International Journal of Physical Education, Exercise and Sports
www.physicaleducationjournal.com
ISSN: 2664-9896
Received: 12-09-2026, Accepted: 12-10-2026, Published: 27-10-2026
Volume 8, Issue 4, 2026, Page No. 36-41

Physical fitness status of first-year female students at Saigon University, Vietnam

Nguyen Hung Dung, Doan Le Que Tran
Faculty of National Defense Education and Physical Education, Saigon University, Vietnam

Abstract
Physical fitness is an important indicator reflecting the mobility and health status of students. The assessment of the physical fitness of first-year female students is significant in identifying the limited components and providing a practical basis for organizing physical education in universities. The research aims to assess the physical fitness status of first-year female students at Saigon University. A cross-sectional descriptive study was conducted on 435 18-year-old female students enrolled in Physical Education I in the first semester of the 2024–2025 academic year. The research results show that, according to Decision No. 53/2008/QĐ-BGDĐT, 90.11% of students did not meet the overall physical fitness standards; among them, 81.84% did not pass the 5-minute run test, and 38.39% did not pass the 4 × 10 m shuttle run. Compared to the reference data for Vietnamese women aged 18, 5 out of 6 tests showed statistically significant differences; female students at Saigon University performed better in some components but worse in quick movement and agility. Conclusion: The physical fitness of first-year female students at Saigon University is not developing evenly; endurance and the ability to move and change direction are notable limitations. The results indicate the need to enhance the requirements for endurance and coordination development in the Physical Education program.

Keywords: Physical Fitness, female students, Sai Gon University, Vietnam

Introduction

Physical fitness is a set of attributes related to the ability to perform physical activities and can be quantified through appropriate physical tests (Caspersen *et al*., 1985) [9]. In university students, physical fitness relates not only to the ability to meet the demands of academic and daily activities but also to overall health during young adulthood. Regular physical activity contributes to maintaining and improving cardiovascular endurance, muscle strength, motor function, and overall health. The World Health Organization recommends that adults do at least 150–300 minutes of moderate-intensity aerobic physical activity or 75–150 minutes of vigorous-intensity aerobic physical activity each week, along with muscle-strengthening activities at least two days a week (World Health Organization [WHO], 2020) [15].

In Vietnam, developing physical fitness for the younger generation has been identified as a consistent direction in the Party's guidelines and the State's policies. Resolution No. 08-NQ/TW dated December 1, 2011 [1], of the Politburo identifies the development of physical education and sports as an objective requirement to contribute to improving health, physical fitness, quality of life, and the quality of human resources; at the same time, it emphasizes that physical education and school sports are an important part of the comprehensive education of students (Politburo, 2011) [1]. The resolution also sets the requirement to innovate the curriculum and methods of physical education, develop school sports activities, and create conditions for students to develop their physical fitness comprehensively.

The above orientation continues to be specified through various national policies. Decision No. 641/QĐ-TTg approving the Overall Scheme for the Development of Physical Fitness and Stature of Vietnamese People for the period 2011 [6]–2030 aims to enhance physical fitness and stature to contribute to improving the quality of human resources (Prime Minister, 2011). Decree No. 11/2015 [5, 6]/NĐ-CP of the Government establishes the legal framework for physical education and sports activities within the national education system (Government, 2015); subsequently, Decision No. 1076/QĐ-TTg directs the innovation of content, methods, facilities, and human resources for physical education and school sports (Prime Minister, 2016) [7].

At the stage of human development, Conclusion No. 76-KL/TW in 2020 [2] continues to emphasize the requirement to link physical education with knowledge, ethics, and social skills education, especially for youth and adolescents (Politburo, 2020) [2]. More recently, Conclusion No. 70-KL/TW in 2024 [3] continues to emphasize the task of innovating physical education and school sports in conjunction with the comprehensive development of students, while also focusing on improving the quality of activities, facilities, faculty, and scientific research in the field of school sports (Politburo, 2024) [3]. The Strategy for the Development of Physical Education and Sports in Vietnam until 2030, with a vision for 2045, also continues to focus on expanding opportunities for participation in training and improving the health, fitness, and quality of life of the people (Prime Minister, 2024) [8].

