

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal
Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2024 Issue: 11 Volume: 139

Published: 05.11.2024 <http://T-Science.org>



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ASSESSMENT OF THE PHYSICAL FITNESS OF FREESTYLE WRESTLERS AT THE INITIAL STAGE OF THE EXPERIMENT

Abstract: An athlete's special endurance is considered to be his ability to effectively perform the work chosen as a subject of sports specialization. This concept, concretized for sports wrestling, defines the special endurance of a wrestler, his ability to perform various movements in the course of competitions at a high pace, with different stresses and at different body positions. The above data on the three zones of intensity of the load in terms of heart rate refer to an improvement in endurance compared to continuous muscle work.

Key words: Freestyle wrestling, athlete, physical fitness, special endurance, exercise, HRI, anaerobic, muscular.
Language: English

Citation: Solaydinov, E.Sh. (2024). Assessment of the physical fitness of freestyle wrestlers at the initial stage of the experiment. *ISJ Theoretical & Applied Science*, 11 (139), 10-13.

Soi: <http://s-o-i.org/1.1/TAS-11-139-3> **Doi:** <https://dx.doi.org/10.15863/TAS.2024.11.139.3>
Scopus ASCC: 3300.

Introduction

The special endurance of an athlete is the ability to effectively perform the selected task as a subject of sports specialization. When this concept is specified in relation to wrestling, it is defined as the wrestler's ability to perform various movements at high speed with different loads and in various positions of the body during a competition match. The improvement of endurance involves differentiating the load levels into three training zones based on heart rate (HR).

In the first zone (HR at 130-150 beats/min), which is typical for novice wrestlers, an increase in oxygen consumption occurs at the limit of 130 beats/min. This limit is referred to by specialists as the training threshold because it can be subjectively felt by the athlete.

In the second zone (HR at 150-180 beats/min), anaerobic mechanisms for energy supply are activated, as the limit of 150 beats/min approaches the anaerobic threshold (AT). Specialists consider the AT level a sensitivity measure for training. The higher the AT level, the better the training is considered to be. For example, if the AT starts at an HR of 130-140 beats/min, it indicates that the wrestler's physical form is low. If it is above 160-165 beats/min, it suggests a high level of training.

In the third zone (HR at 150-180 beats/min), there is an improvement in anaerobic energy supply mechanisms. It should be noted that in this zone, the informative indicator for dosing training loads according to HR ceases to be relevant; instead, blood lactate levels become significantly important. It is also important to consider that if, under normal conditions, the heart contracts approximately once per second (with 0.25 seconds for contraction and 0.75 seconds for rest), then at an HR of 180 beats/min, the heart contracts three times per second (0.22 seconds for contraction and 0.8 seconds for rest), indicating a sharp decrease in the strength of cardiac contractions. Additionally, at the critical threshold of 180 beats/min, the oxygen debt sharply increases, becoming less dependent on the athlete's qualifications and more closely related to age (for instance, at age 15, the maximum HR averages 200 beats/min, while at age 60, it is around 160 beats/min).

The information provided about the three zones of load according to HR is related to the improvement of endurance in relation to steady muscular activity. However, the tactical struggle characteristic of wrestling requires the athlete to have endurance for uneven muscle work, which is particularly essential as it leads to a discoordination of the organism's adaptive

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functions due to several reasons. The athlete's ability to withstand sharp changes in the intensity of exercise is limited by the variability in the adaptation speed of various systems in the organism. For example, the HR increases 2-3 seconds after a sprint, while the liver's hemodynamic response adjusts only after 20-30 seconds of increased load. However, variations in load intensity during an HR of 180 beats/min are not complex for the wrestler's organism, as oxygen debt accumulates slowly.

Longer sprints are easier for the athlete than short ones because the organism has more time to reorganize the functioning of all systems. During the dosage of variable intensity loads, the following sequence is recommended: a) from longer (prolonged) sprints to shorter ones; b) from higher loads to slightly varying loads. An analysis of wrestlers' special endurance indicates that the level of this quality depends on numerous components. These include the athlete's ability to maintain a high pace from the beginning to the end of the match, the ability to perform uneven movements regarding character, speed, and strength throughout the entire competition, especially under conditions that complicate breathing. Thus, a wrestler's special endurance is linked not only to the capacity to address the above tasks during their matches but also to the ability to compete multiple times a day over several days.

According to the author, the determining factor for a wrestler's special endurance is the level of development of their aerobic and anaerobic capabilities. Results from ergometric studies indicate that during competitions, anaerobic energy sources, particularly the glycolytic pathway for energy production, are critically important, accounting for up to 80% of the overall energy demand. The highest performance indicators and the most significant anaerobic changes in the body occur in athletes with very high aerobic capabilities.

