Revista Românească pentru Educație Multidimensională
ISSN: 2066-7329 | e-ISSN: 2067-9270
Covered in: Web of Science (WOS); EBSCO; ERIH+; Google Scholar; Index Copernicus; Ideas RePeC; Econpapers; Socionet; CEEOL; Ulrich ProQuest; Cabell, Journalseek; Scipio; Philpapers; SHERPA/RoMEO repositories; KVK; WorldCat; CrossRef; CrossCheck

2023, Volume 15, Issue 3, pages: 119-133 | https://doi.org/10.18662/rrem/15.3/758
Submitted: March 29th, 2023| *Accepted for publication:* April 26th, 2023

The Study Regarding the Training and Evaluation Process of the Female Judokas Training Level

Veaceslav MANOLACHI [1],
Irina DELIPOVICI [2],
Victor MANOLACHI [3],

[1] Dr.habil., university professor, "Dunărea de Jos" University of Galati, Romania; State University of Physical Education and Sport, Chisinau, Republic of Moldova, veaceslav.manolachi@ugal.ro, +373 22 494081.
[2] PhD, university lecturer, "Dunărea de Jos" University of Galati, Romania; State University of Physical Education and Sport, Chisinau, Republic of Moldova, +373 22 310432.
[3] PhD, university lecturer, "Dunărea de Jos" University of Galati, Romania; State University of Physical Education and Sport, Chisinau, Republic of Moldova, victor.manolachi@ugal.ro, +373 22 493550.

Abstract: *The survey results allowed the determination of the hypothetical structure of the training level of female judokas, the emphasis being placed on the paramount importance of the technical-tactical, volitional and motor training level. At the same time, the complex of main registered indices coincides, in general, with the structure of the training level of judokas. However, the extensive investigation of the survey results notes significant differences between the training levels of the female judokas and male judokas, especially regarding the physical training level. The survey shows that the most common manifestations of the motor skills of the female judokas are: explosive force, reaction speed, movements execution speed, coordinating abilities, starting speed, specific resistance, speed resistance, muscle sensitivity, orientation in space, active suppleness, rational relaxation and the speed of a single movement. This set of indices refers only to a force capacity - explosive force – which allows us to consider this fact an essential difference of the structure investigated from that of the physical training level of the male judokas, thus making possible the presumption of the existence of considerable reserves for increasing the mastery of the female judokas, namely in the direction of developing and improving the force and speed-force.*
Most specialists recognize the need to make corrections in training plans based on data on the functional state of the neuromuscular system (NMS) of the female judokas in order to increase the level of special physical training and of other aspects of mastery, but are not experienced enough on how the analysis of the test results is performed for the application of concrete individual corrections in the instructive and training process.

Keywords: *Female judokas, sample of coaches, respondents, structure of physical training, motor skill.*

How to cite: Manolachi, V., Delipovici, I., & Manolachi, V. (2023). The Study Regarding the Training and Evaluation Process of the Female Judokas Training Level. *Revista Românească pentru Educație Multidimensională, 15*(3), 119-133. https://doi.org/10.18662/rrem/15.3/759

©2023 Published by LUMEN Publishing. This is an open access article under the CC BY-NC-ND license http://creativecommons.org/licenses/by-nc-nd/4.0/

Introduction

The modern sports with the highest achievements require research in the field of adaptive capacity of the female athletes, their physical activity being the main theoretical condition for physical training. Scientific research in this direction shows that even the most difficult physical work is not able to cause adaptive changes in the human body, as seen in highly qualified athletes. This is explained by the fact that the intensity of the training work is combined with extreme conditions of competitive activity (Dorgan & Braniste, 2021; Manolachi, 2015, 2018a, 2018b; Platonov, 2017, 2018; Poholenchuk, 1993; Shahlina, 1995).

In the world of the researchers, coaches there is no consensus on testing the training level of the female judokas, and most tests applied in the practice of women's judo are not *verified for* information from the point of view of test theory, which greatly diminishes the veracity of the results obtained and, therefore, it does not allow an objective assessment of the degree of activism of the female athletes. Furthermore, the tests do not indicate the optimal periodicity of testing, and the insufficiency of scientifically substantiated recommendations leads to the lack of a unique system of opinions of practitioners on the essence of the researched problem.

