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The Role of Physical Education in Developing Soft Skills and Essential Competencies for University Students

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ABSTRACT

The increasing focus on employability and comprehensive education has heightened the demand for university graduates with robust soft skills alongside disciplinary expertise. This review examines the role of university-level Physical Education (PE) in the development of soft skills. Fifty peer-reviewed worldwide research from 2018 to 2024 were thoroughly synthesized, and a frequency analysis was performed to quantify reoccurring themes. Findings indicate widespread academic consensus that physical education fosters teamwork, tenacity, resilience, leadership, problem-solving, and communication skills. The integration of educational technology and the professional development of instructors have emerged as essential contextual elements that improve these results, while evidence of cross-cultural consistency highlights the global significance of the advantages of physical education. The results endorse the strategic integration of physical education into higher education curricula and emphasize the necessity for clearly defined soft-skill objectives, technology-enhanced instruction, and continuous staff training to optimize student growth.

Keywords: educational technology integration, experiential learning, higher education, Physical Education, soft skills development

1. Introduction

The rapid advancement of technological innovation and the changing requirements of the global economy have significantly transformed the employability skills anticipated of university graduates. Modern businesses increasingly prioritize "soft skills" - a combination of interpersonal, communicative, leadership, problem-solving, and adaptability traits - equally or even more than specialized knowledge (Muschalla & Kutzner, 2021; Ermakov, 2021). These qualities are now broadly recognized as essential factors influencing occupational success, personal well-being, and responsible citizenship. Consequently, higher education institutions are under increasing pressure to provide curricula that cultivate both technical expertise and a comprehensive array of soft skills essential for effective engagement in contemporary workplaces.

The significance of Physical Education (PE) in universities necessitates renewed focus. Traditionally viewed mainly as a means to enhance physical health and recreational participation (Golub et al., 2018; Lubysheva, 2010), physical education is now acknowledged for its educational capacity to cultivate various soft skills (Andres, 2021; Ma & Mazlan, 2024). Team sports, cooperative activities, and organized exercise foster genuine situations where children must interact, communicate, make swift judgments, and exhibit resilience. These practical learning possibilities are challenging to reproduce in traditional classroom environments and correspond with modern demands for comprehensive student development (Arufe-Giráldez et al., 2023; Azhyppo et al., 2018).

Notwithstanding this growing acknowledgment, the literature investigating the role of physical education in the acquisition of soft skills remains disjointed among languages, geographies, and study methodologies. A rigorous synthesis is necessary

to delineate prevailing themes, pinpoint commonly referenced competencies, and underscore novel teaching techniques.This article addresses the above gap through the following objectives:

1. Review and integrate international scholarship on the relationship between university-level PE and soft-skill development.

2. Identify and categorize the specific soft skills and competencies most commonly associated with PE in the reviewed literature.

3. Expose emerging pedagogical approaches that enhance PE's effectiveness in cultivating these skills.

4. Derive actionable recommendations for embedding PE more purposefully within university curricula to promote holistic student development.

2. Literature Review

An expanding corpus of study highlights the diverse benefits of Physical Education (PE) to the cultivation of soft skills and key abilities in university students, transcending mere physiological effects. This study synthesizes insights from several research perspectives, encompassing studies on targeted skill development, instructional innovations, and perceptions in physical education.

Conceptualizing Soft Skill Development in PE

The modern interpretation of soft skills encompasses "flexible" or "universal" competencies, essential for professional achievement (Ermakov, 2021; Yarkova, 2016). Researchers assert that physical education functions as an effective medium for developing these competencies (Andres, 2021; Ma & Mazlan, 2024). Particularly, professional education for IT professionals is demonstrated to cultivate essential soft skills (Andres, 2021). The development of soft skills is similarly emphasized for prospective athletes and physical education instructors (Kondur et al., 2022; Fedorova & Rybnikova, 2020; Nosko et al., 2020), suggesting that the discipline inherently cultivates these qualities in its participants. Muarifin (2022) further expands this notion to encompass elementary school kids, proposing a fundamental role for physical education across educational levels. The overarching societal importance of physical culture and sport (Golub et al., 2018; Mikhaylova, 2017; Lubysheva, 2010) indirectly endorses the notion that physical education fosters holistic persons. Furthermore, cognitive work capacity and the recognition of soft skills are associated with general well-being (Muschalla & Kutzner, 2021), indicating that the health advantages of physical exercise indirectly facilitate the development of soft skills.

