

## THE USAGE OF THE PILATES SYSTEM WITH THE HELP OF A SMALL BALL IN PHYSICAL EDUCATION CLASSES IN A SPECIAL MEDICAL GROUP

I.M Dydareva, V.A. Koloshkina, T.A. Sheleshkova

VSU named after P.M. Masherov, Vitebsk, Republic of Belarus

E-mail: kfvis1947@mail.ru

**Annotation.** The article discusses one of the modern methods of forming a healthy way of life and body shaping – pilates with small rubber balls. The article shows the effectiveness of their use in physical culture classes with the students 1-1 courses philological and biological faculties of the VSU named after P.M. Masherov, assigned to the special medical group. The Genchi test was used to assess the cardiovascular system.

**Key words:** pilates, small rubber balls, exercises, pulse, cardiovascular system, overweight, students.

**Introduction.** Pilates actively uses exercises with a small rubber ball, which is much cheaper than a large fitness ball, and takes up less space. It is a universal simulator, thanks to which the main muscle groups and deep fibers are involved in the training process. Exercises with a small ball are designed for weight loss, they allow you to develop flexibility and improve coordination of movements. A small projectile requires a lot of effort and energy, so the calories in the classes with it will be burned in large volumes. Exercises with a small gymnastic ball can help to diversify the boring training process and even make it more effective. Mechanical vibration has a specific effect on almost all human organs and functional systems. Continuous vibration has a calming effect on the nervous system. The vibrations of the ball affect the spine, intervertebral discs, joints and surrounding tissues. The brain also receives impulses, as a result, the development of new conditioned reflex connections, especially necessary for the mental and intellectual development of a person, is accelerated. It improves the ability to self-control and introspection. Exercises with a gymnastic ball are performed slowly without sudden movements, paying special attention to breathing (inhaling through the nose, exhaling through the mouth). Among the exercises with the ball, there are those that develop muscle and endurance, and others, on coordination and a sense of balance. The ball can also be useful where other sports gadgets are often useless. We are talking about the deep muscles of the buttocks and the muscles of the inner thigh. But by placing the ball between the knees and feet, squeezing it with your feet, these hard-to-reach problem areas of the figure can be worked out [1,2].

*The aim of the study* was to determine the effect of a set of exercises with a small rubber ball on the state of the cardiovascular system and weight loss in female students.

**Tasks:** 1. To study the effect of Pilates exercises with a small rubber ball on the state of the cardiovascular system and weight loss in female students.

2. To evaluate the effectiveness of the Pilates system with a small rubber ball in physical education classes with overweight students.

**Material and methods.** To assess the cardiovascular system, the following methods were used: measuring of heart rate and Genchi's test [1]. The study involved girls (n=20) of 1-3 courses of the Faculty of Biology of the VSU named after P. M. Masherov, who underwent a medical examination and were assigned to a special medical group for health reasons. Classes were conducted using exercises with a small rubber ball, twice a week for 60 minutes, for 4 months (February-May). In these classes, exercises with a small rubber ball were performed at a slow pace, aimed at developing coordination of movements, a sense of balance, flexibility, endurance, special attention was paid to breathing, the first part of the lesson was conducted in

moderate dynamics, the second – in a slow pace and static (fixing the position for 15 - 30 seconds). All exercises were performed with musical accompaniment.

Before the start of the study (February 2019), the following indicators of the functional state of the body were determined in the subjects: resting heart rate (HR), Genchi's test (after 2-3 deep breaths, exhale deeply and hold your breath for as long as possible). The time was noted from the moment of holding the breath to the beginning of inspiration. The result was evaluated as "excellent", with a breath hold on exhalation of more than 40c, "good" - from 30-40c, "average" - 25-30c, "bad" - less than 25c. Body weight, waist and hip circumference were measured.

**Results and discussion.** At the beginning of the study (February), 6% of students had a resting heart rate of 90 bpm or higher, 60% - 80-90 bpm, 20% - 70-80 bpm, and only 14% - 60-70 bpm. The average body weight was 80-90 kg. By the end of the study (May), there were statistically significant ( $p < 0.05$ ) changes in the studied parameters: the pulse of 90 beats / min and above decreased from 6% to 2% of students, the pulse of 80-90 beats / m decreased from 60% to 35% of students, 70-80 beats / min increased to 40% of students and 60-70 beats / min increased to 23% of students; with the exception of the index of 90 bpm and higher-decreased from 6% to 2% of students ( $p > 0.05$ ). Body weight decreased by an average of 12 kg, it was 13-15%.

The parameters of the Genchi's Test indicate an improvement in the functional state of the students' body. If in February, only 1 out of 60 people could hold their breath for more than 40 seconds, by December this figure increased to 8 people. 5 people were able to hold their breath for 30-40 seconds in February, by December this figure increased to 27 people. By the end of the study, there were statistically significant ( $p < 0.05$ ) changes in the studied indicators. This indicates an improvement in the functioning of the respiratory and cardiovascular systems.