Studies have examined the energy value of different models of competitions for wrestlers and the dynamics of various vegetative systems in the organism. These studies show that the need for oxygen, oxygen consumption, and oxygen debt during the competition process are within average value ranges, significantly lower than those recorded in other sports (primarily cyclic sports). This indicates that wrestling movements have a lower energy equivalent, with emphasis on strength and static modes. However, this general description does not fully reflect the specific characteristics of wrestlers' endurance due to the pronounced variable nature of the work. The fluctuations in oxygen levels during competitions can explain this. The tactical characteristics also significantly influence the nature of energy supply since active (offensive) tactics require a considerably higher energy demand compared to passive (defensive) tactics. Therefore, according to the authors mentioned above, the

development of wrestlers' special endurance should focus not only on achieving a high absolute level of functional systems in the organism but also on enhancing the mobility of the vegetative processes occurring within.

In highly skilled judo wrestlers, special endurance is primarily determined by the level of anaerobic capabilities (with the contribution of lactate anaerobic power being 27.9%, glycolytic anaerobic volume 27.4%, glycolytic anaerobic capacity 20.9%, aerobic volume 8.6%, anaerobic power 3.6%, and aerobic effectiveness 2.9%).

Trainers should have the ability to orient themselves in assessing the levels of various metabolic functions and direct training towards improving one of them. Moreover, comparative analysis of bioenergetic capabilities among representatives of ten different sports specializations reveals that almost all the indicators describing these bioenergetic capabilities are lower in wrestlers compared to athletes from other specializations. When differentiating wrestlers by the level of their bioenergetic capabilities, they rank significantly lower than representatives of other sports based on many indicators, securing the ninth position among ten discussed sports specializations regarding overall energy volume, surpassing only gymnasts, while lagging far behind hockey players, middle-distance runners, sprinters, speed skaters, basketball players, and others. The level of wrestlers' capabilities often depends on the stability of various parameters of movement functions. For instance, according to the author, an athlete's fatigue significantly affects the effectiveness of various movement actions and the manifestation of different qualities and capabilities, which is expressed in an increase in the time to execute technical actions, a decrease in strength and static endurance indicators, and a reduction in the accuracy of dynamic and kinematic parameters of movements. It should be noted that higher-level athletes exhibit less displacement in the alteration of functions during standardized loads compared to less qualified athletes. Special endurance in wrestling is expressed by the athlete's ability to achieve results with the least energy expenditure, where the higher the result and the less time spent to achieve it, the higher the indicator of special endurance.

Some authors argue that experienced athletes can demonstrate much greater endurance during wrestling compared to novice athletes. Enhancing a wrestler's functional capabilities is considered one of the factors ensuring their high performance capacity.

It is known that physical performance capacity is one of the most important parameters describing an individual's health condition. Diagnosing physical performance capacity has significant practical implications for physical education and sports and serves as a criterion for selecting talented children and adolescents in sports. For these purposes, it is

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advisable to apply the PWC test, which allows calculating submaximal loads, especially maximal oxygen consumption, during childhood and adolescence.

These parameters have been primarily studied based on the calendar age of children and adolescents. At the same time, considering the biological age indicators of the organism is very important when evaluating parameters for diagnostic events in young athletes. However, the relationship between biological age indicators and physical performance capacity in adolescents engaged in sports that primarily develop endurance has not been sufficiently studied. Scientific literature has established a robust connection between the level of development of coordination abilities and the quality of performing competitive movements. The positioning of the overall center of gravity affects the degree of expressed muscular-tonic asymmetry. However, the issue of how muscular asymmetries in the support-motor apparatus relate to the manifestation levels of physical capabilities remains unclear.

One of the modern directions in individual combat sports, particularly wrestling, is the research of wrestlers' physical preparation based on developing their physical qualities using mathematical statistical methods, specifically correlation and factor analysis. Researchers studying the factor structure of young judokas' physical preparation have included repeatedly performed specific locomotor tests in their research programs to investigate the dynamics of their time characteristics directly during the testing period. All tests had precise quantitative metrics. The factor structure of physical preparation for young wrestlers was defined by

strength and speed-strength preparation, speed capabilities, special endurance, and the stability of the neuromuscular apparatus.

Their special endurance factor was found to be less directly related to the manifestation of strength capabilities but more significantly related to their expression in technical-tactical actions. A comparative analysis of the factor structure of physical preparation in young wrestlers established that it is directed toward achieving sports mastery.

The results of the comparative analysis of the factor structure of physical preparation in young wrestlers can be used to develop a scientifically grounded system of phased pedagogical control.

CONCLUSION

The importance of developing a wrestler's special physical preparation and special endurance has been discussed, along with an explanation of the concept of "special endurance" and ways to develop it. Information has been provided regarding the characteristics related to the style of conducting competitions in various types of sports wrestling based on technical-tactical movements. According to the author, during the improvement and correction of individual styles of effective actions and successful competition interventions by wrestlers, the primary focus should be on developing an individual program for preparing special endurance. Specific loads should be dosed based on athletes' individual performance capacities and the selected methods of special endurance development. The results obtained from the analysis and synthesis of training processes have outlined a direction for future studies in this area.

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