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Evaluation of implementation and effects of a health-promoting sports club intervention using a mixed-method design: PROSCeSS protocol

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ABSTRACT

Public authorities and academics have advocated for applying been advocating for the application of the setting-based approach to sports clubs. However, studies have shown that existing health promotion (HP) interventions in sports clubs poorly understand and apply this approach. Moreover, methods used to evaluate these interventions do not inform their implementation process, limiting the generation effectiveness' proofs. This study aims at evaluating the implementation process and effectiveness of an HP intervention in sports clubs (PROmotion de la Santé dans les Clubs de Sport; PROSCeSS), based on the health-promoting sports club (HPSC) model.

A type 3 hybrid design, using a multiphase mixed-method: QUAN→QUAL→QUAN+QUAL (qual)→QUAL (quan+qual), will be used. Phase A will be a pre-post-quantitative study with one HP officer, five managers and five coaches from 30 sports clubs exploring the effects of the PROSCeSS intervention on HP perceptions and health literacy. Phase B will be focus groups with participants from HP initiatives that the 30 sports clubs will have previously put in place to detect changes in health. Phase C will explain the results of phases A and B by choice of strategies and adherence to standardised steps, measured through semistructured interviews and implementation data collection. Phase D will cross-reference the semistructured interviews, the sports club characteristics questionnaire and the implementation data collection to study the relationships between the context and the implementation process. This protocol will identify 'what works', 'for whom', in 'what context' in terms of HPSC and clarify which intervention components are more effective at improving HP. This evaluation design will help to develop appropriate approaches to evaluate HP interventions.

INTRODUCTION

To improve health, public authorities and academics have been advocating for many years for a setting-based approach, considering that settings are 'social places or contexts in which people engage in daily activities where environmental, organisational and personal factors interact to affect health and well-being'.¹ This approach is

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Sports clubs are a setting that can contribute to promoting health. Several health promotion (HP) interventions have been identified. Still, they often target specific health behaviours without giving clubs the choice of HP initiatives and without acting on the different levels and health determinants. Developing interventions based on a theoretical model could facilitate a social-ecological approach to health and evaluate the implementation processes. The effectiveness could facilitate the development of adapted interventions.

WHAT THIS STUDY ADDS

⇒ This study presents an HP intervention conducted in sports clubs based on a theoretical and an intervention framework. This protocol evaluates an HP intervention's effectiveness and conditions using a validated tool, mixed methods and hybrid design.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ This study represents a step in developing more generalisable HP interventions and implementation strategies for sports clubs.

based on a socioecological approach,² which considers that it does not depend only on individual behaviours but factors in part influence it at different levels (ie, individual, interpersonal, institutional, community and public policy), which interact with each other and affect health. Many settings, like schools or cities,³ have successfully implemented setting-based health promotion (HP) interventions. Recently, sports clubs have been recognised as non-traditional settings that can contribute to promoting health.⁴ Beyond attracting a large population (12% of Europeans from diverse socioeconomic backgrounds),⁵ their voluntary and non-lucrative nature plays an important role in mediating information and values⁶ and confers a strong educational potential.⁴ In addition, sports

participation and the context in which it takes place can be associated with numerous physical, mental and social health benefits.^{4 7 8} Some sports clubs are seizing this potential and developing HP-related activities, such as sport for all⁹ or smoke-free environments.¹⁰ Different studies have also highlighted that not all sports contexts are health friendly, such as sports cafeterias that offer 'unhealthy' products,¹¹ sponsors related to alcohol or sugary drinks.¹² Thus, the potential of sports clubs to promote health is not inherent and depends on their ability to develop and act on health determinants within the sports club.

Since the recognition of the potential of the sports club to promote health, a growing number of HP interventions have been identified.^{13 14} Although they have generated health benefits, a literature review revealed that most interventions poorly apply the setting-based approach and are not based on a theoretical model, limiting their effects, scope, transferability and sustainability.¹⁵ These interventions mainly targeted sports participants rather than the whole club (club, managers, coaches). They were focused on specific health behaviours (eg, nutrition, alcohol, smoking, social inclusion) rather than on the different health determinants in this setting¹⁵: organisational (policies, decision-making process, orientations), environmental (material and infrastructure), social (values, norms and climate) and economic (human, material and financial resources). Additionally, evaluation methods for these interventions remain limited because no validated HP measurement tool has been used. Very few longitudinal designs have been realised,¹³ limiting the understanding of their effectiveness and transferability. Similar results were found by another literature review,¹⁴ identifying only three controlled studies worldwide evaluating HP interventions in sports clubs, which targeted single health behaviour and were not grounded in a theoretical model.

