

Article

Sports coaches' perception of health promotion: an exploratory study regarding philosophies, actions, barriers, and strategies

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Abstract

As front-line players in sports clubs, coaches can create a positive context influencing athletes' health decisions and behaviours. However, coaches rarely engage in health promotion (HP) practices due to various obstacles. Coaching philosophy, encompassing beliefs, principles, and values, significantly influences coaches' practices. However, its impact on HP remains unexplored, as the main factor influencing coaches' practices, has not yet been studied in regard to HP. The aim of this study was to explore coaches' perceptions of what they define as health in relation to their coaching philosophies, actions and strategies they undertake in relation to HP, as well as alignment or discrepancies between these three elements. An exploratory mixed-method survey design (QUAL=>quan) was used in this study. A sample of 299 sports coaches in Europe completed an online survey, including closed ended questions on their influence on sports participants health behaviours, barriers for HP and open-ended questions on coaching philosophies and associated health benefits, keywords linked to health, and strategies for HP. Qualitative and quantitative data were analysed using inductive thematic analysis and multivariate statistics respectively. While coaches define health mainly through keywords related to physical health (e.g. 'hydration', 'recovery'), their perceived coaching philosophies were focused around nine themes, related to social and mental health, predominantly using participant management and communication as implementation strategies. Furthermore, they identified lack of time, knowledge and human resources as the main barriers to pay attention to HP. The present findings highlight a gap between how coaches define health, what they consider they can influence and how they promote health. Further work is needed to explore the paradox between coaches' definition of health and self-reported actions focusing mostly on social and mental health mostly.

Keywords: health promotion; sports coaches; strategies; health promoting sport coaches

Contribution to Health Promotion

- By exploring coaches' philosophies, the study highlights how coaches' priorities influence their practice. This can inform the design of targeted training programmes to help them broaden their reach on sports participants' health.
- The study of coaches' HP strategies helps to understand the challenges they face and provides insights to develop tailored and practical solutions to improve their effectiveness.
- The study of coaches' perceived role in health highlights their potential as agents of health promotion and underlines the importance of raising their awareness of a more holistic approach to health promotion (i.e. physical, social, and mental).

INTRODUCTION

Health is not solely the responsibility of individuals or of the healthcare system, but it is 'generated and experienced in various settings of daily life: where we learn, work, play and love' (WHO 1986). This is the foundation of the settings-based approach to health promotion (HP), positing that healthy behaviours should be supported by organizational policies and environmental changes (Kokko *et al.* 2009). The application of the settings-based approach to HP has demonstrated its success in schools and cities. This approach has more recently been applied in Sports Clubs (SC), and has been termed, Health Promoting Sports Clubs (HPSC); (Kokko 2014). The HPSC include four types of health determinants (social, organizational, environmental, and economic), acting at three internal levels of a sports club: macro-level (policies and orientations of SC activities), meso-level (club management activities), and micro-level (activities of coaches' guidance) (Johnson *et al.* 2024).

As frontline actors in SC, coaches can contribute to sports participants' holistic health (social, mental, and physical). This is stimulated by the informal educational nature of the SC setting, as well as through the creation of a positive, safe and secure sporting environment (Lonsdale *et al.* 2013). Coaches are members of the SC who undertake a multitude of support activities with the aim of optimizing the training programme, developing and refining physical, technical, and athletic tactics through communication and support within and outside the environment (Cruickshank and Collins 2015). A coaches' overall guidance and efforts to create a health promoting context can have a direct impact on the health decisions made by sports participants, which gives coaches a major responsibility for 'making healthier choices, easier choices' (Casey *et al.* 2014). Coaches have been recognized as having a major impact on the mental health of their sports participants, for example, by promoting the development of their autonomy and enhancing self-confidence (Mageau and Vallerand 2003), or by improving participants' skills (Sheldon and Filak 2008). In addition, coaches can promote the social health of sports participants by stimulating positive social relationships (Sparks *et al.* 2015). Moreover, coaches influence physical health through stimulating physical activity, increasing fitness, power, but also healthy eating and injury prevention. In their daily practices, coaches plan exercise, rest, and social life activities of sport' participants. In this sense, they monitor exercise load (duration, intensity, and volume), recovery (sleep, resting heart rate, nutrition, estimated fatigue, etc.), repetition of type- and age-specific physical tests with relevant evaluation and feedback, and frequency of injuries and their causes, and adapt their

coaching practices accordingly (Malm *et al.* 2019). Furthermore, research among sports coaches and sports participants demonstrate the benefits of HP activities showing that high scores concerning the perception of HP activities by coaches and by sports' participants are associated with low scores on drop-out intentions and high scores on quality of life and pleasure in practicing, in both young people and in adults (Van Hoya *et al.* 2016, 2020, Johnson *et al.* 2024).