Teamwork, Collaboration, and Organizational Skills

Teamwork is regularly recognized as a fundamental soft skill augmented by physical education. D'Isanto et al. (2022) examine heuristic learning as a means to enhance students' collaborative abilities in physical education environments. Nopiyanto et al. (2023) corroborate this, demonstrating a favorable impact of a service-learning program centered on traditional sports games on pre-service physical education teachers' soft skills, particularly teamwork. The cultivation of health-preserving competency, especially among IT students, necessitates collaborative endeavors (Prysiazhniuk et al., 2019). Psychological well-being in physical education and school sports is associated with healthy social contact and collaboration (Piñeiro-Cossio et al., 2021).

In addition to collaboration, PE enhances organizational and leadership competencies. Romanovskiy et al. (2024) recognize organizational skills as an element of soft skills essential for prospective higher education educators and professionals in physical education and sports. Omelchuk and Domina (2023) examine the development of professional abilities for prospective scientific and pedagogical professionals in physical culture, encompassing organizational elements. Chedova (2023) investigates the development of universal skills in university students via theoretical physical education classes,

positing that even systematic instruction in physical culture enhances overall organizational comprehension. The professional roles of educators (Griban et al., 2020) and academic leaders (Reyes & Redoña, 2021) underscore the significance of these organizational and leadership qualities, which can be developed through professional education.

Problem-Solving, Critical Thinking, and Cognitive Development

PE inherently involves situations that require swift problem-solving and analytical reasoning. Lim (2024) illustrates this via a neuroscience-themed escape room, an innovative experiential learning design that fosters problem-solving and cognitive engagement. The extensive influence of educational technologies on cognitive competence (Novikova, 2023) and capabilities in the digital era (Pushkarev & Pushkareva, 2022) indicates that contemporary physical education, with its growing incorporation of technology, might enhance cognitive skill development. Catal et al. (2023) emphasize the significance of analytical thinking in recognizing knowledge deficiencies within cybersecurity, a competency applicable to strategic decision-making in physical endeavors. Kolokoltsev et al. (2018) investigate motor skills and functional attributes, whilst Prontenko et al. (2020) create a software application for assessing children's fitness, both of which inherently depend on comprehending and enhancing physical processes, thus involving cognitive problem-solving. Kenton and Blumer (2016) explore metacognitive skills, essential for self-regulation in learning and problem-solving, frequently evident in demanding physical tasks.

Perseverance, Discipline, and Motivational Aspects

The requirements of physical activity naturally foster tenacity and discipline. Shkola et al. (2019) examine the development of valuable attributes in youth during physical training, encompassing determination and resilience. Sirotkina (2022) underscores the importance of socio-pedagogical assistance in cultivating a value-oriented perspective on health among students, promoting sustained involvement and self-discipline. Motivation is essential for ongoing engagement, as demonstrated by Prontenko et al. (2019), who examined the relationship between students' motivation for physical education and their physical fitness levels, while Tymoshenko et al. (2019) described the motivational value-based attitudes of students towards physical education. These studies collectively underscore how physical education fosters attributes of perseverance and self-regulation.

Communication and Social Dynamics

Effective communication is crucial in PE, especially in team-oriented activities where explicit instructions, feedback, and strategic dialogues are vital. Nonetheless, the social context of physical education may sometimes provide difficulties. Sağin et al. (2022) examine bullying in physical education, emphasizing the importance of cultivating healthy social interactions and transparent communication to guarantee a secure and effective learning atmosphere. Viscione et al. (2019) examine physical education in secondary higher education, implicitly acknowledging the social connections intrinsic to these environments.

