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Research Article

Physical Health Status of Private Undergraduate Students in Hebei Province: Influencing Factors and Improvement Strategies

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ABSTRACT
This study examines the physical health status of private undergraduate students in Hebei Province by integrating anthropometric indicators with lifestyle behaviors and contextual factors. Using a mixed-methods approach, data were collected from 200 students through physical measurements, structured questionnaires, and semi-structured interviews. The results show that although most students fall within the normal Body Mass Index (BMI) range, significant health risks persist due to insufficient physical activity, irregular exercise frequency, unbalanced dietary habits, and inadequate sleep patterns, particularly among upper-year and female students. Unlike previous studies that primarily rely on physical fitness indicators, this study provides new evidence by revealing a clear disconnect between normal anthropometric outcomes and unhealthy lifestyle behaviors, highlighting that BMI alone is insufficient to represent students' overall physical health. The findings further indicate that individual behaviors are closely shaped by institutional constraints, academic pressure, family expectations, and socio-cultural norms. The study contributes theoretically by supporting a holistic health framework that integrates social determinants, motivational factors, and institutional support systems. From a policy perspective, the findings underscore the need for coordinated, multi-level health promotion strategies involving curriculum reform, campus-based physical activity initiatives, digital health support, and family engagement to foster sustainable improvements in student well-being.

Keywords: *Influencing Factors; Improvement Strategies; Physical Health; Private Universities; Undergraduate Students.*

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1. Introduction

The physical health of university students plays an essential role in supporting academic performance, long-term well-being, and future societal participation. As higher education increasingly emphasizes intellectual achievement and professional preparedness, concerns have grown regarding declining levels of physical activity and unhealthy lifestyle behaviors among college students. Rapid social transformation, technological convenience, and sedentary routines have reshaped students' daily lives, often at the expense of regular exercise, balanced nutrition, and adequate rest.

Although university students are commonly perceived as a relatively healthy population, emerging evidence suggests a more complex and concerning reality. Many students exhibit insufficient physical activity, irregular eating patterns, inadequate sleep, and prolonged screen exposure. Traditional assessments of student health frequently rely on anthropometric indicators such as body mass index, yet these measures alone

may obscure behavioral and contextual risks that influence long-term physical and mental health. As a result, students may appear physically healthy based on body composition standards while simultaneously engaging in behaviors that increase vulnerability to future metabolic, cardiovascular, and psychological problems.

Student health is shaped not only by individual choices but also by institutional and family environments. Within universities, limited access to sports facilities, assessment-oriented physical education practices, and insufficient health literacy education can restrict opportunities for sustained physical activity. At the family level, strong academic expectations and limited emphasis on physical fitness often reinforce sedentary habits. These interconnected influences highlight the need for a holistic and multi-level approach to understanding student health, particularly within private higher education institutions where resources, institutional priorities, and support systems may differ from those of public universities.

In the context of China's ongoing social and educational transformation, promoting student health has become increasingly important. While advances in technology and productivity have improved quality of life, they have also contributed to declining physical strength and growing fatigue among university students. Insufficient physical activity has been shown to affect not only physical health but also academic efficiency, mental well-being, and social adaptability. Addressing these challenges requires research that integrates physical indicators with behavioral patterns and contextual factors to inform more effective health promotion strategies.

Against this background, the present study focuses on private undergraduate students in Hebei Province to examine their physical health status from an integrated perspective. By combining anthropometric indicators with behavioral, institutional, and family-related factors, the study seeks to move beyond a narrow evaluation of physical health and provide a comprehensive understanding of the determinants of student well-being. Through this approach, the study aims to generate evidence-based guidance for universities, families, and policymakers in developing coordinated strategies that support healthier, more resilient student populations and sustainable development in higher education.

