this study (Serbia, Switzerland, and the UK), which may have negatively affected the level of engagement in the course among participants from some

non-EU countries. Furthermore, a range of physical activity and sport policies in the EU emphasise the importance of "sport-for-all" (Christiansen et al., 2014). However, the implementation of such strategies was found to be challenging (Klepac et al., 2020; Pratt et al., 2021), which may have lowered the perceived value and expected outcomes of the SCforH course among some participants. If the "physical activity policy to practice disconnect" (Pratt et al., 2021) is more pronounced in the EU than in non-EU countries, this could partially explain why EU residents provided lower ratings for the SCforH course.

In a previous study (Matolić, Jurakić, Podnar, et al., 2023), sports organisations from the Central and Eastern region of Europe were found to be more committed to promoting HEPA, compared with those in Western Europe. It might be that stakeholders in the sports sector from Central and Eastern Europe place a stronger value on participating in educational courses on the promotion of physical activity in the sports setting, such as the SCforH course. This would explain why SCforH course participants from Central and Eastern Europe provided higher ratings of course quality, compared with participants from Western Europe.

Research has found that learners with prior experience in areas related to the content of a given course are more inclined to complete the course (Lee & Choi, 2011). Prior knowledge of the subject may also improve learning outcomes (Hailikari et al., 2008). However, this was not confirmed in the current study, because we did not find statistically significant differences by prior awareness of the SCforH guidelines in any of the analysed variables.

7.6.6. Practical implications

Our findings show that the SCforH online course is an adequate tool for dissemination of SCforH guidelines among stakeholders in the European sports sector; from sports clubs to higher organisational levels such as sports associations and governmental bodies. The positive feedback on the quality of SCforH online course, justifies continued efforts to widely disseminate the course, with the aim to improve national implementation of SCforH guidelines in European countries. However, the course could be further refined to improve its ratings among students, residents of EU countries, and participants from Western Europe, based on the findings of the current study. More generally, findings of this study could inform the development of other online courses intended for the stakeholders in the European sport sector.

7.6.7. Strengths and limitations

The strengths of this study include: (i) a large sample of participants including various types of stakeholders in the European sports sector; (ii) a large number of included countries; (iii) a comprehensive quantitative assessment of course quality; and (iv) objective assessment of participant engagement in the course using web trigger events.

The study also had several limitations. First, the survey did not include questions about sociodemographic characteristics of participants, such as gender and age, nor did the student survey include questions about their country of origin and college/university. Therefore, the representation of different sociodemographic groups and regional distribution in the survey could not be determined. Second, while useful for reaching populations that are otherwise difficult to reach, snowball sampling does not allow to determine the response rate. Owing to the sampling strategy, the sample may not be fully representative of the study population. The generalisability of our findings may have been further compromised by disproportionate response rates from different countries. Third, given that the participants completed the course evaluation survey immediately after the course, we could only assess behavioural intent (instead of actual behaviour) and expected outcomes (instead of actual outcomes).

7.7. Conclusions

It can be concluded that the level of participant engagement in the SCforH course is high. The quality of SCforH course is also high, as perceived by a wide range of stakeholders in the European sports sector. These findings demonstrate that the SCforH online course is an adequate tool for dissemination of SCforH guidelines in Europe.

Some aspects of course quality are rated slightly lower by residents of EU countries (compared with residents of non-EU countries), participants from Western Europe (compared with participants from Central and Eastern Europe), and students (compared with representatives of sports clubs and associations). These findings can be used to refine the SCforH online course and improve the content of new training courses tailored to stakeholders in the European sports sector.

Future studies evaluating the quality of SCforH course should consider using sampling methods that would improve generalisability. They would also benefit from conducting a follow-up survey, to determine the extent to which participants: (i) use knowledge and skills acquired in the course; and (ii) profit from attending the course in terms of improved performance and other gains.

7.8. Declarations

7.8.1. Ethics statement

The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (reference number: 10/2021). The study was conducted in accordance with the Declaration of Helsinki.

7.8.2. Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

7.8.3. Funding

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7.8.4. Authors' contribution

Tena Matolić: Conceptualisation, Data curation and analysis, Methodology, Project administration, Writing – original draft, Writing – review & editing. Danijel Jurakić: Conceptualisation, Methodology, Supervision, Writing – review and editing. Željko Pedišić: Conceptualisation, Methodology, Supervision, Validation, Writing – review and editing.

7.8.5. Author disclaimer

Views and opinions expressed are those of the authors only and do not necessarily reflect those of the European Union or The European Education and Culture Executive Agency (EACEA). Neither the European Union nor the granting authority can be held responsible for them.

Chapter 8: Conclusion

8.1. General conclusion

Overall, this thesis found that the commitment of European sports organisation to promotion of HEPA is still lower than their commitment to promotion of elite sports. Based on examples of good practice among National Olympic Committees, sport-for-all organisations, and organisations from Central and Eastern Europe in advancing HEPA, there is a potential to boost HEPA promotion efforts within National sports associations, and throughout Western Europe countries. Although a range of SCforH initiatives have already been implemented (Benedičič Tomat et al., 2022), further increases in HEPA promotion could be achieved by raising awareness of SCforH guidelines. In this doctoral dissertation, the broadly disseminated SCforH online learning course was found to be a suitable tool for this purpose. The course is highly *satisfying*, *engaging* and *useful* to participants, it fostered *attitude change*, *knowledge acquisition*, *skill development* and *knowledge/skill retention*, as well as intent to *utilise*, and expectation of *personal performance improvements* and *other benefits*. Some elements of the course received slightly higher ratings from the representatives from Central and Eastern Europe, and non-EU countries, while students evaluated the course slightly lower than sports club and sports association representatives. Nonetheless, the dissemination of SCforH guidelines across various European countries and among different stakeholders in the sports sector using the SCforH online course is a promising strategy. Quality of this course and other educational HEPA promotion courses should be continuously evaluated. This can be done by utilising EDUCATOOL questionnaires developed as part of this doctoral thesis. Grounded in Kirkpatrick's evaluation framework, EDUCATOOL questionnaires have demonstrated adequate factorial validity, convergent validity, internal consistency, and test-retest reliability.

The first study addressed the lack of evidence regarding the commitment to promotion of various types of physical activity and the correlates of HEPA promotion among higher level actors, such as sports organisations in Europe. These actors play an important role in the sports sector as they serve as a link between higher-level European and global organisations and local sports clubs – the members of sports associations (Hartmann & Benedičič Tomat, 2022). This intermediary position makes them important for implementing higher-level directives and addressing grassroots challenges in HEPA promotion in the sports sector. Previously, the research primarily focused on the correlates and determinants of individual participation in

physical activity and HEPA initiatives (Audrey et al., 2012; Bauman et al., 2012; Bullough et al., 2015) or the health promotion perspectives among of sports club coaches, managers, and participants (Kokko et al., 2015; Meganck et al., 2015; Meganck et al., 2017; Van Hoye et al., 2022). Therefore, this dissertation is the first to include higher-level sports organisations, both National and European, encompassing data from 536 representatives from national sports associations, national sports-for-all organisations, national umbrella organisations, National Olympic Committees, and European umbrella sports federations. Moreover, a number of studies have discussed the clash in the sports sector between professional and grassroots sports (De Bosscher & van Bottenburg, 2011; Green, 2006; Grix & Carmichael, 2012; Hartmann-Tews, 2006). However, none have specifically researched the actual commitment of sports organisations to various types of physical activity. This dissertation addressed this gap by investigating the commitment of sports organisations in Europe to different types of physical activity, including elite sports, HEPA, HESE, HEXA and HELPA. Furthermore, there are evident differences in political and organisational structures of sports clubs across different regions of Europe (Breuer et al., 2015) and in sports development globally (Hallmann & Petry, 2013). By including sports organisations from 36 European countries, spanning all four European regions, and encompassing both EU and non-EU member countries, this dissertation provided comprehensive understanding of how these geographical and organisational differences influence the HEPA promotion efforts.

From the findings of first study, the following conclusions can be drawn:

- Hypothesis H1 *(Commitment to promoting HEPA is low in most sports organisations in Europe.)* is accepted.

- Hypothesis H2 (*The type of sports organisation, level of commitment to promoting elite sports, EU membership status, region of Europe in which the organisation is located, and the awareness of SCforH guidelines are significantly associated with the level of commitment to promoting HEPA.)* is partially accepted. The level of commitment to promoting HEPA is significantly associated with the type of sports organisation, European region in which the organisation is located, and the awareness of SCforH guidelines in the sports organisation but not with the level of commitment to promoting elite sports, and EU membership status.

The second study addressed a significant need in public health domain: the enhancement of methods to evaluate quality of educational HEPA promotion initiatives (Hanson & Jones, 2017; Smith et al., 2016). There has been a strong demand for scientifically supported, framework based, and easy-to-use evaluation tools in this area (Fynn et al., 2020; O'Connor-Fleming et al., 2006; Tézier et al., 2022; Van Hoye, Johnson, Lemonnier, et al., 2021). Improving the evaluation can improve the scalability of initiatives, inform policy and funding decisions (Leask et al., 2019; Milat et al., 2012), and facilitate translation of research into practice (Rychetnik et al., 2012). This thesis addresses the problems with current evaluation processes, which are often too complex (Gaglio et al., 2013; Glasgow et al., 2019), fail to evaluate all important segments (Gaglio et al., 2013; Glasgow et al., 2019; Harden et al., 2015; Ho, 2016; Hughes et al., 2016; Kwan et al., 2019; McColgan et al., 2013; Reio et al., 2017) and which frequently are not based on theoretical frameworks (Fynn et al., 2020). These issues were dealt with in this study by developing a generic and user-friendly evaluation tool grounded in Kirkpatrick's evaluation framework (Kirkpatrick & Kirkpatrick, 2006; Kirkpatrick & Kirkpatrick, 2016). The EDUCATOOL includes two questionnaires: a post-course questionnaire, that is intended to be applied immediately after participants attended an educational course, and a follow-up questionnaire that is intended to be applied ideally one to six months later. This dual approach addresses previous criticism (Reio et al., 2017) and gaps in existing evaluation tools (Grohmann & Kauffeld, 2013; Thielsch & Hadzihalilovic, 2020). Both questionnaires cover all components of Kirkpatrick's evaluation model, including participant *reaction, learning outcomes*, *behavioural intent/behaviour* changes, and *expected outcomes/results*. This comprehensive approach ensures that all essential elements of an educational course are evaluated. Moreover, the general wording of EDUCATOOL allows for the comparisons of different initiatives, addressing the issue of using the various, and also non-standardised evaluation tools and methods (Fynn et al., 2020; Lim et al., 2023; Shelton, 2011). This can significantly enhance between-study comparability.

From the findings of second study, the following conclusions can be drawn:

- Hypothesis H3 (*The factorial validity of the newly developed questionnaire for evaluation of educational initiatives is satisfactory.)* is accepted.

- Hypothesis H4 (*The internal consistency reliability of the newly developed questionnaire for evaluation of educational initiatives is satisfactory*.) is accepted.

- Hypothesis H5 (*The test-retest reliability of the newly developed questionnaire for evaluation of educational initiatives is satisfactory*.) is accepted.

- Hypothesis H6 (*The convergent validity of the newly developed questionnaire for evaluation of educational initiatives is satisfactory*.) is accepted.

The third study has pioneered empirical evaluation of a recently developed educational HEPA promotion initiative – SCforH online course – which has been extensively disseminated across Europe. This evaluation was done by employing the newly developed EDUCATOOL, based on the Kirkpatrick's framework (Kirkpatrick & Kirkpatrick, 2016). The evaluation also assessed level of participants' engagement via web trigger events related to their actions while attending the course. The SCforH online course was found to be highly engaging and received high overall quality score and high scores across all four levels of Kirkpatrick's evaluation model. The awareness of SCforH guidelines, which form the basis of this course, were positively associated with higher levels of HEPA promotion in European sports organisations, as demonstrated in the first study of this thesis (Matolić, Jurakić, Podnar, et al., 2023). Therefore, this evaluation can help improve further promotion of the SCforH guidelines and consequently improve commitment to HEPA promotion among European sports organisations. In addition to evaluating the SCforH online course, this study addressed a lack of studies that evaluated HEPA promotion initiatives found in the scoping review conducted as part of this doctoral dissertation. By assessing how various stakeholders in the sports sector evaluate the quality of SCforH online course, findings of this Study 3 can help identify ways in which the course could be improved.

From the findings of third study, conclusions were drawn:

- Hypothesis H7 (*Most participants are highly engaged in the SCforH online educational course.*) is accepted.

- Hypothesis H8 (*The quality of SCforH online educational course as perceived by participants is high.*) is accepted.

- Hypothesis H9 (*There are significant differences in participants' engagement in the course and perceived quality of the course among stakeholder types, EU membership statuses, participants from different regions of Europe, and prior awareness of the SCforH guidelines*.) is partially accepted. The participants' engagement in the course and their perceived quality of the course vary significantly among different stakeholder types, EU membership statuses, and regions of Europe where the organisations are located. However, the differences were not significant among the participants with different level of prior awareness of the SCforH guidelines.

8.2. Strengths and limitations

Key strengths of this research were as follows:

i. The samples in Studies 1 and 3 included participants from all European regions, EU member and candidate countries, and other European countries. This coverage enabled comparisons between European regions and between EU member states and non-EU countries. Additionally, in these studies data were collected from various stakeholders in the European sports sector, encompassing representatives from seven different organisation types in study three and five different types of European sports organisations in study one.
ii. EDUCATOOL was developed through a rigorous process that included Delphi surveys with experts in various relevant fields and consultations with 20 potential end-users to refine the tool, ensuring its relevance and practicality.
iii. The quality of SCforH course was evaluated at all four levels of Kirkpatrick's framework, including *reaction*, *learning*, *behavioural intent* and *expected outcomes*.

This research had several methodological limitations that could not be avoided during its planning and execution. First, given that literature search and data extraction in the scoping review were not done in duplicate, the subjectivity in interpreting and potentially missing

relevant publications may have affected some of the findings. Second, the inclusion criteria for the scoping review were restricted to English-language studies, potentially excluding relevant research published in other languages. Third, the review focused on providing an overview of study methods rather than conducting a comprehensive analysis of key findings. As this research was conducted independently by the doctoral student within the framework of this doctoral thesis, there was no opportunity of cross-verification of the processes, inclusion of other language studies and comprehensive analyses. Fourth, a critical appraisal of methodological quality across included research in the scoping review was not conducted. Nevertheless, this assessment is only optional for scoping reviews. Fifth, Study 1 was cross-sectional, which prevented drawing conclusions about causality. Sixth, the varying sample sizes across specific countries in Study 1 prevented accurate modelling of commitment levels to different types of physical activity, thereby increasing the risk of type II errors if all countries were treated as independent variables in regression analyses. Seventh, in Study 2, the sample included non-native English-speaking students from the Faculty of Kinesiology, Zagreb University, highlighting potential language barriers. Eighth, the Study 2 focused solely on the convergent validity of the overall EDUCATOOL evaluation score compared to another questionnaire due to the different factor structure. Finally, the EDUCATOOL questionnaire was tested within a single online course context, necessitating broader research across different training and course types in future research.

The generalisability of findings in this thesis was limited by several factors. First, Study 1 did not include sports organisations from all European countries. Second, Study 3 had disproportionate response rates from different countries, potentially biasing the sample representation. Third, the convenience sampling approach in Study 2 and snowball sampling technique in Study 3, though useful for accessing hard-to-reach populations, may have resulted in non-representative samples of the target population.

This thesis demonstrated limited inclusion of explanatory variables on two fronts. First, Study 1 did not gather detailed characteristics of sports organisations that could potentially influence their commitment to promoting HEPA. Second, Study 3 lacked questions about participant sociodemographic characteristics such as gender, age, country of origin, or educational affiliation. Nevertheless, the deliberate brevity of the surveys aimed to mitigate potential issues such as low response rates and participant attrition.

Lastly, the assessment of SCforH course quality relied solely on the EDUCATOOL post-course questionnaire administered immediately after the course. Hence, it remains to be elucidated how would participants rate the course quality over time through EDUCATOOL follow-up surveys.

