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CHOOSING CERTAIN TESTS TO EVALUATE THE MALE ATHLETES' PROFESSIONAL PHYSICAL FITNESS FOR THE TAEKWONDO TEAM AT TRA VINH UNIVERSITY, VIETNAM

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Abstract:
Taekwondo is a sport that is not only competitive in competition, especially in speed and variation, but is also an attractive sport suitable for all subjects, ages, and genders, and its practitioners learn self-defense, health improvement, and complete physical development. A Taekwondo athlete's performance is mostly determined by their level of physical conditioning. The purpose of this article is to identify tests for evaluating male Taekwondo team athletes at Tra Vinh University's professional level of physical conditioning. In order to effectively address the research method, the article makes use of standard scientific research techniques in the fields of physical education and sports, including document consultation, interviewing, pedagogical assessments, and statistical mathematics. The article has identified 7 tests to evaluate professional physical fitness for male Taekwondo team athletes at Tra Vinh University through the processes of synthesizing documents, interviewing, and verifying reliability. These tests include: Long Jump (cm), High Jump(cm), Run T-test (second), Vertical sweep (cm), Horizontal sweep (cm), rope skipping for 30 seconds, and moving horizontally 5m x 10 times (s).

Keywords: test, professional physical fitness, Taekwondo, Tra Vinh University

1. Introduction

Taekwondo originated in Korea, although the claim to Taekwondo's historical origins is still debatable and uncertain. For example, Hwarang in Korea are typically described as Japanese samurai. Hwarang is also considered the cradle of Taekwondo today. Ever since its expansion to the West, taekwondo has been a modern sport. Taekwondo has grown into a top-tier sport in recent years; it was featured as a demonstration sport in the Olympic Games of 1988 and 1992 and has been an official competition since 2000 [1].

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Taekwondo's sporting accomplishments are the product of numerous contributing variables; thus, each component cannot be ignored and must be developed simultaneously and thoroughly. Developing young athletes' talents holistically is a critical and urgent matter in their training. Physical strength is a crucial component of top Taekwondo competition as it greatly influences an athlete's performance. As a result, high-level athletes need to build their general physical fitness thoroughly, as this is a strong basis for growing professional physical fitness. It can be said that the top characteristics of high-level Taekwondo athletes in professional physical fitness are the ability to develop strength, speed and flexibility in attack techniques. However, Taekwondo athletes need to reach a high level of professional endurance in order to sustain themselves during lengthy, demanding contests and guarantee a close professional mix of strength, speed, and transformational ability.

According to Nguyen Toan, Pham Danh Ton (2000), "*physical qualities are often divided into three basic types: strength, speed, and strength*". Physical qualities are relatively different features, aspects, and portions of a person's physical strength [4].

Cochran S. (2001), a strength and conditioning expert, and a member of the US National Strength and Conditioning Association - NSCA - specializing in researching martial arts (2001) has summarized the specific requirements of each subject. separate martial arts [5], [6], [7].

Thus, it can be said that there are variations in the physical requirements for every martial art with unique competition features.

The characteristics of physical activity in Taekwondo require high requirements in most qualities and motor abilities. Taekwondo athletes must have good capacity in aerobic endurance, anaerobic endurance, power (speed power) and flexibility. Both boxing and fighting contests have complete physical demonstrations, with the antagonistic content being more evident. Attack tactics in Taekwondo involve skill to coordinate moves, quick execution to hit the opponent, sufficient strength to score points, endurance to compete to the very end, and movement.

Although hand blows can still be used to win points, Taekwondo athletes mostly use their kicking methods in combat tournaments. Kicking techniques must not attack or counterattack the opponent's lower body (lower body). Quickly applying kicking tactics for attack and defense calls for balance, strength, and self-control. However, the trend toward using techniques in competition today is very diverse. The employment of foot techniques has increased in recent years among athletes from various nations, particularly in the face area, where they get three or four times more points than intermediate kicking methods (in Taekwondo competition, one point is awarded for a roundhouse kick to the armor, three points for a spinning kick to the armor, three points for a roundhouse kick to the face, and four points for a spinning kick to the face) [8].

