



Tests for building model characteristics of physical fitness of athletes aged 16-17 in mas-wrestling

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Abstract

Objective of the study was to selection of essential tests for assessing the physical fitness of young athletes in the sport of mas-wrestling.

Methods and structure of the study. General and special physical fitness was tested for 53 athletes specializing in mas-wrestling, whose age was $16,28 \pm 0,68$ years, representatives of weight categories up to 50 kg (15 people), up to 60 kg (13 people), up to 70 kg (25 people). To build model characteristics of physical fitness, a set of pedagogical methods was used. tests and dynamometry to determine the strength of the hand and fingers. The indicators of the athletes' special physical fitness were determined using a modified «Lower Thrust» simulator. A paired correlation analysis was carried out using the licensed IBM SPSS Statistics 22.0 program. The research was conducted on the basis of the V. Manchaara Republican Center for National Sports and the Children's and Youth Sports School № 1. Yakutsk.

Results and conclusions. Closely interrelated indicators of general and special physical fitness were determined based on correlation analysis, where correlation coefficients ranged from $r=0,701$ to $r=0,977$, which allowed us to select significant tests for constructing model characteristics of athletes. The complex includes: running 60 m, running 1000 m, long jump from a place, long jump from a place with your back in the direction of movement, hanging on a high crossbar, bending and unbending your arms while lying down, squatting with a barbell, pulling up from hanging on a high crossbar, leaning forward from a sitting position, as well as wrist and finger dynamometry.

Keywords: mas-wrestling, physical fitness, correlation analysis, construction of model characteristics.

Introduction. At the present stage of sports development it is impossible to imagine the process of training athletes without monitoring their various components of fitness, especially physical fitness [3-5]. Despite the fact that the national sport of mas-wrestling has confidently established itself in the international arena for the last 25 years, there are still enough questions about the organization and implementation of control, construction of model characteristics of physical fitness of mas-wrestlers of different genders, ages, weight categories and qualifications. There are scientific studies devoted to the issues of conducting pedagogical testing, determining certain indicators of physical fitness, however, these scientific studies mostly concern qualified male or female athletes [1, 2]. In turn, there is a deficit of scientific data regard-

ing the issues of constructing model characteristics of physical fitness of adolescent mas-wrestlers (these include: 12-13, 14-15, 16-17 years old), namely, regarding what tests should be used, how to evaluate the obtained testing data, what evaluation ranges are appropriate to use, etc. In adolescence, scientifically based control of the physical fitness of mas-wrestlers is an integral part of an effective system of sports training, as it allows managing the training process of athletes who have not yet formed, and inadequate load can lead to adverse consequences in the form of overtraining, failure of adaptation, injuries and inability to continue a sports career. Model characteristics of physical fitness, including assessment, allow not only to determine the level of development of physical qualities and abilities, track them in dynamics, but also



to manage the training process, apply the obtained research data for prognostic purposes.

Objective of the study was to selection of essential tests for assessing the physical fitness of young athletes in the sport of mas-wrestling.