Despite their potential to positively influence sports' participants health, coaches may not engage in health-promoting practices, due to different barriers, such as role boundaries linked to sport performance or fun (Super *et al.* 2018), their volunteer status, lack of knowledge, and/or limited resources for promoting health (Casey *et al.* 2012). There is therefore a gap between proposed HP practices by coaches and their actual implementation in practice, as well as a lack of knowledge about how to overcome the barriers to implementation (Kokko *et al.* 2015, Van Hoya *et al.* 2016). Indeed, as SC benefit from the help of many volunteers, coaches are often not required to undergo formal training. Moreover, current coach education programme may not frequently include a thorough assessment of health, which means coaches are often ill-equipped and unaware of their role in HP (Tézier *et al.* 2025). This does not allow us to understand the link between the actions coaches implement and the way they perceive health. In addition, for health-promoting actions to be carried out, they must be linked to the coach's coaching philosophy.

Studies have reported that in high schools, coaching philosophy was linked to coaches' coaching actions (Gould *et al.* 2007). Coaching philosophy is defined as the beliefs, principles and values that guide behaviour and characterize coaching practice. From a practical point of view, a coach's philosophy is his or her orientation or vision of coaching (Gould *et al.* 2017). From an operational perspective, the personal coaching philosophy is a tool that enables coaches to challenge their practice and develop their own understanding and knowledge, as well as that of their interpreters (Reynolds 2005). It was suggested that acquiring a coherent coaching philosophy would enable coaches to approach their coaching practice with consistency and clarity. Moreover, recognition of the direct impact of these coaching philosophies would enable a greater quality of engagement in practice (Nash *et al.* 2008).

In order to explore HP around coaches, the aim of this article is to highlight coaches' perceptions of how they define health, the influence they believe they have on the health of sports participants through their coaching philosophies, the health topics they address during the season, the strategies

used to promote health, and the barriers they perceive to promoting health. The research questions are:

How do coaches perceive HP in sport in relation to the topics they address during the season? What are the coaches' coaching philosophies, and do they influence the health of sports participants in relation to the benefits they believe they bring them? To what extent are coaches' HP strategies successful or not, and what are the perceived barriers to implementing HP strategies?

METHOD

Design

To achieve synergy between qualitative (QUAL) and quantitative (quan) methods, an exploratory mixed-method survey design (QUAL=>quan) was used (Leech and Onwuegbuzie 2009). Qualitative data (i.e. open-ended questions) and quantitative data (i.e. closed-ended questions) were analysed sequentially for a contextual exploration of existing concepts (i.e. QUAL) which was supplemented by practical and generalized information (i.e. quan) (Guével and Pommier 2012). Qualitative data shed light on coaches' philosophies in their coaching practice, benefits of their practices, health perception and strategies that they used to promote health. This method enables to gather more in-depth information on coaching philosophies, coaches HP actions and the barriers they experience to implement HP, both through self-reported data and through an overview of coaches' needs for action (Van Hoya *et al.* 2024). Quantitative data provided insights into coaches' perceived influence on the health of sports participants, the HP actions they implemented during a sporting season and barriers they experienced to implementing HP actions.

Procedure and participants

Ethical approval was obtained and registered through CNIL by the Delegate of Data Protection No. 2024-312 by the University of Lorraine. An online survey (Limesurvey™) was sent to coaches through members of the working group 'Promoting Physical Activity and Health in Sport Clubs' of the health-enhancing physical activity Europe network. The survey was sent by all authors of the manuscript in their network and circulated among the convenience sample from 5 March to 5 June 2024; the average time to completion was

18 min. The survey was sent to all study participants in the English irrespective of their native language, in order to maintain a rigorous format and use the same wording. They were encouraged to translate it into their native language if necessary.

Measurement

All participants received information about the study and ethics issues, gave informed consent on the first page of the survey, all personal data were anonymized and had information about the study and ethics issues. The survey included seven different sections:

1. Socio-demographic variables. This section includes all data on gender, age, sport, country, volunteer or paid coach, experience, level of supervised practice, and age of supervised participants (see [Supplementary Files](#)).
2. Coaches' keywords associated with health (open-ended questions). This section identified three keywords that coaches linked to health in regard to their role and experience, ranked by importance.
3. Health topics addressed during a season by coaches (closed-ended questions). The Coaches Health Promotion Activities Scale (CHPAS) (Van Hoya *et al.* 2016) was used to capture coaches' perceptions of their HP activities on a five-point scale ranging from 1 (does not describe the coach/my activities at all) to 5 (describes the coach/my activities very well). The measure comprises three topics (see [Table 1](#) for individual items): Substance Use, Respect for Oneself and Others, and Healthy Lifestyle. The scale has been validated on a similar sample (Van Hoya *et al.* 2016). Reliability analyses on coaches' data revealed that the CHPAS had good internal consistency for the global score and for each sub-dimension. The reliability of the coaches' health promotion activities scale was evaluated using Cronbach's alpha for each subscale.
4. Coaching philosophies regarding health (open-ended questions). This section included two open questions: (i) a description of their coaching philosophy and (ii) three key core coaching principles.
5. Benefits of the coaches' coaching philosophies regarding to (open-ended questions). This section included a

Table 1. Mean frequency score self-reported by coaches on health topics addressed during the season ($N=189$).

