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Assessment of Male Student's Physical Development of at Ho Chi Minh City University of Technology and Education

Thanh Duc Nguyen

Ho Chi Minh City University of Technology and Education
thanhnd[at]hcmute.edu.vn

Abstract: ***This study aims to assess male student's physical development at Ho Chi Minh City University of Technology and Education (HCMC UTE) after one year. As well as it has compared with the Student Fitness Assessment Standards of the Ministry of Education and Training of Vietnam and the fitness standards of Vietnamese adults. Conducting a test to assess students' physical ability with 13 survey tests on the aspects of morphology, physical strength, psychological and physiological functions recorded as follows: Students of HCMC UTE's physical status is in the normal range. However, the physical level of development is not uniform among students (coefficient of variation (Cv) of many tests > 10%), which reflects the rather high differentiation in terms of specific training professions, or related to the movement mode of students. In addition, physical criterion of HCMC UTE male students are quite similar to the Evaluation Standards of the Ministry of Education and Training of Vietnam's. Compared with the data on Physical condition of Vietnamese (age 18) found that the morphological test (Standing height) is quite similar; two physical fitness tests (Lie down on the back with sit-ups/30s; Stand with flexibility and bend the body) are equal; Four fitness tests (Foreign hand squeeze, In-place long-range, 4x10m shuttle, running 30m) the advantage belongs to Physical condition of Vietnamese. Students of HCMC UTE only outperformed in Cardiac Function test with difference (d=-3.85 Hw). The research results will be a useful basis for adjusting the content and curricula, contributing to improving the physical quality of graduates, meeting the labor requirements of the society.***

Keywords: assessment, examination, students, physical condition, status, technology and education

1. Introduction

In the trend of integration and development, it is necessary to train human resources to meet the indispensable requirements of society. Physical education (PE) is one aspect of comprehensive education, training the young generation with solid professional capacity, pure moral qualities, healthy manners, good health in order to improve the quality of life, achieve The goal is rich people, strong country, democracy, justice and civilization. [1]

PE is one of the important subjects in the general training program with the role of creating a class of people who not only have new knowledge, ability, and political qualities but also have abundant health to meet the requirements of professional demands. [4]

The examination and assessment of students' physical development will help to understand the current situation, thereby innovating and perfecting the training program, content and methods, contributing to improving the quality of teaching. These are objective and necessary requirements to select appropriate content, to train human resources that are physically strong, mentally rich, and ethically pure.

2. Research methods, objects and organization

Research methods: include common methods used in the process of performing research tasks, including: Synthesis and analysis of related document methods; Sociological Investigation; Pedagogical examination; Check psycho-physiological function; Statistics and calculations. [3]

Research object: Students's physical development at HCMC UTE.

Subjects of the research: The staff and lecturers of the Center for Physical & National Defense Education (20 people) and 320 male students with normal health, participating in PE at HCMC UTE.

Scope of the study: physical assessment of students.

Study period: from May 2020 to May 2021.

3. Result

3.1 Selection of physical assessment tests for students at HCMC UTE after one year

After omitting from 53 tests, the remaining 41 tests, the study continued to interview teachers specializing in PE who have been teaching PE at HCMC UTE to select tests for student's physical assessment.

Each test in the question are has 5 levels of choice according to the Likert scale to answer: Totally agree (5 marks); Agree (4 marks); Normal (3 marks); Disagree (2 marks); Totally disagree (1 marks).

The selected tests must adhere to the basic principles:

- Ensure reliability, notification, feasibility, low cost, easy to deploy.
- Simple and easy to implement, suitable for the current conditions of HCMC UTE's measuring machinery.

- These tests must meet the requirements of a comprehensive physical assessment for students of HCMC UTE and can be compared with students of other universities across the country.

In addition, the topic also conventionally selected only the physical assessment tests of students with the rate of ≥80% agreeing through 2 interviews (removing the tests with the approval rate <80%). At the same time, there must be consistency (no significant difference) between the two interviews (Sig. > 0.05).

