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An environment-based approach to health promotion with an emphasis on the environmental dimension of capacity building in sports

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Abstract

This study aimed to identify the factors influencing the environmental dimension of capacity building in sports clubs to promote public health in Iraq. A qualitative research design was adopted. Data were collected through semi-structured interviews with sports club managers, federation officials, and subject-matter experts. Using thematic analysis, the study identified recurring patterns and core themes related to environmental capacity building and public health promotion. The findings revealed three interrelated clusters of determinants. First, active environmental design - including accessibility and connectivity of pathways, quality green spaces, and supportive equipment-enhances participation and sustained engagement. Second, access facilitation and motivational mechanisms - reducing structural barriers and implementing incentive-based initiatives - strengthen inclusive participation. Third, institutional policies and structural support-expanding public sport infrastructure and providing governmental backing-play a critical enabling role. A comprehensive, multi-level approach integrating environmental planning, motivational strategies, and institutional support is essential for sustainable public health advancement.

Keywords: Capacity building; Environmental dimension; Sports clubs; Public health; Health promotion.

Introduction

Health is a fundamental human asset encompassing interconnected physical, mental, social, and spiritual dimensions that collectively shape individual well-being and societal development. The dynamic interaction among these dimensions enhances the capacity of individuals and communities to achieve equity, security, and sustainable prosperity(1). Nevertheless, recent global trends reveal stagnation—and in some cases decline—in life expectancy, raising concerns that the present generation in certain countries may not surpass the longevity of their parents(1). A major contributing

factor to this alarming trend is the increasing prevalence of physical inactivity across all age groups, particularly in both high-income and developing countries(2). Physical inactivity has been identified as one of the leading risk factors for global mortality. Substantial empirical evidence demonstrates that regular physical activity significantly reduces the risk of non-communicable diseases, including obesity, type 2 diabetes, hypertension, cardiovascular diseases, and certain forms of cancer. In addition, it enhances mental health by alleviating symptoms of anxiety and depression, improving cognitive functioning, and strengthening stress-management capacity(3). Despite the well-established benefits of physical activity, global participation levels have remained largely unchanged over the past two decades(4). In response, the World Health Organization introduced the *Global Action Plan on Physical Activity 2018–2030*, which advocates for comprehensive, multi-sectoral strategies and the development of safe, inclusive, and supportive environments that facilitate active living(4).

Health is not solely the product of individual behaviors; rather, it is profoundly shaped by broader environmental determinants(5). Social and cultural influences, socioeconomic conditions, ethical norms, and organizational structures collectively shape health-related behaviors and outcomes(5). A growing body of research indicates that individuals' behaviors and health status are strongly influenced by the environments in which they live, learn, work, and engage in leisure activities(6). This ecological perspective emphasizes that sustainable health promotion requires structural and contextual interventions alongside individual-level strategies(6). Sport has long served as an organized and purposeful means of promoting physical, psychological, and social well-being(7). From ancient athletic traditions to modern competitive and recreational sport systems, sport has consistently contributed to the development of social skills, social cohesion, and community health(7). In contemporary societies, sports clubs represent a unique and influential setting for health promotion. Beyond increasing physical activity participation, clubs provide structured environments in which organizational policies, cultural norms, and community-based interventions can be implemented to advance comprehensive health outcomes(7). Across Europe, more than 150,000 active sports clubs engage nearly 19 million individuals of all ages, highlighting their substantial societal reach(8). Initiatives such as the Healthy Club Association in Ireland and the Good Sports Program in Australia demonstrate successful models of leveraging sports club settings to promote healthier behaviors and supportive environments. These examples illustrate the strategic potential of sports clubs as community-based platforms for advancing public health through integrated environmental and organizational approaches(8, 9).

One of the key determinants of sports clubs' effectiveness as health-promoting settings is their capacity for environmental and organizational development(10). Environmental capacity building encompasses the establishment of supportive policies, the education and empowerment of managers, coaches, and members, the provision of adequate resources and infrastructure, and the design of integrated programs that simultaneously enhance physical, mental, and social health(11). This approach is grounded in the premise that sustainable health outcomes cannot be achieved solely through individual behavior change; rather, the environments in which individuals participate must actively facilitate and reinforce healthy choices(11). Environmental capacity building enables sports clubs to systematically embed health-oriented policies and interventions within their organizational structures, cultural norms, and daily practices, thereby strengthening their long-term impact on both members and the wider community(12). By institutionalizing health promotion within governance frameworks and operational routines, clubs can move beyond short-term initiatives toward sustainable and scalable health outcomes(12).

Contemporary health promotion is increasingly grounded in a settings-based approach, which emphasizes that health outcomes are shaped by broader social, cultural, economic, and political determinants(13). This perspective calls upon policymakers and public health practitioners to move beyond an exclusive focus on individual behavior and instead address the contextual conditions in which people live and interact. In contrast to traditional models that primarily assigned responsibility for health to individuals, the settings-based approach recognizes that sustainable health improvement requires structural and environmental change(14). Rooted in the World Health Organization's Ottawa Charter for Health Promotion, this framework conceptualizes health as the product of complex interactions among individual, social, organizational, and environmental factors embedded in everyday life contexts(15). It emphasizes the creation of supportive environments in which healthy choices are facilitated and health becomes an integral part of organizational culture and routine

practice(15). Within the sport sector, this approach has been operationalized through the concept of Health Promoting Sports Clubs (HPSC), introduced by Kokko and colleagues (2014)(12). The HPSC framework extends health promotion beyond the mere provision of sport activities to encompass policy development, education, community engagement, and stakeholder participation within club settings(12). Complementing this framework, initiatives such as the Health-Enhancing Physical Activity (HEPA) Europe working groups and the Sports Club for Health project have further advanced the agenda of positioning sports clubs as structured health-promoting environments(16).