Items	Mean ^a	Std. deviation
[Respecting others (partners, opponents, referees)]	4.69	0.664
(Warming up before an effort and/or stretching after an effort to avoid injuries)	4.34	0.986
(Playing fair even when losing)	4.18	1.112
(Sleeping well and recovering after a significant effort or training)	4.02	1.090
[Be active and playing sport to be healthy, instead of sitting behind a screen (TV, computer, and video game)]	3.92	1.083
(Need to control his aggressiveness, while being on a sport field)	3.66	1.271
[Healthy eating and drinking (not too fatty, not too sweet, not too salty)]	3.59	1.200
[Washing oneself (taking a shower) after training or a game]	3.18	1.512
(Hazard of alcohol consumption)	2.64	1.410
(Hazard of smoking)	2.51	1.486
(Hazard of doping)	1.95	1.367

^aScores range from 0 (health topic never discussed) to 5 (health topic always discussed).

Table 2. Coaches' level of influence on the health of their sports participants ($N = 297$).

Items	Mean	Std. deviation
(I have an influence on my sports participants' motivation to participate in sport)	8.06	1.395
(I have an influence on my sports participants' sense of belonging to the club)	7.9	1.574
(I have an influence on my sports participants' respect of sports club policies)	7.84	1.753
(I have an influence on improving my sports' participants' performance)	7.52	1.564
(I have an influence on my sports' participants' mental health)	7.38	1.621
(I have an influence on my sports' participants' physical health)	7.32	1.579
(I have an influence on my sports' participants' skills that can prepare them for everyday life outside sport)	7.12	1.677
(I have an influence on my sports' participants' social health)	6.97	1.722
(I have an influence on my sports' participants' relationships with peers inside and outside sport)	6.27	1.956
(I have an influence on my sports' participants' daily life choices)	5.34	2.035
(I have an influence on my sports' participants' relationship with their parents or/and family)	5.12	2.265

Table 3. Coaches' self-reported strategies for health promotion.

	Strategies	Description	Examples
Successful strategies	Self-management	Ability to build a clear preparation planning and develop the individual	• 'Prepare session' • 'Block training sessions over a period then change to another block of training' • 'Changing to help challenge the athlete and prevent stale training' • 'Making my athlete realize by themselves' • 'Invite to practice outside practices to integrate into lifestyle'
	Training	Education use and self-reflections	• 'Training, courses, lessons, and reading' • 'Learn and replicate' • 'Improve myself first by observation and method improvements'
	Relationship	Relationship strategy is successful when it related to coaches' capacity to understand sports participants through communication and sharing.	• 'Speaking with athletes' • 'Individual discussions' • 'Speak openly' • 'Explain to sports participants nutrition and training'
	Inspiration	Communication and exchanges with others coaches	• 'Exchanges with others professionals'
	Philosophy	Introduction of rules in practices	• 'Impose rules for health and well-being prevention' • 'Introduce rules and principles to be in good form'
Unsuccessful strategy	Self-management	Poor training management	• 'General training programmes' • 'Unprepared training session' • 'Trying things that are too complex'
	Training	Non-adaptative communication	• I had followed inappropriate advice
	Relationship	Unilateral communication	• Major speeches • Asking to stop smoking • Talking to someone that doesn't want any help • Some people are 'deaf' to health arguments
	Inspiration	Work alone	• Work on your own, independently
	Philosophy	Be too strict	• 'Authority' • 'Prohibit' • 'Try to control too much' • 'Play results' • 'Put too much pressure' • 'Demand results'

description, by the coaches, of three benefits they perceive in their coaching philosophy, ranging from those they consider most important to those they consider least important.

6. Coaches' perceived influence on sports' participants health (closed-ended question). An eight-item scale was created to evaluate coaches' perceived influence on sports participants' health, (see Table 2). Participants responded

to each item using a 10-point Likert-type scale ranging from 1 (being not at all influential) to 10 (being fully influential).

7. HP implementation strategies regarding health (open-ended questions). This section focused on successful strategies and unsuccessful strategies used by coaches to promote sports' participants' health and well-being (see Table 3).

Table 4. Barriers perceived by coaches ($N = 176$).

Items	Mean	Std. deviation
(Lack of time)	6.65	2.352
(Lack of knowledge)	6.62	2.648
(Lack of human resources)	6.23	2.49
(Lack of interest from sport' participants)	6.23	2.422
(Lack of sports club or management support)	6.22	2.66
(Lack of interest in health)	5.87	2.878
(Lack of a health professional in my network)	5.87	2.812
(Lack of policy/regulations in my sports club)	5.64	2.926
(Focus on competition or sports results)	5.54	2.846
(Lack of financial resources)	5.37	2.669

8. Barriers coaches experienced regarding HP implementation (closed-ended questions). The barriers were evaluated through the Motives Index (Meganck *et al.* 2015). Eleven items were scored on a five-point Likert-type scale anchored by '1 = a very weak motive' and '5 = a very strong motive'. Reliability analyses on coaches' data revealed that the Motives Index had good internal consistency for the global score and for each sub-dimension (see Table 4).