8.3. Recommendations for policy, practice and future research

This thesis has addressed significant research gaps and has provided insights for future research, practice, and policy. Based on the evidence from all three studies included in this thesis, several recommendations can be provided:

i) Given the inability to conclude about causal associations between the commitment to promoting HEPA and the type of sports organisation, European region, and the awareness of SCforH guidelines, future studies should explore the HEPA commitment in sports organisations using a longitudinal study design. Moreover, including additional explanatory variables could provide a more comprehensive understanding of commitment to HEPA promotion. Potential variables to considered include the sports organisations' membership base, resource allocation, partnership base, availability of facilities, volunteer base, educational funds and actions, existence of evaluation mechanisms and processes, stakeholder expectations, implementation of SCforH guidelines, attendance to SCforH online course, organisational core values, and whether they are single- or multi-sport organisations.

ii) Similarly, further understanding regarding the correlates of perceived quality of SCforH online course could be gained by including additional variables such as specific details of the university, sports organisation, club, government, and public health organisation. This could include primary focus areas of the organisation (such as sports, public health, nutrition, health, physical activity, policy), resources and staff availability, partnerships, and funding options.

iii) Future similar studies should endeavour to increase the sample within each country and strive to include a sufficient number of representatives from all European countries to enable analysis of between-country differences. Despite extensive survey dissemination efforts in 36 European countries in this doctoral research, the COVID-19 pandemic may have hindered participation due to competing

obligations, priorities, busy schedules, and other challenges faced by potential participants. It is plausible that repeating the dissemination process at a different time could result in higher response rates, especially if conducted during a less hectic period. Additional, Study 3 may have coincided with competing events in participating organisations. Moreover, a lack of trust or unfamiliarity with the email sender or their organisation could have also negatively affected participation rates. This should be considered when designing similar future studies.

iv) Future studies should evaluate measurement properties of EDUCATOOL among students from different universities and among other stakeholders in the sports sector, such as sports club and association representatives, governmental and public health officials, and academic staff. Testing among native English speakers is also needed. Furthermore, EDUCATOOL should be translated to and evaluated in other languages.

v) Moreover, it would be valuable in the future to assess the validity and reliability of EDUCATOOL by evaluating it across a variety of educational courses. These could include other HEPA promotion courses, public health courses, as well as courses from other sectors. Additionally, evaluating measurement properties of EDUCATOOL following different formats of courses, such as other digital, paper-and-pencil, and face-to-face courses, would also be needed.

vi) Employing qualitative research methods alongside quantitative approaches, could give further depth to the findings of this research. Qualitative methods could provide valuable insights into participants' perceptions, experiences, barriers, and facilitators, complementing the quantitative data.

vii) The SCforH online course should build upon its highest *reaction* scores and explore possibilities for enhancing the already satisfactory *learning*, *behavioural intent* and *expected outcomes* scores. However, there are opportunities for further enhancement. Potential improvements could include providing additional downloadable materials, incorporating multimedia elements such as vlogs, facilitating group and private discussions on the platform, gamifying the course, and developing an interactive mobile phone application with short-term and long-term milestones. Furthermore, translating the course into languages spoken in non-EU member countries could broaden its reach. For academic staff, integrating specific post-lesson educational tests within the SCforH online course could provide valuable feedback. Similarly, incorporating hands-on activities, offering options to

invite quest speakers, providing tips for organising Q&A sessions, facilitating field visits, and enabling discussion forums on the platform could all potentially increase the perceived task value of the course. These enhancements could boost engagement among academic staff and participants from non-EU member countries, as well as improve perceived quality evaluation among students, stakeholders from EU member countries and participants from the Western European region.

viii) Future evaluation studies of the SCforH online course should incorporate the EDUCATOOL follow-up questionnaire to understand the long-term effects of the course, such as actual behavioural change and outcomes. Moreover, it would be valuable to research whether the awareness and implementation of SCforH guidelines have increased after a period following the course dissemination.

ix) The satisfactory evaluation and engagement results of the SCforH online course imply that this media is suitable for dissemination of the SCforH guidelines and promoting HEPA in the sports setting. This is especially relevant for participants from non-EU member countries and countries from the Central and Eastern region. Given that this region shows the highest commitment towards HELPA, the SCforH online course's focus on HESA could have significant positive impact.

x) Given that awareness of the SCforH guidelines is associated with higher HEPA promotion levels among European sports organisations and that the SCforH online course based on these guidelines is highly evaluated by various stakeholders in the sports sector, including sports organisation representatives, further promotion of the SCforH online course within sports organisation should be pursued to enhance the currently low commitment to HEPA promotion. Initiatives for positive change should be driven by higher-level organisations at both European and national levels, such as governmental bodies directly responsible for sport and health promotion. This could be achieved by increasing their participation in the SCforH online course, promoting the course more widely, and providing more funding and support for sports organisations and their members to enhance their HEPA programmes.

xi) Finally, new strategies for HEPA promotion in the sports setting could be informed by examples of good practice from national sport-for-all organisations, National Olympic Committees, and organisations from Central and Eastern Europe. Promoting current and creating new SCforH programmes and initiatives could further support the positive change by providing valuable how-to materials and guidelines.

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Appendices

Appendix A: Additional files from the scoping review

Studies included in quantitative analysis:

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Appendix B: Additional files from Study 2

Appendix B1: An example of survey used as part of the Delphi process in the development of EDUCATOOL

Page 1 / Instructions for participants and consent to participate in the survey

This short 10-minute survey is conducted as a part of the first round of the Delphi decisional process on a newly developed toolkit for the evaluation of educational courses. You have been invited to participate as a panel member in the decisional process. Your participation in the survey is voluntary and your responses will be anonymous to the survey moderator and to other panel members. You are not required to respond to all questions, and you may quit with the survey at any time. However, to facilitate the decisional process, we would prefer if you would respond to all survey questions.

1. Do you consent to participate in this survey?

- O Yes
- O No

If 'Yes' is selected, the second page appears. If 'No' is selected the page nine appears.

Page 2 / Supplementary information sheet

Before responding to survey questions, please read the documents "EDUCA-TOOL Instructions and Questionnaires 14_4" and "EDUCA-TOOL Calculator 14_4". When responding to survey questions, if needed, please refer to the information presented in the documents.

2. Have you read the documents “EDUCA-TOOL Instructions and Questionnaires 14_4” and “EDUCA-TOOL Calculator 14_4”?

- O Yes
- O No

If ‘Yes’ is selected, the third page appears. If ‘No’ is selected the ninth page appears.

Page 3 / Question 1

3. The proposed name of the toolkit is EDUcational Course Assessment TOOLkit. Do you agree with the proposed name?

- O Yes
- O No

Page 3 / Question 2

4. If not, which name would you propose?

Page 3 / Question 3

5. The proposed abbreviated name of the toolkit is EDUCA-TOOL. Do you agree with the proposed abbreviated name?

- O Yes
- O No

Page 3 / Question 4

6. If not, which abbreviated name would you propose?

Page 4 / Question 1

7. Do you agree with the purpose of the toolkit? (See *What is the purpose of EDUCA-TOOL?*)

- O Yes
- O No

Page 4 / Question 2

8. If not, what would you suggest to change?

Page 4 / Question 3

9. Do you agree with the list of potential users of the toolkit? (See *Who is EDUCA-TOOL intended for?*)

- O Yes
- O No

Page 4 / Question 4

10. If not, what would you suggest to change?

Page 4 / Question 5

11. Do you agree with the description of what is included in the toolkit? (See *What does EDUCA-TOOL include?*)

- O Yes
- O No

Page 4 / Question 6

12. If not, what would you suggest to change?

Page 4 / Question 7

13. Do you agree with the included evaluation components (reaction, learning, behavioural intent / behaviour, expected outcomes / results) and their descriptions? (See *What can be evaluated using EDUCA-TOOL?*)

- O Yes
- O No

Page 4 / Question 8

14. If not, what would you suggest to change?

Page 4 / Question 9

15. Do you agree with the information provided in the section *How can EDUCA-TOOL be used to perform the evaluation?*

- O Yes

O No

Page 4 / Question 10

16. If not, what would you suggest to change?

Page 5 / Question 1

17. Do you agree with the included evaluation subcomponents in the Post-Course Questionnaire (e.g. satisfaction, knowledge acquisition, utilisation, improved personal performance)? (See *Instructions for post-course evaluation / What is evaluated?*)

O Yes

O No

Page 5 / Question 2

18. If not, what would you suggest to change?

Page 5 / Question 3

19. Do you agree with the information provided in the section *Instructions for post-course evaluation*?

O Yes

O No

Page 5 / Question 4

20. If not, what would you suggest to change?

Page 6 / Question 1

21. Do you agree with the wording of the items in the Post-Course Questionnaire? (See *EDUCA-TOOL Post-Course Questionnaire*)

- O Yes
- O No

Page 6 / Question 2

22. If not, what would you suggest to change?

Page 6 / Question 3

23. Do you agree with the response scale in the Post-Course Questionnaire? (See *EDUCA-TOOL Post-Course Questionnaire*)

- O Yes
- O No

Page 6 / Question 4

24. If not, what would you suggest to change?

Page 7 / Question 1

25. Do you agree with the included evaluation subcomponents in the Follow-up Questionnaire (e.g. satisfaction, knowledge acquisition, utilisation, improved personal performance)? (See *Instructions for follow-up evaluation(s) / What is evaluated?*)

- O Yes
- O No

Page 7 / Question 2

26. If not, what would you suggest to change?

Page 7 / Question 3

27. Do you agree with the information provided in the section *Instructions for follow-up evaluation(s)*?

- O Yes
- O No

Page 7 / Question 4

28. If not, what would you suggest to change?

Page 8 / Question 1

29. Do you agree with the wording of the items in the Follow-up Questionnaire? (See *EDUCA-TOOL Follow-up Questionnaire*)

- O Yes
- O No

Page 8 / Question 2

30. If not, what would you suggest to change?

Page 8 / Question 3

31. Do you agree with the response scale in the Follow-up Questionnaire? (See *EDUCA-TOOL Follow-up Questionnaire*)

- O Yes
- O No

Page 8 / Question 4

32. If not, what would you suggest to change?

Page 9 / Question 1

33. Do you have any suggestions for the EDUCA-TOOL calculator?

- O Yes

- No

Page 9 / Question 2

34. If yes, what would you suggest to change?

Page 9 / Question 3

35. Do you any other suggestions to improve EDUCA-TOOL?

- Yes
- No

Page 9 / Question 4

36. If yes, what would you suggest to change?

Appendix B2: Relevant studies from the literature review that were considered in the development of EDUCATOOL

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Appendix B3: EDUCATOOL questionnaires and instructions

EDUcational Course Assessment TOOLkit (EDUCATOOL)

1. What is the purpose of EDUCATOOL?

The purpose of the EDUcational Course Assessment TOOLkit (EDUCATOOL) is to enable a simple evaluation of educational courses and training according to the Four-Level Kirkpatrick Model[2], the New World Kirkpatrick Model[3], Phillips' Five-Level Framework,[4] and similar frameworks, regardless of the mode of their delivery (e.g. face-to-face, paper-and-pencil, online).

2. Who is EDUCATOOL intended for?

It is primarily intended for:

- professionals involved in the development, delivery, and evaluation of educational courses
- organisations and businesses that implement educational training
- educators
- researchers

3. What does EDUCATOOL include?

EDUCATOOL includes two questionnaires and an Excel calculator for data processing. The course participants can be asked to complete the survey immediately after the course (see

[2] Kirkpatrick, D., & Kirkpatrick, J. (2006). Evaluating training programs: The four levels. Berrett-Koehler Publishers.
[3] Kirkpatrick, J. D., & Kirkpatrick, W. K. (2016). Kirkpatrick's four levels of training evaluation. Association for Talent Development.
[4] Phillips Jack J., & Phillips Patricia P. (2016). Handbook of Training Evaluation and Measurement Methods (4th ed.). Routledge.

section *Instructions for post-course evaluation*) or sometime (preferably, one to six months) after the course (see section *Instructions for follow-up evaluation(s)*).

4. What can be evaluated using EDUCATOOL?

The evaluation using EDUCATOOL encompasses the following components:

1. REACTION – The degree to which participants find the educational course satisfactory, relevant/useful, and engaging.

2. LEARNING – The degree to which participants gain and retain knowledge, develop and retain skills, and increase their interest in the subject as a result of attending the course.

3. BEHAVIOURAL INTENT / BEHAVIOUR – The degree to which participants utilise or intend to utilise the knowledge/skills gained in the course.

4. EXPECTED OUTCOMES / RESULTS – The degree to which participation in the course resulted in or is expected to result in improved personal performance and other benefits.

5. How can EDUCATOOL be used to perform the evaluation?

The evaluation can be done using one or both of the questionnaires, depending on the aims of the evaluation and available resources.

6. Citation

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7. Contact info

If you have any essential inquiries about EDUCATOOL, please contact tena.matolic@kif.unizg.hr.

8. Instructions for post-course evaluation

Which tool(s) to use?	EDUCATOOL post-course questionnaire; EDUCATOOL calculator
What is evaluated?	1. REACTION 1.1. Satisfaction (item 1) 1.2. Relevance (item 2) 1.3. Engagement (item 3) 2. LEARNING 2.1. Knowledge acquisition (item 4) 2.2. Knowledge retention (item 5) 2.3. Skill development (item 6) 2.4. Skill retention (item 7) 2.5. Attitude change (item 8) 3. BEHAVIOURAL INTENT 3.1. Utilisation (items 9 and 10) 4. EXPECTED OUTCOMES 4.1. Improved personal performance (item 11) 4.2. Other benefits (item 12)
When to conduct it?	Immediately after the course is finished.
How to conduct it?	Online or paper-based survey among the course participants.
How to process the collected data?	Participant responses (0–10) can be analysed separately for each questionnaire item. The total score in each of the 4 evaluation components (Reaction, Learning, Behavioural Intent, Expected Outcomes) can be calculated as the sum of weighted responses for all items within the given component. The calculation can be performed using the EDUCATOOL calculator, which can be downloaded here. In the calculation, you can use the following default weights: 0.833 for items 1–3; 0.5 for items 4–8; 1.25 for items 9 and 10; and 1.25 for items 11 and 12. The default weights give equal importance to each of the 4 evaluation components in the overall score, which means that the total score in each of the evaluation components will

	be in the range from 0 to 25. Alternatively, you can specify your own weights for each item. The overall evaluation score (0–100) can be calculated as the sum of total scores for all evaluation components.

9. EDUCATOOL post-course questionnaire

On a scale from 0 (“completely disagree”) to 10 (“completely agree”), please express your level of agreement with the following statements:

1. Overall, I am satisfied with this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
2. I find this course useful.	0 1 2 3 4 5 6 7 8 9 10	n/a
3. I was fully engaged in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
4. I acquired new knowledge in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
5. I will be able to retain this knowledge over the long term.	0 1 2 3 4 5 6 7 8 9 10	n/a
6. This course helped me develop skills.	0 1 2 3 4 5 6 7 8 9 10	n/a
7. I will be able to retain these skills over the long term.	0 1 2 3 4 5 6 7 8 9 10	n/a
8. Taking this course increased my interest in the subject.	0 1 2 3 4 5 6 7 8 9 10	n/a
9. I will use the knowledge acquired in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
10. I will use the skills developed in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
11. Participation in this course will improve my performance (e.g. work performance, academic performance, task-specific performance).	0 1 2 3 4 5 6 7 8 9 10	n/a
12. My participation in this course will result in other benefits (e.g. benefits for my business, institution, or community).	0 1 2 3 4 5 6 7 8 9 10	n/a

10. Instructions for follow-up evaluation(s)

Which tool(s) to use?	EDUCATOOL follow-up questionnaire; EDUCATOOL calculator
What is evaluated?	1. REACTION 1.1. Satisfaction (item 1) 1.2. Relevance (item 2) 1.3. Engagement (item 3) 2. LEARNING 2.1. Knowledge acquisition (item 4) 2.2. Knowledge retention (item 5) 2.3. Skill development (item 6) 2.4. Skill retention (item 7) 2.5. Attitude change (item 8) 3. BEHAVIOUR 3.1. Utilisation (items 9 and 10) 4. RESULTS 4.1. Improved personal performance (item 11) 4.2. Other benefits (item 12)
When to conduct it?	On a single or on several occasions, preferably 1–6 months after the course.
How to conduct it?	Online or paper-based survey among the course participants.
How to process the collected data?	Participant responses (0–10) can be analysed separately for each questionnaire item. The total score in each of the 4 evaluation components (Reaction, Learning, Behaviour, Results) can be calculated as the sum of weighted responses to all items within the given component. The calculation can be performed using the EDUCATOOL calculator, which can be downloaded here. In the calculation, you can use the following default weights: 0.833 for items 1–3; 0.5 for items 4–8; 1.25 for items 9 and 10; and 1.25 for items 11 and 12. The default weights give equal importance to each of the 4 evaluation components in the overall score, which means that the total score in each of the evaluation components will be in the range from 0 to 25. Alternatively, you can specify your own weights for each item. The overall evaluation score (0–100) can be calculated as the sum of total scores for all evaluation components.

