CZU 796.85+159.9:796.4

ARGUMENT OF THE EFFICIENCY OF THE STRUCTURE AND CONTENT OF THE TECHNOLOGY OF THE USE OF GYMNASTICS IN THE BASIC TRAINING STAGE OF THE 13-15 YEAR-OLD JUDOKAS

***Boișteanu Alexandru*[1]**
[1]*Sports school No. 2, Cahul, Republic of Moldova*

Abstract. *The recently published literature emphasizes more and more the need to solve the means by which the formation of motor skills is pursued, and practice has shown that the better the means used are selected by structure and content, the more effective their influence on sports training is. The need to complete the means by which physical exercises influence the improvement of motor skills is accentuated insofar as the aim is to obtain learning performances of the technical elements. Within the pedagogical experiment, a conceptual model of the structure and content of the implementation of gymnastics means in the basic stage of judokas aged 13-15 was used. The concept of the use of gymnastics technology is a systemic approach to the mechanism of the process of performing integrative exercise groups through the clarity of operational objectives of the methodological content that contributes to the design of express resources for training judokas in sports training. The control over the level of the technical training capacity development demonstrated the efficiency of the conceptual model of the structure and content of the gymnastic means in the basic stage of the 13-15 year-old judokas.*

The research took place in the Sports School No. 2 Cahul, Republic of Moldova. The pedagogical experiment was done around an applied intervention, which aimed to estimate the influence of gymnastics on psychomotor and technical skills of 13-15 year-old judokas in the basic training stage, an approach that lasted for a period of 4 years, between November 2012 and October 2016. 24 judo fighters participated in the experiment.

Keywords: *sports training, basic training stage, judo, technology, gymnastics measures, conceptual model, technical parameters, 13-15 year-old preadolescents.*

Actuality of the research: Sports training in the basic training stage is carried out on the basis of requirements and rules of harmonious and multilateral development, carried out on the basis of pedagogical, biological, psychological principles and on the basis of training and performance objectives [2, 4] . At the beginning of the basic training period of preadolescents, the processes of adaptation to effort are particularly intensive, but as the level of development of motor and psychomotor qualities increases, the rhythm of biological systems decreases. In order to improve certain training conditions, the preadolescent's body must undergo efforts generating within the biological systems (nervous system, musculoskeletal system, metabolism). In the process of sports training, using gymnastics exercises can aim at the general improvement of multilateral training through the systematic development of the neuromuscular system of the arms, scapular belt, abdomen and back, legs [1, 5]. Through gymnastics means the volume, intensity and duration of effort are regulate, improving cardiac, circulatory, respiratory and sensorimotor performances that are particularly important for general health [3, 5, 6]. For this purpose, a conceptual model of the technology of implementing the gymnastics means was developed in the basic training stage of judoka fighters (Figure 1).

