

SUBSTANTIATION OF HEALTH RELATED POWER LIFTING TRAINING METHODIC FOR UNIVERISTIES STUDENTS WITH MUSCULAR SKELETAL APPARATUSE AFFECTIONS

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Abstract. *Purpose:* substantiation of health related power lifting training methodic for universities students, who have disorders of muscular skeletal apparatus. *Material:* in experimental researches 126 students of 18-24 years' age, having disorders of muscular skeletal apparatus, participated. With the help of testing we registered changes of students' functional, physical and psycho-physiological fitness indicators. *Results:* optimal correlation of specific and non specific loads was found: 60% of specific and 40% of non specific. It is recommended to follow certain correlation of exercises in easy and complicated conditions: for first year students - 3:2; for second year students – 3:2; for third year – 2:3; for fourth year – 2:3; for fifth year students – 1:3. Specific only for power lifting conditions and temps of students' (with muscular skeletal apparatus affections) functional, physical and psycho-physiological fitness improvement were determined. *Conclusions:* The requirements of the training methodic envisage correction of loads for bringing every indicator on proper level.

Key words: algorithm, health, purpose, methodic, power lifting, status, students, testing.

Introduction

World wide tendency to worsening of children's, adolescents' and youth's health did not pass away Ukrainian rising generation [1, 7, 9, 17]. As per the data of official statistic 70 – 80% of Ukrainian students have health problems [2, 3, 4, 11, 14, 16, 18]. Affections of muscular skeletal apparatus (MSA) are the most prevailing among the after effects of many diseases. Such affections are conditioned by traumas of spinal cord, polio, cerebral palsy and lower limbs' amputations [6, 12, 19–21]. Scientists found that significant improvement of youth's with health problem functional, physical and psycho-physical indicators is possible on the base of physical culture and sports' practicing (power lifting in particular) [2, 4].

Researches of problems of students' with MSA disorders have certain specific features:

- 1) Need in maximal attention to kind of disease, degree of MSA disorder, individual characteristics of physical loads' endurance [8].
- 2) Training program shall facilitate strengthening of students' motivation for receiving and mastering knowledge [22].
- 3) Need in increased attention to distinctions in psycho-physiological characteristics, indicators of psychic status and features of students' personalities, depending on power lifting experience [23].

Among researches, devoted to students' health strengthening with power lifting means it is necessary to pay attention to domestic works (I.N. Manko, [13]; M.Yu. Minov, 2010 [15]; A.V. Gorbunov, [5]; Ye.V. Kurmayeva, 2013 [10]) and works of foteing scientists (Trinkaus E., Rhoads M.L., 1999 [31]; Rossouw F., Krüger P.E., Rossouw J., 2000 [29]; Keogh J.W.L., Hume P.A., Pearson S.N., Mellow P., 2007 [26]; Jensen A.M., 2010 [25]; Hale B.D., Roth A.D., DeLong R.E., Briggs M.S., 2010 [24]; Kozub F.M., Brusseau T.A., 2012 [27]; Lewis C., 2015 [28]).

Analysis of researches [1, 6, 11, 12, 20] devoted to substantiation of health related methodic of pupils and students by means of different kinds of sports confirms that health related power lifting potentials for disabled students have not been practically studied yet.

Purpose, tasks of the work, material and methods

The purpose is substantiation of health related power lifting training methodic for universities students, who have disorders of muscular skeletal apparatus.

Material and methods of the research: in experimental researches 126 students of 18–24 years' age, having disorders of muscular skeletal apparatus, participated. The researches were conducted in period from 2011 to 2014 in four stages.

Results of the researches

On the base of conducted complex researches we substantiated health related methodic of power lifting training for universities students with MSA disorders. The worked out methodic envisages algorithm of certain operations for teaching to special power lifting exercises (see fig.1). As we can see in fig.1 before power lifting trainings it is necessary to examine health of 1st year students as well as to test anthropometrical and functional indicators, to find degree of physical and psycho-physical fitness. After it, power lifters-beginners can start trainings by year program. This program includes 60% of specific and 40% of non specific loads. When familiarizing students with techniques of special and auxiliary exercises, the main task is to create students' pattern of trained movements. With it, it is necessary to observe correlation of exercises' practicing in easy and in complicated conditions 3:2. At the end of first year of trainings it is necessary to examine health condition, register changes of anthropometric and functional indicators; motor skills and psycho-physiological fitness of students.