Pedagogical Innovations and Perceptions in PE

Contemporary PE research increasingly emphasizes creative pedagogical approaches and their effects. Arufe-Giráldez et al. (2023) present a review of pedagogical methods in physical education, whilst Wang et al. (2023) do a systematic review of blended learning in the discipline, signifying a transition towards more adaptable and technologically integrated methodologies. Montiel-Ruiz et al. (2023) investigate social networks and gamification in physical education, developing interactive and engaging educational experiences. Although these developments provide new opportunities, they also provide limitations, exemplified by the difficulties encountered in online physical education classes (Jeong & So, 2020). Griban et al. (2019) emphasize unconventional methods of physical training, so illustrating pedagogical diversity. Zhamardiy et al. (2020) provide a systematic framework for the application of fitness technologies in physical education. The efficacy of these methodologies is frequently linked to perceptions. Research investigates the perceptions of students and teachers on physical education learning (Nugraha et al., 2022), the personal aspirations of physical education student

teachers (Jess et al., 2021), and the viewpoints of physical education teacher education students (Østerlie & Kristensen, 2023). Merma-Molina et al. (2023) examine the perspectives of future physical education instructors about sustainability, which mirror overarching pedagogical objectives. Spittle et al. (2023) evaluate instructional efficacy, whereas Xue et al. (2023) examine the impact of an inclusive educational climate on the competency of physical education teachers, both enhancing the comprehension of improved delivery in physical education. The significance of physical education in the professional endeavors of educators (Griban et al., 2020) and the physical training required for specialized occupations such as patrol officers (Prontenko et al., 2020) underscores its practical importance. General trends in physical activity across Europe (Euronews, 2023; European Commission, 2022) and challenges such as insufficient family education (Guo & Chen, 2023) establish a wider societal framework for the importance of physical education.

This comprehensive review demonstrates that PE's role in developing soft skills and essential competencies is well-supported by a diverse body of research. The field is actively exploring innovative pedagogies and acknowledging the complex interplay of physical, cognitive, and social factors in student development.

3. Methodology

This study utilized a dual methodology, integrating qualitative synthesis and quantitative frequency analysis, to investigate the function of Physical Education (PE) in cultivating soft skills and essential competences among university students. Fifty international peer-reviewed research (2019–2024) were assessed. Thematic analysis was employed to discern repeating soft skills and pedagogical patterns, while frequency statistics were utilized to measure the presence of each theme throughout the corpus.

4. Results and Findings

The synthesis of 50 scholarly articles and accompanying frequency analysis yielded several key insights into the role of Physical Education (PE) in developing soft skills and essential competencies among university students. The findings reveal a broad spectrum of recurring themes, with varying degrees of emphasis across the literature. These themes can be grouped into two major categories: (1) specific soft skills and competencies, and (2) pedagogical approaches and contextual factors.

Table 1 - Frequency of Key Themes and Competencies in the Reviewed Literature

Theme/Competency	**Number of Documents Mentioning**
1. Specific Soft Skills & Competencies	
Teamwork & Collaboration	9
Leadership & Organizational Skills	7
Problem-Solving & Critical Thinking	6
Perseverance, Discipline, Resilience & Motivation	8
Communication & Social Interaction	4
Health-Preserving Competence	3
Cognitive Competence/Abilities	3
Professional Development (of PE teachers/staff)	7

2. Pedagogical Approaches & Context	
Modern/Non-Traditional PE Means & Fitness Tech.	7
Educational Technology Integration (Blended, Gamification, Online)	10
Perceptions (Students/Teachers)	7
Pedagogical Models/Methods (general)	2
Role/Significance of PE (general)	5
Values/Motivational Attitudes towards PE	3

Note: A single document could contribute to multiple categories if it discussed several distinct themes.

(Source: Author's survey)

Teamwork and collaboration were the most frequently referenced soft skills, with nine studies mentioning them. Scholars have consistently emphasized the importance of physical education, particularly team-based athletics, in the development of cooperative behavior, shared responsibility, and mutual goal achievement (D'Isanto et al., 2022; Nopiyanto et al., 2023; Piñeiro-Cossio et al., 2021). Themes of perseverance, discipline, resilience, and motivation were prevalent in eight documents and followed closely. These self-regulatory and affective traits were linked to the development of long-term health-oriented perspectives, the overcoming of challenges, and the sustained physical effort (Prontenko et al., 2019; Tymoshenko et al., 2019; Shkola et al., 2019; Sirotkina, 2022).