11. EDUCATOOL follow-up questionnaire

On a scale from 0 (“completely disagree”) to 10 (“completely agree”), please express your agreement with the following statements:

1. Overall, I am satisfied with this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
2. This course has been useful to me.	0 1 2 3 4 5 6 7 8 9 10	n/a
3. I was fully engaged in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
4. I acquired new knowledge in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
5. I still possess the knowledge I acquired in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
6. This course helped me develop skills.	0 1 2 3 4 5 6 7 8 9 10	n/a
7. I still possess the skills developed in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
8. Taking this course increased my interest in the subject.	0 1 2 3 4 5 6 7 8 9 10	n/a
9. I have used the knowledge acquired in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
10. I have used the skills developed in this course.	0 1 2 3 4 5 6 7 8 9 10	n/a
11. Participation in this course has improved my performance (e.g. work performance, academic performance, task-specific performance).	0 1 2 3 4 5 6 7 8 9 10	n/a
12. My participation in this course resulted in other benefits (e.g. benefits for my business, institution, or community).	0 1 2 3 4 5 6 7 8 9 10	n/a

Appendix B4: EDUCATOOL calculator link

https://educatool.org/

Appendix C: Additional files from Study 3

Supplementary file with post-hoc analyses

Table 1: Post-hoc pairwise comparisons[a] by stakeholder type in *reaction*

Stakeholder type	Academic staff	Policymaker	Public health promoter	Sports association representative	Sports club representative	Student	Other
Academic staff	-	1.000	1.000	1.000	1.000	1.000	1.000
Policymaker	-	-	1.000	1.000	1.000	1.000	1.000
Public health promoter	-	-	-	1.000	1.000	1.000	1.000
Sports association representative	-	-	-	-	1.000	1.000	1.000
Sports club representative	-	-	-	-	-	0.108	1.000
Student	-	-	-	-	-	-	0.004
Other	-	-	-	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 2: Post-hoc pairwise comparisons[a] by stakeholder type in *learning*

Stakeholder type	Academic staff	Policymaker	Public health promoter	Sports association representative	Sports club representative	Student	Other
Academic staff	-	1.000	1.000	1.000	1.000	1.000	1.000
Policymaker	-	-	1.000	1.000	1.000	0.689	1.000
Public health promoter	-	-	-	1.000	1.000	0.531	1.000
Sports association representative	-	-	-	-	1.000	1.000	1.000
Sports club representative	-	-	-	-	-	< 0.001	1.000
Student	-	-	-	-	-	-	< 0.001
Other	-	-	-	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 3: Post-hoc pairwise comparisons[a] by stakeholder type in *behavioural intent*

Stakeholder type	Academic staff	Policymaker	Public health promoter	Sports association representative	Sports club representative	Student	Other
Academic staff	-	1.000	1.000	0.961	1.000	1.000	1.000
Policymaker	-	-	1.000	1.000	1.000	0.348	1.000
Public health promoter	-	-	-	1.000	1.000	0.931	1.000
Sports association representative	-	-	-	-	1.000	0.016	1.000
Sports club representative	-	-	-	-	-	< 0.001	1.000
Student	-	-	-	-	-	-	0.008
Other	-	-	-	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 4: Post-hoc pairwise comparisons[a] by stakeholder type in *expected outcomes*

Stakeholder type	Academic staff	Policymaker	Public health promoter	Sports association representative	Sports club representative	Student	Other
Academic staff	-	1.000	1.000	1.000	1.000	1.000	1.000
Policymaker	-	-	1.000	1.000	1.000	1.000	1.000
Public health promoter	-	-	-	1.000	1.000	0.825	1.000
Sports association representative	-	-	-	-	1.000	1.000	1.000
Sports club representative	-	-	-	-	-	0.018	1.000
Student	-	-	-	-	-	-	0.137
Other	-	-	-	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 5: Post-hoc pairwise comparisons[a] by stakeholder type in *time in course*

Stakeholder type	Academic staff	Policymaker	Public health promoter	Sports association representative	Sports club representative	Student	Other
Academic staff	-	0.033	0.055	0.769	0.659	0.140	1.000
Policymaker	-	-	1.000	1.000	1.000	1.000	0.113
Public health promoter	-	-	-	1.000	0.551	0.506	0.147
Sports association representative	-	-	-	-	1.000	1.000	1.000
Sports club representative	-	-	-	-	-	1.000	1.000
Student	-	-	-	-	-	-	0.864
Other	-	-	-	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 6: Post-hoc pairwise comparisons[a] by region of Europe in *reaction*

Region of Europe	Central and Eastern Europe	Northern Europe	Southern Europe	Western Europe
Central and Eastern Europe	-	0.014	0.661	< 0.001
Northern Europe	-	-	0.098	1.000
Southern Europe	-	-	-	< 0.001
Western Europe	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 7: Post-hoc pairwise comparisons[a] by region of Europe in *learning*

Region of Europe	Central and Eastern Europe	Northern Europe	Southern Europe	Western Europe
Central and Eastern Europe	-	0.255	0.689	< 0.001
Northern Europe	-	-	0.019	0.533
Southern Europe	-	-	-	< 0.001
Western Europe	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 8: Post-hoc pairwise comparisons[a] by region of Europe in *behavioural intent*

Region of Europe	Central and Eastern Europe	Northern Europe	Southern Europe	Western Europe
Central and Eastern Europe	-	0.282	0.904	< 0.001
Northern Europe	-	-	0.051	1.000
Southern Europe	-	-	-	< 0.001
Western Europe	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Table 9: Post-hoc pairwise comparisons[a] by region of Europe in *expected outcomes*

Region of Europe	Central and Eastern Europe	Northern Europe	Southern Europe	Western Europe
Central and Eastern Europe	-	0.190	1.000	< 0.001
Northern Europe	-	-	0.320	0.430
Southern Europe	-	-	-	< 0.001
Western Europe	-	-	-	-

a P-values from Mann-Whitney U test corrected for multiple comparisons using Bonferroni correction

Appendix D: Candidate's background

Personal background

Tena Matolić was born on March 27, 1994, in Slavonski Brod, Croatia. From an early age, she was fascinated by experiments of various kinds and was very curious child. Tena was also engaged in physical activities and sports from a young age, particularly dancing, football, tennis, and field hockey. In her student years, she got introduced to yoga, breathing exercises, and meditation. She soon travelled to India to study yogic practices at Swami Vivekananda Yoga Anusandhana Samsthana. Additionally, she has attended numerous educational programs and specializations in yoga, fitness, healthy movement, and mindful practices.

Professional scientific development

Tena completed her secondary education at the Science and mathematics high school in Županja in 2012. In 2018, she earned a master's degree in education and fitness from the Faculty of Kinesiology, University of Zagreb. During the academic year 2017-2018, she also completed a semester of additional specialization in Kinesiology at Masaryk University, Faculty of Sport Studies in Brno, Czech Republic. In 2020, she enrolled in a Doctoral study of Kinesiology at the Faculty of Kinesiology, University of Zagreb.

Ccurrently, works as a research associate at the Laboratory for Physical Activity Epidemiology and Promotion, Faculty of Kinesiology, University of Zagreb. She is also an associate for the "Physical activity and health" course and the "Kinesiological recreation" course. Additionally, she served as a researcher and helped coordinating the Erasmus + Collaborative Partnership project entitled "Creating mechanisms for continuous implementation of the Sports Club for Health guidelines in the European Union" (SCforH 2020-22). Tena is an active member of the Health-Enhancing Physical Activity (HEPA) Europe organisation and currently serves as the interim leader for the SCforH Working Group under the HEPA Europe organisation. She is also a member of Sports Club for Health (SCforH) consortium, dedicated to promoting HEPA in sports setting. Furthermore, she serves as an editor for the Sports Recreation section at a Kinesiology conference in Opatija, Croatia.

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Conferences and congresses

1. International Yoga and Ayurveda conference, 3rd – 5th October 2021, Zagreb, Croatia. Presentation: "*Testimony of benefits of Yoga and Ayurveda in Sports rehabilitation*".
2. 9th International Scientific Conference on Kinesiology, 15th – 19th September 2021, Opatija, Croatia. Presentations: "*The influence of yoga on the subjective perception of stress, anxiety, and depression on individuals with and without previous yoga experience"* (won "Miloš Mraković Young Researcher Award"), and "*Sports Club for Health (SCforH): 12 years of a successful European initiative*".
3. 11th HEPA Europe conference "An ecosystem approach to health-enhancing physical activity promotion", 31st August – 2nd September 2022, Nice, France. Presentation: "*Promotion of health-enhancing physical activity in Europe: a cross-sectional study among 536 sports organisations*". Coordinating: Sports Club for Health (SCforH) international symposium for sports clubs and associations.
4. International conference for sports clubs and associations: Improving health through sport, 22nd of September 2022. Leading practical workshop: *Newly created Sports Club for Health online learning tool*.
5. 1st international conference CALT: Creative Approaches to Learning and Teaching, 24th – 25th of March 2023. Presentation: "*Creation of the Sports Club for Health online learning tool*".
6. 12th HEPA Europe conference "Implementing health-enhancing physical activity research: from science to policy and practice", 11th – 13th September 2023, Leuven,

Belgium. Presentation: "*Evaluation of the Sports Club for Health (SCforH) online learning tool among various stakeholders and end-users from 34 European countries*". Leading: Sports Club for Health HEPA working group annual meeting.

7. Conference on healthy lifestyles "Together to health", 20th of April 2023, Rovinj, Croatia. Presentation: "*How important is physical activity for health?*".
8. 13th HEPA Europe conference "Optimising health enhancing physical activity: the importance of inclusion", 19th – 21st of August 2024, Dublin, Ireland. Presentation: "*EDUcational Course Assessment TOOLkit (EDUCATOOL): development and application in a Health-Enhancing Physical Activity (HEPA) promotion intervention*"

Awards

1. 2013 DEAN'S AWARD for the best 1st year student of the integrated undergraduate and graduate university study.
2. Miloš Mraković young researcher award at 9th International Scientific Conference on Kinesiology, 19th of September 2021.

Appendix E: Published papers

BMC Public Health

RESEARCH

Open Access

Promotion of health-enhancing physical activity in the sport sector: a study among representatives of 536 sports organisations from 36 European countries

Tena Matolić[1], Danijel Jurakić[1*], Hrvoje Podnar[1], Ivan Radman[1] and Željko Pedišić[2*]

Abstract

Background It is a common belief that most sports clubs and organisations are primarily focused on elite sports while placing less emphasis on the promotion of health-enhancing physical activity (HEPA). However, there is a lack of evidence on this topic in the scientific literature. Therefore, the aim of this study was to determine the level and correlates of the commitment of sports organisations in Europe to HEPA promotion.

Methods Representatives of 536 sports organisations from 36 European countries responded to our survey. A multiple regression analysis was conducted with the commitment of sports organisation to HEPA promotion (0 ["not at all"] – 10 ["most highly"]) as the outcome variable and organisation type ("national sport association" reference group [ref], "European sports federation", "national umbrella sports organisation", "national Olympic committee", "national sport-for-all organisation"), headquarters in a European Union member state ("no" [ref], "yes"), region of Europe ("Western" [ref], "Central and Eastern", "Northern", "Southern"), commitment to elite sports ("low" [ref], "medium", "high"), and awareness of Sports Club for Health (SCforH) guidelines ("no" [ref], "yes") as explanatory variables.

Results Approximately 75.2% (95% confidence interval [CI]: 71.5, 78.8) of sports organisations were highly committed to elite sports. Only 28.2% (95% CI: 24.4, 32.0) of sports organisations reported a high commitment to HEPA promotion. A higher commitment to HEPA promotion was associated with the national Olympic committees ($\beta = 1.48$ [95% CI: 0.41, 2.55], $p = 0.007$), national sport-for-all organisations ($\beta = 1.68$ [95% CI: 0.74, 2.62], $p < 0.001$), location in Central and Eastern Europe ($\beta = 0.56$ [95% CI: 0.01, 1.12], $p = 0.047$), and awareness of SCforH guidelines ($\beta = 0.86$ [95% CI: 0.35, 1.37], $p < 0.001$).

Conclusion From our findings, it seems that most sports organisations are primarily focused on elite sports. Coordinated actions at the European Union and national levels are needed to improve the promotion of HEPA through sports organisations. In this endeavour, it may be useful to consider national Olympic committees, national

*Correspondence:
Danijel Jurakić
danijel.jurakic@kif.unizg.hr
https://www.linkedin.com/in/danijel-jurakic-4139251a8/
Željko Pedišić
zeljko.pedisic@vu.edu.au

Full list of author information is available at the end of the article

sport-for-all organisations, and relevant sports organisations in Central and Eastern Europe as role models and to raise the awareness of SCforH guidelines.

Keywords Europe, Health-enhancing sports, Physical activity, Sports association, Sports club, Sports Club for Health Guidelines

Background

Physical activity has a wide range of benefits for health and well-being [1]. It reduces the risk of various chronic diseases, such as coronary heart disease, type 2 diabetes, metabolic syndrome, obesity, and several types of cancer [1]. Even just one hour of moderate-intensity physical activity per week is associated with a 33% lower risk of mortality [2]. Despite these benefits and global efforts to promote physical activity, the global prevalence of not meeting the recommended levels of physical activity is still very high; approximately 27.5% among adults [3] and 81% among adolescents [4]. Physical activity promotion is, therefore, one of the key public health priorities globally.

Different settings provide opportunities to engage in physical activity, with sports clubs being among the most represented ones [5]. While common reasons for participation in sports are enjoyment, social interactions, and weight management [6], sports club members may also be elite athletes focused on training at a high load and achieving top-level results in competition [7]. In this paper, we generally refer to sports participation for recreational purposes.

Epidemiological research has shown a range of health benefits associated specifically with recreational sports participation, including improved aerobic and metabolic fitness, improved cardiovascular function at rest, reduced adiposity, reduced risk of all-cause mortality, and improved psychological health and social well-being [8–11]. The individuals who play sports in a sports club are more likely to regularly engage in physical activity than others [12–14], and the participation in sports activities, therefore, significantly contributes to achieving recommended levels of physical activity [13, 15, 16]. Other benefits of sports for the society include better integration of minorities [17] and people with disabilities [18], as well as improved socialisation of older adults, children, and adolescents [8].

The implementation of sports programmes in the community is considered as one of the "best investments" for population health [19]. A study conducted in England suggested that encouraging participation in activities of higher intensity among females, preventing reduction in exercise intensity associated with ageing among males, and providing adequate facilities are key policy challenges for HEPA promotion through sports [20].The sports clubs may play an important role in addressing these and other challenges in health promotion, because of their high population reach [21, 22] and a range of health benefits associated with sports club participation [14, 23]. Therefore, sports clubs are deemed as a suitable setting for HEPA promotion [5, 24].

In some countries, such as the United Kingdom, sport and physical activity policies seem to have a twofold focus on top-level performance in competitions and 'active citizens' [25]. Activities that generate more economic benefits are likely to receive more funding, and elite sport is often perceived as more "valuable" in this regard [25, 26]. Such perception may facilitate the development of professional sports clubs [27], while limiting opportunities for mass sport participation. Complementarity between elite sport development and the promotion of 'sport for all' is often discussed, especially at the political level [28] but it should not necessarily be assumed. Even in countries with national policies that promote such complementarity, sports clubs and organisations at the grassroot level may encounter a range of difficulties when trying to achieve and maintain a good balance between elite sports development and HEPA promotion, such as lack of funding, inadequate facilities and equipment, shortage of staff and volunteers, and insufficient "how-to" knowledge [5, 14, 18, 28–30].

To help overcome these difficulties, the largest European Union (EU) initiative for the promotion of HEPA through sports clubs—*Sports Club for Health* (SCforH)—has been in place since 2008. The principles of the SCforH approach and recommended steps for its implementation in sports clubs have been described in the SCforH guidelines [5], textbook [31], and online course. In 2013, the Council of the EU recognised the importance of implementing the SCforH guidelines in sports clubs and listed it as one of 23 indicators for evaluation of health-enhancing physical activity (HEPA) promotion in the EU countries. In the White Paper on Sport, the European Commission supported the promotion of sports to achieve a healthy society and emphasised the importance of HEPA promotion as an integral part of sports organisations [32]. Despite the recognition of sports clubs as an important setting for HEPA promotion at the highest political level in the EU [33–35], a recent study found that only 12% of EU citizens are involved in sports and recreational activities within sports clubs [36].

It is widely considered that most sports clubs and organisations are primarily focused on elite sports and achieving top results in competitions, while placing less emphasis on sport-for-all and HEPA in general [12,

17, 28–30]. However, no recent quantitative evidence is available to corroborate this widespread assumption, and the actual commitment of sports clubs and organisations to HEPA remains to be elucidated. Such evidence is important from a public health perspective, as it would inform future HEPA promotion policies and initiatives in the sports sector. Therefore, the aim of this paper was to explore the level and correlates of commitment of sports organisations in Europe to promoting HEPA.

Methods

Study design and participants

In 2016/17, we conducted a questionnaire-based, cross-sectional study among representatives of sports organisations from 36 European countries, including 28 EU member states at the time, 4 candidate countries (Albania, North Macedonia, Serbia, and Turkey), Iceland, Monaco, Norway, and Switzerland. Our study sample did not include regional- and local-level organisations. Out of 1717 invited representatives of sports organisations, 536 agreed to participate in the study and responded to the survey. All participants gave informed consent before responding to the survey. The sample included representatives of: European umbrella sports organisations, national Olympic committees, national sport associations, national sport-for-all organisations, and national umbrella sports organisations. Sample characteristics are presented in Table 1. The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (ref: 102/2016).

Measures

We collected the following data in relation to the participating sports organisations: the type of organisation, the country in which their headquarters are located, the awareness of SCforH guidelines among their representatives, and their level of commitment to promoting different types of physical activity. The awareness of SCforH guidelines was assessed with the question *"Prior to this survey, as a representative of your sports organisation, were you aware of the 'Sports Club for Health Guidelines'?"*. The level of commitment to promoting different types of physical activity data was assessed with the questions: "*Please estimate how much is your sports organisation committed to the promotion of:"* (a) *"Elite sports"*, (b) *"Health-enhancing sports, recreational sports or 'sport for all'"*, (c) *"Health-enhancing exercise (for example, Nordic walking, aerobics, gym workout)"*, and (d) *"Health-enhancing lifestyle physical activities (for example, gardening, walking or cycling for transport, stair climbing)"*, with the response scale from 0 ("*Not at all*") to 10 ("*Most highly*"). The questions were developed through discussion between three authors (ZP, HP, and IR), and their *a priori* validity was confirmed by 11 experts in physical activity research and promotion, members of the SCforH Consortium. Based on the responses to these four questions, we created two summary variables: commitment to the promotion of elite sports (question "a") and commitment to HEPA promotion (calculated as the arithmetic mean of responses to the questions b, c, and d), with satisfactory inter-rater reliability (intraclass correlation coefficient [ICC] = 0.72 and 0.81, respectively). We additionally determined the EU membership and region of Europe in which the organisation is located. According to EuroVoc [37], we classified the countries into four regions: Central and Eastern, Western, Southern, and Northern Europe.

Data analysis

We calculated percentages and their 95% confidence intervals (CIs) for "low" (0–3), "medium" (4–6), and "high" (7–10) levels of commitment to HEPA promotion in the overall sample and stratified by the type of organisation, country membership in the EU, region of Europe, commitment to elite sports, and the awareness of SCforH guidelines. Fisher's exact test was used to test the difference between levels of commitment of sports organisations to HEPA promotion across the strata. The categorisation of commitment to HEPA into "low", "medium", and "high" was used only for the descriptive purposes and tests of differences.

The multiple linear regression analysis was used to examine the relationships between the level of commitment to the promotion of HEPA expressed on the scale from 0 to 10 (dependent variable) and the type of organisation (reference group [ref] = national sport associations), commitment to the promotion of elite sports categorised as "low" (0–3), "medium" (4–6), and "high" (7–10) commitment (ref = "*low commitment*"), EU membership (ref = non-member), region of Europe (ref = Western), and the awareness of SCforH guidelines (ref = "*No*"). We presented unstandardized regression coefficients alongside their 95% confidence intervals (CIs) and p-values. The regression model was checked for normality of residuals using the normal probability plot, for multicollinearity using the variance inflation factors, and for heteroscedasticity using the predicted vs. residuals plot. The statistical significance was tested at $p < 0.05$.

