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Self-Efficacy in Engaging in Physical Activity: Towards the Development of a Framework in Managing and Training College Athletes

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Abstract

This study explores the relationship between self-efficacy and physical activity levels among college athletes and proposes a development framework for improving their management and training. Employing a mixed-method approach, the research used standardized questionnaires – the General Self-Efficacy Scale (GSE) and the International Physical Activity Questionnaire (IPAQ) – to quantitatively assess self-efficacy and physical activity among college athletes at Hunan Institute of Technology. Results indicate that athletes' self-efficacy is at a moderate level with room for improvement, while their physical activity levels are relatively high. The study found significant gender and grade differences in self-efficacy and physical activity levels, and a positive correlation between self-efficacy and physical activity intensity. Through qualitative interviews with professional teachers, the research identifies various influencing factors on athletes' self-efficacy from the perspectives of schools, teachers, and athletes themselves. School-related factors include discipline settings, teaching staff, policies, and management systems; teacher-related factors include professional quality and communication skills; athlete-related factors include personal experiences and psychological influences. Based on these findings, a comprehensive framework is developed to enhance self-efficacy by improving school management, teacher capabilities, and athletes' self-regulation and mutual support. This study contributes a new perspective to educational and sports psychology by linking self-efficacy theory with practical management strategies to promote the physical and mental development of college athletes and improve their competitive performance.

Keywords: athlete development framework, college athletes, physical activity, self-efficacy, sports management

INTRODUCTION

The rapidly advancing scientific and technological landscape has significantly improved college athletes' learning, living, and training environments, thereby enhancing their physical and mental well-being support. Given that self-efficacy profoundly influences how athletes overcome challenges and realize their potential, understanding effective management and training strategies for them is crucial.

Since the early 21st century, the approach to training and managing athletes has evolved, recognizing student-athletes as a vital group balancing academics and sports, with their training becoming increasingly systematic and goal-oriented. However, variations in management and training practices across countries, regions, and schools lead to diverse outcomes; while well-designed programs cultivate talent, poor management results in training gaps. Modern sports inherently rely on developing young talent, with countries globally, including China since the 1980s with its "sports and education integration" policy, focusing on nurturing future athletes to boost national sports performance. College athletes are key to this, facing the dual demands of rigorous training, competition, and academic coursework (e.g., languages, computers, sports science), necessitating balanced and systematic management to ensure both athletic and academic excellence.

The field of psychology, independently established in the late 19th century, offers critical insights into human thought, emotion,

and behavior in various contexts, including sports. In sports psychology, it is essential to help athletes maintain confidence, manage pressure, and stay motivated. Exploring the relationship between self-efficacy and physical activity can inform schools and coaches in developing superior management strategies and enhancing training and teaching methodologies. As dynamic systems, schools must adapt to changing needs, requiring collaborative management of athletes among teachers, students, and administrators. Teachers, in particular, must continuously update their pedagogical and management approaches, especially for college athletes who possess strong personalities and social influence, requiring scientific guidance and adaptability to maintain high performance in evolving training demands.

Statement of the Problem. This study aims to understand the relationship between self-efficacy and physical activity and how this can help schools and teachers improve how they train and manage college athletes. The research addresses three main questions:

1. What is the level of self-efficacy in physical activity?

2. What are the factors that influence self-efficacy?

3. Based on the findings, what framework can be developed?

Self-efficacy, an individual's confidence in achieving goals, is crucial for athletes; high self-efficacy promotes effort and persistence, while low self-efficacy can lead to avoidance. Self-efficacy and physical activity are reciprocally linked, with higher self-efficacy correlating with increased activity and vice versa. This study examines how schools and teachers can enhance athletes' self-efficacy to improve their activity levels and performance, thereby bolstering overall sports team management, which is vital for developing talented athletes and maintaining strong university teams amidst growing competition in Chinese universities (Zhang, 2022).

Theoretical Framework. This study utilizes Albert Bandura's self-efficacy theory to explore the relationship between self-efficacy and physical activity, aiming to enhance school management and the training of college athletes.

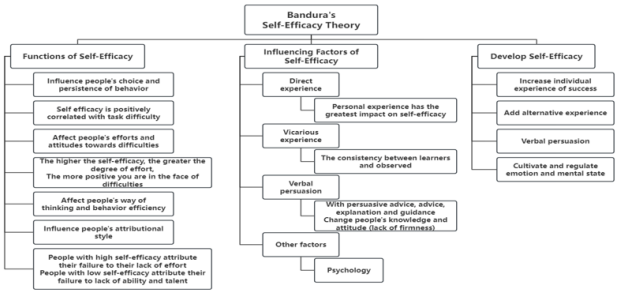

Figure 1

Bandura's Self-efficacy Theory

Bandura's (1977) Self-Efficacy Theory, which focuses on its functions, influencing factors, and development, posits that high self-efficacy leads to greater effort, persistence, and positive responses to challenges, while also shaping how individuals attribute success or failure. Self-efficacy is primarily influenced by direct personal experiences (most impactful), indirect observations, verbal persuasion, and psychological support, and can be strengthened through fostering successful experiences, vicarious learning, positive encouragement, and emotional regulation, which this study applies to the management and training of college athletes.