Theoretical conceptualisation is key to transforming knowledge into practice or maximising the effects and duration of interventions.¹⁶ Due to the complexity of the socioecological approach and its application to specific settings, this need for theoretical conceptualisation is particularly important to implement and make interventions effective and for their evaluation.¹⁷ The health-promoting sports club (HPSC) model and intervention framework,¹⁵ based on the setting-based approach,¹ have recently been developed to meet this need. The model and framework are based on the HPSC concept,⁴ on evidence-driven guidelines¹³ and incorporating the needs, knowledge and experiences of sport club stakeholders.¹⁸ The framework provides 69 intervention components and 13 strategies (table 1), acting on the health determinants and at different levels of the sports club: individual (sport participants' personal characteristics and behaviours), microlevel (coaches' activities to guide, alter or support sports participants' actions), meso level (activities of sports club managers), macro level (overall HP policies and orientation of sports club

activities), sports federations and second-line services (eg, government, public health departments).

The PROSCeSS intervention

The PROMotion de la Santé dans les ClubS de Sport in French (PROSCeSS) intervention is theoretically grounded in the HPSC model¹⁵ and was developed through coconstruction work.¹⁹ The objective of the intervention is to enable the sports club to adopt an HP approach using multideterminant and multilevel strategies, which have proven effective.²⁰ The intervention is implemented through an eight-step process, lasting 15 months (see figure 1 and table 2 for details), targeting enhanced HP knowledge, developing individual and collective empowerment and generating organisational and environmental changes. The intervention steps are standardised in terms of dose and content. Still, sports clubs have the flexibility to choose their HP objectives and two HP initiatives to develop by applying the 13 strategies and 69 intervention components from the HPSC model, which best meet their specific goals and needs. A dedicated project team member will coach each club to carry out the intervention steps.

Objective

This study aims to investigate the implementation process and evaluate preliminary evidence of the effectiveness of the PROSCeSS intervention in improving the HP and the health of sports club actors.

Hypothesis and research questions

The hypothesis and research questions are presented in phase form to differentiate the methods and analyses used but do not represent the chronology of the study.

Phase A: the PROSCeSS intervention will increase HP perceptions and health literacy of the HP officer, managers and coaches in 30 different sports clubs.

The use of qualitative and mixed-methods will question the following issues:

Phase B: How will sports participants adopt the PROSCeSS intervention, and how will it impact their physical, mental and social health?

Phase C: How will the adherence (dose and intensity) to implementation and the number and type of strategies used to influence changes in the HP perceptions and health literacy of HP officers, managers and coaches as well as in participant health?

Phase D: How do the different contexts of 30 sports clubs influence the implementation of the intervention, including the choice of strategies, the initiatives that were undertaken and the transferability of the PROSCeSS intervention?

METHODS AND ANALYSIS

Design

The proposed intervention is a complex intervention,²¹ with expected effects at several levels (individual, micro, meso and macro) and multiple target populations

Table 1 Strategies and intervention components of the HPSC intervention framework (Van Hoya et al., 2021)

Strategies	Intervention components
COMMUNICATION: Develop and implement communication to raise awareness of the actions taken to promote health within the sports club	COM1: Develop a communication plan COM2: Communicate with one message, a slogan (clear, explicit and visible) COM3: Ensure internal club communication COM4: Ensure the club communicates with the external community COM5: Ensure the club communicates with all partners COM6: Communicate the benefits of health promotion activities
DYNAMIC: Create strategies to improve all stakeholders' sense of belonging to the club and consider the individual and their environment (socio-ecological approach) to define the most relevant health promotion goals	DYN1: Take the feeling of belonging to the club into account when defining the goals DYN2: Consider interactions between the individual and their environment, while defining health promotion goals
EDUCATION: Support the sports club, management and coaches by varying the type of education they receive and take into account differences in the sports' participants they coach	EDU1: Support the managers and coaches to actively engage in gaining knowledge and skills to promote health EDU2: Tailor the support to the managers and coaches individually in relation to the sports' participants they coach (mentoring, courses, online tools) EDU3: Encourage the managers and coaches to support each other to promote health EDU4: Propose a variety of ways for the sports clubs to raise awareness about health promotion EDU5: Create tools and training courses to support health promotion in sports clubs
EXPERIENCE: Identify past club experiences, organisational readiness and the reasons and quality of the club's commitment to promote health	EXP1: Identify previous club experiences to promote health EXP2: Identify the organisational readiness to promote health EXP3: Identify reasons for commitment to promote health EXP4: Identify the degree of commitment to promote health EXP5: Rely on existing, evidence-based health promotion tools EXP6: Rely on a diagnosis to assess needs and expectations to implement health promotion actions EXP7: Rely on other clubs' experiences when developing health promotion actions
GOALS: Write down the sports club's health promotion goals, using positive messages, adapted to sports language, culture and the placement of health promotion within the club, considering the social inequalities of health	GLS1: Define the goals of health promotion GLS2: Health promotion goals are formally written and documented GLS3: Write goals in a positive sporting language based on the club's culture GLS4: Consider inclusivity (eg, how people experience health differently) when defining the goals
FEASIBILITY: Regularly review the capacity of the sports club to achieve its health promotion goals	FEAS1: Regularly review the financial resources being used FEAS2: Regularly review the human resources being used FEAS3: Regularly review the club's capacity to undertake the actions required to achieve the goals FEAS4: Regularly review the time dedicated to achieving the goals
MOBILISATION: Mobilise people to manage the development of health promotion	MOB1: Mobilise sports champions to support the development of health promotion within your club MOB2: Mobilise experts in health promotion MOB3: Identify and mobilise one or several internal health promotion representatives MOB4: Mobilise parents (and other family members) to support health promotion actions MOB5: Mobilise local decision-makers and elected officials to promote health within the sports club MOB6: Advocate with sports federations to support the clubs on health promotion actions
MONITORING: Monitor health promotion activities in daily practice using a 'small steps' philosophy and review any changes	MON1: Review small improvements towards achieving health promotion goals MON2: Review all the health promotion activities undertaken in the club MON3: Review the short-term effects of the actions (changes within one sports season) MON4: Review the long-term effects of the actions (changes beyond one sports season) MON5: Review the health promotion policies of the sport clubs
MOTIVATION: Understand what motivates coaches to implement health promotion and empower them in this undertaking	MOT1: Foster positive interpersonal relationships MOT2: Take coaches' skills to manage situations into account MOT3: Take coaches' motivation for coaching and their future expectations into account MOT4: Strengthen coaches' autonomy to promote health MOT5: Strengthen coaches' sense of ownership of the club
PARTICIPATIVE APPROACH: Value a 'participative approach' to promote health throughout the club and beyond	PAP1: Identify and call attention to health promotion actions of individuals PAP2: Identify and call attention to coaches' health promotion actions PAP3: Identify and call attention to management health promotion actions PAP4: Identify and call attention to every health promotion action PAP5: Include the managers, coaches and sports participants in the decision-making process PAP6: Involve parents (and other family members and friends) in health promotion efforts
PARTNERS: Partner with other organisations to create a common culture and collaborative process to promote health	PART1: Identify partners for health promotion (clubs, agencies, regional authorities, health professionals) PART2: Define how to collaborate with existing and future partners (define roles, share experiences, contract terms, evaluation of results, equal partner power) PART3: Create a common culture with existing and future partners (trust, recognition, shared time)

