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IMPROVING THE EFFECTIVENESS OF GENERAL PHYSICAL TRAINING METHODS FOR 13-14-YEAR-OLD HANDBALL PLAYERS

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ABOUT ARTICLE

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Abstract: This scientific study examines the role of general physical training in the preparation of young handball players. During the research process, a methodology developed by the author was applied to young handball players, and its effectiveness was demonstrated based on tables.

Introduction.

Physical education plays a crucial role in the comprehensive development of the younger generation, including their intellectual, moral, and physical growth. Therefore, the Law of the Republic of Uzbekistan "On Physical Education and Sports" emphasizes the importance of paying special attention to preschool children, school students, and university students. It is essential to properly distribute sports loads from early childhood, with a particular focus on developing general physical fitness [1,2].

Performing general physical exercises contributes to the improvement of movement control mechanisms. The motor center adapts to sending and receiving uniform impulses over an extended period. Regular long-term training leads to morphological and biochemical changes in muscles. The metabolic processes within them adjust according to the intensity of physical activity. During such training, changes occur in the autonomic organs, particularly in the cardiovascular and respiratory systems, improving thermoregulation. These processes are primarily controlled through neurohumoral regulation [5,6].

In developing general physical fitness, sports training methods include standard, variable, combined, circuit training, competition-based, and specialized general physical training, all adapted to the requirements of different sports and incorporating game-based techniques.

For 13-14-year-old students, developing general physical fitness at varying intensities is essential. During training sessions, general physical preparation accounts for 60% of the total training process.

Developing general physical fitness in handball contributes to improving game techniques and tactics. It establishes a foundation for mastering technical skills at a high level. Enhancing the level of general physical fitness includes:

Strengthening the cardiovascular system

Efficiently managing and conserving energy during functional system activities.

Maximizing the utilization of functional capabilities.

General physical fitness plays a crucial role in improving performance in handball by enhancing physical qualities required for the sport. Considering these factors, the development of general physical fitness in children remains one of the most pressing issues today.

Research Objective

To develop the general physical fitness of 13-14-year-old handball players through specialized exercises.

Research Tasks

To achieve the above objective, the following tasks will be carried out:

Utilizing relevant literature sources related to the topic.

Assessing the physical fitness levels of 13-14-year-old handball players.

Comparing and analyzing the performance of handball players after the experiment.

Research Object

Lessons and handball training sessions conducted with 13-14-year-old children.

Research Subject

Scientific methodological frameworks and tools applied to develop the general physical fitness of 13-14-year-old students.

Literature Review on the Topic

According to V.N. Platonov, the concept of general physical fitness refers to the athlete's level of comprehensively and harmoniously developed motor qualities.

When discussing general physical fitness and, in particular, the preparation of athletes, it is essential to develop motor qualities such as speed, strength, endurance, agility, and flexibility in an interconnected manner. In this regard, special emphasis should be placed on speed-strength qualities.

In handball, the execution of movement skills relies heavily on speed-strength, making it a crucial determining factor for performance.

In his book, Y.I. Portnikh emphasizes that after conducting long-term research on handball players of various ages and skill levels, he found a direct correlation between physical qualities, technical mastery, and competition performance. According to him, the more developed an athlete's physical qualities are, the more refined their sports mastery becomes [8,9,11,13].

The analysis of the aforementioned scientific literature underscores the significance of the chosen topic. Indeed, general physical fitness serves as the most crucial foundation for effectively shaping sports mastery in young handball players.

At the same time, the analysis of scientific data suggests that not every physical training process necessarily leads to the effective development of physical qualities or positively influences the formation of technical and tactical skills. On the contrary, in many cases, this is not guaranteed. Therefore, in the training process, the application of physical conditioning exercises must take into account each handball player’s age, the specific characteristics of the sport, their skill level, and genetic potential.

For this reason, the preparation of young handball players in sports training should consist of a targeted set of physical exercises.

According to Y.V. Verkhashansky's observations, the technical skills of participants in world championship sports events significantly declined during the course of the competition. This situation draws attention to the fact that these athletes' special endurance was developed to a high level. Therefore, it is evident that special endurance plays a crucial role in maintaining

the effectiveness of technical skills throughout long competitions. It is well known that general physical fitness, when developed, ensures effective formation [9,15,16].

According to I.P. Klusov, the development of general physical fitness is essential for handball players to perform special technical exercises even when significant fatigue effects are present over an extended period. General physical fitness is developed through the regular performance of high-volume exercises at moderate intensity, such as long-distance running, swimming, cycling, and similar activities [17,21].

V.Ya. Ignatyev and others recommended the following test exercises for assessing the physical qualities of handball players:

- Sprinting 30 meters from a standing start.
- Climbing a rope without using the legs (5 meters).
- Determining the muscle work coefficient of the arms, shoulders, waist, and legs.
- Vertical jump from a standing position.
- Running 2 x 800 meters.