Research indicates that implementing a settings-based approach in sports clubs is inherently a multi-level process requiring interventions at macro, meso, and micro levels within the club. Within this framework, programs that operate solely at the micro level—for example, individual physical activity promotion—cannot achieve sustainable outcomes without concurrent support from the meso level (managerial leadership) and macro level (organizational policies and strategic direction)(17). Accordingly, qualitative studies have suggested that interventions should be designed and executed simultaneously across multiple organizational levels to develop a comprehensive approach. For instance, Koski et al. (2017) demonstrated that activities promoting social participation and healthy nutrition must receive support ranging from coaches to overall club management(16). To facilitate the effective design of such approaches, logic models and intervention frameworks have been developed. Van Hoye et al. (2023), based on the Health Promoting Sports Clubs (HPSC) model, proposed a logic model that allows clubs to systematically define and evaluate inputs, activities, outputs, and impacts at each level(18). This model illustrates how club management can establish specific policies and create conditions that enable coaches and other stakeholders to embed health promotion activities throughout the organization. Similarly, Johnson et al. (2020) found that club stakeholders—including managers, coaches, health professionals, and sports experts—require diverse resources such as practical tools, training, networking, financial support, and evaluation methods to design and implement effective health-promoting programs(19). Recent evidence emphasizes that the settings-based approach is most effective when environmental and organizational capacities are simultaneously developed, involving managers, coaches, and local stakeholders in the design, implementation, and evaluation of health-promoting activities(19, 20). Within the HPSC framework, clubs can integrate health into daily operations through internal policies, personnel capacity building, and provision of educational and infrastructural resources(19). Extensive European studies have shown that initiatives like the Sports Club for Health have been implemented in over 30 countries, with approximately 62% of programs adhering to the seven guiding principles of the approach. These programs cater to all age groups and demonstrate that coherent policy-making and stakeholder engagement can foster effective health-promoting activities at the club level(21). Since the 1990s, Australian recreational and sports environments have also been recognized as platforms for promoting healthy behaviors. Interventions, such as those led by VicHealth, have replaced tobacco industry sponsorship with health-focused funding to reduce health inequities and increase participation in sports and recreational activities. Programs include creating healthy sports environments, promoting physical activity, and implementing policies such as smoke-free settings, responsible alcohol management, and sun-safety measures(22-24). Practical implementations of settings-based approaches have yielded positive outcomes. For example, Lane et al. (2021) evaluated the GAA Healthy Club Project, finding that clubs that systematically adopted a health-promoting approach demonstrated significant improvements in strategic orientation, social interactions, and community engagement, whereas clubs focusing solely on physical activity did not experience such changes(25). Overall, recent scientific findings suggest that designing, implementing, and evaluating settings-based approaches in sports clubs should be tailored to the club's specific characteristics, consider multiple levels of influence (macro, meso, and micro), engage stakeholders in decision-making processes, and employ systematic evaluation tools(19). Such an approach strengthens the role of clubs in community health promotion and ensures sustainable, effective outcomes. Scientific projects such as Health Promoting Sports Clubs: From Theory to Intervention provide practical examples of translating theory into action. Across seven studies, ranging from literature reviews to stakeholder participation in program design, measurement tools, and intervention evaluations were developed and tested in eight pilot projects(18). This process demonstrates that clubs can transform the abstract concept of health-promoting sports clubs into practical, implementable programs that reinforce their societal role. In practice, executing these approaches requires collaboration among club management, coaches, members, and even

national and local sports organizations(11). For instance, the latest WHO Europe operational guidelines provide tools and methods for club managers to integrate health promotion from policy to practice, establishing not only temporary programs but sustainable, structured processes(11). By combining a settings-based approach with organizational capacity building, sports clubs can play a pivotal role in promoting community health, simultaneously addressing individual behaviors, social interactions, and environmental structures while creating conditions for long-term impact.

Literature Review and Theoretical Foundations

Relevant Models and Theories

Individual-Level Models

Individual-level behavior change models, such as the Health Action Process Approach (HAPA)(26) and the Behavior Change Wheel (BCW)(27), primarily focus on personal behavior and self-efficacy, facilitating individual change through motivational interventions, education, and skills training. These models provide powerful tools for designing interventions aimed at modifying individual behavior; however, their main limitation lies in the insufficient consideration of environmental influences, organizational interactions, and existing contextual capacities.

The HAPA model, developed by Schwarzer in 1993, is a social-cognitive framework emphasizing individual behavior and perceived self-efficacy. While it incorporates elements such as social support and resources, its primary focus is on how an individual can adopt and maintain health behaviors. The model operates through two main phases: the motivational phase, in which individuals form intentions, and the volitional phase, in which they plan and execute behavior toward achieving their health goals. Although HAPA is a useful tool for individual behavior change, it does not explicitly address how environmental factors can support or inhibit health nor does it contribute to broader environmental or organizational change(26). In contrast, the Behavior Change Wheel (BCW), developed by Michie et al., is a widely applied framework for designing behavior change interventions. The BCW considers multiple determinants of individual behavior and health promotion across three concentric layers: the outer layer (policies and legislation), the middle layer (intervention functions such as enablement or coercion), and the inner layer (individual capabilities, opportunities, and motivation) (27). The model emphasizes that no single layer is inherently superior and that interventions can integrate multiple layers according to the needs and objectives of the program. While the BCW is highly effective for individual-level intervention design, it does not provide detailed guidance on organizational-level processes or the interaction between organizational structures and health determinants. Its focus remains primarily on individual behavior change rather than on the development of organizational or environmental capacities to promote health.

The Precede–Proceed Model (PPM), originally developed for planning health interventions, is primarily applied within healthcare settings with clearly defined objectives. When applied to sports clubs with less well-defined goals, the model is limited in its ability to directly assess environmental needs and organizational capacities(28). Although PPM is recommended for mapping interventions when evaluating behavioral or environmental problems, many sports clubs have yet to identify specific outcomes, objectives, or problems, reducing the model's practical utility in this context(29). Furthermore, PPM heavily relies on community participation, which, while conceptually advantageous, can be challenging to implement in practice. During its early stages, PPM was still in the process of exploring and developing the concept of health-promoting sports clubs, highlighting the need for further research to apply the model effectively. Additionally, the model does not explicitly target multiple determinants of health—a key component in most health promotion interventions. Consequently, relying solely on individual-level models to design health-promoting programs in sports clubs, without considering environmental structures and existing capacities, presents limitations for sustainability and effectiveness. Models such as Booth's framework(30) and the Behavior Change Wheel(27) are effective tools for individual behavior change; however, their impact is maximized when implemented within supportive environments. Individual control over health is facilitated when the surrounding environment reinforces positive, health-promoting behaviors(31). Social psychology

research underscores that individual behavior is strongly influenced by environmental contexts. Integrating the layers of the Behavior Change Wheel—behavioral sources, intervention functions, and policy categories—with Booth's socio-ecological framework (individual, environmental, and governmental levels) demonstrates how environment-based intervention design can directly enhance stakeholder health and underscores the necessity of creating supportive, health-promoting environments.