In the field of education, the assessment of students' physical fitness has been institutionalized by the Ministry of Education and Training through Decision No. 53/2008 [4]/QĐ-BGDĐT. This document defines the purpose of physical fitness assessment as monitoring the results of comprehensive physical training, serving as a basis for adjusting the content and methods of physical education, and simultaneously promoting regular physical exercise. The evaluation system includes indicators reflecting strength, speed, coordination, and endurance, with standards categorized by age and gender (Ministry of Education and Training, 2008) [4]. Therefore, the objective assessment of

students' physical fitness is not only significant for research but also provides direct information for the management and organization of physical education in schools.

The transition from high school education to university is a period of significant changes in the learning environment, daily schedule, level of autonomy, and health behaviors. These changes can adversely affect physical activity levels. The systematic review and meta-analysis by Winpenny *et al*. (2020) [14] show that moderate to vigorous physical activity tends to decrease during the transition to young adulthood. At the same time, college students may spend a significant proportion of their day engaged in sedentary behaviors, posing a challenge to maintaining physical fitness and a regular active lifestyle (Castro *et al*., 2020) [10].

Female students are a group that needs special attention. The global analysis by Strain *et al*. (2024) shows that the rate of not meeting physical activity recommendations is higher among women than men. However, physical activity and physical fitness are two related but distinct concepts: physical activity reflects movement behavior, while physical fitness reflects the body's functional capabilities and needs to be directly assessed through objective tests (Caspersen *et al*., 1985) [9]. Therefore, merely surveying the level of physical activity is not sufficient to fully determine the fitness status of students.

Studies on university students often assess various components of physical fitness such as strength, speed, cardiovascular endurance, coordination, and flexibility. The systematic review by Kljajević *et al*. (2022) [12], which included 21 studies with 7,306 students, shows that physical fitness and physical activity are important indicators of student health and emphasizes the value of using objective physical fitness measurements. In Vietnam, standardized tests have also been used to survey the physical fitness of youth and students, while also forming reference data on the physical characteristics of Vietnamese people (Duong Nghiep Chi *et al*., 2013) [11].

Although there have been studies on student physical fitness at some higher education institutions in Vietnam, the results of one group of students or one university cannot be directly generalized to other institutions due to differences in learner characteristics, learning environments, physical education programs, facilities, and opportunities for sports participation. For Saigon University, evaluating female students in their first year is particularly significant because this is the initial stage of the university training process and can provide baseline data for monitoring and adjusting physical education activities. Within the scope of accessible documents, systematic evidence describing the physical fitness of first-year female students at Saigon University is still limited.

Therefore, this study was conducted to describe the current status of physical fitness components of first-year female students at Saigon University and to determine the percentage of students achieving physical fitness classification levels according to the current standards of the Ministry of Education and Training. The research results are expected to provide initial cross-sectional data as a basis for evaluating, organizing physical education content, and guiding appropriate physical fitness enhancement activities for female students of the university.

Materials & methodologies

1. Research design

The study was conducted using a cross-sectional descriptive design to assess the physical fitness status of first-year female students at Saigon University at the time of participating in the Physical Education I course. The study did not implement any interventions; physical fitness indicators were collected and analyzed to describe the physical fitness characteristics of the research subjects and to serve as a basis for classification according to the evaluation standards selected in accordance with the regulations of the Ministry of Education and Training.

2. Research subject

The study consists of two groups of subjects.

The first group consists of 30 coaches and instructors currently teaching Physical Education, who were surveyed using a questionnaire to select appropriate criteria/tests for assessing the physical fitness of first-year female students. The opinions of the expert group are used as a professional basis to determine the evaluation criteria system that aligns with the research objectives, the characteristics of the subjects, and the testing conditions at Saigon University.

The second group consists of 435 first-year female students, 18 years old, participating in the Physical Education I course in the first semester of the 2024–2025 [19, 20] academic year at Saigon University. This is the group of subjects directly tested on physical fitness indicators to assess the current situation.