Through reference to scientific works published in the country as well as abroad, the topic has synthesized 53 tests (morphology; physical strength; physiology and psychology) to include in the selection of assessment student's fitness. On the basis of tests that are synthesized and follow the selection principles, the topic has omitted complicated and less common exercises. As a result, 41 tests remained to be included in the expert interview step.

Finally, the topic has selected 13 tests that satisfy the conditions as conventions, as well as ensure reliability and informability to be included in the physical assessment test for students at HCMC UTE. These include 01 morphometric test [Standing height (cm)]; 08 fitness tests [Lying on your back with sit-ups/30s, Standing flexible with your body flexed (cm), Right hand squeeze force (KG), Jump away in place (cm), Long jump (cm), Shuttle running 4x10m (s), Running 30m (s), Running 1500m(s); 02 physiological tests [Vital capacity (l), Cardiac function (Hw)]; 02 psychological tests [Test Tapping (point), LanDolt Open Loop (bit/s)].

3.2 Assessment of students's physical development of HCMC UTE after one year

To evaluate the effectiveness of the PE program on the physical development of HCM UTE students, we have compared the mean value ($\overline{X}$) and calculated the fitness growth rate (W%) of 320 male students belonged to the 2019 - 2020 training course. The results of the analysis of the growth rate of the fitness tests are presented in Table 1 and figure 1.

Table 1 shows that HCMC UTE male students's physical fitness has increased in a positive direction after the experimental period. Specifically, except for the morphological test, the values of all physical fitness, physiological and psychological functions were significantly increased compared to before the experiment at the probability threshold from P<0.05 ~ P<0.001. However, the level of physical development among students was not uniform (many tests have Cv > 10%). It has reflected a rather high differentiation, industry-specific characteristics between training disciplines or related to student's mobility.
Figure 1 also shows that the physical indexes of students all increased after one year. In which, the tests with the highest growth rate were the LanDolt Open Loop, which increased by 8.1%, followed by the Flexible Standing Test, which increased by 7.4%; Lie on your back with sit-ups/30s increased by 6.3%. The speed tests had no significant growth (Running 4x10m shuttle increased 0.9%; Running 1500m increased 1.2%; Running 30m increased 3.9%). Particularly, the Standing height test was almost unchanged. The average growth of total of test was 3.65%.

3.3 Compare with the Standards of Student Fitness of the Ministry of Education and Training of Vietnam and the Physical Fitness of Vietnam

In September 2008, the Ministry of Education and Training of Vietnam issued a Regulation on the assessment and classification of students' physical fitness (Decision No. 53/2008/QD-BGDĐT) including 6 criterion for ages 6-20 including: Lie on your stomach with your back bent/30s (times); Hand grip force (KG); Jump away in place (cm); Running 30m; Running the shuttle 4x10m; Running for 5 minutes depending on your strength (m). This is an essential basis for educational institutions, especially universities across the country, to conduct annual physical fitness tests and ratings for students. [2]

In the research topic, 5/6 of the pedagogical examination criterion of this regulation were used. The recorded results were that the actual performance of the tests of HCMC UTE male students was quite different from the assessment standards of Vietnam Ministry of Education and Training. Specifically, the mean value of the physical fitness tests of Lying on the back with sit-ups/30s, Running 30m and Running shuffling 4x10m of HCMC UTE male students have prevailed. In contrast, the superiority of Hand squeeze force and Jump away in place belongs to the Fitness Assessment Standards of the Vietnam Ministry of Education and Training.

