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APPLICATION OF PILATES MEANS FOR ALL-ROUND PHYSICAL DEVELOPMENT OF FEMALE CANOEISTS AGED 12-13

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Abstract. The article describes the reasons for seeking additional means of physical education that, against the background of the limited volume and intensity of physical exertion on the bodies of female canoeists aged 12-13, can lead to adaptive shifts. The use of Pilates techniques in physical training is suggested as one such means. The technique includes a set of progressively more complex exercises from the Pilates system aimed at developing flexibility and strengthening the muscles of the arms, neck, and sides of the back; improving the spine and correcting posture; stretching the spine and strengthening the back from the upper spine to the coccyx; working the lumbar muscles, buttocks, and thigh biceps; exercising the muscles of the back and abdomen together; developing strength and endurance in the back muscles; and improving flexibility, balance, and coordination. The developed method of incorporating Pilates tools into physical training is recommended for enhancing the functional and physical fitness of female canoeists aged 12-13 years.

Key words: physical fitness, pilates, canoe athletes, flexibility, speed, coordination abilities, endurance.

Introduction: In modern long-term sports training, the improvement of competitive results in canoeing is largely determined by a continuous increase in the volume and intensity of training loads. This trend imposes high demands on the body's capabilities, leading to overstrain in the functional systems of female canoeists aged 12-13. For pedagogically justified planning of training load, considering the psychophysiological characteristics of athletes of the specified age, it seems relevant to search for additional means of physical education that can provide adaptive shifts in physical development with a limited volume and intensity of physical activity.

Now, in the field of mass sports, wellness programs in physical education are leading, designed to meet the needs of various age groups and social groups [1-4]. Today, there are about two hundred types of wellness programs. Conventionally, they can be divided into two main directions: Western and Eastern, which are based on differences in people's mentality and ideologies, which, in turn, define national peculiarities. As a result of the innovative development of these systems and methods, a special direction of wellness impact on a person has emerged, called "mental fitness," "mindful body," or, as it is referred to abroad, "Body & Mind" [5,6].

Mental fitness also includes the Pilates exercise system, created nearly a hundred years ago by the German doctor, trainer, and athlete Joseph Pilates. At the end of the last century, Pilates' method was revived and modernized. The original system consisted of only 34 exercises, whereas now there are about 500. The primary focus of the Pilates system is on developing physical qualities such as strength, flexibility, coordination, and endurance, while also having a positive impact on the psycho-emotional state of those involved [7].

However, it should be noted that most of the literature and methodological developments related to Pilates are descriptive in nature and do not reflect the full complexity or versatility of the possible impact on various body systems [8, 9]. Moreover, there is a lack of objective evidence supporting the positive effects of this system on the psycho-physical state of those involved and the appropriate selection of corresponding impact methods. According to the Law of the Republic of Kazakhstan No. 490-13 of December 2, 1999, "On Physical Culture and Sports," a key factor during the completion of the body's age-related development is the comprehensive development of physical qualities necessary for full physical preparation for future life activities. This should primarily be reflected in meeting the physical training standards [10]. We are scientifically interested in how the physical qualities and physical condition of 12-13-year-old female canoeists will develop, who, in addition to their canoe training, also incorporate Pilates fitness program elements. As we expect, the results of this study will serve as the foundation for promoting a healthy lifestyle, maintaining optimal physical health, and enhancing the body's ability to manage fatigue more effectively.

The purpose is to study the effectiveness of Pilates exercises on the all-round physique of female canoeists aged 12-13 years.

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Objective of the study:

1) To study the impact of physical training methods using Pilates exercises on the physical development of 12-13-year-old female canoeists.

2) To provide practical recommendations on the use of the Pilates exercise system in the training process of 12-13-year-old female canoeists to improve functional training and all-around physique.

Materials and Methods. An analysis of the scientific and methodological literature available to us allowed us to get an idea of the state of the issue under study. Pedagogical observations were used to evaluate the means and methods of sports training of female canoeists aged 12-13 years. To assess the physical fitness of female athletes aged 12-13 years participating in the experiment, the control was carried out using the following tests: Harvard step test (performance capability); Yarotsky test (coordination abilities); timed part distance walks 500 m (endurance); 30 m running (speed); forward bend to assess flexibility.