On the base of the received information and considering the data of previous researches training program is composed. The program envisages fulfillment of special exercises in easy and complicated conditions in correlation 3:2. After two year of trainings it is necessary to carry out medical examination of students. If required it is necessary to treat the found diseases. Testing also helps to determine changes of students' functional, physical and psycho-physiological fitness indicators. Then these indicators are compared with appropriate normative for third year students. After it, training program for third year is composed. Mastering of special and auxiliary exercises envisages their fulfillment in easy and complicated conditions in proportion 2:3.

At the end of third year of trainings the described above testing procedures shall be varied out. Further, on their basis, considering parameters of previous researches, the program for the next forth year should be composed. It is recommended to plan fulfillment of specific exercises on the same conditions as in the third year (2:3).

In the same way, at the end of forth year it is necessary to register changes of the tested indicators. Further, with the help of previous researches' materials, it is necessary to correct training program for fifth year. With it, special and auxiliary exercises in easy and complicated conditions in proportion 1:3 shall be stipulated. As we can see in diagram (see fig.1) the offered methodic of motor skills', functional fitness improvement and training to special exercises, envisages conduct of students' profound medical examinations twice a year (before trainings and at the end of training period). In this methodic the basic pre-condition is well known postulate that physical load is the foundation of motor skills' formation and physical fitness improvement. Physical exercise is a structural unit of physical load. At first stage of physical exercises' influence implies excitation of appropriate afferent and motor centers, mobilization of skeletal muscles, blood circulation and respiratory functions. In combination, they create one functional system, responsible for realization of these motor responses. Effectiveness of these responses is insufficient for formation of steady adaptation. For achievement of the desired purpose multiple repetitions are required for gradual functional reconstruction of organism. For persons with MSA affections this process takes much more time. The reason is unsatisfactory condition of central and periphery nervous system, disorders of motor function and coordination. As per the data of specialists in adaptive physical education of disabled persons the most adequate are little volumes of loads. It should be noted that in our research we substantiated optimal parameters of loads for students. With it (see fig.1) we stipulated gradual increasing of special exercises' complexity: proportion of exercises in easy and complicated conditions for first year students – 3:2; for second year students – 3:2; for third year – 2:3; for forth year students – 2:3; for fifth year students – 1:3. This training methodic also envisages correction of loads for bringing every indicator (functional, physical, psycho-physiological fitness) for proper level.

Discussion

Results of our researches supplemented and confirmed the data of other authors [2, 4, 23–31] that systemic power lifting trainings facilitate improvement of functional mobility indicators and strength of nervous processes. Results of practical application of the worked out methodic confirmed principles, which are general for adaptation physical culture and sports for disabled [2, 6, 9, 12, 17, 21], about specificities of motor skills and physical abilities' formation.

It was found that the substantiated power lifting training methodic for universities' students with MSA affections ensures continuous perfection of motor abilities (confident increase of strength, quickness, speed-power and coordination indicators) and functional fitness; improvement of neuro-dynamic features of central nervous system. The results of the research permitted to determine specific only for power lifting conditions and rate of improvement of functional, physical and psycho-physical fitness of students with MSA affections.