Additionally, we conducted three multiple ordinal logistic regression (proportional odds) analyses, with the above-mentioned set of independent variables and the commitment to the promotion of: (i) health-enhancing sports activity; (ii) health-enhancing exercise; and (iii) health-enhancing lifestyle physical activities as outcome variables. The dependent variables in these analyses were expressed on the scale from 0 to 10. The ordinal logistic regression analyses were conducted because the multiple linear regression models with these three dependent

variables did not meet assumptions for linear regression analysis, particularly in regard to the normality of residuals. For each ordinal regression model, we assessed proportional odds assumption and goodness of fit using the Hosmer-Lemeshow, Brant, Lipsitz, and Pulkstenis-Robinson tests. The descriptive analyses, Fisher's exact tests, and multiple linear regression analysis were performed using RStudio (version 1.4.1103) with "stats" [38], "pastecs" [39], and "performance" [40] packages. The ordinal regression analyses were performed in RStudio (version 2022.12.0+353 "Elsbeth Geranium" Release) with "MASS" [41], "brant" [42], and "generalhoslem" [43] packages.

Results

Approximately three out of four (75.2% [95% CI: 71.5, 78.8]) sports organisations reported a high commitment to elite sports. Less than one third (28.2% [95% CI: 24.4, 32.0]) of sports organisations reported a high commitment to HEPA promotion (Table 1). We found significant (unadjusted) differences in the commitment to HEPA promotion by the type of organisation ($p<0.001$), the level of commitment to elite sports ($p=0.031$), and the awareness of SCforH guidelines ($p<0.001$). The highest percentage of sports organisations with a low commitment to HEPA promotion was found among national sport associations (34.8% [95% CI: 30.4, 39.2]), European umbrella sports federations (38.5% [95% CI: 12.0, 64.9]), the organisations that were highly committed to the promotion of elite sports (34.0% [95% CI: 29.4, 38.6]) and the organisations whose representatives were not aware of the SCforH guidelines (35.7% [95% CI: 31.1, 40.3]).

The multiple linear regression analysis, adjusted for all independent variables in the model, showed that the commitment of sports organisations to HEPA promotion is associated with the type of organisation, the region of Europe in which the organisation was located, and the awareness of SCforH guidelines (Table 2). The national Olympic committees ($\beta=1.48$ [95% CI: 0.41, 2.55], $p=0.007$) and the national sport-for-all organisations ($\beta=1.68$ [95% CI: 0.74, 2.62], $p<0.001$) were significantly more committed to HEPA promotion than national sport associations (ref). The sports organisations in Central and Eastern Europe were significantly more committed to HEPA promotion, compared with the sports organisations in Western Europe ($\beta=0.56$ [95% CI: 0.01, 1.12], $p=0.047$). The awareness of SCforH guidelines was associated with a higher commitment of the sports

Table 1 The commitment of sports organisations in Europe to the promotion of health-enhancing physical activity (HEPA)

Category	*n*[a] (%)	Commitment to HEPA promotion; % (95% CI)[b]			
		Low	Medium	High	*p*[c]
Overall sample	536 (100)	32.1 (28.1, 36.0)	39.7 (35.6, 43.9)	28.2 (24.4, 32.0)	< 0.001
Type of organisation					
National sport associations	451 (84.1)	34.8 (30.4, 39.2)	42.1 (37.6, 46.7)	23.1 (19.2, 26.9)	< 0.001
European umbrella sports federations	13 (2.4)	38.5 (12.0, 64.9)	30.8 (5.7, 55.9)	30.8 (5.7, 55.9)	
National umbrella sports organisations	12 (2.2)	25.0 (0.5, 49.5)	25.0 (0.5, 49.5)	50.0 (21.7, 78.3)	
National Olympic committees	20 (3.7)	20.0 (2.5, 37.5)	25.0 (6.0, 44.0)	55.0 (33.2, 76.8)	
National sport-for-all organisations	40 (7.5)	7.5 (-0.7, 15.7)	27.5 (13.7, 41.3)	65.0 (50.2, 79.8)	
European Union					
No	68 (12.7)	32.4 (21.2, 43.5)	45.6 (33.8, 57.4)	22.1 (12.2, 31.9)	0.430
Yes	468 (87.3)	32.1 (27.8, 36.3)	38.9 (34.5, 43.3)	29.1 (24.9, 33.2)	
Region[d]					
Western Europe	148 (27.6)	37.2 (29.4, 44.9)	35.8 (28.1, 43.5)	27.0 (19.9, 34.2)	0.089
Central and Eastern Europe	145 (27.1)	26.2 (19.0, 33.4)	42.1 (34.0, 50.1)	31.7 (24.1, 39.3)	
Northern Europe	155 (28.9)	34.2 (26.7, 41.7)	44.5 (36.7, 52.3)	21.3 (14.8, 27.7)	
Southern Europe	88 (16.4)	29.5 (20.0, 39.1)	34.1 (24.2, 44.0)	36.4 (26.3, 46.4)	
Commitment to elite sports					
Low	55 (10.3)	25.5 (13.9, 37.0)	29.1 (17.1, 41.1)	45.5 (32.3, 58.6)	0.031
Medium	78 (14.6)	26.9 (17.1, 36.8)	41.0 (30.1, 51.9)	32.1 (21.7, 42.4)	
High	403 (75.2)	34.0 (29.4, 38.6)	40.9 (36.1, 45.7)	25.1 (20.8, 29.3)	
Awareness of SCforH[e] guidelines					
No	420 (78.4)	35.7 (31.1, 40.3)	41.0 (36.2, 45.7)	23.3 (19.3, 27.4)	< 0.001
Yes	116 (21.6)	19.0 (11.8, 26.1)	35.3 (26.6, 44.0)	45.7 (36.6, 54.8)	

a Number of sports organisations

b Percentage of sports organisations with a low, medium, or high level of commitment to the promotion of HEPA and its 95% confidence interval

c P-value from the Fisher's exact test

d Region of Europe according to EuroVoc

e Sports Club for Health

Table 2 Correlates of the commitment of sports organisations in Europe to the promotion of health-enhancing physical activity (HEPA): results of a multiple linear regression analysis

Independent variables	*β* (95% CI)[a]	*p*[b]
Type of organisation		
National sport associations	*Ref*[c]	
European umbrella sports federations	0.86 (-0.48, 2.20)	0.206
National umbrella sports organisations	0.51 (-0.87, 1.89)	0.471
National Olympic committees	1.48 (0.41, 2.55)	0.007
National sport-for-all organisations	1.68 (0.74, 2.62)	< 0.001
European Union		
No	*Ref*[c]	
Yes	-0.17 (-0.79, 0.44)	0.577
Region[d]		
Western Europe	*Ref*[c]	
Central and Eastern Europe	0.56 (0.01, 1.12)	0.047
Northern Europe	0.11 (-0.43, 0.65)	0.696
Southern Europe	0.40 (-0.23, 1.03)	0.216
Commitment to elite sports		
Low	*Ref*[c]	
Medium	0.10 (-0.80, 1.00)	0.834
High	-0.42 (-1.23, 0.38)	0.305
Awareness of SCforH[e] ***guidelines***		
No	*Ref*[c]	
Yes	0.86 (0.35, 1.37)	<0.001

a Unstandardized regression coefficient adjusted for all independent variables listed in the table and its 95% confidence interval

b P-value for the unstandardized regression coefficient

c Reference group

d Region of Europe according to EuroVoc

e Sports Club for Health

organisation to HEPA promotion (β=0.86 [95% CI: 0.35, 1.37], p<0.001).

Compared with national sports organisations, European umbrella sports federations had a higher commitment to the promotion of health-enhancing sports, while national Olympic committees had a higher commitment to the promotion of health-enhancing exercise and health-enhancing lifestyle physical activities (Table 3). National sport-for-all organisations and organisations whose representatives were aware of the SCforH guidelines had a higher commitment to all three types of HEPA. Compared with sports organisations from Western Europe, the organisations from Central and Eastern Europe and Southern Europe had a higher commitment to the promotion of health-enhancing lifestyle physical activities.

Discussion

Key findings

The main finding of our study is that less than one third of sports organisations in Europe are highly committed to HEPA promotion. We also found that a higher commitment to HEPA promotion is associated with the national Olympic committees, national sport-for-all organisations, sports organisations from the Central and Eastern Europe, and the awareness of SCforH guidelines. Most findings for the commitment of sports organisations to specific types of HEPA were in accordance with the findings for overall HEPA.

Level of commitment to HEPA promotion

Our findings suggest that the potential for health promotion through sports organisations is still underutilised. It may be that sports clubs lack the necessary resources, such as funding, adequate facilities, volunteers, and staff, to effectively implement both HEPA and elite sport programmes [20]. Consequently, they may be unable to provide the necessary opportunities for widespread community involvement in their activities [20]. It has been suggested that prioritising investments in elite sports may have a negative impact on investments in 'sport for all' [29]. Also, the historical orientation of sports organisations to professional sports and achieving their core "obligation" of winning medals in competitions [29, 30] may limit their commitment to 'sport for all'.

With sports for health becoming more and more important topic on the political agenda, the complementarity between elite sport development and the promotion of 'sport for all' is increasingly discussed [28]. The complementarity of elite sports and 'sport for all' assumed in the "virtuous cycle of sport" and the "pyramid theory" has been questioned [28, 44]. While some authors have put forward arguments for a divergent development of elite sports and 'sport for all' [44], others suggest there is evidence of some complementarity between the two [28]. Nevertheless, striking the right balance between the investments in elite sport and 'sport for all' is needed to improve HEPA promotion, regardless of the level of their complementarity.

Previous research has shown that SCforH programmes were implemented in only seven EU countries in 2015 [45] and in only six EU countries in 2018 [46], which may partially explain the relatively low percentage of European sports organisations in our sample that were highly committed to HEPA promotion. While European Union policies emphasise the importance of HEPA promotion through sports clubs and organisations, it may be that this has not been adequately addressed in national-level policies in all member states. Improvements in national physical activity policies may be needed to facilitate the promotion of HEPA through sports organisations. It is worth emphasising that several factors may influence the development, implementation, and impact of sport policies in a given country, and that they may differ between countries, making policy convergence a challenging task [47]. Differences in national policies and structure of the sports system may explain variability in sport

Table 3 Correlates of the commitment of sports organisations in Europe to the promotion of health-enhancing sports activity (HESA), health-enhancing exercise (HEXE), and health-enhancing lifestyle physical activities (HELPA): results of three multiple ordinal logistic regression analyses

Independent variables	HESA		HEXE		HELPA	
	OR (95% CI)[a]	p[b]	OR (95% CI)[a]	p[b]	OR (95% CI)[a]	p[b]
Type of organisation						
National sport associations	*Ref*[c]		*Ref*[c]		*Ref*[c]	
European umbrella sports federations	3.70 (1.26, 11.71)	0.019	0.85 (0.29, 2.48)	0.771	1.61 (0.54, 4.69)	0.380
National umbrella sports organisations	1.72 (0.58, 5.28)	0.332	2.14 (0.73, 6.08)	0.156	0.95 (0.35, 2.53)	0.913
National Olympic committees	2.06 (0.89, 4.86)	0.092	3.02 (1.31, 7.09)	0.010	2.82 (1.27, 6.32)	0.011
National sport-for-all organisations	3.17 (1.52, 6.78)	0.002	3.56 (1.74, 7.43)	0.001	2.44 (1.19, 5.04)	0.015
European Union						
No	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Yes	1.03 (0.66, 1.61)	0.884	0.84 (0.54, 1.30)	0.435	0.81 (0.52, 1.29)	0.376
Region[d]						
Western Europe	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Central and Eastern Europe	1.21 (0.80, 1.82)	0.371	1.36 (0.90, 2.05)	0.142	1.75 (1.16, 2.64)	0.008
Northern Europe	1.40 (0.93, 2.11)	0.103	0.98 (0.65, 1.46)	0.908	0.95 (0.63, 1.42)	0.787
Southern Europe	1.06 (0.66, 1.69)	0.817	1.13 (0.71, 1.81)	0.610	1.67 (1.03, 2.69)	0.037
Commitment to elite sports						
Low	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Medium	0.79 (0.40, 1.57)	0.503	0.87 (0.44, 1.70)	0.675	1.15 (0.60, 2.20)	0.681
High	0.94 (0.49, 1.75)	0.837	0.65 (0.35, 1.20)	0.173	0.64 (0.35, 1.15)	0.133
Awareness of SCforH[e]guidelines						
No	*Ref*[c]		*Ref*[c]		*Ref*[c]	
Yes	1.48 (1.01, 2.19)	0.047	1.82 (1.24, 2.67)	0.002	1.78 (1.21, 2.61)	0.003

a Odds ratio adjusted for all independent variables listed in the table and its 95% confidence interval

b P-value for the odds ratio

c Reference group

d Region of Europe according to EuroVoc

e Sports Club for Health

participation rates across different countries [48]. Therefore, when developing national policies relevant to HEPA promotion through sports clubs, policymakers should consider examples of good policies and organisational structures from the countries with higher sport participation rates.

Correlates of the commitment of sports organisations to HEPA promotion

We found that the organisations from Central and Eastern Europe have a higher overall commitment to HEPA promotion than the sports organisations from Western Europe, while the organisations from Southern Europe had a high commitment to health-enhancing sports activity. This is in contrast to the findings of Breuer et al. [17] study suggesting that the Central and Eastern European as well as Southern countries are oriented more towards elite sports and less towards other benefits and values of sports, compared with the Western European countries. However, it should be noted that the Breuer et al. [17] study included only four Central and Eastern European countries; namely, Czech Republic, Hungary, Poland, and Slovenia, and only three Southern countries: Greece, Italy, and Spain. It may be that our findings are different because they reflect the situation in a wider range of countries in the region. During the communist era in these countries, sport was controlled exclusively by the governments, and, according to Breuer et al. [17], they favoured elite sport and used it to build their country's international reputation. However, after the World War II, the "Soviet concept of physical culture" was also very popular in this European region [49]. The concept addressed population health and recreation through physical education, health literacy, hygiene, competitive sport, and sport for all [50]. It is possible that sports organisations in Central and Eastern Europe inherited these historical values, which would explain their higher commitment to HEPA promotion found in our study. From our analyses, it seems that the higher overall commitment of sports organisations from Central and Eastern Europe to HEPA is mainly due to their higher commitment to health-enhancing lifestyle physical activities.

Our findings also suggest that the national Olympic committees and sport-for-all organisations have the highest overall commitment to HEPA promotion, while the

European umbrella sports federations had a high commitment to the promotion of health-enhancing sports activity. This was expected due to their jurisdiction and scope of activities. For example, the primary vision of The Association For International Sport for All (TAFISA), which is reflected in the visions of many national sport-for-all organisations, is that all people should have access to physical activity that is necessary to achieve a healthy lifestyle [51]. The national Olympic committees operate in accordance with the recent Olympic agenda that recommends to strengthen the role of sports in reaching the UN Sustainable Development Goals by supporting social and health development through increased sports participation [33]. Another possible explanation for the higher commitment of national Olympic committees to HEPA promotion is that for larger organisations it may be easier commit to both elite and recreational sports, due to their available resources (e.g., membership, funding, and employed staff) [52]. A similar assumption was also made when comparing HEPA promotion in larger and smaller sports clubs [17]. There is a widely held belief that hosting major sporting events and having national teams that perform well at such events would facilitate higher sport participation in the population [28]. However, the empirical evidence to support this belief is questionable [28]. In their attempt to increase sports participation in the population, it is possible that Olympic committees therefore put increased emphasis on alternative strategies, such as promoting HEPA through sports clubs.

The association between the awareness of SCforH guidelines and a higher commitment of sports organisations to HEPA promotion indicates the importance of disseminating the SCforH guidelines in Europe and confirms the significance of this indicator in the Council Recommendations. This is in accordance with previous findings from the public health sector showing that practical guidelines and initiatives can lead to positive changes [53, 54]. Policymakers should aim to improve the commitment of sports organisations to HEPA promotion by issuing policies and increasing funding that would support a wide adoption of the SCforH approach.

Implications for policy and practice

Our findings may inform the development and/or refinement of EU- and national-level physical activity policies and practices of sports organisations in relation to HEPA promotion. In specific, national Olympic committees and sport-for-all organisations can be used as models for HEPA promotion in other types of sports organisations. This should be done by taking into consideration that their approaches to HEPA promotion may need to be adapted to better align with the aims and scope of other types of sports organisations. A number of examples of good practice of HEPA promotion through sports organisations are likely to be found among the countries in Central and Eastern Europe. However, it should be taken into account that the way HEPA promotion through sports organisations is facilitated should be tailored to the specific political, socioeconomic, and cultural context in the given country. The commitment of sports organisations to HEPA promotion could also be increased by raising the awareness and utilisation of SCforH guidelines among their representatives. The recommended approaches for implementation of SCforH guidelines in sports organisations have been described elsewhere [5, 55].

Strengths and limitations

The key strengths of this study include: (1) quantitative assessment of the commitment of sports organisations to promoting different types of physical activity, which allowed us to analyse its correlates; (2) study sample that included the representatives of sports organisations, which ensured that the participants have adequate knowledge and/or access to information needed to complete the survey; and (3) large and diverse sample size including 536 sports organisations from 36 European countries, which allowed us to make comparisons by the type of organisation and by the region and EU membership of the country in which the organisation is located.