The study was conducted at the Zhastar rowing base in Almaty region. The experimental studies involved 20 females aged 12 to 13 years. The subjects were divided into two groups. The control group included 10 female athletes who trained according to the generally accepted physical training method. The experimental group consisted of 10 female athletes who trained according to the experimental physical training method using Pilate's exercises. The pedagogical experiment was carried out from October 2023 to October 2024 to test the effectiveness of the experimental methodology for developing physical abilities through Pilates exercises in canoeing for 12-13-year-old female athletes.

Results. Based on the data obtained during the analysis of available scientific and methodological literature and plans for training sessions for female canoeists aged 12-13, as well as pedagogical observation, we developed an experimental method for all-round physique, including a set of Pilates exercises in canoeing. Each day of the microcycle, a set of exercises from the Pilates system was introduced into the general physical training, aimed at developing flexibility and strengthening the muscles of the arms, neck, and sides of the back; improving the backbone; correcting posture; stretching the spinal column, strengthening the back from the upper section to the coccyx; working out the psoas muscle, nates, and biceps femoris; joint working out of the back and abdominal muscles; developing strength and endurance in the back muscles, improving flexibility and a sense of balance, coordination (Figure 1).

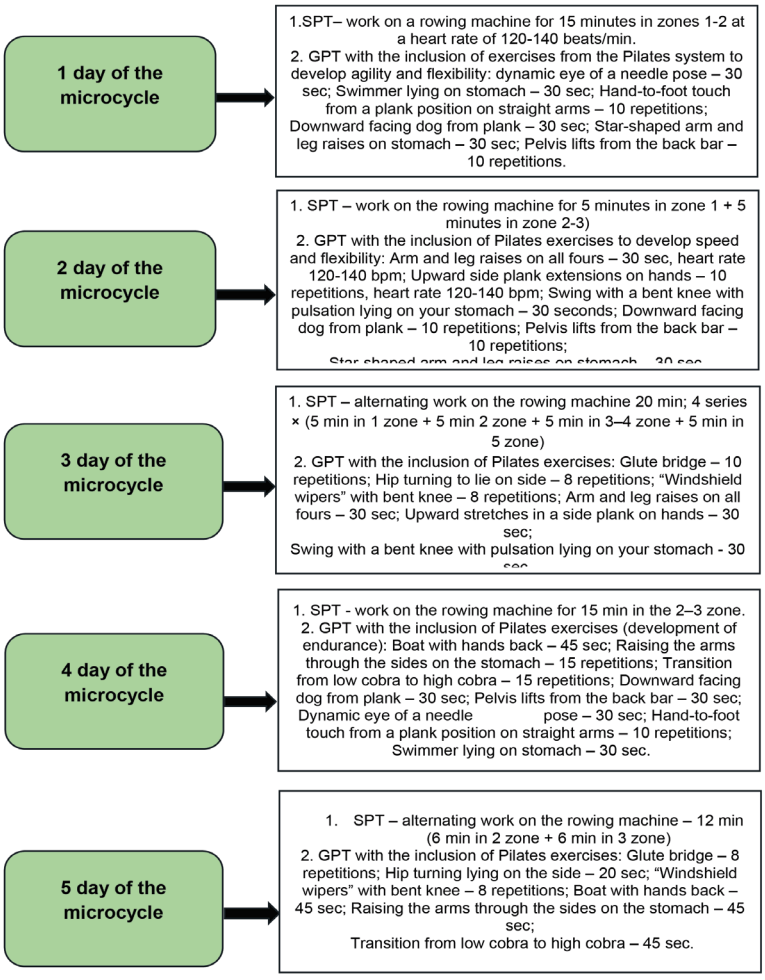

Figure 1 – Training cycle diagram for 12–13-year-old female canoeists using an experimental method with the inclusion of a set of exercises from the Pilates system

In the experimental group, a training program was carried out, which provided for physical development in a consistent increase of the level of coordination, speed, flexibility, and endurance according to the methodology we developed. To determine the level of physical performance of the athletes participating in the experiment, we conducted the Harvard Step. At the end of the experiment, the Harvard Step Test index of the control group athletes increased by an average of 1.8%, the experimental group athletes showed the following increase in the result by an average of 5.6%, which is 4% more than in the control group. This indicates an increase in the level of performance as the athletes' training increases, but the data obtained allow us to conclude that the method we developed is more effective for increasing the performance of 12-13-year-old female canoeists (Figure 2).

