THE STATUS OF SPEED STRENGTH OF FEMALE ATHLETES RUNNING 100M AGE 14-16 OF THE TALENTED TEAM, HO CHI MINH CITY, VIETNAM

Duong Ngoc Truong[i]
Faculty of National Defense Education and Physical Education,
Saigon University,
Vietnam

Abstract:
The purpose of the article is to identify the tests that assess the status of speed strength of female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City. The article uses the methods of synthesizing documents, interviewing and statistical mathematics. The article has identified 08 tests to evaluate speed strength for the research subjects ensuring enough reliability and information, including: Running 30m high start (s), Hopping 30m right leg (s), Hopping 30m left leg (s), Pedaling back fast 30m (s), Jumping 3 steps without momentum (cm), Jumping 5 steps without momentum (cm), Half-sitting 40kg 10s (times), Half-sitting 50kg 10s (times). The results of assessing the status show that the speed strength of female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City is relatively uniform.

Keywords: speed strength; running 100m; talented female athletes; Ho Chi Minh City

1. Introduction

Success is characterized as the end result of an effort. Someone will succeed as a result of their efforts (E. Rudiansyah, Soekardi & T. Hidayat, 2017). The 100-meter sprint race has grown to be the most well-liked event in athletics. The world's quickest people are its world-champion athletes. The pace of muscular contraction, the speed of endurance, and power coordination are a few factors that improve performance in the 100-meter run (K. Sanborn, 2008). The physical training regimen has such a great impact on the body of the athlete. It enhances neurophysioloy and aids in regulating the growth of bodily tissues (M. A. Almy & S. Sukadiyanto, 2014). The capacity to quickly change body position from one location to another is what defines the sprint 100-meter skill (R. Henjilito, M. Asmawi, J. Tangkudung & A. T. Bon, 2019). Success in many sports depends on the ability to sprint, and several training techniques have been employed to enhance sprinting skills (G. P.

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[i] Correspondence: dntruong@sgu.edu.vn

Paradisis, A. Bissas & C. B. Cooke, 2015). The majority of speed training programs are built around free sprinting, or sprinting without any external equipment. To enhance anaerobic power and oxygen depth, it is very vital to recover from the origin for a sufficient amount of time before repetitions are performed. Jogging or walking exercises are frequently used to recover after a rest interval in repetitive sprint exercises. Team sports activity profiles need the growth of power, acceleration, speed, and the capacity to repeatedly perform high-intensity runs and sprints (R. G. Lockie, A. J. Murphy, A. B. Schultz, T. J. Knight & X. A. K. J. De Jonge, 2012). In addition to an increase in anaerobic power and only a little gain in aerobic power, the repetition sprint training program findings also show an improvement in fast muscle fibers and neo-muscular mechanics. Enhancing sprint and strength performance helps athletes perform better and increases muscle power production, which is a key factor in sports success (E. Sáez de Villarreal, B. Requena, M. Izquierdo & J. J. Gonzalez-Badillo, 2013).

Every Olympic Games still feature the crowning of the 100-meter sprint champion, who are the fastest humans in the world (T. Haugen, S. Seiler, Ø. Sandbakk, and E. Tønnessen, 2019). The movement's components are 1) limb movement, 2) arm movement, 3) posture, and 4) the harmonious coordination of every body movement component. The 100-meter sprint can be broken down into five basic phases: the reaction period at the start, the acceleration phase, the maximum speed phase, the deceleration phase, and the finish (R. Wibowo, 2017).

Short distance is the most concerned in Athletics and speed strength is one of the important factors in short distance. The study of exercises to develop speed strength is an urgent and important issue for the Athletics team of Ho Chi Minh City. Identifying the professional indicators characteristic of Athletics has been and always be an issue that many researchers have studied. However, the effectiveness and research subjects are still limited and not specific. To develop speed-strength for athletes, accurate information about their status is needed to have appropriate exercises. With the importance above, the article chooses the research direction with the name: *"The status of speed strength of female athletes running 100m age 14 - 16 talent team of Ho Chi Minh City, Vietnam"*.

The purpose of the article is to identify the tests that assess the status of speed strength of female athletes running 100m age 14 - 16 talent team of Ho Chi Minh City, Vietnam.