2. Literature Review

2.1 The current situation of college students' physical fitness and health

Studies on the physical health of college students consistently indicate that overall physical fitness levels remain relatively low. Bi (2020) reported that poor performance in strength-related tests, such as standing long jump, pull-ups, and sit-ups, reflects insufficient muscular strength among college students. Similarly, Ren and Chen (2019) found that deficiencies in strength and endurance are persistent issues in university student populations, suggesting that current physical fitness levels do not adequately support students' long-term health needs. In addition, Zhang (2019) emphasized the importance of establishing a comprehensive physical fitness and health service system for college students, encompassing educational management, policy leadership, and coordinated support from the sports and health sectors. Recent evidence further suggests that student physical health should be understood through a broader lens that incorporates exercise behavior, psychological well-being, and social adaptability, rather than being limited to physical performance indicators alone (Han et al., 2025).

Empirical evidence shows that although certain indicators, such as lung capacity, have improved in recent years, overall physical fitness remains suboptimal, particularly in strength and endurance components. Ren and Chen (2019) highlighted that such

imbalances reflect structural and behavioral limitations in current physical education practices. Therefore, improving college students' physical health requires not only enhancing fitness standards but also strengthening a comprehensive service system that addresses multiple dimensions of physical fitness, including physical, psychological, and social factors.

2.2 Factors affecting college students' physical health

Factors affecting college students' physical health can be broadly categorized into intrinsic and extrinsic dimensions. From an individual perspective, intrinsic factors mainly involve students' health-related knowledge, awareness, and exercise habits. Liu (2020) explained that limited understanding of physical fitness and irregular exercise routines significantly constrain students' ability to maintain adequate physical health. Supporting this view, Huang et al. (2025) demonstrated that insufficient health consciousness and weak exercise motivation mediate the relationship between psychological capital and physical activity participation among university students, thereby contributing to declining physical fitness levels.

Beyond individual characteristics, extrinsic factors related to institutional environments also play a decisive role. Zhou (2019) emphasized that inadequacies in physical education curricula and limited access to sports facilities reduce students' opportunities for sustained physical activity. In addition, Wu (2021) highlighted that weaknesses in the design, implementation, and follow-up mechanisms of physical health testing systems, along with the insufficient integration of health knowledge into assessment practices, further undermine the effectiveness of health promotion efforts in universities. Collectively, these findings indicate that college students' physical fitness is shaped by the interaction between personal health awareness and motivation and the structural conditions provided by educational institutions, underscoring the need for comprehensive and coordinated interventions.

2.3 Socio-cultural influences

Socio-cultural factors also significantly influence the physical fitness of college students. Wang and Wang (2020) observed that there is a serious polarization of college students in the problems of low body weight, malnutrition, and overweight; the trend of increasing obesity is especially evident, while some students engage in excessive dieting in pursuit of "bone beauty," resulting in low body weight and malnutrition. In addition, gender-related differences are frequently reported in flexibility-related outcomes among university students, indicating that physical fitness patterns may vary by gender and shape students' engagement in physical activities (Karataş, 2025).

Sociocultural factors have a significant impact on the physical health of university students. Societal prejudices about weight and body shape, such as the pursuit of "bony beauty", have contributed to the exacerbation of the problem of low body weight and malnutrition. Meanwhile, gender differences affect college students' participation and performance in physical activities, reflecting the influence of sociocultural contexts on physical activity choices. Therefore, it is necessary to emphasize the influence of social culture on physical fitness and health, and to formulate appropriate health promotion strategies on this basis.

2.4 Measures to promote the physical health of college students

The literature identifies increased participation in structured physical activity as a key measure for improving college students' physical health. For instance, participation and engagement in sports clubs have been associated with better self-perceived health status, physical strength, and healthier behavioral patterns among students (Jo et al., 2025). Such findings suggest that organized extracurricular sports can function as an

effective platform for sustaining physical activity participation and supporting broader health-related outcomes in university settings (Chu & Zhang, 2018).

In addition to participation, the adoption of scientific training methods has been shown to improve health outcomes. Lu (2021) reported that high-intensity interval training implemented in university physical education courses improved both physical fitness and mental well-being. This evidence supports the integration of innovative and time-efficient exercise approaches into higher education curricula to better align with students' lifestyles.