The study had four key limitations. First, its cross-sectional design prevented drawing conclusions about the direction of causality between the variables. For example, it is possible that a higher awareness of SCforH guidelines was either a cause or a consequence of a higher commitment to the HEPA promotion, or that the relationship between these variables was bidirectional. Our findings should therefore be taken with caution and further investigated in longitudinal and intervention studies. Second, other characteristics of sports organisations that were not assessed in our survey may be associated with the commitment to HEPA promotion. Therefore, there is a possibility that our findings are affected by residual confounding. Future studies on this topic should aim to include a wider range of explanatory variables in their analyses. Third, the study sample did not include sports organisations from all European countries, which may limit the generalisability of our findings. Fourth, the level of commitment to specific types of physical activity may vary across different countries. However, we could not include all countries as independent variables in the regression model, because our sample was too small and that would significantly increase the probability of type 2 error. Therefore, we grouped countries into four regions.

Conclusion

From our findings, it seems that most sports organisations are highly committed to elite sports. Only one third of sports organisations in Europe are highly committed to HEPA promotion. Given that increasing the population levels of physical activity is one of the key public health priorities in Europe, coordinated actions at the EU and national levels are needed to improve the promotion of HEPA through sports organisations. This should include various stakeholders in the sports sectors, such as representatives of sports clubs and associations, HEPA researchers and promoters, policymakers in the areas of health and sport, and tertiary education teachers and students of sport and exercise science, physical education, and health promotion. In this endeavour, it may be useful to consider national Olympic committees, national sport-for-all organisations, and relevant sports organisations in Central and Eastern Europe as role models and raise the awareness of SCforH guidelines among the representatives of sports organisations. Future research should examine other possible strategies to facilitate HEPA promotion through sports organisations, especially initiatives by policymakers at the EU and national levels aimed to improve sport policies and ways to ensure a better balance between funding for elite sports and 'sport for all'.

Abbreviations

EU	European Union
HEPA	Health-enhancing physical activity
HESA	Health-enhancing sports activity
HEXE	Health-enhancing exercise
HELPA	Health-enhancing lifestyle physical activities
SCforH	Sports Club for Health

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Authors' contributions

ŽP, DJ, and TM conceptualised the study. ŽP, HP, and IR designed and conducted the survey. TM and ŽP analysed the data and interpreted the results. TM drafted the manuscript. All authors contributed to writing the manuscript and approved all its versions.

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Availability of data and materials

According to the conditions of the ethics approval, the data used in this study cannot be shared publicly. The data will be shared upon a reasonable request sent to the corresponding author.

Declarations

Ethics approval and consent to participate

The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (ref: 102/2016). The participation in the study was voluntary and all participants gave informed consent before responding to the survey. The study was conducted in accordance with the Declaration of Helsinki.

Consent for publication

Not applicable.

Competing interests

The authors have no conflicts of interest relevant to this article.

Author details

[1]Faculty of Kinesiology, University of Zagreb, Horvaćanski zavoj 15, Zagreb 10110, Croatia
[2]Institute for Health and Sport, Victoria University, Footscray Park Campus, Ballarat Road, Footscray, VIC 3011, Australia

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EDITED BY
C. Paul Morrey,
Utah Valley University, United States

REVIEWED BY
Vilko Petrić,
University of Rijeka, Croatia
Donald Roberson,
Palacký University Olomouc, Czechia

*CORRESPONDENCE
Željko Pedišić
✉ zeljko.pedisic@vu.edu.au
Danijel Jurakić
✉ danijel.jurakic@kif.unizg.hr

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Development and validation of the EDUcational Course Assessment TOOLkit (EDUCATOOL) – a 12-item questionnaire for evaluation of training and learning programmes

Tena Matolić[1], Danijel Jurakić[1]*, Zrinka Greblo Jurakić[2], Tošo Maršić[3] and Željko Pedišić[4]*

[1]Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia, [2]Faculty of Croatian Studies, University of Zagreb, Zagreb, Croatia, [3]Faculty of Kinesiology, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia, [4]Institute for Health and Sport, Victoria University, Melbourne, VIC, Australia

Introduction: The instruments for evaluation of educational courses are often highly complex and specifically designed for a given type of training. Therefore, the aims of this study were to develop a simple and generic EDUcational Course Assessment TOOLkit (EDUCATOOL) and determine its measurement properties.

Methods: The development of EDUCATOOL encompassed: (1) a literature review; (2) drafting the questionnaire through open discussions between three researchers; (3) Delphi survey with five content experts; and (4) consultations with 20 end-users. A subsequent validity and reliability study involved 152 university students who participated in a short educational course. Immediately after the course and a week later, the participants completed the EDUCATOOL post-course questionnaire. Six weeks after the course and a week later, they completed the EDUCATOOL follow-up questionnaire. To establish the convergent validity of EDUCATOOL, the participants also completed the "Questionnaire for Professional Training Evaluation."

Results: The EDUCATOOL questionnaires include 12 items grouped into the following evaluation components: (1) reaction; (2) learning; (3) behavioural intent (post-course)/behaviour (follow-up); and (4) expected outcomes (post-course)/results (follow-up). In confirmatory factor analyses, comparative fit index (CFI = 0.99 and 1.00), root mean square error of approximation (RMSEA = 0.05 and 0.03), and standardised root mean square residual (SRMR = 0.07 and 0.03) indicated adequate goodness of fit for the proposed factor structure of the EDUCATOOL questionnaires. The intraclass correlation coefficients (ICCs) for convergent validity of the post-course and follow-up questionnaires were 0.71 (95% confidence interval [CI]: 0.61, 0.78) and 0.86 (95% CI: 0.78, 0.91), respectively. The internal consistency reliability of the evaluation components expressed using Cronbach's alpha ranged from 0.83 (95% CI: 0.78, 0.87) to 0.88 (95% CI: 0.84, 0.92) for the post-course questionnaire and from 0.95 (95% CI: 0.93, 0.96) to 0.97 (95% CI: 0.95, 0.98) for the follow-up questionnaire. The test–retest reliability ICCs for the overall evaluation scores of the post-course and follow-up questionnaires were 0.87 (95% CI: 0.78, 0.92) and 0.91 (95% CI: 0.85, 0.94), respectively.

Conclusion: The EDUCATOOL questionnaires have adequate factorial validity, convergent validity, internal consistency, and test–retest reliability and they can be used to evaluate training and learning programmes.

KEYWORDS

training evaluation, course quality, learning effectiveness, Kirkpatrick model, educational programmes

Introduction

Learning is one of the key components of daily time use across the world (Charmes, 2015). According to time-use surveys conducted in 37 countries, between 15 and 69% of adults aged 25–64 years participate in learning programmes (OECD, 2023). Training, learning, and educational courses and programmes (hereafter referred to as "educational courses") have multifaceted benefits for individuals and organisations (Kraiger, 2008). Educational courses are commonly developed to improve subject-specific knowledge, increase work productivity, promote healthy lifestyle, or encourage pro-environmental behaviours (Kahn et al., 2002; Arthur et al., 2003; McColgan et al., 2013; Cavallo et al., 2014; Hughes et al., 2016; Beinicke and Bipp, 2018; Dusch et al., 2018; Hauser et al., 2020).

Educational courses need to be evaluated, to determine their quality and potential areas of improvement (Wilkes and Bligh, 1999; Arthur et al., 2003; Kraiger, 2008). The recommended ways of evaluating educational courses have evolved over time (Bell et al., 2017), and they now involve complex processes necessitating the use of scientifically grounded and standardised methods (Guskey, 2000). For this purpose, over the past 80 years, various frameworks for the evaluation of educational courses have been developed (Tamkin et al., 2002; Moseley and Dessinger, 2009; Shelton, 2011; Stufflebeam, 2014; Perez-Soltero et al., 2019).

The Kirkpatrick's evaluation framework (Kirkpatrick and Kirkpatrick, 2006) is widely used to guide the assessment of educational courses, both in research and practice (Moreau, 2017). Its most recent version, "The New World Kirkpatrick model" (Kirkpatrick and Kirkpatrick, 2016), incorporates evaluation of participants' reactions to education, learning quality, behavioural change, and the effects/results of education.

The available instruments that can be used to evaluate educational courses based on Kirkpatrick's model are often highly complex and specifically designed for a given type of training (Kraiger, 2008; Thielsch and Hadzihalilovic, 2020). Therefore, their application may require a substantial amount of time while being limited in scope (Grohmann and Kauffeld, 2013). In addition, literature reviews have shown that educational course evaluation commonly focuses only on the first two "levels" of Kirkpatrick's framework, that is, reaction and learning (McColgan et al., 2013; Hughes et al., 2016; Reio et al., 2017). This is also supported by the data in the "*Association for Talent Development's report*" from 2016 where talent development professionals reported that reaction was evaluated in 88%, learning in 83%, behaviour in 60%, and results in 35% of their organisations (Ho, 2016). Possible reason for this is a lack of generic instruments that would be applicable to a wide spectrum of educational courses.

Therefore, the aims of this study were to: (1) develop a simple and generic questionnaire for the evaluation of educational courses by assessing respondents' reactions to education, learning quality, behavioural change, and the effects/results of education; and (2) determine its validity and reliability.

Materials and methods

Development of EDUCATOOL

The EDUcational Course Assessment TOOLkit (EDUCATOOL) was developed in four stages, from March to November 2021.

Literature review

In the first stage of EDUCATOOL development, we conducted a comprehensive literature review to identify existing conceptual frameworks and questionnaires used to evaluate educational courses. This included searches in five bibliographic databases: SPORTDiscus (through EBSCOHost), APA PsycInfo (through EBSCOHost), Web of Science core collection (including Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Conference Proceedings Citation Index – Social Science & Humanities, Book Citation Index – Social Sciences & Humanities), Google Scholar, and Scopus. Full-texts of 150 publications were reviewed, and findings from 40 relevant books and papers were summarised and considered before drafting the questionnaire (Supplementary File S1).

Drafting the questionnaire

Based on discussions guided by the literature review, in the second stage, three researchers (TM, ŽP, DJ) created the first draft of EDUCATOOL. The toolkit consisted of two complementary questionnaires (post-course and follow-up questionnaires) (Pedisic et al., 2023a), user guide (Pedisic et al., 2023a), and a Microsoft Excel spreadsheet for data cleaning and processing (i.e., EDUCATOOL calculator) (Pedisic et al., 2023b). The post-course questionnaire was designed to capture participants' immediate feedback, and it is meant to be administered immediately upon the completion of the educational course. The follow-up questionnaire was designed to evaluate longer-term impacts of the course, and it is meant to be administered preferably 1–6 months after completing the course.

Delphi survey with content experts

The Delphi method — a systematic, iterative process aimed at achieving expert consensus — was used in the third stage of questionnaire development, to improve the initial version of EDUCATOOL. The Delphi panel included five experts in the following fields: (1) survey design and psychometrics; (2) evaluation of educational courses; (3) education and training; (4) psychology; and (5) English language. An independent researcher, who was not involved in the Delphi panel, served as a moderator of the process. Before each round of the survey, the moderator distributed anonymous questionnaire and supplementary files (i.e., EDUCATOOL instructions, questionnaires, and calculator) to the panel members. Between the survey rounds, the moderator carefully considered suggestions from the panel and modified the documents accordingly. Three rounds of Delphi survey were conducted, before achieving a

consensus among the experts on the purpose, content, and wording of EDUCATOOL.

Consultations with end-users

In the fourth stage, we initiated a consultative process aimed at further refinement of EDUCATOOL. The consultations involved 20 individuals, potential end-users of EDUCATOOL, including: (1) professionals involved in the development, delivery, and evaluation of educational courses; (2) educators in secondary and tertiary degree courses (3) researchers; and (4) managers of private businesses that conduct educational courses. The potential end-users were asked to review the EDUCATOOL questionnaires, instructions, and calculator and provide suggestions on how to improve them. Based on their feedback, we made final modifications to the documents.

Assessing reliability and validity of EDUCATOOL

Study design

To simulate a scenario in which individuals attend an educational course and then evaluate it using EDUCATOOL, we asked the participants in our study to engage in the Sports Club for Health (SCforH) online course (Jurakic et al., 2021). The topic of SCforH online course is how to improve the quality and availability of health-enhancing sports programmes through sports clubs and associations. The course consists of seven units, including videos, interactive infographics, and quizzes. It usually takes between 20 and 30 min to complete the course. The SCforH online course has been included in the curriculum of several tertiary degree courses in Europe.

In October 2022, the participants completed the SCforH online course. Immediately after the course, they completed the EDUCATOOL post-course questionnaire. One week later, the post-course questionnaire was re-administered to participants to enable evaluating its test–retest reliability. Six weeks after the course, the participants completed the EDUCATOOL follow-up questionnaire. A week later, the participants were asked to complete the follow-up questionnaire again, to enable assessing its test–retest reliability. On all four survey occasions, the participants were also asked to complete the "Questionnaire for Professional Training Evaluation" (Grohmann and Kauffeld, 2013), to enable evaluation of convergent validity of EDUCATOOL post-course and follow-up questionnaires.

Participants

We invited all third-year students from the Faculty of Kinesiology, University of Zagreb, Croatia to participate in the study. They were selected purposefully as the study population, because the SCforH online course is intended for the current and future stakeholders in the sports sector and it is one of the learning topics at the third year of Master's of Kinesiology programme at the University of Zagreb. Our goal was to include at least 90 participants in the sample, to ensure a satisfactory width of the 95% confidence interval (CI) of the intraclass correlation coefficient (ICC ± 0.075), assuming an ICC of 0.80, according to the Bonnett's calculation (Bonett, 2002). The final sample consisted of 152 participants. Prior to participation in the study, all participants provided an informed consent. Through the consent form, the participants were informed that: (1) the participation in the survey is voluntary; (2) they are not required to respond to all questions; (3) they may withdraw from the study at any time without providing a reason for withdrawal and without any consequences; (4) we will not collect any personal information other than their email address; (5) their individual responses will be kept confidential; and (6) the collected data will only be used for research purposes and published collectively, that is, as a summary of responses from all participants. The study protocol was approved by the Ethics Committee of the Faculty of Kinesiology, University of Zagreb (number: 10/2021).

Measures

The EDUCATOOL post-course and follow-up questionnaires included 12 items each, asking about: (1) satisfaction with the course; (2) relevance / usefulness of the course; (3) level of engagement in the course; (4) acquisition of new knowledge through the course; (5) retention of knowledge acquired through the course; (6) development of new skills through the course; (7) retention of skills that were developed through the course; (8) increase in the interest in the subject of the course; (9) use of the knowledge acquired in the course; (10) use of the skills developed in the course; (11) improvements in personal performance; and (12) wider benefits of the course. The items were grouped into the following evaluation components: (1) reaction (items 1–3); (2) learning (items 4–8); (3) behavioural intent (post-course)/behaviour (follow-up; items 9–10); and (4) expected outcomes (post-course)/results (follow-up; items 11–12). All items (i.e., statements) in the questionnaire were positive, to avoid possible issue with double negation in responses.

The Questionnaire for Professional Training Evaluation included 12 items asking about six factors (i.e., satisfaction, utility, knowledge, application to practice, individual results, and global results) grouped into four evaluation components: reaction; learning; behaviour; and organisational results. Details about the questionnaire can be found elsewhere (Grohmann and Kauffeld, 2013). Previous research has shown that the Questionnaire for Professional Training Evaluation has good discriminant validity and internal consistency reliability (Cronbach's $\alpha = 0.79$ to 0.96) (Grohmann and Kauffeld, 2013) For the purpose of this study, we slightly modified the original wording of the items, so that the questionnaire can be administered immediately after the course.

In both questionnaires, participants were asked to provide their responses on an 11-point Likert scale ranging from 0 ("completely disagree") to 10 ("completely agree"). The evaluation component scores for both questionnaires were calculated as the arithmetic means of the respective questionnaire items, while the overall evaluation score was calculated as the arithmetic mean of evaluation components. The questionnaires were administered in English, because we were interested in the measurement properties of the original, English version of EDUCATOOL.

Data analysis

To evaluate the factorial validity of the proposed 4-factor model, we conducted a confirmatory factor analysis using weighted least squares means and variance adjusted estimation. This method has been proposed for ordinal Likert-type data and it does not assume normal distribution of data (Beauducel and Herzberg, 2006; Brown, 2015). The model fit was assessed based on the following fit indices: (i) the scaled chi-square test; (ii) the comparative fit index (CFI); (iii) the root mean square error of

approximation (RMSEA), and (iv) the standardised root mean square residual (SRMR). The chi-square test p-value of <0.05 was considered to indicate a lack of good fit (Bollen and Stine, 1992; Kline, 2023), while CFI ≥ 0.95 (Hu and Bentler, 1999), RMSEA ≤ 0.06 (Steiger, 2007), and SRMR ≤ 0.08 (Hu and Bentler, 1999) were considered to indicate adequate model fit. We also calculated factor loadings for all questionnaire items and assessed them against the conservative threshold of 0.60 (Matsunaga, 2010). The internal consistency reliability of evaluation components and overall score was expressed using the Cronbach's alpha coefficient and its 95% CI. Convergent validity and test–retest reliability were expressed using the two-way mixed model intraclass correlation coefficient, type [A, 1], case 3A according to McGraw and Wong (McGraw and Wong, 1996) (single measure, absolute agreement) and its 95% CI. The data were analysed using RStudio (version 2022.07.1, Build 554) (RStudio v2022.07, 2022) using the packages "lavaan" (Rosseel et al., 2023), "lavaanPlot" (Lishinski, 2022), "MVN" (Korkmaz et al., 2022), "energy" (Rizzo and Szekely, 2022), "psych" (Revelle, 2022), and "boot" (Canty and Ripley, 2021).

Results

The final version of EDUCATOOL

During the three rounds of Delphi process, 39 changes have been made to EDUCATOOL. At the end of the process, the Delphi panel has reached a complete consensus on its content. EDUCATOOL underwent additional 10 changes as part of the consultations with end-users, and its final version includes: post-course questionnaire (Pedisic et al., 2023a); follow-up questionnaire (Pedisic et al., 2023a); user manual (Pedisic et al., 2023a); and Microsoft Excel spreadsheet for data processing (Pedisic et al., 2023b).