Continued

Table 1 Continued

Strategies	Intervention components
PLANNING: Create an implementation plan to achieve the written health promotion goals	PLAN1: Include the core goals in the plan PLAN2: Include the target population in the implementation plan PLAN3: Include the funding sources in the implementation plan PLAN4: Include the responsible persons in the implementation plan PLAN5: Include key steps in the implementation plan PLAN6: Encourage sustainable health promotion actions PLAN7: Base future plans and policies on current health promotion actions PLAN8: Plan future actions based on the evaluation of current actions
RESOURCES: Identify, develop or review financial, human, material and capacity building resources available to invest in health promotion	RES1: Review available financial resources (subsidies, sponsors) to invest in health promotion RES2: Review available human resources (dedicated volunteer time, staff turnover) to invest in health promotion RES3: Review current skills and knowledge available to promote health RES4: Identify and mobilise tools for health promotion development within sports clubs RES5: Identify the funding that can be used for health promotion actions RES6: Establish a national resource site for health promotion within sports clubs RES7: Establish a national spokesperson for health promotion within sports clubs RES8: Create and host a regional and local network of health promotion mentors within sports clubs (share practices)

HPSC, health-promoting sports club.

(managers, coaches and sports participants). Therefore, a flexible evaluation model,²¹ with a better understanding of the contexts in which effects unfold, is needed.²² To this end, a hybrid effectiveness-implementation design^{23 24} allows for an evaluation that creates reliable and transferable data by considering the complexity of HP interventions and their contexts.²² Among hybrid designs with a focus on evaluating the effectiveness and implementation,^{23 24} the hybrid type 3 design is recommended when effectiveness outcomes

are highly dependent on the quality of implementation and when interventions are ‘tailor-made’ with choices of multiple implementation strategies.²³ It seeks to test the acceptability, adoption, fidelity and sustainability of the intervention or strategies to determine implementation outcomes (eg, which strategies are used in which settings, with what intensities, by whom, and in what ways)²⁴ and then measures the effects of the intervention on the target population by incorporating the level of intervention strategy adoption.²⁴