The scoring requirement for a technique in most martial arts is typically to be fast, strong, accurate, and capable of "knocking out" the opponent. The ability to control strength and speed is directly related to the ability to control nerves. Athletes must possess the ability to rapidly mobilize energy sources in addition to having a high level

of concentration and attention. This is a crucial trait that is closely related to mental endurance, flexibility, and speed endurance in Taekwondo.

Taekwondo's match time is not long, with only 2 minutes per round for three rounds, and the weight class competition will end for the day. Before making it to the final, an athlete may participate in a number of matches, thus, they must be resilient and have a fast recovery time [8].

The above shows that physical fitness plays an extremely important role in Taekwondo, Main assessment tests are required in order to precisely evaluate each athlete's level of physical fitness and to provide targeted activities to enhance Taekwondo athletes' physical fitness. Precise, thorough, and scientific. Given the aforementioned significance, we decide to use the paper in the above research direction: "Selecting some tests to evaluate the professional physical fitness of male Taekwondo team athletes at Tra Vinh University, Vietnam".

2. Material & methods

2.1 Methods

The article uses the following research methods to address the purpose of the article:

- Document reference method: This method is used throughout the research process, to synthesize documents related to the research topic, form a theoretical basis and analyze research results. This method in the research process mainly serves the purpose of the article. Through documentary sources, the project determined methods and selected tests to assess professional physical fitness for research subjects.
- Interview technique: This technique uses specialists, coaches, and coworkers who practice and instruct Taekwondo in sports centers to conduct direct and indirect questionnaire interviews. University Taekwondo teams in the Ho Chi Minh City and Tra Vinh regions are more reliable and have a more practical basis for choosing tests that are appropriate to use in evaluating professional physical fitness.
- Pedagogical testing approach: To evaluate the research subjects' professional physical fitness, the article employs tests as a pedagogical testing method.
- Statistical techniques to handle and examine the gathered data with SPSS 20.0 software assistance.

2.2 Participants

- Research subjects: 11 male Taekwondo team athletes at Tra Vinh University.
- Interview subjects: 36 experts, coaches of Taekwondo athlete training centers such as: City. Ho Chi Minh, Ben Tre, Tien Giang, Can Tho, Tra Vinh; lecturer at HCM City University of Sports, Ho Chi Minh City University of Physical Education and Sports, Ho Chi Minh.

3. Results

3.1 Determining professional physical fitness tests for male Taekwondo team athletes at Tra Vinh University

To determine professional physical fitness tests for male Taekwondo team athletes at Tra Vinh University, the article proceeds in 3 steps.

- Step 1: Synopsis of tests used to evaluate athletes on the Taekwondo team's professional physical fitness from both domestic and international writers
- Step 2: Interview experts, specialists, and coaches.
- Step 3: Check the test's reliability.

3.1.1 Summary of tests to assess professional physical fitness for Taekwondo team athletes from domestic and foreign authors

The essay examines pertinent papers, watches real practice sessions and competitions, and gathers information regarding the tests utilized to assess the professional physical fitness of Taekwondo competitors. Evaluation of Taekwondo athletes' professional physical fitness by both domestic and international writers, including: Nguyen Ngoc Cu (1998) [9], Nguyen The Truyen, Nguyen Kim Minh, Tran Quoc Tuan (2000) [10], Nguyen Thy Ngoc (2003) [11], Nguyen Dang Khanh (2004) [12], Lam Quang Thanh (2004) [13], Nguyen Thy Ngoc (2008) [14], Truong Ngoc De et al (2009) [15], Vu Xuan Thanh (2011) [16], Tran Le Thuy Tran (2011) [17], Nguyen Bich Thuy (2012) [18], Le Nguyet Nga, Nguyen Quang Vinh, Nguyen Thanh De (2016) [19], Nguyen Dang Khanh (2017) [5], Huynh Hong Ngoc (2019) [20].