Community-Based Models

Community-based or socio-ecological models emphasize the dynamic interaction between individuals and their environments, demonstrating that individual behaviors are influenced not only by personal factors but also by social networks, physical settings, organizational structures, and broader policy contexts(30, 32-34). The model developed by Dahlgren and Whitehead identifies three primary layers—individual, interpersonal, and community/policy—providing a practical framework for designing multi-level health interventions in complex settings such as sports clubs(35, 36). This model underscores the undeniable impact of physical environments, social interactions, and organizational policies on health behaviors and highlights that the success of health-promoting programs requires simultaneous changes across multiple levels. The interactions among these layers are interdependent rather than isolated; influence flows from the individual (micro) level to social groups (meso) and broader community and policy structures (macro), particularly relevant for stakeholders involved in physical activity and nutrition policy development. By illustrating how individual, environmental, and policy-level factors shape behavior and impact health outcomes, the model effectively identifies key determinants of health—cultural, economic, environmental, and social—that contribute to promoting health and physical activity. Despite the substantial potential of sports clubs as settings for health promotion, implementing a successful settings-based approach with integrated environmental and organizational capacity-building faces multiple challenges and constraints. These include the need for coordinated interventions across levels, engagement of diverse stakeholders, and alignment of club structures and policies with health promotion objectives.

1. Complex Interactions Across Levels

Sports clubs function as multi-level systems comprising managers, coaches, members, and volunteers. These levels continuously interact, and changes at one level can have indirect and sometimes unpredictable effects on others. For instance, decisions by senior management to implement health promotion programs may have limited effectiveness if coaches and members are not adequately empowered and engaged(37).

2. Multiple Determinants of Health

Health outcomes are influenced by a range of cultural, economic, social, and environmental factors. Recognizing and managing all these determinants within a club setting is challenging. For example, financial constraints can limit the quality of infrastructure and the availability of trained coaches, while cultural differences may restrict the acceptance and participation in health-promoting programs(11).

3. Dynamics and Diversity of Club Systems

Sports clubs are open, dynamic systems. Staff turnover, seasonal variations in membership, and fluctuating activity schedules mean that single-point evaluations may not capture comprehensive outcomes. Furthermore, clubs vary widely in size, sport type, membership, and resource availability, making the standardization of programs difficult(35).

4. Need for Training and Capacity Building

Successful implementation of health-oriented policies requires targeted training for managers, coaches, and other stakeholders. Without investment in environmental and organizational capacity building, health promotion programs are unlikely to be sustainable or to produce long-term behavioral impacts among members(22).

5. Resource and Infrastructure Limitations
Some clubs face significant financial and human resource constraints, limiting their ability to implement health-promoting programs effectively. These challenges underscore the need for support from federations, governments, and local organizations to provide funding, training, and technical guidance(36).

Health Promoting Sports Clubs (HPSC) and Environmental Capacity Building
The Health Promoting Sports Clubs (HPSC) model provides a comprehensive, practical framework for sports clubs to institutionalize health promotion beyond physical activity, addressing physical, mental, social, and cultural dimensions of well-being. The model conceptualizes the club as a multi-level system, incorporating three organizational levels: macro (policies and strategic management), meso (managers, coaches, and teams), and micro (members and operational coaches). In addition, the HPSC framework emphasizes four key domains of health determinants—organizational, social, environmental, and economic—highlighting the complex interplay of factors that influence health within the club setting(12). By integrating these levels and domains, HPSC guides clubs in embedding health into governance, daily operations, and community engagement, thereby supporting sustainable, system-wide health promotion(16). Within the HPSC framework, environmental capacity building encompasses the design and implementation of internal policies, stakeholder empowerment, provision of financial and educational resources, and the development of infrastructure. These components collectively create an environment conducive to sustainable and effective health-promoting interventions. For example, clubs that provide training resources for coaches, implement policy-driven guidelines, and offer spaces for social and group activities not only increase physical activity participation but also enhance members' mental and social health behaviors(16).
Empirical evidence indicates that sports clubs that systematically implement environmental capacity-building strategies achieve significant improvements in member health outcomes, program sustainability, and social engagement(9). Accordingly, HPSC functions not only as a theoretical framework but also as a practical tool for integrating settings-based approaches and organizational capacity-building at both the structural and environmental levels of sports clubs.
Building on the concept introduced by Kokko et al. (2014), the Health-Enhancing Physical Activity (HEPA) working group and the Sports Club for Health (SCforH) project have emphasized the development of sports clubs as health-promoting environments. By focusing on the multiple health benefits of specific types of physical activity, these initiatives have developed practical guiding principles for clubs(16), including:

- Promoting evidence-based health benefits of physical activity, delivered by qualified and competent staff;
- Encouraging regular engagement in physical activity within the club;
- Minimizing health and safety risks for members;
- Creating a supportive and healthy environment for physical activity;
- Securing the club's commitment to providing a responsible, motivating, engaging, and appropriate environment for members.

These principles provide a practical framework for the development of health-promoting sports clubs and serve as a foundation for implementing settings-based approaches. The SCforH guidelines focus on promoting regular physical activity and offer a practical model that clubs can adopt to systematically encourage participation and embed health promotion into their daily operations.