Reaction

For the purpose of the current study, we defined reaction as the degree to which participants find the educational course satisfactory, relevant/useful, and engaging. In the EDUCATOOL questionnaires, satisfaction is assessed with the item *"Overall, I am satisfied with this course,"* relevance with *"I find this course useful"* (post-course questionnaire) or *"This course has been useful to me"* (follow-up questionnaire), and engagement with *"I was fully engaged in this course."*

Learning

For the purpose of the current study, we defined learning as the degree to which participants gain and retain knowledge, develop, and retain skills, and increase their interest in the subject as a result of attending the course. In the EDUCATOOL questionnaires, knowledge acquisition is assessed with the item *"I acquired new knowledge in this course,"* knowledge retention with *"I will be able to retain this knowledge over the long term"* (post-course questionnaire) or *"I still possess the knowledge I acquired in this course"* (follow-up questionnaire), skill development with *"This course helped me develop skills,"* skill retention with *"I will be able to retain these skills over the long term"* (post-course questionnaire) or "*I still possess the skills developed in this course* "(follow-up questionnaire), and attitude change with *"Taking this course increased my interest in the subject."*

Behavioural intent/behaviour

For the purpose of the current study, we defined behavioural intent and behaviour as the degree to which participants utilise or intend to utilise the knowledge/skills gained in the course. In the post-course questionnaire, utilisation is assessed with the items: "*I will use the knowledge acquired in this course*" and *"I will use the skills developed in this course."* In the follow-up questionnaire, the items are worded: *"I have used the knowledge acquired in this course"* and *"I have used the skills developed in this course."*

Expected outcomes/results

For the purpose of the current study, we defined expected outcomes and results as the degree to which participation in the course resulted in or is expected to result in improvement of personal performance and other benefits. In the post-course questionnaire, they are assessed with the items: *"Participation in this course will improve my performance (*e.g., *work performance, academic performance, task-specific performance)"* and "*My participation in this course will result in other benefits (*e.g., *benefits for my business, institution, or community)*," respectively. In the follow-up questionnaire, the wording of these items is: *"Participation in this course has improved my performance (*e.g., *work performance, academic performance, task-specific performance)"* and "*My participation in this course resulted in other benefits (*e.g., *benefits for my business, institution, or community)."*

Measurement properties of EDUCATOOL

Factorial and convergent validity

In the confirmatory factor analysis of the proposed model with four factors including: (1) reaction; (2) learning; (3) behavioural intent (post-course)/behaviour (follow-up); and (4) expected outcomes (post-course)/results (follow-up), all goodness of fit statistics except the scaled chi-square test indicated adequate fit for the EDUCATOOL post-course and follow-up questionnaires (Table 1). The factor loadings in the confirmatory factor analysis for all items were above the 0.60 threshold, ranging from 0.66 to 0.92 for the post-course questionnaire (Table 2) and from 0.87 to 0.98 (Table 3) for the follow-up questionnaire. Furthermore, when assessed against the Questionnaire for Professional Training Evaluation, the convergent validity of the post-course and follow-up questionnaire was 0.71 (95% CI: 0.61, 0.78) and 0.86 (95% CI: 0.78, 0.91), respectively.

Internal consistency and test–retest reliability

The internal consistency reliability of the EDUCATOOL evaluation components ranged from 0.83 to 0.88 for the post-course

TABLE 1 Goodness of fit statistics for a four-factor structure of the EDUCATOOL questionnaire items.

Goodness of fit	Post-course questionnaire	Follow-up questionnaire
χ^2 (p)*	71.53 (0.015)	97.52 (<0.001)
RMSEA†	0.05	0.03
SRMR‡	0.07	0.03
CFI§	0.99	1.00

*Scaled chi-square (p-value). †Robust root mean square error of approximation. ‡Standardised root mean square residual. §Robust comparative fit index.

TABLE 2 Factor loadings, internal consistency, and test–retest reliability of the EDUCATOOL post-course questionnaire.

	Factor loading*	Cronbach's α (95% CI)†	ICC (95% CI)‡
Questionnaire item			
(1) Overall, I am satisfied with this course.	0.82	–	0.72 (0.60, 0.81)
(2) I find this course useful.	0.82	–	0.64 (0.46, 0.76)
(3) I was fully engaged in this course.	0.74	–	0.68 (0.55, 0.77)
(4) I acquired new knowledge in this course.	0.67	–	0.70 (0.58, 0.79)
(5) I will be able to retain this knowledge over the long term.	0.66	–	0.55 (0.39, 0.67)
(6) This course helped me develop skills.	0.77	–	0.75 (0.65, 0.83)
(7) I will be able to retain these skills over the long term.	0.72	–	0.57 (0.42, 0.69)
(8) Taking this course increased my interest in the subject.	0.69	–	0.58 (0.41, 0.70)
(9) I will use the knowledge acquired in this course.	0.87	–	0.77 (0.67, 0.84)
(10) I will use the skills developed in this course.	0.88	–	0.69 (0.56, 0.78)
(11) Participation in this course will improve my performance.	0.92	–	0.69 (0.57, 0.78)
(12) My participation in this course will result in other benefits.	0.87	–	0.66 (0.53, 0.76)
Evaluation component			
Reaction	–	0.84 (0.78, 0.88)	0.74 (0.61, 0.83)
Learning	–	0.83 (0.78, 0.87)	0.81 (0.72, 0.87)
Behavioural intent	–	0.87 (0.81, 0.91)	0.78 (0.68, 0.85)
Expected outcomes	–	0.88 (0.84, 0.92)	0.73 (0.62, 0.81)
Overall evaluation score	–	0.93 (0.91, 0.94)	0.87 (0.78, 0.92)

*Factor loadings on Reaction (items 1–3), Learning (items 4–8), Behavioural intent (items 9–10), and Expected outcomes (items 11–12) from the confirmatory factor analysis. †Internal consistency reliability expressed using Cronbach's alpha coefficient and its 95% confidence interval. ‡One-week test–retest reliability expressed using intraclass correlation coefficient type (A,1) case 3A, according to McGraw and Wong (1996) and its 95% confidence interval.

questionnaire and from 0.95 to 0.97 for the follow-up questionnaire. The internal consistency reliability of the overall evaluation score from the post-course and follow-up questionnaires was 0.93 and 0.98, respectively (Tables 2, 3).

The test–retest reliability of the EDUCATOOL post-course questionnaire items ranged from 0.55 (95% CI: 0.39, 0.67) for *knowledge retention* ("I will be able to retain this knowledge over the long term") to 0.77 (95% CI: 0.67, 0.84) for *knowledge utilisation* ("I will use the knowledge acquired in this course"; Table 2). The test–retest reliability of evaluation components ranged from 0.73 (95% CI: 0.62, 0.81) for *expected outcomes* to 0.81 (95% CI: 0.72, 0.87) for *learning*. The test–retest reliability of the overall evaluation score was 0.87 (95% CI: 0.78, 0.92).

The test–retest reliability of the EDUCATOOL follow-up questionnaire items ranged from 0.75 (95% CI: 0.63, 0.83) for *satisfaction* ("Overall, I am satisfied with this course") and *skill retention* ("I still possess the skills developed in this course") to 0.85 (95% CI: 0.77, 0.90) for a*ttitude change* ("Taking this course increased my interest in the subject"; Table 3). The test–retest reliability of evaluation components ranged from 0.80 (95% CI: 0.70, 0.87) for *reaction* to 0.88 (95% CI: 0.82, 0.93) for *learning*. The test–retest reliability of the overall evaluation score was 0.91 (95% CI: 0.85, 0.94).

Discussion

Key findings

The literature review, open discussions between three researchers, Delphi survey with five content experts, and consultations with 20 end-users have informed the development of the EDUCATOOL post-course and follow-up questionnaires. These 12-item questionnaires can be used to evaluate training and learning programmes through the assessment of participants' reaction, learning, behavioural intent/behaviour, and expected outcomes/results.

The key finding of this study is that the EDUCATOOL questionnaires have good measurement properties. In specific, our confirmatory factor analyses found a good fit for the proposed factor structure of EDUCATOOL questionnaire items. For both EDUCATOOL questionnaires, we also found adequate convergent validity, internal consistency, and test–retest reliability.

Factorial and convergent validity

Our analyses have confirmed the hypothesised 4-factor structure of EDUCATOOL questionnaire items. The number of factors is in accordance with the Kirkpatrick's evaluation framework (Kirkpatrick and Kirkpatrick, 2006, 2016) that is widely used as a guide for the assessment of educational courses, and with the factor structure of some previous questionnaires in this field (Cassel, 1971; Johnston et al., 2003). In comparison, a previous study found a six-factor structure of the Questionnaire for Professional Training Evaluation, with the factors representing participant satisfaction, perceived utility, gained knowledge, application to practice, individual organisational results, and global organisational results (Grohmann and Kauffeld, 2013). The difference between the two questionnaires in the factor structure is likely due to the differences in the wording and content of their items. For example, unlike the Questionnaire for Professional

TABLE 3 Factor loadings, internal consistency, and test–retest reliability of the EDUCATOOL follow-up questionnaire.

	Factor loading*	Cronbach's α (95% CI)†	ICC (95% CI)‡
Questionnaire item			
(1) Overall, I am satisfied with this course.	0.92	–	0.75 (0.63, 0.83)
(2) This course has been useful to me.	0.98	–	0.81 (0.71, 0.88)
(3) I was fully engaged in this course.	0.88	–	0.76 (0.64, 0.84)
(4) I acquired new knowledge in this course.	0.87	–	0.77 (0.66, 0.85)
(5) I still possess the knowledge I acquired in this course.	0.92	–	0.84 (0.75, 0.89)
(6) This course helped me develop skills.	0.93	–	0.81 (0.71, 0.87)
(7) I still possess the skills developed in this course.	0.92	–	0.75 (0.63, 0.83)
(8) Taking this course increased my interest in the subject.	0.92	–	0.85 (0.77, 0.90)
(9) I have used the knowledge acquired in this course.	0.95	–	0.81 (0.70, 0.88)
(10) I have used the skills developed in this course.	0.98	–	0.76 (0.64, 0.85)
(11) Participation in this course has improved my performance.	0.98	–	0.78 (0.66, 0.86)
(12) My participation in this course resulted in other benefits.	0.95	–	0.79 (0.68, 0.86)
Evaluation component			
Reaction	–	0.95 (0.93, 0.96)	0.80 (0.70, 0.87)
Learning	–	0.96 (0.95, 0.97)	0.88 (0.82, 0.93)
Behaviour	–	0.97 (0.95, 0.98)	0.81 (0.69, 0.88)
Results	–	0.96 (0.95, 0.97)	0.81 (0.70, 0.88)
Overall evaluation score	–	0.98 (0.97, 0.98)	0.91 (0.85, 0.94)

*Factor loadings on Reaction (items 1–3), Learning (items 4–8), Behaviour (items 9–10), and Results (items 11–12) from the confirmatory factor analysis. †Internal consistency reliability expressed using Cronbach's alpha coefficient and its 95% confidence interval. ‡One-week test–retest reliability expressed using intraclass correlation coefficient type (A,1) case 3A, according to McGraw and Wong (1996) and its 95% confidence interval.

Training Evaluation, the EDUCATOOL questionnaires ask about the engagement in the course, skill development and utilisation, knowledge and skill retention, and attitude change.

Despite these differences, the convergent validity of EDUCATOOL established against the Questionnaire for Professional Training Evaluation is relatively high, indicating that the questionnaires assess a similar construct. The convergent validity was higher for the follow-up questionnaire, compared with the post-course questionnaire, which may be attributed to the fact that the original version of the Questionnaire for Professional Training Evaluation is intended to be administered at least 4 weeks after the educational course. In comparison, the convergent validity of the FIRE-B questionnaire (Thielsch and Hadzihalilovic, 2020), that was developed based on the Kirkpatrick's evaluation framework, was somewhat lower than for EDUCATOOL, ranging from 0.45 to 0.69.

Internal consistency and test–retest reliability

Both EDUCATOOL questionnaires have adequate internal consistency and test–retest reliability, comparable with other questionnaires for course evaluation (Aleamoni and Spencer, 1973; Byrne and Flood, 2003; Royal et al., 2018; Niemann and Thielsch, 2020). The test–retest reliability varied across EDUCATOOL questionnaire items, with the lowest (albeit still satisfactory) ICCs found for the items on knowledge retention, skills retention, and attitude change in the post-course questionnaire. It is possible that some participants overestimated or underestimated their knowledge/skills retention and attitude change immediately after the course (i.e., at the time of the first survey), while they were able to estimate it more accurately a week later (i.e., at the time of the re-test survey). This possible explanation is supported by the fact that the respective questions in the follow-up survey have somewhat higher test–retest reliability. This explanation is also supported by previous findings on a relatively high level of participant knowledge immediately after the training, which then reduces over time (Ritzmann et al., 2014). Importantly, the resulting evaluation component (*learning*) from the EDUCATOOL post-course questionnaire seems to have a higher test–retest reliability (ICC = 0.81) than the belonging individual items.

In our study sample, the overall evaluation score, the four evaluation components, and all individual items of the EDUCATOOL follow-up questionnaire have shown somewhat higher test–retest reliability, compared with the post-course questionnaire. It is possible that the outcomes of course attendance stabilise over time, making participants more likely to respond to the questionnaire in a consistent manner. It could also be that the follow-up questionnaire captures more stable aspects of educational experience which are less likely to change over time. These possible explanations are in accordance with the findings of previous methodological studies indicating that the questions about the past generally have higher reliability than the

questions pertaining to the present and future (Tourangeau, 2021). The overall evaluation score and four evaluation components of the EDUCATOOL follow-up questionnaire also seem to have somewhat higher internal consistency reliability, compared with the post-course questionnaire.

Implications for research and practice

The generic wording of EDUCATOOL questionnaire items will enable its use for the evaluation of different types of educational courses (e.g., online or face-to-face, professional or recreational, long or short) across various fields and settings. An additional advantage of EDUCATOOL is its brevity, making it a practical choice for collecting valuable course evaluation data even in situations with limited time available. While EDUCATOOL can provide a good insight into participants' reactions to education, learning quality, behavioural change, and the effects/results of education, for a more comprehensive evaluation, the use of additional methods and evaluation tools may need to be considered. For example, researchers and practitioners may find it relevant to examine different types of interactions in the learning process (Moore, 1989), instructor's effectiveness (Kuo et al., 2014), transfer of learning (Blume et al., 2010), and monetary benefits of course attendance (Phillips and Phillips, 2016), which cannot be assessed directly or in detail using EDUCATOOL.

Strengths and limitations of the study

Our study had the following strengths: (1) a systematic approach used to inform the development of EDUCATOOL; (2) a diverse group of experts involved in the Delphi panel; (3) a large number of potential end-users of the questionnaire who have contributed to the consultation process; and (4) a relatively large number of participants involved in the study of validity and reliability.

Our study had several limitations. First, the study was conducted in a convenience sample, limiting the generalisability of our findings. Future studies should examine measurement properties of EDUCATOOL in representative samples of various population groups, such as students from various colleges. Second, due to the differences in the factor structure of EDUCATOOL and the Questionnaire for Professional Training Evaluation, in this study we were only able to examine the convergent validity of the overall evaluation score. Future studies should consider exploring the convergent validity of EDUCATOOL also against other questionnaires for evaluation of educational courses. Third, in the study of validity and reliability, the EDUCATOOL questionnaire referred to a single online course; thus, it would be beneficial to further investigate the application of EDUCATOOL in other training areas and with other types of courses. Fourth, the EDUCATOOL questionnaire used in this study was in English and the participants were non-native English speakers. Despite the fact that all participants in our sample had at least 9 years of formal education in English as secondary language, it might be that the measurement properties of EDUCATOOL would be somewhat different if the study was conducted among native English speakers.

Conclusion

The EDUCATOOL post-course and follow-up questionnaires can be used to evaluate training and learning programmes through the assessment of participants' reaction, learning, behavioural intent/behaviour, and expected outcomes/results. The novel questionnaires have adequate factorial validity, convergent validity, internal consistency, and test–retest reliability. Given the generic wording of their items, the questionnaires can be used to evaluate different types of courses in various fields. Future studies should examine measurement properties of EDUCATOOL in representative samples of different population groups attending various courses.

Data availability statement

The datasets presented in this article are not readily available because they are anonymous and intended for study purposes only. Requests to access the datasets should be directed to TM, tena.matolic@kif.unizg.hr.

Ethics statement

The study was approved by the Ethics Committee of the Faculty of Kinesiology, University of Zagreb (number: 10/2021). The study was conducted in accordance with the local legislation and institutional requirements. The participants provided their informed consent to participate in this study.

