

# The Effect of Self-Efficacy on College Students' Physical Fitness Test Scores

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**Abstract.** The 8th National Student Physique and Health Survey indicates a slight improvement of 0.2% in the achievement of college students in meeting the standard of excellent physical health. To address the lack of research in this area, a survey was conducted among 1300 students from various grades at Jingdezhen Ceramic University. The study delves into the complex link between college students' self-efficacy and their scores on physical fitness tests, with the goal of offering deep insights to enhance the overall health and physical fitness of this group. The findings reveal a strong positive relationship between levels of self-efficacy and scores on physical fitness tests, underscoring self-efficacy as a key predictor of students' performance on these tests. Moreover, gender differences in self-efficacy dimensions for males were examined, showing that while there were no significant variations between males and females in each dimension, males had higher mean scores in self-efficacy than females. The results highlight the significance of boosting self-efficacy, regulating emotions, diversifying sports activities, creating a healthy academic setting, fostering positive self-assessment, and addressing gender-specific requirements in enhancing the physical health of college students.

**Keywords:** Self-efficiency; physical fitness test scores; university students.

## 1. Introduction

The 8th National Student Physique and Health Survey in 2021 revealed a slight increase of 0.2% in college students' attainment of excellent physical health standards. However, this advancement is the smallest among all age groups [1]. The escalating concerns regarding the decline in physical fitness and health among college students have attracted considerable attention across various sectors. To boost the physical well-being of college students and gain a thorough comprehension of the factors affecting their physical health, it is crucial to explore strategies focused on enhancing their physical fitness. In addition to assessing individual physiological aspects, the physical fitness evaluation scores of college students, as a significant indicator of their physical condition, are influenced by a multitude of non-physiological factors [2]. The notion of self-efficacy revolves around individuals' assumptions and evaluations of their ability to execute a specific behavior. This concept was initially introduced by Bandura, a renowned American psychologist, in the 1970s. Bandura defined self-efficacy as "the level of belief in one's capability to apply their skills to achieve a certain work behavior" [10]. The evolution of this concept has laid the foundation for subsequent studies, particularly in elucidating and forecasting physical activity patterns.

Physical fitness encompasses traits that individuals are born with or develop over time that are linked to their capacity for physical activity [3]. As defined by the Physical Fitness Research Division of the Chinese Association of Sports Science in 1982, physical fitness is the overall and relatively consistent attribute of an individual's body structure, bodily functions, and mental aspects exhibited through genetic and acquired traits [4]. The assessment of physical fitness is a valuable method for evaluating an individual's fitness level, focusing on dimensions of human anatomy and physiological performance.

A study exploring the connection between self-efficacy, physical activity, and health in college students revealed a significant positive correlation among the level of physical activity, self-efficacy

for physical activity, and physical well-being. These factors were found to interact and mutually reinforce each other, with a high level of prediction [5]. Individuals with strong self-efficacy are more inclined to engage in physical activities and maintain their fitness, while those with low self-efficacy are more likely to avoid physical activities. The self-efficacy level exhibited during a fitness test could also impact the test results, as individuals' confidence and attitudes might influence their performance. Therefore, gaining a comprehensive understanding of the relationship between physical fitness and self-efficacy is crucial for enhancing the overall health and well-being of individuals from both theoretical and practical perspectives.

The most recent version of the National Physical Fitness Standards for Students was published on July 18, 2014 by the Ministry of Education in China. This update assesses the physical fitness and overall health of students through a comprehensive testing program that evaluates various aspects of human morphology, physiological function, and body composition. The physical fitness assessment for university students includes required measurements such as height, weight, lung capacity, as well as optional assessments like endurance, flexibility, strength, speed, and explosive power [6]. While previous research has predominantly focused on identifying factors contributing to the decline in physical fitness among college students and the impact of individual sports on physical fitness levels, there has been limited exploration of the relationship between self-efficacy and college students' scores on physical fitness tests.

