



Application of technical devices at the initial stage of training in technical techniques in volleyball

Cieślicka M.¹, Kozina Zh.L.², Muszkieta R.³, Zhigaeva M.V.², Kazina V.V.⁴, Safronova T.N.⁴, Kudryavtsev M.D.^{4,5,6}

¹Kazimierz Wielki University in Bydgoszcz, Poland

²H.S. Skovoroda Kharkiv National Pedagogical University, Ukraine

³Nicolaus Copernicus University in Toruń, Poland

⁴Siberian Federal University

⁵Reshetnev Siberian State University of Science and Technology

⁶Krasnoyarsk State Pedagogical University of V.P. Astafyev

Аннотация. Цеслицка М., Козина Ж.Л., Мушкетера Р., Жигаева М.В., Казина В.В., Сафронова Т.Н., Кудрявцев М.Д. Применение технических устройств на начальном этапе обучения техническим приемам в волейболе. Цель работы - разработать и обосновать методику начального обучения техническим приемам в волейболе с применением технических устройств юных волейболистов 11-12 лет. Материал и методы. Всего в данном исследовании приняли участие 42 юных волейболиста 11-12 лет, из них - 22 спортсмена контрольной группы и 20 спортсменов экспериментальной группы. Для выявления основных трудностей в освоении технических приемов в волейболе и основных методик, применяемых при разучивании приемов было проведено анкетирование тренеров и спортсменов. Всего было опрошено 15 тренеров и 42 юных спортсмена 11-12 лет. Для выявления эффективности применения тренажеров на начальном этапе обучения волейболу применялись оценка эффективности приема мяча по количеству принятых и потерянных мячей и по экспертной оценке. Педагогический эксперимент проводился с целью выявления эффективности совместного применения тренажерных устройств «Подвесные мячи», «Блок обручей», «Обруч на шесте», «Замковый держатель», «Закрывающая сетка» для начального обучения технике приема мяча. Результаты. Выявлено, что тренеры и спортсмены по-разному отмечают наибольшие трудности, связанные с изучением технических приемов волейбола. Тренеры отметили, что самым большим препятствием является недостаток технической подготовленности, спортсмены рядом с недостаточностью техники отмечали страх перед болевыми ощущениями при приеме мяча. После проведения эксперимента большинство спортсменов (96,8%) экспериментальной группы, отмечали наличие страха болезненных ощущений при приеме мяча, отметили практически полное исчезновение подобных опасений, что не оказалось характерным для спортсменов контрольной группы. Показано, что применение тренажеров положительно сказывается на качестве выполнения технических приемов волейбола. Выводы. Показано, что применение тренажеров и интерактивных технологий является эффективным, целесообразным, надежным, достаточно доступным в применении и простым в изготовлении средством для начального обучения техническим приемам в волейболе.

Цеслицка М., Козина Ж.Л., Мушкетера Р., Жигаева М.В., Казина В.В., Сафронова Т.Н., Кудрявцев М.Д. Застосування технічних пристроїв на початковому етапі навчання технічним прийомом у волейболі. Мета роботи – розробити та обґрунтувати методику початкового навчання технічним прийомом у волейболі із застосуванням технічних пристроїв юних волейболістів 11-12 років. Матеріал і методи. Усього в даному дослідженні взяли участь 42 юних волейболіста 11-12 років, з них – 22 спортсмена контрольної групи і 20 спортсменів експериментальної групи. Для виявлення основних труднощів в овоєнні технічних прийомів у волейболі й основних методик, застосовуваних при розучуванні прийомів було проведено анкетування тренерів і спортсменів. Усього було опитано 15 тренерів і 42 юних спортсмена 11-12 років. Для виявлення ефективності застосування тренажерів на початковому етапі навчання волейболу застосовувались оцінка ефективності прийому м'яча за кількістю прийнятих і втрачених м'ячів та за експертною оцінкою. Педагогічний експеримент проводився з метою виявлення ефективності спільного застосування тренажерних пристроїв «Підвісні м'ячі», «Блок обручів», «Обруч на жердині», «Замковий тримач», «Закрита сітка» для початкового навчання техніці прийому м'яча. Результати. Виявлено, що тренери і спортсмени по-різному відзначають найбільші труднощі, пов'язані з вивченням технічних прийомів волейболу. Тренери відзначили, що найбільшою перешкодою є недовідок технічної підготовленості, спортсмени поряд з недостатністю техніки відзначали страх перед болючими відчуттями при прийомі м'яча. Після проведення експерименту більшість спортсменів (96,8%) експериментальної групи, що відзначали наявність страху болючих відчуттів при прийомі м'яча, відмітили практично повне зникнення подібних побоювань, що не виявилось характерним для спортсменів контрольної групи. Показано, що застосування тренажерів позитивно позначається на якості виконання технічних прийомів волейболу. Висновки. Показано, що застосування тренажерів та інтерактивних технологій є ефективним, доцільним, надійним, досить доступним у застосуванні і простим у виготовленні засобом для початкового навчання технічним прийомом у волейболі.

