

RESEARCH ON THE SELECTION OF FAST STRENGTH DEVELOPMENT EXERCISES FOR MALE HANDBALL ATHLETES AT DANANG UNIVERSITY OF PHYSICAL EDUCATION AND SPORTS

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Through the use of observation methods, discussion interviews, pedagogical testing methods and statistical methods, the article has selected 26 exercises, including 10 group exercises, 11 coordinated exercises and 5 game exercises – a competition to develop strength. At the same time, the article also selected 5 tests to assess the speed of male handball athletes at Danang University of Physical Education and Sports.

Keywords: *Exercise; Strength; Men's Handball athletes; Soccer teams.*

1. Introduction

Realizing the importance and widespread love of handball, the Danang University of Physical Education and Sports has included handball as an elective subject for students in the physical education curriculum of the school and annually selects students with good expertise into the gifted handball team to practice to promote the handball movement in the school and selecting the best players to establish male handball athletes to compete in student handball tournaments in Da Nang City and nationwide.

Through direct observation of the children practicing and competing, we found that their physical problems were very limited, especially their speed. The players do not have the necessary agility in each phase of the ball to carry out the coordination and intentions of the coach. Therefore, “Research and selection of exercises to develop strength for male handball athletes at the Danang University of Physical Education and Sports” is very necessary.

2. Research overview

Related to the content of this research, many authors have paid attention and research, including some typical research works such as: Nguyen Hung Quan (2000), “Training handball”, Publishing House of Physical Education and Sports, Hanoi; Harre. D (2000), “Training Doctrine”, Publishing House of Hanoi Sports, Trung Anh Tuan, Bui The Hien translated; Bui Quang Hai, Vu Chung Thuy, Nguyen Kim Xuan, Nguyen Danh Hoang Viet, (2009), “Textbook for selecting sports talents”, Publishing House of Hanoi Sports; Von Kiaus

Feldmann (2014), “Training Modules for Teens”; Von Kiaus Feldmann (2015), “Training Module for Youth”; Von Kiaus Feldmann (2016), “Forms of training for middle and high school youth”... However, these researches mostly mentioned a wide range of topics related to many different sports or different objects. Particularly in the field of handball, it is impossible not to mention the authors who have laid the foundation for the development of this sport in our country such as: Nguyen Thiet Tinh first wrote about “Handball” published in 1993; Nguyen Hong Quan has published a number of books such as “Handball Tactical Techniques” (1999), “handball training” (2000), “handball curriculum” (2002)...

Research on handball is still not much, especially some authors such as Pham Dinh Ban, Nguyen Trong Bon, Nguyen Xuan Quac, Truong Ngoc Tu... In which, Truong Ngoc Tu studied the issue of “Building a system of standards to assess the training level of handball-intensive students at the University of Physical Education and Sports” (2006). In that direction, Nguyen Xuan Quac mentioned another object with the topic “Research on the training level of national team women handball players after one year of practice” (2009). Selecting exercises to develop speed strength has also had many researches, such as: Nguyen Hai Duong (2009) with the title “Selection of a system of exercises to develop speed-strength for professional basketball students at the Danang University of Physical Education and Sports”. In addition, there is a similar research on the object as well as the content of the study, which is the research of Nguyen Trong Bon (2004), with the title “Research

on the application of exercises to develop speed strength for students specializing in handball at the University of Physical Education and Sports I"... The above research works are valuable documents that help the author to supplement and complete the content of this research.

3. Research methods

During the research process, we used the following main research methods: document analysis and synthesis; interview method; method of pedagogical examination; experimental method of pedagogy; statistical methods.

4. Research results

4.1. The concept of physical qualities

According to the views of Le Buu, Duong Nghiep Chi, and Nguyen Hiep, physical qualities are the characteristics, aspects and relatively separate parts of human physical fitness and are often divided into 5 basic parts: speed, strength, endurance, the ability to coordinate movements and flexibility. According to authors Luu Quang Hiep and Pham Thi Uyen, physical fitness is a physical activity that can develop different aspects of physical activity capacity and there are four main motor qualities: speed, strength, endurance and dexterity. Therefore, physical training in sports training is a matter of special interest to scientists, experts and coaches.

4.2. The concept of physical training

Physical training is a prerequisite for improving sports performance. However, in essence, the level of physical development depends on the structural states and functions of many organs and body systems. The process of training to develop physical qualities is also the process of perfecting the functional systems that play a major role in muscle activity. On the other hand, physical training for athletes is a process of professional education, mainly through a system of exercises aimed at perfecting physical capacity, ensuring athletes achieve the highest achievements in competition training.