Health-Promoting Sports Capacity Building in Iraq
In countries such as Iraq, where financial, human, and infrastructural resources are limited, environmental capacity building in sports can not only enhance the performance of sports organizations but also contribute to the physical and mental well-being of the broader population. Strengthening such capacities can play a critical role in reducing inequalities related to physical activity access and participation. Given the rising burden of non-communicable diseases associated with physical inactivity and unhealthy lifestyles, the strategic development of health-promoting sports capacity is of paramount importance. By assessing the readiness of sports clubs and their environmental capacity-building strategies, it is possible to establish a practical and evidence-based

framework to guide sports managers and policymakers. Such a framework enables the design and implementation of high-quality, sustainable, and effective health-oriented sports programs that are adapted to local contexts, resource constraints, and community needs.

Research Methodology

The aim of this study was to identify factors influencing the environmental dimension of capacity building in sports clubs to promote public health in Iraq. Given the exploratory nature of this objective, the study adopted an interpretivist philosophy as the most appropriate approach for qualitative research. Consequently, a qualitative methodology was selected, enabling researchers to examine a limited number of cases in depth and focus on understanding participants' perspectives rather than relying solely on extensive quantitative data. Following the establishment of sampling criteria, semi-structured interviews were chosen as the primary data collection technique(38).

Sampling Criteria

Using a purposive sampling design, the researchers engaged with experts, sports club managers, and representatives from sports federations in Iraq. Purposive sampling, grounded in the phenomena under investigation, involves selecting participants who are specifically knowledgeable about environmental capacity building and its impact on public health in Iraqi sports clubs. This approach allows researchers to collect rich, relevant insights from individuals and organizations directly involved with sports clubs, thereby enhancing the applicability and relevance of findings to the study objectives. Sampling continued until theoretical saturation was reached, with three additional interviews conducted to ensure that all aspects of the topic were fully explored(39). In total, 20 experts and managers from Iraqi sports clubs and federations were interviewed using semi-structured interviews (see Table 1). Interviews were conducted in person at participants' workplaces, federation meeting venues, and via telephone over a six-month period in 2025–2026. After analysis, it was determined that no new information emerged from the final interviews, confirming that theoretical saturation had been achieved. Key interview questions focused on participants' understanding and definitions of the environmental dimension of club capacity building, managerial and structural challenges and opportunities, factors influencing resource mobilization and investment, the role of sponsors and financial partnerships in enhancing club performance, and the impact of sports on public health outcomes. All interviews were conducted with participants' consent, audio-recorded, and transcribed immediately by the researcher. Each interview lasted approximately 30–40 minutes. Due to the sensitive nature of the information collected, participant confidentiality was strictly maintained, and pseudonyms were used to uphold research ethics.

Table 1. Demographic Characteristics of Study Participants

Participant	Gender	Age	Education	Field of study	Work Experience (year)	Fedration/Ministry	Position
P1	Male	51	PhD	Physical Education	18	Federation	**President**
P2	Female	54	PhD	Physical Education	10	Federation	**Vice President**
P3	Male	45	PhD	Physical Education	20	Federation	**Secretary**

P4	Male	48	PhD	Physical Education	18	Board	**President**
P5	Female	65	PhD	Physical Education	31	University	**Professor**
P6	Male	37	PhD	Physical Education	11	University	**President**
P7	Male	49	PhD	Physical Education	15	University	**Professor**
P8	Male	37	Master's	Physical Education	12	Federation	**Coach / Referee**
P9	Female	47	PhD	Physical Education	22	Federation	**Coach / Referee**
P10	Male	35	PhD	Physical Education	18	Board	**President**
P11	Male	37	Master's	Physical Education	18	Board	**Secretary**
P12	Male	40	Master's	Physical Education	21	University	**Coach**
P13	Female	48	PhD	Physical Education	19	University	**Coach**
P14	Male	47	Master's	Physical Education	18	Federation	**Coach / Referee**
P15	Male	47	PhD	Physical Education	14	Federation	**Coach / Referee**
P16	Female	42	PhD	Physical Education	13	University	**Coach**
P17	Female	46	Master's	Physical Education	12	Club	**Manager**
P18	Male	45	Master's	Physical Education	16	Club	**Manager**
P19	Male	46	PhD	Physical Education	14	University	**Coach**
P20	Female	45	Master's	Physical Education	10	University	**Coach / Referee**

Data Collection Instruments

The researchers developed a questionnaire carefully aligned with the study objectives and conceptual framework to comprehensively address the research question. This instrument was exclusively used for data collection and included both open- and close-ended questions. Open-ended questions allowed experts and managers from Iraqi sports clubs and federations to freely express their perspectives on the environmental dimension of capacity building and its role in promoting public health. The questionnaire was designed to explore various aspects of environmental capacity building in sports clubs, including technological readiness, organizational capabilities, environmental factors influencing public health, and specific elements such as facility design, infrastructure, green spaces, and motivational factors. By combining open- and close-ended questions, the tool aimed to capture rich insights into challenges, motivations, and strategies related to environmental capacity building, thereby supporting nuanced thematic analysis of the phenomenon under study.

Data Collection Procedure

A comprehensive list of experts and key stakeholders across different provinces in Iraq—including federation presidents, club coaches, and club owners—was compiled. To verify their eligibility and ensure participation, initial telephone contacts were made in five major cities. Eligible participants were then included in the final sampling frame (see Table 1).

Prior to the main semi-structured interviews, a pilot study was conducted in three provinces of the Kurdistan Region, involving two participants from each province. The pilot aimed to identify factors affecting the environmental dimension of capacity building and its impact on public health, and

insights gained informed refinements to the final data collection instrument. The pilot also facilitated access to participants for subsequent in-person interviews.
For the final study, 20 experts were selected across various provinces of Iraq, reflecting the qualitative nature of the research. Sample size considerations were informed by previous methodological guidance: Arslan (2018) recommended a homogeneous sample of six to eight participants for qualitative studies(40), while Yin and McKee (2018) suggested beginning with a small, manageable sample for effective data collection and analysis(41).
In-depth, face-to-face semi-structured interviews were conducted in Arabic and Kurdish in the selected regions. Interviews were audio-recorded and transcribed into English based on written notes and digital recordings (e.g., mobile devices). Participants shared insights regarding opportunities, challenges, barriers, and contextual factors influencing clubs. Additionally, three telephone interviews were conducted per province to capture any supplementary information potentially missed during in-person interviews. The primary purpose of these follow-up calls was to triangulate findings from the face-to-face interviews, thereby strengthening the reliability of identified themes and ensuring no critical insights were overlooked. These structured follow-up interviews also validated or refined sub-themes identified during the early stages of data collection. After completing 20 semi-structured interviews, the researcher determined that additional interviews were unnecessary, as thematic saturation had been reached. In qualitative research, data saturation is typically achieved after 12–16 interviews, although more complex studies may require up to 24 interviews to capture all relevant themes(42). Data collection continued until no new information emerged, consistent with best practices for qualitative research(43). Following the completion of all interviews, the researcher reviewed and prepared the transcripts for subsequent thematic analysis.