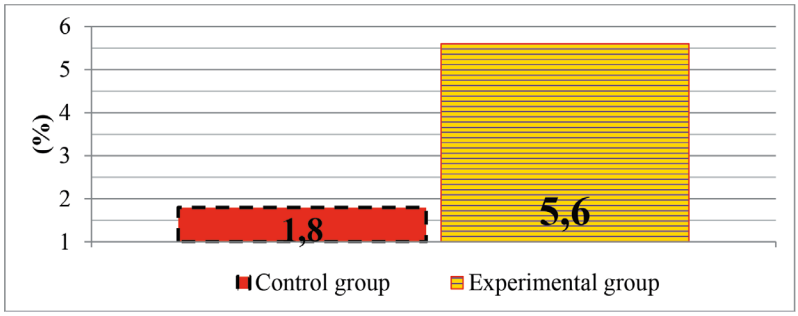

Figure 2 - Percentage increase in the Harvard Step Test index at the end of the experiment

At the end of the experiment, the response rate to the Yarotsky Test in athletes in the control group increased by an average of 4.1%, while in the experimental group, this value corresponded to 9.7%, which is 5.6% more than the result of the control group (Figure 3).

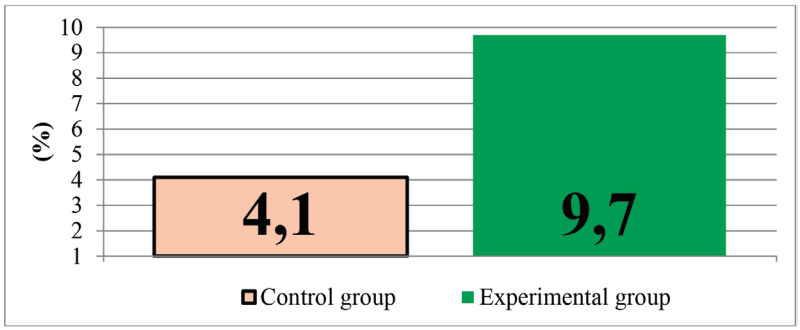

Figure 3 - Percentage increase in the results of the Yarotsky Test at the end of the experiment

At the end of the experiment, endurance was assessed by timed distance walking 500 m distance for the athletes in the control group improved by an average of 1.5%, while in the experimental group, this value was 2.9%, which is 1.4% more than the result of the control group (Figure 4).

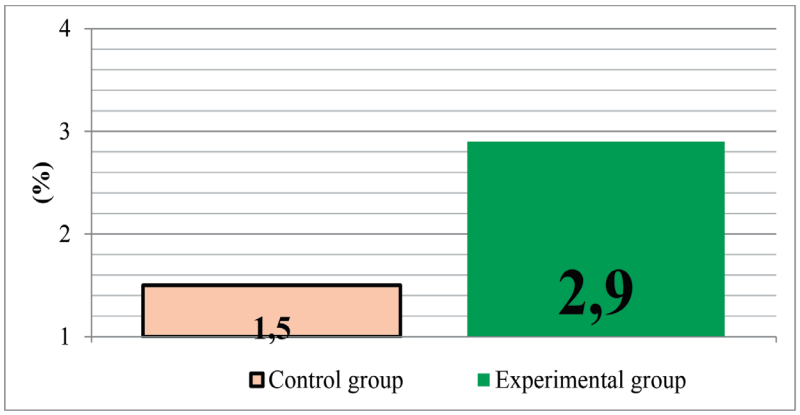

Figure 4 - Percentage improvement in 500 m distance time at the end of the experiment

Speed was assessed based on the results of running 30 m from a high start. At the end of the experiment, the 30 m running time of the athletes in the control group improved by an average of 2.8%, in the experimental group this value corresponded to 2.7%, which is 0.1% less than the result of the control group (Figure 5).

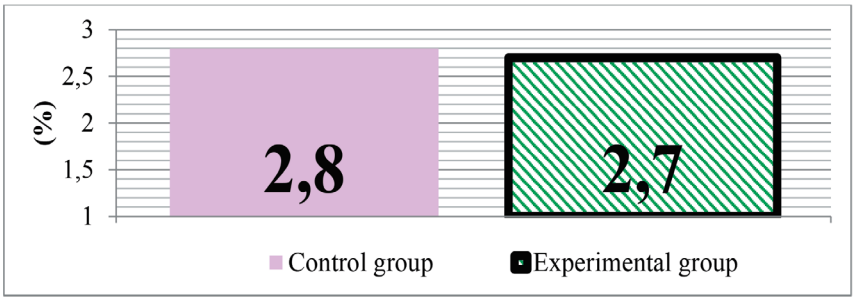

Figure 5 - Percentage of improvement in 30 m running at the end of the experiment

Based on the results of the 30 m run, it can be concluded that the influence of traditional and experimental techniques leads to a gradual increase in speed, however, it is not necessary to say that a set of Pilates exercises leads to a significant increase in speed abilities.