The lack of a clear planning of the volume, intensity of the training process, the insufficient attention of the coach to the functional state of the athletes in certain periods of the biological cycle, can be one of the reasons for menstrual dysfunction. The biological characteristics of the women's body dictate the need for a significant reorganization of the training process of the athletes. When planning training tasks, it is necessary on the one hand, to take into account the phases of the menstrual cycle (MC), i.e. the implementation of an individual approach to the training process of the women, on the other hand, new methods, economic and productive, allowing the improvement of the functional state of the athletes' body and contributing to the improvement of sports results (Manolachi, 2015, 2017; Novikov, 2012; Shahlina, 2001; Manolachi et al., 2022).

The purpose of the research

It consists in the elaboration of the methodology regarding the determination of the optimal values of the force and force-speed efforts as well as of their correction range based on the express analysis of the functional state of the neuromuscular system.

The objective of the research:

- reflecting the respondents' opinion regarding the implementation of pedagogical testing systems in the training process of the female judokas.

Organization of the research:

The level of professionalism of the respondents is confirmed by the following indicators. In total, 91 coaches were interviewed, 45 of whom had the title of Merited Coach and first category coach, 27 people were senior coaches of the national teams of Romania and of the Republic of Moldova, of specialized sorts schools and sports clubs. All the survey participants have a work experience between 2 and 28 years. At the same time, the work experience with female athletes was substantially lower, ranging from 1 to 20 years. The respondents represented 25 localities of the countries.

The special questionnaire included 20 questions. The first three of these were aimed at determining the opinion of coaches about the structure of physical training of the female judokas. To the first question, the respondents were asked to evaluate the importance of physical qualities for female athletes. The evaluation system was quite simple: if the coach considered a certain quality very important, he gave it - 2 points, if he considered that quality is not very important – 1 point, and if the quality did not matter – 0 points. Subsequently, the total score of all respondents and the average for each quality were calculated.

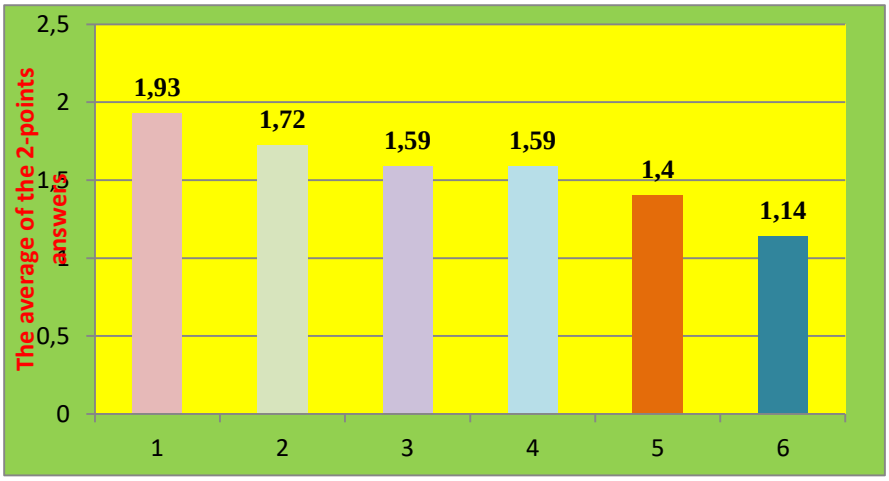
Results and discussions

The analysis of the answers to the first question shows that coaches consider speed to be the most important quality of an athlete. This quality accumulated an average score of 1,93 (Figure 1). Subsequent data analysis allowed highlighting the average values for each quality and their ranking according to importance: resistance – 1.72 points, ability and suppleness – equal score – 1.50, force – 1.49 points, and morpho-functional peculiarities – 1.14. Comparing the data obtained with the known representations about the structure of the training level of judokas, there is an essential decrease in the importance of force compared to other qualities.

