METHOD OF APPLICATION FOR A LARGE NUMBER OF BALLS, AS AN EFFECTIVE FACTOR FOR LONG-TERM TRAINING OF HIGHLY QUALIFIED TABLE TENNIS ATHLETES

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Abstract: The modern system of training table tennis players is a complex, multifactorial process, including goals, objectives, means, methods, organizational forms, material and technical conditions, etc. During the last years, along with the use of traditional methods in table tennis, the method of working with a large number of balls has become widespread. The object of research is the theory and methodology of long-term training for table tennis, based on the use of a large number of balls. The purpose of the research is to improve the methodology of long-term training for table tennis based on the use of a large number of balls.

Keywords: methodology, training process, table tennis, long-term training, large number of balls.

1. Introduction

One of the most important trends in the development of modern sport is the search for new, more efficient means and methods of training. The modern system of training table tennis players is a complex, multifactoral process, including goals, objectives, means, methods, organizational forms, material and technical conditions, etc. Managing this process aims to optimize and improve the effectiveness of training and competitive activity in all its manifestations, which contributes to the achievement of higher sports results [Barchukova G.V., 1990].

Over the past years, in table tennis, along with the use of traditional methods, the method of working with a large number of balls (LNB) was widely disseminated. The increased interest of specialists in this method is explained by its universal nature, the possibility of using athletes of different ages and skill levels at

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various stages of training, and efficiency in solving the whole variety of training tasks. According to Russian and foreign experts, the LNB method can be equally effective at all stages of sports improvement. However, up to now there is no broader theoretical and methodological justification for the use of the LNB method in the training process, which greatly limits the potential possibilities and effectiveness of this method [Komanov V.V., 2014].

2. Material and Methods

The object of the research - the theory and methodology of improving the technical elements of highly qualified table tennis athletes, through the use of a large number of balls, in the process of long-term training.

The subject of the research - the methodology of applying a large number of balls for highly qualified table tennis athletes, in the process of long-term training.

The purpose of the research - improving the methodology of long-term training of highly qualified table tennis athletes, by applying a large number of balls.

Objectives of the research:
1. Improving the methodology of long-term training of highly qualified table tennis athletes.
2. Identifying the peculiarities of motor skills in the long-term training process in table tennis.
3. Development of an experimental training methodology in table tennis, by applying a large number of balls.

Hypothesis of the research. It is assumed that the method of working with a large number of balls will increase the effectiveness of the training process of long-term training in table tennis by increasing the motor density of classes.

As is known, the LNB method was first proposed for use in the training process in the early 60s in the women's volleyball team of Japan. Specialists of China were the first to evaluate the possibility of applying this method in table tennis and, taking into account the specifics of their activities, they used it in the training of the national team of tennis players. Since the mid-60s, the LNB method that has received creative development has been widely used in China at all stages of sports training: from initial specialization to the highest achievements level [Ushinsky G.V., 1999].

This method consists in the fact that a special basket is placed next to the table, in which from 100 to 200 balls are placed (or an apparatus for shooting balls is installed), and the athlete continuously performs strikes of varying difficulty, and each ball can be used once, and several times. Thus, the time required for picking up balls is reduced (it is estimated that when practicing with one ball for 10 minutes, practical exercises take only 3-4 minutes, the rest of the time is spent picking up the ball), increasing the number of strikes, conducted per unit of time [Ushinsky V.G., 1997]. That is, the LNB method is a variation of the method of playing with a sparring partner, however, the partner does not hit the balls, but throws them with a certain pace and in certain directions. The advantages of this method are its mobility and flexibility, the ability to perform any series of strikes without taking into account the mistakes

of both the player and the partner throwing balls [Barchukova G. V., Bogushas V. M., Matyshin O. V., 2006].

As noted Ushinsky V.G. [1999], the LNB method is implemented using the following methods: with the participation of the coach; independently by the athlete (for example, improving the quality of performance of the submission); with the participation of the partner (for example, improving various ways of receiving the ball or counterattacking elements);

using a robot training-simulator. It should be noted, however, that recently in China a negative attitude has been defined to the use of a robot training-simulator in the training process, primarily based on its psychological inconsistency with the competitive requirements;

LNB + one ball game, that is, the introduction of a new ball into the game occurs only after the end of the point draw.

The experience of Chinese experts indicates that the LNB method does not replace, but complements the training with one ball, and the distribution of time for tasks with a large number of balls and with one ball in proportional terms should be 1: 2, maximum 1: 1.

The application of the method of a large number of balls shall carry according to the development of athletic side during the annual (or semi-annual) training cycle. The content of the work and the load are determined by the purpose and objectives of a specific period and stage of training.

This method is good because thanks to him are further strengthened the muscles, stabilizes blood pressure, normalizes blood circulation and other vital systems of the human body. Also, tracking while training with LNB - an excellent exercise for the eyes [Ushinsky V.G., 1999].