The process of physical training must be based on the characteristics of the athlete's age group, the specific sport and use appropriate measures and means, so that physical training will be highly effective. Strength training is a continuous, regular and planned process that affects the athlete's body, which has profound effects on the nervous system, cardiovascular system, muscles as well as on the human internal organs. Of course, if you want to have excellent results in a sport, you must first have physical qualities and develop suitability for that sport. But other aspects should not be taken lightly such as: tactical technique, psychology, will... Normal physical qualities are divided into

5 basic categories: Speed, strength, endurance, the ability to coordinate movements and flexibility. But in training practice, the above physical qualities are often not expressed individually, but they have an interactive relationship with each other. For example, the high jump technique that throws the ball in the hand to block the goal is a technique that shows the power of speed, but it also contains the ability to coordinate movements, reflexes and the ability to process information from nerves. In fact, there are many opinions about physical training for athletes today. However, one author believes that "the process of physical training for athletes is aimed at strengthening the body's organ systems, improving their functional capacity, at the same time, the development of movement qualities of speed, strength, endurance, flexibility, dexterity".

Stemming from the above issues, the process of physical training for students and athletes includes: general physical training is the process of comprehensive development of physical qualities as well as different functional abilities to be not specific to a particular activity and it creates the necessary conditions to improve the effectiveness of specialized physical training.

Specialized physical training: to be an educational process aimed at developing and perfecting physical abilities corresponding to the characteristics of an intensive sport, with the task of developing to the maximum extent those abilities of athletes; specialized physical training aimed at consolidating and improving the working ability of the authorities, physical qualities suitable to the requirements of the chosen sport.

General fitness training: to be the foundation for professional fitness improvement. However, from the point of view of modern sports, it is not a general training process, but rather comes from the requirements of specialized physical training to choose appropriate means and methods.

The necessary professional physical training must be divided into two parts: basic professional physical training and basic professional physical training.

4.3. The concept of speed power

Speed power is power born in fast movements. In sports activities, there are many views on the quality of speed, strength and overall there are 3 points of view from a professional perspective as follows:

Speed power according to the old view of Verkhosanki: shows resistance to external resistance between 40 and 70% of maximum ability.

Speed power according to the view of Jurgen Hatman: the basic feature of speed power is the combination of speed power with external force (weight, tool weight...).

Speed power is the maximum effort capacity of a muscle to perform movements in the shortest amount of time with a certain amplitude.

Thus, it can be generalized that speed power is the power generated in fast movements.

4.4. Features of handball

Handball is a team sport, competing directly against each other. The main formation of each team consists of 7 people, all linked with the common goal of getting the ball into the opponent's goal. Therefore, the situations are developed alternately on both sides of the goal of each team. The process of the competition is determined by technique - tactics and physicality. During the competition, skillfully using their hands to lead, pass and throw the ball, the athletes also have to move flexibly to create space for teammates to finish. Therefore, during the competition, it created a lively and diverse range of techniques - tactics and increased the attractiveness of handball.

The competitive feature of handball is that the situation is always alternating on both sides of each other's goals, so it requires athletes to have a very fast movement speed to deploy a quick attack and quickly gather the formation to defend the area. Therefore, many times athletes have to operate with great capacity. The volume and intensity of movement in matches are always different and will not be equal for each athlete as well as for each team. That volume depends on the specific playing situation, influenced by the opponent's strength, tactical plan, physical level, technical-tactical, activeness of each player.

During the competition, the amount of movement of modern handball players is very large. In big matches, high-level athletes have to move on average from 4500-6500m. The total number of breakthroughs in attack and from attack to defense is up to 55 times. Moving at high speed combines the implementation of techniques - tactics, movement, passing, catching the ball and throwing the ball, so it requires athletes to have perfect physical and tactical skills to carry highly effective during competition. Handball is a sport of mainly non-cyclical activities and a sport of dynamic force activities of ever-changing intensity. That creates different situations on the field in each game moment. The sequential coordination between active and passive periods in a handball player's activity lasts from 3 to 20 seconds. The total pulse in the entire 60-minute match is up to 9000-11000 times. During a match, athletes usually lose 2 to 4 kg of weight.

In summary, the operational characteristics of handball are very diverse and complex. Therefore,

it is required that handball athletes have a very high level of skill - tactics and physical strength to be able to meet the amount of movement during the competition.