Author contributions

TeM: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Software, Validation, Writing – original draft, Writing – review & editing. DJ: Conceptualization, Methodology, Software, Supervision, Validation, Writing – review & editing. ZGJ: Software, Validation, Writing – review & editing. ToM: Software, Validation, Writing – review & editing. ŽP: Conceptualization, Methodology, Software, Supervision, Validation, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2023.1314584/full#supplementary-material

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ORIGINAL RESEARCH

Raising awareness of the Sports Club for Health (SCforH) guidelines in the sports, higher education, and health promotion sectors: Evaluation of an educational online intervention in 34 European countries

Tena Matolić[1], Danijel Jurakić[1]✉, and Željko Pedišić[2]

[1]Faculty of Kinesiology, University of Zagreb, Zagreb, Croatia; and [2]Institute for Health and Sport, Victoria University, Melbourne, Australia

Abstract

Background: Sports Club for Health (SCforH) is among the largest European initiatives that promotes health through sports clubs. The recently developed SCforH online course has never been empirically evaluated. **Objective:** The aims of this study were to: (i) assess participant engagement in the course and course quality; and (ii) explore differences in the engagement levels and subjective assessments of course quality by stakeholder type, EU residency status, region of Europe, and prior awareness of SCforH guidelines. **Methods:** The study sample included 840 participants from 34 European countries, who attended the SCforH online course. Using web trigger events, we gathered information on the number of course parts completed and time in course. Course quality was assessed using the 12-item EDUcational Course Assessment TOOLkit (EDUCATOOL) post-course questionnaire, asking about participant's *reaction*, *learning*, *behavioural intent*, and *expected outcomes*, where scores on the evaluation components were expressed on a scale from 0 to 25 points. The overall evaluation score (0–100 points) was calculated as the sum of evaluation components. **Results:** The vast majority of participants (92%) completed all 28 parts of the course, and the median time in course was 27.60 min (95% confidence interval [26.93, 28.27]). The medians of all evaluation components were ≥ 20.00, while the median overall evaluation score was 82.50 (95% confidence interval [81.11, 83.89]). Some aspects of course quality were rated slightly lower by residents of EU countries (compared with residents of non-EU countries), participants from Western Europe (compared with Central and Eastern Europe), and students (compared with representatives of sports clubs and associations; $p < .05$ for all). **Conclusions:** The level of participant engagement in the SCforH course and quality of the course are high, which demonstrates that this course is an adequate tool for dissemination of SCforH guidelines among various stakeholders in the European sports sector.

Keywords: online course, educational course, sport setting, physical activity, exercise, EDUCATOOL

Introduction

Physical activity is associated with a range of benefits for individuals and society (Warburton & Bredin, 2017). Globally, numerous initiatives have been implemented to raise awareness of the importance of physical activity for health and to promote different types of physical activity. Such initiatives cover different settings, such as workplace, schools, universities, healthcare, community, environment, and sports.

Sports setting has a great potential for physical activity promotion (Koski et al., 2017), because specialised equipment, facilities, skilled staff, structured training programs, and financial support that can be used for this purpose are already available in sports clubs (Downward et al., 2021). Several initiatives have been launched in Europe with the aim to promote physical activity through sports clubs (Lane et al., 2020; Madsen et al., 2020; Ooms et al., 2017), and Sports Club for Health (SCforH) is one of the largest such initiatives (Pedišić, Matolić, et al., 2022).

By increasing the quality and availability of "sport for all" programs in sports clubs, the SCforH initiative may contribute to improving population health in Europe (Koski et al., 2017). The initiative targets the stakeholders in the sports sector, such as sports club managers, sport coaches, sports promoters, policymakers, physical educators, and sports club members. It relies on the existing resources in sports clubs and associations, including their infrastructure, personnel, and 'know-how', to maximise the potential of the European sports sector to promote health-enhancing sports activities among all age groups. Since 2008, when the SCforH idea was publicly presented for the first time, the European Union (EU) co-funded three large international SCforH projects that involved a total of 38 partner institutions from 18 countries (Pedišić, Oja, et al., 2022). In 2009, the first version of SCforH guidelines

✉ **Corresponding author:** Danijel Jurakić, e-mail danijel.jurakic@kif.hr, ORCID® record https://orcid.org/0000-0002-4861-4066

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were published to provide guidance to stakeholders in the sports sector on promoting health-enhancing sports activities through sports clubs. The guidelines were updated in 2011 and 2017 (Pedišić, Oja, et al., 2022), and the latest book of guidelines has been made publicly available in five languages. In 2013, the EU Council has listed the implementation of SCforH guidelines as one of the 23 key indicators for evaluation of the promotion of health-enhancing physical activity (HEPA) in the EU member countries (Pedišić, Oja, et al., 2022).

Since 2009, the SCforH guidelines have been extensively disseminated among European sports clubs and organisations. However, data collected in 36 European countries, including all EU member states, EU candidate countries, Iceland, Norway, and Switzerland, revealed that less than 10% of European sports clubs (Pedišić, Matolić, et al., 2022) and 17% of national sports organisations (Pedišić, et al., 2021) have integrated the SCforH guidelines into their programs. Such implementation rates could be explained by a lack of awareness and knowledge about SCforH guidelines.

Awareness of SCforH guidelines among representatives of sports associations has increased from 22% in 2016/17 to 53% in 2021/22 (Pedišić, Matolić, et al., 2022), which is expected to lead to their increased implementation in the future. However, these findings also indicate that additional efforts are needed to further increase the awareness of SCforH guidelines. A recent study conducted among 536 sports organisations in Europe found that awareness of SCforH guidelines is associated with a higher commitment to HEPA promotion (Matolić, Jurakić, Podnar, et al., 2023). It is, therefore, important to continue raising awareness of SCforH guidelines in the European sports sector.

As part of the ongoing shift towards a greater utilisation of online platforms, various internet-based physical activity interventions have been developed (Jahangiry et al., 2017; Marcus et al., 2000). Following this trend, to continue increasing awareness of SCforH guidelines, in 2020/21 the SCforH online course was developed (Sports Club for Health Consortium, 2020). It leverages the wide reach, accessibility, interactivity, and cost-effectiveness of the highly popular and fast evolving digital landscape (International Telecommunication Union, 2023; Marcus et al., 2000). As part of the latest international EU funded SCforH project, the course was disseminated among stakeholders in the European sports sector.

Knowledge about the course quality is essential for making improvements in the course. However, no previous study has evaluated the SCforH online course. Therefore, the first aim of this study was to evaluate the SCforH online course by analysing participant engagement in the course and course quality as perceived by participants. It is also important to gain insight into suitability of the course for different audiences. Thus, our second aim was to explore differences in the engagement levels and subjective assessments of course quality between: (i) different types of stakeholders in the sports sector; (ii) residents of EU and non-EU countries; (iii) participants from different regions of Europe; and (iv) those with and without prior awareness of the SCforH guidelines.

Methods

SCforH online course

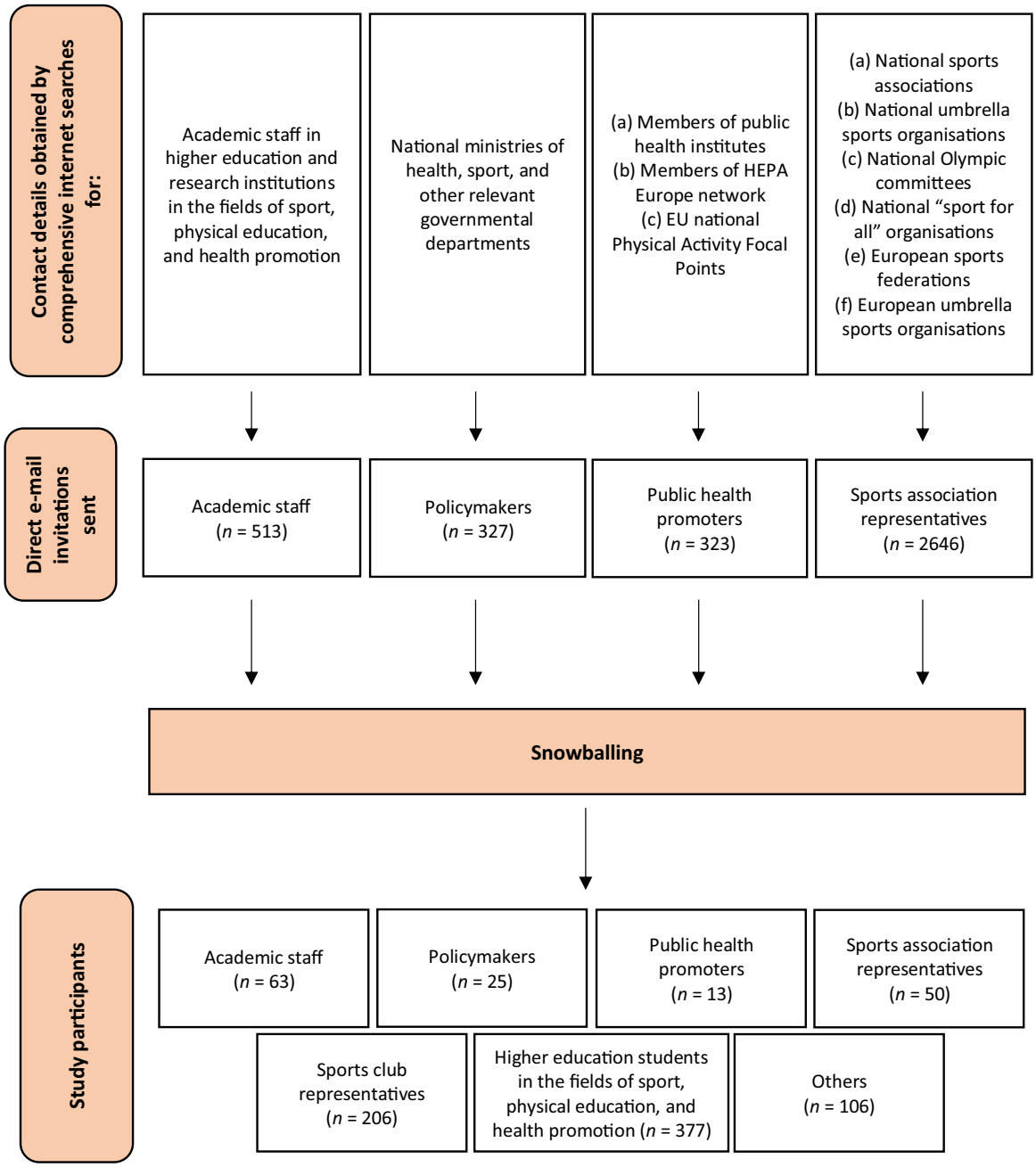
The SCforH online course presents key messages from the SCforH guidelines in plain language. It was developed in three stages. The first stage included a literature review and internet search conducted by three researchers, with the aim to develop course content and get insight into the newest trends and technologies in online educational courses. In the second stage, the three researchers developed the first version of the course in collaboration with IT professionals, graphic designers, and an English language editor. The course was then reviewed and pilot-tested for functionality by an independent assessor. In the third stage, the course underwent a thorough review by 30 experts specialising in physical activity, sport, health, and education from 27 EU countries. Their feedback was implemented, and the final version of the course was translated into 24 European languages by language professionals. The course includes: (i) 7 units with a total of 28 content items (hereafter: "course parts") encompassing textual, pictorial, and video learning materials, interactive exercises, and in-course quizzes; (ii) links to additional SCforH online resources; (iii) course evaluation survey; and (iv) SCforH survey. A certificate is issued to participants after completion of all seven units of the course. This is currently the only educational course on SCforH guidelines. To the best of our knowledge, it is also the only online course aimed at physical activity promotion in the sports setting that is accessible in all official EU languages, facilitating its uptake among diverse audiences. The course is user friendly and tailored to various stakeholders in the sports sector.

Study design and participants

In this course evaluation study, the SCforH course and SCforH online survey were disseminated from June 2021 to November 2022. Direct email invitations to participate in the course were sent to 3809 participants from 36 European countries, including all EU member and candidate countries, Iceland, Norway, Switzerland, and the United Kingdom (Figure 1). All contacted individuals were encouraged to share the course invitation with their organisation members, students, and other potential participants.

All participants in the course were invited to complete the course evaluation and SCforH surveys. The final study sample included 840 participants from 34 European countries (Table 1). The participation in the course and surveys was voluntary. Prior to responding to the questionnaire, participants provided their informed consent. The study protocol was approved by the Scientific and Ethics Committee of the University of Zagreb, Faculty of Kinesiology (reference number: 10/2021). The study was conducted in accordance with the Declaration of Helsinki.

Figure 1 Flowchart of the sampling process



Measures

The level of the participants' engagement in the course was assessed by analysing web trigger events associated with actions taken by participants during their course attendance. In specific, we gathered information on their overall time spent in the course and the number of course parts they completed.

Course quality was assessed using the EDUcational Course Assessment TOOLkit (EDUCATOOL) post-course questionnaire (Matolić, Jurakić, Greblo Jurakić, et al., 2023). The questionnaire has 12 items asking about participant's: (i) *reaction* (items on satisfaction, relevance and engagement); (ii) *learning* (items on knowledge acquisition, knowledge retention, skill development, skill retention, and attitude change); (iii) *behavioural intent* (items on utilisation of knowledge and utilisation of skills); and (iv) *expected outcomes* (items on improved personal performance and other benefits). Participants provided their responses on an 11-point Likert scale, ranging from 0 ("completely disagree") to 10 ("completely agree"). Using the EDUCATOOL Calculator (Matolić, Jurakić, Greblo Jurakić, et al., 2023), the total score in each of the evaluation components (i.e., *reaction*, *learning*, *behavioural intent*, and *expected outcomes*) was calculated as the arithmetic mean of responses to the respective questionnare items, linearly transformed to a scale from 0 to 25 points. The overall evaluation score (0–100 points) was calculated as the sum of participant's scores in the four evaluation components.

Table 1 Characteristics of the study sample

Category	*n*	%
Stakeholder type		
Academic staff[a]	63	7.5
Policymaker	25	3.0
Public health promoter	13	1.5
Sports association representative	50	6.0
Sports club representative	206	24.5
Student[b]	377	44.9
Other	106	12.6
European Union residency		
Yes	758	90.2
No	82	9.8
Region[c]		
Central and Eastern Europe	506	60.2
Northern Europe	29	3.5
Southern Europe	219	26.1
Western Europe	86	10.2
Awareness of SCforH guidelines[d]		
Yes	161	54.4
No	135	45.6

Note. SCforH = Sports Club for Health. [a]Academic staff in higher education and research institutions in the fields of sport, physical education, and health promotion. [b]Higher education students in the fields of sport, physical education, and health promotion. [c]Region of Europe according to EuroVoc. [d]Surveys for students and "Other" did not include the question on awareness of SCforH guidelines. Also, not all of the remaining participants responded to the question.

Higher scores denote better course quality. The questionnaire has adequate validity and reliability (Matolić, Jurakić, Greblo Jurakić, et al., 2023). More details about the questionnaire and its measurement properties can be found elsewhere (Matolić, Jurakić, Greblo Jurakić, et al., 2023).

We also collected data on participant's: type of involvement in the sports sector (i.e., stakeholder type); country of residence; and prior awareness of the SCforH guidelines. Based on their type of involvement in the sports sector, the participants were classified into the following categories: (i) academic staff in higher education or research institutions in the fields of sport, physical education, and health promotion (hereafter: "academic staff"); (ii) representatives of governmental bodies (hereafter: "policymakers"); (iii) representatives of public health institutes and/or national Physical Activity Focal Points (hereafter: "public health promoters"); (iv) sports association representatives; (v) sports club representatives; (vi) higher education students in the fields of sport, physical education, and health promotion (hereafter: "students"); and (vii) others. Based on the country of residence, we classified participants into residents of EU countries and non-EU countries and four regions according to EuroVoc, including Central and Eastern, Northern, Southern, and Western Europe (Publications Office of the European Union, 2014). Prior awareness of SCforH guidelines was assessed using a binary (yes-no) question.

Data analysis

We checked the normality of distributions of time in course and course quality variables using Shapiro-Wilk test, histograms, and Q-Q plots. Given that the distributions were not normal, we used non-parametric statistics.

We calculated medians, their 95% confidence intervals using the method proposed by Bonett and Price (2002), and interquartile ranges for course quality and time in course variables in the overall sample and by stakeholder type, EU residency, region of Europe, and prior awareness of the SCforH guidelines.

Multivariate differences in four evaluation components and time in course by stakeholder type, EU residency, region of Europe, and prior awareness of the SCforH guidelines were tested using the c-sample test of location. This was followed by a set of Kruskal-Wallis tests of univariate differences between the groups. Post-hoc pairwise comparisons were performed using Mann-Whitney *U* test with Bonferroni correction. In all the analyses, p value of less than .05 indicated a statistically significant difference. We did not analyse differences in the number of completed course parts, because this measure of engagement in the course had very low variability.

The data analysis was performed using R (Version 4.2.2; R Foundation for Statistical Computing, Vienna, Austria) and RStudio (Version 2022.12.0.353; Posit, Boston, MA, USA) with "dplyr" (Wickham et al., 2023), "stats", and "MNM" (Nordhausen et al., 2018) packages.

Results

Engagement in the course and assessments of course quality

The vast majority of participants (92%) completed all 28 parts of the course, and the median time in course was 27.60 min. In the overall sample, the medians of all EDUCATOOL items were high, ranging from 8.00 to 9.00 (Table 2). *Reaction* was the evaluation component with the highest median (21.67), while the sample medians of all three remaining evaluation components were equal (20.00). The median overall evaluation score was 82.50.

Multivariate differences

There were significant multivariate differences in course quality and time in course between stakeholder types, EU and non-EU residents, and participants from different regions of Europe ($p < .001$ for all three comparisons; Table 3). However, we did not find statistically significant multivariate differences in course quality and time in course by prior awareness of SCforH guidelines ($p = .260$).

Univariate differences

We found significant differences between stakeholder types in *reaction* ($p = .002$), *learning* ($p < .001$), *behavioural intent* ($p < .001$), *expected outcomes* ($p = .003$), and time in the course ($p = .002$; Table 3). A post-hoc analysis revealed several pairwise differences between stakeholder types. For example, compared with sports club representatives, students provided lower ratings for *learning* ($p < .001$), *behavioural intent* ($p < .001$), and *expected outcomes* ($p = .018$). Students also provided lower ratings for *behavioural intent*, compared with sports association representatives ($p = .016$). Policymakers spent more time in the course than academic staff ($p = .033$).