Seven articles identified leadership and organizational skills, which were particularly relevant in the context of preparing future PE professionals but also pertinent to the general student body. These studies underscored the frequent placement of students in decision-making or managerial roles in PE settings (Romanovskiy et al., 2024; Omelchuk & Domina, 2023; Chedova, 2023). In the same vein, six papers identified the importance of critical thinking and problem-solving skills, with several papers highlighting the situational demands of PE that necessitate real-time strategy and adaptive thinking, which are frequently improved through the utilization of digital tools (Lim, 2024; Catal et al., 2023). Although communication and social interaction skills were acknowledged as essential, they were less frequently mentioned in four articles, particularly in cooperative and conflict-prone PE settings (Sağin et al., 2022). A smaller but significant number of studies addressed cognitive competence (3 articles) and health-preserving competence (3 articles), indicating that PE may also promote higher-order thinking and long-term health awareness (Novikova, 2023; Pushkarev & Pushkareva, 2022; Prysiazhniuk et al., 2019).

The professional development of PE instructors was a recurring theme, as evidenced by the seven articles that referenced it, in addition to student-focused competencies. This literature underscored the importance of educators having both modern pedagogical expertise and interpersonal skills to effectively facilitate student development in PE environments (Fedorova & Rybnikova, 2020; Yarkova, 2016; Nosko et al., 2020). This emphasizes a "train-the-trainer" model in which the development of instructors is essential for the success of students.

Educational technology integration was the most frequently discussed factor in the pedagogical context, as evidenced by the ten articles that addressed the topic. These investigations investigated the influence of gamification, online physical education, blended learning, and wearable fitness technologies, suggesting a clear transition to digitally enhanced physical education instruction (Wang et al., 2023; Montiel-Ruiz et al., 2023; Jeong & So, 2020; Zhamardiy et al., 2020; Prontenko et al., 2020). The perceptions of students and teachers were also extensively investigated in seven articles, with the results

indicating that attitudes toward physical education have a substantial impact on learning outcomes and engagement (Nugraha et al., 2022; Jess et al., 2021; Østerlie & Kristensen, 2023).

Lastly, seven studies examined contemporary or unconventional physical education formats, including outdoor education, dance, or fitness programs that deviate from conventional competitive sports (Griban et al., 2019; Zhamardiy et al., 2020). These methods were commended for their inclusivity and their potential to engage a broader spectrum of students. Although there were fewer studies that addressed general pedagogical models (2 articles), the overall significance of PE (5 articles), or the motivational values associated with PE (3 articles), these still provided significant context for understanding the changing role of physical education in higher education.

5. Discussion

The central hypothesis that Physical Education (PE) is a critical platform for the development of a diverse array of soft skills and essential competencies among university students is strongly supported by the results of this review. The frequent identification of teamwork and collaboration in the reviewed literature is indicative of the inherent capacities of physical education activities, particularly team sports and cooperative tasks, to foster interpersonal coordination, shared responsibility, and collective problem-solving. The value of physical education in promoting social learning outcomes within higher education contexts is further emphasized by the fact that these skills are inherently embedded in the structure of physical activities that necessitate students to interact, negotiate, and perform as a unit.

The function of PE in the development of self-regulatory attributes, including perseverance, discipline, resilience, and motivation, is equally significant. These competencies are consistently associated with the sustained physical effort and goal-oriented behavior of students during physical education sessions. The literature indicates that engaging in physically demanding activities not only cultivates physical endurance but also cultivates psychological characteristics that are crucial for academic and professional success. These qualities are developed through the experience of stretching physical limits, managing setbacks, and persevering in pursuit of performance objectives, which are elements that reflect more general life challenges.

The literature also prominently featured leadership and organizational skills, with numerous studies emphasizing the unique nature of PE environments as spaces where students can assume leadership roles, coordinate group tasks, and manage time and resources. These experiential opportunities are particularly apparent in activities that designate students roles such as team captains, event organizers, or peer instructors, indicating that physical education can make a significant contribution to leadership development when it is intentionally designed to include these responsibilities. In the same vein, physical education activities were demonstrated to enhance cognitive competence, critical thinking, and problem-solving by providing students with dynamic, real-time decision-making scenarios. The necessity to analyze changing circumstances, develop strategies, and adapt promptly is indicative of the analytical thinking that is anticipated in academic and professional environments, suggesting a cognitive advantage that extends beyond physical performance.

