

**PHYSICAL EDUCATION AND SPORTS**

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**IMPROVEMENT OF JUDO JUMPING TECHNIQUES USING FITBALL**

***Abstract.** All athletes were divided into control ( $n = 15$ ) and experimental ( $n = 15$ ) groups. A feature of the training process in the experimental group was the use of exercises with fitballs, which are aimed at improving the technique of throwing in judo.*

***Keywords:** athletes, educational and training process, exercises with fitballs*

In judo wrestling techniques have a complex structure. The main techniques in the rack include throws. In judo there are many throws, but they all have in common - these are the phases of the reception [1, 2, 3].

An analysis of the literature has shown that most wrestling experts distinguish three phases of throwing, but give them different names. Thus, most authors distinguish the onset of the throw phase: preparatory, main, final [4, 5, 6]. Some authors also divide the reception into three phases, but call them: the phase of entry, the phase of separation of the opponent from the carpet, the phase of flight and landing of the opponent [7]. The division of reception into phases allows to optimize the process of learning throws, timely detection of errors and emphasis on basic movements.

Analyzing the above, it is very important to correctly teach to perform basic movements, which are the basis for further performance of the reception, in the initial

stages of learning [8, 9, 10]. Proper training in the basics of throwing technique is important for further improvement of the athlete [11, 12].

Innovative methods are important in accelerating the learning process when teaching the technique of techniques along with demonstration. In cases where athletes, despite a detailed explanation and demonstration, can not perform the movement correctly, then you can use to help fitball to speed up the learning process. Novice judokas find it difficult to monitor the position of their body and the body of a partner, while out of balance, perform a throw and perform insurance. It is also difficult to place the position of the arms and legs in phases during the throws while still performing the rotation of the body around the axis. The muscles of the shoulder girdle are the first to start working, but when the legs, pelvis and torso turn into work, judokas lag behind the shoulder girdle and as a result the speed of the throw decreases. Fitball is used to achieve the goal of consistent and correct work of body parts. Therefore, the search for modern effective means of teaching basic judo techniques remains relevant [13, 14, 15].

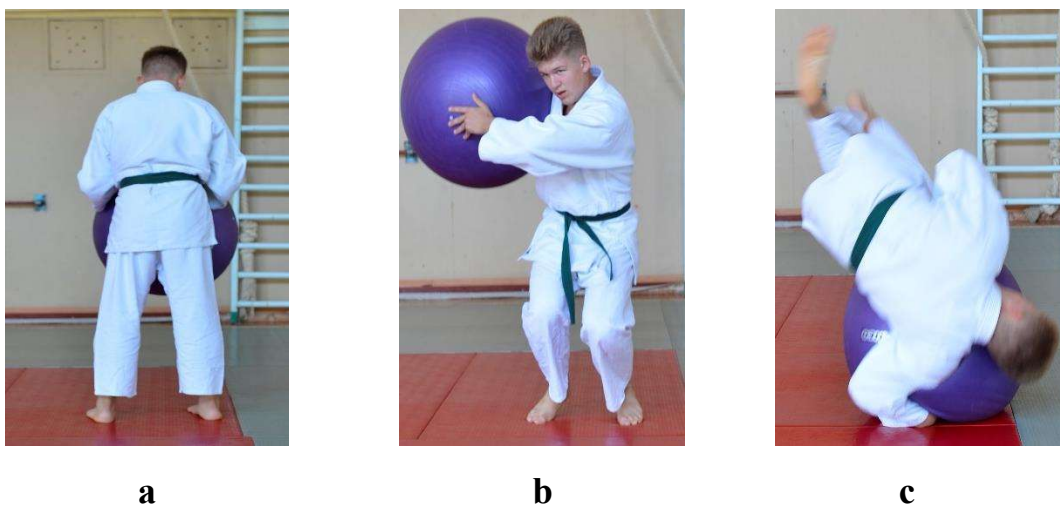
In our previous studies, it was found that in recent years to solve various problems of teaching and training are widely used exercises with fitballs [16]. These means are most widely used for the purpose of health-improving influence and correction of development in martial arts, development of physical qualities of judoists [17, 18].