Data Analysis
In qualitative research, data collection, analysis, and reporting are often interconnected and occur simultaneously(44), making the distinction between these stages sometimes challenging(45). While Braun and Clarke (2006) describe thematic analysis as a linear six-step process, in practice it is iterative and reflective, involving continuous movement between stages(46). Thematic analysis is a widely recognized and effective technique for analyzing qualitative data. This study employed a six-step approach, incorporating Lincoln and Guba's (1985) criteria for trustworthiness at each stage(47), with additional reliability measures applied as recommended by Lincoln and Guba (1994) to ensure validity and rigor(48).
Step 1 – Familiarization with the data: Researchers repeatedly reviewed transcripts and audio recordings to gain a comprehensive understanding of the data. Notes were taken on experts' and managers' responses regarding the environmental dimension of capacity building in sports clubs and its impact on public health. Trustworthiness was enhanced through triangulation of data sources (interviews and observations) and systematic documentation in Excel spreadsheets.

Step 2 – Generating initial codes: Following Braun and Clarke (2006), codes were identified as the building blocks of analysis. Researchers manually coded the data, linking labels to relevant sections of text based on the research questions. Reliability was ensured by dual coding conducted by two researchers and biweekly peer review sessions to verify coding consistency.

Step 3 – Searching for themes: After coding all data, researchers grouped similar codes to form potential themes and sub-themes. Some codes were aggregated into main themes, while others formed sub-themes. Trustworthiness was reinforced through visual mapping of codes to clarify relationships between themes(49).

Step 4 – Reviewing themes: Themes were reviewed and refined to ensure alignment with coded data and research questions. A thematic map was created to illustrate how themes related to the environmental dimension of capacity building in clubs influence public health outcomes. Detailed analyses were written for each theme.

Step 5 – Defining and naming themes: Researchers clearly defined and labeled three main themes—(1) infrastructure and active environments, (2) facilitating access and motivation, and (3) roles of organizations and national/local policies. Themes were refined until the research team reached consensus, ensuring distinction and alignment with the research objectives.

Step 6 – Producing the report: Following theme development, researchers conducted final analyses and prepared the report. The COREQ guidelines for consolidated criteria for reporting qualitative research were applied to ensure transparency(49). Illustrative quotations, both short and extended, were included with unique identifiers to represent different participants. Themes, sub-themes, and codes were presented in a thematic matrix (Table 2), and example quotations were incorporated in the Results section. Final discussions compared the findings with existing literature. Trustworthiness was further enhanced by member checking, wherein participants reviewed the analysis and provided feedback on the interpretations(49).

By systematically applying the trustworthiness strategies outlined by Guba and Lincoln (1994), this study ensured that its findings are credible, transferable, dependable, and confirmable(48). Credibility refers to the congruence between participants' perspectives and the researcher's representation of them(50). Techniques employed to enhance credibility included prolonged engagement, continuous observation, and triangulation of data sources (interviews and observations).

Transferability refers to the extent to which findings can be applied to other contexts. This study provides rich descriptions of the environmental dimension of capacity building in Iraqi sports clubs, including aspects such as facility design, infrastructure, and policies. While the study focuses on Iraq, the applicability of the conceptual framework and identified themes is likely to resonate with other countries, particularly developing nations in Asia with similar socio-economic conditions and technological contexts. Consequently, the findings may inform strategies for sports clubs in comparable settings, taking into account cultural nuances. Dependability was ensured through a comprehensive audit trail, including regular checks on data consistency, team meetings, and systematic documentation of raw data, field notes, and transcripts(49). Confirmability is achieved when credibility, transferability, and dependability are established(48). This study enhanced confirmability by maintaining a thematic matrix based on interviews, telephone conversations, and observational data, allowing for verification of findings and ensuring that interpretations were grounded in the data. Data were analyzed using a thematic analysis approach. First, open coding was conducted to identify meaningful units of text. In the second stage, axial coding was used to group similar codes into sub-themes based on conceptual similarity. Finally, selective coding was applied to integrate sub-themes into overarching themes representing the environmental dimensions of capacity building in sport for health promotion. The coding process resulted in five main themes: active environment design, facilitating access and motivation, incentive programs, institutional support and policies, and support of clubs and events.

Consent for publication: permissions for this research project have been approved by the relevant authority of the authors' institution. In addition, informed consent was obtained from all participants and they were informed that the data may be used for publication purposes.

Ethics guidelines

This research has been approved by the Iranian Institute of Science and Technology (2025/10/08- 1994922) in accordance with IranDoc (2018) guidelines. Furthermore, participation in this study was voluntary, and in interviews with all participants, we emphasized confidentiality throughout the entire process, including the use of the data, information, and personal opinions provided."