Data analysis

The qualitative results were analysed using inductive thematic analyses concerning coaches' philosophies, benefits of this approach, their influence regarding health, their definition of health and barriers they faced to promote health (Braun and Clarke 2022). Data around strategies used to implement HP actions were analysed by deductive thematic analysis based on the Health Promoting Sport Coaches Guide ('Be an Empowering and Supportive Coach', s. d.). After reading of the answers, two researchers (A.V.H. and K.B.) coded the data in an Excel sheet independent from each other based on the research questions. Coding was done through thematic analysis and categories were created through a concomitant reconciliation of data. Subsequently, umbrella categories were created. A comparison of the researchers' coding was then carried out, with pooling and discussion leading to a consensus on the final categories to be established. Analysis done on the three dimensions of health outcomes were based on the definition of health, where physical health referred at 'capacity to maintain daily adequate energy level to resist at injury and diseases' (WHO 1948), social health referred at 'the ability to fulfil one's obligations, develop one's potential, manage one's own life, be independent and participate in social activities' (Darlington and Masson 2020) and mental health referred at 'a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community' (WHO 2005).

Descriptive statistics (means, standard deviations, cross-tabulations) of the quantitative variables were calculated using SPSS 23. Three multivariate analyses of variance (MANOVAs) were carried out to examine the prevalence of coaches' influence/responsibility on sports' participants, health topics addressed during a season by coaches and barriers perceived by coaches. Multivariate analyses of variances

were also used to analyse gender (male, female, or non-binary), type of sport (individual, collective, or multi-sport), time commitment to coaching (<1 year, 1–3 years, 4–10 years or ≥ 11 years), level coached (local, regional, national, international, or non-competitive), gender coached (female, male, or mixed), age range of sports participants being coached (children younger than 6, adolescents, adults, and older adults). The use of repeated measure ANOVA allowed for simultaneous examination of dependent variables to understand how different health-related practices are implemented. The use of a measures ANOVA (MANOVA) was used to simultaneously test the effect of different conditions or groups on variables that are correlated with each other, without using repeated measures. In this study, results are presented according to the way they were analysed following the mixed-method recommended process (Guével and Pommier 2012).

RESULTS

Participants

Among the 1123 individuals that accessed the survey link, the final sample consisted of 299 respondents (27%) who completed at least 70% of the questionnaire. The majority of respondents were from Belgium (45.8%) followed by the United Kingdom (3%) and the Netherlands (3%). Characteristics are presented in Supplementary File S1).

Coaches' perceptions of health promotion activities

In this section, coaches' keywords associated with health and health topics they promote throughout the season are presented.

Coaches' keywords associated with health (open-ended question)

Figure 1 presents keywords associated with the physical, social and mental health dimensions. The most populated category was physical health category and includes the maintenance and development of sports' participant's physical abilities and the regular engagement in physical exercises as well as the balance between physical activity and recovery, as well as the adoption of healthy lifestyle.

Social health included keywords on social relationships and the development of social values, like respect.

Mental health was less represented, but entailed the importance given to the pleasure of playing sport, personal development and contributions to personal goals' achievement of personal goals and mental well-being.

Health topics addressed during a season by coaches (close-ended question)

Among the three dimensions of the Coaches Health Promotion Activities Scale (see descriptives in Supplementary File), higher scores were found for 'respect for oneself and others' ($M = 4.22$, $SD = 0.74$; social dimension), followed by 'healthy lifestyle' ($M = 3.68$, $SD = 0.94$, physical dimension) and 'substance use' ($M = 2.36$, $SD = 1.28$), with a significant difference between the subscales, $F(1, 188) = 443.26$, $P < 0.001$ (see Table 1).

Perception of health and health topics addressed by coaches during the season

Merging these results in line with mixed method used, the qualitative data highlighted keywords mainly oriented around



Figure 1. Prevalence of coaches' keywords associated with health.

physical health, where the quantitative data showed that physical health (healthy lifestyle) is less often covered than social health during the season. These results suggest that when coaches are asked to define health as a concept, they think primarily about physical health. When they are asked about different health topics they address themselves, they describe acting mostly on social health.

Coaches' perception of their coaching philosophy, its benefits and their influence on sports participants

This section presents coaches' philosophy and its associated benefits and perceived influence on sports participants.

Coaching philosophy and its associate benefits (open-ended question)

Nine categories of coaching emerge from the coaches' philosophy (see Table 5 for more details) and reveal different types of benefits by contributing to the social, physical or mental health of sports participants.