At the systemic level, researchers emphasize the importance of policy orientation and coordinated institutional support in promoting students' physical health. Sustainable health promotion requires collaboration among education management, sports, and health sectors, while broader engagement from families and communities further strengthens institutional efforts and supports long-term health outcomes (Pan, 2022; Zhang, 2019; Liu & Li, 2021).

2.5 Theoretical and Conceptual Framework

This study is grounded in an integrated theoretical and policy-based framework that explains the physical health of private undergraduate students through the interaction of individual behavior, social context, and institutional support. The framework draws on established health and motivation theories alongside national and regional health policies to provide a comprehensive lens for understanding student well-being in higher education settings.

From a social perspective, the Social Determinants of Health theory emphasizes that health outcomes are shaped not only by individual choices but also by broader social and environmental conditions, including family background, educational context, and societal expectations. In the context of this study, this perspective helps explain how family priorities, school environments, and academic pressures influence students' physical activity patterns, dietary behaviors, and overall health status. It highlights that student health cannot be fully understood without considering the social structures within which students live and study.

Motivational processes are further explained through Self-Determination Theory, which focuses on the role of intrinsic and extrinsic motivation in shaping health-related behaviors. According to this theory, individuals are more likely to engage in sustained physical activity when their needs for autonomy, competence, and relatedness are supported. Applied to this study, Self-Determination Theory provides a basis for understanding how supportive school environments, accessible sports facilities, and positive social encouragement can enhance students' motivation to participate in physical activity and maintain healthy lifestyles.

At the institutional and policy level, this study is informed by China's national health promotion initiatives, particularly the Healthy China 2030 Plan and related education and sports policies. These policies emphasize the integration of health education, physical activity, and mental well-being within the education system, requiring higher education institutions to strengthen physical education curricula, improve sports infrastructure, and promote regular health monitoring. Financial and regulatory support from national and local governments further reinforces the role of universities in fostering students' physical and mental health through structured programs and services.

In Hebei Province, the implementation of sports and health management services provides an important contextual foundation for this study. Provincial initiatives, such as the establishment of student health record systems, regular physical health assessments, and the organization of campus-wide sports activities, aim to identify

health risks early and encourage active participation in physical exercise. These measures reflect a localized application of national health strategies and underscore the importance of coordinated efforts among government authorities, educational institutions, and families in improving student health outcomes.

Collectively, these theoretical and policy perspectives form a coherent conceptual framework that guides the present study. By integrating social determinants, motivational mechanisms, and institutional support systems, the framework enables a holistic examination of students' physical health and aligns closely with the study's focus on anthropometric indicators, lifestyle behaviors, and contextual influences. This integrated perspective also provides a strong theoretical foundation for the multi-level health promotion strategies advanced in the discussion and conclusion sections.

3. Method

This study employed a mixed-methods research design, integrating quantitative and qualitative approaches to obtain a comprehensive understanding of the physical health status of private undergraduate students in Hebei Province and to formulate evidence-based improvement strategies. The integration of both approaches enabled the study to capture objective health indicators as well as contextual, behavioral, and institutional factors influencing students' physical health.

3.1 Research Design and Participants

The study involved undergraduate students and Physical Education (PE) teachers from private higher education institutions in Hebei Province. Quantitative data were collected through a questionnaire survey administered to 200 undergraduate PE students, while qualitative data were obtained through semi-structured interviews with 10 third-year PE students and 10 PE teachers. An overview of the research participants and data sources is presented in Table 1.

Table 1. Research Participants and Data Sources

Participants	n	Data Source	Method
Undergraduate PE students	200	Questionnaire survey	Quantitative
Third-year PE students	10	Semi-structured interviews	Qualitative
Physical Education teachers	10	Semi-structured interviews	Qualitative

For the quantitative component, the 200 undergraduate PE students were selected using simple random sampling to minimize selection bias and enhance representativeness. The sample was evenly distributed across academic levels, comprising 50 freshmen, 50 sophomores, 50 juniors, and 50 seniors. Only students majoring in Physical Education were included to ensure consistency in academic exposure to physical health and exercise-related knowledge, thereby strengthening internal validity.