Despite the fact that communication and social interaction were not frequently addressed as distinct themes, their presence is implicit in nearly all forms of collaborative physical activity. Effective collaboration, coordination, and conflict resolution during PE are contingent upon effective communication, both verbal and non-verbal. Consequently, the literature's relative underrepresentation of communication may be indicative of an assumption that it is integrated into broader categories, such as leadership or teamwork. In the same vein, cognitive competence may be interwoven with more frequently addressed themes such as critical thinking or problem-solving, suggesting potential overlaps in thematic categorization.

The literature places a significant emphasis on the professional development of PE instructors and staff, in addition to student-facing outcomes. The extent to which physical education contributes to the development of student skills is significantly influenced by the quality of instruction and the pedagogical approaches employed by educators. The significance of training instructors in the facilitation of soft skills and the integration of modern technologies is underscored

by studies, which also emphasize the importance of training them in physical education methods. This acknowledgment is consistent with a systemic perspective, which regards educator capacity building as a necessary condition for the successful development of students.
The most frequently discussed contextual factor was educational technology integration, which underscored a distinct shift in the PE landscape toward digitally enhanced learning. Online PE modules, blended learning models, gamified applications, and fitness-tracking technologies are being utilized more frequently to provide more personalized and engaging experiences. These technologies not only broaden instructional opportunities but also foster the development of adaptive learning behaviors and digital literacy, which is consistent with the broader trend in higher education toward technology-mediated pedagogy.

Efforts to diversify physical education offerings and make them more inclusive and relevant to a broader student population are also reflected in modern and non-traditional approaches, such as outdoor education, fitness-based programs, and alternative physical activities. These methods are especially beneficial in attracting students who may be less inclined to participate in competitive team sports, thereby promoting the inclusive education agenda within universities. The studies also underscore the significance of comprehending the perceptions of both students and teachers, as they observe that positive attitudes toward physical education are linked to more meaningful learning outcomes and increased engagement.

It is crucial to note that the inclusion of international literature in this review demonstrates a high level of cross-cultural consistency in the perceived benefits of PE. Although the educational systems and cultural contexts of the reviewed studies differ, they all agree that physical education (PE) makes a substantial contribution to the comprehensive development of university students. This alignment further supports the argument that physical education is a universally valuable element of higher education curricula, with implications that transcend institutional and geographical boundaries.

6. Conclusion

The transformative function of Physical Education (PE) in the development of essential soft skills among university students has been comprehensively examined in this study. The findings provide compelling evidence that physical education is a multidimensional educational platform rather than a mere avenue for physical activity, and they support qualitative interpretations with quantitative frequency analysis, drawing from a wide range of international academic sources.

The findings confirm that PE's experiential and interactive framework fosters the development of a wide range of soft skills, including collaboration, leadership, resilience, communication, and problem-solving. Additionally, the incorporation of educational technologies into physical education practice is indicative of a current trend toward pedagogical models that are more adaptable, engaging, and inclusive, as they are better tailored to the changing needs of the digital era.

In order to optimize the potential of physical education in higher education, it is imperative that institutions implement intentional measures to integrate soft skill development into the foundation of physical education programs. This encompasses the development of outcome-based curricula that emphasize competencies that extend beyond physical fitness, the provision of continuous professional development for instructors in soft skill pedagogy, and the integration of digital tools that facilitate individualized learning and interactivity. Furthermore, it is imperative to reestablish physical education as a central component of the comprehensive development of students, underscoring its significance in the cultivation of graduates who are not only academically prepared but also possess the interpersonal and adaptive skills necessary for navigating intricate real-world environments.

Universities can advance their mission to produce well-rounded, future-ready individuals who are capable of making meaningful contributions in a variety of professional and societal roles by acknowledging and reinforcing the pedagogical potential of PE.

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