Findings

The comprehensive data collected from multiple interviews provided rich thematic insights into the factors influencing the environmental dimension of capacity building in sports clubs and its impact on promoting public health in Iraq. **Table 2** presents a thematic matrix summarizing the three main themes, their corresponding sub-themes, and associated codes identified through detailed transcription and rigorous analysis of the interview data

Table 2. Thematic Matrix: Codes and Themes from Thematic Analysis

Themes	Sub-Themes	Codes
Active environment design	**Accessibility and connectivity of routes**	Presence of pedestrian and cycling networks
		Easy access to these networks
	Quality of green spaces	Availability of adequate and appropriate green spaces
		Access to and possibility of physical activity in green spaces
	Supportive facilities and equipment	Path signage, benches, and shade structures
		Adequate lighting
		Public exercise equipment
Facilitating access and motivation	**Reducing access barriers**	Reducing the cost of access to sports facilities
		Provision of subsidized services
		Attention to cultural and gender sensitivities
	Incentive programs	Offering discounts for the use of sports facilities
		Implementation of group and social challenges in media
		Designing health-oriented educational campaigns
	Development of public sports spaces	Annual budget allocation for creating public sports spaces
		Fair distribution of public sports facilities across the city

Institutional support and policies		Upgrading existing public sports spaces
	Support of clubs and events	Support for national and local competitions
		Sponsorship of competitions by governmental organizations
		Ensuring security of sports clubs

Theme 1: Active Environment Design

Active environment design is one of the most effective environmental strategies for promoting public health, providing the foundation for sustained participation in physical activity through a set of complementary components. Pedestrian and cycling networks are most effective in influencing health-promoting behaviors when they are continuous, safe, and connected to essential services and daily destinations. Evidence indicates that linking active routes to educational, commercial, service, and recreational facilities significantly increases the likelihood of engaging in active transport and daily physical activity. This connectivity transforms physical activity from a planned, optional behavior into a natural part of everyday life(51). Studies have shown that urban environments with fragmented or unsafe pathways are used less frequently, even when physical infrastructure exists. In contrast, functional connectivity between routes and urban destinations plays a critical role in reducing sedentary behaviors and preventing non-communicable diseases(52). Furthermore, equitable accessibility of active routes for diverse population groups, including older adults and low-income communities, can reduce health inequalities. A participant emphasized this point, stating: *"From my perspective, appropriate infrastructure such as parks, walking paths, cycling routes, and safe access to sports facilities plays a key role in promoting public health."*

The quality of urban green spaces, including parks and natural environments, plays a fundamental role in promoting mental health and social well-being. Research evidence indicates that regular exposure to green spaces is associated with reduced stress, anxiety, and depression, as well as increased feelings of relaxation and life satisfaction(53). These effects are mediated through mechanisms such as cognitive restoration, alleviation of urban psychological stressors, and enhanced connection with nature. The value of green spaces extends beyond their mere presence; factors such as visual aesthetics, safety, proper maintenance, and opportunities for light physical and social activities determine the quality of use. High-quality green spaces not only facilitate physical activity but also strengthen social interactions and a sense of community belonging, thereby enhancing both mental and social health(53). One participant highlighted this perspective, stating:

"Accessible and safe green spaces and parks (dedicated to public sports activities) play a significant role in improving individuals' mood and reducing stress, which in turn enhances mental health and contributes to overall public health."

Supportive infrastructure serves as a critical complement to active environment design, playing an important role in reducing psychological barriers to initiating physical activity. Such infrastructure includes wayfinding signage, benches, shelters, adequate lighting, and public exercise equipment. Research indicates that these amenities enhance individuals' sense of safety, comfort, and perceived control over their environment, thereby lowering the psychological "cost" of starting physical activity(52). Proper signage reduces uncertainty and increases confidence in using active spaces. Benches and shelters, particularly for older adults and those with lower physical capacity, allow individuals to adjust the intensity of their activity and rest as needed. Public exercise equipment in urban open spaces provides opportunities for low-cost, informal physical activity, contributing to reduced inequities in access to sports and fitness resources(52).

Theme 2: Facilitating Access and Motivation

The mere presence of infrastructure and active environments does not guarantee sustained participation in physical activity. The second critical factor—facilitating access and enhancing motivation—plays a decisive role in whether individuals actually use these opportunities. Research indicates that many individuals, despite physical access to sports facilities, do not engage in physical activity due to financial, cultural, social, or perceptual barriers. Therefore, reducing these barriers and strengthening motivation is a prerequisite for effectively leveraging environmental capacity to promote public health(54). Addressing access barriers—particularly financial, cultural, and social obstacles—is a key strategy for increasing participation and reducing social stigma associated with sports. It also fosters a sense of inclusion and social acceptance, helping physical activity be perceived as a natural and accessible behavior for all community members. One participant emphasized this point, stating:

"Financial, social, and cultural barriers—such as lack of proper understanding of the importance of physical activity, traditional habits, misconceptions about sports, low public awareness of exercise for health maintenance and disease prevention, and limited family support for participation—significantly reduce public engagement in physical activity."

Incentive programs and awareness campaigns play a crucial role in enhancing intrinsic motivation and sustaining physical activity. Strategies such as offering discounts for facility use, implementing educational campaigns highlighting health benefits, and organizing group or community challenges have been shown to increase participation(54, 55). These programs enhance awareness, shift attitudes, and foster a sense of social competition or cohesion, thereby motivating individuals to initiate and maintain physical activity. Research indicates that community-based motivational interventions, especially when paired with social support, are more effective in sustaining active behaviors. Media, social networks, and public education campaigns also play a key role in promoting an active lifestyle(55). One participant highlighted this aspect, stating:

"Awareness campaigns play a major role in organizing lectures, discussions, health workshops, and creating individual and group challenges within the community."

Additionally, fostering supportive social environments significantly influences community-level sports participation. Measures such as eliminating or reducing fees for public sports spaces, providing free or subsidized services, and considering cultural and gender sensitivities can broaden participation across diverse community groups. Empirical evidence suggests that reducing these barriers is strongly associated with increased engagement in physical activity, particularly among low-income and vulnerable populations(54) .

Theme 3: Institutions and Urban/National Policies

Institutions and urban and national policies play a fundamental role in institutionalizing physical activity as a socially accepted behavior. Health-promoting policies that focus on developing public sports facilities, supporting clubs and schools, and integrating physical activity into urban planning can sustainably increase community participation(56). One participant emphasized this point, stating:

"Institutional support is a critical element in promoting health through sports. This is achieved through joint awareness programs between government institutions and educational and sports organizations, in addition to activating the role of families in encouraging regular physical activity. Such support can also be strengthened through coordination among ministries of youth and sports, education, and health to unify efforts in promoting a culture of sports and health."



