Analysis of the relationship between results in the combined event and the level of deadlift strength development in young weightlifters aged 12-14

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Abstract

Purpose: Determine the calculation methods for results in classical weightlifting combined events for young weightlifters aged 12-14 at the initial stage of training.
Methods: Theoretical analysis of the research problem, pedagogical monitoring and experimentation, and methods of mathematical statistics.
Results: The highest correlation was found between the performance of young weightlifters in the snatch and clean and jerk and their deadlift strength (r = 0.877 and r = 0.781, respectively).
Conlcusion: For the clean and jerk, our proposed regression equations will allow coaches to conduct operational monitoring of progress in the classical combined event for young weightlifters aged 12-14 years, avoiding undesirable effects associated with overexertion and injuries.

Keywords: Combined event, deadlift strength, competitions, analysis, results, coefficients, correlation.

Introduction

In the world of weightlifting, special attention is being paid to successfully organizing the training of athletes in modern conditions, improving the effectiveness of methods for managing and controlling the training process, rationally using modern technologies in athlete preparation, and increasing the efficiency of training plans for highly qualified weightlifters while considering the age-specific characteristics of the body. In many countries, particularly in European nations, there is a growing emphasis on adapting the training system for weightlifters to meet contemporary requirements. This includes training highly skilled athletes, optimizing training plans, preventing injuries in professional sports, enhancing technical abilities, and improving various types of preparation indicators. These efforts aim to increase athletes' chances of achieving high results during competitions.

Worldwide, research has been conducted in various areas to improve the technical training level of weightlifters across different skill levels. These areas include: - Distribution and planning of training loads to enhance weightlifters' technical mastery - Management and biomechanical analysis of competitive and special exercise movements - Impact of training loads on technical preparation - Selection of special auxiliary exercises to improve snatch technique - Influence of these auxiliary exercises on the biomechanical movements of competitive exercises These studies have focused on enhancing the overall technical proficiency of weightlifters in the field of training heavy athletes.

As is known, the integral indicator of an athlete's level of physical, technical, and functional preparedness is their sports performance. In weightlifting, it is determined by the total sum in the classical two-lift competition. Monitoring the state of health, the dynamics of physical qualities growth, and sports performance indicators is particularly crucial when training young weightlifters. At the initial stage of sports training, the foundation of general physical preparation is laid, and motor skills are formed. Incorrect mastery of these skills often limits the motor capabilities of young athletes.

At the same time, determining the result in the classical two-lift competition for young weightlifters aged 12-14 at the initial stage of sports training is highly undesirable, as any sports competition is associated with maximum stress on motor and autonomic functions.

It is no coincidence that young weightlifters are allowed to compete in classical two-lift competitions from the age of 14, and it is recommended that they participate in competitions no more than twice a year, and additionally, twice a year in general physical fitness competitions *(M. T. Lukyanov, A. I. Falameev, 1969).* For young weightlifters aged 12-13, standard competitive loads are not prescribed at all.

Methods

Methods of literature analysis, questionnaire survey, pedagogical observation, expert assessment, pulse measurement, pedagogical experiment, and mathematical statistics.

Fig 1. Correlation between snatch performance and deadlift strength indicator in young weightlifters aged 12-14 years.