To ensure the uniformity of the research sample, the survey subjects focus on female students of the same age, the same academic year, and participating in the same phase of the Physical Education program. Cases that do not meet the conditions to perform physical tests at the time of examination need to be handled according to the exclusion criteria of the study.

3. Research method

Method of document analysis and synthesis: Scientific documents, professional regulations, and studies related to the assessment of students' physical fitness were compiled to establish the theoretical basis, select initial indicators, and develop a physical fitness assessment process for first-year female students.

Expert interview method: The interview form was used to collect the opinions of 30 coaches and physical education lecturers on the appropriateness of the physical fitness assessment criteria. The selection of criteria is based on the level of expert consensus and the suitability for the characteristics of female students, the research objectives, as well as the practical testing conditions of the school.

Pedagogical testing method: After the testing system was established, the study proceeded to test 435 female students following the same organization, guidance, and implementation conditions. The tests used aim to reflect the basic components of physical fitness, such as speed, strength, coordination, endurance, and other components depending on the test system selected according to Decision 53/2008/QĐ-BGDĐT (Ministry of Education and Training, 2008) [4]. The test results are recorded according to the

measurement units of each test and used to describe and compare with the current evaluation standards.
The test system includes: 30 m high-start run (seconds), assessing speed; standing long jump (cm), assessing lower limb explosive strength; 4 × 10 m shuttle run (seconds), assessing agility and coordination; 5-minute free run (m), assessing endurance; and standing trunk flexion (cm), assessing flexibility.

4. Statistical methods

The data were checked, coded, and processed using statistical software. Quantitative variables are presented as mean value, standard deviation (SD), coefficient of variation, relative error of the mean value, and one-sample t-test comparing the performance of the physical fitness tests of the research subjects with the physical characteristics of Vietnamese people of the same age and gender (Duong Nghiep Chi, 2013) [11].
For the physical fitness tests, the study calculates descriptive parameters to determine the distribution characteristics and the degree of variation among individuals. The proportion of students at the levels of Good, Satisfactory, and Unsatisfactory is calculated according to the applied evaluation standards.

Results

To assess the physical condition of first-year female students at Saigon University, the research is conducted in two steps:

- Determine the criteria for assessing the physical condition of first-year female students at Saigon University
- Evaluate the physical condition of first-year female students at Saigon University

1. Determine the criteria for assessing the physical condition of first-year female students at Saigon University.

To determine the physical fitness evaluation criteria for first-year female students at Saigon University, the research was conducted as follows:

- Summarize the criteria for evaluating physical fitness for students from research works by authors both domestically and internationally.
- Interview experts and specialists in the field of Physical Education and school sports.

In Vietnam, the assessment of students' physical fitness is standardized through Decision No. 53/2008 [4]/QĐ-BGDĐT by the Ministry of Education and Training, which stipulates the contents and standards for evaluating some basic physical fitness components according to age and gender (Ministry of Education and Training, 2008) [4]. Based on that, many domestic studies have used physical fitness tests to assess the physical characteristics and fitness levels of students and to propose solutions to improve the quality of physical education, such as the studies by Duong Nghiep Chi *et al*. (2013), Hoang Ha (2016), Nguyen Van Hoa (2016), Nguyen Ngoc Minh (2017), Dao Chanh Thuc (2020), Nguyen Huu Tri (2023), Mai Van Ngoan (2024), Nguyen Do Minh Son (2025) [11, 16, 17, 18, 19, 20, 21, 22], and Nguyen Anh Tuan *et al*. (2008) [23]. These research results show that the standard physical fitness test system continues to be used as an important tool to describe physical fitness status, identify limited components, and provide practical grounds for organizing and adjusting physical education programs in higher education institutions.
Based on the aggregated results, the opinions of 30 experts, practical conditions, and personal experience, the study selected the following physical fitness tests for first-year female students at Saigon University: 30m sprint (seconds), standing long jump (cm), 4 x 10m shuttle run (seconds), 5-minute run at own pace (m), 30-second sit-up (repetitions), and handgrip strength (kg).