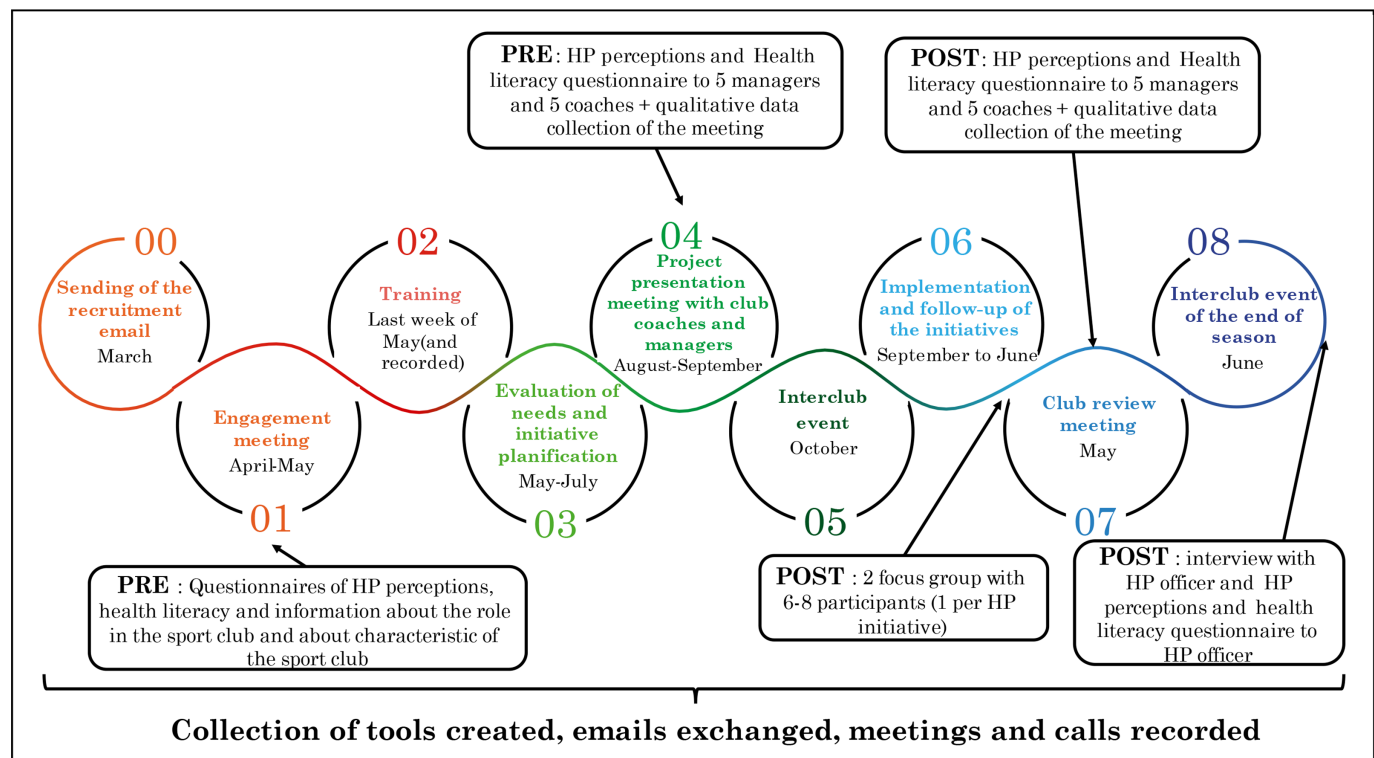


Figure 1 PROSCeSS intervention and data collection. HPSC, health-promoting sports club; PROSCeSS, PROMotion de la Santé dans les ClubS de Spor.

Table 2 Course and content of the PROSCeSS intervention

Steps	Activity	Time period	Duration of the meeting	Purpose of the activity	People present (except the dedicated member of the project team)	Tools used
1. Engagement meeting	Meeting for: <ul style="list-style-type: none"> ▲ The presentation of the main lines of HP in the sports club ▲ The presentation of the intervention (objectives and process) ▲ The recruitment of a health promotion officer and signature of the commitment charter 	April–May	30 min–1 hour	The HP officer is identified and has signed the charter of commitment, he/she has understood the main purpose of what HP is in the sports club and the steps of the intervention that will allow him/her to develop initiatives in the club	A person from the sport club who has HP knowledge and developed activities	<ul style="list-style-type: none"> ▲ Presentation material (computer) ▲ Infographic of the intervention's progress ▲ Commitment charter
2. Training	Training around HP in the sports club, testimonies of health-promoting sports clubs, detailed presentation of the steps and strategies of the intervention and time for questions and answers	Last week of May	4 hours	The HP officers in each club understand what HP is in the sports club, what forms it can take, how to implement it, and what are the steps and content of the intervention that will enable their implementation	The HP officer from each sports club, sports clubs implementing HP initiatives and members of the project team (the PROSCeSS team)	<ul style="list-style-type: none"> ▲ Presentation material (computer) ▲ Various elements around the organisation of a face-to-face training (room, buffet, etc.), distance or even hybrid training
3. Evaluation of needs and initiatives planning	Meeting(s) to: <ul style="list-style-type: none"> ▲ Carry out a diagnosis of the context, needs, resources, experiences, skills and objectives of the sports club to promote health ▲ Set 2 HP initiatives ▲ Select from 69 intervention components and 13 strategies to meet HP initiatives and specific characteristics of the sports club ▲ Plan initiatives over the sports season 	It is possible that this step takes place over two meetings: May–July	2–4 hours	Plan 2 HP initiatives (eg, adapted sport sessions, healthy cafeterias, homework help in connection with psychosocial skills deployed in the practice of sport, waste collection and awareness of sustainable development, injury prevention) and identify relevant intervention components and strategies (based on the diagnosis) to meet the club's character and implement HP initiatives	The HP officer	<ul style="list-style-type: none"> ▲ Diagnostic tool ▲ Tool for setting objectives and strategies
4. Project presentation meeting with club managers and coaches	Presentation meeting and discussion of the two initiatives and objectives that have been developed and strategies, which have been identified with the coaches and managers of the sports club	August–September	1 hour	Initiate a common reflection with managers and coaches of the sports club and have their support for the intervention	The HP officer, managers and coaches of the sports club	<ul style="list-style-type: none"> ▲ Presentation material (computer) ▲ Document summarising objectives and initiatives as well as the identified strategies and intervention components
5. Interclub event	Convivial event at the beginning of each sports club HP project in the form of a conference and a moment of free exchanges, which brings together all the HP officers from the different sports clubs, the project team and potential partners	October	3 hours	Discuss the initiatives and objectives of HP of each sports club, the strategies that seem to be the most relevant, generate ideas, create collaborations and create a feeling of belonging to a network (PROSCeSS network).	The HP officer and the coaches and managers of the club who have decided to support him, members of the project team and potential partners (city stakeholders, HP professionals, etc.)	<ul style="list-style-type: none"> ▲ Presentation material (computer) ▲ Various elements around the organisation of an event (rooms, meals, etc.)