Currently, investigations into the physical well-being and health of college students in China primarily concentrate on the causes of the diminish in physical fitness evaluation scores of college students and the examination of countermeasures [7], exploration of the overall state of physical fitness and health among college students along with proposed enhancement strategies [8]. The correlation between self-efficacy and the physical fitness examination scores of college students remains inadequately addressed.

In order to tackle this concern, an in-depth investigation is conducted in this research on enhancing the physical fitness and health of college students through self-efficacy. The aim is to gain a deeper insight into the correlation between self-efficacy and physical fitness among college students. This research will lay the groundwork and serve as a guide for creating evidence-based training programs to enhance the physical fitness and health of college students.

## **2. Methods**

### **2.1. Design**

To thoroughly investigate the correlation between college students' self-efficacy and physical well-being, to emphasize the pivotal role of self-efficacy in the health and adjustment of college students, and to offer personalized health strategies, this study utilized a questionnaire survey approach to randomly poll students at Jingdezhen Ceramics University. By analyzing the link between self-efficacy and physical health, assessing the self-efficacy levels of college students, examining its influence on their physical well-being, recognizing individual discrepancies, and enhancing overall physical health through boosting self-efficacy, the study lays the groundwork for promoting healthy habits and future investigations into the psychological and physical well-being of university students. The study required the collection of self-efficacy and physical fitness scores from 1300 college students, who were categorized into freshmen, sophomores, juniors, and seniors. It aimed to distribute equal numbers of questionnaires to both genders in each group, consisting of sections on personal details, self-efficacy assessment, and physical fitness scores.

### **2.2. Research Process**

#### **2.2.1. Pre-survey**

Prior to commencing the official survey, a total of 40 questionnaires were dispersed among a randomly chosen subset of participants in this study. Ten individuals from each of the four academic

levels - freshmen, sophomores, juniors, and seniors - were specifically chosen to receive and fulfill the questionnaire, ensuring a diverse representation. The completed questionnaires were gathered within a three-day timeframe, subsequently organized and examined for any potential shortcomings in content or inconsistencies to assess the overall reliability of the data collected.

### 2.2.2. Formal survey

Following the pre-survey results, adjustments were made to the questionnaire, or left unchanged if no issues were identified. The questionnaire was given a validity period of five days and shared with four demographic groups: freshmen, sophomores, juniors, and seniors enrolled at Jingdezhen Ceramic University. The questionnaire links were distributed, resulting in a total sample size of 1300 respondents.

### 2.3. Analysis Method

Utilizing statistical software for analyzing the gathered data. Initially, conduct a reliability analysis to evaluate the internal consistency of the self-efficacy scale and assess if the Cronbach's coefficient exceeds 0.6 for questionnaire reliability. Subsequently, investigate the impact of self-efficacy on the physical fitness test scores of college students through simple linear regression analysis.

## 3. Result

### 3.1. Self-Efficacy Predicts College Students' Physical Fitness Test Scores

The descriptive statistical analysis of self-efficacy among students at Jingdezhen Ceramic University revealed that, according to the data presented in Table 1, the average self-efficacy score for students is 2.55 out of a total of 4. This suggests that students' self-efficacy is at a moderate level. Specifically, three items, including "I can always find solutions when I give my best effort," "I can resolve most issues when I put in effort," and "I generate solutions when faced with challenges," had the highest average score of 2.8 with a relatively low standard deviation. This indicates that students have strong self-efficacy in problem-solving. Conversely, the mean scores for the items "Maintaining ideals is straightforward" and "Dealing with unforeseen circumstances" were lower, averaging around 2.3 with a high standard deviation. This implies that students' self-efficacy in maintaining their ideals and adapting to unexpected events is weak and varies significantly. These findings suggest that there is ample room for improvement in students' self-efficacy, particularly in the areas of commitment to ideals and managing unexpected situations.