Conceptual Framework. This study investigates the self-efficacy and physical activity levels of college athletes, analyzing internal and external variations, and exploring their interrelationship and influencing factors. It proposes enhancing self-efficacy through a three-pronged approach: empowering athletes with self-regulation, positive emotions, and mental health care; guiding coaches to improve collaboration, enforce policies, and creating supportive training systems; and optimizing school policies and resources for fair talent selection, improved learning and training conditions, and addressing practical needs of both coaches and athletes. Ultimately, the research seeks to provide a comprehensive understanding of how self-efficacy and physical

activity interact, aiming to foster collaboration among students, coaches, and schools to promote college athletes' success in training, academics, and daily life.

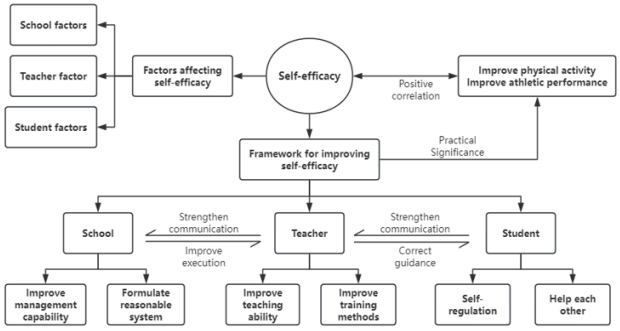

Figure 2
Structural Framework of the Study

LITERATURES

Self-Efficacy. Research by Brace et al. (2020) revealed a strong correlation between self-efficacy and psychological resilience in high-level athletes, showing that self-efficacy significantly influences competition preparation and performance under stress. Similarly, Liu (2020) found that physical exercise enhances self-efficacy and psychological resilience among ordinary college students, which helps reduce negative emotions. Furthermore, Fu (2021) demonstrated that higher self-efficacy predicts better athletic performance and increased motivation. In addition, África et al. (2021) linked high self-efficacy in students to lower occupational burnout and a more optimistic outlook, suggesting that interventions to boost self-efficacy can improve academic performance and quality of life. Finally, Saeed et al. (2019) showed that positive feedback and raised expectations enhance motivation, motor learning, and self-efficacy, thereby supporting improved sports performance.

Physical Activity. Correlation analysis shows that self-efficacy, self-control, and physical activity (PA) are positively related, with self-discipline mediating the link between self-efficacy and PA, while impulse control does not; notably, women require higher self-discipline than men to improve PA through self-efficacy (Yu, 2022). Comparing college students by major, Socha et al. (2022) found physical activity positively correlates with both subjective health evaluations and objective physical health measures. Wu et al. (2023) demonstrated that changing physical activity during self-study is more effective for learning progress than during scheduled education, highlighting the need for environments that reduce sedentary behavior and promote high-intensity PA.

Hong et al. (2020) cataloged 12 common adult physical activities in China, rating their intensities to standardize PA evaluation. Kong (2021) systematically outlined theoretical bases and strategies to promote PA among children and adolescents across individual, interpersonal, group, and social levels, developing the WSR model tailored for Chinese youth. Du & Zhang (2022) revealed that extensive sports activities can alleviate internet addiction symptoms in college students by enhancing self-efficacy and self-control, which mediate this protective effect.

Li (2023) found that both traditional physical education and sports education modes help college basketball club members meet recommended high-intensity PA standards, with the sports education model yielding greater increases in exercise time during class. Helmerhurst summarized PA measurement methods, noting two main types: subjective, relying on participant questionnaires, and objective, which uses scientific instruments. Kim (2022) confirmed the effectiveness of the International Physical Activity Questionnaire (IPAQ) for measuring PA levels and metabolic equivalents (METs), while Wang and Chen (2012) detailed objective methods such as the double-labeled water technique, indirect calorimetry, and motion sensors, all recognized by experts for their accuracy.

Mental Health. Wang and Zhang (2023) emphasized that psychological training benefits high-level athletes' physical and mental health by fostering positive thinking and behaviors, recommending the establishment of robust mental health education and counseling systems to help athletes overcome challenges.

Edwards (2023) highlighted that despite their motivated and seemingly carefree lifestyles, athletes face significant mental health pressures similar to the general population, and using biopsychosocial screening tools can aid in developing targeted management strategies. Zhao (2024) identified five main stressors for college athletes – competition, training, life interactions, endogenous, and exogenous learning pressures – with endogenous learning stress being primary; many athletes adopt positive coping strategies, and task-oriented and cognitive-behavioral interventions are advised to reduce stress and improve self-efficacy.