2. Assessment of the physical fitness status of first-year female students at Saigon University

To assess the physical fitness status of first-year female students at the University of Sports, the research conducted tests on the physical evaluation criteria identified in section 3. 1 of 435 first-year female students (18 years old) studying Physical Education I, the researchers proceeded to calculate the parameters , S, C_V, and obtained the following results:

Table 1: The physical condition of first-year female students at Saigon University (n = 435)

TT	Test	$\overline{X}$	S	C_V	ε
1	Grip strength (kg)	28.87	1.73	6.00	0.01
2	Supine sit-ups in 30 seconds (reps)	14.30	1.39	9.70	0.01
3	Standing long jump (cm)	162.02	15.28	9.43	0.01
4	30 m sprint from a standing start (seconds)	6.16	0.53	8.63	0.01
5	4 x 10m shuttle run (seconds)	12.83	0.63	4.89	0.01
6	5 minutes free run (m)	796.58	51.98	6.53	0.01

The results in Table 1 show that the physical fitness of 435 first-year female students at Saigon University varies among different components. The average values of the tests are as follows: handgrip strength 28.87 ± 1.73 kg; supine sit-ups in 30 seconds 14.30 ± 1.39 times; standing long jump 162.02 ± 15.28 cm; 30 m sprint from a standing start 6.16 ± 0.53 seconds; 4×10 m shuttle run 12.83 ± 0.63 seconds; and a 5-minute free run 796.58 ± 51.98 m.
The coefficient of variation of the tests ranges from 4.89% to 9.70%, all below 10%. Among them, the 4×10 m shuttle run has the lowest dispersion (CV = 4.89%), followed by the handgrip strength (6.00%), the 5-minute free run (6.53%), 30 m sprint from a standing start (8.63%), the standing long jump (9.43%), and the 30-second supine sit-up (9.70%). This result shows that the performance of the female students in each test is relatively concentrated around the average value, meaning the degree of difference between individuals in the sample is not large, indicating a good homogenous sample.
Although the variability among individuals in the sample set, population in some indicators is close to 10%, all sample mean values are sufficiently representative ($\varepsilon < 0.05$) to serve as a basis for further analyzes and evaluations.

Evaluate the physical fitness of first-year female students at HSG University according to the physical fitness assessment standards for students set by the Ministry of Education and Training.

The study conducted a general physical fitness assessment of 435 first-year female students (18 years old) at Saigon

University who are taking Physical Education, Part I, according to Decision 53/2008 [4]/QĐBGDĐT: regulations on assessing the physical fitness of students.

When evaluating, the study selected 04 general fitness tests to assess:

Mandatory test: Standing long jump (cm), 5-minute free run (m)

Optional test: 30 m sprint from a standing start (seconds), 4x10 m shuttle run (seconds)

The results are presented in Table 2.

Table 2: The results of the general physical fitness assessment of first-year female students at Saigon University according to Decision 53/2008 [4]/QĐBGDĐT

TT	Test	Good		Pass		Not Pass	
		Quantity	%	Quantity	%	Quantity	%
1	Standing long jump (cm)	65	14.94	347	79.77	23	5.29
2	30 m sprint from a standing start (seconds)	152	34.94	235	54.02	48	11.03
3	4x10 m shuttle run (seconds)	72	16.55	196	45.06	167	38.39
4	5-minute free run (m)	0	0.00	79	18.16	356	81.84
5	Physical fitness classification	0	0.00	43	9.89	392	90.11

The results in Table 2 show a clear difference between the physical fitness components of first-year female students at Saigon University.

For the standing long jump, there were 65 students classified as Good, accounting for 14.94%; 347 students classified as Pass, accounting for 79.77%; and only 23 students classified as Not Pass, accounting for 5.29%. Thus, a total of 94.71% of students achieved a rating of Pass or higher. This is the test with the lowest failure rate among the four tests, indicating that the speed strength of the lower limbs is generally a relatively favorable physical component of the research group.