For the qualitative component, third-year PE students were purposefully selected because they had completed most core courses and accumulated sufficient academic and practical experience to provide reflective insights. A balanced gender composition (five males and five females) was maintained to capture gender-related perspectives on physical health. In addition, PE teachers aged 35–50 years were selected based on their professional experience and familiarity with student health behaviors, curriculum implementation, and institutional support mechanisms, providing an essential institutional perspective.

3.2 Data Collection Instruments and Procedures

Quantitative data were collected using a structured questionnaire covering five domains: demographic characteristics, physical health status, lifestyle habits, dietary patterns, and mental health indicators. Key physiological data, particularly Body Mass Index (BMI), were calculated based on self-reported height and weight. The questionnaire was pre-tested with 15 students to ensure clarity and content validity, and revisions were made accordingly. Data collection was conducted over a 4–6-week period using online platforms and paper-based distribution, supported by reminder follow-ups to improve response rates.

Qualitative data were gathered through semi-structured interviews guided by protocols developed separately for students and teachers. Student interviews explored daily health routines, physical activity patterns, dietary behaviors, academic pressure, and coping strategies, while teacher interviews focused on institutional conditions, common health challenges, and recommended interventions. All interviews were conducted with informed consent, audio-recorded, and transcribed verbatim.

3.3 Data Analysis

Quantitative data were analyzed using descriptive statistical techniques, including means, standard deviations, frequencies, and percentages, to describe students' physical health profiles and lifestyle behaviors. BMI values were interpreted using standard health classification guidelines. Given the exploratory nature of the study, descriptive analysis was considered appropriate for addressing the research objectives.

Qualitative data were analyzed using thematic descriptive analysis. Interview transcripts were coded to identify recurring themes related to lifestyle challenges, academic stress, institutional constraints, and health promotion strategies. Findings from student interviews were used to contextualize quantitative results, while insights from teacher interviews informed the development of practical and policy-oriented recommendations.

3.4 Ethical Considerations

The study adhered to established ethical research standards. Participation was voluntary, and informed consent was obtained from all participants prior to data collection. Anonymity and confidentiality were ensured using participant codes and secure data storage. Participants were informed of their right to withdraw at any stage without penalty. No sensitive personal information was collected, and interview participants were free to decline any question. Study findings were shared with participating institutions in line with ethical obligations for transparency and knowledge dissemination.

4. Results

4.1 The physical health status of private undergraduate students

The physical health status of 200 private undergraduate students in Hebei Province was examined using anthropometric indicators, including height, weight, and body mass index (BMI). Table 2 presents the anthropometric characteristics of students by gender and academic year.

Table 2: The physical health status of private undergraduate students based on Body Mass Index (BMI).

Year Level	Male Height (cm)	Male Weight (kg)	Male BMI	Female Height (cm)	Female Weight (kg)	Female BMI
Freshmen	171.3 ± 5.91	61.95 ± 8.95	21.11	160.16 ± 5.39	51.62 ± 6.62	20.09
Sophomores	172.5 ± 5.42	62.05 ± 7.92	20.85	160.51 ± 5.44	51.35 ± 6.47	19.91
Juniors	172.1 ± 5.88	62.33 ± 7.85	21.04	160.76 ± 5.40	50.87 ± 6.57	19.72
Seniors	172.1 ± 5.91	61.25 ± 8.92	20.68	160.10 ± 5.19	50.82 ± 6.12	19.85

Values are presented as mean ± standard deviation.

As shown in Table 2, male students had an average height of 172.1 cm, body weight of 61.91 kg, and a mean BMI of 20.90, while female students averaged 160.30 cm in height, 51.17 kg in weight, and a BMI of 19.91. Across all academic year levels, the mean BMI values of both male and female students fell within the World Health Organization's normal BMI range (18.5–24.9).

When examined by academic year, anthropometric characteristics remained relatively stable. Among male students, mean BMI values showed a slight decline from 21.11 in the freshman year to 20.68 in the senior year. A comparable pattern was observed among female students, whose mean BMI values decreased marginally from 20.09 to 19.85 over the same period. Overall, variations in height, weight, and BMI across cohorts were minimal, indicating no substantial differences in body composition by year level.