Cieślicka M., Kozina Zh.L., Muszkieta R., Zhigaeva M., Kazina V.V., Safronova T.N., Kudryavtsev M.D. Application of technical devices at the initial stage of training in technical techniques in volleyball. The purpose of the work is to develop and substantiate the methodology of initial training for technical techniques in volleyball with the use of technical equipment for young volleyball players 11-12 years old. Material and methods. In total, 42 young volleyball players of 11-12 years old participated in this study, of which 22 were athletes of the control group and 20 athletes of the experimental group. In order to identify the main difficulties in mastering technical techniques in volleyball and the main techniques used in studying techniques was conducted questioning of coaches and athletes. In total, 15 trainers and 42 young athletes aged 11-12 were polled. To determine the effectiveness of the use of simulators in the initial stage of volleyball training, the evaluation of the effectiveness of the ball in the number of balls accepted and lost and expert evaluation. The pedagogical experiment was conducted with the aim of identifying the effectiveness of joint use of the gym equipment "Hanging balls", "Hoops block", "Hoop on the pole", "Lock holder", "Closed net" for the initial training of ball technique. Results. It is revealed that coaches and athletes in different ways note the greatest difficulties associated with the study of technical techniques of volleyball. Trainers noted that the greatest obstacle is the lack of technical preparedness, athletes along with the lack of technology noted fear of painful sensations when taking the ball. After the experiment, most of the athletes (96.8%) of the experimental group, who noted the fear of pain in the reception of the ball, marked the almost complete disappearance of such fears, which was not characteristic for athletes of the control group. It is shown that the use of simulators positively affects the quality of performance of technical methods of volleyball. Conclusions. It has been shown that the use of simulators and interactive technologies is effective, expedient, reliable, affordable and easy to manufacture as a means for initial training in technical techniques in volleyball.

Ключевые слова: акробатика, координационные способности, развитие, учащиеся средних классов, физическая культура.

волейбол; тренажеры; спортсмен; техника; навчання

volleyball; simulators; sportsman; machinery; teaching.



Introduction.

Volleyball is one of the most popular sports games in the world (Rabaz, F.C., Castuera, R.J., Echeverria, C.F., Silva, & Arroyo, 2015; Millan & Borda 2015; Podstawski et al. 2015). It fully develops, and at the same time allows you to have a good rest. Not for nothing this is the most common game on beaches in holiday homes. But volleyball is also an Olympic sport, requiring possession of complex equipment, tactics, high physical training. These requirements provide high requirements for the methodology of training volleyball technology using non-lethal means, an individual approach, improving the structure of the training process (Jurkojc, Michnik, & Czapla, 2017; Kozina et al., (2005 -2015), Millan-Sanchez, Rabago, Espa, 2017; Morales, Lorenzo, Lopez, & Cevallos, 2017; Paulo, Zaal, Fonseca, & Araujo, 2016; Boichuk, Iermakov, & Nosko, 2017). One of the most topical issues of volleyball training is the selection of effective training methods that allow the training of top-notch players Rabaz et al. (2015), Santos et al. (2016), Popov (2014), Fernandez-Echeverria, Gil, Moreno, Claver, & Moreno (2015), Cheng, X. N., Ikoma N., Honda, M., Ikenaga, T., & Ieee. (2017), Claver, Jimenez, Gil-Arias, Moreno, & Moreno (2017), Gonzalez-Silva, Fernandez-Echeverria, Claver, F., Gil-Arias, & Moreno (2017).

In connection with this, the special relevance of training methods, which allow the most effective, fast, accessible enough to achieve high-quality possession of all techniques of technology, and in the first place - precision-targeted. Accurate actions are key in all sports games, including - and in volleyball Podstawski, et al. (2015), Jurkojc, Michnik, & Czapla, (2017). Particular attention is paid to the initial stage of training in technical techniques in volleyball. Among the means of training, one of the most important is the use of special technical devices. In the initial training simulators are rarely used.

Millan, & Borda (2015) has shown that, unlike the traditional mini volleyball training plan, learning based on the gameplay method and the use of adapted materials facilitates the training of technical elements in volleyball.

However, scientific justification of the effectiveness of the use of simulators for initial training in technical techniques in volleyball at this stage is not enough.

In this study, the hypothesis that the use of simulators in the initial stage of the training of volleyball technique will enhance the effectiveness of the training process of young athletes.

Communication of work with scientific programs, plans, themes.

The study was conducted according to:

- research work, which was financed from the state budget of the Ministry of Education and Science of Ukraine for 2013-2014. "Theoretical-methodical bases of application of information, pedagogical and medico-biological technologies for formation of a healthy way of life" (State registration number 0113U002003)

- research work, which was financed from the state budget of the Ministry of Education and Science of Ukraine for 2015-2016. "Theoretical-methodical bases application of means of information, pedagogical, medical and biological orientation for impellent and spiritual development and formation of a healthy way of life" (State registration number 0115U004036)

- research work, which is funded by the state budget of the Ministry of Education and Science of Ukraine for 2017-2018. "Theoretical-methodical bases of application of information, medico-biological and pedagogical technologies for realization of individual physical, intellectual and spiritual potential and formation of a healthy way of life" (State registration number 0117U000650).

The purpose of the work is to develop and substantiate the methodology of initial training for technical techniques in volleyball with the use of technical equipment for young volleyball players 11-12 years old.

Objectives of the study:

1. To determine the state of the issue on the issue of initial training in technical techniques in volleyball according to modern literature

2. Identify the main difficulties for trainers and athletes that arise during the training of volleyball ball in the training process of young volunteers 11-12 years old.

3. Develop a methodology for initial training in technical techniques in volleyball with the use of technical devices.

4. To determine the effectiveness of the application of the developed methodology of initial training techniques to technical techniques in volleyball with the use of technical devices in the training process of young volleyball players.

Material and Methods.

Participants

In total, 42 young volleyball players of 11-12 years old participated in this study, of which 22 were athletes of the control group and 20 athletes of the experimental group, the average height of which was



152.3 ± 5.2 cm, the average weight was 39.01 ± 6.5 kg

Organization of research

Experimental studies were carried out on the basis of CSF number 75.

Questionnaire

In order to identify the main difficulties in mastering technical techniques in volleyball and the main techniques used in studying techniques was conducted questioning of coaches and athletes. In total, 15 trainers and 45 young athletes 11-12 years old were interviewed.

Questionnaire for identifying difficulties in mastering the reception of the ball

1. What do you (your students) do most of all interfere with the development (refinement) of the ball reception? (Need to emphasize.)