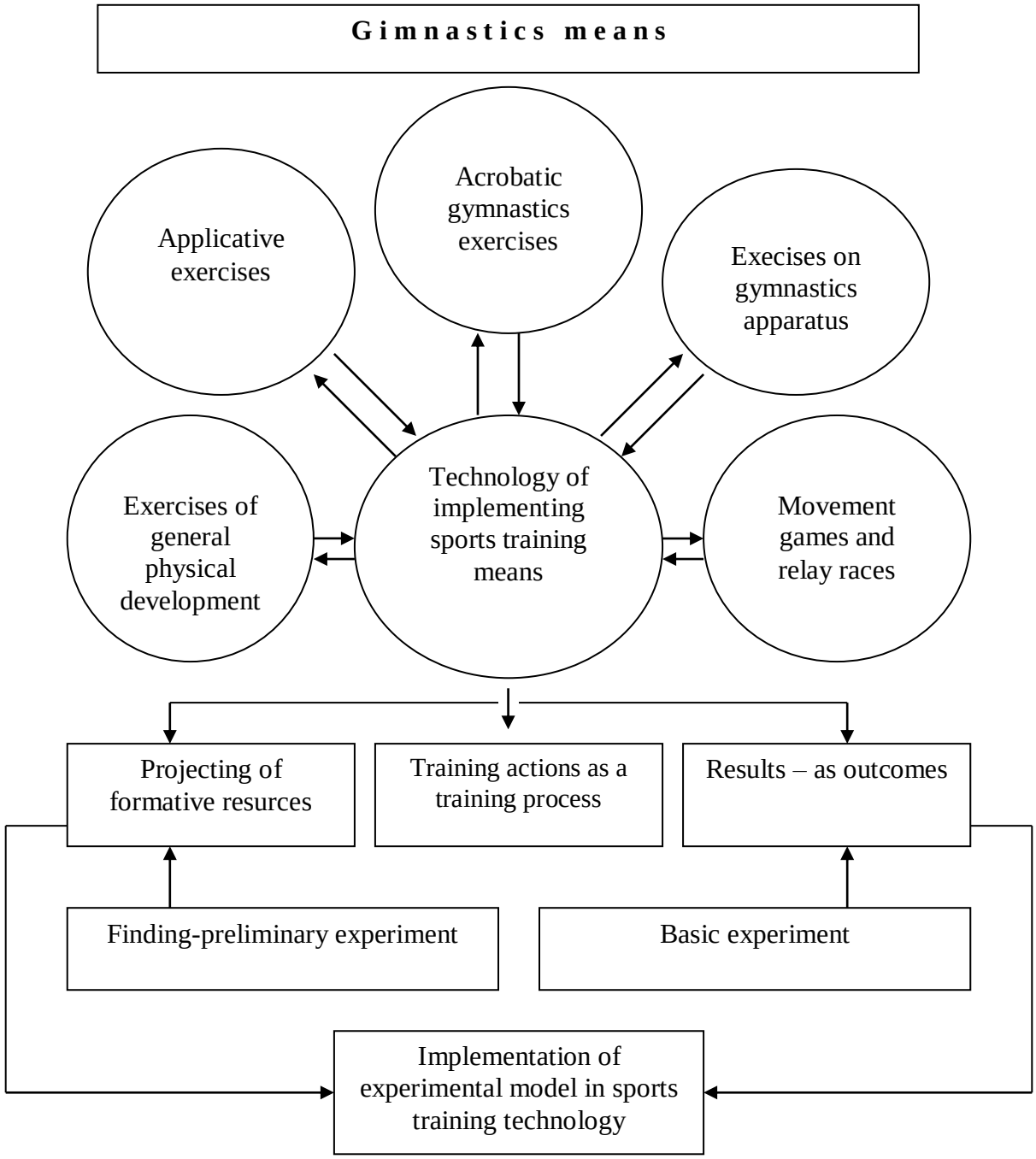

Fig. 1. Conceptual model of the technology of implementing the gymnastics means in the basic training stage of judokas

In the basic training stage, the means of gymnastics diversified and, at the same time, became more complex in terms of effects, due on the one hand to the development of methodical content that created new combinations of movements, specific devices and installations, and on the other hand by introducing new technologies for the use of means in the field of activity, contributing to the optimization of the effects of physical exercises and technical skills.

Methods of the research: analysis of the specialized methodological-scientific literature, analysis of the training process documents (structure and content), method of pedagogical observation, motor and psychomotor tests, pedagogical experiment, statistical-mathematical method of processing the collected data, comparative method, graphic and tabular method.

In order to determine the efficiency of the use of gymnastics technology in the basic training stage of 13-15-year-old judokas in the experimental groups, the value of the parameters of the technique of hand throwing and belt, from the knee, with side obstruction and over the shoulder for 30 s each.

Results of the research: The results of testing the throwing ability of the judo wrestling partner are presented in Table 1, which determines the progressive and authentic level of the subjects' ability.