Philosophies contributing to mental health

The contribution of coaching philosophies to the mental health of sports participants can be examined through various categories. 'Performance enhancement and goal achievement in sport': Coaches fostering growth and confidence among participants. For example, a coach said: 'motivate sport' participants to improve their own capabilities', which helps build both their skills and self-assurance. The creation of a 'positive, caring learning and development environment': By emphasizing positivity, pleasure, and safety, coaches establish a nurturing atmosphere for participants. A coach highlighted an approach aims: 'To bring a safe space to participants to help their wellbeing', ensuring they feel secure and supported. 'Support personal development of sports participants': Coaches encourage participants to develop their skills inside and outside of practice. A coach emphasized: 'striving to enhance sport' participants' skills and mental capacity'. 'Learning while having fun': The coaches ensure that participants enjoy the process of personal development through an attractive experience and a pleasant environment. As a coach described: 'positive coaching will help children develop while having fun'. Transmit 'Values': Coaches also instill values such as respect and perseverance, enabling participants to continue their sport in a meaningful way. A coach put emphasis

on: 'enabling young people to develop in the sport they enjoy while continuing to have fun and respecting their physical limits'.

Philosophies' contributing to physical health

The contribution of coaching philosophies to the physical health of sports participants can be examined through various categories. 'Performance enhancement and goal achievement in sport': Coaches play an important role in helping sports participants to express their ability. For example, a coach said that help should be provided to participants to: 'realize their full potential in sport', implying to stay physically up to date. 'Support personal development of sports participants': Enabling sports participants to practice for their objectives without any injuries. A coach said: 'Assisting sport' participants in deriving pleasure from their sport while minimizing injuries'. 'Personalized and adaptative approach': Coaches reflect and adapt their coaching according to sports participants physical capacity. According to a coach, training should be: 'Safe', 'progressive', 'age appropriate', 'lifetime engagement opportunity'. 'Learning while having fun': coaches also emphasize that to feel good physically, you have to enjoy practicing. A coach claimed: 'Surpass yourself and perform with pleasure'. 'Prevention': Coaches promote healthy lifestyle behaviours to prevent injuries. A coach wanted to: 'allow them to perform cardiovascular and muscular work useful to their health and well-being'.

Philosophies' contributing to social health

The contribution of coaching philosophies to the social health of sports participants can be examined through various categories. 'Performance enhancement and goal achievement in sport': Coaches instill the fact that progress imply team notion. As coach said: 'We work in team, and we progress together'. This implies creating a 'positive, caring learning, and development environment': such an environment can promote this team atmosphere. As a coach placed emphasis on 'promoting collective over individuals'. 'Support personal development of sports participants': Coaches encourage learning by sharing. A coach said: 'Encouraging learning and positive attitudes among participants'. 'Developing and maintaining access to sport practice': Coaches create relation within group according to participants needs. A coach highlighted: 'Stimulate fitness and social contact of elderly people'.

Table 5. Coaches' philosophies categories and related types of health.

Categories	Definitions	Examples related to type of health affected by categories		
		Physical	Mental	Social
1. Performance Enhancement and Goal Achievement in Sports	Improving performance and achieving goals by setting clear objectives, providing targeted support, and fostering growth and confidence in sports participants	• 'Realize their full potential in sport' • 'Helping my players to perform'	• 'Motivate sport participants to improve their own capabilities'	• 'We work in team, and we progress together'
2. Positive, caring learning and development environment	Emphasizes the idea of creating a favourable environment for learning and for personal and collective development, with an emphasis on positivity, benevolence, pleasure and safety.	–	• 'To bring a safe space to participants to help their wellbeing'	• 'promoting collective over individuals', 'The spirit of belonging to a group'
3. Support personal development of sport participants	Supporting sports participants on their sporting journey while focusing on their personal growth, self-confidence and overall well-being.	• 'Assisting sport participants in deriving pleasure from their sport while minimizing injuries'	• 'Striving to enhance sport participants' skills and mental capacity' • 'Providing a supportive environment that promotes long-term fulfilment and well-being', • 'Offering life skills and helping sport' participants develop their health and overall well-being'	• 'Promoting teamwork and collective play with respect' • 'Encouraging them to grow both as sport' participants and individuals who share values such as solidarity, fair play, and respect', • 'Encouraging learning and positive attitudes among participants'
4. Personalized and Adaptive Approach	Reflects the idea of personalising training and support methods according to athletes' specific conditions, while emphasising an individual and adaptable approach to encourage optimal development.	• 'Safe, progressive, age appropriate, lifetime engagement opportunity'	–	–
5. Developing and maintaining access to sport practice	Promotes the objective of making sport accessible to all, motivating every individual to participate, and ensuring that everyone can benefit from the opportunities offered by physical activity, whatever their level or objectives	–	–	• 'Everyone participates, progresses and has fun on the pitch' • 'Stimulate fitness and social contact of elderly people'
6. Learning while having fun	Emphasises learning through pleasure, personal development and creating a positive and enriching experience in sport.	• 'Surpass yourself and perform with pleasure'	• 'Positive coaching will help children develop while having fun'	• 'Have fun together'
7. Values	Reflects the balance between the rigour necessary for improvement and respect for individuals, while integrating the element of fun and commitment into the learning and sporting development process.	–	• 'Enabling young people to develop in the sport they enjoy while continuing to have fun and respecting their physical limits' • 'Enable young people to develop in the sporting discipline that they enjoy, while continuing to have fun' • 'Motivate sport' participants to improve	• 'My target is the progression of the athletes in their sport, with the respect of themselves, the respect of their partners, the respect of the other competitors, and the respect of the rules' • 'My philosophy is focused on progression and the role each player has in the team, emphasizing sacrifice and humility for the benefit of the team', 'Love your job,