**Table 1.** Descriptive statistics of self-efficacy

Variables	subject	average values	standard deviation	Overall averages
self-efficacy	1	2.76	0.708	2.55
	2	2.52	0.722	
	3	2.25	0.821	
	4	2.45	0.767	
	5	2.39	0.767	
	6	2.72	0.757	
	7	2.63	0.752	
	8	2.55	0.743	
	9	2.72	0.708	
	10	2.46	0.771	

The study utilized SPSS 26.0 software to perform regression analysis on the relationship between college students' self-efficacy and physical fitness test scores. A regression model was established with college students' self-efficacy as the independent variable and physical fitness test scores as the dependent variable, resulting in a correlation coefficient of 0.665 between the two variables.

**Table 2.** Results of regression coefficient test between self-efficacy and physical fitness test scores

<b>dependent variable</b>	<b>independent variable</b>	<b>Non-standardized coefficients</b>	<b>Standardized coefficients</b>	<b>T</b>	<b>P</b>
<b>Physical fitness test results</b>	<b>common measure</b>	0.966	-	44.275	0.000
	<b>self-efficacy</b>	0.370	0.665	32.459	0.000

The findings from the regression analysis indicated a significant impact of the independent variable on the dependent one. As indicated in Table 2, the regression outcomes demonstrated a notable influence of self-efficacy on the physical fitness test scores of college students. The self-efficacy of college students positively correlates with their physical fitness test results, with higher self-efficacy levels leading to better performance scores. The regression coefficient for students' self-efficacy stood at 0.665, surpassing the significance threshold of 1%, suggesting that self-efficacy serves as a reliable predictor of college students' physical fitness test outcomes.

### **3.2. All Aspects of Self-Efficacy Significantly Affect College Students' Performance on Physical Tests**

Tables 3 depict the correlation coefficients between the five dimensions of college students' self-efficacy and their physical fitness test scores. These dimensions include sense of effort, natural ability, sense of environment, rate of goal attainment, and self-expectation, with correlation coefficients of 0.559, 0.600, 0.571, 0.524, and 0.595, respectively. All correlations were found to be statistically significant. The dimension of giftedness showed the highest correlation with physical fitness test scores, while goal attainment exhibited the lowest correlation. The order of significance among the dimensions based on their correlation with physical fitness test scores is as follows: giftedness, self-expectation, sense of environment, sense of effort, and goal attainment. This indicates that giftedness has the most significant impact on physical fitness test scores, followed by self-expectation.

**Table 3.** Results of regression coefficient test between self-efficacy and physical fitness test scores

<b>dependent variable</b>	<b>Dimensions</b>	<b>sense of effort</b>	<b>natural ability</b>	<b>sense of environment</b>	<b>rate of goal attainment</b>	<b>self-expectation</b>
<b>Physical fitness test results</b>	<b>R</b>	0.559	0.600	0.571	0.524	0.595
	<b>Adjusted R<sup>2</sup></b>	0.311	0.360	0.325	0.274	0.354
	<b>P</b>	0.000	0.000	0.000	0.000	0.000

### **3.3. There is a Significant Difference in Self-Efficacy Among Students of Different Genders**

In 1300 valid samples, there are 678 male students and 622 female students from college. To investigate potential gender differences in college students' self-efficacy and its five dimensions, comparing the mean values of each dimension by gender is essential. This comparison helps to pinpoint variations in the variable's dimensions, as outlined in Table 4.

**Table 4.** Differential results for gender variables

genders	M (Male)	M (Female)	P
<b>Self-efficacy values</b>	2.560	2.50	0.162
<b>sense of effort</b>	2.742	2.733	0.818
<b>natural ability</b>	2.436	2.351	0.084
<b>sense of environment</b>	2.644	2.584	0.187
<b>rate of goal attainment</b>	2.397	2.349	0.280
<b>self-expectation</b>	2.560	2.486	0.124

The data presented in the table demonstrates that averaging techniques were employed to examine gender disparities in self-efficacy and its five components among college students. The results indicate that while self-efficacy does not exhibit significant gender discrepancies in the university student population as a whole, there are notable variations in the mean scores of the instinctual and self-expectation dimensions between males and females, with consistency observed in the other dimensions. While no substantial gender differences were observed in self-efficacy levels, the scores for boys were higher than those for girls across all dimensions, including the gift dimension, environmental awareness dimension, sense of environment dimension, and self-expectation dimension. This suggests that boys possess higher levels of self-efficacy and differ from girls in self-efficacy, gift, environmental awareness, and self-expectation values.