The analysis of the answers to the second question provided more extensive data, the respondents being asked to evaluate, according to the same system, the particular manifestations of motor skills. According to the theoretical assertion in the literature (Novikov, 2012; Platonov, 2017, 2018), 29 such manifestations were selected. The classification by importance, according to the accumulated average score, of the particular manifestations of motor skills is presented in Figure 1. The detailed analysis of the data

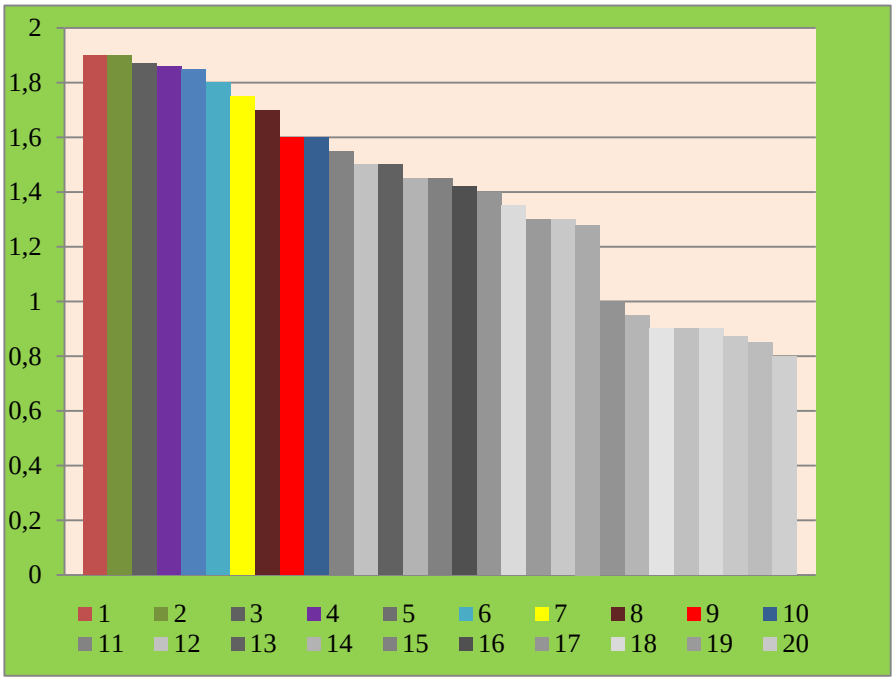
presented in (Figure 1) shows that 12 manifestations of motor skills accumulated between 1.51 and 2.00 points.

Given the high score, these skills can be considered the most important for the female judokas. The particular manifestations of physical qualities, which, according to the respondents, accumulated an average score (between 1.00 and 1.50 points, (9 of them) can be classified as being of relative importance for the female judokas. Finally, 8 of the particular skills were assessed with the fewest points (from 0.97 points and below) and can probably be considered as some of the least important in the training structure of the female judokas. Despite the relatively conventional nature of this classification, the data obtained from the analysis of the questionnaires can be taken into account in the future when developing the training program of the female judokas.



1 – speed; 2 – resistance; 3 – ability; 4 – suppleness; 5 – force; 6 – morpho-functional peculiarities.

Fig. 1. The appreciation of the importance of the motor skills of the female judokas



1 – explosive force; 2 – reaction speed; 3 – speed of execution of an integral movement; 4 – coordination of movements; 5 – starting speed; 6 – specific resistance; 7 – speed resistance; 8 – muscular sense; 9 – orientation in space; 10 – active flexibility; 11 – rational relaxation; 12 – the frequency of a single movement; 13 – dynamic balance; 14 – endurance; 15 – MOC; 16 – adaptive coordination; 17 – movements frequency; 18 – resistance at force; 19 – dynamic force; 20 – VVP; 21 – efforts differentiation; 22 – static equilibrium; 23 – absolute force; 24 – relative strength; 25 – body weight; 26 – body proportions; 27 – waist; 28 – passive flexibility; 29 – static force

Fig. 2. The appreciation of the importance of the particular manifestations of the motor skills of the female judokas

In order to obtain the relevant data regarding the researched issue, very important is the additional information regarding the correlation of the main aspects of the structure of the sports training of the female judokas. Thus, 69% of the respondents highlighted in the first place the explosive force of the muscles, and in the second – one of the athletics events. At the same time, a significant part of the interviewees (23%) have completely different opinions, which denotes the lack of a unique opinion of the coaches regarding the predilection for a certain quality in the structure of sports training of the female judokas.