Figure 1: Overall Thematic Framework

Discussion

The qualitative data analysis provided valuable insights into the environmental factors influencing capacity building in sports clubs to promote public health, particularly in developing countries such as Iraq. The findings indicate that sports clubs, as dynamic and multi-level environments, have significant potential to enhance physical, mental, social, and cultural health. This potential is most effectively harnessed when a settings-based approach is implemented alongside systematic environmental and organizational capacity-building strategies. Such an approach enables the institutionalization of health in clubs' policies, programs, and daily activities. Beyond merely increasing physical activity, it focuses on creating supportive, motivating, and inclusive environments for all members. The findings identified three key pillars of environmental capacity building—active environment design, access facilitation and motivation, and community empowerment—which strengthen interpersonal and group interactions and help establish health behaviors at the community level.

Active Environment Design

The findings of the present study indicate that an active environment design, through three main components—connectivity and accessibility of routes, quality of green spaces, and availability of supportive facilities—plays a crucial role in promoting the physical, mental, and social health of citizens. These results align with the theoretical literature on health-oriented urban design, which considers the built environment as a structural determinant of health-promoting behaviors.

Regarding the connectivity of active routes, the present findings are consistent with those of Lawrence Frank and colleagues (2005), who demonstrated that neighborhoods with higher walkability and well-connected street networks are associated with increased daily physical activity and reduced metabolic risk indicators. Functional connectivity of pedestrian and cycling routes to educational, commercial, and service centers integrates physical activity into daily life and reduces reliance on motorized transport. Beyond the physical benefits, such connectivity fosters social interactions and public space utilization, thereby strengthening social capital(57). Furthermore, a systematic review by Westenhöfer et al. (2023) indicates that urban environments with higher walkability—including connected pedestrian and cycling routes to everyday destinations—are associated with increased physical

activity and improved multiple health outcomes. These studies, in addition to reducing sedentary behaviors, suggest that such built environment designs can positively affect mental health and social interactions, which is consistent with the results of the present study(58).

Alongside the street network structure, the quality of green spaces emerges as a complementary dimension of an active environment. In this regard, research by Richard Mitchell and colleagues (2008) demonstrated that greater access to high-quality green spaces is associated with reduced cardiovascular mortality and decreased health inequalities. Green spaces not only provide opportunities for physical activity but also enhance mental and social health by reducing stress, improving mood, and fostering social interactions(59). Moreover, a study by Lopez-Haro et al. (2025) in Mexico showed that increased access to and use of green spaces is not only associated with higher physical activity levels but also significantly linked to better mental health and social interactions, emphasizing that the quality and attractiveness of these spaces play a critical role in promoting public health(60). Therefore, perceived quality, safety, and visual appeal of green spaces are key determinants of their usage and effectiveness in enhancing health.

On the other hand, the presence of supportive facilities such as adequate lighting, street furniture, drinking fountains, and public exercise equipment plays a facilitative role in the effective use of active infrastructure. In this regard, research by Sallis et al. (2012) indicates that access to safe sports facilities and infrastructure is one of the main predictors of increased physical activity in urban populations. Supportive facilities, especially for vulnerable groups such as the elderly, women, and low-income populations, enhance feelings of safety and motivation to use public spaces, thereby helping to reduce health inequalities(61). Fan et al. (2025) also found that environmental amenities—including exercise equipment, proper lighting, and park service facilities—are significantly associated with increased duration and frequency of physical activity. This study emphasizes that urban design should go beyond merely providing pathways and green spaces and include visible, safe supportive elements in public areas to encourage the use of active spaces among diverse population groups. These findings align with previous research on the role of infrastructure in promoting physical activity and suggest that the availability of such facilities can help reduce health disparities(62) . Overall, the results of the present study underscore that designing an active environment is a multidimensional concept, and its effectiveness is not limited to physical infrastructure alone but depends on design quality, functional connectivity, and the provision of supportive elements. These findings are consistent with the "health-promoting cities" approach, which views health as an outcome of integrated urban planning policies. Therefore, policymakers and urban planners should consider network connectivity, enhancement of green space quality, and provision of supportive facilities synergistically to transform urban environments into sustainable platforms for promoting public health.

Facilitating Access and Motivation

The findings of the present study indicate that merely providing physical infrastructure does not guarantee participation in physical activity. Rather, facilitating actual access and enhancing individual and social motivation play a decisive role in the effective utilization of these opportunities. This result aligns with recent public health evidence emphasizing the importance of removing financial, social, and cultural barriers to transform "potential access" into "actual participation."

In a comprehensive systematic review conducted by the World Health Organization (2019) within the framework of implementing the Global Action Plan on Physical Activity, financial barriers, restrictive cultural norms, gender stigmas, and lack of social support were identified as major impediments to participation in physical activity across various countries. The report emphasizes that policies aimed at reducing costs, providing safe spaces, and implementing community-based interventions can significantly increase participation levels (4). Similarly, findings from Strain et al. (2024) showed that socio-economic inequalities are directly associated with the prevalence of physical inactivity, and reducing financial and environmental barriers can narrow the gap in physical activity between low-income groups and other segments of society. These findings support the perspective highlighted in the present study, indicating that eliminating fees for public sports facilities and providing subsidized services can broaden the scope of participation(63).

From a motivational perspective, the findings of Stienhoff et al. (2024) indicate that community-based motivational interventions—especially when combined with social support, group challenges,

and awareness campaigns—have a more sustainable impact on the continuity of physical activity. Their study emphasizes that enhancing social belonging and collective identity plays a crucial role in consolidating active behaviors (64).

In the same vein, Barrett et al. (2024) reported that incentive programs, including membership fee discounts, media campaigns, and digital interventions (such as online challenges and social networks), are significantly associated with increased intrinsic motivation and self-efficacy for engaging in physical activity (65). These findings align with the narratives of respondents in the present study regarding the role of "awareness campaigns, health workshops, and individual and group challenges."

Moreover, Peng et al. (2023) demonstrated that attention to cultural and gender sensitivities, as well as the creation of inclusive social environments—particularly for women and vulnerable groups—can enhance feelings of safety, social acceptance, and belonging, thereby reducing stigmas associated with sports participation. This approach transforms physical activity from a "voluntary and individual" behavior into an accepted social norm(66). Therefore, the findings of the present study can be interpreted within the framework of contemporary behavior change models, which emphasize the interaction of structural factors (reducing costs and environmental barriers), social factors (family and community support), and psychological factors (motivation and self-efficacy). Reducing financial barriers, implementing awareness programs, and strengthening social support not only increase participation but also help reduce health inequalities among low-income and vulnerable populations.