2. Research methods

Through the research process, the article uses the following methods:

The method of reference documents to synthesize documents related to the article from relevant research works to select tests to evaluate speed strength for female athletes running 100m age 14 - 16 talent team of Ho Chi Minh City, Vietnam.

The method of pedagogical testing to test tests to evaluate the speed strength of research subjects including: Running 30m high start (s), Hopping 30m right leg (s), Hopping 30m left leg (s), Pedaling back fast 30m (s), Jumping 3 steps without momentum

(cm), Jumping 5 steps without momentum (cm), Half-sitting 40kg 10s (times), Half-sitting 50kg 10s (times).

The interview method aims to solicit opinions from experts, professional coaches to select tests to evaluate speed strength for research subjects. The statistical method aims to process data collected through descriptive statistics (mean, standard deviation, coefficient of variation, max, min), and Pearson quantitative correlation analysis.

2.1 Research subjects
10 female athletes running short distance talent team of Ho Chi Minh City, Vietnam.

2.2 Interview subjects
25 people: experts, coaches, professionals.

3. Research results

3.1. Identify tests to evaluate speed strength for female athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City
To identify tests to evaluate speed strength for female athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City, the article proceeds according to the following steps:

Step 1: Synthesize tests to evaluate strength for athletes running 100m distance of authors at home and abroad.

Step 2: Interview experts, coaches, professionals.

Step 3: Test the reliability of the test and the information of the test.

3.2. Synthesize tests to evaluate strength for athletes running 100m distance of authors at home and abroad
The article synthesizes tests to evaluate speed strength in short-distance running from researches of authors domestic and abroad such as: Nguyen Ngoc Cu (1999), Duong Nghiep Chi and partners (2000), Dam Quoc Chinh (2000), Nguyen Dai Duong and Nguyen Quang Hung (2002), Duong Ngoc Truong (2005), Dam Trung Kien (2009), Nguyen Thi Ngoc Ut (2014), Majumdar, A. S., & Robergs, R. A. (2011), Mackala, K., Fostiak, M., & Kowalski, K. (2015), Krzysztof, M., & Mero, A. (2013), Morin, J. B., Bourdin, M., Edouard, P., Peyrot, N., Samozino, P., & Lacour, J. R. (2012), Arsac, L. M., & Locatelli, E. (2002) … Based on the characteristic qualities in running 100m, the research purpose and characteristics of the research subjects, the article selects 24 characteristic tests to evaluate speed strength in running 100m.

3.3 Interview experts, coaches, professionals
Conducting a questionnaire and interviewing 25 people who are experts, coaches, professionals, analyzing the composition of interview subjects as follows:
- Education level: Doctor: 2 people, accounting for 8%.

- Master: 10 people, accounting for 40%.
- Bachelor: 13 people, accounting for 52%.
  Seniority:
- Over 15 years: 6 people, accounting for 24%.
- From 10 - 15 years: 11 people, accounting for 44%.
- From 5 - 10 years: 8 people, accounting for 32%.

The article interviews according to 03 levels of frequent use, less use and non-use of tests with the results in Table 2.1.

Table 2.1: Interview results to select speed strength tests for female
athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City

Ordinal	Interview	Frequent use	Less use	Never use
1	Running 30m high speed (s)	72%	28%	0%
2	Running 30m high start (s)	92%	8%	0%
3	Running back pedal 30m (s)	88%	12%	0%
4	Hopping 30m left leg (s)	92%	8%	0%
5	Hopping 30m right leg (s)	96%	4%	0%
6	Running 100m (s)	76%	24%	0%
7	Running 200m (s)	68%	32%	0%
8	Running 300m (s)	68%	32%	0%
9	Running 400m (s)	72%	28%	0%
10	Running back pedal 30m (s)	72%	28%	0%
11	Long jump in place (cm)	64%	36%	0%
12	Jumping 3 steps without momentum (m)	84%	16%	0%
13	Jumping 5 steps without momentum (m)	88%	12%	0%
14	Jumping 7 steps without momentum (m)	60%	40%	0%
15	Throwing 3kg weight from below up forward (m)	48%	52%	0%
16	Throwing 3kg weight from below up backward (m)	60%	40%	0%
17	Frequency of running steps in 60m section (times)	56%	44%	0%
18	Frequency of running steps in 100m section (times)	72%	28%	0%
19	Single reflex (ms)	60%	40%	0%
20	Thigh strength (kg)	64%	36%	0%
21	Half-sitting 40 kg 10s (times)	84%	16%	0%
22	Bending body 30 seconds (times)	76%	24%	0%
23	Back strength (kg)	68%	32%	0%
24	Half-sitting 50 kg 10s (times)	84%	16%	0%