The use of various equipment at high speeds. Pavlov Sh.K., Akramov J.A., Abdurahmonov F.A., and others, through their research, demonstrated that regular training over an extended period to develop speed-strength and special qualities can significantly improve handball players' technical-tactical skills and other abilities [22,24].

Klusov A.P. emphasizes that the future of sports, including handball, focuses on developing the anaerobic mechanisms of energy supply.

The method of multi-part training, with its various options, is likely to play a leading role. In this approach, certain components of the load, its duration, intensity intervals, rest periods, and the number of repetitions within other segments may vary.

Pavlov Sh.K., Abdurahmonov F.A., and Akramov J.A. recommend developing elements of strategic planning for training in the annual cycle based on the analysis of competition activity.

Research Methods

1. Analysis of scientific literature sources and summarization of scientific-methodological experiments.
2. Pedagogical observations and control tests.
3. Determination of general physical fitness.
4. Assessment of overall physical development.
5. Evaluation of physical qualities.

6. Analysis of experimental and observational results using mathematical-statistical methods.

Analysis of scientific literature sources and summarization of scientific-methodological experiments.

In physical education lessons for handball players aged 12-14, scientific sources and literature in the fields of pedagogy and physiology are analyzed and applied. In the development of general physical fitness, practical experience is summarized, and the experience of physical education teachers is identified and generalized through surveys.

I see you're asking for the translation. Here's the translation again:

During the analysis, the theoretical and practical exercises aimed at improving the general and special physical fitness of 13-14-year-old handball players were studied.

Organization of the Research.

The research was conducted with students from grades 6-8 of Secondary School No. 225 in the M. Ulugbek district of Tashkent city during the years 2023-2024.

Based on the collected data, the 6th "B" and 8th "B" grades of Secondary School No. 225 in the M. Ulugbek district of Tashkent city were included as control groups. Students from the 5th "B" and 8th "B" grades participated in the experiment, focusing on the development of specific general physical qualities (physical development, physical fitness).

The conducted scientific research was analyzed, the previously obtained results were compared, and the data obtained were processed using mathematical statistical methods.

Table 1

Development of endurance in young handball players in the experimental and control groups (1600 meters run) n=14

Classes	Groups	Tests	X±м	X±м	T	P
6	Experimental	1600 m (time in seconds)	7.01±0.33 7.01±0.63	6.13±0.48 6.48±0.11	1.51 4.81	>0.05 >0.05
7	Experimental group	1600 m (time in seconds)	6.78±0.04 6.48±0.04	6.05±0.15 6.37±0.06	4.86 1.57	> 0.05 >0.05
8	Experiment Control	1600 m (minutes:seconds)	6.45±0.03 6.45±0.03	6.00+0.16 6.23±0.05	2.8 2.03	< 0.05 >0.05

As seen from the table, the result of the standing long jump increased by 0.7 cm among students in grades 6-7, by 0.4 cm among students in grades 7-8, and by 9.06 cm among the experimental trials in grades 5-8.

In the control groups, the standing long jump increased by 30 cm in grades 5-6, by 1.02 cm in grades 6-7, by 1.82 cm among students in grades 7-8, and by 14.13 cm in grades 5-8.

In this test, the experimental group showed an increase in the number of jumps by up to 1.99 times in grades 5-6, while the result in grades 6-7 remained stable. Among students in grades 7-8, the number of jumps increased by up to 2.14 times. Overall, the number of jumps increased by up to 12.13 times in grades 5-8.

In the control group, the number of jumps increased by 0.98 times among students in grades 5-8, by 3.25 times between grades 6-7, and by 8.44 times between grades 7-8.

Table 2

Development of speed-strength qualities (initial and post-experiment indicators) n=14

Classes	Groups	Tests	X±м	X±м	T	P
6	Experiment	Standing long jump (meters)	162.75±0.80	171.05±0.95	5.02	<0.001
	Control		161.23±1.08	165.0±0.97	2.61	>0.05
7	Experiment	Standing long jump (meters)	165.01±1.28	178.0+1.29	5.07	<0.001
	Control		167.05±0.10	172.27+1.09	3.38	>0.05
8	Experiment	Standing Long Jump (meters)	175.6±1.67	184.5±1.93	2.97	>0.05
	Control		172.7±0.41	174.1+0.40	2.24	>0.05

Table 3

Number of jumps on the rope in one minute (Pre-experiment and post-experiment indicators) n=14

Classes	Groups	Tests	X±м	X±м	T	P
6	Experiment	Number of jumps in one minute on the trampoline (meters)	66+0.81	78±1.07	4.57	<0.01
	Control		64 ±0.85	73±1.01	3.36	<0.01
7	Experiment	Number of jumps in one	74±0.37	88+0.86	4.04	<0.01

	Control	minute on the trampoline (meters)	68±0.63	98±0.96	4.28	<0.01
8	Experiment	Number of jumps in one minute on the rope (meters)	91±0.97	108±1.06	3.46	<0.01
	Control		69.08±1.01	80±1.14	3.25	<0.01

The average result of the handball players in the "4x10 meter shuttle run" test, which indicates their agility, is 9.02 seconds.

