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## Research of physical fitness tests in the selection of 8 - 9 year old females table tennis players in Ho Chi Minh city, Vietnam

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### Abstract

The study used popular sports science methods in physical education and sports, since then the author has identified 05 fitness tests in selecting female athletes from 08 to 09 years old. In Ho Chi Minh City, Vietnam has sufficient credibility based on science and notice.

**Keywords:** Test, physical fitness, table tennis, Ho Chi Minh City

### 1. Introduction

Throughout their competitive season, young athletes in intensive training settings are confronted with a series of physical (e.g., training sessions), social (e.g., coach evaluation), and psychological (e.g., demonstrating personal competence) demands (G. Martinent, J.C. Decret, 2015) [6]. The demands associated with sport participation may lead some of these young athletes to experience burnout (G. Martinent, *et al* 2014) [7]. Growing empirical research has provided evidence that athlete burnout can be defined as a syndrome characterized by physical/emotional exhaustion, sport devaluation, and a reduced sense of accomplishment (T.D. Raedeke, 1997) [8]. To date, most of the previous studies have examined athlete burnout using cross-sectional designs that are limited to understanding individual differences in athlete burnout changes.

In Vietnam, a modern table tennis player must have not only a thorough tactical technique, a good psychological state, a combination of control between the vortex, the speed, the power and the drop point of the ball in a reasonable way but also a high level of physical strength. Therefore, physical strength is a very important factor for modern table tennis players. The precise and scientific identification of physical selection tests is one of the most important determinants of success in the selection of table tennis players.

### 2. Research and Methods

**2.1 Purpose of the research:** To identify physical fitness tests in the selection of young table tennis players.

**2.2 Objectives of the research:** To achieve the above purpose, we address the following objectives: Synthesis of physical fitness tests in the selection and assessment of physical strength for the table tennis players from local and foreign authors. - Interviews with trainers, experts and professionals. - Verification of the reliability and notification from tests.

**2.3 Methodology:** organization of the research: methods of reference, pedagogical examination, questionnaire and statistics mathematics.

**2.4 Subject for the research:** 18 female players aged 8-9 are talented in table tennis in Ho Chi Minh City.

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### 3. Results

#### 3.1. The current situation of the use of physical fitness tests in the selection of table tennis players by local and foreign authors.

Through the synthesis of documents by Nguyen The **Truyen** (1999), Bui Huy Quang (1997) [3], selection documents of Ho Chi Minh City Department of Culture, Sports and Tourism (2005) [4], National target selection program (1998), selection documents of China (2008), we have eliminated the unsuitable tests and selected the following specific tests: Running 20m (s), Running 30m (s), Running 60m (s), long jump in place (cm), hit the ball away from the table (cm), throw badminton away (cm), jump rope for 45 seconds (times), jump rope for 2 minutes (times), hit the ball against

the wall for 1 minute (times), move to pick up 21 balls x 3m (s), move to pick up 42 balls x 3m (s), move to pick up 11 balls x 3m x 2 times (s).

#### 3.2. Interview results

From the results of the above, conduct building the test slips and the interviews. Time of two interviews is 1 month apart. In both interviews, 39 respondents answered, of which 32 respondents were experts and coaches accounting for 82.05%, 7 respondents are managers accounting for 17.95%. In order to test the coincidence of the results of the two interviews, compare them to the index  $\chi^2$  (as squared) (Table 1).

**Table 1:** Comparison of results of two interviews of physical fitness tests in the selection of female table tennis players aged 8-9.