Table 1. Comparative analysis of the level of development of technical training capacities of 13-15 year-old judoka fighters from the experimental and control groups of (n = 24)

No	Tested parameters	Group	Statistical data		t	P
			Initial testing	Final testing		
			$\overline{X} \pm m$	$\overline{X} \pm m$		
1	Hand and belt throwing (number of rep. during 30")	E	4,21±0,16	4,69±0,09	5,90	<0,001
		C	3,85±0,17	4,21±0,04	0,863	>0,05
		t	1,545	4,90		
		P	>0,05	<0,001		
2	Throwing from the knee (number of rep. during 30")	E	3,36±0,68	5,04±0,13	2,75	<0,05
		C	4,08±0,08	4,21±0,18	0,89	>0,05
		t	1,051	3,74		
		P	>0,05	<0,001		
3	Throwing with a side obstacle (Tai-Otochi) (number of rep. during 30")	E	3,60±0,42	5,00±0,133	4,01	<0,01
		C	3,01±0,66	4,22±0,140	2,06	>0,05
		t	0,75	4,33		
		P	>0,05	<0,001		
4	Throwing over the shoulder (number of rep. during 30")	E	3,31±0,44	4,46±0,091	2,933	<0,05
		C	3,39±0,58	4,06±0,13	1,311	>0,05
		t	0,11	2,53		
		P	>0,05	<0,05		

Note: n=24 t=2,074 2,819 3,292
f=22 P<0,05 0,01 0,001
n=12, f=11 t=2,201 3,055 4,315 r=0,602
Probability 95% 99,5% 99,9%

Regarding the arm and belt throwing, appreciated in number of repetitions for 30 s, we make the following specifications of the activity of the experimental group. The value of the arithmetic mean was initially equal to 4.21 throws (Figure 2) and increased to 4.69 at the end of our assessments with an arithmetic mean error of 0.09, highlighting an improvement in the speed of execution of the technical procedure. The t test (Table 1) showed that there is a statistically significant difference between the arithmetic means of the judoka fighters of the experimental group, t calculated with the value of 5.90 compared to

the tabulated t equal to 4.437 at a threshold <0.001 for f equal to 11. The coefficient variability was initially 14.01, at the end 7.16, which is evidenced by a highly reliable group.

For the control group, the arithmetic mean was initially 3.85 throws, at the final test - 4.21 indicating an insignificant difference. The value of t calculated was equal to 0.863 compared to t tabulated 2.201 at a threshold> 0.05. At the final test the coefficient of variability is equal to 3.56.

Based on the data obtained by the experimental groups, we consider that in the final testing the indicators of the disposal procedures increased statistically significantly.

Thus, we affirm the influence of the gymnastics techniques on the training of young judoka fighters, which means with a 99.9% probability that the experimental intervention module applied was effective.

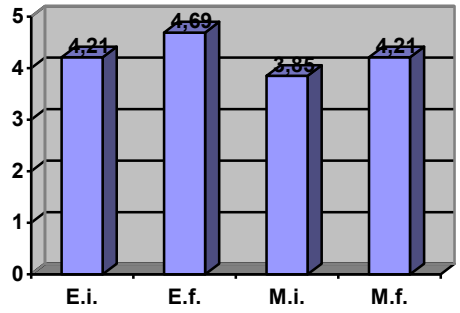

Fig. 2. Comparative presentation of the indicators of the arm and belt procedures of the fighters of the experimental and control group in the initial and final stage of the experiment

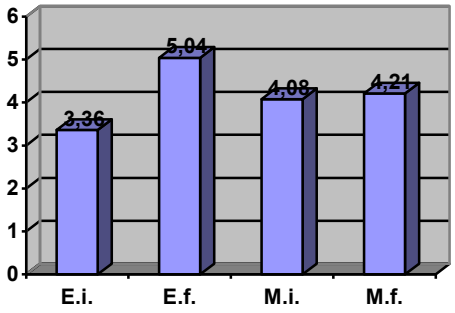

Fig. 3. Comparative presentation of the indicators of throwing over the shoulder with both arms from the knees of the fighters of the experimental group and control in the initial and final stage of the experiment