- Fear of the ball (painful sensations when taking the ball)

- lack of ability

- lack of reaction

- lack of speed of movement

2. How do you master the ball reception?

(Need to emphasize).

- by repeated repetition

- directly in the game

- with the help of the target instructions when performing the exercise

- using the technique of viewing the ball in the

leading volleyball players of the country and the world.

- with the use of simulators

- other methods

After conducting a pedagogical experiment, a repeated questionnaire was conducted in order to identify the subjective attitude of coaches and athletes to the methodology of the use of simulators for learning to receive a ball in volleyball. The second questionnaire included 2 questions:

1. Does the use of simulators to master the technique of ball adopting?

2. (For those who noted that the development of the ball prevents the fear of painful feelings arising from collision with the ball)

Did the fear of taking the ball disappear?

Method of control of the effectiveness of technical techniques in volleyball

The control of the effectiveness of the ball was conducted according to the method used in sports schools for volleyball in Ukraine and Russia. To do this, the ball was played by one of the players or a coach in a gym hoop that was at a height of 150-180 cm from the floor. The athlete taking the ball was located at a distance of 3-5 m from the hoop. The number of balls received from 20 innings was determined.

Method of expert evaluation of ball technique

The technique of receiving the ball was evaluated by four experts - volleyball coaches. The evaluation was conducted on a 12-point system. As a quantitative characteristic, the sum of points set by all four experts was used.

Pedagogical experiment

The pedagogical experiment was conducted with the aim of identifying the effectiveness of joint use of the gym equipment "Hanging balls", "Hoops block", "Hoop on the pole", "Lock holder", "Closed net" for the initial training of ball technique. To do this, two groups of initial training of young volunteers 11-12 years old, identical to the experiment, trained in general on similar techniques. However, the control group did not use simulators to study the technique of receiving the ball, and in the experimental group for training techniques for receiving the ball used simulators. The use of simulators was conducted taking into account the methodological recommendations of specialists.

In order to increase the effectiveness of the process of mastering the reception of the ball used gym equipment.

Hanging balls (fig. 1) (this simulator was in the material and technical equipment of the Youth School № 12). It helps the beginners to determine the point of contact of the hand with the ball when transmitting from above, at the reception from the bottom, and especially when taking the ball with falling and jumping gear.

To improve the quality of receiving the ball and develop the ability to perform high-speed transfers, a special device for hanging balls is used (Fig. 3.1). It helps to stabilize the flight path slightly, as well as to avoid frequent falls of the ball. In special brackets at a height of 1 m from the floor are mounted rods, located at a distance of 50-60 cm from the wall. On the rods loose "ride" rings, which with the help of a rope hanging balls. The height of the suspension of balls from the floor is regulated depending on the growth involved. On a rod you can simultaneously place 2-3 goals. Another option for using hanging balls is shown in Fig. 1.

Along the cord or cable at a distance of 1.5-2 m from each other hang 4-5 volleyball balls. The ends of the cable at a certain angle (for different positions of the balls from the floor) are attached to stretching volleyball nets.

The simulator will allow to conduct the process of training and improvement of reception and transfer from below with two hands in place, after moving; in the fall with a rollover on the back,



receiving from the bottom of one and two hands no place, in the fall, falling on the chest and thigh.



Fig. 1. Trainer "hanging balls" (source: Internet)

Suspended balls on shock absorbers

The rubber shock absorber is attached one end to the ball, and the other - to the bracket of the basketball ring, hinged crossbar, etc. The rubber shock absorber can be replaced by a rope to help beginners determine the point of contact of the hand with the ball at the upper transfer, when receiving from the bottom and especially when taking the ball in the fall and during the jump.

This simulator is used to study and improve the strike attack: selecting the correct run and selecting the place for repulsion, as well as help with the development of ball hit ball technology in place.

The simulator can also be used for training and improving the reception of the ball in the fall on

the thigh and back. You can apply hanging balls under a grid, using for this its lower cable: after moving from the line of attack to the middle line in the stand of the volleyball player on the curve near the grid to take the ball with a roll, then the same - on the other side of the grid.

Block of hoops

Four nylon metal gymnastic hoops 80 cm in diameter at a distance of 120 cm each other fasten with a thin kapron cord and insulating tape to two kapron ropes in a thickness of 8 mm, located in parallel. On both sides, the ropes are hooked to volleyball racks, the height of which can be adjusted.

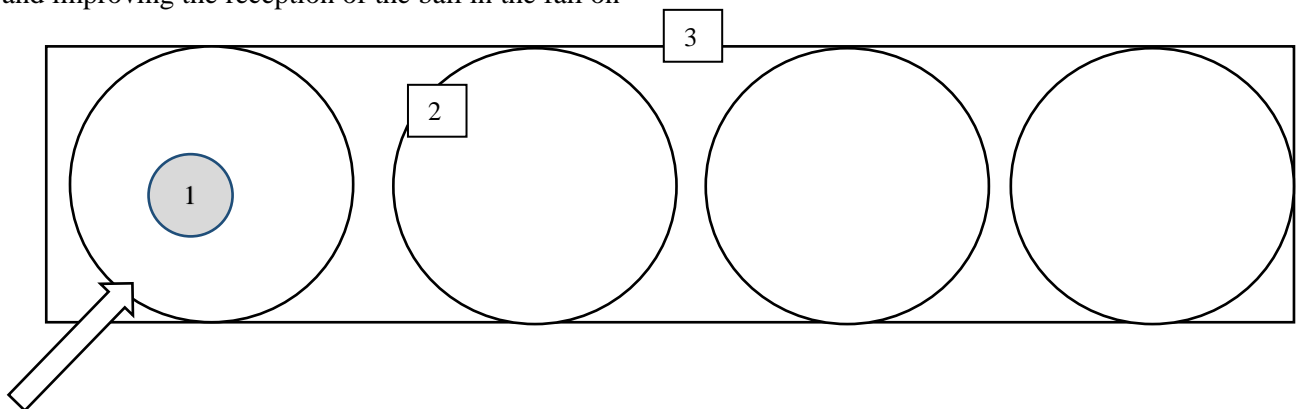


Fig. 2. Trainer "Block of hoops" for training technical techniques in conjunction with accurate transmission (source: author's picture):

