

The Influence of Family Support, Physical Education Content, Student Participation, and Teaching Methods on the Psychological Development of Undergraduate Students

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Abstract: *The psychological development of undergraduate students has emerged as a critical concern in higher education due to increasing academic stress, emotional challenges, and social adaptation difficulties. Physical education has been widely recognized as a holistic educational approach that integrates physical activity, social interaction, and experiential learning, thereby offering significant potential for promoting students' psychological well-being. However, existing studies often examine isolated factors such as participation frequency or instructional style, resulting in a fragmented understanding of how physical education contributes to psychological development. Grounded in Self-Determination Theory, Social Learning Theory, and Ecological Systems Theory, this conceptual paper reconceptualizes the role of physical education in undergraduate psychological development by integrating curriculum design, student participation, teaching methods, and family support into a unified framework. Specifically, physical education content is conceptualized in terms of curriculum diversity and goal clarity, while student participation is represented by participation initiative and participation frequency. Teachers' teaching methods are further examined through guidance style and evaluation mode, highlighting their influence on students' emotional regulation, self-cognition, and social adaptation. In addition, family support is incorporated as a critical contextual factor that may moderate the relationships between physical education experiences and psychological development outcomes. Based on an integrative review of prior studies, this paper proposes a set of theoretically grounded research propositions that clarify both direct and moderating relationships among the core constructs. By offering an ecologically informed and multidimensional conceptual framework, this study contributes to a deeper theoretical understanding of the psychological functions of physical education and provides a foundation for future empirical research and educational practice.*

Keywords: Physical Education; Curriculum Design; Student Participation; Family Support; SDG 3: Good Health and Well-being

1. Introduction

The United Nations Sustainable Development Goals (SDGs) emphasize the importance of promoting human well-being as a foundation for sustainable development, among which SDG 3 specifically highlights the need to ensure healthy lives and promote well-being for individuals across the life course. Mental health and psychological well-being are increasingly recognized as essential components of sustainable human development, particularly among young adults navigating critical educational and life transitions (Gao et al., 2023). Within this global

sustainability agenda, higher education institutions are expected not only to cultivate academic competence but also to foster students' long-term psychological well-being through inclusive and preventive educational practices (Li et al., 2025). Psychological development among undergraduate students has therefore become a critical issue in higher education systems worldwide, particularly in the context of increasing academic pressure, rapid social change, and heightened mental health risks faced by university populations (Li et al., 2025; Feng et al., 2025).

1.1 Problem Statement

Recent studies indicate that undergraduate students frequently experience emotional distress, stress overload, identity confusion, and difficulties in social adaptation, which not only affect academic performance but also have long-term implications for personal development and societal integration (Gao et al., 2023). As a result, promoting psychological development has become a strategic priority for universities, policymakers, and educators seeking sustainable and preventive approaches to student mental health (Li et al., 2025). Psychological development is generally conceptualized as a multidimensional construct encompassing emotional management, stress resistance, self-cognition, and social adaptation, all of which interact dynamically throughout the university years (Gao et al., 2023). Emotional management refers to students' ability to regulate negative emotions such as anxiety and depression, while stress resistance reflects their capacity to cope with academic and life challenges (Lazarus & Folkman, 2019). Self-cognition involves a clear understanding of one's abilities, strengths, and limitations, and social adaptation reflects competence in interpersonal communication and collaboration within diverse social environments (Gao et al., 2023).

In response to growing concerns about student mental health, higher education institutions have increasingly emphasized non-pharmacological and educational interventions that can be embedded within daily campus life (Li et al., 2025). Among these interventions, physical education has gained attention as a holistic educational practice that integrates physical activity, social interaction, and experiential learning (Dobson, 2023). Unlike counseling services that often adopt a remedial approach, physical education provides a universal, preventive, and development-oriented context for fostering psychological well-being (Gao et al., 2023). Existing research suggests that physical education contributes to psychological development by offering structured opportunities for emotional release, challenge-based learning, and social cooperation (Zhang et al., 2020; Gao et al., 2023). Participation in sports activities allows students to experience success and failure, regulate emotions in competitive contexts, and build resilience through repeated practice and feedback (Xu et al., 2022). Team-based activities further promote social adaptation by enhancing communication skills, empathy, and collective responsibility (Zhang et al., 2020).