Role of Institutions and Policies

In addition to environmental and motivational factors that facilitate the use of active spaces, urban and national institutions and policies play a fundamental role in institutionalizing physical activity as a socially accepted behavior. At the micro level, local policies can facilitate participation in physical activity by improving access, reducing barriers, and increasing social support. At the macro level, national and international policies provide frameworks for implementation, allocate resources, and create social consensus, enabling the formation of active environments. Health-oriented urban policies that prioritize active environmental design can produce multiple benefits. For example, developing continuous networks of active routes, increasing the number of high-quality green spaces, and providing multi-purpose supportive facilities not only facilitate physical activity but also enhance safety, social belonging, and social capital at the neighborhood level. A systematic review by Zhong et al. (2022) showed that active urban design policies are significantly associated with increased walking and cycling participation and reduced health inequalities(67). Furthermore, equity-focused policies in access to urban sports facilities can reduce participation gaps among different demographic groups. Hou et al. (2024) found that the equitable distribution of sports facilities and green spaces, particularly in low-income neighborhoods, is associated with increased physical activity in these populations and can contribute to reducing socio-economic health disparities(68).

Alongside infrastructure, local institutions—such as municipalities, health and sports organizations, schools, and community centers—play a critical role in emphasizing the importance of physical activity. These institutions can promote social participation and integrate physical activity into the collective identity of urban communities through awareness programs, informational campaigns, and group activities. A study by Zhu et al. (2025) found that local sports governance significantly increases participation in physical activity through infrastructure development and raising public awareness, and this effect is strengthened by interaction with local institutions(69).

Local institutions also play an important role in facilitating participation among specific groups, such as women, older adults, and disadvantaged populations. Recent research indicates that supportive programs designed with cultural and gender sensitivities can enhance feelings of safety and social acceptance, thereby increasing engagement in physical activity. For instance, Peng et al. (2023) emphasize that social support at the local level and the creation of inclusive environments can have a significant positive impact on women's participation in physical activity(66) .

At a broader level, national policies and international frameworks are essential for institutionalizing physical activity. The World Health Organization (WHO), in the Global Action Plan on Physical Activity 2018–2030, stresses that countries should develop multisectoral policies focusing on education, transport, environment, sports, and health to increase physical activity at the national level. These policies include practical actions such as increasing funding for public sports facilities, integrating physical activity into school curricula, and implementing national awareness campaigns

(4). Strain et al. (2024) also highlight that to reduce gender and social disparities in physical activity, national policies must be comprehensive and provide sufficient financial and supportive mechanisms for vulnerable groups. Countries that have implemented clear policy frameworks and incentive-based measures have successfully reduced physical inactivity and improved participation across different population groups(63). In summary, institutional support—both local and national—increases the social legitimacy of sports and public trust in physical activity, reinforcing it as an accepted social norm. When physical activity is promoted through official policies and programs, individuals adopt it not merely as a personal choice but as part of a healthy lifestyle and social norm. Policies that combine infrastructure, education, motivation, and social support have a higher likelihood of success because they simultaneously address structural, social, and psychological factors, thereby enhancing participation at all levels.

Conclusion

The present study demonstrated that promoting physical activity as a socially accepted behavior for public health goes beyond individual access to sports facilities and requires a multilevel approach that simultaneously addresses environmental, motivational, and institutional factors. From an environmental perspective, designing safe and continuous pathways, improving the quality of green spaces and sports equipment, and ensuring equitable access and appealing environments facilitate physical activity participation and reduce health inequalities. From a motivational perspective, reducing financial, cultural, and social barriers, implementing incentive programs, and providing social support enhance sustained engagement in physical activity. Creating inclusive environments that are sensitive to gender and cultural differences further strengthens a sense of belonging and social participation. Institutions and health-oriented policies at both urban and national levels play a critical role in institutionalizing physical activity and reinforcing the social legitimacy of sports. Combining local and national policy-making with environmental design and motivational programs provides an integrated framework for increasing public participation and promoting physical activity. Sports clubs, as multilevel and dynamic settings, can, through an environment-based approach and organizational capacity-building, enhance the physical, psychological, and social health of members, strengthen social participation and interactions, and institutionalize a culture of organizational health. The success of this approach depends on active involvement of managers, coaches, and members, as well as continuous attention to the cultural, social, and economic diversity of clubs. Integrating an environment-based approach with organizational capacity-building transforms sports clubs into comprehensive, impactful spaces for community health promotion and offers a practical and reliable model for policymakers and sports managers.

Limitations

1. **Geographic scope and sampling:** The present study was limited to the environments and sports clubs in Iraq, and its findings may not be generalizable to the entire population or other regions.
2. **Type of data and collection methods:** Data were primarily collected through observations and questionnaires, which may involve respondent bias and limit the accuracy in capturing actual behaviors.
3. **Dimensions examined:** The study focused only on environmental factors, and other determinants of physical activity and health were not assessed.
4. **Study duration:** Due to time constraints, the long-term effects of environmental interventions and club capacity-building on health behaviors and physical activity were not fully explored.

Recommendations for future research

1. Conduct longitudinal and mid-term studies to examine the sustained effects of club capacity-building and environmental policies on participation in physical activity and community health.
2. Expand research to more diverse regions and populations to improve generalizability and examine the influence of cultural, social, and economic differences.
3. Evaluate the effects of other dimensions of capacity-building on health promotion.
4. Design and implement controlled experimental interventions in sports clubs to assess the effectiveness of environment-based and organizational capacity-building programs.

5. Utilize digital tools and new technologies to collect more accurate data and minimize self-report biases in measuring physical activity.

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Declarations

Data Availability Statement: The data supporting the findings of this study, including the dataset, survey instruments, variable coding scheme, and analysis materials, have been uploaded to the journal submission system as supplementary files for peer review purposes. These materials include all necessary information required to verify and reproduce the results of the study.

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