- 1 - ball;
- 2 - hoops;
- 3 - block for mounting hoops

With this simulator, you can do the following exercises to teach the transfer with two hands from above and improve it:

1. Ball transfers in pairs: one performs the transfer over the hoop, the other - in the hoop.
2. Ball transfer in a hoop, fixed at different heights.
3. Transfer the ball with two hands from below to the hoop.

4. Transfer the ball to the hoop, standing in columns on the various sides of the playground. After the transfer, the player who has performed moves to the end of his column.

5. Standing in pairs: one partner performs a ball transfer with two hands on the top in a hoop, the second - reception with two hands from the bottom above him, then transfer the ball with two hands from the top to the partner's hoop, etc.



6. Ball transfers in pairs in motion along the pairs of hoops: one performs the transfer with two hands above the hoops, the other - in a hoop.

7. Transfer the ball with two hands from the top to the hoop, sitting on the floor.

Similarly, with the help of the block of hoops, you can perform other exercises: interversions in the hoops, climbing through the hoops, throwing the ball to the goal, etc.

Wire on a pole

This simple device can be quickly installed and cleaned. The zeper is stretched through the meshes of the grid, and the ring serves as a target for working out ball gears for accuracy.

Exercises for the development of the accuracy of the transfer and reception of the ball

1. Volleyball is lined up in a column at a distance of at least 3 m, and then 6 m from the hoop. After transferring a teacher (coach) or partner, they send the ball in the ring.

2. Athletes are divided into three groups. The first numbers perform a serving, the second take it and pass the ball to the third, who is in zone 3, who are guiding him in a ring suspended on a grid in zone 2 or 4.

3. Athletes are divided into two groups. The first numbers perform a serving, and the second,

taking the ball, try to get them in the ring, hung on the grid in zones 2, 3, 4. Dosage exercises are adjusted depending on the flight range of the ball and the way of its reception and transmission.

4. The players are divided into pairs and are located in zones 2 and 4. A player from zone 4 performs a two-handed transfer from the top to the partner, the one in turn - an attacker on the partner to whom the transfer was addressed, and he takes the reception back to the player in the zone 2, then the one performing the role of connecting, passes the ball to zone 3 or 4, where the rings are.

5. The players are in zone 6, connecting - in zone 3. Players perform in turn the transfer of the ball with two hands above the connector that directs the ball either to zone 4, or transfer with two hands from above - so for head in zone 2, where the rings are located.

Lock holder

By the end of the pole with the help of a carbine, a leather strap with a lock, which attaches to the lacing of the ball, is fastened. The lock is made of steel wire. For this purpose, you can use a clamping clip for curtains, linen cloths, and the like. Exercises with this simulator allow you to correctly perform the shock movement and coordinate movements of hands, trunk and legs.

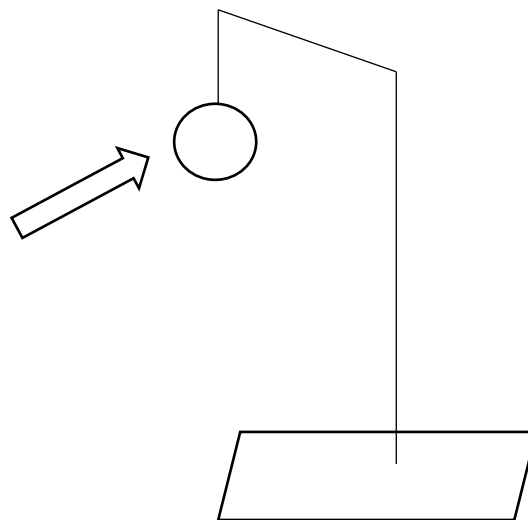


Fig. 3. The simulator "The lock holder" for training technical techniques in combination with the attacking blow (source: author's picture)

The technology of improving the technique of ball possession and the technique of movement in volleyball with a closed grid

Admission is one of the main technical elements of the volleyball game. The quality of its performance (probably 50%) depends on the success of the game team in the attack. Despite the apparent

simplicity of this element (for example, in comparison with the attacker's blow), the ability to correctly and consistently receive the feed comes to players with only a great deal of experience. And the real skill in this case reach units! This is because the quality of the reception depends on a number of factors: from the ability of the host player to guess



the actions presented, even before submission, exemplifies its character and direction (anticipation); from the ability of the receiving player to immediately determine the endpoint of its trajectory and the speed of its movement to this point immediately after submission; from the correct position of the legs, hands and body of the host player at the time of contact with the ball.

The proposed training technique is directed primarily to one of the listed elements, namely: the development of a player's ability to move quickly to the point of reception of the feed. The essence of the technique is that the various feeding exercises are performed in a completely closed grid, which makes the player submitting, virtually invisible to the host. To do this, use a dense opaque cloth, width 2 meters and a length of 9 meters, at the top of which are sewn sutures, with a step of 1 meter. These cloth ties during the training are tied to the top of the net. During the exercise, the ball, after it is served, becomes available for observation by the receiving player only after it appears above the grid, which reduces the time of the player's respective actions in moving and receiving the ball. This contributes to the development of the speed of thinking and the speed of player movement when receiving a feed.