Alberto (2021) stressed the importance of mental health in athlete training but noted stigma and limited resources often prevent athletes from seeking help; promoting adaptive coping, self-management, and increased government funding are essential for reducing mental health issues. Rowan (2023) pointed out that while young athletes share mental health challenges with nonathletes, athlete-specific factors affect their well-being and resilience, underscoring the need for prevention, identification, and support. Kussman (2024) found eating disorders are more prevalent among athletes, especially women in weight-sensitive sports, recommending multidisciplinary treatment teams and preventive education for coaches to foster healthy environments. Lastly, Liu (2024) described psychological fatigue as a decline in athletes' mental and physical resources that impairs training and performance, revealing that gratitude and positive interpersonal relationships within teams can reduce psychological fatigue, with team relationships mediating this effect.

Positive Emotions. Positive emotions play a crucial role in promoting college students' physical and mental health by enhancing cognition, interpersonal resources, and mental well-being. Lian (2024) highlights effective methods such as mindfulness, group interventions, and positive psychology techniques, recommending their integration into curricula, mental health activities, and online platforms with peer support. Ma (2022) emphasizes that physical exercise fosters intellectual growth, emotional stability, social connections, and willpower, encouraging active participation through more PE classes and extracurricular activities with teacher guidance.

Lu (2023) stresses the importance of incorporating positive psychology into mental health education to engage students, while Qi et al. (2024) advocate that students should leverage their strengths, maintain optimism, and build positive relationships to enhance resilience against adversity. Zhou (2024) views positive psychology as a key trend in mental health education, promoting the integration of its principles to improve psychological services and support balanced development of knowledge, intention, and behavior in students.

Xu (2019) found that applying positive psychology in athlete training helps regulate psychological states aligned with biological rhythms, improving training outcomes and competition performance. Building on stress cognitive evaluation theory and positive psychology, Lin (2023) designed a group counseling program to cultivate positive psychological qualities and coping strategies among college students, aiming to better manage stress through self-exploration and interaction.

Sports Performance of College Athletes. Yang (2023) explored psychological dimensions to understand their impact on athlete performance and to develop a model that could identify correlations or mediating effects, particularly noting the strong link between psychological resilience and willpower, which suggests the importance of understanding dimensional concepts and scale similarities for future research. Athletes enhance their performance by utilizing both body and brain prediction mechanisms for situational adaptation and by regulating attention, arousal, fatigue, and pain (Zeng, 2024). Furthermore, Zhang (2024) emphasized that scientific training and appropriate sports equipment are crucial for improving athletes' skills, physical fitness, confidence, and teamwork, advocating for

careful selection and evaluation of equipment, technical guidance, and ongoing innovation to boost competitiveness and promote sports development. Complementing these physical and strategic approaches, Liu et al. (2024) highlighted mindfulness training, rooted in Eastern philosophy, as a valuable psychological tool that, by fostering nonjudgmental attention to present experiences, can significantly improve athletes' psychological state and performance. Finally, as global warming increases the prevalence of high-temperature sports, researchers like Wang and Zhang (2023) are investigating how cold therapy techniques can mitigate heat stress, while Li (2023) specifically noted cold water immersion as an effective method for alleviating muscle fatigue, reducing injuries, and accelerating recovery, ultimately enhancing athletes' subsequent performance.

Higher Education Management. The evolving landscape of higher education management is being shaped by technological advancements and shifting educational philosophies. The integration of big data technology is crucial for optimizing existing educational management models, improving efficiency, and aligning with future trends to support high-quality education (Cheng, 2024; Zhang, 2024).

Beyond technology, the professionalization of university teaching management personnel is paramount for enhancing teaching quality. This includes strategic recruitment, team optimization, continuous education, root cause management, and robust evaluation systems (Liu, 2024). Similarly, nurturing innovative talent requires administrators to adopt modern management strategies, reform educational models, prioritize a people-centered approach, develop personnel capabilities, refine methods, and bolster innovation support (Lin, 2023).

Despite these advancements, higher education management faces significant challenges. These hurdles include difficulties in cultural integration, internal conflicts, insufficient management levels, academic corruption, and resistance from traditional ideologies (Chen & Zheng, 2024). To address these, it's essential to strengthen cultural exchange, establish effective communication, implement sound management systems, reinforce academic ethics, and foster an innovative environment (Chen & Zheng, 2024).

The rapid growth of new media also influences student thinking, necessitating that universities update management concepts, leverage new media technologies for innovative methods, adapt mechanisms for the digital era, integrate flexible education, and refine evaluation systems (Zhang & Shen (2023).