In previous studies, a statistically significant effect of the proposed exercises with fitballs on the development of self-insurance techniques and elements of throwing through the thigh [16]. Therefore, this area of research is quite relevant, especially when teaching basic judo techniques.

The following methods were used during the research: theoretical analysis and generalization of literature sources, pedagogical observations, method of expert assessments, methods of mathematical statistics. To achieve the goal and objectives, a pedagogical study was conducted. The study involved 30 judokas aged 10-11, who practiced on the basis of IC "Meteor" in Dnipro. All athletes were divided into control ( $n = 15$ ) and experimental ( $n = 15$ ) groups.

A feature of the training process in the experimental group was the use of exercises with fitballs, aimed at studying the technique of throwing. In the control group, training sessions were conducted according to the current curriculum for CYSS.

Exercises with fitball were used in the study of throws: o-goshi, seoi-otochi, tai-otoshi, uchi-mata, ura-nage. Each throw was divided into three phases: the entry phase, the phase of separation of the opponent from the carpet, the phase of flight and landing of the opponent [7]. Experts evaluated the technique of throwing according to these phases, and took into account the accuracy of the following technical indicators: removal from the balance of the opponent; work and position of arms, legs and torso; control of the opponent during the throw and landing.



**Fig.1. Performing a throw through the thigh (o-goshi) with a fitball**

The exercise shown in Figure 1 was used to teach the technique of throwing through the thigh (o-goshi).

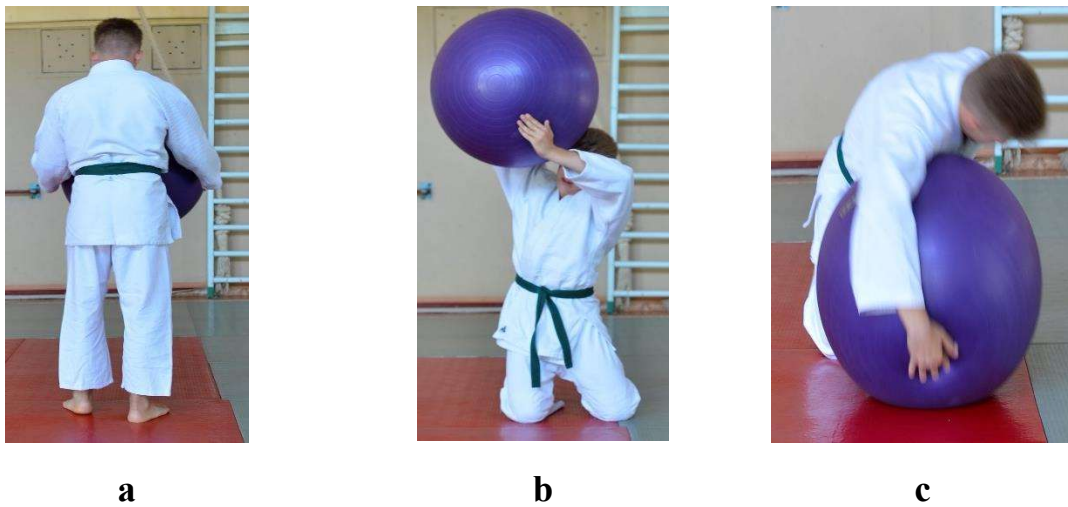
S. P. - frontal rack, hands embracing fitball (Fig. 1, **a**)

Perform the step with the right foot, diagonally, bending the knees to turn the body to the left by 180° (Fig. 1, **b**).

Bending the knees and tilting the body forward to perform insurance to the right through the fitball (Fig. 1, **c**).

Perform the exercise right and left 15-20 times.