Table 5. Continued

Categories	Definitions	Examples related to type of health affected by categories		
		Physical	Mental	Social
			their own capabilities, based on respect for the sport' participants'	know your limits, and respect others'
8. Learning and Technical Development	Emphasizes the educational and technical aspects of sport, stressing the importance of the progressive development of skills and the sharing of knowledge.	–	–	• 'Share knowledge and expertise' • 'Everyone is capable of learning skills'
9. Prevention	Promotion of healthy lifestyle behaviours through disease and injury prevention.	• 'Teach practitioners a technique that will allow them to perform cardiovascular and muscular work useful to their health and well-being' • 'Learn the sport without being injured'	–	–

'Learning while having fun': Because the pleasure of practising must be shared within the group. In the words of a coach: 'Have fun together'. 'Values': Coaches fostering mutual respect in the team. A coach claimed 'My target is the progression of the athletes in their sport, with the respect of themselves, the respect of their partners, the respect of the other competitors, and the respect of the rules'. 'Learning and technical development': Technical learning is achieved through group sharing. A coach said: 'Share knowledge and expertise'.

Influence of sports coaches on their sports participants (close-ended question)

Coaches perceive themselves to have the strongest influence on their sports participants' motivation to participate in sport, with a mean score of 8.06 (SD = 1.395), on sports participants' sense of belonging to the club ($M = 7.90$, $SD = 1.574$) and on ensuring adherence to sports club policies ($M = 7.84$, $SD = 1.753$). Coaches felt they had the least influence were on sports participants' daily life choices ($M = 5.34$, $SD = 2.035$) and their relationships with parents and families ($M = 5.12$, $SD = 2.265$).

A repeated MANOVA revealed a significant difference between each item, with Wilk's $\lambda = 0.29$, $F(10\ 282) = 68.171$, $P < 0.001$, and $\eta^2 = 0.71$, indicating significant differences in coaches' perceptions of their influence on sports participants' health.

Association between philosophy, benefits, and influence

The results showed a nuanced understanding by coaches of the influence and benefits of their coaching philosophy on the health of sports participants. The qualitative results show that the benefits they perceive from their practices depend on the focus of the coach's philosophy. Thus, a focus on the social environment and the individual is perceived as beneficial for social and mental health, whereas a focus on sports practice will be perceived as beneficial for physical health.

The quantitative data showed similar results, revealing a different perception of the influence of coaches, with more importance given to the sense of belonging and motivation (i.e. social and mental health), but less to healthy behaviour habits (i.e. physical health).

Coaches' health promotion implementation

In this section, we report coaches' successful and unsuccessful self-reported strategies (see Table 3) by coaches and barriers to coaches' HP implementation are reported (see Table 4).

Successful and unsuccessful strategies (open-ended question)

The results indicate that the strategies employed by coaches vary in success depending on their specific application. A self-management strategy like (e.g. 'prepare session') is associated with success when linked to the coaches' ability to implement structured planning, while poor organization generally leads to failure. A training strategy (e.g. 'Improve myself first by observation and method improvements'), which relies on education and self-reflection, also proves effective, by avoiding non-adaptive exchanges, which are a source of failure. A relationship strategy (e.g. 'Individual discussions') is successful when it promotes understanding of participants through authentic communication and sharing, however, a one-sided communication, especially if participants are unresponsive, undermines the strategy's effectiveness. An inspiration strategy (e.g. 'Exchanges with others professionals') appears effective when it facilitates communication with other coaches with the aim of learning and reproducing. Finally, a philosophy strategy (e.g. 'Introduce rules and principles to be in good form') is successful when it involves introducing rules in practice, but if these rules are overly strict or excessively performance-focused, they lead to failure.

Barriers perceived by coaches (close-ended question)

Respondents' scores on barriers perceived by coaches indicate substantial variation between items (see Table 4).

The descriptive statistics showed that the greatest perceived barriers by coaches were the lack of time ($M = 6.65$, $SD = 2.352$), the lack of knowledge ($M = 6.62$, $SD = 2.648$), and the lack of human resources ($M = 6.23$, $SD = 2.49$). Conversely barriers least perceived by coaches were the lack of a health professional in their network ($M = 5.87$, $SD = 2.812$), the lack of policy/regulations in their sports club ($M = 5.64$, $SD = 2.926$), the focus on competition or sports results ($M = 5.54$, $SD = 2.846$), and lack of financial resources ($M = 5.37$, $SD = 2.669$).