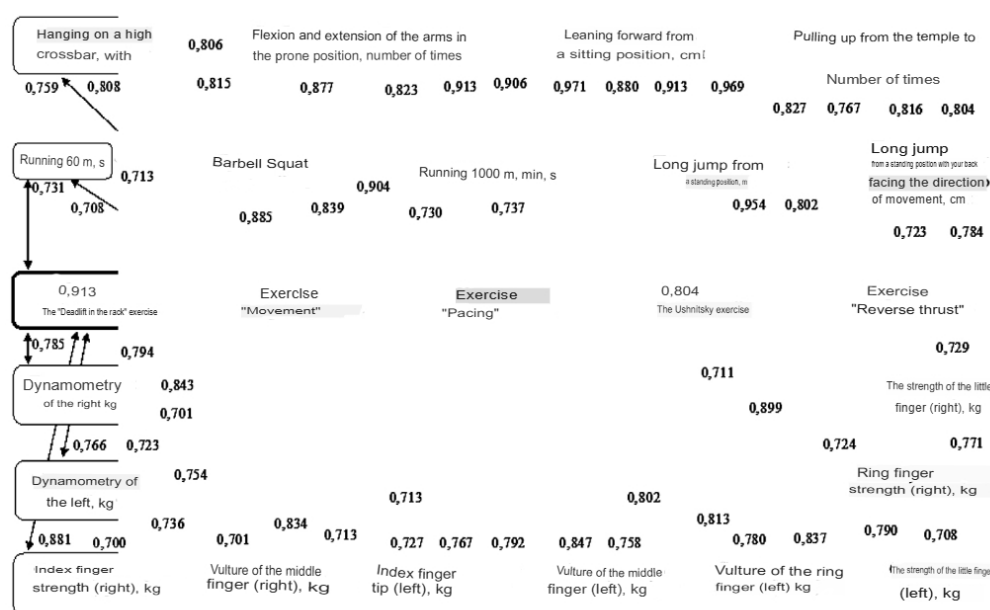
Methods and structure of the study. The general and special physical fitness of 53 athletes specializing in mas-wrestling, aged $16,28 \pm 0,68$ years, representatives of the weight categories up to 50 kg (15 people), up to 60 kg (13 people), up to 70 kg (25 people) were tested. To construct model characteristics of physical fitness, a set of pedagogical tests and dynamometry were used to determine the strength of the hand and fingers. The indicators of special physical fitness of athletes were determined using a modified Lower Pull simulator, on which the athletes performed five exercises: Standing Pull, Movement, Stepping Up, Ushnitskiy, and Reverse Pull [3, 5]. A paired correlation analysis of the indicators of general and special physical fitness was conducted using the licensed IBM SPSS Statistics 22.0 program. The studies were conducted at the Republican Center for National Sports named after V. Manchaary and children's and youth sports school № 1 of Yakutsk.

Results of the study and discussion. Using pair correlation, the relationships between the indicators of general and special physical fitness of athletes aged 16–17 years in the weight categories up to 50 kg, up to

60 kg and up to 70 kg were determined. The conducted correlation analysis allowed us to determine that 19 out of 25 indicators of general physical fitness testing of mas-wrestlers are closely related to five indicators of special physical fitness, the correlation coefficients were in the range from $r=0,701$ to $r=0,977$.

Indicators in exercises performed by athletes using the modified Lower Pull simulator, such as Reverse Pull and Moving Along the Support Board, correlate to a greater extent with the parameters characterizing the strength of various muscle groups ($r=0,804$ – $0,904$) and flexibility ($r=0,969$ – $0,971$). The parameters characterizing arm strength are most closely related to the indicators in the «Stepping Up» and «Ushnitskiy» exercises, where the correlation coefficients are 0,906 and 0,913, as well as speed-strength abilities - $r = 0,816$ and $r = 0,954$ and flexibility - $r = 0,880$ and $r = 0,913$, respectively. The highest correlation coefficients were found between the indicators in the «Ushnitskiy» exercise and strength, in particular finger strength ($r = 0,834$ – $0,881$) and upper limb strength ($r = 0,877$) (see figure).

Initially selected exercises for constructing model characteristics of physical fitness based on literary data and by interviewing mas-wrestling specialists, the use of which allowed us to learn the testing parameters, were subsequently subjected to statistical processing using correlation analysis to identify in-



Correlation constellation with a high degree of interrelation between the indicators of general and special physical fitness of athletes in mas-wrestling aged 16–17 in the weight categories up to 50 kg, up to 60 kg and up to 70 kg.



formative tests, which led to a reduction in the number of exercises used and an increase in their informativeness.

Conclusions. To build model characteristics of physical fitness of 16-17 year old athletes specializing in mas-wrestling, weight categories up to 50 kg, up to 60 kg and up to 70 kg, it is advisable to use a set of significant exercises that were selected based on correlation analysis. It included 60 m run, 1000 m run, standing long jump, standing long jump with the back in the direction of movement, hanging on a high bar, bending and unbending arms in a prone position, squatting with a barbell, pulling up from a hang on a high bar, forward bending from a sitting position, as well as wrist and finger dynamometry (index, middle, ring and little fingers).

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