In addition, when performing various exercises with the use of closed mesh engaged begins to sculpt under the net on the actions of players on the opposite side and analyze them more closely, which helps him to better handle the transition ball. It contributes to the development of game thinking and anticipation. The habit of analyzing and anticipating the opponent's actions remains with the player after the opening of the grid, which, of course, raises the level of athlete in the game of volleyball.

Statistical analysis.

The digital material obtained during the research was processed using traditional methods of mathematical statistics. For each indicator, the arithmetic mean X , the standard deviation S (standard deviation), the standard error (m), the reliability of the differences between the parameters of the initial and final results, as well as between the control and experimental groups by the t-test of the Student with an appropriate level of significance (p).

Mathematical processing of data was carried out using programs for processing the results of scientific research Microsoft Exel "Data Analysis", SPSS. Differences were considered significant at a significance level of $p < 0.05$.

Results.

As a result of the questionnaire of coaches, it was found that when mastering the ball in the

volleyball the greatest obstacle is the lack of technical preparedness, ie abilities (33% of responses), after which the coaches noted lack of speed of movements (24% of responses), lack of reaction rate (23%) and, finally, fear of the ball (20% of the answers).

The responses of young athletes were distributed, however, slightly differently. Thus, 38% of the beginning volleyball players noted that they most of all when mastering the reception of the ball is hampered by fear of painful feelings during a collision with the ball, 35% of young volleyball players noted the main obstacle lack of reaction, 24% of young volleyball players noted the lack of speed of movement and 23% of athletes noted lack of ability.

Thus, based on the responses of coaches and athletes on the first question of the questionnaire, we can conclude that the development of the reception of the ball for beginners volleyball presents certain difficulties, the main causes of which are evaluated differently by coaches and athletes.

The analysis of answers to the second question questionnaire showed that both coaches and athletes noted that they were mastering the reception of the ball by the main way of repeated repetition (68% of coaches and 74% of athletes), 26% of coaches and 17% of athletes noted that they are mastering the given technical reception mainly directly in the game, 4% of coaches and 5% of athletes noted that they are studying the reception of the ball, mainly with the help of target instructions during the exercise, 3% of coaches and 1% of athletes noted the use of simulators, 1% of coaches and 1% of athletes noted that at about military completions techniques used to browse receiving the ball in the leading experts of the country and the world.

Thus, based on the questionnaire of trainers and athletes it can be concluded that the development of ball reception causes certain difficulties for young volleyball players. Nevertheless, the teaching method for this technique remains standard - through repeated repetitions (reproductive method). Relatively little is used non-standard methods of training, including - the use of simulators, although, according to a number of specialists, often the use of simulators can help where other means are not.

The results of the study showed that the technique of teaching ball technique influences the process of mastering this technique. The simulators are a powerful tool for improving the efficiency of the technique of taking the ball to volleyball. Thus, as a result of the experiment, the results of the performance of the control norm by athletes of the experimental group increased by 35.25% ($p < 0.001$), whereas in the control group, the data showed an



increase of 8.91%, which is probable at $p < 0.05$ (Table 1). Before the experiment, the average number of bad ball techniques by athletes of the control group in the special test was 7.0 ± 0.48 , in the experimental group, this number was 5.75 ± 0.52 , which suggests that before the experiment of the group were almost identical.

After the experiment, the number of attempted attempts in the control norm in athletes control group was 8.77 ± 0.5 , and in the experimental - 13 ± 0.79 (Table 1), indicating the positive effect of the use of simulators in the development of reception m' bat in volleyball.

The obtained data convincingly testify to the effectiveness of the use of simulators for mastering the technique of taking the ball with two hands from below.

The results of the expert assessment of the technique of receiving the ball showed that after the experiment, the technique of this treatment improved in both the control group and the experimental group. However, if in the experimental group the increase of the expert evaluation was 68.45%, which is probable at $p < 0.001$, then in the control group this increase was 44.4%, which is probable at $p < 0.01$ (table 1).

Before the experiment, the average expert evaluation of the technique of receiving the ball by athletes of the control group was 19.05 ± 0.78 , in the experimental group, this value was equal to 19.5 ± 0.87 , indicating that before the experiment the group were practically identical. After the experiment, the average value of the expert evaluation in athletes in the control group was 26.8 ± 0.83 , and in the experimental one - 32.15 ± 1.18 (Table 1), which indicates the positive effect of the use of simulators in the development of the reception of the ball in volleyball.

After the experiment, a repeated questioning of coaches and athletes was conducted to reveal their thoughts on the effectiveness of the use of simulators for mastering the reception of the ball by novice volleyball players.

A repeated questionnaire showed that the technique of ball technique was used. Most of the athletes (96.8%) of the experimental group, who noted the fear of painful sensations during the ball, noted the almost complete disappearance of such fears as a result of the experiment, while in the control group, only 31.2% of starters athletes noted. who stopped afraid of the painful feelings that arise when taking the ball.

Table 1

Indicators of the technique of receiving the ball by young volleyball players of the control and experimental groups before and after the experiment

Indicators of technology	Group	$\bar{X} \pm m$	$\bar{X} \pm m$	t	p
		To Experiment	After Experiment		
The effectiveness of the ball	counter.	$7 \pm 0,48$	$8,77 \pm 0,5$	1,98	$< 0,05$
	the expert	$5,75 \pm 0,52$	$13 \pm 0,79$	4,23	$< 0,001$
Expert evaluation	counter.	$19,05 \pm 0,78$	$26,8 \pm 0,83$	2,01	$< 0,01$
	the expert	$19,5 \pm 0,87$	$32,15 \pm 1,18$	5,54	$< 0,001$

Discussion.