Underpinning these practical reforms is a strong theoretical framework. Sun (2022) provides a comprehensive theoretical system by outlining the core categories of education management: activities, systems, mechanisms, and concepts, offering significant value for contemporary educational reform. Continuous innovation in higher education management models is vital for quality improvement. This means updating educational goals, emphasizing humanistic care, and developing scientifically sound management systems. The focus should be on optimizing content, enhancing team quality, reshaping evaluation systems, and re-establishing internal management with a scientific, oversight-driven approach (Chen, 2024). From a knowledge management perspective, the competence of university teachers – encompassing learning, teaching, research, and social service – is fundamentally their ability to effectively manage knowledge (Li, 2021).

These interconnected efforts aim to create a more scientific, practical, and high-quality higher education system that effectively responds to both internal demands and external societal needs.

Management and Training of College Athletes. Effectively cultivating high-level sports talent in universities hinges on a multifaceted approach that integrates learning, training, and management. Zhang (2022) highlights the pivotal role of management, emphasizing the need to strengthen coaching staff through improved quality, enhanced management

methods, and regular evaluations. Furthermore, addressing communication barriers with athletes and fostering positive interpersonal relationships, alongside developing athletes' psychological qualities to build a cohesive team identity, are crucial for success.

The "Tsinghua Model" offers valuable insights into integrating sports and education within university athletic programs. Guo et al. (2024) explored this model's evolution, highlighting its guiding principles and challenges. A key takeaway is the importance of prioritizing the "college student" identity for athletes, where learning remains the primary focus. However, effectively balancing academic pursuits with athletic demands presents a significant challenge that universities continue to navigate.

Drawing lessons from American university sports, Peng and Gao (2020) point to collaborative linkage as a hallmark of effective governance. Multiple institutions, including university sports associations, intercollegiate leagues, member schools, and individual sports teams, work cooperatively to enhance governance performance. This multi-center linkage approach facilitates a more comprehensive and robust management of university athletics.

A comparative analysis of the Chinese and American university volleyball leagues by Zhang (2023) reveals significant differences that impact team management and competition systems. These disparities include varying levels of influence from school management, differing participation rates in competitions, diverse academic performance expectations, distinct coach selection processes, and varied funding sources. Understanding these differences is crucial for developing new pathways to advance university sports in China.

Limitations of Existing Research. While existing research deeply explores self-efficacy and physical activity, most focus on only one aspect of college athlete management and training. Few studies use the relationship between self-efficacy and physical activity as a foundation for improving management methods. This practical and empirical study takes a novel approach by applying educational management theory from this perspective. It aims to analyze and support college athlete management and training through a thorough understanding of relevant theories, providing a basis for future interventions.

METHODS

Research Design. This study used both quantitative and qualitative methods (mixed method). A questionnaire was given to college athletes to collect measurable data on self-efficacy and physical activity levels. To complement this, interviews with teachers offered deeper insights into training and management practices. Using both methods ensures richer understanding and reliable data backed by validated tools.

Population and Sampling. The study focused on students and teachers in physical education at Hunan University of Technology. Athletes were chosen across grades 1–4, covering athletics, gymnastics, and ball games. One male and one female athlete from each grade participated, ensuring diversity. Teachers involved in coaching these sports were also interviewed. Participation was voluntary. In total, 24 questionnaires were distributed and returned (100% valid), and three teachers were interviewed. Data collection took place in July and August 2024.

Instrumentation. The following instruments were used in gathering the necessary data for the study:

General Self-Efficacy Scale (GSES). The GSES by Schwarzer et al. (10 items, 4-point scale) measured athletes' confidence in handling challenges. Higher scores indicated stronger self-efficacy.

International Physical Activity Questionnaire-Short Form (IPAQ-SF). The Chinese version of the International Physical Activity Questionnaire (Short Form) measured physical activity over seven days, covering vigorous, moderate, and light activities.

The study used widely accepted, expert-reviewed questionnaires and an interview guide reviewed and refined with expert input. Questionnaire reliability was tested using Cronbach's alpha for consistency. A repeated test was done one week later with reordered questions to check stability.

Data Source. Participants completed an online survey, which took about 30 minutes. The collected data were checked, organized, and prepared for analysis. Teachers were interviewed with their prior consent. Each interview lasted for about 60 to 90 minutes. The interview was recorded and transcribed, and analyzed for key themes and patterns.

Ethical Consideration. The study followed strict ethical standards by keeping all personal data confidential and securely stored. Participation was entirely voluntary, with informed consent obtained and the right to withdraw at any time clearly explained. Random sampling and double-blind data reviews were used to minimize bias throughout the research process. Finally, participants received a summary of the study results through online or offline meetings.