According to the results from Table 2.1, the article selects tests that achieve 80% agreement at the level of frequent use to evaluate speed strength for female athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City. According to this convention, the article selects 8 tests, specifically as follows: Running 30m high start (s); Running back pedal 30m (s); Hopping 30m left leg (s); Hopping 30m right leg (s); Jumping 3 steps without momentum (m); Jumping 5 steps without momentum (m); Half-sitting 40 kg 10s (times); Half-sitting 50 kg 10s (times).

3.4 Test the reliability and information of tests to evaluate speed strength for athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City

a. Test the reliability of tests

To determine the reliability of the tests above, the article conducts testing through the method of repeated tests separated by 7 days in female athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City. The reliability assessment of physical strength is presented in Table 2.2.

Table 2.2: Reliability coefficient of speed strength tests for female athletes running 100m distance aged 14-16 talent team of Ho Chi Minh City (n = 10)

Ordinal	Test	First test		Second test		r	P
		$\overline{X}_1$	δ	$\overline{X}_2$	δ		
1	Run 30m high start (s)	3.92	0.10	3.92	0.09	0.919	< 0.05
2	Hopping 30m right foot (s)	7.35	0.30	7.34	0.26	0.985	< 0.05
3	Hopping 30m left foot (s)	7.70	0.51	7.65	0.45	0.971	< 0.05
4	Kick back fast 30m (s)	4.71	0.52	4.74	0.53	0.975	< 0.05
5	Jump 3 steps without momentum (cm)	7.36	0.36	7.37	0.37	0.980	< 0.05
6	Jump 5 steps without momentum (cm)	12.64	0.69	12.66	0.70	0.983	< 0.05
7	Half sit 40kg 10s (times)	10.40	1.43	10.40	1.58	0.808	< 0.05
8	Half sit 50kg 10s (times)	9.70	1.70	9.70	1.77	0.890	< 0.05

b. Test the validity of the tests

To test the validity of the tests assessing the performance of running 100m distance of 100m athletes aged 14-16 of the talented team of Ho Chi Minh City (n = 10), the article conducts calculating the correlation coefficient between the performance of the tests and the performance of running 100m, using the PEARSON correlation formula and obtaining the results in Table 2.3.

Table 2.3: Correlation coefficient between tests assessing the performance of running 100m distance of female athletes aged 14-16 of a talented team of Ho Chi Minh City (n = 10)

Ordinal	Test	Correlation coefficient	
		r	p
1	Run 30m high start (s)	0.753	<0.05
2	Hopping 30m right foot (s)	0.933	<0.01
3	Hopping 30m left foot (s)	0.953	<0.01
4	Pedal back fast 30m (s)	0.832	<0.01
5	Jump 3 steps without momentum (cm)	0.841	<0.01
6	Jump 5 steps without momentum (cm)	0.773	<0.01
7	Sit half 40kg 10s (times)	0.728	<0.05
8	Sit half 50kg 10s (times)	0.751	<0.05

From the results in Table 2.3, comparing r table with degrees of freedom n >10, the article obtained the following results: All tests above have a correlation coefficient between two

(r) tests greater than 0.6 so there is enough evidence to evaluate strength speed for female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City.

From the synthesis of documents, interviews, reliability tests and notification of tests, the article has identified tests to evaluate strength speed for female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City are:

- Run 30m high start (s);
- Hopping 30m right foot (s);
- Hopping 30m left foot (s);
- Pedal back fast 30m (s);
- Jump 3 steps without momentum (cm);
- Jump 5 steps without momentum (cm);
- Sit half 40kg 10s (times);
- Sit half 50kg 10s (times).