The question about the degree of differences in the physical training of the female judokas, compared to males, generated quite contradictory

answers. Thus, only 18.3% of the respondents believe that the physical training of the female judokas should differ considerably from that of the male judokas. At the same time, 26.6% of those surveyed point out substantial differences in the content of physical training of the two categories. Even if we unified these opinions, it would appear that less than half of the coaches surveyed (45.1%) have a clear picture of the complexity of training of the female judokas. The majority of respondents (40.8%) however, assume the existence of insignificant differences between the physical training of the female judokas and that of the male judokas. However, the opinion of the other coaches remains unclear (14.1%), who do not notice these differences or consider that they do not exist. It may be that this wrong conclusion of a small but still significant part of the respondents constitutes a convincing proof of the lack of systemic knowledge of the coaches on this problem.

Nor did the assessments on the fourth question concerning the periodicity of testing the training level of the female judokas reflect an unequivocal opinion of the respondents. The analysis of the answers shows that 18.3% of the coaches consider admissible the testing of the training level of the disciples once a year; 31.0% of the respondents believe that testing should be performed ones every half year; 19.7% - every 3 months; 16.9% - think it should be carried out monthly, and 14.1% - weekly. Such a significant rate of equivocal answers demonstrates the insufficiency or even lack of clear and scientifically substantiated recommendations in this regard.

The fifth question in questionnaire was addressed to the coaches in order to specify the structure of the tests applied in the practice of women's judo, as well as to highlight the priority of certain tests according to the frequency of their use. The results obtained are presented in Table 1. The analysis of the data in Table 1 shows that, to assess the level of development of different physical qualities, coaches use from 6 (suppleness) to 14 (resistance) tests, which differ from each other by orientation, complexity, spending time, required equipment. At the same time, the total number of tests applied is quite impressive (48), so it is probably not absolutely necessary to develop other tests, but probably to systemize and concretize those already existing in the practice of training female judokas.

Table 1. Tests applied by coaches to assess the training level of the female judokas

Motor skills	No. of tests	Tests	Number of respondents who performed the tests
Force	8	1. Traction at the fixed bar	**20**
		2. Pushups	**14**
		3. Pushes hand squats with weightlifting	**14**
		4. Back dinamometry	**6**
		5. Squats with the partner	**5**
		6. Palpating hand flaxes dynamometry	**5**
		7. Climbing on the rope	**5**
		8. Polidinamometry	**2**
Speed	9	1. Throws of the partner in a fixed time interval (10, 20, 30 sec.)	**20**
		2. Speed running – 30, 60, 100 m	**19**
		3. The number of throws of the partner in one minute	**3**
		4. Reaction time to a moving object	**3**
		5. The time of a single movement	**2**
		6. Throw execution time	**2**
		7. Special relay	**2**
		8. Pushups (with time restriction)	**2**
		9. Fighting games	**2**
Resistance	14	1. Speed running (1, 1,5, 2, 3, 3,5, 7 км)	**13**
		2. No. of procedures performed with a "new" partner	**8**
		3. Cross-country running on different distances	**5**
		4. Cooper Test	**5**
		5. Throws of the partner, 3 min.	**4**
		6. Throws of the partner on time – 15-20 throws	**4**
		7. Running 30 min.	**2**
		8. No. of jumps in one minute	**2**
		9. The maximum number of squats with the partner	**2**
		10. Ruffier index	**2**
		11. Lying pushups	**2**

		12. Jumping over the gym bench (maximum number)	**2**
		13. Partner throws in a minute	**1**
		14. Throws of the partner "to the brim" in a scheduled tempo	**1**
Ability	11	1. Acrobatics exercises	**8**
		2. Specific relays	**8**
		3. Gymnastic exercises	**4**
		4. Throw execution quality	**4**
		5. Exercises in the "bridge" position	**6**
		6. Rolls	**6**
		7. Jumps	**2**
		8. Reaction time to a moving object	**1**
		9. Rollover by spins	**1**
		10. „Taking" the opponent out of balance	**1**
		11. "Vertical" method	**1**
Suppleness	6	1. Longitudinal and lateral twines	**17**
		2. Torso applications-extensions	**9**
		3. The gymnast's and the fighter's bridge	**16**
		4. Acrobatic exercises	**7**
		5. Spins in "bridge" position	**2**
		6. Goniometry	**2**

The answers to the sixth question of the questionnaire highlighted the opinions of the specialists on the place and role of force and force-speed training of the female judokas in the multi-year training process. It was determined that during the 4-year cycle, force and force-speed exercises occupy between 40-50% of the total training period (this is the predominant opinion of the respondents), and during the competition period – from 25 to 40%. Furthermore, no significant differences of these data were found depending on the year of training of the analyzed cycle.