**Errors:** 180 ° rotation does not bend the knees.



**Fig.2. Performing a throw over the shoulder from the knees (seoi-otochi) with a fitball**

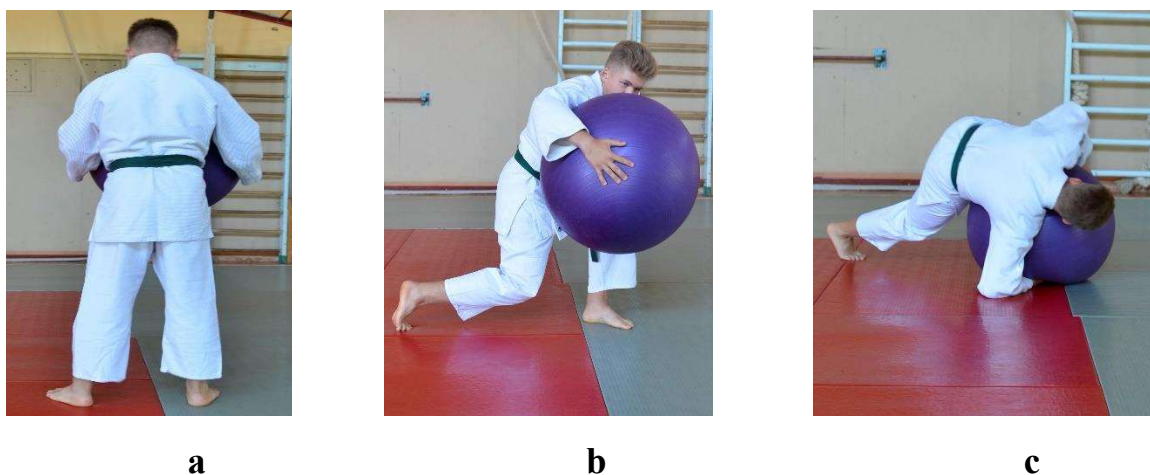
The exercise indicated in (Fig. 2) was used to teach the technique of throwing over the shoulder from the knees (seoi-otochi).

S. P. - right-hand stand, hands embracing the fitball (Fig. 2, a).  
Step with your right foot left and forward and turn 180 get on your knees (Fig. 2, b).

Execute insurance through fitball to the right (Fig. 2, c).

Perform the exercise right and left 15-20 times

**Errors:** not performing a 180° rotation and landing on both knees.



**Fig.3. Performing a front step (tai-otoshi) with a fitball**

The exercise shown in Figure 3 was used to teach the tai-otoshi technique.

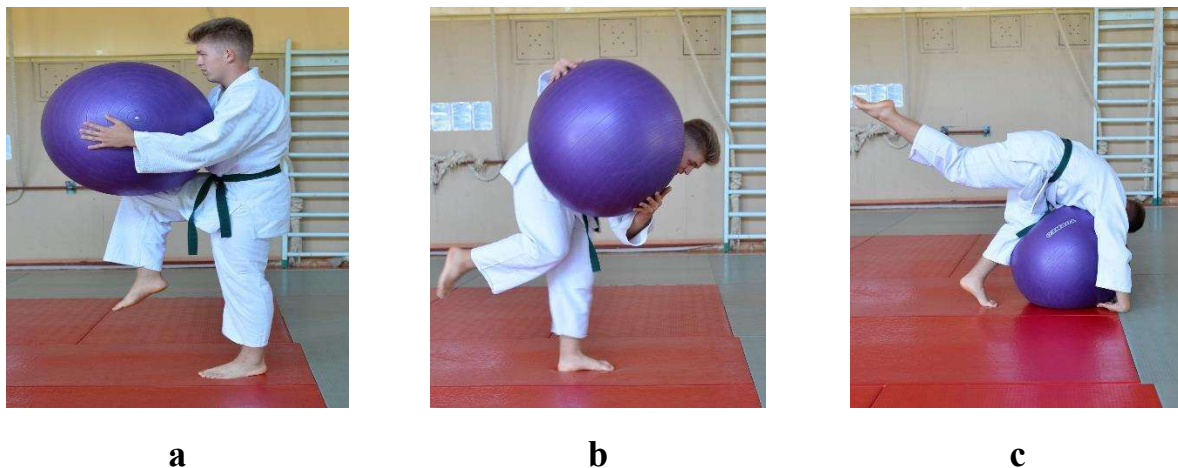
S. P. - front rack, hands embracing fitball (Fig. 3, **a**).