Continued

Table 2 Continued

Steps	Activity	Time period	Duration of the meeting	Purpose of the activity	People present (except the dedicated member of the project team)	Tools used
6. Implementation and follow-up of the initiatives	The HP officer and the managers and coaches who support him while implementing HP initiatives and objectives and ensure follow-up	September to June		Implement the initiatives and strategies of HP and ensure their smooth running	The HP officer and the managers and coaches of the club support him	<ul style="list-style-type: none"> ▲ Tools to keep contact between the HP officer and the dedicated member of the project team ▲ Various tools that have been developed
7. Club review meeting	Presentation of HP initiatives to managers, coaches and members of the sports club	May	1 hour	Present the results of the HP initiatives to strengthen their place within the club, encourage reflection around these initiatives to strengthen them or develop new initiatives	The HP officer, managers and coaches of the sports club	<ul style="list-style-type: none"> ▲ Presentation material (computer) ▲ Document that summarise the achievement of objectives and the results of HP initiatives
8. Interclub event at the end of season	Convivial event for the end of each sports club HP project in the form of a conference and a moment of free exchanges, which brings together all the HP officers of the sports clubs, the project team and potential partners	June	3 hours	Allow each club to present the results of their HP initiatives, to talk about the barriers and facilitators encountered, the orientations to develop or strengthen partnerships and to develop the network (PROSCeSS network)	The HP officer and the managers and coaches of the club who support him, members of the project team, potential partners (members of the town hall, health promotion professionals, etc.) and future sports clubs who may wish to be included	<ul style="list-style-type: none"> ▲ Presentation material (computer) ▲ Various elements around the organisation of an event (rooms, meals, etc.) ▲ Tools summarising the results of each club's initiatives
HPSC, health-promoting sports club; PROSCeSS, PROMotion de la Santé dans les ClubS de Spor.						

This protocol presents how a hybrid type 3 design can be used to investigate the implementation process and evaluate the effectiveness of the PROSCeSS intervention and describes its mixed-method multiphase research: QUAN→QUAL→QUAN+QUAL(qual)→QUAL(quan+qual) (see figure 1 and table 3 for detail).

Sample and recruitment

The study is based on the concept of a cluster, represented by sports clubs allowing observation of whether the intervention has a greater effect on one subgroup over another. Inclusion criteria for sports clubs are to be affiliated with a sports federation belonging to the French National Olympic Committee. The type of sport (individual/collective and gender participation rates) will be the primary selection criterion. To ensure diversity, secondary selection criteria include location (rural/urban), club size (less than 100, between 100 and 1000, more than 1000 members) and resources (eg, number of employees, number of volunteers, ownership of infrastructure or not and availability of an HP officer). The lack of previous longitudinal studies measuring HP perceptions hampers the ability to calculate the sample size. Moreover, the voluntary nature of the PROSCeSS intervention reinforces the call to select sports clubs based on their commitment to organisational change through HP. To consider different French contexts, two cities were identified to carry out this intervention: Nancy and Nice. Fifteen sports clubs per city will be recruited to analyse the diversity of projects and contexts related to clubs in different regions of France. A dropout rate of 20% is expected, resulting in the probable loss of 6 sports clubs during the intervention. An email describing the intervention and objectives will be sent to all eligible sports clubs in these cities. The sports clubs that respond positively and have identified an HP officer will be recruited. Sports clubs that have not identified an HP officer, who have not signed the commitment charter and who will complete one of the stages late (see figure 1), will be excluded from the study.