Regarding the testing of throwing over the shoulder with both arms from the knees (Figure 3) of the fighters from the experimental group, the arithmetic mean (Table 1) at the initial testing was at the level of 3.36 ± 0.68, and at the final testing increased the number of throws up to an average of 5.04 ± 0.13 reps for 30 sec, the difference demonstrating an improvement in this capacity with an average of 1.38. The t test showed a statistically significant difference between the arithmetic means of the fighters because the calculated t was 2.75 compared to the tabulated t of 2.201 at a threshold <0.05 for f equal to 11. The null hypothesis is rejected with a probability of over 95% that the experimental intervention module was effective in sports training. Statistical results in the control group are not significant, progress in the activity of throwing over the shoulder with both arms on the knee is low (t = 0.89, P> 0.05). When throwing from the knee, the statistical data show a statistically significant difference in the indicators of the experimental and control group. The t test highlights the differences between the arithmetic means of the fighters, because the arithmetic mean in the experimental group was 5.04 at the final test, and in the control group it is equal to 4.21, the calculated t was 3.74 compared to the equal table. with 3,292 at a threshold <0.01 for f equal to 22.

In this way, the successes of the experimental group on the development of the execution capacities of the technical throwing procedures are demonstrated, reason for which we support with a probability of 99.5% that the technology of implementing the means of artistic gymnastics develops the aptitude of the fighters.

Regarding the throw with side obstacle (Tai-Otochi) of the fighters from the experimental group, the arithmetic mean of the number of repetitions (Figure 4) at the initial test was equal to 3.60 ± 0.44, and at the final test it was the repetition value of 5.0 ± 0.44, and at the final test it was at the repetition value of 5.0 ± 0.133. The application of the t test (Table 1) brought to the fore a statistically significant difference between the arithmetic means of the side obstacle throws accumulated by the judoka fighters of the experimental group, t calculated reaching the value of 4.01 compared to the tabulated t 3,106 at a threshold <0,01 for f equal to 11.

Following the same statistical procedure, we further present the results obtained in side-throwing of the fighters of the control group. The results obtained show that the difference observed between the two statistical averages is insignificant (t = 2.06, P> 0.05) and the null hypothesis confirmed invalid.

In the same experimental groups, the results obtained in performing the side-kicking procedure are distributed as follows:

- at the final test the fighters of the experimental group obtained a result of 5.00 ± 0.133 repetitions;
- the control group demonstrated an arithmetic mean of 4.22 ± 0.140 repetitions;
- the value of the calculated t test is equal to 4.33 at a threshold <0.01 for f equal to 22.

We state that there is a statistically significant difference between the arithmetic means of the fighter groups in favor of the experimental group.

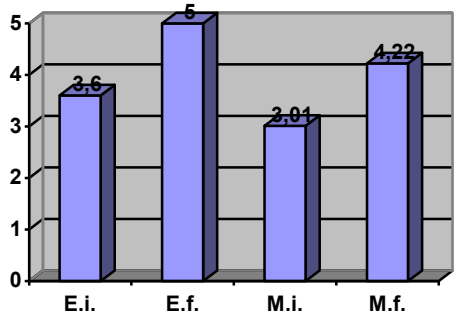

Fig. 4. Comparative presentation of indicators of side obstruction procedures (Tai-Otochi) of the fighters of the experimental and control group in the initial and final stage of the experiment