RESULTS

Analysis of Self-Efficacy Level. The average self-efficacy score of college athletes was 26.33 out of 40, indicating a medium level (Table 1). No overall gender difference was found, but males scored higher on questions about confidence in overcoming difficulties and problem-solving.

Table 1
Overall Results of College Athletes' Self-Efficacy (n=24)

Question	n	Min	Max	AVG	SD
Q1	24	3	4	3.41	0.50
Q2	24	1	4	1.87	0.85
Q3	24	1	4	2.33	0.91
Q4	24	2	4	2.54	0.65
Q5	24	1	4	2.08	0.88
Q6	24	2	4	3.37	0.64
Q7	24	2	4	3.29	0.69
Q8	24	2	4	2.83	0.76
Q9	24	2	4	2.95	0.69
Q10	24	1	3	1.62	0.64
Total	24	20	35	26.33	4.15

Self-efficacy differed by grade level, with third-year athletes scoring highest overall and showing stronger beliefs in effort leading to results and managing challenges. Across sports, no significant differences were found, though track and field athletes had the highest average, followed by gymnastics and volleyball.

Analysis of Physical Activity Level of College Athletes. College athletes (n=24) averaged 16.97 hours per week of high and moderate intensity physical activity (range: 11.5–30 hours), with 9.95 hours in high-intensity and 7.02 hours in moderate-intensity activities (Table 2). Low-intensity activity averaged 5.45 hours weekly. There were no significant gender differences, though males averaged slightly more hours in high and moderate activities. Physical activity levels varied significantly by grade, with third-year athletes recording the highest overall and intensity-specific activity, followed by second, fourth, and first years. By sport, total high and moderate activity did not differ significantly, but gymnastics athletes had the highest total activity, track and field the highest high-intensity, and gymnastics the highest moderate-intensity levels.

Table 2
Overall Results of Physical Activity Level of College Athletes (n=24)

	N	Min	Max	AVG	SD
Weekly high intensity physical activity level (hours)	24	4.00	21.00	9.95	3.55
Weekly moderate intensity physical activity level (hours)	24	1.50	20.00	7.02	4.09
Weekly low intensity physical activity level (hours)	24	0.00	15.00	5.45	3.93
Total level of high and medium physical activity (hours)	24	11.50	30.00	16.97	5.20

Correlation Analysis between Self-Efficacy and Physical Activity Level. Among college athletes (n=24), self-efficacy showed a significant positive correlation with high-intensity ($r = 0.585$), moderate-intensity ($r = 0.635$), and combined high and moderate physical activity levels ($r = 0.899$), with the strongest link to the combined level (Table 3). No significant correlation was found between self-efficacy and low-intensity activity. Additionally, total high and moderate activity correlated more strongly with moderate-intensity activity, while

high-intensity activity was negatively correlated with both moderate and low-intensity activity.

Table 3
Correlation Between Self-Efficacy and Physical Activity Level of College Athletes

	Total score of self-efficacy	High intensity physical activity level	Moderate intensity physical activity level	Low intensity physical activity level	General level of high and medium physical activity
Total score of self-efficacy	1				
High intensity physical activity level	.585**	1			
Moderate intensity physical activity level	.635**	-0.079	1		
Low intensity physical activity level	0.208	-0.048	0.349	1	
General level of high and medium physical activity	.899**	.621**	.732**	0.242	1

***When the confidence (double test) is 0.01, the correlation is significant.*

Influencing Factors of College Athletes' Self-Efficacy. At Hunan Institute of Technology, college athletes' self-efficacy is shaped by several limiting factors. Unlike universities with dedicated Sports Training majors and specialized "high-level athlete" enrollment, the institute offers only Physical Education and Social Sports Guidance and Management, restricting athlete recruitment to those with limited training and competitive experience. Teacher capacity further impacts development – despite an overall adequate teacher-student ratio, practical teaching loads are heavy, with too few qualified faculty holding senior titles or doctorates to deliver high-quality, specialized instruction. Policies add to the challenge: athletes struggle to balance rigorous training with academics, face competition with regular students for scholarships, lack exam exemptions for graduate study, and have no clear employment pathways after graduation. Finally, the effectiveness of the integrated "Learning + Training + Management" system depends on robust facilities, teacher strength, thoughtful talent selection, and supportive policies. When these are lacking, stable development, athlete well-being, and self-efficacy all suffer.

The Influence of Teachers on College Athletes' Self-Efficacy. Teachers' professional quality, personality, and communication skills are critical to college athletes' self-efficacy. Coaches unanimously rank teachers' expertise as the top factor in effective team management – above facilities and athlete satisfaction – because skilled teachers can assess athletes accurately, design safe and efficient training plans, and boost competition results. Beyond expertise, a teacher's personality profoundly shapes athletes' attitudes and motivation, especially as many athletes navigate early adulthood away from family. Ideal traits like confidence, patience, and optimism foster trust, skill growth, and resilience, while negative traits like harshness or blame weaken performance. Finally, strong communication is vital: unlike professional teams, college sports rely on voluntary participation and school backing. Teachers must engage athletes' interest, maintain open dialogue, offer guidance and support, and resolve conflicts to ensure a positive, motivated team environment that sustains high self-efficacy.