A repeated MANOVA revealed a significant difference between the items Wilk's $\lambda = 0.66$, $F(10\ 166) = 8.27$, $P < 0.001$, $\eta^2\ 0.35$, indicating significant variation in coaches' perceptions across the different barriers they face to HP implementation.

Comparison of coaches' perceived strategies and barriers

The success of HP strategies used by coaches depends on their organization and communication capacities, but is also influenced by perceived barriers such as lack of time, knowledge and human resources. Aspects related to performance, regulation, or financial resources are also perceived as main obstacles, but do not seem to be the main reason for implementation failures of the chosen strategies.

DISCUSSION

The present article shows a discrepancy between coaches' perception of HP and actions they conduct to promote health. Their perceptions are closely related to physical health, where actions implemented are mostly focusing on social and to a lower extent mental health. This study also suggest that coaches perceive they play an important role in promoting health for sports participants and having an influence on sports participant's health, especially regarding their social and mental health, and more in a preventive manner to impact physical health. Coaches identify that the effectiveness of their HP strategies depends on their ability to manage and communicate in their practices, but they also require more time and knowledge to diversify additional strategies to implement effective HP strategies, including limited resources and knowledge gaps.

When coaches think about health, they do primarily cite physical health, before social and mental health. In this regard, physical health is perceived through a balance between preparation, rest, and good hygiene, mental health through notions of pleasure and social health through social relationships. This representation of social and mental health is all the more interesting given that the literature associates pleasure with the motivational aspect of sports participants (Jetzke and Mutz 2020) which is also said to be accentuated by interpersonal relationships (Chang *et al.* 2020). Thus, the pleasure and interpersonal relations perceived as health by coaches would lead to motivation and therefore to continuity in practices.

Although each health topic is addressed by coaches, their actions on health topics are not holistic, as their practices are more focused on mental and social health. These results are aligned with literature which shows that coaches are active in promoting health, particularly the social aspect, before promoting healthy behaviours or education about substance abuse (Van Hoya *et al.* 2015). This may be in-part explained by the fact that strong coach-athlete bonds reinforce the

positive effect of motivation on engagement as eluded to above. This highlights the need for coaches to foster a supportive environment that reduces negative motivational states (Longakit *et al.* 2024) and promotes fair play, respect and inclusion (Palou Sampol *et al.* 2019, Abad Robles *et al.* 2021, Riffi Acharki *et al.* 2023). From a physical health point of view, they nevertheless, implement actions directly linked to sports practice and they emphasize the aspects of prevention such as warm-up to avoid injury. The importance of these notions is widely recognized in the literature (Weerapong *et al.* 2004, McGowan *et al.* 2015). However, aspects of physical health, not directly related to practice, like healthy eating and substance abuse, are less addressed by coaches. This can then be explained by a lack of knowledge (Jacob *et al.* 2016), a need for education in sports nutrition (Couture *et al.* 2015) and a lack of their role in the prevention of substance use such as doping (Patterson *et al.* 2022). Interestingly, current literature highlights a higher risk of substance consumption by sports participants (Clark *et al.* 2015).

The training philosophies of coaches is based on nine categories, mainly focused on the creation of a positive and safe sport environment aiming at motivating sports participants to practice and maintain their participation. This means supporting their personal development, learning and enjoyment. This, once again, shows the attention coaches pay to mental and social health specifically during sports practice. Importantly, even though sports practice has been shown to have beneficial effects on physical health (Oja *et al.* 2015), it has also been shown to have beneficial effects on social and mental health (Eather *et al.* 2023), which—in the current study—is more integrated in coaches' philosophy. Moreover, coaches also recognize themselves as having an important role in mental health and social health, which has shown to be effective for sports participants health through the sports environment (Mazzer and Rickwood 2009, Anderson-Butcher 2019). However, coaches only pay attention to physical health in the context of injury prevention linked to sports participation (Hergenroeder 1998). This reluctance to promote physical health can be attributed to the coaches' fear of inadvertently harming participants, as they lack the knowledge or confidence to properly support them (Kroshus *et al.* 2019, Bissett *et al.* 2020).

The coaches say that they have perceived that their actions linked to their coaching philosophy have benefits mainly in terms of promoting mental and social health. This corroborates previous studies that describe the use of resources related to mental and social variables by coaches as a way to explain their commitment (Van Hoya *et al.* 2018). These results are consistent with those of studies that have shown that coach training has an influence on the development of mental skills of sports participants (Gould *et al.* 2017). These mental and social benefits perceived by coaches support the idea that sports coaches have a broader role than just teaching the skills needed to play a sport and can influence life skills needed for individual and community development (Super *et al.* 2018).