For this purpose, the answers of the respondents about the ways of dosing the efforts of force and force-speed are of considerable interest. It was established that such a dosage is performed by most specialists in the weekly cycle and at each training session taking into account the general condition of the female judokas, in the monthly cycle – based on control testing, in the annual cycle (during training and competition) – based on training programs with the introduction of corrections according to the results of previous control experiments.

Referring to the need to assess the functional status of the neuromuscular system (NMS) of the female judokas in the process of planning force and force-speed efforts, most specialists (82.0%) consider that this should be done systematically. At the same time, the respondents' opinions on the evaluation methods and the periodicity of testing the functional state of the neuromuscular system were quite divided, thus finding that many coaches do not have exact knowledge about the structure of the evaluation process of the neuromuscular system of the athletes. In other words, this question in the questionnaire proved to be very complicated for the respondents. However, it was found that most coaches include in the process of assessing the functional state of the neuromuscular system the indices of reaction speed and the value of the explosive force of the muscles. Furthermore, the periodicity of testing these indices is determined by the majority of interviewed coaches (75%) monthly.

The next question of the questionnaire highlights the respondents' opinions about the possibility of making corrections in the training programs of the female judokas, based on the functional status of the NMS. The analysis of the answers to this question showed that 75.0% of the respondents consider that making this correction is very possible, needing to correct, first of all, the individual value of the effort volume. However, 16.0% of the coaches consider that making corrections in the content of training plans according to the data of the functional diagnosis is not necessary.

When asked about directing the corrections in the training process according to the NMS data of the female judokas, it was found that 86.0% of those interviewed assume the possibility of increasing the level of special physical training. However, 42% of specialists do not know exactly how to apply in practice the correction of the training process taking into account the data of the functional state of the NMS of the female judokas.

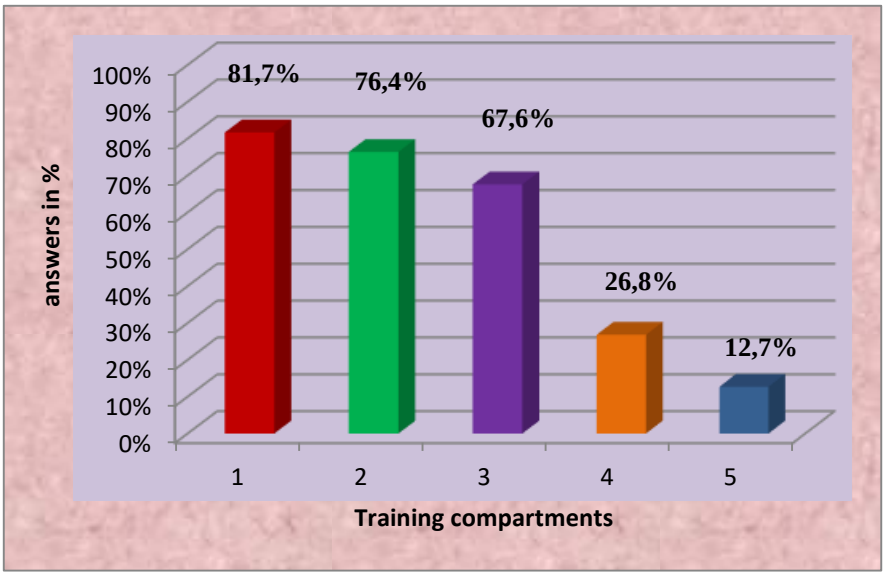
The answers to the next question of the questionnaire highlighted the opinion of the respondents regarding the informativity of the tests applied in the control process: 19.7% of the coaches always take into account the informativity of the tests, and 32.1% of the respondents – in most cases. Thus, it can be stated that more than half of the coaches (51.8%) have the necessary knowledge and skills in the field and, in all probability, obtain true results from the tests. The same cannot be said of another group of respondents. Therefore, 21% of the surveyed coaches only sometimes consider the informativity of the tests, 16.9% of the respondents do not take it into account at all, and 9.9% could not answer this question. In this context, it can be noticed that, at the present time, in the practice of

spontaneous choice of tests, methods and tools of pedagogical evaluation, many errors and inaccuracies are committed.