Test	1 st time n = 20		2 nd time n = 19		$\chi^2$	P
	$\Sigma$	%	$\Sigma$	%		
Running 20m (s)	58	58.00	54	56.84	0.21	> 0.05
Running 30m (s)	84	84.00	80	84.21	0.18	> 0.05
Running 60m (s)	72	72.00	69	72.63	0.02	> 0.05
Long jump in place (cm)	70	70.00	67	70.53	0.02	> 0.05
Hit the ball away from the table (cm)	70	70.00	69	72.63	0.09	> 0.05
Throw badminton away (cm)	91	91.00	86	90.53	0.07	> 0.05
Jump rope for 45 seconds (times)	95	95.00	91	95.79	0.03	> 0.05
Jump rope for 2 minutes (times) (s)	70	70.00	66	69.47	0.07	> 0.05
Hit the ball against the wall for 1 minute (times)	96	96.00	93	97.89	0.06	> 0.05
Move to pick up 21 balls x 3m (s)	100	100.00	95	100.00	0.00	> 0.05
Move to pick up 42 balls x 3m (s)	74	74.00	71	74.74	0.02	> 0.05
Move to pick up 11 ball x 3m x 2 times (s)	70	70.00	67	70.53	0.03	> 0.05

The research result from Table 1 show that in all the results of the two interviews from the tests to be  $\chi^2$  calculated  $< \chi^2$  table = 3.84 at the probability threshold  $P > 0.05$ , so the difference between the two interviews is not statistically significant at the probability threshold  $P > 0.05$ . Based on the results of the interviews, select the tests with a total score  $> 75\%$  of total scores in both interviews (1st time  $> 75$  points, 2 nd time  $> 71.25$  points). According to the above rules, choosing the physical fitness tests for the selection of 8 - 9 year old table tennis players is as follows: Running 30m (s), throw badminton away (cm), jump rope for 45 seconds (times), hit the ball against the wall for 1 minute (times), move to pick up

21 balls x 3m (s).

#### 3.3. Verification of the reliability and notification of the tests

##### 3.3.1. Verification of the reliability.

In order to test the reliability of the physical fitness tests in the selection of female table tennis players aged 8 - 9, we inspected the performance of the tests in the two times, the time between two intervals is five days, the test conditions between the two times are the same. We then calculated the correlation coefficient (r) of the tests between the two testing times and obtained the results in Table 2.

**Table 2:** Reliability coefficient of physical fitness tests in the selection of 8-9-year-old female table tennis players (M $\pm$ SD)

TT	Test	1 st time M $\pm$ SD	2 nd time M $\pm$ SD	Reliability coefficient (r)	P
1	Running 30m (s)	7.11 $\pm$ 0.40	7.12 $\pm$ 0.34	0.96	<0.01
2	Jump rope for 45 seconds (times)	81.28 $\pm$ 6.87	80.56 $\pm$ 6.58	0.98	<0.01
3	Throw badminton away (cm)	489.33 $\pm$ 44.61	491.83 $\pm$ 45.65	0.96	<0.01
4	Hit the ball against the wall for 1 minute (times)	32.50 $\pm$ 5.38	32.61 $\pm$ 6.09	0.94	<0.01
5	Move to pick up 21 balls x 3m (s)	77.89 $\pm$ 6.84	78.11 $\pm$ 6.87	0.95	<0.01

In case of the correlation coefficient  $r \geq 0.8$ ,  $P \leq 0.05$ , then the test is sufficiently reliable.

In case of the correlation coefficient  $r < 0.8$ , then the test is not reliable

From Table 2 we find that all tests have  $r > 0.8$  and  $P < 0.01$ . Thereby, all the above tests are reliable enough to select the physical strength of 08 - 09 year old female table tennis players in Ho Chi Minh City.

##### 3.3.2. Verification of notification

In order to verify the notification of the physical fitness tests in the selection of table tennis players, we calculated the correlation coefficient between the results of the tests and the results of the tournament to rank according to Spirmen hierarchical correlation formula that obtained the results in Table 3. From the results in Table 3, we compare the hierarchical correlation coefficient  $r_{table}$  with the degree of freedom  $n - 2$  and we have the following results:

**Table 3:** Hierarchical correlation coefficient between the tests in the selection of female table tennis players aged 08 - 09 with competition ranking

TT	Test	Correlation (r)	
		r	P
1	Running 30m (s)	0.53	<0.05
2	Jump rope for 45 seconds (times)	0.83	<0.05
3	Throw badminton away (cm)	0.86	<0.05
4	Hit the ball against the wall for 1 minute (times)	0.86	<0.05
5	Move to pick up 21 balls x 3m (s)	0.75	<0.05

The results in Table 3 show that all tests express a strong correlation with competition performance ( $r > 0.4$ ,  $P < 0.05$ ). These tests are sufficiently noticeable and feasible in physical selection for female table tennis players aged 08 - 09 in Ho Chi Minh City.

