The Usage of Means and Methods of Cross-Fit for the Development of Students’ Strength Endurance

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Abstract. The analysis of the content of the comprehensive program of physical education of students from 1 to 11 grades (authors VI Liakh, A.A Zdanevich) of the section “Elements of martial arts” was conducted. The modern physical culture and sports type of motor activity – cross-fit was studied. The characteristic features of the methodology for conducting cross-class studies are determined considering on the specific choice of means and methods. Complexes of cross-fit exercises were made considering on the level of physical and technical preparedness of students. The methodical features were presented in the preparation and implementation of exercise complexes, as well as methods for their implementation. The introductory and final testing of the level of development of the power dynamic endurance for the boys and girls of the tenth classes was conducted. The results of the study necessitated the implementation of the offered complexes of cross-fit exercises for using in the sectional classes on the section "Elements of single combats". Complexes of exercises were used versatile and varied on different muscle groups, both with burdening of one's own body, and with the use of weights of external objects. Locomotions of suggested complexes of cross-fit are available, different and allow to scale a content and conditions for motions implementation. Actualized organizational-methodical activities in the process of training sessions of students, due to the process of pedagogical experiment, allowed to solve a number of particular tasks directed to the formation of motor skills, to getting the knowledge of physical culture and sports, and to successfully prepare to implement All-Russian Physical Culture and Sports Complex "Ready for Work and Defense" qualifying standards.

1. Economy and production

Senior school age is sensitive for the development of the range of different physical qualities. [3] Taking into account age peculiarities of senior students’ organisms, according to the grounds of Z.K. Kholodov and V.S. Kuznetsov “it’s a period of lasting improvement of motor abilities, of enormous abilities in the development of motor qualities”. [6] One of those qualities is strength endurance. A strength dynamic endurance as a kind of a special endurance means an ability of a person to perform force actions of motion for a long time till a perversion of a technique and lowering of the effectiveness of motions. The development of different types of endurance allows “achieving a wide and harmonious development of motion abilities”. [1]

For increasing of the effectiveness of students’ physical educating process a modern physical education teacher should integrate different means and methods of health-improving methodology into the process of educating. Methods of cross-fit are diverse, but in the most of cases force actions of motion with weighting down your own body, with external objects and with changing the area of bearing (For
example, the area of jumping onto), with using of the outer factors, as a cross-country movement, etc. are used. In a line of authors’ opinion, the system of exercises “cross-fit” gives a wide range of exercises, different from the point of view of direction. The content of motion activities of cross-fit allows developing physical qualities widely and harmoniously. [8]

The object of the study is an educational process at sectional classes in “The Elements of Marital Arts” part.

The subject of the study is the usage of means and methods of cross-fit towards students of senior school age.

The purpose of the study is to reveal the influence from using cross-fit exercises on fitness’s level of 10th grade students by the circular method.

The hypothesis. It’s suggested that applying of the complexes of speed-strength exercises by circular method of the methods of cross-fit allows to improve a level of force abilities and special kinds of endurance.

The objectives of the study:
1. The analysis of the part “The Elements of Marital Arts”. V.I. Liakh, A.A. Zdanevich, The complex program of physical educating of 1-11th grade students./ V.I. Liakh, A.A. Zdanevich // Moscow: Prosveshenie. – 2004
2. Studying of the system of cross-fit exercises and its possibility of usage in off-hour activities of high-school students.
3. Systematization of cross-fit complexes with the usage of the circular method with the elements of cross-fit.
4. Experimental grounding of circular training sessions pointed to the development of force dynamic endurance.

The methods of studying:
1. Analyzing and generalization of the material on the theme of the study.
2. Pedagogical supervision.
3. Pedagogical experiment.
4. Testing.
5. The methods of mathematics statistics.

Experimental complexes of exercises for students are the enumeration of physical exercises for different muscles’ groups with weighting down your own body, as well as with external jumping and force objects’ weight, and circular exercises. The complexes of cross-fit exercises are counted on the average level of fitness of students. It should be noted that according to common methods of conducting training-educational classes in cross-fit, there is a necessity and possibility of scaling (changing, modifying parameters) all the parameters of loading (the change of exercises, a tempo, a number of circles, an intensity, a number of exercises, technical complexity). [3]

It should be noted that the exercises are presented separately for girls and boys.

Complex number 1. The basis for this set of exercises was taken from WOD "Easy Mary" [8]
Task: Run as many laps as possible in 15 minutes.
5 flexion-extension of the arms in the support lying / in the latch on the knees. 5 pull-ups on a high crossbar / pull-up from a lying supine. 10 "air" sit-ups.

