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PHYSICAL FITNESS OF FEMALE STUDENTS AT CAN THO UNIVERSITY OF MEDICINE AND PHARMACY, VIETNAM

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Abstract:
Physical fitness refers to the body's capacity to perform physical activities and plays a pivotal role in maintaining health and promoting human physical development. For university students, physical fitness is particularly important, as they represent the core intellectual workforce of the nation in the near future. This study aims to identify a set of tests that can accurately, comprehensively, and scientifically assess the physical fitness of female students at Can Tho University of Medicine and Pharmacy, Vietnam. The research employed commonly used scientific methods in the field of sport sciences, including document synthesis and analysis, interviews, pedagogical testing, and statistical analysis, to determine appropriate tests for assessing the general physical fitness of female students at Can Tho University of Medicine and Pharmacy, and to evaluate physical fitness according to Decision No. 53/2008/QĐ-BGD&ĐT of the Ministry of Education and Training. The study sample consisted of 1,185 female students. Research findings identified five tests for evaluating the general physical fitness of students at the university, including: Standing long jump (cm), 30-m sprint (s), 4×10-m shuttle run (s), 5-minute run (m), and Sit-and-reach (cm). Based on the criteria of the Ministry of Education and Training, the physical fitness of female students at Can Tho University of Medicine and Pharmacy was classified as follows: 4.64% ranked Good, 9.37% ranked average, and 85.99% of them could not meet the standard.

Keywords: physical fitness, female students, Can Tho University of Medicine and Pharmacy, Vietnam

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1. Introduction

Human beings, as the creators of all material and cultural values, play a vital role in shaping a prosperous society. Such a society requires not only intellectual capacity but also the physical well-being of the population [1]. At the 13th National Congress, the Communist Party of Vietnam reaffirmed that in order to advance national development, *"human resources are the most important"*, emphasizing the necessity to *"develop well-rounded human beings"* and to *"create breakthroughs in fundamentally and comprehensively reforming education and training; develop high-quality human resources; attract and utilize talents"* [2]. It further asserts that *"Health is the most valuable asset of every individual and the most essential foundation for people's happiness, for the survival of the nation, and for the country's prosperous and sustainable development. Protecting, caring for, and improving public health is a primary objective, a driving force, and a top political mission that must be prioritized in development strategies and policies; it is the responsibility of the entire political system, society, and every citizen"* [3].

Human resource training in medicine and pharmacy is a distinctive and highly challenging process, requiring learners not only to acquire a vast and complex body of scientific knowledge but also to cultivate robust physical and mental resilience. Academic pressure, intensive clinical practice schedules, and frequent exposure to stressful situations involving human health and life place demanding burdens on students (Nguyen Thi Minh Anh, 2021) [4]. Numerous international studies have demonstrated that medical students and healthcare workers are at high risk for chronic stress, professional burnout, and mental health disorders (Dyrbye et al., 2017) [5]. These conditions negatively affect students' academic performance and quality of life and, importantly, pose potential risks to patient safety in the future.

In this context, the concept of wellness, or holistic health, is no longer viewed as supplementary; rather, it has become a core professional competency of modern healthcare practitioners (Shapiro et al., 2019) [6]. Only physicians and pharmacists who are physically healthy and mentally stable can make sound clinical decisions, maintain empathy toward patients, and commit sustainably to their profession. Therefore, equipping medical students with the knowledge, skills, and attitudes necessary to proactively care for and enhance their own health is not merely a personal need but also a strategic requirement and an institutional responsibility of medical training institutions. In light of the ongoing comprehensive reform of higher education in Vietnam, improving the quality of physical education (PE) programs in higher education institutions in general, and in medical and pharmaceutical universities in particular, has become an urgent priority. Physical education not only contributes to the development of physical fitness and stature, but also fosters personal qualities, resilience, and health-promoting habits—factors that are especially important for medical and pharmacy students, who will become the future workforce directly responsible for safeguarding and improving community health. Enhancing students' physical fitness plays a strategic role and provides an important foundation for student training and self-development.

Given the above significance, this study was conducted under the title: *"Physical Fitness of Female Students at Can Tho University of Medicine and Pharmacy, Vietnam"*.

The purpose of this article is to identify and provide information on the current physical fitness status of female students at Can Tho University of Medicine and Pharmacy, Vietnam.

2. Materials & methods

2.1 Participants

2.1.1 Study participants

A total of 1,185 first-year female students (18 years old) from Cohort 50 of Can Tho University of Medicine and Pharmacy participated in the study. All participants were in normal health, without disabilities or illnesses, during the assessment period. Additionally, they regularly attended physical education classes in accordance with the curriculum delivered by the Center for Physical Education and Sports.