№ п/п	Tests	Indicators	February 2019		May 2019		R
			n	%	n	%	
1	HR At rest	60-70 bpm	3	10	8	26	< 0,05
		70-80 bpm	8	26	12	40	< 0,05
		80-90 bpm	13	43	9	30	< 0,05
		90 and more bpm	6	20	1	3	> 0,05
2	Holding of breath	More than 40 s.	1	3	3	10	< 0,05
		30c-40 s.	3	10	6	20	< 0,05
		25c-30.	11	36	18	60	< 0,05
		Less than 25s.	15	50	3	10	< 0,05
3	Body mass	80-85 kg.	10	33	20	66	< 0,05
		85-90 kg.	15	50	10	33	< 0,05
		90 and more kg.	5	17	0	0	< 0,05

**Conclusion.** Therefore, exercises with a small ball can be aimed at working out different muscle groups. Together, they make up a universal complex that involves the whole body. Thanks to a small rubber ball, you can develop endurance, flexibility, coordination of movements, strengthen the muscles of the press, buttocks, inner thigh muscles, chest muscles. Regular exercises with a small rubber ball have a beneficial effect on the body as a whole, improve the nutrition of tissues, promote the restoration of muscle functions, reduce pain, increase the elasticity of the skin, develop motor skills of the hands. It is recommended for restoring the sensitivity of the hands, preventing flat feet. They have proven themselves in the fight against excess weight and cellulite.

#### Literature

1. Sharipova, G. Y. Functional tests for assessing the respiratory system / G. Y. Sharipova, Z. A. Kulteleva // Youth Scientific Forum: Natural and medical sciences: electronic collection

of articles based on the materials of the XLIV student International correspondence scientific and practical conference. - Moscow: "MCNO", 2017. – № 4 (43). – Pp. 59-63.

2. Koloshkina V. A. Dudareva I. M., The influence of Pilates system exercises on the functional state of the students 'body / Materials of the V International Scientific and practical conference " Pedagogy of modernity: actual issues of psychological and pedagogical theory and practice" / V. A. Koloshkina. I. M. Dudareva-Cheboksary, 2019. - pp. 70-73.

3. <https://medn.ru/statyi/diagnostika/proba-genchi.html>.

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## МЕТОДИКА УМЕНЬШЕНИЯ ДЕФИЦИТА МЫШЕЧНОЙ МАССЫ ТЕЛА У СТУДЕНТОВ

**Е.В. Егорычева, И.А. Фатьянов**

*Волгоградский государственный технический университет,*

*г. Волжский, Российская Федерация*

*Волгоградская государственная академия физической культуры,*

*г. Волгоград, Российская Федерация*

E-mail: [eleg71@mail.ru](mailto:eleg71@mail.ru)

**Аннотация.** В статье представлены результаты исследования проблемы недостатка мышечной массы у студентов высших учебных заведений. На основе изучения характеристик физического развития и показателей функционального состояния студентов предложена к практическому применению методика увеличения мышечной массы у обучающихся с её дефицитом. Основу методики составляют статодинамические упражнения. Развивающее воздействие упражнений направлено на основные мышечные группы и предполагает применение метода повторных усилий. Показано, что при использовании экспериментальной методики улучшается телосложение студентов, показатели их физической и функциональной подготовленности, а также основные маркеры, характеризующие уровень здоровья. Внедрение авторской методики снижения дефицита мышечной массы у студентов средствами и методами физического воспитания в процесс внеучебных занятий студентов высших учебных заведений обеспечивает прирост мышечной массы в среднем на 10-12 % от исходных показателей, повышает уровень показателей физической подготовленности в среднем на 5-7 %, и показатели здоровья на 6-8 %.

Результаты исследования могут быть использованы в учебном и внеучебном процессе физического воспитания в высших учебных заведениях различного профиля, а также в процессе формирования и повышения профессиональных компетенций преподавателей физической культуры.

**Ключевые слова:** дефицит мышечной массы, физическое воспитание студентов, гипертрофия мышц.

Результаты научных исследований, посвященных различным аспектам физического воспитания учащейся молодежи, свидетельствуют о том, что проблема отклонения массы тела школьников и студентов от нормы не теряет своей актуальности, поскольку доля учащихся, имеющих отклонения, достигает в отдельных случаях 40 % от общего числа обследуемых [1, 3, 4, 5]. Между тем, данный показатель является своеобразным маркером, который указывает на риски развития неблагоприятных тенденций в физическом развитии обучающихся и в состоянии их здоровья. Анализ показывает, что значительную часть из данной категории студентов составляют юноши и девушки с дефицитом мышечной массы. Специалисты убеждены, что характеристики телосложения