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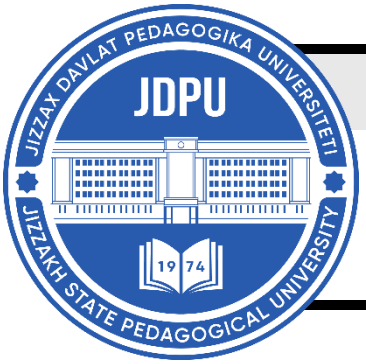

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IMPROVEMENT OF THE SPECIAL PHYSICAL TRAINING MODEL OF GRECO-ROMAN JUNIOR WRESTLERS

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ABOUT ARTICLE

Key words: specific training, Greco-roman wrestling, junior wrestlers, analysis, tactical objectives, technical actions, combat situation, category system, competition rules, Olympic games, physical training.

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Abstract: The use of methods to objectify the specific activities of athletes in training and competitions is not a problem studied to its true extent in wrestling. Measuring and evaluating the predictability components of competitive performance in this sport is even more important given the fact that in free and Greco-roman wrestling the elaboration of models has never been easy, due to the unquantifiable performance that performers have to achieve. Therefore, the issue is the most important field of research in the current stage in sports wrestling, before becoming an operational tool available to practitioners. The transformation of these components into figures allows obtaining results that can define the weight and impact they have in creating training and competitive models, selection models, planning, control and evaluation of the efficiency of training methods and especially the establishment of a battery of tests, usually validated by the method of factor analysis, to support periodic improvements by assimilating the progress in knowledge. From this point of view, we proposed the elaboration of the action strategy in order to increase the efficiency and highlight some components of the specific physical training model, whose materialization at the level of junior athletes decisively influenced the training activity, as a premise in obtaining the performance goals. Our experimental approach took place at the Dinamo Bucharest Sports Club, where the junior sports of the club and the national junior team trained. The

training of the junior wrestlers from the Grecoroman style according to the parameters of the specific physical training model foreshadowed by us, demonstrated its efficiency and led to the modeling of the wrestling behavior and performance compatible with that of high-performance wrestlers.

INTRODUCTION

Wrestling is a dynamic, high-intensity combat sport that requires complex skills and tactical excellence for success (Zi-Hong et al., 2013). Over time, wrestling has undergone a multilateral process of transformation and development. The congresses organized for this purpose have periodically implemented modifications of the competition regulations to amplify the dynamism and spectacularity of the direct competitions. of programs that facilitated the possibility of organizing sports training and participation in national and international competitions. The performance system involves a rigorous selection at an early age, in approaching the training of young athletes, emphasizing through training those performancegenerating components, by the psycho-physiological potential specific to the age at which this discipline can be practiced. ”The various motor acquisitions allow the practice of more and more varied physical activities and sports. The practice of sport becomes very effective from the age of nine, the age corresponding to the acquisition of technical skills. it is truly complete only from the age of 12, the age of logical and deductive intelligence and orderly and methodical reasoning”(Edouard et al., 2007).

The programming, planning, and organization of the training process are represented by a series of scientific indicators of methodological, physiological, psychological, pedagogical, technical-tactical nature as a result of research and standardization undertaken by specialists with concerns in the field of wrestling. The evolution of sports performance is ”a product of the effects determined by the concentric action of some objective and subjective factors” (Alexe, 1993, p. 23). o have control of the effects and implicitly of the performances, a series of procedures were started through which an attempt was made to objectify the means from the point of view of their efficiency. Regarding the evaluation of the expected effects, actions were taken based on which the level of influences is established, respectively the level of performance so that timely regulatory intervention is possible. It is imperative that in addition to determining the most efficient means and a strict record of their use as well as a current assessment of the level of performance, in all configurations, to correct any inaccuracies found, so that the dynamics are progressive and competitive behaviors according to the scheduled stage.

Athletes who wrestle at a high-performance level are involved in training that targets abilities such as strength, power, and endurance at the same time to achieve progress in all performance coordinates (Issa, 2015; Curby, 2005). Much of the research indicates a possible attenuation of

strength and power as a result of concurrent training while aerobic capacity and endurance performance appear to be minimally affected (Helgerud et al., 2011). A methodology for developing specific physical training in Grecoroman wrestling will positively influence the general motor skills of young wrestlers in all aspects of its manifestation (Pryimakov, 2020). ”From personal experience in training young people in performance in Grecoroman wrestling, I noticed that the manifestation of high strength allows not only easier learning of wrestling techniques but also the practice of competitive wrestling with superior performance in terms of stability of attack and defense” (Chirilă, 2009, p.12). The use of a specific physical training model that simulates combat behavior in training will significantly develop motor performance, increase the physical abilities of athletes and will significantly contribute to the development of their motor skills (Gable, 1998). Renowned wrestling experts say that ”muscular strength, muscular endurance, and anaerobic capacity are the most important variables in Greco-roman wrestling and athletes must pay particular attention to improving these variables to be a successful wrestler.” (Nikooie et al., 2017).