The analysis of the answers to the next question in the questionnaire showed that the level of technical-tactical training of the female judokas is often visually assessed by coaches. Furthermore, 15.5% of respondents perform this activity in competitions, 14.1% - in training, and 12.7% - in both competitions and training. 15.5% of those surveyed apply, for the purpose of evaluation, the calculation of the criteria of technical-tactical mastery, and 8.4% choose the most appropriate path, combining the calculation of the criteria of the training level with the visual examination at trainings and competitions. This correlation in the coaches' answers obviously demonstrates that most coaches continue to respect the existing tradition in judo practice, evaluating the technical-tactical mastery only through pedagogical observations. At the same time, the developed and informative indices of this aspect of the training level of the wrestlers often cause mistrust of the coaches, due to the complexity of the calculations or the lack of special knowledge, necessary for the practical implementation of the information obtained.

The results of the answers to the question on the importance of various aspects of the training level of the female judokas in training process are presented in Figure 3. Analyzing the data reflected in Figure 3, we see that 81.7% of the respondents consider technical-tactical training important, 76.1% - moral and volitional training, 67% - special physical training. These aspects of training represent, in the opinion of the survey participants, essential components of the sports training process of the performance female judokas. At the same time, the respondents also emphasize the importance of general physical training (only 26.8% of coaches highlighted it) and of theoretical training (12.7%).

The analysis of the answers to the following question allowed the highlighting of the data on the technical procedures, most frequently used in women's judo. These data are reflected in Figure 4. According to the diagram presented, the main standing wrestling techniques are: throws with leg (80.3%) and rollover throws over the leg (70.4%), and in ground wrestle the most common fixation is applied (14.1%). Furthermore, some coaches consider the female judokas to use rational the following techniques: throws on the back (7.0%), strangulation (5.6%), throws in front (5.6%), throws over the chest (5.6%), throws by falling down (4.2%), sprains (4.2%), contortions (2.8%), throws with the support of the sole of the foot on the opponent's abdomen (2.8%) and hold legs throws (1.4%).

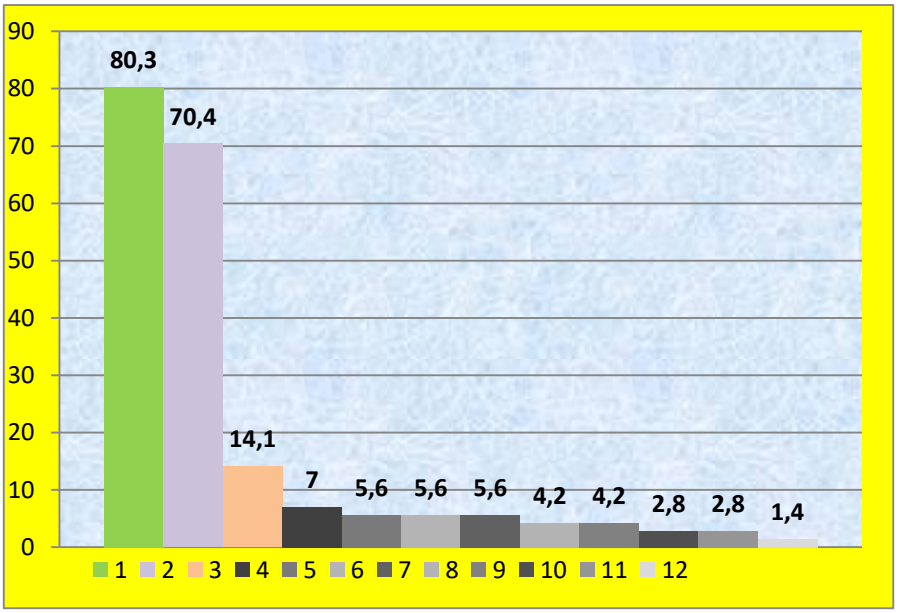


1 – technical-tactical training; 2 – moral-volitional training; 3 – special physical training; 4 – general physical training; 5 – theoretical training.

Fig. 3. The importance of various aspects of the training of the female judokas

The next question of the survey was to identify the respondents' opinion on the aspects of improving the technical mastery of the female judokas. Most specialists (76.1%) consider the multilateral development of the technique necessary, and a considerably smaller number (23.9%) plead for the qualitative improvement of a limited spectrum of procedures. Therefore, the opinion of most of the interviewed respondents coincided with that of the experts, who researched this issue.