Air squats are standard squats in a full or classic squat performed at a high pace with the technique of kipping represented in the form of a swing by hands back in the phase of unbending the knee and hip joints.

A circular method of continuous type is used.

Complex number 2. The basis of this complex was taken from WOD "Ghost" [10]
Task: perform 6 laps.
30 seconds transfer of the ball (1kg) in pairs
30 seconds from the stop squatting go to the emphasis lying down, perform jumping up (Burpi)
30 seconds jumping rope
30 seconds rest.
A feature of this complex is the restriction of the exercise of the time, without specifying a specific dosage.

The circular method of interval type is used.

Complex number 4. The basis was taken from WOD "Bull" [9]

Task: perform two laps for a while.
20 jumping rope
10 sit-ups with ball stuffing
10 pull-ups from the lying
2 circles smooth running.

The basic method for performing this set of exercises is circular repeated.

It should be noted that it is necessary to consistently perform the entire motor task. In particular, perform all the repeats of jumping rope, and then move on to the next exercise. It is possible to reduce the dosage in the exercise based on the abilities of the student.

When performing the above sets of exercises, various methods of physical education are used. In particular, the method of continuous exercise, which implies the exercise of the exercises together, evenly, without interruptions between the "stations". An interval exercise method was also used, which involved the successive passage of stations with rest intervals between them. The method of repeated exercise implied multiple execution of one exercise with the subsequent transition to the next.

A characteristic feature of the presented sets of exercises is the use of stretching exercises of those muscle groups that participated in the operational phase of the movement. These exercises should be used after completing the whole complex of exercises in full. Also the possibility of stretching the body segments as a means of active rest between approaches, repetitions is considered.

An approximate set of stretching exercises:
1. The starting position is the sitting of the foot together / apart. Slopes forward with fixation in the final phase for 5-10 seconds
2. The starting position is the sitting, the legs are bent at the knee joints and are retracted, bending back, lowering the torso onto the floor and holding the posture in the final phase for 5-10 seconds.
3. The starting position is the complete hanging on the crossbar. Turn the body left-right with fixation in the final phase of rotation for 5 seconds.
4. Slopes downward with fixation in the final phase for 5 -10 seconds.
5. The starting position is an emphasis with one hand standing sideways against the wall. Turning the trunk against the supporting arm with fixation in the final phase for 5-10 seconds.

Thus, the complexes of exercises using a circular method with cross-fit elements were selected taking into account the age characteristics of the students. At the same time, the level of their physical readiness was taken into account. Complexes of exercises were systematized taking into account the use of more global and less regional muscular groups in the operational movement. One of the tasks of implementing the presented cross-fit complexes was an increase in the level of general physical preparedness of the students' body. It should be noted that in the compilation of exercise complexes for schoolchildren using cross-fit means, they were guided by the possibility of varying the motor actions.

The schoolchildren of the control group carried out the training process in accordance with the traditional, well-worked out pattern of training sessions with the elements of single combat presented in "IKO Kyokushinkaikan"

http://www.kyokushinkaikan.org/en/. [13]

The training process during the school year is supplemented with the means and methods of cross-fit for the experimental group. Consecutive implementation of various, mainly global and regional impact of exercises from gymnastics, fitness, athletics, calisthenics. Each complex in accordance with the terminology and methodology of cross-fit has a predominantly specialized focus: strength training with weighting of external objects, exercises with the weight of their own body and on gymnastic projectiles, aerobic, mixed. It should be noted that some complexes equally integrate in their content all types of exercises. Also, the complexes, called in the cross-fit as WOD (Workout of the day), have a
clear separation according to the type of task and the standard of the selected power zone. Very often, WOD involves performing exercises with the help of various variations and modifications of the classical circular method and its varieties. Such as: the method of continuous exercise (implying the exercise of the exercises together, evenly, without interruptions between stages), method of interval exercise (implies the sequential passage of stages with intervals of rest between them), the method of repeated exercise (involves the multiple execution of one exercise with a subsequent transition to the next). [8]

2. Conclusion
Cross-fit training involved three stages in the process of the pedagogical experiment: 1) formation of the motor skill (training, consolidation, improvement); 2) training of power abilities with weighting of external objects; 3) the performance of the elected WOD; 4) a set of stretching exercises.

The effectiveness of "circular" training with cross-fit elements in the aspect of development of power dynamic endurance in students of 10th grades is experimentally proved.

There were significant changes in the re-testing indicators in the experimental group in comparison with the control group: "Burpee" with a rotation of 180 degrees (number of times) - 15%; sit-ups with a stuffed ball standing on platforms (number of times) - 9.7%; flexion and extension of the arms in the supine position, with simultaneous pulling the knee to the elbow (number of times) - 13%.

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