Incorrect executions in terms of methodical succession, spatial orientation and intensity of execution will lead to mastering the elements and procedures inefficiently. In Gioftsidou’s et al. (2015) opinion ”a key point of the program is the use of appropriate technique throughout all exercises and paying maximum attention to a correct position and good control of the body.

All these tendencies to improve specific physical training, especially maximum strength, were initiated and became an integral part of training methods, with the changes in regulations in 1970 when the fights became more aggressive and dynamic. Training methods include wrestling, and nonwrestling activities for increasing strength and power (Horswill, 1992). His analysis compared the performance of elite fighters with fighters with poorer results and found that increased strength attributes are a clear advantage in direct racing. Although his research is very extensive, the data they provide is not particularly useful for their use as a model because Horswill did not use typical primary methods for assessing strength.

To make the performance capacity more efficient, the structure of the competitive calendar and the means used in training must always be taken into account (Mirzaei et al., 2011). The starting point for an effective control of training is the description of a target performance, of a performance structure that corresponds to a performance prognosis (Tünnemann, 2013).

The scientific and practical substantiation of the possibility of using the training model for the development of the performance capacity of the young junior athletes will also lead to an increase of their motor potential. This may be an irrefutable thing for an earlier and more sustainable approach to Greco-roman wrestling techniques with surplus results in the profitability of competitive behavior. The training process refers to improving performance by providing feedback on the performance of individual athletes or teams (James, 2009).

Research hypotheses: The purpose of the research is the elaboration of the specific physical training model of the junior athletes from the Greco-roman style based on observed, compared, studied and configured parameters whose values were highlighted in large-scale competitions. In this context, the axial hypothesis that was the basis for organizing the entire preliminary and heuristic approach was based on the assumption that the detailed study of the competition model will contribute to the content of the specific physical training model and will cause major changes, compatible with high performance. Considering that the study of the competitive model was completed based on the quantification of some parameters of the wrestling behavior of high-performance athletes, we considered that in addition to learning a perfect technique, these exceptional athletes possessed a high degree of maximum strength. Assuming that high maximum strength parameters are favorable factors in completing specific wrestling techniques at this level, we considered, as an auxiliary hypothesis, that the approach of a specific physical training model can not be validated without raising the maximum strength parameters of our wrestlers, allowing them to improve sports performance.

2. Organization and conduct of research

2.1 The purpose and tasks work

The purpose of the research was to develop a specific physical training model for junior wrestlers practicing the Greco-Roman style, with the following objectives:

- Formulation of the content of the specific training model and its

application in experimental research at the level of junior wrestlers, followed by a comparative analysis of the effects produced by it;

- Inventory and choice of methodology for investigation and statistical

data processing;

- Designing, selecting, and experimenting with means for developing

maximum strength at a level that allows highlighting the technicaltactical potential of Greco-Roman style junior wrestlers in large-scale competitions;

- Selection of tests, which highlight the evaluation of the effectiveness of

training and participation in major competitions of young wrestlers;

- Immanent, comparative and correlated verification, evaluation and

interpretation of research results;

- Validation or refutation of experimental research hypotheses.

Work hypothesis

The practical use of the competition model will contribute to the constitution of the content of the training model and will determine major changes, compatible with the great performance at the level of the training objectives.

2.2. Research methods

The content of the theoretical substantiation of the specific physical training model of the junior wrestlers from the Greco-roman style concerning the characteristics of the specific effort, of the wrestling behavior and the training to obtain superior performances was achieved through documentary information. Imposed a wide range of specific research techniques and methods:

- pedagogical observation method. This consisted in observing and delimiting the wrestling parameters, the wrestling behavior of the champions with a model value that was implemented by modeling the training fight and at the level of the junior wrestlers from the Greco-roman style. Based on this method, comparisons and delimitations were made and the fundamental or detailed aspects regarding the specific training and the analyzed competitions were highlighted.