4.5. Assessment of the current speed of Male Handball Athletes at Danang University of Physical Education and Sports

During training, athletes are relatively fully trained in technique, tactics as well as physical strength. The situation of distribution of training time and strength training for male handball players is shown (Table 1) as follows:

Table 1. The situation of the training program to develop strength for male handball athletes at Danang University of Physical Education and Sports

TT	Contents	Number of periods	Rate %
1	Speed	4	10,00
2	Strength	12	30,00
3	Endurance	10	25,00
4	Flexibility	10	25,00
5	Dexterity ability	4	10,00
	Total	40	100,00

Table 1 shows the training program and organization of training to develop speed for male handball athletes at Danang University of Physical Education and Sports as follows:

- The time to teach speed is: 10,00%
- Strength teaching time is: 30,00%
- Speed endurance training time is: 25,00%
- Flexible teaching time is: 25,00%
- The time to teach dexterity is: 10,00%

Thus, it can be seen that the proportion of time spent on training to develop speed is not much, in the curriculum mainly focuses on teaching the qualities of strength, endurance and flexibility.

4.6. The initial situation of the male handball athlete at Danang University of Physical Education and Sports

In order to have a basis for evaluating the performance of the male handball athletes' test results on the exercise of rapid strength development, the study applied the selected tests to initially check the current situation of the research objects speed in 5 tests.

The results of the calculation of the composite indicators of the results of the pre-test (initial) test of 24 athletes divided into 2 groups: 12 athletes in the control group, 12 athletes in the experimental group, to be presented in Table 2.

Table 2. Initial situation check results of speed of two experimental and control groups of male handball athletes at Danang University of Physical Education and Sports

Order	Test	Experimental group			Control group			t _{calculate}	P
		\bar{x}	σ	Cv%	\bar{x}	σ	Cv%		
1	Run 30m XPC (s)	4.28	0.17	3.90	4.27	0.13	3.03	0.30	>0.05
2	Run 100m XPC (s)	13.63	0.41	2.98	13.61	0.42	3.05	0.22	>0.05
3	Lead of speed ball 30m (s)	4.79	0.22	4.60	4.74	0.23	4.77	1.87	>0.05
4	Lead the ball to the stakes 10m (s)	9.49	0.68	7.16	9.48	0.69	7.26	0.07	>0.05
5	Lead the ball through the stakes and throw the goal ball (s)	8.60	0.49	5.66	8.59	0.54	6.24	0.09	>0.05

Table 2 shows that: Before the experiment, the results of the two experimental and control groups were relatively equal and there was no statistically significant difference at the probability threshold $p > 0.05$ because there was $t_{calculated} < t_{table}$, this could be currently the male handball athletes at Danang University of Physical Education and Sports have a fairly high level of speed, but their achievements are only average.

4.7. Select and evaluate the effectiveness of exercises to develop strength for male handball athletes at Danang University of Physical Education and Sports

4.7.1. Research selection of exercises

- Basis of exercise selection: The process of determining the selection of exercises to develop

speed for male handball athletes at Danang University of Physical Education and Sports is conducted according to the following steps:

- + Based on practical requirements of training program.
- + Based on the level of practice and reference to professional handball material.
- + Based on practice and handball competition at Danang University of Physical Education and Sports.
- + Based on teaching and training methods.

At the same time, to determine the practical basis for the selection of exercises, the research has conducted indirect interviews (through interview forms) with 24 lecturers, experts, coaches who have been training at handball clubs. Thereby selecting 26 exercises, specifically presented in Table 3.

Table 3. Exercises to develop speed for male handball athletes at Danang University of Physical Education and Sports

Individual exercises	Coordination exercise	Game exercises – competition
1. Run 30m XPC	1. Two people compete for a goalball handball	1. Volleyball 6.
2. Lead the ball at maximum speed 15m	2. Movement select the drop point of the ball	2. Volleyball 10
3. Lead the ball to the stakes 25m	3. Coordinating toss the ball, turn and run to receive the ball	3. Who is faster game
4. Lead the ball through the stakes and throw the goal ball 30m	4. Pass the ball diagonally to a rectangle of length 25m	4. Game of winning flags
5. Run 30m zigzag	5. Practice in groups to move and throw a goal ball	5. Signal chase game
6. 3 pitching momentum	6. Exercises to stop a quick attack	6. Teamwork against chaperones
7. Speed running	7. Group training 2 against 3 (3 against 2)	7. Practice competition 1/2 yard, whole yard sân, cả sân 5x5, 6x6, 7x7
8. Run XP 10m fast on signal	8. Pass the ball and develop the ball situation	
9. Lead the ball at high speed and return to the original position	9. One against one in the specified area	
10. Follow the perimeter of the triangle on each side 20m		

4.7.2. Evaluating the effectiveness of exercises to develop speed for male handball athletes at Danang University of Physical Education and Sports

After 24 weeks of conducting the experiment, in order to see more clearly the effectiveness of

the system of exercises to develop speed for male handball athletes, the research evaluated the post-exercise results of 2 groups as the experimental group and the control group after the experiment, to be presented in detail in Table 4.