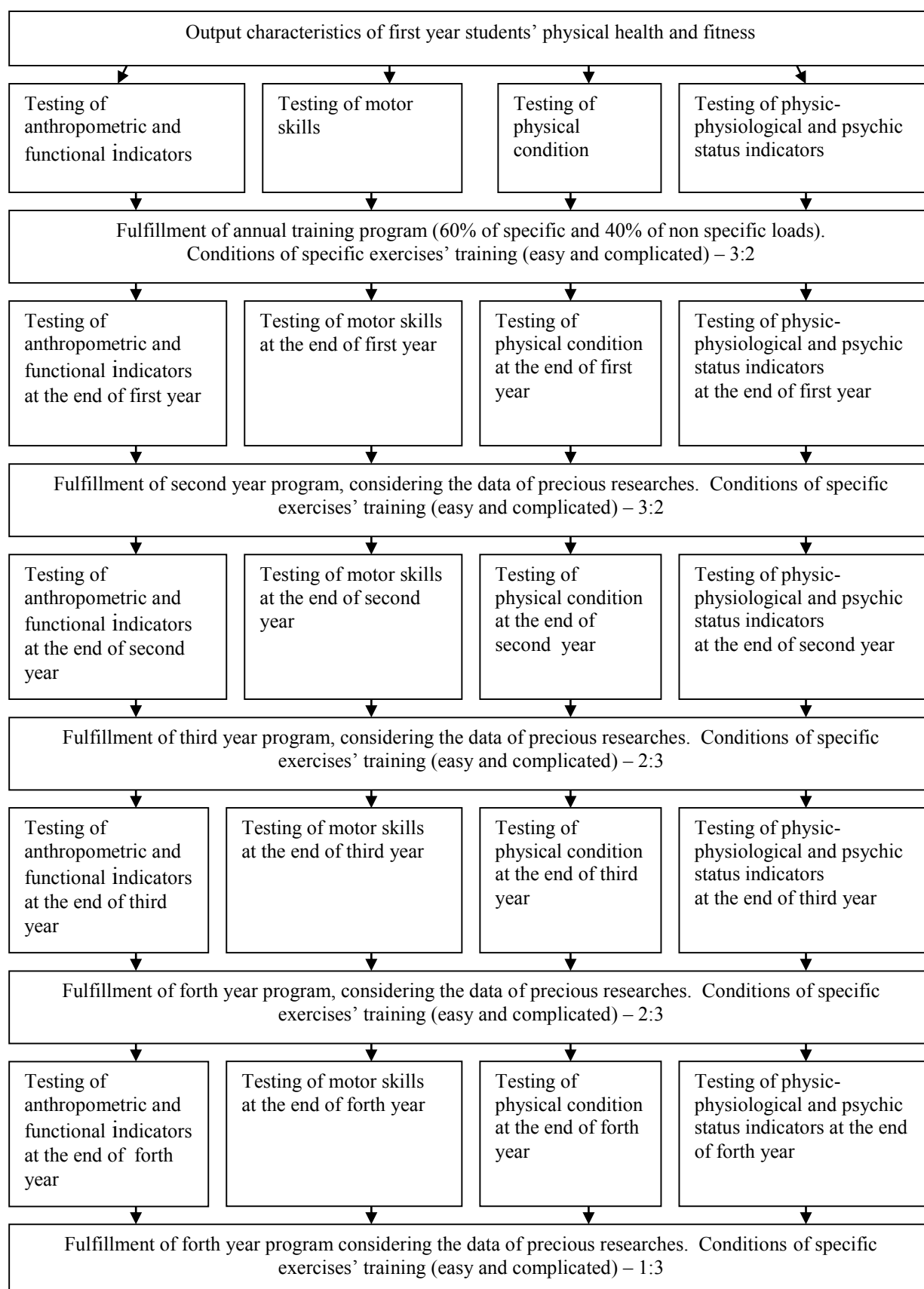


Fig.1. Diagram of application of health related power lifting methodic with students, who have MSA affections.

Conclusions

Effective health related power lifting training methodic for universities' students with MSA affections for extra-curriculum classes from first to fifth years has been experimentally substantiated:

- output diagnosis of anthropometrical, functional and psycho-physiological indicators; levels of physical health and psychological fitness; fulfillment of annual training program for first year students (which includes 60% of specific and 40% of non specific loads) in easy and complicated conditions in proportion 3:2;
- testing of anthropometrical, functional and psycho-physiological indicators; levels of physical health and psychological fitness; fulfillment of annual training program for second year students (considering the results of testing) in easy and complicated conditions in proportion 3:2;
- testing of the mentioned above indicators at the end of second year; fulfillment of program for third year students (composed, considering the conducted testing) in easy and complicated conditions in proportion 2:3;
- testing of the mentioned above indicators at the end of third year; fulfillment of program for fourth year students (composed, considering the conducted testing) in easy and complicated conditions in proportion 2:3;
- testing of the mentioned above indicators at the end of fourth year; fulfillment of program for fifth year students (composed, considering the conducted testing) in easy and complicated conditions in proportion 1:3;

The prospects of further researches can be connected with development of pedagogic control methods over physical loads of students-power lifters.

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Conflict of interests

The author declares that there is no conflict of interests.

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