## 4. Discussion

### 4.1. Analysis of Factors Affecting College Students' Self-Efficacy

Bandura's research suggests that self-efficacy development is influenced by four key factors: failure in action experiences, alternative experiences, verbal encouragement, and emotional arousal states. These elements collectively contribute to the formation of self-efficacy and significantly impact the learning process [9].

College students' self-efficacy is influenced by various factors, where social support is crucial in molding their confidence. Support from peers, family, and mentors significantly enhances their self-assurance. Successful academic experiences are also important, as they boost their belief in their academic abilities. Self-evaluation and goal establishment reinforce self-efficacy by providing a clear understanding of their capacities and objectives. The manner in which obstacles and challenges are dealt with impacts self-efficacy, with triumphs in handling difficulties aiding in fortifying their confidence. Factors such as physical well-being, gender, and cultural heritage are also linked to self-efficacy. Additionally, the acquisition of precursor skills like effective communication and leadership contributes to the development of higher self-efficacy in related fields. These elements are interwoven and collectively shape the self-efficacy of college students.

### 4.2. Potential Mediators Between Self-Efficacy and College Students' Physical Test Scores

This research concluded that self-efficacy positively impacts physical examination results by way of self-esteem and mental well-being mediation. Wood & Bandura's research showed that a person's general self-assessment and boosted self-respect were linked to increased self-efficacy. Enhanced self-efficacy may suggest a more favorable evaluation of one's capabilities, which is associated with increased self-respect[10]. According to social cognitive theory, self-efficacy is viewed as a confidence assessment in one's abilities, whereas self-esteem is seen as a self-worth evaluation. Because individuals view themselves as competent and valuable, i.e., their perceptions, beliefs, and assessments are interconnected.

Schwarzer & Warner discovered in their research that high self-efficacy correlated with enhanced mental well-being. This hints at the possibility that an individual's belief in their competence within a specific area could support the maintenance or enhancement of their psychological health [11]. A strong belief in one's abilities might result in the adoption of more constructive coping mechanisms and response to stress, subsequently decreasing negative feelings and fostering mental wellness. Furthermore, heightened self-efficacy might cultivate a feeling of control over oneself, which could aid in managing emotions. The theory posits that individuals are more inclined to confront life's obstacles effectively when they trust in their capabilities, thereby potentially improving their mental condition.

### **4.3. Educational Suggestions for Enhancing Physical Fitness of University Students**

The study's findings revealed a significant positive link between self-efficacy levels and scores on physical fitness tests. Therefore, enhancing self-efficacy in college students is crucial for boosting their performance in these tests. The research proposes improving students' belief in their capabilities, particularly in problem-solving, overcoming challenges, and sticking to their goals. This can be accomplished through various courses and hands-on experiences. To begin with, higher education institutions should offer diverse sports activities to cater to the varied interests and requirements of their students. By providing a range of sports programs, each student can discover an activity that appeals to them, fostering a positive attitude towards physical fitness and increasing participation in sports. Gender differences must be acknowledged in this process, with tailored support and guidance being provided. For instance, when designing the curriculum, it is important to consider the unique needs of male and female students.

Achieving success in academic endeavors is correlated with a higher sense of self-worth and belief in one's abilities. This boost in self-esteem and self-confidence plays a role in improving one's physical well-being. Institutions of higher education have the ability to foster successful academic experiences among students by offering the necessary support and material. By doing so, they can effectively bolster their self-esteem and self-efficacy.