The Influence of College Athletes' Personal Factors on Self-Efficacy. Personal experience, verbal persuasion, and other individual factors significantly shape college athletes' self-efficacy. According to Bandura (1977), direct experience – succeeding or failing in training and competition – has the strongest impact: success builds confidence, while failure can undermine it. Indirect experience, like observing similar peers succeed or fail, also influences athletes' belief in their own potential. Verbal persuasion – objective feedback and encouragement from teachers – is equally important: clear, supportive feedback boosts confidence and clarifies strengths, while negative or biased feedback damages self-belief. Higher education further enhances self-understanding and helps athletes maintain a realistic, positive view of their abilities. Other personal factors, especially mental health, gender, and grade level, also affect self-efficacy. High performance pressure can cause hidden psychological issues that lower confidence. Gender norms often contribute to lower self-efficacy in female athletes. Grade level matters too, with juniors showing the highest self-efficacy and seniors often lower due to reduced training and competition.

Framework of Improving College Athletes' Self-Efficacy. College athletes play a unique dual role in universities, balancing academics and sports to build well-rounded individuals who are "students first, athletes second." To support this, schools must enrich their experiences through social activities, peer coaching, and competitions that provide recognition and build self-efficacy.

Addressing the persistent conflict between intense training and academic demands requires integrating cultural learning with training, offering personalized and flexible courses, clear career guidance, effective communication, and balanced schedules. Strong teaching staff are essential requiring not just advanced degrees but also practical skills and ongoing development to maintain quality instruction and mentorship. Finally, optimizing athlete selection is crucial: high-level recruits should be screened for academics, discipline, and behavior, while general recruits should be assessed for physical potential and passion for sports, ensuring balanced teams that foster both athletic success and personal growth.

Provide Policies and Management Systems Conducive to College Athletes. To meet modern demands, schools must strengthen teachers' international vision and build robust continuing education platforms, ensuring teachers have strong skills, high morals, innovative thinking, and a global perspective through tailored training, structured funding, and international exchanges. Granting departments more management authority – especially over enrollment, funding, and facilities – allows flexible, targeted policies for athlete development while ensuring teachers' and students' voices are heard on key issues like fair compensation, awards, postgraduate exemptions, and career pathways. Finally, innovating how school policies and management systems are assessed and refined – through modern tools, data analysis, stakeholder input, and continuous reflection – ensures policies stay relevant, effective, and supportive of the evolving needs of college athletes, teachers, and the wider university community.

Improving Teachers' Teaching Ability and Promoting the All-round Development of College Athletes. Strengthening college sports teaching requires teachers to continually enhance four core areas: maintaining and expanding their specialized sports skills through regular training and exchanges; deepening their cultural heritage and moral cultivation to instill cultural awareness, sportsmanship, and ethical values in students; improving teaching preparation and implementation by designing clear, flexible, student-centered lessons, mastering modern technologies, and adapting global teaching concepts; and refining teaching evaluation and reflection by combining student feedback, self-assessment, peer input, and careful analysis to identify and address weaknesses, personalize instruction, and integrate best practices. Together, these efforts ensure teachers provide high-quality, relevant, and inspiring guidance that supports college athletes' holistic growth and self-efficacy.

Improving Training Methods and Paying Attention to the Healthy Growth of College Athletes. To boost college athletes' self-efficacy, schools must prioritize training safety by providing proper facilities, disciplined management, realistic training loads, and individualized methods to prevent injuries. Teachers should leverage athletes' ability for "understanding learning" by encouraging critical thinking, guiding problem-solving, and supporting self-directed insights that deepen training effectiveness. Additionally, integrating psychological strategies – like positive psychology, mental health monitoring, and mindfulness practices – helps athletes manage stress, strengthen mental resilience, and maintain peak performance, further reinforcing their confidence and well-being.

Have the Ability to Self-Regulate. To strengthen college athletes' self-efficacy, it's vital to develop strong self-regulation skills through three steps: First, athletes should build self-monitoring habits by recording daily training details, feelings, and progress, using this data with teacher guidance to set clear, realistic short-, medium-, and long-term goals that

motivate and guide improvement. Second, they must refine self-feedback skills by exploring different methods – from mental preparation to positive self-talk – to adjust behavior and emotions in training, study, and life. Third, athletes need to enhance self-evaluation skills, using goal achievement and peer comparisons to objectively assess progress and adopt a healthy attribution style that credits success to ability and views failure as fixable through effort, reinforcing motivation and self-belief.