Flexibility limits the freedom of movement of the canoeists and determines the lack of stiffness when performing competitive techniques. To measure the level of flexibility after the experiment, the athletes of the control and experimental groups were tested to perform a forward bend. At the end of the experiment, the result of forward bend in the athletes of the control group improved by an average of 5.6%, in the experimental group this value corresponded to 25%, which is 19.4% more than the result of the control group (Figure 6).

A significant increase in flexibility in the experimental group at the end of the experiment allows us to conclude that the use of a set of exercises from the Pilates system in physical training gives excellent results in comparison with the traditional method of flexibility development in female canoeists aged 12-13 years.

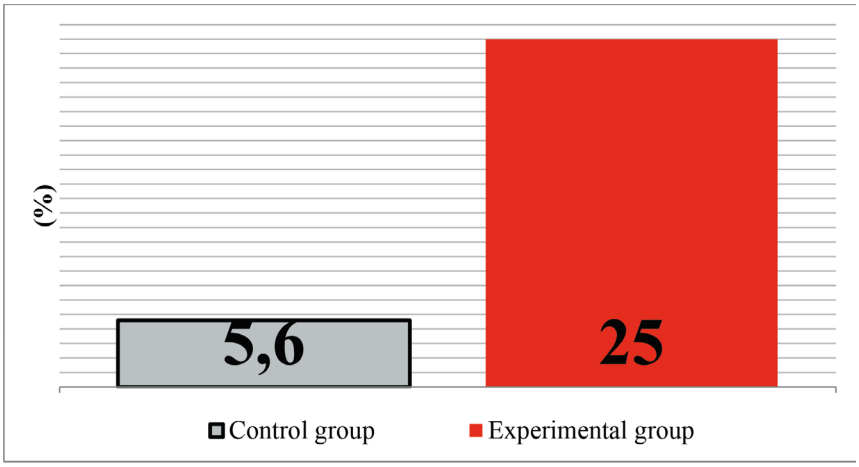

Figure 6 - Percentage improvement in forward bending at the end of the experiment

Discussion. To achieve high athletic results in canoeing, it is necessary to systematically perform training and competitive loads that improve the functional training of athletes, using methods of long-term exercise, variable, repeated, and interval training with a different ratio of load and rest.

The study revealed that the Pilates exercise system significantly impacts the development of physical qualities such as strength, flexibility, coordination abilities, and endurance and positively affects the psycho-emotional state of female canoeists aged 12-13 years. The level of tension in the muscle's decreases, the amplitude of joint opening increases, and the development of physical abilities and a positive emotional state during training sessions are stimulated, which is important during prolonged monotonous exercise during the training session.

The positive effect of the Pilates exercise system performed by female canoeists aged 12-13 has been determined:

– performing exercises implies movement in all planes;

– the variability of exercises is suitable for students with different physical fitness;

– corrects the imbalance of muscles leading to injury;

– The level of flexibility and functional efficiency of the athletes' bodies increases when they perform training and competitive loads.

Conclusions. The results of the conducted studies on the influence of experimental methods of physical training of female canoe athletes aged 12-13 years using exercises from the Pilates system showed a significant increase in the level of physical performance, coordination abilities, and flexibility. As for the level of manifestation of complex forms of speed and endurance, the experimental technique we developed did not give significant changes. These data give us reason to conclude that the experimental technique of physical training using Pilates is effective for improving coordination, speed and strength abilities, and flexibility, and as a result, improving athletic performance among athletes specializing in canoeing.

Since the proposed technique is easy to use and takes a short amount of time, this technique can be used under normal conditions of the training process in winter and summer to improve the functional training of female canoeists aged 12-13 years.

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References

1 Melnikova O.F. Mass sports as a factor of health improvement and formation of a healthy lifestyle of the population //Science Time, 2017. – №5(41). – P. 77-80.

2 Baro M., Singh O.J., Thapa S.Kr., Sonowal A. Physical Fitness and Wellness - Challenge in the 21st Century // International Journal of Physical Education Fitness and Sports, 2016. – 5(1). – P. 29-32

3 Gualdi E., Zaccagni L. Physical Activity for Health and Wellness // International Journal of Environmental Research and Public Health (IJERPH), 2021. – 18(15). – P. 7823.