In the 30m high start running test, 152 students achieved a good level (34.94%), 235 students achieved (54.02%), and 48 students did not achieve (11.03%). The overall pass and good rate is 88.96%. Notably, this is the test with the highest percentage of students classified as Good among the four tests, indicating that the speed of first-year female students is generally maintained at a fairly positive level.

For the 4×10 m shuttle run, only 72 students achieved a Good level (16.55%) and 196 students achieved a Pass level (45.06%), while as many as 167 students did not pass, accounting for 38.39%. Thus, the percentage of students achieving at least a Pass level is only 61.61%, significantly lower than the standing long jump and the 30-meter sprint. This result shows that the ability to move quickly, change direction, and coordinate movements is an aspect that needs more attention in organizing physical education for female students.

The most notable limitation recorded was in the 5-minute free run. No students achieved a Good level (0.00%), only 79 students passed (18.16%), while 356 students did not pass, accounting for 81.84%. This is the highest failure rate among the tests and is much higher than the standing long jump (5.29%), 30-meter run (11.03%), and 4 × 10-meter shuttle run (38.39%). This result shows that endurance is the most limiting physical component for first-year female students in the study sample.

The overall classification results further clarify the issue: no students were classified as Good; only 43 out of 435 students met the requirements, accounting for 9.89%, while 392 students, equivalent to 90.11%, were classified as Not Passed. Thus, about nine out of ten female students have not met the overall physical fitness standards according to Decision No. 53/2008 [4]/QĐ-BGDĐT.

The difference between the results of each test and the overall classification is a point that needs special attention. Although the majority of students meet the requirements for standing long jump and 30-meter run, the overall fitness achievement rate remains very low. This shows that limited performance in one or more components, especially the 5-minute free run, significantly affects the overall classification results as per the regulations. Since the 5-minute run is one of the mandatory tests, the fact that 81.84% of students did not pass this test is a significant reason explaining why the overall failure rate in physical fitness reached 90.11%.

Comparison of the physical fitness of first-year female students at Saigon University with the average physical fitness of Vietnamese people

The evaluation of the physical condition of an object or phenomenon must always be based on a comparison of that object or phenomenon with a standard or a similar object. In this study, the physical fitness of the research subjects was compared with the average physical condition of Vietnamese people (Duong Nghiep Chi, 2013) [11] of the same age and gender. The comparison used the independent two-sample t-test, and the results are presented in Table 3.

Table 3: Comparison of the physical fitness of first-year female students at Saigon University with the average physical fitness of 18-year-old Vietnamese females (Duong Nghiep Chi, 2013) [11]

TT	Test	SGU Student (n = 435)		Vietnamese (n = 1400)		Comparison	
		$\overline{X}$	S	$\overline{X}$	S	t	P
1	Grip strength (kg)	28.87	1.73	29	5.05	0.82	>0.05
2	Supine sit-ups in 30 seconds	14.30	1.39	12	3.96	18.39	<0.01
3	Standing long jump (m)	162.02	15.28	160	17.04	2.34	<0.05
4	30 m sprint from a standing start (seconds)	6.16	0.53	6.23	0.63	2.21	<0.05
5	4x10 m shuttle run (seconds)	12.83	0.63	12.58	1.17	5.75	<0.01
6	5-minute free run (m)	796.58	51.98	723	101.73	19.95	<0.01

Table 3 results show that out of the 6 physical fitness tests compared, 5 out of 6 tests showed a statistically significant difference between first-year female students at Saigon University and the average value of 18-year-old Vietnamese females ($p<0.05$); only the grip strength test did not show a statistically significant difference ($p>0.05$).

The results compared to the average values for 18-year-old Vietnamese females show that first-year female students at Saigon University have equivalent results in handgrip strength; better results in core strength-endurance, lower limb explosive strength, speed, and endurance; but lower results in quick movement and agility as demonstrated by the 4×10 m shuttle run.