However, despite its recognized potential, the psychological function of physical education is often constrained by practical limitations in curriculum design, instructional practices, and student engagement (Sichuan Academy of Education Sciences, 2023). Many universities continue to rely on homogeneous curricula, traditional teacher-centered instruction, and evaluation systems that prioritize technical performance over psychological growth (Zhang, 2023). These issues reduce students' intrinsic motivation and limit the depth of psychological experiences derived from physical education participation (Deci & Ryan, 2019).

Moreover, existing studies increasingly indicate that the psychological effects of physical education are not determined by participation alone but emerge from the interaction of multiple dimensions (Gao et al., 2023). Curriculum diversity and goal clarity shape the quality of

learning experiences, while participation initiative and frequency determine the intensity and continuity of engagement (Xu et al., 2022). Teachers' guidance styles and evaluation modes further influence students' emotional responses, self-efficacy, and identity formation during physical education activities (Espinoza Gutiérrez et al., 2025). Beyond the school environment, family support has been identified as a crucial contextual factor influencing students' educational experiences and psychological outcomes (Huang & Chen, 2023). Family support, particularly emotional encouragement and resource provision, can enhance students' motivation for participation and buffer negative psychological experiences (Xu et al., 2022). Nevertheless, family support has rarely been integrated into conceptual models of physical education and psychological development, and its moderating role remains insufficiently theorized (Huang & Chen, 2023).

In addition, prior research has largely focused on generalized or nationally representative samples, with limited attention to regional educational contexts (Sichuan Academy of Education Sciences, 2023). Sichuan Province, characterized by significant urban–rural disparities, diverse cultural backgrounds, and distinctive physical education environments, presents a meaningful context for conceptual analysis (Huang et al., 2022). Understanding how physical education contributes to psychological development within such contexts requires an integrated and ecologically informed theoretical framework (Bronfenbrenner, 1979). Against this background, the present study aims to reconceptualize the role of physical education in undergraduate psychological development by integrating curriculum design, student participation, teaching methods, and family support into a unified conceptual framework (Deci & Ryan, 2019; Gao et al., 2023). By synthesizing existing empirical findings and theoretical perspectives, this conceptual paper proposes a set of research propositions that clarify both direct effects and boundary conditions of physical education on psychological development (Hayes, 2017). Through this effort, the study seeks to advance theoretical understanding and provide a foundation for future empirical research and educational practice (Li et al., 2025).

1.2 Research Objective

The present study aims to reconceptualize the role of physical education in undergraduate psychological development by integrating curriculum design, student participation, teaching methods, and family support into a unified conceptual framework. Specifically, the objective of this study is to develop a theoretically grounded model that explains the mechanisms through which physical education influences undergraduates' psychological development and to identify key mediating and moderating factors within this process. By synthesizing existing empirical findings and theoretical perspectives, this conceptual paper proposes a set of research propositions that clarify both direct effects and boundary conditions of physical education on psychological development. From a sustainability perspective, promoting undergraduate psychological development through physical education aligns closely with the United Nations Sustainable Development Goal 3, which emphasizes good health and well-being across the life course.

2. Literature Review and Propositions

2.1 Theoretical Foundations of the Study

The conceptual framework proposed in this study is grounded in three complementary theoretical perspectives: Self-Determination Theory, Social Learning Theory, and Ecological Systems Theory (Deci & Ryan, 2019; Bandura, 1986; Bronfenbrenner, 1979). Together, these theories provide a multidimensional lens for understanding how individual, instructional, and contextual factors jointly shape undergraduate psychological development (Gao et al., 2023).

Self-Determination Theory emphasizes that psychological well-being and optimal functioning depend on the satisfaction of three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2019). In physical education contexts, autonomy can be fostered through flexible curriculum choices and self-supportive teaching styles, competence through appropriate challenge and feedback, and relatedness through cooperative activities (Gao et al., 2023). When these needs are satisfied, students are more likely to develop intrinsic motivation and experience positive psychological outcomes (Deci & Ryan, 2019). Social Learning Theory highlights the role of observation, modeling, and reinforcement in shaping behaviour and psychological development (Bandura, 1986).