Compare with Vietnamese Fitness
In 2001, the Institute of Sports Science in collaboration with the University of Sports I and II, the College of Sports and Physical Education of Da Nang conducted a research and synthesis of the physical status of Vietnamese people (ages 6 to 20 years old). [5] This is a source of data with practical value to help schools at all levels across the country have a basis to compare specifically with the overall physicality of Vietnamese. Compared with the data of Vietnamese physical condition (age 18), it was found that: the test of Standing height is quite similar; Two fitness tests consist of Lying on your back with sit-ups/30s and Standing flexible bending body was equal. Four tests of Hand grip force, Jump away in place, Running a shuttle 4x10m, running 30m, the advantage belongs to Vietnamese physical condition. HCMC UTE male student only outperformed in Cardiac Function test with difference (d=-3.85 Hw).

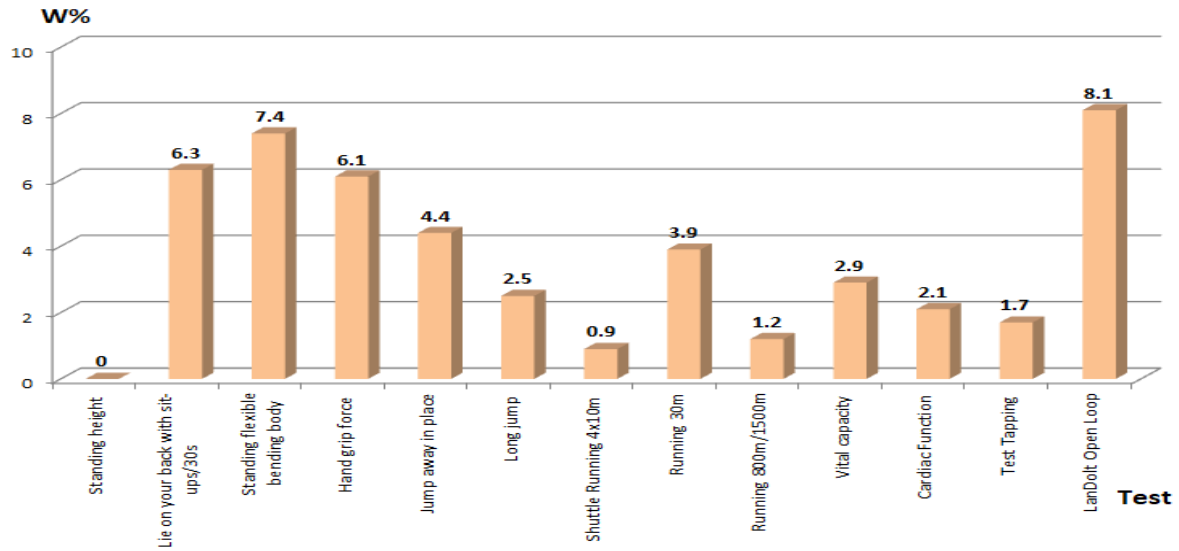

Figure 1: Growth rate of physical tests of male students as a whole

Table 1: Comparison of physical development of HCMC UTE students after one year

No.	Tests	Initial time			After 1 year			t	P (.Sig)	W%
		$\overline{X}_1$	± SD	ε	$\overline{X}_2$	± SD	ε			
1	Standing height (cm)	165.0	5.26	0.29	165.01	5.25	0.29	1.73	>0.05	0
2	Lie on your back with sit-ups/30s (times)	20.0	3.17	0.17	21.3	3.33	0.18	7.43	<0.001	6.3
3	Standing flexible bending body (cm)	13.0	3.0	0.17	14.0	2.95	0.16	7.56	<0.001	7.4
4	Hand grip force (KG)	40.0	4.38	0.25	42.5	4.35	0.24	10.63	<0.001	6.1
5	Jump away in place (cm)	200	20.2	1.13	209	21	1.17	8.24	<0.001	4.4
6	Long jump (cm)	3.9	0.33	2.72	4.0	0.35	0.01	8.41	<0.001	2.5
7	Shuttle Running 4x10m (s)	11.0	1.04	0.06	10.9	1.00	0.05	2.33	<0.05	0.9
8	Running 30m(s)	5.0	0.49	0.03	4.81	0.36	0.02	6.12	<0.001	3.9
9	Running 800m/1500m(s)	418	40.0	2.23	413	36.2	2.02	4.53	<0.001	1.2
10	Vital capacity (l)	3.4	0.41	0.02	3.5	0.42	0.02	5.91	<0.001	2.9
11	Cardiac Function (Hw)	9.5	1.54	0.09	9.3	1.38	0.07	5.29	<0.001	2.1
12	Test Tapping (đ)	128.0	9.7	0.54	130.2	8.2	0.45	4.72	<0.001	1.7
13	LanDolt Open Loop (bit/s)	1.3	0.06	0.00	1.41	0.13	0.00	14.6	<0.001	8.1