4.2 The problems that affect the health status of private undergraduate students

The analysis of factors affecting the health status of private undergraduate students focused on personal lifestyle behaviors, including physical activity patterns and dietary habits. Quantitative findings were supported by qualitative interview data to describe observed behavioral patterns.

a. Physical Activity Duration and Frequency

As presented in Table 3, only 27.3% of students reported engaging in physical exercise for more than one hour per session. Male students were more likely to report longer exercise durations (31.8%) compared to female students (18.1%). In contrast, 38.1% of female students reported exercising for less than 30 minutes per session.

Table 3: Daily Duration of Physical Exercise

Duration	Male (%)	Female (%)	Total (%)
Less than 30 min	19.5	38.1	25.8
30–60 min	48.7	43.8	46.9
More than 1 hour	31.8	18.1	27.3

Weekly exercise frequency patterns are shown in **Table 4**. Overall, 35.8% of students reported exercising five to six times per week. Male students demonstrated higher exercise frequency (44.7%) than female students (18.7%). Notably, 10.5% of female students reported exercising less than once per week.

Table 4. Weekly Frequency of Physical Exercise

Frequency	Male (%)	Female (%)	Total (%)
Less than once	4.3	10.5	6.2
1–2 times	15.2	30.3	20.4
3–4 times	35.8	40.5	37.3
5–6 times	44.7	18.7	35.8

Qualitative interview data further illustrated variations in physical activity engagement. Some students reported regular exercise routines, including basketball, cycling, and structured athletic training. Others described limited or irregular physical activity due to academic workload, internships, or time constraints. Several participants reported physical discomfort associated with prolonged sitting and insufficient physical movement.

b. Dietary Habits

Dietary behaviors related to breakfast consumption are summarized in Table 5. A total of 15.1% of male students and 3.1% of female students reported never eating breakfast, while daily breakfast consumption was reported by 28.7% of male students and 61.1% of female students.

Table 5. Frequency of Eating Breakfast

Frequency	Male (%)	Female (%)
Never	15.1	3.1
1–2 times/week	20.8	12.3
3–5 times/week	35.4	23.5
Every day	28.7	61.1

Meal composition behaviors are presented in Table 6. Only 10.0% of students reported consciously maintaining balanced nutrition, whereas 80.5% selected meals based on personal preference and 9.5% reported picky eating behavior.

Table 6. Meal Composition Behavior

Behavior	Percentage (%)
Balanced Nutrition	10.0
Personal Preference	80.5
Picky Eating	9.5

Interview responses supported these findings, with several students reporting irregular meal timing, reliance on convenience foods, and dietary disruptions associated with academic and internship demands. Some participants also reported digestive discomfort linked to prolonged periods of poor eating habits.

5. Discussion

Building on this integrated perspective, the findings of this study demonstrate that the physical health of private undergraduate students cannot be adequately understood through anthropometric indicators alone but must be interpreted in relation to lifestyle behaviors and contextual influences. Although most students exhibited Body Mass Index values within the normal range, the results reveal a clear discrepancy between physical measurements and daily health practices. This indicates that conventional BMI-centered assessments may obscure latent health risks that emerge from sustained unhealthy behaviors.

Specifically, insufficient physical activity, irregular exercise frequency, unbalanced dietary habits, and inadequate sleep were widely observed, particularly among upper-year and female students. This mismatch between acceptable physical indicators and unhealthy behavioral patterns suggests that students may appear physically healthy while simultaneously accumulating long-term risks related to metabolic, cardiovascular, and psychological health. These findings reinforce the limitation of relying solely on anthropometric measures as proxies for overall student well-being.

Moreover, the results indicate that individual lifestyle choices are closely shaped by broader contextual factors. Institutional constraints such as limited sports facilities, assessment-oriented physical education practices, and insufficient health literacy education, together with family environments that prioritize academic achievement over physical well-being, play a significant role in shaping students' health behaviors. Insights from Physical Education teachers further support the interpretation that student health challenges are embedded within structural and cultural conditions rather than arising solely from personal neglect. Taken together, these findings provide a holistic foundation for interpreting students' physical health and frame the thematic discussions that follow.