Have the Quality of Helping Each Other. Analysis shows self-efficacy among college athletes varies within the same sport, with males and juniors showing higher levels. Bandura's (1977) theory highlights two key ways to build self-efficacy: alternative experience (learning by watching peers succeed) and verbal persuasion (encouragement from others). Observing similar athletes overcome challenges helps learners adjust, evaluate themselves realistically, and learn efficiently. Positive reinforcement convinces athletes of their abilities. Promoting peer support—like experienced athletes sharing techniques and seniors mentoring newer teammates—creates positive alternative experiences and encouragement, boosting confidence and helping athletes set achievable goals.

DISCUSSION

Analysis of Self-Efficacy Level. The study found that college athletes' overall self-efficacy is at an "upper middle" level but still has room to grow. Differences by gender and academic year may be influenced by social and cultural factors, family background, training experience, physical activity intensity, mental health, and competition conditions. Although differences between sports weren't statistically significant, they may relate to each sport's unique demands and training approaches. More research is needed to clarify these influences.

Analysis of Physical Activity Level of College Athletes. College athletes show high weekly levels of high and moderate intensity physical activity, reflecting the demands of long-term team training and a focus on higher-intensity workouts – levels that exceed those of ordinary students. The lack of significant gender differences suggests training is standardized across genders, though males' slightly higher intensity may stem from physiological and personality factors. Physical activity levels vary significantly by grade, with third-year athletes being the most active – likely due to different training loads, stages of development, or competition demands, which merit further study. While overall activity levels don't differ much by sport, variations in intensity patterns among gymnastics, track and field, and volleyball athletes indicate that each sport's unique traits and training methods shape athletes' activity profiles.

Correlation Analysis between Self-Efficacy and Physical Activity Level. The study's strong positive correlations between self-efficacy and high/moderate physical activity levels align with Bandura's (1977) theory, showing that more intense training boosts athletes' confidence. The lack of correlation with low-intensity activity makes sense since it's less emphasized in training. The strong role of moderate-intensity activity highlights its importance in athletes' routines, while the negative link between high- and lower-intensity activity suggests that too much low/moderate training can limit time for vital high-intensity work. Overall, Hunan Institute of Technology athletes show medium self-efficacy with clear gender and grade differences but little variation by sport. Their physical activity levels are high, vary by grade, but not by gender or sport. Together, these results confirm a strong connection between self-efficacy and high/moderate intensity training.

Influencing Factors of College Athletes' Self-Efficacy. Hunan Institute of Technology's college athletes face self-efficacy challenges shaped by four main factors. First, the lack of dedicated Sports Training and "high-level athlete" majors means recruitment is limited to less-experienced students, inherently lowering self-efficacy potential compared to athletes from specialized programs. Second, although the overall teacher-student ratio meets standards, sports classes have high student loads per

teacher and few senior or doctoral-qualified faculty, limiting training quality and the professional support needed to build athletes' confidence and motivation. Third, current policies—heavy academic demands, limited scholarship access, no clear postgraduate exam exemptions, and uncertain employment paths—fail to address athletes' unique pressures and future needs, weakening their motivation and sense of security. Lastly, while a robust management system is essential for structured, disciplined training and athlete well-being, any shortcomings in this system risk creating instability and stress, undermining athletes' confidence and self-belief.

The Influence of Teachers on College Athletes' Self-Efficacy. Teachers' professional quality, personality, and communication ability each play a critical role in shaping college athletes' self-efficacy. Highly skilled teachers deliver systematic, effective training that leads to better performance and competition results, directly boosting athletes' confidence and belief in their abilities. A teacher's positive personality traits – such as confidence, patience, decisiveness, and calmness – create a supportive, motivating environment that keeps athletes engaged, resilient, and able to grow through challenges, while negative traits like impatience or blame can damage self-belief and training outcomes. Strong communication and positive relationships further reinforce self-efficacy by fostering team unity, shared goals, and trust, while poor communication breeds conflict and undermines athletes' confidence. Together, these teacher qualities are foundational for building and sustaining college athletes' self-efficacy.

The Influence of College Athletes' Personal Factors on Self-Efficacy. College athletes' self-efficacy is deeply shaped by their personal experiences, the encouragement they receive, and various individual factors. Direct success experiences strongly build confidence, while observing similar peers succeed can boost belief in one's potential when direct experience is limited; failures – personal or observed – can weaken it. Supportive verbal persuasion from teachers and others clarifies understanding, provides motivation through challenges, and helps athletes maintain confidence, while negative feedback does the opposite. Higher education further supports self-efficacy by enhancing self-awareness and a positive growth mindset. Personal factors like mental health, gender, and grade level add complexity: psychological pressures can subtly undermine confidence, societal norms often lower self-efficacy in female athletes compared to males, and different academic years bring shifting demands and outlooks that influence self-belief—often peaking in juniors and dropping in seniors. Together, these elements show that developing college athletes' self-efficacy requires attention to experience, feedback, and individual circumstances.