Ethical approval

The intervention, design, methods and consent procedure were approved by the Université de Lorraine ethics committee and follow the principles of General Data Protection Regulation (number 2021/66) and the French ethical regulations. The use of data is in accordance with the European and national laws and regulations of Regulation (EU) 2016/679 regarding personal data, free movement of such data and the European Code of Conduct for Research Integrity as well as national ethics regulations. Before taking part in the study, participants will be provided information about the study, objectives, implications for taking part and data management. Signed informed consent will be obtained by the research team from each participant and their parent/guardian if they are under 18 years old

before completing the questionnaires. Participants will have the right to withdraw from the study at any time without consequences and will be informed of how they can access the data (request to the research team). In addition, anonymised key findings will be presented to sports clubs to show potential changes.

Phase A: the PROSCeSS intervention will increase HP perceptions and health literacy of the HP officer, managers and coaches in each sports club

This phase is designed as a pre-post-quantitative study.

Sample

Each club will be asked to identify an HP officer at the beginning of the intervention, which will be included in the data collection. This person will then be responsible for identifying at least five managers and five coaches during the project presentation meeting in the club (step 4) to be included in the study. A total of 30 HP officers, 150 managers and 150 coaches will be recruited.

Measurement

A four-part prequestionnaire will be collected from the HP officer of each club: 1—sports club characteristics, 2—characteristics of respondent's role in the club, 3—HP perceptions and 4—health literacy. A three-part prequestionnaire will be collected from coaches and managers of each club: (2—information on the role in the club, 3—HP perception and 4—health literacy). The postquestionnaires for HP officers, managers and coaches are only composed of items regarding HP perceptions and health literacy.

1. Characteristics of the sports clubs include the number of licensees, employees, training slots or financial resources (see online supplemental annexe 1).
2. Characteristic of the respondent's role includes the number of hours in the club, being a volunteer or paid employee (see online supplemental annexe 2).
3. The validated French version of the e-PROSCeSS questionnaire²⁵ will be used to measure managers' and coaches' HP perceptions. The questionnaire is composed of three different scales: the macrolevel includes items to measure the global HP orientation of the sports club, the mesolevel measures the HP guidance of managers towards coaches and the microlevel measures HP actions from coaches to the participants of their sport. Each scale categorises items into one of four health determinants: economic (eg, *My sports club allocates resources to HP actions (eg, communications, administrative support, staff time)*); environmental (eg, *My sports club has safe infrastructures (eg, locker rooms, practice fields, other spaces)*); organisational (eg, *My sports club has defined the roles, responsibilities and expectations while working with partners to promote health*); social (eg, *My sports club encourages the 'everyone plays' ideology*). Each item is rated on a 6-point Likert scale: *Strongly disagree*; *Disagree*; *Slightly disagree*; *Slightly agree*; *Agree*; *Strongly agree* and the possibility to answer: *I do not know*.

Table 3 Description of the mixed method pre- post- hybrid type 3 design

Phases	Hypothesis and research questions	Design	Data collection	Data analysis	Expected results	Data integration
Phase A	The PROSCeSS intervention will increase HP perceptions and health literacy of the HP officer, 5 managers and five coaches in each sport club	Pre-post quantitative study	Questionnaires of HP perceptions, ²⁵ health literacy and information about the role in the sport club (online supplemental annex 2)	Descriptive, multivariate, multilevel analysis using R software	<ul style="list-style-type: none"> ▲ Effects of intervention implementation on HP perceptions and health literacy among sports club HP officers, managers and coaches ▲ Information of the health determinants and club levels which are impacted the most when implementing HP 	
Phase B	How will the PROSCeSS intervention be adopted by sport participants and will it impact their physical, mental and social health?	Qualitative study (post)	Focus group (one per initiative)	Content analysis using Nvivo software	Effects of the intervention on the satisfaction and health of participants	
Phase C	How will the adherence of implementation and the number and type of strategies used to influence changes in HP perceptions and health literacy of HP officers, managers, coaches and participant?	QUAN+QUAL(qual): The quantitative and qualitative results will be explained by the qualitative results	<ul style="list-style-type: none"> ▲ Semi-structured interview ▲ Implementation data collection (observations, meeting recordings, emails and produced documents) ▲ Questionnaires of HP perceptions,²⁵ health literacy and information about the role in the sports club (online supplemental annex 2) ▲ Focus group 	Content analysis using Nvivo software Descriptive, multivariate, multilevel analysis using R software	Information on the relationship between strategies used and the effects on participants health, literacy and HP perceptions of managers and coaches	Adherence to the implementation and number and type of strategies mobilised (qualitative) will be used to explain the evolution of scores of HP perceptions and health literacy of managers and coaches (quantitative) and changes in the health of sports participants (qualitative)
Phase D	How do the different contexts and characteristics of the 30 sports clubs influence the implementation of the intervention, including the choice of strategies, the initiatives undertaken and the transferability of the PROSCeSS intervention?	QUAL(quant+qual): The qualitative results will be explained by the qualitative and quantitative results	<ul style="list-style-type: none"> ▲ Sports club characteristics questionnaire (online supplemental annex 1) ▲ Semi-structured interview ▲ Data relating to the intervention implementation (observations, meeting recordings, collection of exchanged emails and produced documents) 	Content analysis using Nvivo software	Information on the relationship between context and the intervention implementation	The contexts of sports clubs (quantitative and qualitative) will be used to explain the implementation process (qualitative)
HPSC, health-promoting sports club; PROSCeSS, PROMotion de la Santé dans les Clubs de Spor.						