The analysis of literary sources has shown that, at the present stage, the technique of training for technical techniques in volleyball remains standard - through repetitive repetitions (reproductive method) (Rabaz, Castuera, Echeverria, Silva, & Arroyo, 2015; Aoki, Arruda, Freitas, Miloski, Marcelino, Drago, ... Moreira, 2017, Popov, 2014). Relatively little is used non-standard methods of training, including - the use of simulators, although, according to a number of specialists, often the use of simulators can help where other means are not. In the context of these data, our study has new data, since quantitative characteristics of the effect of the use of simulators in the initial training on technical techniques have been obtained.

Millan, and Borda (2015) reviewed the program of training mini-volleyball for children from 9 to 11 years with the use of adapted means. Unlike

the traditional mini volleyball training program, a training program based on the game method and the use of adapted materials for the needs and capabilities of the school motivates and facilitates sports training. The application of this program has a significant impact on motivation, mastering of technical elements, game training. Therefore, the authors point out the need for the use of adapted means, i.e. reduced balls, low-hanging grids, etc. in accordance with the needs and opportunities of children. Our research in connection with the study of the use of special simulators at the initial stage of volleyball training contains new data.

Podstawski, et al. (2015), Jurkojc, Michnik, & Czapl, (2017), have shown that volleyball is one of the most powerful means of developing motor preparedness. Our study supplements the data obtained by the authors by justifying the



effectiveness of the use of technical aids in the initial stage of volleyball education.

Our study confirms the data of Rabaz, et al. (2015), Santos, et al. (2016), Popov (2014), Fernandez-Echeverria, Gil, Moreno, Claver, & Moreno, (2015), Cheng, Ikoma, Honda, Ikenaga, & Ieee (2017), Claver, Jimenez, Gil-Arias, Moreno, & Moreno, (2017), Gonzalez-Silva, Fernandez-Echeverria, Claver, F., Gil-Arias, & Moreno, (2017) on the need to improve the volleyball training process.

It was found out that as a result of the use of the simulators, not only the indicators of expert evaluation of the technique of this technique, but also the performance indicators of the standard were improved. In addition, the fact of the disappearance of painful sensations and, accordingly, the fear of them when taking the ball in the majority of athletes of the experimental group, while in the control group this amount was significantly less. The use of simulators is effective, expedient, reliable, fairly accessible in use and easy to manufacture a means for initial training in the technique of ball intake to volleyball. It can be recommended in the wider practice of use in the training process of young volleyball players in comparison with its current use.

When performing various exercises using a closed mesh, the athlete begins to peek under the net for the actions of the players on the opposite side and analyze them more closely, which helps him to better handle the ball. It contributes to the development of game thinking and anticipation. The habit of analyzing and anticipating the opponent's actions remains with the player after the opening of the grid, which, of course, raises the level of athlete in the game of volleyball.

Thus, the study conducted convincingly showed the effectiveness of the use of training devices for training techniques for ball starting volleyball players. As a result of the use of the simulators, not only the indicators of expert evaluation of the technique of this reception have improved, but also indicators of the implementation of the standard. In addition, the fact of the disappearance of painful sensations and, consequently, the fear of them in the reception of the ball in most of the athletes of the experimental group, while in the control group this amount was significantly less.

The use of technical devices is effective, expedient, reliable, affordable and easy to use in the manufacture of equipment for initial training in the technique of taking the ball to volleyball. It can be recommended in the wider practice of use in the

training process of young volleyball players in comparison with its current use.

The data obtained in our study also broadens the results of research into the need to apply an individual approach to the training of young volleyball players (Jurkojc, Michnik, & Czaplá, 2017; Kozina et al., (2005 -2015), Millan-Sanchez, Rabago, & Espa, 2017; Morales, Lorenzo, Lopez, & Cevallos, 2017; Paulo, Zaal, Fonseca, & Araujo, 2016; Boichuk, Iermakov, & Nosko, 2017)

Thus, our study obtained the following data, which are new in relation to the research of other authors:

- in the training process of young volleyball players of 11-12 years, the main difficulties for coaches and athletes that arose during the training of taking the ball in volleyball;
- the technique of initial training of the reception of a ball with the help of the simulators is developed,
- the effectiveness of the use of simulators for the initial development of technology for technical techniques in volleyball.

The results of experimental research allowed theoretically to substantiate, expand and supplement the provisions determining the structure of the optimal learning process, with the obligatory allocation of peculiarities of teaching methods for short-term technical actions.

The practical significance of the work is determined in the high pedagogical effect of using the method of initial training for receiving the ball with the help of simulators and improving the technical and tactical skills on the basis of the peculiarities of teaching methods for short-term technical actions of young volunteers 11-12 years old.

Conclusion

1. It has been established that the development of technical techniques in volleyball causes some difficulties for novice athletes, which is clearly convincing evidence of the survey of trainers and athletes. To overcome these difficulties is the use of simulators, as evidenced by experimental data.

2. It was found that coaches and athletes in different ways note the greatest difficulties associated with the study of technical techniques of volleyball. Trainers noted that the main obstacle is the lack of technical preparedness, i.e. skills (33% of responses), after which the lack of speed of movement (24% of responses), lack of reaction speed (23% of responses) and, finally, fear of the ball (20 % of responses). 38% of the beginning volleyball players noted that they most of all when mastering



the reception of the ball is hampered by fear of painful feelings during a collision with the ball, 35% - lack of reaction, 24% of young volleyball players noted lack of speed of movement and 23% of athletes - lack of ability. After the experiment, most of the athletes (96.8%) of the experimental group, who noted the fear of pain in the reception of the ball, marked the almost complete disappearance of such fears, which was not characteristic for athletes of the control group.