Within physical education settings, teachers and peers serve as important role models, and instructional feedback functions as a key mechanism for reinforcing self-efficacy and emotional regulation (Zhang, 2023). Positive instructional interactions can thus enhance students' confidence and persistence in sports participation (Espinoza Gutiérrez et al., 2025). Ecological Systems Theory further situates psychological development within nested environmental systems, emphasizing that individual outcomes are influenced by interactions among family, school, and broader sociocultural contexts (Bronfenbrenner, 1979). From this perspective, family support functions as a mesosystem factor that shapes how students interpret and respond to physical education experiences (Huang & Chen, 2023). Integrating family support into the conceptual framework therefore allows for a more comprehensive understanding of boundary conditions affecting psychological development (Xu et al., 2022).

2.2 Key Concepts and Construct Definitions

Physical education content refers to the structural and pedagogical design of physical education curricula, particularly curriculum diversity and goal clarity (Gao et al., 2023). Curriculum diversity reflects the range of sports and activities offered, while goal clarity refers to the explicit articulation of psychological and educational objectives within courses (Zhang et al., 2020). Diversified and goal-oriented curricula are more likely to provide meaningful psychological experiences and sustained engagement (Gao et al., 2023).

Student participation is conceptualized as a multidimensional construct encompassing participation initiative and participation frequency (Xu et al., 2022). Participation initiative reflects students' intrinsic willingness to engage, whereas participation frequency captures cumulative exposure necessary for psychological change (Wang & Li, 2022). Both dimensions are essential for translating physical education experiences into stable psychological traits (Li et al., 2023). Teachers' teaching methods include guidance style and evaluation mode, which shape students' learning climate and psychological perceptions (Espinoza Gutiérrez et al., 2025). Self-supportive guidance styles and diversified evaluation methods have been shown to enhance autonomy, self-identity, and emotional well-being (Zhang, 2023).

Family support refers to emotional encouragement and material or resource provision provided by family members (Huang & Chen, 2023). Such support influences students' motivation, participation quality, and psychological responses to educational experiences (Xu et al., 2022). Psychological development among undergraduates is defined as a multidimensional outcome encompassing emotional management, stress resistance, self-cognition, and social adaptation (Gao et al., 2023).

2.3 Review of Prior Studies

Empirical studies consistently demonstrate a positive relationship between physical education content and undergraduate psychological development, particularly in terms of emotional regulation and social adaptation (Zhang et al., 2020; Gao et al., 2023). However, existing research often examines curriculum diversity and goal clarity separately, failing to consider their combined effects within a unified conceptual framework (Gao et al., 2023).

Research on student participation indicates that both participation initiative and participation frequency positively predict psychological development, although diminishing marginal effects may occur when participation exceeds optimal thresholds (Xu et al., 2022; Wang & Li, 2022).

Despite these findings, few studies have integrated participation quality and frequency into a coherent explanatory model (Li et al., 2023). Studies on teaching methods confirm that self-supportive guidance styles and encouraging evaluation modes are associated with higher levels of psychological well-being and lower anxiety among students (Espinoza Gutiérrez et al., 2025; Zhang, 2023). Nevertheless, these studies often overlook contextual moderators such as family support and regional educational environments (Huang & Chen, 2023).

Although family support has been recognized as an important factor in psychological development, its moderating role in the relationship between physical education and psychological outcomes remains underexplored (Xu et al., 2022; Huang & Chen, 2023). Furthermore, there is a lack of region-specific conceptual research focusing on undergraduates in southwestern China, particularly Sichuan Province (Sichuan Academy of Education Sciences, 2023).

2.4 Conceptual Framework and Research Propositions

Based on the reviewed literature and theoretical foundations, this study proposes an integrated conceptual framework linking physical education content, student participation, and teachers' teaching methods to undergraduate psychological development, with family support as a moderating factor (Deci & Ryan, 2019; Gao et al., 2023).

Proposition 1 (P1):

Physical education content, including curriculum diversity and goal clarity, is positively associated with undergraduate psychological development (Zhang et al., 2020; Gao et al., 2023).

Proposition 2 (P2):

Student participation, reflected in participation initiative and participation frequency, is positively associated with undergraduate psychological development (Xu et al., 2022; Wang & Li, 2022).

Proposition 3 (P3):

Teachers' teaching methods, including guidance style and evaluation mode, are positively associated with undergraduate psychological development (Espinoza Gutiérrez et al., 2025; Zhang, 2023).

Proposition 4 (P4):

Family support positively moderates the relationship between physical education content and undergraduate psychological development (Huang & Chen, 2023; Xu et al., 2022).