4. Given the diversity of HP initiatives that will be implemented, no opportunities for measuring specific health behaviours have been identified, but a measurement of control on health determinants at the individual level was chosen: health literacy.²⁶ To measure the effectiveness of the intervention on the evolution of health literacy, the Health Literacy for School-Aged Children²⁷ will be used. Theoretical knowledge, practical knowledge, critical thinking, self-awareness and citizenship will be measured by 10 items (two items by dimensions) taking the form: *I think I am well informed about health* or *I think I can compare health information from different sources* and are rated on a Likert scale from 1 to 4: 1=*not at all true*; 2=*barely true*; 3=*somewhat true* and 4=*absolutely true*.

Data collection

The data will be collected sequentially depending on the respondent (see figure 1 for details). HP officers will complete the prequestionnaire during the engagement meeting (step 1) and the postquestionnaire at the end of the intervention, after the closing interclub event (step 8). The five managers and five coaches will complete the prequestionnaire during the project presentation meeting (step 4) and the postquestionnaire at the club review meeting (step 7).

Data analysis

Basic descriptive statistics will be calculated, including means, SD and frequencies. A comparison of HP perceptions and health literacy scores will be undertaken between different sports clubs and before and after the intervention of the same club, using multivariate and multilevel analysis to see the influence of sports club characteristics and the effect of the intervention on these variables. Within the sports club, variances will be analysed using intraclass correlation coefficients to document the intervention effects at each sports club level (managers and coaches). The R 4.1.2 software will be used for analysis.

Phase B: How will sports participants adopt the PROSCeSS intervention, and how will it impact their physical, mental and social health?

A focus group can provide relevant information about the implementation and effectiveness of HP interventions,²⁸ and will, therefore, be used to measure the satisfaction and effect of the intervention on sports participants' health. The choice to conduct focus groups is explained by the diversity of the interventions that will be implemented.

Sample

Participants in one of the two sport club initiatives (see intervention description) will be invited to participate in the focus groups (between 6 and 12 adults). If the initiatives target minors, parents will be asked to participate. A total of 60 focus groups (two per sports club) will be carried out.

Measurement and data collection

An interview guide generated by the research team focusing on satisfaction with the initiative and strategies, intention to continue the initiatives and health benefits (physical, mental and social) related to participation will be used to conduct the focus groups. Focus groups will be held at the end of the implementation of HP initiatives (after step 6).

Data analysis

Focus groups will be fully transcribed and analysed using an inductive data analysis with the Nvivo V.12 software.

Phase C: How will the adherence to implementation and the number and type of strategies used to influence changes in the HP perceptions and health literacy of HP officers, managers and coaches, as well as in participants' health?

A QUAN+QUAL (qual) design will be used to answer this research question. Semistructured interviews and implementation data collection will be used to see how adherence to the intervention implementation and the number and type of strategies influences the evolution of HP perceptions and health literacy of HP officers, managers and coaches. Focus groups will also be used to discuss perceived changes in sport participant's health due to the implemented intervention (eg, if a sports club increases messaging to participants about the recommended amount of physical activity, has this messaging, in fact, increased sports participants frequency to visit the club?).

Sample

Interviews will be conducted with each HP officer, 30 total interviews. The questionnaire and focus group data sample will be identical to those described above (30 HP officers, 150 managers, 150 coaches and 60 focus groups with 6 to 12 persons each) (see a sample of phase A).

Measurement

HP perceptions and health literacy questionnaires and focus groups have been described above (see the measurement of phases A and B).

Semistructured interviews will be conducted with an interview guide based on the PIET model,²⁹ which studies the transferability of an implemented research design and its ability to be deployed in another context. Four criteria are identified: the population (what are the characteristics, needs and attitudes towards the intervention), the intervention in its context (characteristics, design, strategies and implementation), the environment (physical, organisational, partnership, barriers/facilitators) and the transferability (which process, needed improvements, which strategies to prioritise, learning objectives). Although four criteria are described, the analysis will focus only on data related to the choice of strategies (type and number). The other criteria will be analysed to answer the research question from Phase C.

The implementation data will be collected according to two criteria: (1) the ability to participate in the

standardised steps through a tracking file which will inform the number of steps that have been completed, and the recording meeting, which will inform the time spent on each step and (2) the choice of strategies (type and number), captured by the goal-setting tool used in step 3 and the tracking file.