5.1 Interpreting Normal BMI in the Context of Lifestyle Behaviors

While the BMI results suggest that students are generally within a healthy weight range, a deeper examination of lifestyle behaviors presents a more complex picture. The slight decline in BMI observed across academic years may reflect reduced physical activity levels and increased academic pressure as students' progress through their studies. Despite maintaining normal body weight, many students reported unhealthy behaviors, including irregular breakfast consumption, low exercise frequency, insufficient sleep, and prolonged screen time. These findings reinforce the limitation of relying solely on BMI as a proxy for physical health and support the need for multidimensional health assessment frameworks.

This interpretation is consistent with previous research emphasizing that physical health should be understood holistically. Bi (2020) demonstrated that poor performance in strength-based fitness assessments among college students often reflects underlying muscular weakness associated with sedentary lifestyles. Similarly, Zhao (2019) highlighted gender-based differences in physical performance and flexibility, which align with the lower levels of exercise engagement observed among female students in this study. Extending this perspective, Han et al. (2025) showed that physical activity influences students' mental health through interconnected pathways involving exercise behavior and social adaptability, reinforcing the view that student health cannot be adequately captured by anthropometric indicators alone.

5.2 Gender Disparities and Behavioral Risk Patterns

A prominent finding of this study is the presence of gender disparities in physical activity duration and frequency. Female students consistently reported shorter exercise durations and lower weekly exercise frequency compared to male students. These patterns suggest that female students may face greater barriers to sustained physical activity, potentially influenced by social norms, body image perceptions, and competing academic demands. The higher proportion of female students exercising less than 30 minutes per session and less than once per week raises concerns regarding insufficient physical stimulation to support long-term health.

These behavioral patterns align with Huang et al. (2025), who found that limited health consciousness and insufficient motivation significantly constrain university students' engagement in regular physical activity. Liu (2020) further emphasized that weak exercise habits and inadequate health knowledge exacerbate sedentary lifestyles

among college students. In the present study, qualitative interviews corroborated these findings, as several students attributed irregular physical activity to academic workload, internships, and time constraints, often adopting passive coping strategies such as extended rest or digital entertainment.

5.3 Dietary Habits and Lifestyle Imbalances

Dietary behaviors emerged as another critical factor influencing students' health. Although female students reported higher rates of daily breakfast consumption than male students, a significant proportion of the overall student population skipped breakfast regularly. Furthermore, only a small percentage of students consciously maintained balanced nutritional intake, while the majority selected meals based on personal preference or convenience. These habits may compromise both cognitive functioning and physical well-being, particularly when combined with irregular sleep patterns and low physical activity.

Interview data further illustrated the consequences of poor dietary habits, with students reporting digestive discomfort, fatigue, and disrupted daily routines during periods of academic stress. These findings echo Wang and Wang's (2020) argument that societal and familial attitudes toward nutrition and body image play a crucial role in shaping students' eating behaviors. The convergence of quantitative and qualitative data highlights dietary imbalance as a pervasive yet often underestimated risk factor in student health.

5.4 Institutional Constraints and the Role of the University Environment

Beyond individual behaviors, institutional factors significantly shape students' health outcomes. This study identified limited access to sports facilities, overcrowded campuses, and performance-oriented physical education programs as major barriers to regular physical activity. When physical education is framed primarily as an assessment requirement rather than a developmental process, students are less likely to internalize physical activity as a lifelong habit.

These findings are consistent with Zhou (2019), who linked inadequate physical education curricula and insufficient sports infrastructure to declining student health. Moreover, the lack of students' understanding of key health-related fitness indicators, such as cardiorespiratory endurance and muscular strength, reflects broader deficiencies in physical fitness literacy within higher education contexts (Keating et al., 2009). Teachers' perspectives in this study further reinforce the need for curricular reforms that prioritize physical literacy, conceptual understanding, and sustained engagement rather than short-term performance outcomes.