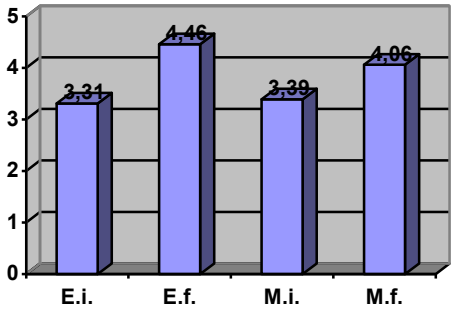

Fig. 5. Comparative presentation of the indicators of the over-shoulder throwing procedures with both arms (Morote-Seoi-Nagè) of the fighters of the experimental and control group in the initial and final stage of the experiment

For throwing over the shoulder with both arms the judokas from the experimental group, the arithmetic mean of the throws (Figure 5) was initially equal to 3.31 ± 0.44, and in the final test 4.46 ± 0.091, in this case we state that there is a statistically significant difference between the arithmetic means of the experimental group fighters, t calculated being

2,933 compared to t tabulated 2,201 at a threshold <0.05 for f equal to 11, which shows the positive influence of the technology applied on the development of technical and tactical throwing skills. The null hypothesis is rejected, proving with 95% probability that the experimental intervention module was effective in training preadolescent fighters.

We make statistical comparisons between both experimental groups, in order to reveal the main effects of the technology for implementing the means of artistic gymnastics. Based on the application of the arithmetic mean, the experimental group performed 4.46 throws at the end of the experiment, the control group 4.06. The application of the t test (Table 1) brought to the fore a statistically significant difference between the arithmetic means of the over-shoulder throws accumulated by the fighters of the experimental group, t calculated reaching the value of 2.53 compared to the tabulated t equal to 2,074 at a threshold <0.05 for f equal to 22, which indicates the positive influence of the use of gymnastics technology on the training of pre-adolescent fighters aged 13-15. The null hypothesis is rejected, proving with a probability of 95 - 99.9% that the experimental intervention module was effective.

Conclusions:

1. The research results highlight the complexity of the training conditions of judokas, the multitude of technology using the variables of gymnastics means that influence sports performance, representing specific contents engaged in the training-development of technical training skills.

2. The use of the conceptual model of the technology for the implementation of gymnastic means in the stage of basic training of judoka fighters aged 13-15 years allowed to streamline the training system and to obtain significantly higher results, being valid the specific hypothesis of the experiment.

3 The gymnastics means specific to judo wrestling and those for the development of technical training capacities applied in the experiment proved their effectiveness, contributing to the significant increase in subjects from the experimental group, compared to those from the control group confirmed by the values of t at P <0, 05 to 0.001.

4. A good analysis of the components of the means of gymnastics in judo at the age of 13-15 ensures the favorable premises for inclusion in the specific training methodology in the basic stage, that conditions the manifestation of performance capacity and obtaining higher results in competition.

References:

1. Dragnea, A. (1992). *Obiectivele inițierii copiilor în practicarea sportului*. În: Antrenament sportiv. Teorie și metodologie. Cap. 6.2.2. București: ANEFS, p. 22-28.
2. Manolachi, V.G. (2003). *Planificarea procesului de antrenament*. În: Sporturi de luptă. Teorie și metodică (lupte libere, greco-romane, judo). Chișinău: F.E.P. Tipografia Centrală, p. 86-101.
3. Mitrache, M., Bejan, R. (2011). *Dezvoltarea motrică și psihomotrică a copiilor cu vârste de 7-11 ani*. București: Discobolul, p. 95.
4. Mușat, C.L. (2010). *Ergofiziologia activităților motrice*. Lucrări practice. Galați: Universitatea ”Dunărea de Jos”, p. 4.
5. Triboi, V., Păcuraru, A. (2013). *Mijloacele și metodele de bază ale antrenamentului sportiv*. În: Teoria și metodologia antrenamentului sportiv. Cap. 3. Iași: Editura PIM, p. 112-118.
6. Брыкин, А.Т., Курьеров, Н.А. (1971). *Средства гимнастики*. В: Гимнастика. Учебник для институтов физической культуры. Под общ.ред. А.Г. Брыкина. Москва: Физкультура и спорт, с.6.