Data collection

Semistructured interviews will be carried out at the end of the intervention (after step 8), and the implementation data collection will be carried out throughout the intervention (eg, continuous collection of emails, Short Message Services, meeting recordings and collection of tools). The data collection related to the questionnaires and the focus group is the same as that described above (see data collection of phases A and B).

Data analysis

The semistructured interviews (fully transcribed), the tracking file and the diagnostic tool will be deductively analysed using Nvivo software to code the elements that inform the use of strategies (the type and number from the HPSC intervention framework).¹⁵ Finally, the tracking file and the recordings from the meetings will make it possible to inform the number of steps which were carried out and the time granted to each one. This qualitative data will first be analysed to provide information on how the strategies are implemented in practice (eg, the COMMUNICATION strategy is often done via social media) and on the adherence to the standardised steps (according to the number of steps realised by the sports clubs on average and the time granted, it will be possible to consider the level of adoption of the standardised steps). These data will then be quantified, and statistical analyses will be performed. In addition to calculating basic descriptive statistics, including means, SD and frequencies, linear regressions will be performed using R V.4.1.2 software to inform a possible association between these different variables and the evolution of scores on the HP perception and health literacy questionnaires.

The analysis of focus groups is identical to that described in phase B. These data will be crossed with those informing the use of strategies and adherence to the implementation of standardised steps. Thus, it will be possible to identify whether implementing the standardised steps or strategies influences the health of sports participants.

Phase D: How do the different contexts of the 30 sports clubs influence the implementation of the intervention, including the choice of strategies, the initiatives that were undertaken and the transferability of the PROSCeSS intervention?

Implementation of complex interventions is dependent on the context: 'a set of characteristics and circumstances that consist of active and unique factors that surround the implementation effort' can impact the intervention and, therefore, its effectiveness.³⁰ To study this phenomenon when implementing the PROSCeSS intervention,

mixed-methods in the form of QUAL (quan+qual) will be used. The sports club characteristics questionnaire, semistructured interviews and implementation data collection will be used to see how different contexts of the sports clubs influence the implementation of the PROSCeSS intervention.

Sample

Data will be collected from the same sample as described in phases A and C.

Measurement

The sports club characteristics questionnaire and the criteria of the interview guide are described above (in phases A and C). The implementation data collection will be collected according to two criteria: characteristics of the sports clubs will be captured by the diagnostic tool completed in step 3 (see figure 1), and barriers that arise during implementation will be documented by collecting all informal exchanges with the dedicated member of the project team (emails, phone calls, SMS), recording meetings and tracking files for each club.

Data collection

The collection of questionnaires, implementation data collection and semistructured interviews are described in data collection of phases A and C.

Data analysis

Questionnaires, semistructured interviews and the implementation data collection will make it possible to analyse contextual elements: for example, contextual reasons why sports clubs chose one strategy over another, the relationship between the stakeholders, temporary requests from the federations, and legal problems. These data will be grouped together to identify contexts specific to each sports club or contextual elements encountered by the sports clubs to be linked with information concerning the implementation of the intervention. Thus, all data concerning the implementation of the intervention, such as the strategies used, the initiatives undertaken and the transferability of the intervention, will be compared between sports clubs based on contextual elements, for example, does a sports club which loses an employee during the season implement fewer strategies? Is a sports club which encounters a legal problem during the season less loyal to the steps of the intervention? Is a club that embarks on another project during the sports season less likely to develop its HP initiatives? Does the number/gender of employees influence the type of strategies put in place? The Nvivo software will facilitate the analysis of data categorised into nodes/themes.

DISCUSSION

Sports clubs are relevant settings for HP. However, several challenges^{13 14} limit the exploitation of their full potential and the generalisation of intervention results. The present protocol proposes an avenue to overcome these challenges and presents how the use of a type 3 hybrid design

considers the influence of the context and process of intervention implementation and a strategy to link them with intervention effectiveness. The collection of qualitative and quantitative data and their cross-referencing will make it possible to better understand how to implement an intervention of such complexity (multilevel and multi-determinant). This helps to demonstrate the relationship between intervention implementation and effectiveness, offering methods to develop appropriate approaches to evaluate HP interventions.

This work also addresses why HP interventions should be theoretically grounded by providing an understanding of the complexity of the social-ecological approach in relation to the sports club context.¹⁷ Thus, the HPSC model and framework¹⁵ will consider contextual contingencies specific to the setting and bring about sustainable changes in the sports club by impacting the different levels and determinants of health that comprise it.

Beyond addressing the limitations identified in the literature and establishing the sports club as a setting for HP, this project aims to offer significant added value to society. The development of an intervention based on the core activity of sports clubs (providing sports activities) could lead to a cascade of benefits that would ultimately benefit society as a whole⁴: improved overall population health, reduced healthcare costs, reduced costs associated with physical inactivity and reduced mortality. In addition, this study could also favour the development of more generalisable HP interventions in sports clubs and inspire the evaluation of interventions that include external levels, such as sports federations, political actors or HP actors.

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