Discussion

The research results show that the physical fitness of first-year female students at Saigon University is unevenly developed across different components. According to Decision No. 53/2008 [4]/QĐ-BGDĐT, the rate of students not meeting overall fitness standards reached 90.11%, with the most significant limitation being endurance, as 81.84% of students did not pass the 5-minute run test; the ability to move quickly and change direction was also limited, with 38.39% not passing the 4 × 10 m shuttle run test. In contrast, the strength and speed of the lower limbs showed more favorable results, with achievement rates of 94.71% and 88.96%, respectively. This shows that the prominent issue for female students does not lie in all physical qualities but mainly focuses on endurance and coordination abilities.

Notably, when compared to the reference data for 18-year-old Vietnamese women published by Duong Nghiep Chi and colleagues in 2013 [11] based on the physical survey of Vietnamese people in the early 21st century, current female students at ĐHSG have better results in the supine sit-up for 30 seconds, standing long jump, 30-meter sprint, and 5-minute run; handgrip strength is equivalent, while the 4×10 meter shuttle run is lower (Duong Nghiep Chi *et al*., 2013). However, some differences, although statistically significant, are quite small in practical terms, such as a long jump only 2.02 cm higher and a 30 m run faster by 0.07 seconds. Therefore, more than two decades after the early 2000s [13] survey, there is still insufficient evidence to assert that the physical fitness of female students today has improved significantly and uniformly.

This result is even more noteworthy when compared to the current classification standards: although some average values are higher than historical reference data, up to 90.11% of female students still do not meet the overall physical fitness requirements. That shows that improvements in some individual qualities have not yet translated into corresponding improvements in overall fitness. Especially, endurance continues to be a component that needs to be prioritized in physical education, as it not only has the highest rate of underachievement but also plays an important role in the ability to maintain prolonged physical activity and overall health.

From the perspective of university physical education, the results indicate the need not only to maintain the content focused on developing speed and strength but also to enhance aerobic exercises, endurance training, agility drills, and coordination activities in the physical education curriculum. At the same time, it is necessary to create more opportunities for physical activity outside of class hours to increase the overall amount of physical activity among female students. However, due to the comparison with reference data from a different historical period, differences in sample, living conditions, and measurement procedures need to be considered; therefore, conclusions about trends in physical fitness over time should be interpreted with caution.

Overall, after more than two decades compared to the physical survey data of Vietnamese people in the early 21st century, the physical fitness of first-year female students at Saigon University has not shown uniform and significant improvement; while some qualities such as speed and strength have progressed, endurance and coordination abilities remain prominent limitations, resulting in a very high rate of those not meeting overall physical fitness standards.

Conclusion

First-year female students at Saigon University have unevenly developed physical fitness. According to Decision No. 53/2008 [4]/QĐ-BGDĐT, 90.11% of students have not yet achieved overall physical fitness; among them, endurance is the most notable limitation, with 81.84% not passing the 5-minute run test. Compared to 18-year-old Vietnamese females in the reference data of Duong Nghiep Chi and colleagues, some indicators have improved but not uniformly, especially in endurance and the ability to move and change direction.

Acknowledgements

This study is part of the research project "Research on general physical development for first-year full-time students of Saigon University after completing the Physical Education course (I)" [Code: CS.2025.B3.038] led by Dr. Nguyen Hung Dung and funded by Saigon University. The authors sincerely thank the anonymous reviewers and the Editor for their insightful feedback and valuable recommendations, which have significantly improved the quality of this manuscript.

References

1. Politburo of the Communist Party of Vietnam. Resolution No. 08-NQ/TW dated December 1, 2011 on strengthening the Party's leadership and promoting the development of physical training and sports through 2020, 2011.
2. Politburo of the Communist Party of Vietnam. Conclusion No. 76-KL/TW dated June 4, 2020 on continuing the implementation of Resolution No. 33-NQ/TW of the 11th Party Central Committee on building and developing Vietnamese culture and people to meet the requirements of sustainable national development, 2020.
3. Politburo of the Communist Party of Vietnam. Conclusion No. 70-KL/TW dated January 31, 2024 on the development of physical training and sports in the new period, 2024.
4. Ministry of Education and Training. Decision No. 53/2008/QD-BGDDT dated August 19, 2008, on the standard physical evaluation criteria for Vietnamese, from which assessing the physical status of these students, 2008.
5. Prime Minister of Vietnam. Decree No. 11/2015/NĐ-CP dated January 31, 2015 on physical education and sports activities in schools, 2015.