- modeling method. It has been used in the training of athletes and in training and evaluation competitions. The main elements that were modeled were those related to the maximum force parameters.

- experimental method. Our paper uses an ameliorating pedagogical experiment, which aims to confirm or refute the hypotheses developed. The experiment aims to optimize the training process of junior athletes, aiming to improve the indices of maximum strength and combat performance. The experiment allows the comparison of indices in training and competitions to configure the current and subsequent models and specific training.

- statistical-mathematical method. Was used to mark the research results, to determine the relationships between the experimental variables and to verify the differences and their significance between the two evaluation moments. Thus, statistical data processing was made using the SPSS program calculating the descriptive data: mean, the error of standard mean, SD standard deviation; sum. In order to highlight the fact that the chosen training program produces significant effects, in terms of the results obtained, the t-test and ANOVA single-factor test was applied, the level of significance being established in our case for N = 16, at the level of $p < 0.05$.

- graphic method, allowed the highlighting of the essential characteristics in the evolution of the researched aspects.

2.3 Research subjects

The subjects of our experimental research were a group of athletes (n = 16), aged 16-18 who train in Greco-roman wrestling at the Dinamo Bucharest Sports Club. The club's athletes had a training cycle with the national junior team, which made our research more efficient and easier. We mention the fact that, between junior wrestlers and those from the national team of juniors, there are no morphological, functional or other differences, the only inequalities being registered at the level of the competitive sports experience. Because the experimental research was carried out at the level of the national team of juniors who at that time trained with the junior wrestlers of the Dinamo Club,

all research subjects are a single research group on which they acted with independent experimental variables.

We mention that, before conducting the research, the parents of the participating athletes were consulted and agreed on the content and operating procedures of the experiment. The research respected the ethical and medical conditions of the subjects' participation.

2.4 Place and conditions of the research

The experimental research was carried out in the conditions of centralized training of high-performance junior athletes, at the sports base of the Dinamo Bucharest Sports Club. The athletes' members of the national team and the junior athletes of the Dinamo Club had at their disposal the best training conditions, the training room is equipped with specific material elements of the latest generation.

2.5 Duration of the research

The duration of the experimental research for the application of the independent variable at the level of the experimental group was 7 weeks, respectively during August-September 2020. The choice of this interval, respectively two mesocycles, was conditioned by government restrictions on training in contact sports. during the covid-19 pandemic. We also considered that the application of the independent variable over a single mesocycle would have been insufficient to obtain significant and relevant research results.

2.6 Research content

As there is no standardization in the elaboration of a specific physical training model unique for the Greco-roman wrestling discipline at different age and value categories, we acted mainly on two components with a major role in obtaining performances:

To objectify the specific physical training, control tests were created symmetrical with those from the "Annual training plan":

• Over-the-hip projections with the wrestling mannequin - 30 seconds;

• Over-the-chest projections with the wrestling mannequin - 30 seconds;

• Entrances and exits from the bridge position - 30 seconds;

• Pirouettes in the bridge position - 60 seconds;

• Parallel bar dips;

• Deadlifts - 50% of your weight.

Development of parameters corresponding to the maximum force

- Barbell rows
- Power cleans
- Low bar squats

Based on the study made after the previous research, we used in the training program for junior wrestlers, those exercises and those dosages that best correlated with the requirements of the wrestling competition.

3. Results and analysis

3.1 Specific training tests

Table 1: Specific training tests - first testing

Statistic al indicators	Over-thehip projections with the wrestling mannequ in - 30 seconds	Over-thechest projections with the wrestling mannequ in - 30 seconds	Entranc es and exits from the bridge position - 30 seconds	Pirouettes in the bridge position - 60 second	Parall el bar dips	Deadlifts - 50% of your own weight
1	2	3	4	5	6	7
M (X)	8.13	9.00	15.56	19.38	17.31	35.38
Me	8.00	9.00	16.00	19.00	18.00	36.00
Mo	8.00	9.00	16.00	19.00	18.00	36.00
S	0.81	1.15	1.71	0.81	3.00	1.71
C.v. (%)	9.96	12.77	10.99	4.18	17.33	4.83
t Test	-8.46	-12.01	-7.52	-9.07	-12.32	-9.50
ANOVA	42.33	55.48	9.60	63.08	17.50	28.29