In summary, through synthesis of documents, from the results of the interviews, verification of the reliability and the notification we have identified the physical fitness tests in the selection of female table tennis players aged 08 - 09 in Ho Chi Minh City including Running 30m (s), throw badminton away (cm), jump rope for 45 seconds (times), hit the ball against the wall for 1 minute (times), move to pick up 21 balls x 3m (s).

In ping-pong competition, it is necessary to make quick judgments, quick reactions, quick hand swings, fast-moving directions so the professional physical strength of the table tennis players needs to have the speed of the individual movement, not cyclical, ie when smashing the ball needs to have the speed to swing the hand and have the appropriate angle to catch for the ball smash or when the ball comes, it is needed to have a fast body movement speed.

Ball smash act in the table tennis is due to the impact of the weight of the arm (arms and racket) and its speed of movement, of course, it must be manifested by certain strength. The strength that table tennis players need is the power of fast speed (spontaneous strength). Fast-attack fighting style attaches great importance to the force of the forearm. From the dynamitic perspective to consider the organization and placement of the muscles of the forearm, elbow bending is actually a speeding lever. Of which, the main muscle to bend elbows is the arm muscles, the musculus biceps brachii. These muscles are the retractors starting in the arm and cling to the forearm or rounding the side of the arm. If these muscles contract in outburst, it will cause the racket holding hand to move at a relatively large speed, thus make the ball smash speed increase. From that shows the choice of throwing badminton far to assess the outburst strength of table tennis players is reasonable. Flexibility is a very important factor for table tennis players, the flexibility that table tennis players need is their ability to adapt in the match. It is also the ability to react quickly. The flying time of the ball comes in mid-air only 0.3 - 0.5 seconds. For a short period of time, it is necessary to judge the speed of the ball, the drop point and the swirling properties of the ball, and to rely on the position of the opponent that quickly decide the strategy. This requires players to have the capacity to adapt well. High or low flexibility is indicated by the speed at changing from one movement to another movement quickly or slowly, judging the coming ball's feature accurately or inaccurately. In the actual table tennis tournament, players need to move quickly to the right, to the left, then to the right, sometimes backward and forward to hit the ball in different positions, thus requiring players to have feet moving fast, turn quickly, reasonably and the dexterity of hands rhythmically

coordinated. Another indispensable physical force in a modern table tennis player is professional endurance. Indeed, table tennis is a game of personal antagonism with a great central nervous system energy drain for consecutive days of competition. In the late stages of increasing stress, the player must have the high professional endurance to compete to the highest efficiency.

The professional endurance that the ping-pong player needs is the professional endurance with fluctuating intensity and professional tight combination between speed and flexibility. According to Khau Trung Hue and colleagues (1997) [2], depending on the different grip of the opponent, the working density of the hand in 1 minute (hit the ball) ranged from 19 to 46 times. It shows that the intensity of movement in table tennis is often unstable. This fluctuation depends on the level of the opponent. In ping-pong competition, one day has many matches to play, the time between the matches is short, the recovery ability of table tennis players is very important, the table tennis players must have good professional endurance. On the other hand, the professional endurance of the table tennis players must be tightly integrated from the start to the end, adapted to speed and flexibility, otherwise speed and flexibility cannot be maintained until the final match, game and score. Based on these analyzes and based on age-specific psycho physiological characteristics, the research results to choose physical fitness tests in the selection of female table tennis players aged 8 - 9 are appropriate.

#### 4. Discussion and Conclusions

The results of the research have identified five physical fitness tests in the selection of female table tennis players aged 8 - 9 in Ho Chi Minh City that have enough reliability and notification including: Running 30m (s), throw badminton away (cm), jump rope for 45 seconds (times), hit the ball against the wall for 1 minute (times), move to pick up 21 balls x 3m (s).

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