Table 4. Post-experiment test results on the speed of the two experimental groups and the control group male handball athletes at Danang University of Physical Education and Sports

Order	Test	Control group			Experimental group			T	P
		\bar{x}	σ	Cv%	\bar{x}	σ	Cv%		
1	Run 30m XPC (s)	4.21	0.13	3.00	4.16	0.13	3.13	2.75	<0.05
2	Run 100m XPC(s)	13.43	0.37	2.76	12.30	0.28	2.21	3.14	<0.05
3	Lead of speed ball 30m (s)	4.62	0.30	6.41	4.54	0.25	5.60	1.31	<0.05
4	Lead the ball to the stakes 10m (s)	9.20	0.48	5.24	8.89	0.49	5.50	2.86	<0.05
5	Lead the ball through the stakes and throw the goal ball (s)	8.41	0.55	6.49	8.18	0.48	5.87	1.99	<0.05

Table 4 shows the effectiveness of the experimental program on the system of speed development exercises over 24 weeks, from 2 groups with equal levels and there is no statistically significant difference with $t < t_{\text{bng}} = 1.96$ and $p > 0.05$, then through training the system of speed development exercises has an effective impact on the research objects, from which the achievement is significantly improved and the difference is statistically significant with $t > t_{\text{bng}} = 1.96$ and $p < 0.05$.

Thereby, the use of exercises that the research has chosen to apply and has been effective in developing the speed of male athletes Futs at Danang University of Physical Education and Sports.

5. Discussion

Sports activities and especially high-achievement sports always show the desire to reach the highest human ability. Therefore, human potential has been fully exploited to achieve the highest sports performance in competition. Physical training is a prerequisite for improving sports performance. However, in essence, the level of physical development depends on the structural states and functions of many organs and body systems. On the other hand, physical training for athletes is a process of professional education, mainly by a system of exercises aimed at perfecting physical capacity, ensuring that athletes achieve the highest achievements in competition training. In recent years, with the trend of developing speed power, we need to pay attention to the following aspects: Firstly, using extra weight to develop speed power; Secondly, the method of training

without extra weight; Thirdly, arrange and adjust the intensity and amount of exercise movement in speed strength training.

6. Conclusion

- The situation of using training exercises to develop speed for male handball players at Danang University of Physical Education and Sports shows that the coaches can provide exercises suitable for the training purposes and achieve highly effective in developing speed through competition performance.

- The research has selected 26 exercises which are divided into 3 groups which are: a group of 10 individual exercises; a group of combined exercises with 11 exercises; game exercise group – competes for 5 exercises.

Individual exercises

1. Run 30m XPC
2. Lead the ball at maximum speed 15m
3. Lead the ball to the stakes 25m
4. Lead the ball through the stakes and throw the goal ball 30m
5. Run 30m zigzag
6. 3 pitching momentum
7. Speed running
8. Run XP 10m fast on signal
9. Lead the ball at high speed and return to the original position
10. Follow the perimeter of the triangle on each side 20m

Coordination exercise

1. Two people compete for a goalball handball
2. Move select the drop point of the ball
3. Coordinating toss the ball, turn and run to receive the ball
4. Pass the ball diagonally to a rectangle of length 25m
5. Practice in groups to move and throw a goal ball
6. Exercises to stop a quick attack
7. Group training 2 against 3 (3 against 2)
8. Pass the ball and develop the ball situation
9. One against one in the specified area

Game exercises – competition

1. Volleyball 6.
2. Volleyball 10
3. Who is faster game?
4. Game of winning flags
5. Signal chase game
6. Teamwork against chaperones
7. Practice competition 1/2 yard, whole field 5x5, 6x6, 7x7

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NGHIÊN CỨU LỰA CHỌN BÀI TẬP PHÁT TRIỂN SỨC NHANH CHO NAM VẬN ĐỘNG VIÊN BÓNG NÉM TẠI TRƯỜNG ĐẠI HỌC THỂ DỤC THỂ THAO ĐÀ NẴNG

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Thông qua sử dụng phương pháp quan sát, phỏng vấn tọa đàm, phương pháp kiểm tra sự phạm và phương pháp toán thống kê, đề tài đã lựa chọn được 26 bài tập, trong đó có 10 bài tập nhóm, 11 bài tập phối hợp và 5 bài tập trò chơi - thi đấu để phát triển sức nhanh. Đồng thời đề tài cũng lựa chọn được 5 test đánh giá sức nhanh cho nam vận động viên bóng ném trường Đại học Thể dục Thể thao Đà Nẵng.

Từ khóa: Bài tập; Sức nhanh; Nam vận động viên bóng ném; Đội tuyển bóng ném.