Table 2: Specific training tests - second testing

Statistic al indicators	Over-thehip projections with the wrestling mannequ in - 30 seconds	Over-thechest projections with the wrestling mannequ in - 30 seconds	Entranc es and exits from the bridge position - 30 seconds	Pirouettes in the bridge position - 60 second	Parall el bar dips	Deadlifts - 50% of your own weight
1	2	3	4	5	6	7
M (X)	10.56	11.88	17.31	23.13	21.19	38.31
Me	11.00	12.00	18.00	23.50	21.50	39.00
Mo	11.00	11.00	18.00	24.00	22.00	39.00
S	1.26	1.02	1.54	1.71	2.17	1.40
C.v. (%)	11.93	8.58	8.89	7.39	10.24	3.65
t Test	8.46	12.01	7.52	9.07	12.32	9.50
ANOVA	42.33	55.480	9.60	63.08	17.50	28.29

We present the results of the control test Exercise of entry and exit from the bridge - 30 seconds which we consider the most conclusive of the tests of specific physical training. The first test of the

sample had the following statistical values for the individual results of the research group subjects: arithmetic mean M (x) = 15.56 repetitions / 30 sec, median Me = 16.00 and Mo = 16.00. The coefficient of variability Cv = 10.99% had an average level of homogeneity of the obtained performances.

The statistical values for the final test had the following values: arithmetic mean M (x) = 17.31 repetitions / 30 sec, median Me = 18.00 and Mo = 18.00, and the coefficient of variability Cv = 8.89% resulted in the significance of a high level of homogeneity of performances obtained.

Comparing the results between tests we noticed that the differences were obvious in favor of the second test. These differences consist in the meanings of the Student's test t = 8.46p = 0.001 and critical t = 4.07, and single-factor ANOVA, F = 42.33 p = 0.001 and critical F = 13.29.

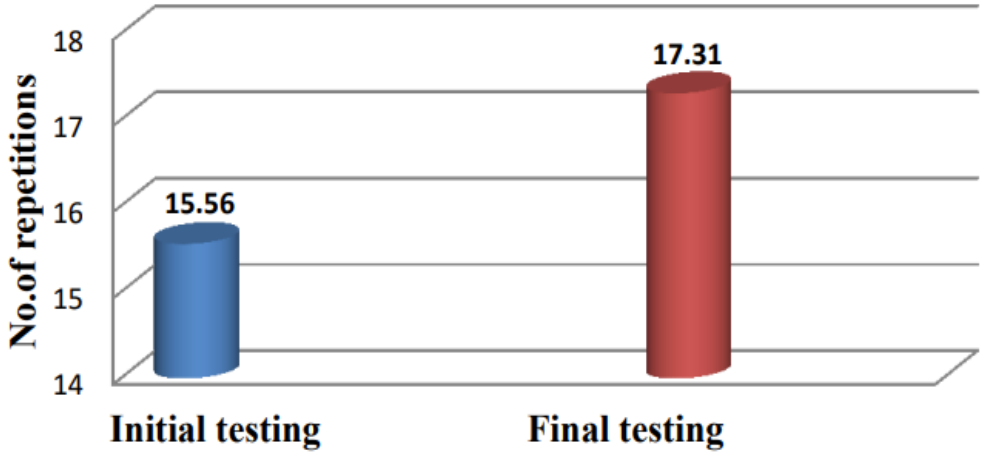

Figure 1 Comparison of the average values at the test Entrances and exits from the bridge position - 30 seconds

Consequently, the results of all tests confirmed considerable progress for all control parameters in this category, the benefits being attested with significance values for all indices in both tests used at a confidence level for p = 0.001 and critical t = 3.88 - the test Student and p = 0.001 and critical F = 12.71.

The validity of our hypothesis was confirmed by the increased statistical values of the degree of significance, regarding the improvement of specific physical training, thus proving the effectiveness of our model, developed and applied at a high level of performance.

3.2 Measurement, interpretation and analysis of tests for maximum force relief

Table 3: Highlighting the maximum force indices at the initial and final testing

Statistical indicators	Barbell rows / kg		Power cleans / kg		Low bar squats / kg	
	T1	T2	T1	T2	T1	T2
M (X)	56.56	66.81	56.31	61.75	88.19	101.88
Me	56.00	66.50	55.50	62.00	88.00	105.00

Mo	53.00	65.00	52.00	65.00	75.00	110.00
S	4.95	5.88	5.61	3.64	9.51	9.52
C.v. (%)	8.75	8.80	9.96	5.89	10.78	9.34
t Test	-10.83	10.83	-7.02	7.02	-13.37	13.37
ANOVA	28.45	28.45	10.58	10.58	16.55	16.55

We present to you the results of the Barbell rows control test, which we consider the most conclusive of the tests of determining the maximum force.