All the situations inherent to the sport of handball (movements, technical-tactical skills, attacking and defensive strategies, as well as counter-methods) must be well-developed, and their execution should rely on speed and power. This is crucial for achieving victory in competitive matches.

4-table

Research results and indicators

Classes	Groups	Tests	X±м	X±м	T	P
6	Experiment Control	4x10 meter shuttle run	10.08+0.67 11.02+0.10	10.05+0.67 11+0.11	2.88 2.85	<0.05 <0.05
7	Experiment Control	4x10 meter shuttle run	10.66+0.67 10.07+0.12	10.04+1.88 10.05+0.18	2.51 2.61	<0.05 <0.05
8	Experiment Control	4x10 meter shuttle run	9.08+0.47 10.02+0.02	9.05+0.67 9.07+0.04	2.87 2.85	<0.05 <0.05

In the training process, focusing on the development of strength and types of exertion is one of the important conditions for preparing skilled handball players.

The strength qualities of 12-14-year-old handball players are monitored through special tests to assess their physical fitness.

5th Table

Research Results Indicators.

Classes	Groups	Tests	X±м	X±м	T	P
6	Experiment Control	1 kg ball throwing.	9.1±0.67 8.02±0.40	10.68±0.87 9.92±0.54	1.44 2.83	>0.01 <0.01

7	Experiment Control	1 kg ball throwing.	10.02±0.17 9.14±0.20	11.45+0.15 10.59±0.21	3.41 4.2	<0.05 <0.01
8	Experiment Control	1 kg ball throwing.	12.00±1.05 10.01 1.10	13.15+0.70 11.17+0.92	0.91 0.81	>0.05 >0.05

"The data provided in the 5th table."

The analysis of the obtained results showed that for the "throwing a 1 kg ball" test, the average score for the shoulder flexor muscle strength of the arms is 9.79 cm. In the experimental group of 5th grade students, the result was 9.79, while in the control group, it was 8.93.

In the 6th grade experimental group, the result was 10.28, while in the control group it was 9.92. In the 7th grade experimental group, the result was 11.45, while in the control group it was 10.59. In the 8th grade experimental group, the result was 13.15, while in the control group it was 11.17. These results indicate that in the experimental group, the improvement was 3.36 cm, in the control group it was 2.24 cm, and the difference between the experimental and control groups was 1 meter and 2 cm.

Speed. (Indicators before and after the exercises).

Handball players' speed is their ability to perform certain actions and techniques in the shortest possible time. Without developing the quality of speed well, it is impossible to achieve high results in handball. A player who moves faster than their opponent, even by a fraction of a second, will have a significant advantage. 4o mini

A handball player's speed depends on several factors, including the agility of their nervous system, their ability to sense subtle changes in the opponent's movements, and how well they are able to quickly assess and correctly evaluate situations that arise during the match. It is also closely related to their skill in performing tactical actions accurately and on time (Pavlov Sh., Akramov Zh., Abdurakhmanov F.; "Handball" Textbook, 2005).

In order to assess the speed of athletes, a 30-meter sprint test is applied. The analysis of the obtained results showed that the average speed indicator for handball players is 10.01 seconds, and the control group showed an improvement of 22%. There is no statistical difference between the control and experimental groups.

The research results indicators.

Table 6

Classes	Groups	Tests	X±м	X±м	T	P
6	Experiment	60 meters run.	9.0610.11	9.03±0.06	1.15	<0.01
	Control		10.05±0.66	10.03±0.83	2.89	>0.05
7	Experiment	60 meters run.	9.05±0.38	9.03±0.78	3.88	<0.001
	Control		10.02±0.07	10.00±0.68	4.52	<0.01
8	Experiment	60 meters run.	8.9±0.34	8.7±0.58	3	<0.01
	Control		9.07±0.27	9.04±0.45	4.32	>0.05

Conclusions

Here is the translation:

1. According to the analysis of the literature, general physical training indicates that the development of physical qualities in young athletes in a well-rounded and harmonious way leads to improved results in sports.

2. When developing the general physical training of handball players, the development of endurance under maximal load at 75% speed was most significant at the age of 13-14 for boys and 10-13 for girls.

3. In endurance training, performing maximum power at repeated intervals (2-10 minutes) showed that the experimental group's results improved significantly with a statistical difference of 2.8 seconds, $p < 0.001$.

4. In developing speed-strength qualities, using dynamic tension methods, such as performing exercises at maximum speed with 30% added weight, proved to yield significantly better results.

5. Using active, slow, and mixed methods to train agility resulted in improved performance in the experimental group, with results improving at a statistically significant level of 2.97-3.25, $p < 0.01$.

6. For 12-14-year-old handball players, using the re-strengthening method during training led to a high level of development of strength.

7. The training methods used for developing speed did not show any statistical difference in the 6th grade, but in the 7-8th grades, there was a statistically significant improvement.

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