6. Prime Minister of Vietnam. Decision No. 641/QĐ-TTg dated April 28, 2011 approving the master project on the development of physical fitness and stature of Vietnamese people for the 2011–2030 period.., 2011.
7. Prime Minister of Vietnam. Decision No. 1076/QĐ-TTg dated June 17, 2016 approving the master project on the development of physical education and school sports for the 2016–2020 period, with orientations toward 2025, 2016.
8. Prime Minister of Vietnam. Decision No. 1189/QĐ-TTg dated October 15, 2024 approving the Strategy for the Development of Physical Training and Sports in Vietnam to 2030, with a vision to 2045, 2024.
9. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: Definitions and distinctions for health-related research. Public Health Reports,1985:100(2):126–131.
10. Castro O, Bennie J, Vergeer I, Bosselut G, Biddle SJH. How sedentary are university students? A systematic review and meta-analysis. Prevention Science,2020:21(3):332–343. doi:10.1007/s11121-020-01093-8.
11. Duong NC, *et al*. "Physical fitness of Vietnamese people from 6 to 60 years old in the early 21st century", Physical Education and Sports Publishing House, Hanoi, 2013.
12. Kljajević V, Stanković M, Đorđević D, Trkulja-Petković D, Jovanović R, Plazibat K, *et al*. Physical activity and physical fitness among university students—A systematic review. International Journal of Environmental Research and Public Health,2022:19(1):158. doi:10.3390/ijerph19010158.
13. Strain T, Flaxman S, Guthold R, *et al*. National, regional, and global trends in insufficient physical activity among adults from 2000 to 2022: A pooled analysis of 507 population-based surveys with 5.7 million participants. The Lancet Global Health,2024:12(8):e1232–e1243. doi:10.1016/S2214-109X(24)00150-5.
14. Winpenny EM, Smith M, Penney T, *et al*. Changes in physical activity, diet, and body weight across the education and employment transitions of early adulthood: A systematic review and meta-analysis. Obesity Reviews,2020:21(4):12962. doi:10.1111/obr.12962.
15. World Health Organization. WHO guidelines on physical activity and sedentary behaviour. World Health Organization, 2020.
16. Hoang H. "Research on solutions to enhance the quality of physical education at member universities of Vietnam National University, Ho Chi Minh City," Doctoral dissertation in Educational Science, Vietnam Institute of Sports Science, Hanoi, 2016.
17. Nguyen VH. "Improving the curriculum of elective sports for non-specialized students at Can Tho University", Doctoral Thesis in Educational Science, Sports University of Ho Chi Minh City, 2016.
18. Nguyen NM. "Research on the type of physical education and sports clubs that operate effectively by the organization of the Center for Physical Education and Sports of Hanoi National University," Doctoral thesis in Education, Institute of Physical Education Sciences, 2017.
19. Mai VN. "Extracurricular Sports and Physical Activity Model for Students at Vietnam National University, Ho Chi Minh City," Doctoral Dissertation in Education, Ho Chi Minh City University of Physical Education and Sports, 2024.
20. Nguyen DMS. Solutions to enhance student satisfaction with physical education courses at Saigon University, Doctoral dissertation in Education, Ho Chi Minh City University of Physical Education and Sports, 2025.
21. Dao CT. "Building a sports and entertainment club model for students of An Giang University, An Giang Province, Doctoral Thesis in Education, University of Physical Education and Sports, Ho Chi Minh City, 2020.
22. Nguyen HT. Research on building a sports club for NK students at Can Tho University, Ph.D. thesis in Education, University of Physical Education and Sports, Ho Chi Minh City, 2023.
23. Nguyen AT, *et al*. Developing physical assessment standards for students 19 - 22 years old in City. Ho Chi Minh, Project Department of Science and Technology of City. Ho Chi Minh, 2008.