The analysis of the answers to the question on the various types of evaluation shows that coaches do not give a clear priority to a certain form of evaluation. Thus, 47.9% of respondents believe that it is necessary to assess the level of physical training of the female judokas; 43.7% assume that the training and competition efforts must be verified, respectively the level of technical training of the female athletes; 40.8% of the respondents keep track of the sports results and the behavior of the female judokas at competitions. Based on the above, it can be emphasized, on the one hand, the approximately equal importance of all types of evaluation in the training of the female judokas, and, on the other hand, the insufficient use by coaches of the entire arsenal of evaluation methods and tools.

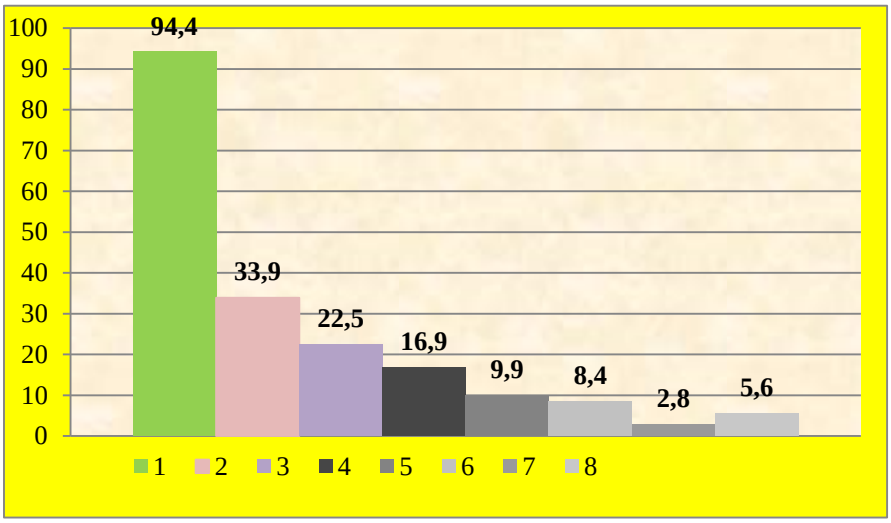


1 – leg throws; 2 – throws by turning; 3 – fixations; 4 – throws on the back; 5 – strangulation; 6 – throws in front; 7 – throws over the chest; 8 – throws by falling down; 9 – luxations; 10 – twists; 11 – throws with the support of the sole of the foot on the opponent's abdomen; 12 – throws hold legs

Fig. 4. The importance of technical actions in women's judo

The last question in the survey was more general and allowed to reflect the opinion of the respondents on the implementation of pedagogical testing systems in the training process of the female judokas. The obtained results are presented in Figure 5. The analysis of the indicated data expresses the unanimous conclusion of the respondents (94.4%) according to which the problem of female judokas testing is not completely solved. 5.6% of survey participants consider the problem, in principle, solved. We believe that this correlation reflects the real situation in the sports training system of the female judokas, which characterized, according to the interviewed coaches, by the insufficient number of methods and informative tests, the lack of a professional measurement system of very high accuracy and reliability (33.9%), as well as some innovative programs argued from a scientific point of view. Further, in order of importance, the specialists elucidated other causes: lack of special literature and fundamental and applied scientific recommendations (22.5%), insufficient number of instructive seminars for coaches (9.9%), lack of a unique test system (8.4%), the inability of the coach to perceive the importance of this problem (2.8%).

Furthermore, 16.9% of the coaches surveyed do not have their own opinion about the test systems, which can probably be explained by a superficial knowledge of the concrete aspects of test and evaluation in the training process of wrestlers.



1 –low degree of research on the problem; 2 – the small number of informative methods and tests; 3 – lack of literature; 4 – lack of own opinions on the researched issue; 5 – insufficient number of seminars for coaches; 6 – lack of a unit testing system; 7 – the complex and inaccessible nature of the problem for coaches; 8 – the problem, in principle, is solved.

Fig. 5. The appreciation of the degree of the testing problem-solving of the female judokas

Such a broad enumeration of the above reasons demonstrates, especially, that most coaches try to thoroughly analyze this issue and assess the training level of the female judokas with the help of informative tests. However, this activity cannot always be performed, due to the low degree of informativity of many tests, the lack of rigorously argued programs, as well as the insufficiency of the literature.