Make a turn in a semi-squat 180 degrees on the right side, leaning on the left leg, put the right leg in a lunge back, hands with a fitball describe a semicircle around the shoulders (Fig. 3, **b**).

Perform insurance over the right shoulder (Fig. 3, **c**).

Perform the exercise right and left 15-20 times.

**Errors:** when turning the torso, the left leg is straight at the knee, the right leg does not turn to the lunge.



**Fig.4. Performing a pickup from the middle (uchi-mata) with a fitball**

The exercise shown in Figure 4 was used to teach the technique of performing the grip from the middle (uchi-mata).

VP - right-hand stand, hands embracing the fitball (Fig. 4, **a**).

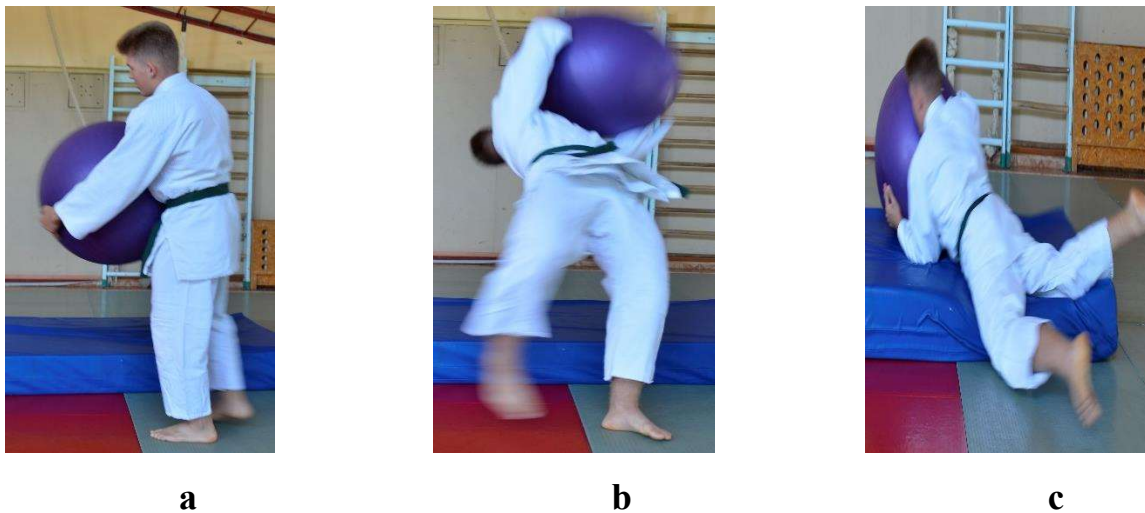
Transfer the center of gravity to the left leg, make a turn in the jump 180 degrees to the right side, hands with a fitball in front of you (Fig. 4, **b**).

Perform a swing with the right foot and insurance over the right shoulder (Fig. 4, **c**).

Perform the exercise right and left 15-20 times.

**Errors:** 180-degree jump is not performed.





**Fig.5. Performing a throw through the chest (ura-nage) with football**

The exercise shown in Figure 5 was used to teach the technique of throwing through the chest (ura-nage).

VP - front rack, hands embracing the fitball (Fig. 5, **a**).

Sit down, step your left foot forward and left (Fig. 5, **b**).

Turning the torso and lifting the football up, perform a fall back over the left shoulder, bending in the back (Fig. 5, **c**).

Perform the exercise right and left 15-20 times.

**Errors:** 90 degree rotation and no back flexion.

Analysis of the indicators of judoists of the experimental group, obtained at the beginning and end of the study showed that the average score of experts on all indicators increased, the increase was statistically significant ( $p < 0,05$ ) (table 1). The largest increase is observed in the throws: the front step of tai-otoshi ( $t = 4.55$ ;  $p < 0.05$ ) and the pickup from the middle of the uchi-mata ( $t = 3.82$ ;  $p < 0.05$ ). Moreover, experts note that the increase in results in all throws was due to improved control of the opponent during the throw and landing.