Through observing the training process at athlete training centers in Tra Vinh province and City. Ho Chi Minh City, in conjunction with discussions with Taekwondo coaches, the coaches have implemented specific physical fitness evaluations for Taekwondo athletes:

- Run 60m XPC (s),
- Run T-test (s),
- Hex jump (s),
- Run 1500m for men and 800m for women (s),
- Run at variable speeds for 30m, and 60m (s).

The thesis coaching team chose 12 standard tests to assess the professional physical fitness of male athletes based on the features of the research subjects, the unique nature of Taekwondo activities, and the real-world scenario of the unit. Members of the Taekwondo team of Tra Vinh University are:

- Long Jump (cm),
- High Jump (cm),
- Run 30m from a high start (seconds),
- Run T-test (seconds),
- Run 400m XPC (seconds),
- Run 1500m (seconds),

- Vertical splits (cm),
- Horizontal split (cm),
- Stand flexibly and bend your body (cm),
- *Rope skipping 30 seconds*
- Hex jump (seconds),
- Move horizontally 5m x 10 times (s).

3.1.2 Interview coaches, experts, and professional

Interview instructors and experts at Taekwondo athlete training facilities like City using interview questionnaires. Lecturer at City University of Sports and Sports; Ho Chi Minh, Ben Tre, Tien Giang, Can Tho, Tra Vinh. Ho Chi Minh City University of Sports and Physical Education. Ho Chi Minh is individuals with training experience in Taekwondo who choose tests to evaluate professional physical fitness for study participants.

In order to choose tests in a way that is accurate, impartial, and scientific. The same evaluation technique, using the same test system, is used to perform two rounds of interviews with questionnaires in this paper. Two interviews with responses spaced one month apart:

- Frequently used: 2 points,
- Rarely used: 1 point,
- Not used: 0 points.

The first interview distributed 40 votes, resulting in 36 votes. Including the following: 10 votes from national referees (27.77%), 20 votes from coaches (55.56%), 4 votes from managers (11.11%), and 2 votes from specialist lecturers (5.56%).

In the second interview, 36 votes were distributed, resulting in 34 votes. Out of the 34 total votes cast, 19 came from coaches (55.88%), 10 from national referees (29.42%), 3 from sports managers (8.82%), and 2 from lecturers with professional experience. Industry makes up 5.88%.

Table 1: Summary of results of two interviews of tests assessing the professional physical fitness of male Taekwondo team athletes at Tra Vinh University

TT	Test	Interview result			
		Times 1 (n=36)		Times 2 (n=34)	
		Total	Tỷ lệ (Rate)(%)	Total	Tỷ lệ (Rate) (%)
1	30m run starting high (s)	49	68.06	42	61.76
2	***Move horizontally 5m x 10 times (s)***	***59***	***81.94***	***56***	***82.35***
3	**Standing forward fold (cm)**	35	48.61	31	45.59
4	Run 400m	49	68.06	42	61.76
5	Run 1500m (s)	40	55.56	38	55.59
6	***Rope skipping 30 seconds***	***59***	***81.94***	***56***	***82.35***
7	Hex jump (s)	40	55.56	38	55.59
8	***Vertical sweep (cm)***	***62***	***86.11***	***61***	***89.71***
9	***Horizontal sweep (cm)***	***62***	***86.11***	***61***	***89.71***
10	***Long jump(cm)***	***58***	***80.56***	***56***	***82.35***

11	High jump (cm)	***58***	***80.56***	***55***	***80.89***
12	***Run T test***	***58***	***80.56***	***55***	***80.89***

The results of two interviews with professional physical fitness assessment tests for male Taekwondo team athletes at Tra Vinh University are presented in Table 1. The interview results in Table 1 of this article select tests with a total score of over 75% in both interviews (1st time > 53 points, 2nd time > 50 points). The results of selecting 7 tests to assess professional physical fitness for male Taekwondo team athletes at Tra Vinh University are as follows:

- Long Jump (cm),
- High Jump (cm),
- Run T-test (second),
- ***Vertical sweep (cm),***
- ***Horizontal sweep (cm),***
- ***Rope skipping 30 seconds,***
- ***Move horizontally 5m x 10 times (s).***

3.1.3 Check the reliability of the test

The degree to which the results of several tests on the same research subject under the same conditions agree is known as the test's reliability; however, even with strict standardization and extremely accurate measuring devices and results, tests still fluctuate. The main reasons for these fluctuations are:

- Changing the state of experimental subjects (fatigue, concentration, etc.).
- "Natural error of measurement" refers to variations in the external environment and non-standardized measuring devices (temperature, wind, humidity, power supply, etc.).
- A change in the status of the person conducting the measurement or evaluation
- The lack of perfection in test preparation techniques.

According to Do Vinh, Trinh Huu Loc [21], Duong Nghiep Chi [22], "*using the repeat test method (retest) evaluates the degree of similarity or correlation between two test repetitions*." The identical conditions and objects are used for both the first (test) and the second (retest). There is ample time for a complete transition between the two activities. Generally, a rest period of one to seven days is appropriate. Pearson method for correlation analysis.

The research subjects were examined twice with the same length of time elapsed between each test to ascertain the dependability of the results. Next, compute the Pearson correlation coefficient (r) between the two tests; the test results are shown in Table 2.

If the correlation coefficient $r \geq 0.8$ and $P \leq 0.05$, the test is sufficiently reliable. If the correlation coefficient $r < 0.8$, the test is not reliable. The results of Table 2 show that all 15 tests to assess professional physical fitness for research subjects ensure reliability ($r > 0.8$ and $P < 0.05$)

Table 2: Reliability coefficients of tests used to evaluate male Taekwondo team athletes' professional physical fitness at Tra Vinh University

TT	Test	Times 1 $\overline{X}$ ± S	Times 2 $\overline{X}$ ± S	r	P
1	High Jump (cm)	64.09±3.91	64.45±4.01	0.87	<0.05
2	Long Jump (cm)	229.91±6.96	230.09±7.09	0.87	<0.05
3	T-test (s)	8.15±0.40	8.14±0.43	0.96	<0.05
4	Rope skipping 30 seconds	80.73±2.24	80.82±1.99	0.93	<0.05
5	Move horizontally 5m x 10 times (s)	10.82±0.16	10.81±0.15	0.98	<0.05
6	Vertical sweep (cm)	6.45±1.92	6.36±2.01	0.89	<0.05
7	Horizontal sweep (cm)	7.55±1.92	7.64±1.96	0.94	<0.05

The article has selected 7 measures to evaluate professional physical fitness for male Taekwondo team athletes at Tra Vinh University through the processes of synthesizing documents, interviews, and reliability checks. These tests include:

- Long Jump (cm),
- High Jump (cm),
- Run T-test (seconds),
- *Vertical sweep (cm),*
- *Horizontal sweep (cm),*
- *Rope skipping 30 seconds (*determine how many times),
- *Move horizontally 5m x 10 times (s).*

3.2 Assessing the professional physical status of male Taekwondo team athletes at Tra Vinh University

This article looks at measures used to assess research subjects' professional physical fitness in order to determine the present level of fitness for male Taekwondo team athletes at Tra Vinh University. The results of testing and calculating the average value, standard deviation, coefficient of variation and relative error of the average value are in Table 3.