5.5 Family Influence and Systemic Health Determinants

Family environments also play a substantial role in shaping students' health behaviors. Many students reported coming from households that prioritize academic achievement over physical activity, leaving little time or encouragement for exercise. Sedentary family leisure patterns and limited emphasis on balanced nutrition further reinforce unhealthy habits established during earlier life stages.

This observation supports Liu and Li's (2021) assertion that coordinated engagement among families, schools, and communities is essential for fostering sustainable health behaviors. Similarly, Ren and Chen (2019) and Shi and Zhang (2021) emphasized that family health culture significantly influences students' daily routines and long-term lifestyle choices. Without supportive family environments, institutional interventions may have limited effectiveness.

5.6 Toward a Multi-Dimensional Health Promotion Framework

Drawing on the integrated findings, this study proposes a multi-dimensional intervention framework that simultaneously addresses individual behavior, institutional support, and family engagement. At the institutional level, integrating physical literacy into the curriculum, providing regular health education, and diversifying physical education offerings may enhance students' health awareness, intrinsic motivation, and sustained participation in physical activity. In addition, the use of digital health platforms managed by Physical Education (PE) teachers can support continuous monitoring, individualized feedback, and structured communication between schools and families, thereby extending health promotion efforts beyond the campus environment. This system-oriented and technology-enabled approach is consistent with contemporary perspectives on digital and data-informed health management, which emphasize coordinated institutional mechanisms to support long-term physical well-being and adaptive health behaviors among student populations (Simon-Ugron et al., 2023; Zhang, 2022). Furthermore, it aligns with evidence from China indicating that effective promotion of student physical health requires integrated service systems supported by educational management, professional guidance, and cross-sectoral collaboration (Pan et al., 2022).

Teacher interviews further underscored the importance of structural and cultural transformation within universities. Recommendations such as establishing regular "sunshine sports time," improving sports infrastructure, offering personalized fitness programs particularly for female students, and fostering peer-led wellness initiatives highlight the need to embed health promotion within the broader academic culture rather than treating it as an auxiliary requirement. These insights are consistent with prior research advocating for policy-driven and institutionally coordinated approaches to student health promotion across education, sports, and health sectors, emphasizing that sustainable improvements depend on systemic alignment rather than isolated interventions (Zhang, 2022; Zhao & Zhou, 2019).

The findings of this study indicate that improving student health extends beyond expanding access to physical activity opportunities and requires the development of a coordinated and sustainable support ecosystem integrating educational practices, institutional commitment, and family involvement. This integrative approach is particularly salient in private higher education contexts, where heightened academic demands and resource constraints may otherwise limit students' capacity to maintain healthy lifestyles. Strengthening systemic collaboration among universities, families, and policymakers is therefore essential to fostering long-term physical well-being and supporting the holistic development of university students.

6. Conclusion

This study concludes that the physical health of private undergraduate students in Hebei Province remains suboptimal when assessed beyond anthropometric indicators alone. Although most students exhibit Body Mass Index values within the normal range, the findings reveal persistent lifestyle-related risks, including insufficient physical activity, irregular exercise patterns, unbalanced dietary habits, and inadequate sleep. These patterns are particularly evident among female students and those in higher academic years, indicating that acceptable physical measurements do not necessarily reflect healthy daily behaviors.

The study further demonstrates that students' health behaviors are shaped by interconnected individual, institutional, and family-level factors. Limited access to sports facilities, assessment-oriented physical education practices, and insufficient health

literacy education constrain sustained physical activity within universities, while family environments that prioritize academic achievement over physical well-being reinforce sedentary routines. These findings support a holistic interpretation of student health, emphasizing that health outcomes are embedded within broader structural and cultural contexts rather than arising solely from personal choices.

Based on these insights, the study highlights the need for coordinated and multi-level health promotion strategies. Universities should integrate physical literacy and health education across curricula, strengthen physical education infrastructure, and foster supportive campus environments that encourage regular activity. Families should actively support healthy routines, while policymakers and community stakeholders should collaborate to ensure equitable investment in health promotion resources. Through such an integrated approach, private higher education institutions can better support sustainable improvements in students' physical well-being, academic engagement, and long-term resilience.

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