



EXPERIMENTAL SUBSTANTIATION OF THE EFFICIENCY OF USING KETTLEBELL JUGGLING EQUIPMENT IN PHYSICAL EDUCATION CLASSES AT A UNIVERSITY

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<https://doi.org/10.5281/zenodo.17856008>

ARTICLE INFO

Qabul qilindi: 01-dekabr 2025 yil
Ma'qullandi: 04-dekabr 2025 yil
Nashr qilindi: 08-dekabr 2025 yil

KEYWORDS

In our opinion, kettlebell sport is one of the attractive forms of introducing young people to regular physical education and sports. In addition to its traditional forms (classical biathlon, long-cycle jerk), a new direction in kettlebell sport is currently developing - power kettlebell juggling (PKJ).

ABSTRACT

The development of physical education and sports is becoming an important social factor in life today. The involvement of the general population in physical education , as well as success in international competitions, are proof of the vitality and spiritual strength of any nation, its military and political power. In the context of a qualitative transformation of all aspects of society, the demands on the physical fitness of young people necessary for successful work activity are increasing, including the development of physical education of university students. Along with the general requirements for the educational process, determined by the state educational standard and curriculum, most universities have their own specifics for conducting methodological, practical and educational and training classes in physical education, associated with various methods of pedagogical influence on the student body. To improve the effectiveness of these methods, given the traditionally low attendance of physical education classes by the majority of students, the tasks are set to implement innovative technologies in physical education, increase student motivation to engage in physical education and sports through the individualization of curricula taking into account the psychological characteristics and physical fitness of students

Relevance of the study. The development of physical education and sports is becoming an important social factor in life today. The involvement of the general population in physical education , as well as success in international competitions, are proof of the vitality and spiritual strength of any nation, its military and political power. In the context of a qualitative transformation of all aspects of society, the demands on the physical fitness of young people necessary for successful work activity are increasing, including the development of physical education of university students. Along with the general requirements for the educational process, determined by the state educational standard and curriculum, most

universities have their own specifics for conducting methodological, practical and educational and training classes in physical education, associated with various methods of pedagogical influence on the student body. To improve the effectiveness of these methods, given the traditionally low attendance of physical education classes by the majority of students, the tasks are set to implement innovative technologies in physical education, increase student motivation to engage in physical education and sports through the individualization of curricula taking into account the psychological characteristics and physical fitness of students [1, 3].

In our opinion, kettlebell sport is one of the attractive forms of introducing young people to regular physical education and sports. In addition to its traditional forms (classical biathlon, long-cycle jerk), a new direction in kettlebell sport is currently developing - power kettlebell juggling (PKJ). It was formed as a result of the evolution of a traditional Russian sport and, in our opinion, combines fashion and novelty, a high emotional background, aesthetics of movement, elements of extreme sports and a show during exercise performance, which are attractive to modern youth. This new form of physical education and simultaneously developing national sport are promising, in our opinion, firstly, for the conversion of sports technologies into the process of physical education of student youth [4], and secondly, for the development on their basis of innovative physical education and health pedagogical technologies that form an interactive attitude of students to classes and their focus on self-improvement [3, 7].

A review of the literature reveals a lack of scientific work devoted to the use of stimulating body weight training (SWT) in the organizational, managerial, pedagogical, physical education, and health-improving, as well as medical-biological aspects. Scientific understanding of SWT as a form of physical exercise and the theoretical and methodological principles of the SWT sports training system are insufficiently developed and not integrated into a unified framework based on experimental research. Therefore, it seems relevant to explore ways to utilize SWT as a health-improving training system and a form of sports specialization in the physical education of schoolchildren and students.

The objective of the study: the use of developed training methods of various types for kettlebell juggling in physical education classes at a university will effectively contribute to the growth of students' motivational engagement in classes, improvement of their physical development, functional and physical condition, and enhancement of their athletic skills.

Object of the study: complexes of group and individual physical exercises of strength juggling with kettlebells.

Subject of the research: methods of health and sports training based on kettlebell power juggling exercises.

Research results. An analysis and summary of scientific and methodological literature, along with expert survey results, indicate a lack of scientific understanding of kettlebell juggling as a form of physical education and sports activity. Existing theoretical and methodological developments in sports training systems are advisory in nature, based on the personal experience of specialists, and are not integrated into a unified framework grounded in theoretical research. General and specialized physical training for kettlebell lifters and jugglers at university level, for both boys and girls, should be used as separate training blocks during the introductory and specialized stages. To ensure the required level of physical and

functional fitness for kettlebell lifters and jugglers during the introductory stage, general physical training should account for up to 50% of the total training volume for boys and up to 40% for girls, with the ratio of strength, speed- strength, overall endurance, and coordination development being 55%, 35%, and 10%, respectively. Kettlebell juggling should account for 50-60% of the total training volume at this stage of training.

In a year-long training cycle for specialized kettlebell jugglers at a university, the effectiveness of a two-cycle training schedule with weekly microcycles of 3-5 sessions was established. The overall volume and intensity of training during the preparatory period should be progressively increased; during the competition period, the total volume of training stabilizes at 9.5-11 hours per week. The intensity of training increases by 15-20% due to increased training time for kettlebell juggling techniques, including those of greater complexity.