3. It is shown that the use of simulators positively affects the speed of development of technical methods of volleyball and the quality of their performance, as evidenced by an increase in the

results of the implementation of the control standard (for example, taking the ball) in the experimental group at 35.25% ($p < 0.001$), while in the control group, these data increased by 8.91% ($p < 0.05$). In addition, the results of the expert evaluation of the technique for receiving the ball in the experimental group amounted to 68.45% ($p < 0.001$), in the control group, this increase was 44.4% ($p < 0.01$).

4. It is shown that the use of the simulators described in the work is effective, expedient, reliable, fairly accessible in use and simple in the manufacture of a means for initial training in technical techniques in volleyball.

References

1. Aoki, M. S., Arruda, A. F., Freitas, C. G., Miloski, B., Marcelino, P. R., Drago, G., . . . Moreira, A. (2017). Monitoring training loads, mood states, and jump performance over two periodized training mesocycles in elite young volleyball players. *International Journal of Sports Science & Coaching*, 12(1), 130-137. doi:10.1177/1747954116684394
2. Boichuk, R., Iermakov, S., & Nosko, M. (2017). Pedagogical conditions of motor training of junior volleyball players during the initial stage. *Journal of Physical Education and Sport*, 17(1), 327-334. doi:10.7752/jpes.2017.01048
3. Boichuk, R., Iermakov, S., Nosko, M., & Kovtsun, V. (2017). Special aspects of female volleyball players' coordination training at the stage of specialized preparation. *Journal of Physical Education and Sport*, 17(2), 884-891. doi:10.7752/jpes.2017.02135
4. Boichuk, R., Iermakov, S., Nosko, M., Kovtsun, V., & Nosko, Y. (2017). Influence of motor coordination indicators on efficiency of game activity of volleyball players at the stage of specialized basic training. *Journal of Physical Education and Sport*, 17(4), 2632-2637. doi:10.7752/jpes.2017.04301
5. Cheng, X. N., Ikoma, N., Honda, M., Ikenaga, T., & Ieee. (2017). *Event State Based Particle Filter for Ball Event Detection in Volleyball Game Analysis*.
6. Claver, F., Jimenez, R., Gil-Arias, A., Moreno, A., & Moreno, M. P. (2017). The Cognitive and Motivation Intervention Program in Youth Female Volleyball Players. *Journal of Human Kinetics*, 59(1), 55-65. doi:10.1515/hukin-2017-0147
7. Iermakov, S., Martyshevsky K., Nosko, N. (1999). *Simulators in volleyball (In Russian)*.
8. Fernandez-Echeverria, C., Gil, A., Moreno, A., Claver, F. & Moreno, P. (2015). Analysis of the variables that predict serve efficacy in young volleyball players. *International Journal of Performance Analysis in Sport*, 15(1), 172-186.
9. Gonzalez-Silva, J., Fernandez-Echeverria, C., Claver, F., Gil-Arias, A., & Moreno, M. P. (2017). Study of the models of game in volleyball of formative stages. *Cultura Ciencia Y Deporte*, 12(36), 211-220.
10. Jurkojc, J., Michnik, R., & Czaplak, K. (2017). Mathematical modelling as a tool to assessment of loads in volleyball player's shoulder joint during spike. *Journal of Sports Sciences*, 35(12), 1179-1186. doi:10.1080/02640414.2016.1214284
11. Kozina, Z. (2005). Nauchno-metodicheskie puti individualizatsii uchebno-trenirovochnogo protsessa v sportivnykh igrakh [Scientific and methodical ways of individualization of educational process in sports games]. *Problemy i perspektivy razvitiya sportivnykh igr i endinoborstv v vysshikh uchebnykh zavedeniyah, (0)1*, 188.
12. Kozina, Z. (2008). Rezultaty razrabotki i primeneniya universalnykh metodik individualizatsii uchebno-trenirovochnogo protsessa v sportivnykh igrakh ya perevoda [Results of development and application of universal methods of individualization of the training process in sports games]. *Slobozhanskiy naukovosportivniy vIsnik. (0)3*, 73-80.
13. Kozina, Z., Sobko, I., Yermakova, T., Cieslicka, M., Zukow, W., Chia, M. . . . Korobeinik V. (2016). Psycho-physiological characteristics of female basketball players with hearing problems as the basis for the technical tactic training methodic in world level teams. *Journal of Physical Education and Sport*, 16(4), 1348-1359. doi:10.7752/jpes.2016.04213
14. Kozina, Z.L., Jagiello, W., Jagiello, M. (2005). Determination of sportsmen's individual characteristics with the help of mathematical simulation and methods of multi-dimensional analysis. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2015;(0)12:41-50. http://dx.doi.org/10.15561/18189172.2015.1207
15. Millan, K. D. A., & Borda, R. A. M. (2015). Pedagogic plan for the teaching and learning of Mini Volleyball in children 9 to 11 years. *Viref-Revista De Educacion Fisica*, 4(2), 1-13.
16. Millan-Sanchez, A., Rabago, J. C. M., & Espa, A. U. (2017). Differences in the success of the attack between outside and opposite hitters in high level men's volleyball. *Journal of Human Sport and Exercise*, 12(2), 251-256. doi:10.14198/jhse.2017.122.01
17. Morales, S. C., Lorenzo, A. F., Lopez, P. A. G., & Cevallos, E. C. (2017). Anomalies in effectiveness: A mathematical model used in international volleyball. *Retos-Nuevas Tendencias En Educacion Fisica Deporte Y*



Recreacion(32), 194-198.

18. Paulo, A., Zaal, F., Fonseca, S., & Araujo, D. (2016). Predicting Volleyball Serve-Reception. *Frontiers in Psychology, 7*. doi:10.3389/fpsyg.2016.01694

19. Podstawski, R., Markowski, P., Choszcz, D., & Klimczak, J. (2015). *Anthropometric indicators and motor abilities of university students performing various types of physical activities (martial arts, volleyball, bodybuilding/fitness, jogging followed by sauna, golf, general PE classes)*.

