



Optimization of the structure of special strength training in qualified athletes doing crossfit

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Abstract

Objective of the study was to optimization of the structure of special strength preparedness among qualified athletes involved in crossfit.

Methods and structure of the study. Results of test tasks for special strength preparedness (barbell clean, barbell snatch, barbell bench press, barbell squat, shot throw with two hands back, 200 m run with a 30 kg load, standing triple jump, standing long jump, upward jump standing, pull-ups on the bar) in qualified athletes were determined using standard methods. 41 young men of the second and first sports categories, CMS Sports School of Moscow, took part in the research.

Results and conclusions. With the growth of sports skills, the levels of strength preparedness of those involved significantly increased, and the coefficients of variation decreased, the number of reliable relationships between indicators of special strength readiness decreased, and the specificity of the relationship structure also appeared. The work calculated the correlation coefficients of indicators of special strength readiness of those involved in various sports qualifications, and checked their suitability in the process of sports training. The importance of the optimal structure of special strength preparedness among qualified athletes involved in crossfit is traced.

Keywords: *crossfit, qualified athletes, special strength preparedness, structure and relationship of indicators, proportionality of characteristics.*

Introduction. Currently, qualified athletes involved in CrossFit exhibit mainly unbalanced development of indicators of special strength readiness [1, 2] due to the lack of productive training methods at the beginning of their sports career in this sport [3, 4]. Therefore, the development of a rational structure of special strength training for qualified athletes is relevant.

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Results of the study and discussion. According to our data, first-class athletes involved in CrossFit were significantly superior to second-class athletes in the following exercises: barbell clean (22,2%, $p < 0,01$), bench press (20,2%, $p < 0,01$), shot throw with two hands back (17,0%, $p < 0,05$), squats with a barbell (15,1%, $p < 0,05$), 200 m run with a load of 30 kg (12,0%, $p < 0,05$). In other tests characterizing strength abilities, an unreliable advantage was revealed for category I athletes.

Athletes who met the CCM standards had a significant advantage (compared with first-class athletes) in five (out of nine possible) indicators. At a one percent significance level, their differences were manifested in the results of bench press (18,3%), squats with a barbell (14,8%), and at a five percent significance level - in terms of barbell clean (17,6%), shot throw two



hands back over the head (16,8%), jumping up from a place (6,9%).

Thus, as the sports skills of those involved increased, the level of their special strength preparedness increased significantly and differences were noted in adjacent classification groups.

Analysis of the coefficients of variation showed that most of the characteristics of special strength preparedness among these athletes are homogeneous (does not exceed the 10% significance level). Only certain indicators (barbell squats, barbell snatch) among athletes of the second and first sports categories are variable. As athletic skill increased, the coefficients of variation decreased, indicating greater homogeneity of indicators among more trained athletes.

In athletes of the second sports category, six reliable relationships were identified between the characteristics of special strength readiness, and the significance of the complex strength indicator was clearly expressed. Among first-class athletes, five significant relationships have been identified between the characteristics of special strength readiness, and among men who have the sports qualification of Master of Sports, the indicators of special strength readiness are interrelated even more specifically, with a total of three relationships.

For second-class athletes, the results of competitive activity are interconnected with the indicators of the barbell snatch ($r=-0,704$), standing triple jump ($r=-0,652$), bench press ($r=-0,648$), for first-class athletes - with the barbell snatch indicators ($r=-0,760$), bench press ($r=-0,680$), among athletes who have fulfilled the standards of a candidate master of sports, these results are interrelated only with the barbell clean indicators ($r=-0,796$). Consequently, with the growth of sports skills of those involved, the number of reliable relationships between the results of competitive activity and the characteristics of special strength readiness decreased.

Based on the magnitude of the coefficients of proportionality of indicators, the characteristics of the proportionality of the special strength preparedness of athletes with a level of sports qualification from the second category to the CMS were determined. Using correlation coefficients, the proper standards for control exercises of strength readiness of athletes involved in crossfit were calculated.

Let's illustrate this with an example. The coach planned for the athlete to perform the first category, which can be achieved with a barbell press equal to 92,6 kg, a barbell squat – 144,3 kg, a barbell snatch – 75,4 kg, a standing long jump – 287 cm, a pull-up on the bar – 17,6 times.

We checked the objectivity of the developed indicators of the correlation between the indicators of special strength preparedness of those involved. For this purpose, we formed two groups of athletes (control and experimental) of the second sports category. For each young man in the experimental group, the proper levels of development of special strength qualities were determined.

In the initial examination, athletes (control group – 40,4%, experimental group – 42,2%) completed less than half of the special strength training standards we developed. Only those in the experimental group were tasked with increasing the number of completed commensurate normative indicators of special strength preparedness.

At the final examination (six months later) in this group, we identified positive changes in the structure of special strength preparedness (87,1% of the results were proportionate). In the final examination, this indicator did not change among athletes in the control group, although certain characteristics of special strength preparedness improved significantly.

The results of our study indicated that only those in the experimental group showed a significant increase (9,9%, $p<0,05$) in sports results in CrossFit; in the control group, these characteristics changed insignificantly (5,6%, $p>0,05$).

Conclusions. The proportionality of indicators of special strength readiness among qualified athletes involved in crossfit is an important condition for increasing further sportsmanship.

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