4 Yermakhanova A.B. Optimization of training of sports reserve in artistic swimming with the use of fitness tools based on the use advanced international experience: diss. ...Doc. of Phil. PhD: 6D010800 / Kazakh Academy of Sports and Tourism. – Almaty, 2018. – 155 p.

5 Ives J.C. Beyond the mind-body exercise hype // Physician and Sports medicine. – 2000. – Vol.28. – P. 67-81.

6 Latey P. The pilates method: history and philosophy // Journal of Bodywork and Movement Therapies. – 2001. – Vol.5. – P. 275-282.

7 Vader S. Pilates from A to Z. – Rostov-on-Don: Phoenix, 2007. – 320 p.

8 Yılmaz O., Soylu Y., Kaplan T., Taşkin M. How pilates exercises affect sports performance? A systematic review// Türk Fizyoterapi ve Rehabilitasyon Dergisi, 2023. – 34(3). – P. 367-373.

9 Kaviraja K., Arun B., Tharani G., Gopinath Y. Effects of Swiss ball exercise and Pilates exercise on core muscle strengthening in college cricketers// Biomedicine, 2020. – 40(3). – P. 377-380.

10 Law of the Republic of Kazakhstan "On Physical Culture and Sports" dated July 3, 2014 №228-V LRK. https://adilet.zan.kz/rus/docs/Z1400000228

12-13 ЖАСТАҒЫ КАНОЭ ҚЫЗДАРЫНЫҢ ЖАН-ЖАҚТЫ ФИЗИКАЛЫҚ ДАМУЫ ҮШІН ПИЛАТЕС ӨНІМДЕРІН ҚОЛДАНУ

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Аңдатпа. Мақалада 12-13 жастағы каноэ спортшыларының денесіне дене белсенділігінің шектеулі көлемі мен қарқындылығы аясында денеде бейімделу өзгерістерін тудыруы мүмкін қосымша дене шынықтыру құралдарын іздеудің себептері сипатталған. Құралдардың бірі ретінде пилатес құралдарын дене шынықтыруда қолдану ұсынылды. Әдістемеге қолдың, мойынның, Арқаның бүйір жақтарының икемділігі мен бұлшықеттерін нығайтуға бағытталған пилатес жүйесінен біртіндеп күрделене түсетін жаттығулар кешені енгізілді; омыртқаны сауықтыру; дене мүсінін түзету; омыртқа жотасын созу, арқаны жоғарғы бөліктен құймышақ сүйегіне дейін нығайту; бел бұлшықеттерін, бөкселерді, сан бицепсін өндеу; арқа мен іш бұлшықеттерін бірге жетілдіру; арқа бұлшықеттерінде төзімділікпен күшті дамыту, икемділік пен тепе-теңдік сезімін, үйлестіруді жетілдіру. Дене шынықтыруда пилатес құралдарын қолданудың әзірленген әдістемесі 12-13 жастағы каноэ спортшыларының функционалдық және дене шынықтыру дайындығын дамыту үшін ұсынылады.

Түйін сөздер: дене шынықтыру, пилатес, каноэ спортшылары, икемділік, жылдамдық, үйлестіру қабілеті, төзімділік.

ПРИМЕНЕНИЕ СРЕДСТВ ПИЛАТЕСА ДЛЯ ВСЕСТОРОННЕГО ФИЗИЧЕСКОГО РАЗВИТИЯ ДЕВОЧЕК-КАНОИСТОК 12-13 ЛЕТ

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Аннотация. В статье описываются причины поиска дополнительных средств физического воспитания, способных на фоне лимитированных объема и интенсивности физической нагрузки на организм спортсменок-каноисток 12-13 лет, вызвать адаптационные сдвиги в организме. В качестве одного из средств предложено применение в физической подготовке средств пилатеса. В методику был включен комплекс постепенно усложняющихся упражнений из системы пилатеса, направленных на развитие гибкости и укрепления мышц рук, шеи, боковых сторон спины; оздоровление позвоночника; исправление осанки; вытяжение позвоночного столба, укрепление спины от верхнего отдела до копчика; проработку поясничных мышц, ягодиц, бицепса бедра; совместную проработку мускулатуры спины и живота; развитие силы с выносливостью в спинных мышцах, улучшение гибкости и чувства равновесия, координации. Разработанная методика применения средств пилатеса в физической подготовке рекомендована для развития функциональной и физической подготовленности спортсменок-каноисток 12-13 лет.

Ключевые слова: физическая подготовка, пилатес, спортсменки-каноистки, гибкость, быстрота, координационные способности, выносливость.