Conclusions

Therefore, the generalization of the survey data of the coaches allows us to formulate the following conclusions:

1. The most significant aspects of the training level of the female judokas refer to the special technical-tactical, volitional and physical training.

2. The structure of physical training of the female judokas, in all probability, differs from that of the male judokas, first of all, by decreasing

the value of force qualities and increasing the suppleness of the female judokas.

3. The finding of the various opinions of the respondents regarding the differences between the physical training of the female judokas and that of the male judokas demonstrates that a significant part of coaches does not have sufficient knowledge about the specifics of women's sports training, in relation to their anatomical-physiological peculiarities.

4. The correction of the training plans and programs must be made based on the data on the functional state of the NMS of the female judokas, which allows the individual modification of the effort size in the necessary direction. Therefore, this fact contributes to the increase of the level of special physical training of the female athletes. However, about half of the interviewed coaches know superficially how to implement this activity in practice.

5. In the evaluation process of the female judokas all its subsystems must be taken into account equally: the verification of training and competition efforts, the record and evaluation of the female athletes' condition, the level of technical-tactical training, the sports results and the female judokas' behavior in competitions.

6. The great majority of the respondents mentioned that the problem of testing the training level of the female judokas is little researched, highlighting the following causes: insufficient teaching literature and scientific recommendations, low number of special lessons and seminars for coaches. All these aspects constitute, as a whole, the main obstacles in the implementation in the training process of the scientifically argued training programs for the female judokas.

References

Dorgan V., & Braniste G. (2021). *Teoria sportului si competitiei* [Theory of sport and competition]. Galati University Press.

Manolachi, V. G. (2015). *Dirijarea şi structurarea etapei pregătirii precompetiționale a judocanilor de performanță*: ghid metodic (pentru studenții ciclurilor I, II şi III) [Directing and structuring the pre-competitive training stage of performance judokas: methodical guide (for students of cycles I, II and III)]. USEFS.

Manolachi, V. G. (2018a). Hidden Physiological Parameters of Different Performance Female Judokas' Body. In V. Grigore, M. Stanescu, & M. Paunescu (Eds.), Physical Education, Sport and Kinetotherapy - ICPESK 2017, vol 36. *European Proceedings of Social and Behavioural Sciences* (pp. 352-358). Future Academy. https://doi.org/10.15405/epsbs.2018.03.47

Manolachi, V. G. (2018b). *Teoria si didactica sportului feminin: evaluare, planificare, dirijare si nutritie* [Theory and teaching of women's sports: evaluation, planning, management and nutrition]. Discobolul.

Manolachi, V., Chernozub, A., Potop, V., Zoriy, Y., Kulbayev, A., Braniste, G., & Savenko, A. (2022). Increasing the functional capabilities of Mixed Martial Arts athletes in the process of optimizing different regimes of power load. *Pedagogy of physical culture and sport*, *26*(6), 399-406. https://doi.org/10.15561/26649837.2022.0606

Novikov, A. A. (2012). *Osnovy sportivnogo masterstva* (2-e izd) [*Fundamentals of Sports Mastery* (2nd ed.)] Sovetsky Sport.

Platonov, V. N. (2017). *Dvigatel'nye kachestva i fizicheskaja podgotovka sportsmenov* [Motor qualities and physical training of athletes]. Olympic literature.

Platonov, V. N. (2018). Struktura i soderzhanie neposredstvennoj podgotovki sportsmenov vysokoj kvalifikacii k glavnym sorevnovanijam [The structure and content of the direct preparation of highly qualified athletes for the main competitions]. *Nauka v olimpijskom sporte* [Science in Olympic Sport], *2*, 17-41.

Poholenchuk, J. T. (1993). *Optimizacija trenirovochnogo processa sportsmenok s cel'ju povyshenija sportivnogo masterstva i sohranenija zdorov'ja* [Optimization of the training process of athletes in order to improve sportsmanship and maintain health]. NAUK.

Shahlina, L. G. (1995). *Mediko-biologicheskie osnovy upravlenija processom sportivnoj trenirovki zhenwin* [Medical and biological foundations of managing the process of sports training of women]. NAUK.

Shahlina, L. G. (2001). *Mediko-biologicheskie osnovy sportivnoj trenirovki zhenwin* [Medical and biological bases of sports training of women]. Naukova Dumka.