20. Popov, A.N. (2014). The structure of physical fitness and its correlation analysis at young players aged 16-17 years at the stage of basic training. *Pedagogics, psychology, medical-biological problems of physical training and sports, 12*, 54-57: doi:10.15561/18189172.2014.1210

21. Rabaz, F. C., Castuera, R. J., Echeverria, C. F., Silva, J. G., & Arroyo, M. P. M. (2015). Procedural knowledge and decisional profile of volleyball players of children's category. *E-Balonmano Com, 11*, 181-182.

22. Santos, C., Merce, C., Branco, M., & Catela, D. (2016). Recurrence Analysis of Interjoint Coordination in Children during Volleyball Practice Task Constraints. *Studies in Perception and Action Xii*, 134-138.

23. Singh, H. (2015). Comparative study on selected physical fitness and physiological variables between volleyball and handball players. *European Journal of Physical Culture and Sports, 10(4)*:206-211: doi: 10.13187/ejpe.2015.10.206

24. Tavares, O. M., Valente-dos-Santos, J., Duarte, J. P., Povoas, S. C., Gobbo, L. A., Fernandes, R. A., . . . Coelho-e-Silva, M. J. (2016). Concurrent agreement between an anthropometric model to predict thigh volume and dual-energy X-Ray absorptiometry assessment in female volleyball players aged 14-18 years. *Bmc Pediatrics, 16*. doi:10.1186/s12887-016-0730-7

Информация об авторах

Цеслицка Мирослава Зигмунтовна;

<http://orcid.org/0000-0002-0407-2592>;
cudaki@op.pl;

Университет Казимира Великого в Быдгощ;
ул. Ходкевича 30, г. Быдгощ 85-064, Польша

Козина Жаннета Леонидовна;

д.н. ФВиС, проф.;
<http://orcid.org/0000-0001-5588-4825>;
Zhanneta.kozina@gmail.com;

Харьковский национальный педагогический университет;
ул. Алчевских, 29, г. Харьков, 61002, Украина.

Мушкаета Радослав Каролевич;

<http://orcid.org/0000-0001-6057-1583>;
radek@muszkieta.com;

Университет Николая Коперника в Торуне, Польша,

Жигаева Марина Владимировна

zhigaeva.mary@gmail.com;
Харьковский национальный педагогический университет;
ул. Алчевских, 29, г. Харьков, 61002, Украина.

Казина Валентина Владимировна; инженер-технолог
центра здорового питания.

v.mutovina89@yandex.ru
Сибирский федеральный университет торгово-
экономический институт; г. Красноярск, ул. Лиды
Прушинской, 2а, 660075, Россия.

Сафронова Татьяна Николаевна; канд. техн. наук, доцент.
safronova63@mail.ru

Сибирский федеральный университет торгово-
экономический институт; г. Красноярск, ул. Лиды
Прушинской, 2а, 660075, Россия.

Кудрявцев Михаил Дмитриевич; д.п.н., проф.;

<http://orcid.org/0000-0002-2432-1699>;
kumid@yandex.ru;
Сибирский федеральный университет,
пр. Свободный, 79, г. Красноярск, 660041, Россия;
Сибирский государственный университет науки и
технологий имени академика М.Ф. Решетнёва,
просп. имени газеты Красноярский Рабочий, 31, г.
Красноярск, 660014, Россия;
Сибирский юридический институт Министерства
внутренних дел РФ,
г. Красноярск, ул. Рокоссовского, д. 20, 660131, Россия;
Красноярский государственный педагогический
университет им. В.П. Астафьева,
ул. Ады Лебедевой, 89, г. Красноярск, 660049, Россия.

Information about the authors

Cieslicka M.;

<http://orcid.org/0000-0002-04072592>;
cudaki@op.pl;
Kazimierz Wielki University in Bydgoszcz;
Chodkiewicza str. 30, 85-064 Bydgoszcz, Poland

Kozina Zh. L.;

<http://orcid.org/0000-0001-55884825>;
Zhanneta.kozina@gmail.com;
H.S. Skovoroda Kharkiv National Pedagogical University;
Altshevskih str. 29, Kharkov, 61002, Ukraine.

Muszkieta R.;

<http://orcid.org/0000-0001-60571583>;
radek@muszkieta.com;
Nicolaus Copernicus University in Toruń, Poland

Zhyhaieva M.V.

zhigaeva.mary@gmail.com;
H.S. Skovoroda Kharkiv National Pedagogical University;
Altshevskih str. 29, Kharkov, 61002, Ukraine.

Kazina V.V.; the engineer-technologist of the center of a healthy
food.

v.mutovina89@yandex.ru
Siberian Federal University of Trade and Economics;
Krasnoyarsk, ul. Lida Prushinskaya, 2a, 660075, Russia.

Safronova T.N.; cand. tech. sci., associate professor.

safronova63@mail.ru
Siberian Federal University of Trade and Economics;
Krasnoyarsk, ul. Lida Prushinskaya, 2a, 660075, Russia.

Kudryavtsev M.D.;

<http://orcid.org/0000-0002-2432-1699>;
kumid@yandex.ru;
Siberian Federal University;
79, Svobodny pr., Krasnoyarsk, 660041, Russia;
Reshetnev Siberian State University of Science and Technology;
Office A-406, 31, Krasnoyarsky Rabochy Av., 660014,
Krasnoyarsk, Russia;
The Siberian Law Institute of the Ministry of Internal Affairs of
Russia,
Rokossovskia str., 20, Krasnoyarsk, 660131, Russia.
Krasnoyarsk State Pedagogical University of V.P. Astafyev; Ada
Lebedeva Street, 89, Krasnoyarsk, 660049, Russia;