*Table 1*

**Average indicators of experts for technically correct performance of throws by judoists of experimental group before and after pedagogical Experiment**

Technique	Expert evaluations (points)		t	p
	Before the experiment X ± m	After the experiment X ± m		
hip throw (o-goshi)	2,7±0,42	4,2±0,23	3,19	<0,05
shoulder throw from the knees (seoi-otochi)	2,9±0,63	4,8±0,33	3,59	<0,05
throw front footrest (tai-otoshi)	2,6±0,47	4,1±0,32	4,55	<0,05
throw pickup from the middle (uchi-mata)	2,8±0,52	4,6±0,22	3,82	<0,05
chest-throw (ura-nage)	2,6±0,55	4,0±0,35	3,18	<0,05

The analysis of the indicators of the judokas of the control group who received at the beginning and end of the study showed positive changes, but not for all indicators. Thus, statistically significant changes occurred only in the throw through the thigh (o-goshi) ( $t = 2.51$ ;  $p < 0.05$ ) (Table 2). This can be explained by the focus of the training process on the study of this normative throw.

*Table 2*

**Average indicators of experts for technically correct performance of throws by judoists of control group before and after pedagogical experiment**

Technique	Expert evaluations (points)		t	p
	Before the experiment X ± m	After the experiment X ± m		
thigh throw (o-goshi)	2,4±0,47	3,9±0,38	2,51	<0,05
shoulder throw from the knees (seoi-otochi)	2,7±0,52	3,3±0,42	0,91	>0,05
throw front footrest (tai-otoshi)	2,5±0,51	2,8±0,37	0,47	>0,05
throw pickup from the middle (uchi-mata)	2,6±0,49	3,1±0,33	0,85	>0,05
chest-throw (ura-nage)	2,4±0,53	2,7±0,41	0,45	>0,05

Comparison of the average performance of experts for technically correct performance of judo throws of the experimental and control groups (Table 3) after the pedagogical experiment showed a statistically significant difference in performance between groups ( $<0.05$ ). The best result of growth in the athletes of the experimental group was in the throw pickup from the middle of the uchi-mata ( $t = 3.75$ ;  $p < 0.05$ ) and in the throw over the shoulder from the knees (seoi-otochi) ( $t = 2.83$ ;  $p < 0.05$ ). In the throw through the thigh (o-goshi) there is also an improvement in the results of the experimental group over the control, but they are not statistically significant ( $t = 0.68$ ;  $p > 0.05$ ). This can also be explained by the focus of the training process of the control group on the study of this normative throw. Thus, the experimental group that used the presented complex has significantly better results. There are also positive changes in the control group, but in the experimental group the dynamics of improvement is more pronounced.

*Table 3*

**Average indicators of experts for technically correct performance of throws by judoists of experimental and control groups after pedagogical experiment**

Technique	Expert evaluations (points)		t	p
	CG X ± m	EG X ± m		
thigh throw (o-goshi)	3,9±0,38	4,2±0,23	0,68	>0,05
shoulder throw from the knees (seoi-otochi)	3,3±0,42	4,8±0,33	2,83	<0,05
throw front footrest (tai-otoshi)	2,8±0,37	4,1±0,32	2,60	<0,05
throw pickup from the middle (uchi-mata)	3,1±0,33	4,6±0,22	3,75	<0,05
chest-throw (ura-nage)	2,7±0,41	4,0±0,35	2,41	<0,05

### **Conclusions:**

1. A feature of the training process in the experimental group was the use of rights with fitballs, aimed at studying the technique of throwing. Each throw was divided into three phases: the entry phase, the phase of separation of the opponent from the carpet, the phase of flight and landing of the opponent.



2. Comparison of average indicators of experts for technically correct performance of throws by judoists of experimental and control groups after pedagogical experiment showed statistically significant difference in indicators between groups ( $p < 0,05$ ). The best result of growth in the athletes of the experimental group was in the throw pick-up from the middle (uchi-mata) ( $t = 3.75$ ;  $p < 0.05$ ) and throw over the shoulder from the knees (seoi-otochi) ( $t = 2.83$ ;  $p < 0.05$ ). Thus, the experimental group that used the presented complex has significantly better results compared to the control.

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