2.1.2 Interview participants

The interview group consisted of 12 experts and managerial personnel with experience in the field of physical education nationwide.

2.2 Methodology

2.2.1 Document synthesis and analysis

This method is used to systematize materials related to the criteria for evaluating students' physical fitness, thereby enabling the researcher to identify the most appropriate fitness tests for the research subjects.

2.2.2 Pedagogical testing

This method helps to comprehensively assess the participants' basic physical qualities with the use of the selected tests, Standing long jump (cm), 30-m sprint (s), 4×10-m shuttle run (s), 5-minute run (m), and Sit-and-reach (cm).

2.2.3 Survey method

A survey questionnaire is created to classify the importance level of each test. The survey would be conducted both directly and indirectly with lecturers, teachers, experts, researchers, administrators, physical education instructors, and coaches who possess extensive experience in the field of physical education. The survey results provide the basis for selecting the most suitable tests for the evaluation of the physical fitness of students at Can Tho University of Medicine and Pharmacy, Vietnam.

3. Results and Discussion

3.1 Identification of general physical fitness tests for female students at Can Tho University of Medicine and Pharmacy

The procedure was conducted in three steps:

Step 1: A synthesis of evaluation criteria from several prior studies was conducted, including those by Duong Nghiep Chi et al. (2013) [7], Ministry of Education and Training (2008) [8], Le Truong Son Chan Hai (2012) [9], Nguyen Van Hoa (2016) [10], Trinh Ngoc Trung (2018) [11], Nguyen Anh Tuan et al. (2010) [12], Institute of Sports Science (2014) [13], and Brian Mackenzie (2005) [14]. Based on these studies, the following representative tests were selected:

- Standing long jump (cm),
- 30-m sprint (s),
- 4×10-m shuttle run (s),
- 5-minute run (m),
- Sit-and-reach (cm).

Step 2: A questionnaire was developed and administered to 12 experts and managerial personnel with experience in the field of physical education nationwide. The interview was conducted twice, at two-week intervals. Differences between the two interview rounds were assessed using the chi-square test, and the results are presented in Table 1.

Table 1: Results of expert interviews on general physical fitness evaluation tests for students at Can Tho University of Medicine and Pharmacy (n = 12)

	Test	Time 1		Time 2		Compare	
		Σ	%	Σ	%	χ^2	Sig
1	30-m sprint (s)	58	96.67	58	96.67	0.00	1.000
2	Standing long jump (cm)	58	96.67	58	96.67	0.00	1.000
3	4×10-m shuttle run (s)	58	96.67	58	96.67	0.00	1.000
4	5-minute run (m)	58	96.67	58	96.67	0.00	1.000
5	Sit-and-reach (cm)	55	91.67	56	93.33	0.20	0.655

The results in Table 1 indicate that across both interview rounds, all tests had χ^2 values < $\chi^2(0.05) = 3.84$ and Sig > 0.05; therefore, the differences between the two observed samples were not statistically significant at the 5% level. This suggests a high level of consistency in responses among the experts and managerial personnel. Tests with a total score exceeding 80% of the maximum score in both interview rounds (> 48 points) were selected.

As a result, five tests were identified for evaluating the general physical fitness of students at Can Tho University of Medicine and Pharmacy, including:

- Standing long jump (cm),

- 30-m sprint (s),
- 4×10-m shuttle run (s),
- 5-minute run (m),
- Sit-and-reach (cm),

Step 3: Reliability Testing of the Selected Tests

According to Duong Nghiep Chi (2004) [15], Le Van Lam and Pham Xuan Thanh (2007) [16], and Do Vinh and Trinh Huu Loc (2010) [17], "the reliability of a test can be assessed using the pairwise correlation coefficient between two measurements (i.e., results from the first and second testing sessions)". In this study, the participants were tested twice, with a 5-day interval between the two sessions, under identical testing conditions. The correlation coefficients (r) between the two testing results were then calculated for each test. The results are presented in Table 2.

Table 2: Reliability coefficients of the general physical fitness tests for female students at Can Tho University of Medicine and Pharmacy

TT	Test	Time 1		Time 2		Reliability	
		$\overline{X}$	S	$\overline{X}$	S	r	P
1	30-m sprint (s)	5.86	0.36	5.84	0.35	0.98	<0.05
2	Standing long jump (cm)	169.69	12.62	169.82	12.33	0.98	<0.05
3	4×10-m shuttle run (s)	11.97	0.85	11.96	0.86	0.99	<0.05
4	5-minute run (m)	843.65	78.80	844.05	78.18	0.99	<0.05
5	Sit-and-reach (cm)	16.66	3.32	16.72	3.23	0.97	<0.05

The data in Table 2 show that all tests used to assess the general physical fitness of students at Can Tho University of Medicine and Pharmacy had reliability coefficients of $r > 0.8$ and $P < 0.05$. Therefore, these tests demonstrate sufficient reliability for evaluating the physical fitness of the study population.