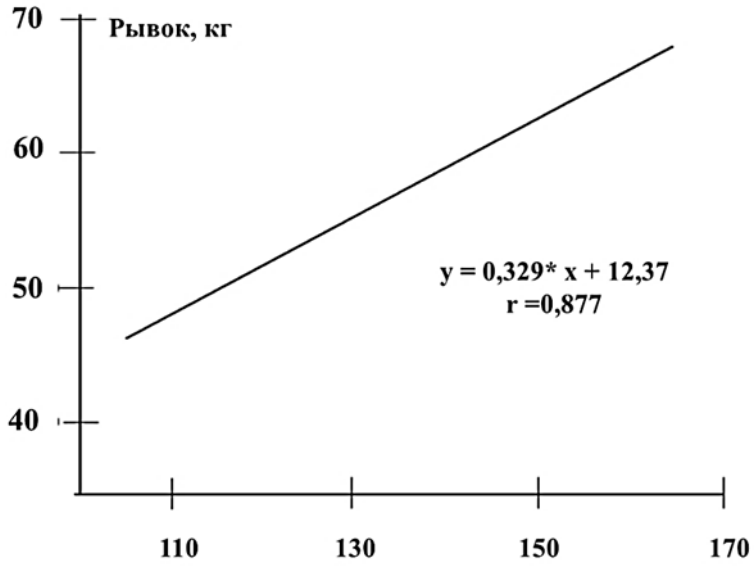
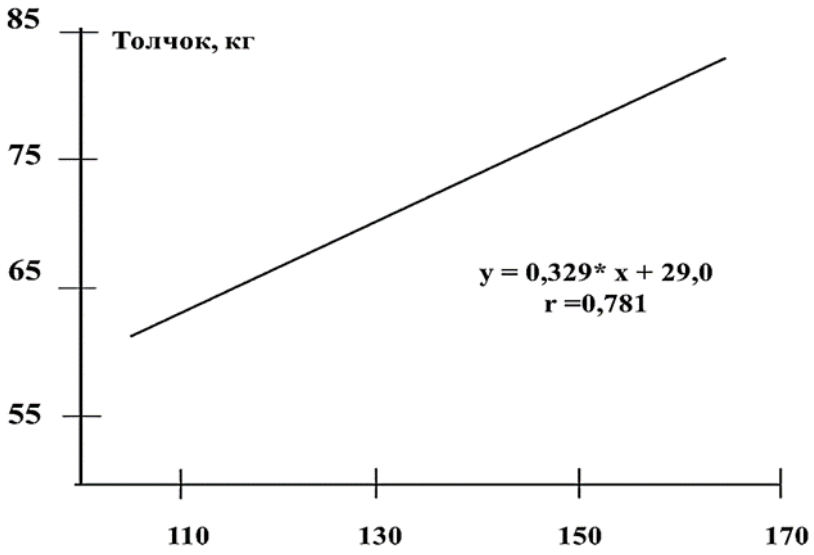


Fig 1. Correlation between the clean and jerk performance and deadlift strength indicator in young weightlifters aged 12-14.



Results and discussion

In light of the above, we attempted to determine the result in the classical weightlifting combined event among young weightlifters aged 12-14 at the initial stage of training using a calculation method, based on the level of development of individual physical fitness indicators. To identify the strength of the relationship between individual aspects of preparedness in adolescent weightlifters and their result in the classical combined event, a correlation analysis was conducted. The initial data for this analysis were the results of the experimental group of subjects obtained during a year-long pedagogical experiment. The highest correlation was found between the performance of young weightlifters in the snatch and clean and jerk and their deadlift strength (r = 0.877 and r = 0.781, respectively).

Analysis of the relationship between snatch and clean and jerk results with deadlift strength using regression methods can, in our view, provide valuable practical data. Through regression analysis, it was established that the relationship between the result in the snatch and clean and jerk with deadlift strength has a linear dependency and is adequately described by the

equation y=a+bx, where y is the result in the snatch or clean and jerk (kg), x is the deadlift strength indicator, and a and b are coefficients.

The dependence of the snatch result on the deadlift strength indicator in adolescent weightlifters is presented in Figure 1. It is expressed by the regression equation y = 0.321 * x + 12.37, where y is the result in the snatch, and x is the deadlift strength indicator.

Figure 2 shows the relationship between the clean and jerk result and deadlift strength in young weightlifters aged 12-14 years. This relationship is defined by the equation: y = 0.329*x + 29.0, where y represents the clean and jerk result, and x represents the deadlift strength indicator.

Conclusion

Based on the derived regression equations, it is possible to determine the snatch or clean and jerk results for adolescent weightlifters at the initial training stage.

For example: when a teenager's deadlift strength is 100 kg, their snatch result will be: y = 0.321 × 100 + 12.37 - 44.47 kg, y = 0.329 × 100 + 29.6 - 62.5 kg. For the clean and jerk, our proposed regression equations will allow coaches to conduct operational monitoring of progress in the classical combined event for young weightlifters aged 12-14 years, avoiding undesirable effects associated with overexertion and injuries.

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