Framework of Improving College Athletes' Self-Efficacy. Clarifying training objectives, solving the learning-training conflict, strengthening teaching staff, and optimizing athlete selection are all vital to boosting college athletes' self-efficacy. Clear goals that prioritize academics while integrating sports ensure athletes develop holistically as students first, expanding their roles and recognition through broader campus life. Addressing the persistent clash between study and training – through stronger integration of sports and education, personalized learning, smart tech use, and clear career planning – reduces stress and supports confidence. A strong teaching staff, with balanced teacher-student ratios and practical technical expertise, improves guidance and mentorship, directly lifting athletes' skills and belief in themselves. Finally, tailored selection methods for different athlete backgrounds ensure balanced teams, smoother management, and healthier athlete development, laying a strong psychological foundation for high self-efficacy.

Provide Policies and Management Systems Conducive to College Athletes. Strengthening teachers' international outlook and continuous training, delegating management authority while valuing teacher and student feedback, and innovating policy evaluation are all crucial for enhancing college athletes' self-efficacy. Investing in global exchanges and tailored

professional development equips teachers with advanced skills and broader perspectives, improving their ability to mentor and support athletes. Giving departments more autonomy to craft responsive policies and actively listening to teachers' and athletes' needs – like fair compensation, clear awards, and career pathways – creates a motivating, supportive environment that addresses practical concerns and future uncertainties. Finally, maintaining effective, adaptive policies through collaborative, research-based evaluations ensures that management systems stay relevant and truly serve athletes' learning, training, and well-being, directly reinforcing their self-confidence and holistic growth.

Improving Teachers' Teaching Ability and Promoting the All-round Development of College Athletes. Enhancing teachers' special sports skills, cultural awareness, moral standards, teaching preparation, implementation, and reflective practices is essential for improving college athletes' learning and self-efficacy. Continuous professional training and exchanges help teachers deepen sport-specific expertise and stay updated with new techniques, ensuring athletes receive advanced, effective instruction. Integrating cultural knowledge and strong moral values into teaching broadens students' understanding of sports' historical and societal roles while modeling integrity, courage, and teamwork—traits that shape character and boost confidence. Meticulous lesson planning, clear delivery, adaptive teaching, and technology integration raise instructional quality and engagement. Finally, systematic evaluation and reflection, supported by student feedback and peer collaboration, help teachers refine their methods and address challenges, creating a responsive, high-quality learning environment that nurtures athletes' skills, confidence, and overall development.

Improving Training Methods and Paying Attention to the Healthy Growth of College Athletes. Prioritizing training safety, promoting "understanding learning," and applying psychological interventions are essential for strengthening college athletes' well-being, performance, and self-efficacy. A safe, well-managed training environment – tailored to individual limits – prevents injuries and builds confidence. Encouraging athletes to actively engage in learning through critical thinking and problem-solving deepens their grasp of training principles, making practice more effective and empowering, which directly enhances self-belief. Finally, integrating psychological support, including mindfulness and positive psychology, helps athletes manage stress, maintain resilience, and optimize performance. Together, these measures create a secure, intellectually engaging, and mentally healthy environment that significantly boosts college athletes' self-efficacy and overall development.

Have the Ability to Self-Regulate. Developing strong self-monitoring, self-feedback, and self-evaluation skills is critical for college athletes' self-regulation and self-efficacy. By systematically tracking their performance and emotions, athletes gain objective insights that help them set realistic, motivating goals and adjust them as they progress. Effective self-feedback—through reflection, study, and psychological strategies—empowers athletes to adapt their behaviors, maintain resilience, and stay positive despite challenges. Coupled with clear self-evaluation and a constructive attribution style that credits success to ability and sees failure as fixable, this proactive self-management cycle deepens athletes' sense of control, strengthens motivation, and significantly enhances their self-efficacy and growth potential.

Have the Quality of Helping Each Other. The disparities in self-efficacy among college athletes present a valuable opportunity to build strong internal support systems. By intentionally cultivating a culture of mutual help, where athletes share experiences and offer encouragement, schools can effectively apply Bandura's concepts of alternative experience and verbal persuasion. This supportive environment enables athletes with lower self-efficacy to boost their confidence through observing successful peers and receiving positive feedback. Moreover, the act of sharing

benefits both the giver and receiver—providing objective learning experiences, reinforcing self-belief, and strengthening team cohesion. Fostering this reciprocal support is vital for creating a positive training atmosphere, enhancing collective self-efficacy, and accelerating progress toward training goals and improved individual performance.

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