Ushinsky V.G. [1999] notes that the method of working with LNB has a positive side, because it is a technical training of the athlete. At a high level, could work out tactical combinations, techniques, bundles-two-ways, three-ways, together with a coach against a partner, and an excellent training for pitches.

According to Barchukova V.G., Bogushas V.M., Matishina O.V. [2006], each method is unconventionally used, but is constantly adapted to specific requirements, due to the characteristics of sports training. When selecting methods, it is necessary to ensure that they strictly comply with the tasks set, general didactic principles, as well as special principles of sports training, age and sex characteristics of athletes, their qualifications and training.

According to Barchukova G.V. and other authors [2006], the main task of technical training in table tennis, is an accurate and correct study of main techniques. The solution of the objective set in the training process helps the method of working with LNB.

In the pedagogical experiment to test the effectiveness and peculiarities of the LNB method in the training process at the stage of long-term training in table tennis, a 30-second test was used, thanks to which we determined the level of technical training of highly qualified tennis players and an indicator of stability.

3. Results

Table 1

Indicators of the number of errors in the 30-second test of both groups before the experiment

Group	n	No. of combination	δ	M	M
Experimental	14	1st	1,3	4,3	0,4
		2nd	1,3	5,7	0,4
		3rd	0,97	5,2	0,3
Control	14	1st	1,3	4,2	0,4
		2nd	1,6	5,9	0,5
		3rd	0,97	5,5	0,3

Table 2

Indicators of the number of errors in the 30-second test of both groups after the experiment

Group	n	No. of combinations	δ	M	m	T	p
Experimental	14	1st	0,97	2,5	0,3	1st combination	<0,05
		2nd	0,97	3,2	0,3	2,14	<0,05
		3rd	0,97	3,1	0,3	2nd combination	<0,05
Control	14	1st	0,97	3,4	0,3	2,38	>0,05
		2nd	0,97	4,2	0,3	3rd combination	>0,05
		3rd	0,65	4,0	0,2	2,5	>0,05

Analysing the performance of technical methods of highly qualified tennis players, it can be said that in the experimental group, the subjects performed the technical elements more clearly and correctly than in the control group.

Differences between the obtained arithmetic mean values in the experiment (Table 2) are considered to be reliable, which means that there are enough grounds to consider the method of working with the LNB as effective in the training process of long-term training.

Thus, Table 2 shows how the average index of number of errors changed following the pedagogical experiment in the first combination task.

The initial indicator of both groups is at the same level. The final data of the average index of number of errors in the experimental group decreased by 1.8 (errors), in the control group - by 0.8 (errors).

Consequently, the indicator of the stability of the game in trimming in the experimental group increased by 41.9%,

while in the control group it increased by 19.1%. So, tennis players in the experimental group began to play in the trimming more stable than those involved in the control group by 22.8%.

We can also note the change in the average index of number of errors after the research in the second combination in the experimental and control groups.

In the second combination task, the average index of error in the experimental group decreased from 5.7 (errors) to 3.2 (errors) or decreased by 2.5 (errors). In the control group - from 5.9 to 4.2 (errors), that is, decreased by 1.7 (errors). In percentage terms, the indicator of the stability of the game of rollbacks in the experimental group increased by 43.9%, in the control group - by 28.9%. Thus, practitioners who train using the LNB method began to play rollbacks to the right and left 15% more accurately than tennis players who used one ball in their training.

In the 3rd combination task, the average number of errors after the experiment in the experimental group was 3.1 (errors), and before the research it was 5.2 (errors), which means it decreased by 2.1 (errors). In the control group, the average decreased by 1.5 (errors), that is, before the experiment it was 5.5 (errors), after the experiment it was 4.0 (errors). This means that the stability of the game on the right of the tennis players of the experimental group after conducting a pedagogical experiment increased by 40.4%, and this is 13.1% more than the stability of the athletes in the control group, which was 27.3%.

The content of the LNB method consists in the continuous delivery of balls with a certain speed, force, direction and rotation. This method allows:

– increase the number of strikes per unit of time, simultaneously increasing the motor density of training;
– control the speed, strength, direction and rotation of the ball. Depending on the level of athletic side, the content and magnitude of the impact can be adjusted in accordance with the required effect;
– increase the load parameters (intensity and volume), which is important from the point of view of education of physical qualities. This requires strict control over the proposed load;
– differentially set and solve training tasks, improve the concentration of attention of the athlete.

4. Conclusions

The characteristics of motor activity in table tennis constitute high demands on the speed of movement, dexterity, endurance, ball feeling, perfected gaming thinking, good reaction, ability to make quick decisions, sustainable nervous system, and unlimited perseverance and diligence.

In the course of the experimental work, we determined a statistically credible increase in test results in the experimental group, and for the control group it was insignificant, which confirms our assumption about the effectiveness of using the LNB method in the process of long-term training of highly qualified table tennis athletes.

In the first combination task, thanks to the method of working with LNB, the stability in trimming increased by 22.8%, in the second combination tennis players began to play rollbacks to the left more precisely by 15%, rollbacks to the right by 27.3% than tennis players who used one ball in their training.

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