Proposition 5 (P5):

Family support positively moderates the relationship between student participation and undergraduate psychological development (Xu et al., 2022; Huang & Chen, 2023).

Proposition 6 (P6):

Family support positively moderates the relationship between teachers' teaching methods and undergraduate psychological development (Huang & Chen, 2023; Gao et al., 2023).

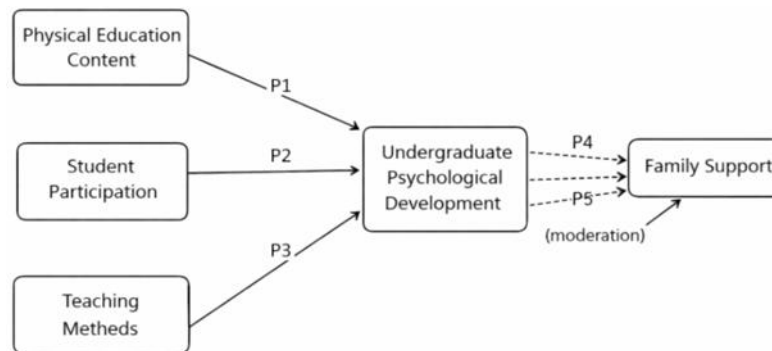


Figure 1: Conceptual Framework of Physical Education and Undergraduate Psychological Development

3. Discussion

3.1 Interpretation of the Conceptual Framework

The proposed conceptual framework highlights the synergistic effects of physical education content, student participation, and teaching methods on psychological development rather than treating them as isolated predictors. By incorporating family support as a moderating factor, the framework reflects an ecological perspective on undergraduate psychological development.

3.2 Theoretical Implications

This study extends Self-Determination Theory by illustrating how structural and contextual elements of physical education jointly satisfy students' basic psychological needs (Deci & Ryan, 2019). It also enriches Social Learning Theory by emphasizing the role of instructional interaction and evaluative feedback in shaping psychological outcomes in physical education contexts (Bandura, 1986; Zhang, 2023). By framing physical education as a preventive and developmental mechanism for psychological well-being, this study extends the discussion of higher education beyond academic outcomes and positions it within the broader agenda of SDG 3 (Good Health and Well-being).

3.3 Practical Implications

The framework provides guidance for universities to optimize physical education curricula by balancing diversity with goal clarity to enhance psychological benefits. It also underscores the importance of fostering self-supportive teaching styles and encouraging evaluation methods to promote students' psychological well-being.

3.4 Comparison with Existing Studies

Compared with prior studies that focus on single variables, this conceptual model offers a more integrated understanding of physical education's psychological functions. The inclusion of family support distinguishes this framework from existing models and responds directly to identified research gaps (Huang & Chen, 2023).

4. Conclusion

This study synthesizes existing literature to propose a comprehensive conceptual framework linking physical education and undergraduate psychological development (Gao et al., 2023). Six theoretically grounded propositions clarify both direct and moderating relationships among core constructs.

The study contributes to theory by integrating educational, psychological, and ecological perspectives into a unified conceptual model. It also provides a structured foundation for future empirical research on physical education and mental health. At a broader level, this conceptual framework highlights the role of physical education as a sustainable educational strategy contributing to SDG 3 by fostering long-term psychological well-being among undergraduates.

5. Limitations

Despite its theoretical contributions, this study has several limitations. First, as a conceptual paper, the proposed framework is not empirically tested, and the relationships among variables are derived from existing literature rather than original data. Future studies should validate the proposed propositions using quantitative or mixed-methods approaches across diverse institutional and cultural contexts. Second, the framework focuses primarily on general undergraduate populations and does not differentiate between disciplinary backgrounds, gender, or levels of physical activity, which may influence psychological outcomes. Future research could incorporate these individual differences to refine the model. Finally, although family support is included as a key moderating factor, other contextual influences—such as peer support, institutional culture, and digital learning environments—were not explicitly examined and warrant further exploration.

6. Future research

As a conceptual paper, this study does not include empirical testing of the proposed relationships. Future empirical studies are necessary to validate and refine the proposed framework. Future research may empirically examine the proposed propositions using longitudinal or mixed-method designs. Comparative studies across regions and cultural contexts would further enhance the generalizability of the framework.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this study.

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