Through literature synthesis, expert interviews, and reliability testing, the study identified five tests for assessing the general physical fitness of students at Can Tho University of Medicine and Pharmacy, including:

- Standing long jump (cm).
- 30-m sprint (s).
- 4×10-m shuttle run (s).
- 5-minute run (m).
- Sit-and-reach (cm).

3.2 Physical status of Can Tho University of Medicine and Pharmacy

The researcher has surveyed with experts and physical education lecturers to select five physical fitness tests, in reference to Decision No. 53/2008 of the Ministry of Education and Training [6]. The four tests are 30-meter sprint (seconds), standing long jump (cm), 4 × 10-meter shuttle run (seconds), Sit-and-reach (cm) and 5-minute run (meters). The results are presented in Table 3.

Table 3: Can Tho University of Medicine and Pharmacy female students' physical fitness (n = 1185)

TT	Test	$\overline{X}$	S	Cv	ε
1	30-m sprint (s)	5.87	0.53	9.04	0.01
2	Standing long jump (cm)	166.88	14.99	8.98	0.01
3	4×10-m shuttle run (s)	11.94	0.81	6.75	0.01
4	5-minute run (m)	767.92	100.41	13.08	0.01
5	Sit-and-reach (cm)	16.66	3.54	21.26	0.01

The data in Table 3 show that the coefficient of variation (CV)—which reflects the degree of variability among individuals within the sample population—indicates high homogeneity (i.e., low dispersion) across most indicators (CV < 10%), including the 30-m sprint (high start), 4 × 10-m shuttle run, and standing long jump. These indicators consistently demonstrate high homogeneity because they are minimally affected by environmental or lifestyle factors such as nutrition, daily routines, and occupational conditions. Moreover, they are measured using ratio-scale metrics, which possess an absolute zero point.

The 5-minute run demonstrated moderate homogeneity among participants (10% < CV < 20%). The sit-and-reach test showed low homogeneity (CV > 20%).

No matter what indicators show relatively large variability, all mean values are statistically representative ($\varepsilon < 0.05$), which indicates the indicators are a reliable basis for conducting further analyses and evaluations.

3.3 Physical fitness assessment of female students of Can Tho University of Medicine and Pharmacy under Decision 53/2008/Education Ministry

The overall physical fitness of the participants in accordance with Decision No. 53/2008 of the Ministry of Education and Training, using the four selected tests, namely standing long jump (strength), 30-meter sprint (speed), 4 × 10-meter shuttle run (agility), and 5-minute endurance run (endurance). The results of the physical fitness evaluation of 18-year-old female students at Can Tho University of Medicine and Pharmacy, based on these tests, are presented in Table 4.

Table 4: Physical fitness of female students of Can Tho University of Medicine and Pharmacy under Decision 53/2008/Education Ministry (n = 1185)

	Test	Good		Pass		Fail	
		No	%	No	%	No	%
(n = 1185)	30-m sprint (s)	399	33.67	733	61.86	53	4.47
	Standing long jump (cm)	502	42.36	491	41.43	192	16.21
	4×10-m shuttle run (s)	663	55.95	405	34.18	117	9.87
	5-minute run (m)	59	4.98	130	10.97	996	84.05
	Sit-and-reach (cm)	55	4.64	111	9.37	1019	85.99

The data in Table 4 show the general physical fitness assessment of female students at Can Tho University of Medicine and Pharmacy according to Decision No. 53/2008/QĐ-BGDĐT. Specifically, the 4 × 10-m shuttle run had the highest proportion of students classified as Good (55.95%), while the 30-m sprint (high start) had the lowest proportion classified as fail (4.47%). The 5-minute run had the lowest proportion of **Good** (4.98%) and the highest proportion of fail (84.05%). Overall physical fitness classifications were: Good: 4.64%, Pass: 9.37%, and Fail: 85.99%. These results indicate that female students at Can Tho University of Medicine and Pharmacy show weaknesses in endurance and lower-limb muscular strength, but demonstrate strengths in agility and speed.

4. Conclusion

Five tests were identified for assessing the general physical fitness of students at Can Tho University of Medicine and Pharmacy: standing long jump (cm), 30-m sprint from a high start (s), 4 × 10-m shuttle run (s), 5-minute run (m), and sit-and-reach (cm).

The general physical fitness classification of female students according to Decision No. 53/2008/QĐ-BGDĐT was: Good: 4.64%, Pass: 9.37%, and Fail: 85.99%. The study results indicate that female students exhibit lower endurance and leg muscle strength but have advantages in agility and speed.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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