Table 3. Summary of results of tests assessing the professional physical fitness of male Taekwondo team athletes at Tra Vinh University

TT	Test	Achievements			
		$\overline{X}$	S	*Cv%*	ε
1	High Jump (cm)	64.09	3.91	6.10	0.04
2	Long Jump (cm)	229.91	6.96	3.03	0.02
3	Run T test (seconds)	8.15	0.40	4.87	0.03
4	***Rope skipping 30 seconds***	80.73	2.24	2.77	0.02
5	***Move horizontally 5m x 10 times (s)***	10.82	0.16	1.50	0.01
6	***Vertical sweep (cm)***	6.45	1.92	29.69	0.19
7	***Horizontal sweep (cm)***	7.55	1.92	25.40	0.16

The results obtained in Table 3 show:

- **High jumping (in centimeters**): The average achievement is 64.09 ± 3.91, coefficient of variation Cv% = 6.10 < 10%. This indicates that the male Taekwondo team athletes at Tra University Vinh have reasonably even and high uniform high jumping performances. The average value is indicative of the sample set, as demonstrated by the relative ε = 0.04 < 0,05.
- **Long jump test (in centimeters**): The average score is 229.91 ± 6.96, with a coefficient of variation (Cv%) = 3.03 < 10%. This indicates that the male Taekwondo team athletes at Tra University Vinh have reasonably even and high uniformity in their on-the-spot long jump performance. The average value is indicative of the sample set, as demonstrated by the relative error of = 0.02 < 0.05.
- **Test:** Running T-test (s): The average achievement is 8.15 ± 0.40, coefficient of variation Cv% = 4.87 < 10%, showing that the running T test performance of male Taekwondo team athletes at Tra Vinh University is high. High uniformity, relatively even. The relative error is ε = 0.03 < 0.05, proving that the average value is representative of the sample set.
- ***Rope skipping 30 seconds:*** *The average achievement is 8.15 ± 0.40, the coefficient of variation Cv% = 4.87 < 10% shows that the 30-second Rope Jumping achievement of male Taekwondo team athletes at Tra Vinh University has high uniformity, relatively similar.* The average value is indicative of the sample set, as demonstrated by the relative ε= 0.03 < 0.05.
- ***Move horizontally 5m x 10 times (s):*** *The average achievement is* 10.82 ± 0.16*, the coefficient of variation* Cv% = 1.50 < 10% *shows that the* ***Move horizontally 5m x 10 times*** *achievement of male Taekwondo team athletes at Tra Vinh University has high uniformity, relatively similar.* The average value is indicative of the sample set, as demonstrated by the relative ε = 0.01 < 0,05.
- ***Vertical sweep (cm):*** *The average achievement is* 6.45 ± 1.92*, the coefficient of variation* 20% <Cv% = 29.69 < 30% *shows that the* ***Move horizontally 5m x 10 times*** *achievement of male Taekwondo team athletes at Tra Vinh University has high uniformity, relatively similar.* The average value is indicative of the sample set, as demonstrated by the relative ε = 0.19 > 0,05.
- ***Horizontal sweep (cm):*** *The average achievement is* 7.55 ± 1.92*, the coefficient of variation* 20% <Cv% = 25.40 < 30% *shows that the* ***Horizontal sweep (cm)*** *achievement of male Taekwondo team athletes at Tra Vinh University has high uniformity, relatively similar.* The average value is indicative of the sample set, as demonstrated by the relative ε = 0.16 > 0,05.

The aforementioned study demonstrates that the majority of the tests used to evaluate the male Taekwondo team players' professional physical fitness at Tra Vinh University have a high degree of homogeneity. The average value is indicative of the sample, as demonstrated by the relative ε ≤ 0.05. However, the two tests, Vertical Split (cm), and Horizontal Split, have low uniformity and the relative error of the average value is not representative. The four tests Vertical Split (cm), Horizontal Split are highly

appreciated and reliable by experts and specialists. This article selects the aforementioned tests to further investigate as these are the two that experts and specialists frequently use to assess professional physical fitness as well as Vertical Split (cm) and Horizontal Split procedures.

4. Conclusions

The article has identified 7 tests to evaluate professional physical fitness for male Taekwondo team athletes at Tra Vinh University through the processes of synthesizing documents, interviews, and reliability checking. These tests include: On-site distance jump (cm), Jump high on the spot (cm), Run T-test (seconds), Vertical splits (cm), and Horizontal splits (cm), Jump rope for thirty count seconds, Move horizontally 5m x 10 times (s).

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

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