Table 2: Comparison of mean values (passes) of the physical criterion of HCMC UTE male students with the Physical Assessment Standards of Vietnam Ministry of Education and Training (age of 18)

No.	Tests	Classify	Mean (pass)		d
			Male students HCMC UTE	The Physical Assessment Standards of Vietnam Ministry of Education and Training	
1	Lie on your back with belly flex for 30s (times)		20.0	≥ 18.0	2.0
2	Right hand squeeze force (KG)		40.0	≥ 42.0	2.0
3	Jump away in place (cm)		200	≥ 209	9.0
4	Running 30m high starting position (s)		5''00	≤ 5''60	0''60
5	Running a shuttle 4x10m (s)		11''00	≤ 12''30	1''30

Table 3: Comparison of physical status of HCMC UTE male students with that of Vietnamese (age of 18)

No.	Test	HCMC UTE male students [n=320]		Vietnamese physique (Male age of 18) [n = 1500]		D ($\overline{X}_A$ - $\overline{X}_B$)
		$\overline{X}_A$	± SD	$\overline{X}_B$	± SD	
1	Standing height (cm)	165.0	5.3	164.8	5.2	0.2
2	Lying on your back with sit-ups/30s (times)	20.0	3.2	20.0	3.6	0
3	Standing flexible bending body (cm)	13.0	3.0	13.0	5.7	0
4	Hand grip force (KG)	40.0	4.4	43.9	6.5	-3.9
5	Jump away in place (cm)	200	20.2	219	21.1	-19
6	Running a shuttle 4x10m (s)	11.0	1.0	10.61	0.8	0.39
7	Running 30m(s)	5.0	0.5	4.88	0.5	0.12
8	Cardiac Function (Hw)	9.5	1.5	13.35	3.5	-3.85

4. Conclusion

By referencing scientific works published in the country as well as abroad, omitting complicated and less popular exercises and conducting expert interviews. Finally, the topic has selected 13 tests that satisfy the conditions as conventions, as well as ensure reliability and informability for inclusion in the physical examination and assessment of HCMC UTE students.

Conducting the physical capacity assessment test of HCMC UTE students with 13 survey tests on morphology, physical strength, psychological and physiological function, we have recorded: Male students have a medium physical state. However, the physical level of development was not uniform among students (many tests have Cv > 10%), which have reflected the rather high differentiation, industry-specific characteristics between the faculties and disciplines being trained or related to student's physical exercise mode.

The actual performance of male students at HCMC UTE was quite different from the Assessment Standards of the Vietnam Ministry of Education and Training. Compared with the data on Physical condition of Vietnamese people (age 18), the achievements between these two subjects was quite similar.

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Author Profile

Thanh Duc Nguyen was born in 1971, obtained a bachelor's degree in sport in 1993, a education master's degree in 2004 (Ho Chi Minh City University of Sports), a doctorate's degree in educational science in 2012 from the Institute of Sports Science (VietNam). Since 1994, he has been a physical education lecturer, coaching football and chess. Since 2016 working at Ho Chi Minh City SPKT University as a director of the Center for Defense and Physical Education.