The influence coaches perceive they have on sports participants could be another explanation for these benefits. Coaches perceive that they have an influence on factors such as motivation or the feeling of belonging, which coincides with previous studies showing the positive influence of the coach on the motivational climate to participate in sports (Mageau and Vallerand 2003). However, even if the literature defines the relationship between sports participants and

coaches as essential to sports participation (Mohd Kassim *et al.* 2020), coaches—in the current study—feel less influential on peer relations or life skills development. This, despite their ability to establish relationships of trust to facilitate positive changes in behaviour and attitudes (Langan *et al.* 2013). This also confirms the results of previous research indicating that coaches have not yet integrated a holistic understanding of the development of sports participants into their daily practices (Kokko *et al.* 2015).

Among the strategies used by coaches to promote health, different coaching strategies have been defined in the literature (WHO 2024). However, not all of them seem to be successful. According to coaches, successful strategies have to be oriented around practice management and communication, which is aligned with previous studies recognizing these as an essential part of the sport coaching science (Moen 2012), and more precisely on the adaptation of the discourse to motivate sports participants (Moen 2012).

The barriers perceived by coaches in implementing and developing HP in SC mainly revolves around the lack of resources (e.g. time, human, and educational). These results follow the barriers perceived by coaches to apply their HP skills (Barros *et al.*, submitted for publication) and confirm that the difficulties and barriers are mainly internal to the coaches (e.g. due to their characteristics or personality) (WHO 2024). In addition, not having the necessary knowledge about certain aspects of health (Srinivasa Gopalan *et al.* 2024) and not knowing how to implement them (Kokko *et al.* 2015), coaches face certain limitations.

Practical implications

The results of the study have implications at several levels, aligning with the settings-based approach to HP (Kokko *et al.* 2009). For public policy, they highlight the need to improve the training of coaches on health-related issues that are often neglected during the season. For sports federations, they highlight the importance of evaluating and improving coaches' knowledge of public health. For coaches, the results encourage reflection on their role in HP. Finally, for the sports participants, the analysis highlights the way in which coaching philosophies influence the physical, social and mental health aspects, thus, emphasizing the pivotal role of sports coaching environment for HP. Finally, these results could therefore be to encourage clubs to assess the dimensions of health involved in the projects they have already set up, and to enable projects to be focused on less-present dimensions of health.

Strengths and limitations

This study has several strengths, including the diversity of coaches in terms of gender, countries and sports as well as a specific focus on perceptions of coaches in SCs, in sports practices and HP. Nevertheless, several limitations should be noted. First, the final sample size, regarding the relatively low response rate could indicate participation bias. Furthermore, the majority of respondents were from Belgium, which may limit the generalizability of the results to other geographic areas. However, 40% of the participants did not indicate their country, therefore it is unknown if results could be further generalized to additional geographic locations. Additionally, data were self-reported and may reflect biases such as under- or overestimates of coaches HP perceptions and actions. It should be also noted that no observational studies were undertaken in SCs to

cross-check the results. Third, the survey was sent out in English only, to make it more accessible internationally. Respondents therefore had access to the same questionnaire without any language-related discrepancies. English speakers probably completed the questionnaire more often than non-English speaking coaches. In addition, the use of transcription software was authorized for any respondent who needed it. Future work should focus on case studies involving coaches and sport participants. This could help highlight potential differences in the use of HP based on the type of sport practised or the level of practice. Other more observational studies should look at multi-stakeholder perspectives, including leaders, coaches, taking into consideration the local/national sports context. Currently, studies are underway including interviews, questionnaires and observations in which several types of data are collected (e.g. type of sport, level of practice, gender, etc.) and allowing analyses to be completed by data triangulation. In response to some of the limitations mentioned in this article, these studies are conducted using mixed methods, with data triangulation between sport practitioners and coaches, enabling a comparison of perceptions and avoiding the bias of coach under- or overestimation regarding HP. They are also conducted in the country's original language. The latter will allow a more in-depth analysis of the relationships between quantitative variables (e.g. a regression) thus providing an explanatory dimension, in particular to identify the predictors of perceptions or actions in terms of HP.

CONCLUSION

This study highlighted that coaches define health mainly in terms of physical health. However, coaches see themselves as having an influence on the mental and social health of sports participants and address these health-related issues to a greater extent than physical health during the season. Moreover, coaches' training philosophies were categorized into 9 themes, with a focus on social and mental health. Coaches primarily used participant management and communication as successful strategies and reported lack of time, knowledge and human resources as the main barriers. The present findings highlight a gap between how coaches define health, what they consider they can influence and how they promote health. Further work is needed to explore the paradox between coaches' definitions of health and their self-reported interventions, which focused mainly on social and mental health.

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Author contributions

A.V.H., B.T., K.B., S.G., and A.V., have contributed to the research design and method definition. All other authors have contributed to shared knowledge, reviewing successive versions of the article. A.H. and A.V. have secured the funding. All authors contributed to the article and approved the submitted version.

Supplementary data

Supplementary data is available at *Health Promotion International* online.

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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Data availability

Data will be available on request from the research team at the following address: aurelie.van-hoye@univ-lorraine.fr.

Ethical approval

Ethical approval was obtained and registered through CNIL by the Delegate of Data Protection No. 2024-312 by the University of Lorraine.

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