2.2. Evaluation of speed strength for female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City

Through the test results of tests to evaluate speed strength for female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City at the initial time, the article has calculated and obtained results in Table 2.4 as follows:

Table 2.4: Status of speed strength for female athletes running 100m distance aged 14-16 talent team Ho Chi Minh City (n =10)

Ordinal	Test	$\overline{X}$	δ	Cv%	Min	Max
1	Run 30m high start (s)	3.92	0.10	2.68	3.74	4.12
2	Hopping 30m right foot (s)	7.35	0.30	4.08	7.0	7.9
3	Hopping 30m left foot (s)	7.70	0.51	6.58	7.0	8.69
4	Pedal back fast 30m (s)	4.75	0.34	7.19	4.05	5.18
5	Jump 3 steps without momentum (cm)	7.36	0.36	4.87	6.98	8
6	Jump 5 steps without momentum (cm)	12.64	0.69	5.44	11.09	13.55
7	Sit half 40kg 10s (times)	10.10	0.99	9.85	9.0	12
8	Sit half 50kg 10s (times)	9.70	0.95	9.78	8.0	11

According to Table 2.4, it shows that:

Running 30m high start (s) result: The average value of sprinters reached $\overline{X}$ = 3.92 ± 0.10 s, with the coefficient of variation Cv% = 2.68 < 10% showing that the sample set of sprinters has high uniformity.

Hopping 30m right foot (s) result: The average value of sprinters reached $\overline{X}$ = 7.35 ± 0.30 s, with the coefficient of variation Cv% = 4.08 < 10% showing that the sample set of sprinters has high uniformity.

Hopping 30m left foot (s) result: The average value of sprinters reached $\overline{X}$ = 7.70 ± 0.51 s, with the coefficient of variation Cv% = 6.58 < 10% showing that the sample set of sprinters has high uniformity.

Pedal back fast 30m (s) result: The average value of sprinters reached $\overline{X}$ = 4.75 ± 0.34 s, with the coefficient of variation Cv% = 7.19 < 10% showing that the sample set of sprinters has medium uniformity.

Jump 3 steps without momentum (cm) result: The average value of sprinters reached $\overline{X}$ = 7.36 ± 0.36 cm, with the coefficient of variation Cv% = 4.87 < 10% showing that the sample set of sprinters has high uniformity.

Jump 5 steps without momentum (cm) result: The average value of sprinters reached $\overline{X}$ = 12.64 ± 0.69 cm, with the coefficient of variation Cv% = 5.44 < 10% showing that the sample set of sprinters has high uniformity.

Sit half 40kg 10s (times) result: The average value of sprinters reached $\overline{X}$ = 10.10 ± 0.99 times, with the coefficient of variation Cv% = 9.85 < 10% showing that the sample set of sprinters has high uniformity.

Sit half 560kg 10s (times) result: The average value of sprinters reached $\overline{X}$ = 9.70 ± 0.95 times, with the coefficient of variation Cv% = 9.78 < 10% showing that the sample set of sprinters has high uniformity.

Running 120 high start (s) result: The average value of sprinters reached $\overline{X}$ = 14.60 ± 0.62 s, with the coefficient of variation Cv% = 4.22 < 10% showing that the sample set of sprinters has high uniformity.

4. Summary of findings

The status of speed strength of female athletes running short distances aged 14-16 talent team Ho Chi Minh City has 8/8 tests: Running 30m high start (s); Running pedal back 30m (s); Hopping 30m left foot (s); Hopping 30m right foot (s); Jumping 3 steps without momentum (m); Jumping 5 steps without momentum (m); Sitting half 40 kg 10s (times); Sitting half 50 kg 10s (times), all have a coefficient of variation Cv% < 10% showing that the sample set of sprinters has high uniformity.

Through the analysis above, it shows that the sample set of achievements of tests to evaluate speed strength of female athletes running short distances aged 14-16 talent team Ho Chi Minh City is relatively uniform and representative.

5. Conclusion

The topic has identified 8 tests to evaluate speed strength for female athletes running short distances aged 14-16 talent team Ho Chi Minh City ensuring enough reliability and notification including: Running 30m high start (s), Hopping 30m right foot (s), Hopping 30m left foot (s), Pedal back fast 30m (s), Jumping 3 steps without momentum (cm), Jumping 5 steps without momentum (cm), Sitting half 40kg 10s (times), Sitting half 50kg 10s (times).

The status of speed strength of female athletes running 100m distance aged 14-16 talent team athletics Ho Chi Minh City is relatively even (Cv <10%).

Conflict of Interest Statement

The author declares no conflicts of interest.

About the Author

Duong Ngoc Truong has been Dean Faculty of National Defense- Security Education & Physical Education, SaiGon University, Vietnam.

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