Mastering the technical arsenal of kettlebell juggling in a university setting requires going through two stages of developing athletic mastery, which feature significant differences in exercise selection, load distribution during their execution, and the overall volume and intensity of the training load: the initial athletic training stage and the specialized training stage. For the preparation stages, it is necessary to differentiate general physical training exercises for boys and girls, varying the ratios of the volumes of general physical training and exercise loads. The set of exercises for general physical training of kettlebell lifters-jugglers for each stage of preparation can be rationally presented in the form of training modules (sets of exercises for the development of certain physical qualities).

To improve the strength and special endurance of kettlebell jugglers, it is recommended to perform the following basic exercises:

- bench press, squats with a barbell on the shoulders - 4 sets of working weight, 5-9 repetitions per set;
- deadlift (boys) - 4 approaches for working weight, 4-6 repetitions per approach;
- exercises to develop the back and abdominal muscles - 3 sets of 10-18 and 20-30 repetitions per set, respectively;
- auxiliary and specialized exercises with kettlebells - 3-4 approaches, 10-15 repetitions per approach;
- exercises to develop explosive strength - 3-4 sets, 4-5 repetitions per set.

To optimize the work mode, the load in the exercises is selected in such a way that the heart rate at the end of the exercise is 160-180 beats/min, and by the beginning of the next repetition it decreases to 120-130 beats/min (under- recovery mode).

To improve functional fitness, running and cycling on a stationary bike are recommended (10 to 20 minutes at a heart rate of 140 beats/min in the high and high load zone).

To relieve psycho-emotional stress and increase athletes' motivation, especially at the initial stage of sports training, it is advisable to use elements of game and competitive methods; for in-depth study of the technique of performing elements (as needed), the method of dissected exercises (study in parts) is used.

It is advisable to introduce specialized exercises for special physical training with weighted kettlebells and juggling with equipment of non-standard weight and shape, starting from the stage of specialized training. When learning and performing individual elements of power juggling with kettlebells, the number of repetitions is regulated by the athlete's

pronounced fatigue and the presence of regularly recurring technical errors (on average - 15-18); the recommended number of approaches is 3-4; the rest interval between approaches - until full recovery of performance (heart rate at the beginning of the next approach - no more than 100 beats/min). Methodological recommendations for this section of technical training are set out in [7].

When learning and performing combinations of elements of a competitive program, or the program itself as a whole, it is recommended that if a serious error is made, the exercise be continued, beginning with the next element. Errors in the execution of elements and combinations of elements are best addressed separately. Other methodological recommendations are provided in [7]. When performing combinations of elements, depending on the level of mastery, the recommended number of repetitions in one approach is no more than 5, with the number of approaches ranging from 1 to 5; when performing a competitive program, no more than 2 repetitions, with the number of approaches ranging from 2 to 6 or more.

The rational ratio of the volume of loads for general physical training and power kettlebell juggling in the preparatory period of training is from 45% : 55% for young men to 40% : 60% for young women. At the same time, the optimal ratio of loads for general physical training for the development of strength, speed-strength qualities, general and special endurance for young men is 25%, 15% and 60%, respectively, for young women - 15%, 25% and 60%, respectively. The intensity of the loads, both general physical training and power kettlebell juggling, should be 70-80% of the intensity of the competition program, depending on the content of microcycles. During the competitive period, the volume of loads for power kettlebell juggling should be increased to 80-85% of the total volume of work for young men and up to 90% for young women, the intensity of the loads - up to 90-100% of the intensity of the competition program.

A health-improving training method for university students was developed using kettlebell juggling (up to 80% of total training time) during the initial stage of athletic training. Exercise routines were developed for both lightweight and standard equipment. The health-improving effects of kettlebell juggling exercises were determined by working at a heart rate of 131-155 beats per minute for 60% of the session time.

The effectiveness of a health-improving kettlebell juggling training method for fostering students' motivational engagement in physical education classes at a university was experimentally validated. Between-group differences in motivational engagement for students in the experimental groups compared to those in the control group were statistically significant, amounting to 56.3% and 59.4% for females and 52.9% and 139% for males.

Conclusions. Application of experimental methods of power juggling with kettlebells contributes to increase of health effectiveness of physical education classes in the university. Positive final between-group shifts were found for the experimental groups compared to the control group for the following parameters: Ruffier index (for girls of the experimental groups compared to the control group - 10.0% and 16.1%, for boys - 5.1% and 20.0%); PWCno (28.4% and 28.3%; 15.6% and 21.7%, respectively); level of maximum oxygen consumption (11.5% and 12.2%; 6.9% and 10.0%, respectively); speed of visual-motor reaction (21.7% and 20.1%; 13.5% and 12.4%, respectively); integral indicator of physical condition (11.5% and 12.2%; 6.9% and 10.0%, respectively); spine flexibility (18.1% and 27.5% for girls); vital capacity of

the lungs (17.1% and 15.8% for boys). Students in the sports improvement group showed an increase in PWCno , maximum oxygen consumption and the integral indicator of physical condition by 28.5%; 13.3%; 22.7% for girls and by 33.6; 16.2; 25.6% for boys, respectively.

The effectiveness of the developed method for training qualified kettlebell lifters and jugglers in a university setting is demonstrated by a significant group increase in the athletes' competitive results in each of the four-month macrocycles. Over 15 months of training, taking into account vacation and session training breaks, as well as the limited number and time of training sessions, all subjects achieved the standards for first and second sports categories.

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