Table 2 Evaluation of the Sports Club for Health (SCforH) online course: Quality and participant engagement

Measure	Median (95% CI[a])	IQR
EDUCATOOL questionnaire item		
(1) Overall, I am satisfied with this course.	9.00 (9.00, 9.00)	2.00
(2) I find this course useful.	9.00 (9.00, 9.00)	2.00
(3) I was fully engaged in this course.	8.50 (8.01, 8.99)	3.00
(4) I acquired new knowledge in this course.	8.00 (8.00, 8.00)	3.00
(5) I will be able to retain this knowledge over the long term.	8.00 (7.51, 8.49)	3.00
(6) This course helped me develop skills.	8.00 (7.51, 8.49)	3.00
(7) I will be able to retain these skills over the long term.	8.00 (8.00, 8.00)	3.00
(8) Taking this course increased my interest in the subject.	9.00 (8.51, 9.49)	3.00
(9) I will use the knowledge acquired in this course.	9.00 (8.51, 9.49)	3.00
(10) I will use the skills developed in this course.	8.00 (8.00, 8.00)	3.00
(11) Participation in this course will improve my performance.	8.00 (8.00, 8.00)	4.00
(12) My participation in this course will result in other benefits.	8.00 (8.00, 8.00)	3.00
EDUCATOOL evaluation component		
Reaction	21.67 (21.26, 22.07)	5.83
Learning	20.00 (19.76, 20.24)	6.00
Behavioural intent	20.00 (19.39, 20.61)	7.50
Expected outcomes	20.00 (20.00, 20.00)	7.50
EDUCATOOL overall evaluation score	82.50 (81.11, 83.89)	23.94
Time in course (min)	27.60 (26.93, 28.27)	14.32

Note. IQR = interquartile range; EDUCATOOL = EDUCational Course Assessment TOOLkit. [a]95% confidence interval for median calculated using the method proposed by Bonett and Price (2002).

Compared with EU residents, participants from non-EU countries provided higher ratings for all four evaluation components ($p < .001$ for all), while spending less time in the course ($p = .007$).

Significant differences in all four evaluation components were also found between participants from different regions of Europe ($p < .001$ for all). A post-hoc analysis revealed several pairwise differences by region of Europe. For example, compared with participants from Central and Eastern Europe and Southern Europe, participants from Western Europe provided lower ratings for *reaction, learning, behavioural intent*, and *expected outcomes* ($p < .001$ for all eight comparisons). Participants from Northern Europe provided lower ratings for *reaction* than participants from Central and Eastern Europe ($p = .014$) and higher ratings for *learning* than participants from Southern Europe ($p = .019$).

We did not find significant differences in any of the evaluation components and time in course between the groups of participants by prior awareness of SCforH guidelines ($p > .05$ for all).

Discussion

Key findings

The main findings of this study are that the stakeholders in the European sports sector: (i) were highly engaged in the SCforH online course; and (ii) provided excellent ratings for all aspects of course quality. The course scored particularly high in the *reaction* component, that is, the degree to which it is satisfying, useful, and engaging to participants. The time spent in course and assessments of course quality were generally similar between those with and without prior awareness of the SCforH guidelines. However, some aspects of course quality were rated slightly higher by residents of countries outside the EU and in Central and Eastern Europe, and slightly lower by students, compared with other course participants.

Engagement in the course

The high number of completed course parts and high median time in the SCforH online course may be suggestive of active engagement and good retention of participants, aspects often identified as challenging in the context of online learning courses (Allen & Seaman, 2013). Previous research on massive open online courses has revealed that completion rates for self-assessment tasks across different topics range from 8.0% to 23.1% among learners with different educational backgrounds (Gomez Zermeño & Aleman de la Garza, 2016). In another study, 44.8% of students reported that they plan to complete all activities of an online course (Engle et al., 2015). These figures are considerably lower than the observed engagement in the SCforH online course. A possible reason for such large differences in engagement may lie in the fact that the SCforH online course was distributed only to potential participants with presumably high interest in the topic.

Course quality

Reaction

The aspects of SCforH course quality pertaining to *reaction* (i.e., satisfaction, relevance, and engagement) received similar or higher ratings, compared with online courses evaluated in previous studies (Ludwikowska, 2021; Tratnik et al., 2017). High satisfaction with and perceived relevance of the SCforH online course may facilitate the learning processes, thereby increasing the likelihood of substantial improvements in knowledge, skills, and attitudes (Chong

Table 3 Evaluation of the Sports Club for Health (SCforH) online course: Between-group differences

Category	Median ± IQR (95% CI[a])				
	Reaction	Learning	Behavioural intent	Expected outcomes	Time in course
Stakeholder type					
Academic staff[b]	21.67 ± 5.00 (20.05, 23.28)	20.00 ± 7.75 (17.82, 22.18)	20.00 ± 7.50 (18.18, 21.82)	18.75 ± 8.13 (16.33, 21.17)	24.34 ± 16.06 (20.08, 28.61)
Policymaker	22.50 ± 5.00 (20.08, 24.92)	20.50 ± 4.50 (18.80, 22.20)	21.25 ± 5.00 (18.83, 23.67)	21.25 ± 6.25 (19.43, 23.07)	29.30 ± 8.83 (25.90, 32.70)
Public health promoter	22.50 ± 3.33 (21.07, 23.93)	22.00 ± 4.50 (19.42, 24.58)	22.50 ± 5.00 (19.82, 25.18)	21.25 ± 3.75 (19.10, 23.40)	32.08 ± 8.29 (26.02, 38.14)
Sports association representative	22.50 ± 5.63 (20.97, 24.03)	19.25 ± 6.88 (16.95, 21.55)	24.38 ± 6.25 (22.08, 26.67)	20.00 ± 8.75 (17.13, 22.87)	28.78 ± 15.48 (25.48, 32.08)
Sports club representative	22.50 ± 5.83 (22.09, 22.91)	21.50 ± 5.50 (20.52, 22.48)	22.50 ± 6.25 (21.89, 23.11)	21.25 ± 7.50 (20.64, 21.86)	27.13 ± 15.01 (25.44, 28.81)
Student[c]	20.83 ± 4.17 (20.02, 21.65)	19.50 ± 6.00 (19.01, 19.99)	20.00 ± 7.50 (19.39, 20.61)	20.00 ± 7.50 (19.39, 20.61)	28.32 ± 12.67 (27.57, 29.06)
Other	22.50 ± 5.00 (21.70, 23.30)	21.00 ± 4.88 (20.04, 21.96)	21.25 ± 6.25 (20.05, 22.45)	20.00 ± 7.50 (18.80, 21.20)	22.99 ± 16.18 (19.58, 26.40)
p[d]	.002	< .001	< .001	.003	.002
p[e]			< .001		
European Union residency					
Yes	21.67 ± 5.00 (21.26, 22.07)	20.00 ± 6.00 (19.51, 20.49)	20.00 ± 7.50 (19.39, 20.61)	20.00 ± 6.25 (20.00, 20.00)	27.81 ± 13.38 (27.08, 28.53)
No	24.17 ± 3.96 (23.00, 25.33)	22.25 ± 7.00 (20.62, 23.88)	23.75 ± 5.00 (22.59, 24.91)	22.50 ± 6.25 (21.34, 23.66)	22.16 ± 17.85 (17.25, 27.07)
p[d]	< .001	.001	< .001	< .001	.007
p[e]			< .001		
Region					
Central and Eastern Europe	22.50 ± 5.83 (22.09, 22.91)	20.00 ± 6.50 (19.51, 20.49)	21.25 ± 7.50 (20.03, 22.47)	21.25 ± 7.50 (20.64, 21.86)	27.58 ± 15.41 (26.46, 28.70)
Northern Europe	20.00 ± 5.00 (18.69, 21.31)	18.50 ± 5.00 (17.19, 19.81)	18.75 ± 7.50 (16.13, 21.37)	20.00 ± 10.00 (17.38, 22.62)	29.17 ± 12.54 (25.03, 33.31)
Southern Europe	21.67 ± 4.17 (20.85, 22.48)	21.00 ± 4.50 (20.51, 21.49)	22.50 ± 6.25 (21.28, 23.72)	20.00 ± 5.00 (19.39, 20.61)	27.66 ± 12.97 (26.12, 29.20)
Western Europe	20.00 ± 5.42 (18.81, 21.19)	17.00 ± 5.50 (16.28, 17.72)	18.13 ± 6.25 (16.93, 19.32)	16.25 ± 6.25 (15.06, 17.44)	27.24 ± 10.17 (25.32, 29.16)
p[d]	< .001	< .001	< .001	< .001	.180
p[e]			< .001		
Awareness of SCforH guidelines					
Yes	22.50 ± 5.00 (21.68, 23.32)	21.00 ± 6.50 (19.78, 22.22)	22.50 ± 6.25 (21.89, 23.11)	21.25 ± 7.50 (20.03, 22.47)	27.19 ± 15.98 (25.24, 29.15)
No	21.67 ± 5.00 (21.26, 22.07)	21.00 ± 5.50 (20.02, 21.98)	22.50 ± 6.88 (21.28, 23.72)	20.00 ± 7.50 (18.78, 21.22)	28.25 ± 13.81 (26.36, 30.14)
p[d]	.392	.216	.329	.079	.153
p[e]			.260		

Note. IQR = interquartile range. [a]95% confidence interval for median calculated using the method proposed by Bonett and Price (2002). [b]Academic staff in higher education and research institutions in the fields of sport, physical education, and health promotion. [c]Higher education students in the fields of sport, physical education, and health promotion. [d]*p* value from the Kruskal-Wallis test. [d]*p* value from the c-sample test of location [g]Region of Europe according to EuroVoc.

& Songan, 2016; Ludwikowska, 2021). High self-reported engagement in the SCforH online course corroborates the conclusions drawn from the objective measures of engagement (i.e., the number of completed course parts and time in course).

Learning

Previous research has shown that a positive attitude towards change is important for successful implementation of new initiatives (Hower et al., 2019; Rafferty et al., 2013). The SCforH online course scored very high in *attitude change*, which indicates its excellent potential to motivate implementation of new SCforH initiatives. The scores for *knowledge acquisition* and *skill development* in the SCforH online course were somewhat lower, compared with previous studies (de Araujo Guerra Grangeia et al., 2016; Ludwikowska, 2021). Despite that, they can still be considered as very high. Previous research suggested that the perceived level of knowledge acquisition is an important driver of student satisfaction with a course (Tratnik et al., 2017), which may partially explain high satisfaction with the SCforH online course. In terms of *knowledge/skills retention,* the SCforH online course scored higher than courses evaluated in a previous study (Diamantidis & Chatzoglou, 2014). However, it should be noted that the corresponding questionnaire items used in the current study refer to participant's perceived future ability to retain knowledge and skills acquired in the course (i.e., envisaged knowledge and skills retention). Hence, they may not adequately reflect the true retention of knowledge and skills that could only be assessed over the long term.

Behavioural intent

In the two *utilisation* items, the SCforH online course scored similar to or higher than educational courses evaluated in previous studies (Diamantidis & Chatzoglou, 2014; Ludwikowska, 2021). It should be noted that the two *utilisation* items in the EDUCATOOL questionnaire asked about behavioural intent as opposed to the actual behaviour that could only be assessed over the long term. However, given that behavioural intentions are strongly related to behaviour (Conner & Armitage, 1998), it may be that the SCforH online course would receive similarly high scores also for the actual behaviour. Furthermore, a previously evaluated educational "game", received somewhat higher ratings for utilisation (Diehl et al., 2017) than the SCforH course. To improve scores in the *utilisation* items, future editions of the SCforH online course could considered gamification as an additional educational strategy.

Expected outcomes

In terms of *expected outcomes*; namely, *improved personal performance* and *other benefits,* the SCforH online course scored similarly high as educational courses evaluated in previous studies (Aoun & Johnson, 2002; Chiu & Wang, 2008). It is important to note that these scores refer to predicted benefits of course attendance as opposed to true benefits that could only be assessed over the long term, as in some previous studies (Diamantidis & Chatzoglou, 2014; Doyle et al., 2012).

Overall evaluation score

The overall evaluation score for the quality of SCforH course (82.50 out of 100 points), slightly exceeded the average quality score for online courses, that is, around 76% of the maximum score, and matched the average score for, generally higher-rated, face-to-face courses, that is, around 81% of the maximum score (Lowenthal et al., 2015). Two prominent online educational course platforms, Coursera and edX, have received average ratings for content, interactivity, instructor presence, and course design ranging 4.36–5.86 and 4.51–5.78 out of 7 points, respectively (Glory et al., 2019; Hanifa et al., 2019). The SCforH online course received an overall evaluation score that falls at the top of these ranges, highlighting its high quality. However, it should be noted that due to methodological differences (e.g., different course quality assessment methods, follow-up periods, and analytical approaches), our results may not be directly comparable to the results of previous studies.

Between-group comparisons

Differences in the engagement in SCforH course and assessment of course quality between various types of stakeholders in the sports sector may be explained by differences in professional roles and responsibilities. It was previously suggested that learners with higher task value tend to remain longer engaged in the course (Chiu & Wang, 2008). Due to possible sense of being directly responsible for sports promotion, policymakers may have a high subjective task value (Eccles, 1983) for participating in the SCforH online course, which could explain their longer engagement in the course, compared with academic staff. Another reason could be the official recognition of the importance of SCforH guidelines by governmental bodies in the EU (Pedišić, Oja, et al., 2022), which could have provided additional motivation for policymakers for high engagement in the SCforH online course. Lower time in SCforH course among academic staff may be explained by potentially lower level of interest in the topic or time constraints. Research also shows that courses tailored to trainees' job demands are more likely to facilitate the application of acquired knowledge and/or skills in their respective workplaces (Diamantidis & Chatzoglou, 2014). Representatives of sports clubs and associations are likely to have direct opportunities to implement SCforH initiatives as part of their work (Geidne et al., 2019). This may be the reason why they provided higher ratings for the SCforH course in the *behavioural intent* items, compared with students. It could also be that the task value of SCforH course is lower among students, compared with representatives of sports clubs and associations, due to competing academic obligations and possibly less developed time management skills (Shaikh & Asif, 2022).

Interesting results were obtained when comparing EU and non-EU residents; while EU residents spent more time in the SCforH online course, residents of non-EU countries provided higher ratings for the quality of the

course. The fact that the course was available in all 24 official languages of the EU may have positively affected the level of engagement in the course among EU residents. By contrast, the course was available in the official languages of only three non-EU countries included in this study (Serbia, Switzerland, and the United Kingdom), which may have negatively affected the level of engagement in the course among participants from some non-EU countries. Furthermore, a range of physical activity and sport policies in the EU emphasise the importance of "sport for all" (Christiansen et al., 2014). However, the implementation of such strategies was found to be challenging (Klepac et al., 2020; Pratt et al., 2021), which may have lowered the perceived value and expected outcomes of the SCforH course among some participants. If the "physical activity policy to practice disconnect" (Pratt et al., 2021) is more pronounced in the EU than in non-EU countries, this could partially explain why EU residents provided lower ratings for the SCforH course.

In a previous study (Matolić, Jurakić, Podnar, et al., 2023), sports organisations from the Central and Eastern region of Europe were found to be more committed to promoting HEPA, compared with those in Western Europe. It might be that stakeholders in the sports sector from Central and Eastern Europe place a stronger value on participating in educational courses on the promotion of physical activity in the sports setting, such as the SCforH course. This would explain why SCforH course participants from Central and Eastern Europe provided higher ratings of course quality, compared with participants from Western Europe.

Research has found that learners with prior experience in areas related to the content of a given course are more inclined to complete the course (Lee & Choi, 2011). Prior knowledge of the subject may also improve learning outcomes (Hailikari et al., 2008). However, this was not confirmed in the current study, because we did not find statistically significant differences by prior awareness of the SCforH guidelines in any of the analysed variables.

Practical implications

Our findings show that the SCforH online course is an adequate tool for dissemination of SCforH guidelines among stakeholders in the European sports sector; from sports clubs to higher organisational levels such as sports associations and governmental bodies. The positive feedback on the quality of SCforH online course, justifies continued efforts to widely disseminate the course, with the aim to improve national implementation of SCforH guidelines in European countries. However, the course could be further refined to improve its ratings among students, residents of EU countries, and participants from Western Europe, based on the findings of the current study. More generally, findings of this study could inform the development of other online courses intended for the stakeholders in the European sport sector.

Strengths and limitations

The strengths of this study include: (i) a large sample of participants including various types of stakeholders in the European sports sector; (ii) a large number of included countries; (iii) a comprehensive quantitative assessment of course quality; and (iv) objective assessment of participant engagement in the course using web trigger events.

The study also had several limitations. First, the survey did not include questions about sociodemographic characteristics of participants, such as gender and age, nor did the student survey include questions about their country of origin and college/university. Therefore, the representation of different sociodemographic groups and regional distribution in the survey could not be determined. Second, while useful for reaching populations that are otherwise difficult to reach, snowball sampling does not allow to determine the response rate. Owing to the sampling strategy, the sample may not be fully representative of the study population. The generalisability of our findings may have been further compromised by disproportionate response rates from different countries. Third, given that the participants completed the course evaluation survey immediately after the course, we could only assess behavioural intent (instead of actual behaviour) and expected outcomes (instead of actual outcomes).

Conclusions

It can be concluded that the level of participant engagement in the SCforH course is high. The quality of SCforH course is also high, as perceived by a wide range of stakeholders in the European sports sector. These findings demonstrate that the SCforH online course is an adequate tool for dissemination of SCforH guidelines in Europe.

Some aspects of course quality are rated slightly lower by residents of EU countries (compared with residents of non-EU countries), participants from Western Europe (compared with participants from Central and Eastern Europe), and students (compared with representatives of sports clubs and associations). These findings can be used to refine the SCforH online course and improve the content of new training courses tailored to stakeholders in the European sports sector.

Future studies evaluating the quality of SCforH course should consider using sampling methods that would improve generalisability. They would also benefit from conducting a follow-up survey, to determine the extent to which participants: (i) use knowledge and skills acquired in the course; and (ii) profit from attending the course in terms of improved performance and other gains.

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Conflict of interest

The authors report no conflict of interest.

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