## **5. Conclusion**

By conducting a survey of 1300 students from different grades at Jingdezhen Ceramic University, important conclusions have been drawn regarding the correlation between college students' self-efficacy and physical fitness test scores. The study identified a significant positive relationship between self-efficacy and physical fitness test results, highlighting the predictive role of self-efficacy in students' performance. This discovery suggests that boosting self-efficacy levels could enhance physical fitness outcomes. Additionally, an examination of gender disparities in self-efficacy was conducted. The findings revealed that males exhibited higher self-efficacy across various domains. When developing targeted health interventions, these gender variations should be taken into account.

Further exploration in this study revealed that the influence of self-efficacy on students' physical fitness test scores is complex. Various aspects of self-efficacy, such as effort, innate ability, perception of surroundings, achievement of goals, and personal expectations, showed significant variations in their impact on student physical fitness test scores. This discovery indicates that customized training and support strategies based on different dimensions of self-efficacy may be more effective. The development of self-efficacy is directly influenced by four factors: experience of failure, experience of substitution, verbal encouragement, and emotional arousal, which collectively shape the foundation of self-efficacy. Self-esteem and mental well-being also play crucial roles in self-efficacy, and recognizing and addressing the diverse needs of male and female students regarding physical activity and fitness is a critical aspect of creating a comprehensive wellness program.

The findings outlined in this study offer a structure for a more comprehensive comprehension of the connection between the physical well-being of university students and their self-assurance. This not merely carries practical consequences for the physical well-being of college students but also acts as

a strong basis for forthcoming studies and initiatives. Moving forward, researchers have the potential to delve deeper into the impacts of various aspects of self-confidence to uncover a more profound correlation between self-assurance and test scores related to physical fitness.

## References

- [1] Department of Physical Education, Health and Arts Education, Ministry of Education. Eighth national students' physical fitness and health research results released. *China School Health*, 2021, (09): 1281-1282. doi:10.16835/j.cnki.1000-9817.2021.09.001.
- [2] Ren, Wenqian. Research on the relationship between physical exercise and college students' physical fitness and self-efficacy .Master's thesis, Nanjing University, 2021.
- [3] Amri Hammami, Morten B. Randers, Sofien Kasmi, Mohamed Razgallah, Zouhaier Tabka, Karim Chamari & Ezdine Bouhlel. Effects of soccer training on health-related physical fitness measures in male adolescents. *Journal of Sport and Health Science*, 2018, (02): 169-175+253.
- [4] Wei, J. M. Exploring the definition and testing of mental fitness categories from the concept of physical fitness. Physical Fitness Research Branch of the Chinese Society of Sports Science. (eds.) *Scientific Fitness and Physical Fitness Enhancement*, 2010, 188-192.
- [5] Li, Prosperity, S. H. Qi, H. L. Jing, & F. Wang. The relationship between self-efficacy and physical activity and health of college students. *Journal of Shenyang Sports Institute*, 2007, 26(2): 3.
- [6] Zhang, Liqiang. A study on the developmental evolution of the National Physical Fitness Standards for Students. *Research on Ice and Snow Sports Innovation*, 2021, (21): 171-172.
- [7] Chen, Vladimir & Ma, Jiangtao. 2011 A new species of the genus *Pseudourostyla* (Hymenoptera, Braconidae) from China. Analysis of the reasons and countermeasures for the decline of college students' physical fitness test scores-taking Renmin University of China as an example. *Contemporary Sports Science and Technology*, 2023, (32): 175-178. doi:10.16655/j.cnki.2095-2813.2023.32.046.
- [8] Niu, Jiaqi, Zhang, Weibo & Yang, Lei. 2011 A new species of the genus *Lepidoptera* (Hymenoptera, Braconidae) from China. Analysis of college students' physical fitness and health status and improvement strategies. *Physical Fitness and Technology*, 2021, (21): 85-86.
- [9] Bandura. *The Social Basis of Thought and Action*. East China Normal Humanities Press, 2001.
- [10] Wood, J. V., & Bandura, A. Social cognitive theory of organizational management. *Academy of Management Review*, 1989, 14(3): 361-384.
- [11] Schwarzer, R., & Warner, L. M. Perceived self-efficacy and its relationship to resilience. In *Resilience in children, adolescents, and adults*, 2013: 139-150.