The results had the following representative values at the first test: arithmetic mean M (x) = 56.56 kg, median Me = 56, modulus Mo = 53 and the coefficient of variability C.v. = 8.75%, offering the significance of a very high homogeneity, which is also proved by the value of the standard deviation S = 4.95

The values of the secondary test changed upwards due to the volume and intensity of the exercise carried out during this period by the research subjects and had the following configuration: arithmetic mean M (x) = 66.81 kg, median Me = 66.50, modulus Mo = 65 and the coefficient of variability Cv = 8.80% signaling a low degree of variation of the individual results.

DISCUSSIONS

The structure and the decisive role of the technique in obtaining the advantages in front of the opponents have intensified the efforts of the specialists in the field of sports wrestling to make its learning more efficient. The content of the technical training differs according to the intensity of the learned procedures and the methodical sequence of teaching. „Physical conditioning can account for up to 45% of the variance observed between successful and less successful wrestlers." (Nagle et al., 1975). Although a relatively limited number of procedures are performed in competitions, it has been shown that from a considerable volume of means, the possibility of ideal selection of the technique in relation to the opponent's reaction would be created, nevertheless, the actions taught must be adapted to the temporal requirements of acquisition and improvement in technical training and specific physical training. „Good physical preparation of the upper extremities in Greco-roman wrestlers is not only important but also a result of the long-term drilling of technical-tactical elements during the training process." (Demirkan et al., 2014).

The methodological basis for the development of specific physical training and the correct planning of training tasks must be carefully developed and monitored by specialists in the field of instruction to eliminate the inherent risks that may arise in the training of junior wrestlers and may jeopardize the achievement of great performance (Tuxtanazarov & Maxmutaliyev, 2020). The physiological demand for combat sports is very high (Barbas et al., 2011). Victory depends on the strength and power of attacks and moves against the opponent. High levels of muscular endurance and the ability to maintain high levels of muscular strength, strength and speed in combat can

contribute to the performance and efficiency of an appropriate motor gesture, thus contributing to improving the technicaltactical performance of athletes." (Marques et al., 2019)

According to Ratamess (2011, 21), „weight training is a staple of grappler training for at least 3–4 workouts per week. Exercises should be selected from 3 broad categories: Olympic-style/power lifts, basic strength, and auxiliary exercises" for senior fighters, this being similar to our experimental approach adapted to the age category of our sample, while also taking into account „sequencing exercises between upper- and lower-body and/or agonist/antagonist muscle groups is also effective" (Ratamess et al., 2009).

In conclusion, we can say that the model proposed by us is a dynamic one that allows changes in content as new approaches and methods appear, being used for the development, control and correction of the specific physical training process.

CONCLUSIONS

- From our perspective we are convinced that a thorough investigation of

the control elements found in the training plan of the national group of juniors and used in the specific physical training process of performance athletes in Greco-roman wrestling is required. We claim that the tests initiated by us meet the requirements of performance-specific training at this level.

- Given that the sport of wrestling is part of the category of sports with non

quantifiable performance, to emphasize the achievements in training, the main means of training become control tests for evaluating performance objectives. The control tests used in our approach proved to be elementary to the age and level of training of the research subjects, they did not create difficulties in accommodating the junior wrestlers with testing, allowing the exposure of the investigated elements.

- The experiment treated the improvement of some components of the

specific physical training which is a premise in expressing the performance potential and in improving the parameters of maximum strength following the model values of elite athlete..

- The elaboration and application of the specific physical training model,

the concretization of the whole training process of the junior wrestlers, allowed us to verify the working hypotheses, by recording, measuring, processing and interpreting the quantified data, both in terms of some specific physical training indices. as well as maximum force coefficients, which were analyzed, compared and evaluated during the experimental research.

- All indicators that were tested confirmed the research hypotheses by

significant high values for the Student test. The analysis of the single-factor ANOVA variant is a very sensitive test of significance and the results partially certified the effectiveness of working with the means of specific physical training largely for the development of motor capacity.

- Experimental scientific research confirms the established hypothesis that

the specific physical training model with the means and methods used, can significantly improve certain components of performance capacity. Scientific guidance to increase the performance of junior wrestlers must be carried out with objective data in all divisions of training, to maximize the efficiency of the methods and means used to achieve great performance.

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