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# **Innovative and traditional health saving techniques in physical culture and sport**

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## **Abstract**

The paper discusses the efficiency of using health saving techniques in physical culture, sports, and fitness. The leading method was a pedagogical experiment, which proved the effectiveness of using innovative and traditional methods in fitness training. We revealed the positive impact of suspended and rotational functional training on weight control, and of power pilates and strength training on slouching elimination. In conclusion, a sociological survey of those engaged in various types of fitness revealed a significant improvement in health indicators through the use of functional training, workout and power pilates and other innovative techniques combined with traditional approaches.

**Keywords:** Fitness, Functional, Training, Health, Techniques.

## Técnicas innovadoras y tradicionales para salvar la salud en la cultura física y el deporte

### Resumen

El documento discute la eficiencia del uso de técnicas de ahorro de salud en la cultura física, el deporte y el estado físico. El método principal fue un experimento pedagógico, que demostró la efectividad del uso de métodos innovadores y tradicionales en el entrenamiento físico. Revelamos el impacto positivo del entrenamiento funcional suspendido y rotacional en el control de peso, y de los ejercicios de pilates y fuerza en la eliminación de encorvamiento. En conclusión, una encuesta sociológica de aquellos involucrados en varios tipos de acondicionamiento físico reveló una mejora significativa en los indicadores de salud mediante el uso de entrenamiento funcional, entrenamiento y pilates de potencia y otras técnicas innovadoras combinadas con enfoques tradicionales.

**Palabras clave:** Fitness, funcional, entrenamiento, salud, técnicas.

### 1. INTRODUCTION

For several decades, health-saving techniques have been used in various spheres of human life, including physical culture and sports (KOVALKO, 2004). Keeping in mind the continuously emerging new methods and techniques aimed at improving the health indicators of various categories of the population, it is important to identify the impact of these innovations (including their combination with

traditional approaches) on the state of health of those engaged in physical culture, sports and fitness. The question is which methods and techniques are considered to be innovative, and which ones are traditional. For example, the use of TRX suspension trainers to improve health status and physical preparation for doing both sports and fitness, starting in the US, is gaining popularity in all countries of the world, including Russia (GRIGORYEV & SEMYONOVA, 2017). This method is obviously passing from the status of innovative techniques to traditional ones. However, combined with other methods and techniques, it can still be classified as innovative. Among other things, this paper presents the results of using functional training for weight control, pilates in combination with power training to reduce slouching, and the use of workout to improve health. It was namely the TRX suspension trainers (in combination with other means) that were included in the content of experimental techniques.

The purpose of the study was to identify the efficiency of suspended and rotational functional training in fitness for weight control of people with excessive body weight. The World Health Organization called obesity a global crisis and a pandemic (Patient info..., n.d.). Obesity and overweight mean an increased risk of chronic diseases, including type 2 diabetes, cardiovascular diseases, hypertension, and stroke, as well as a decrease in the quality of life and overall health deterioration (LISOVSKY, 2002). As is known, the physical activity effect on reducing the percentage of body fat and on the overall health state has been scientifically proven. However, often training with the use of different methods does not lead to the result,

but vice versa makes things worse: leading the locomotor apparatus and the cardiovascular system into a state that does not allow having an active and healthy lifestyle. Thus, quality training aimed at weight control should be targeted at simultaneously improving the well-being of the trainees, and not overloading the joints and the cardiovascular system, thus being reasonable and safe (DOROKHOV & BYKOV, 2002).

It is difficult to combine exercises that are not dangerous for joints and ligaments with a properly selected diet aimed at losing weight (McARDLE, KATCH & KATCH, 2008). In order to lose weight safely for health, not only from the point of view of the training process methodology but from the point of view of individual features of the human body, it is recommended to lose weight not more than 700–1000 grams per week. For weight loss that is safe for internal organs and for the provision of all energy systems, such a principle is extremely important (CHUPAKHA, PUZHAEVA & SOKOLOVA, 2003).

Thus, the paper presents the results of studies aimed at substantiation of the health-improving efficiency and safety of various types of fitness combining traditional and innovative approaches.

The hypothesis is that innovative health-saving techniques (functional training, workout, power pilates) in combination with traditional methods will allow achieving greater efficiency in solving problems of health promotion, such as weight control, slouching, etc. At the same time, such approaches to the improvement of the fitness club's visitors should be safe for the body (GUDSELL, 2001).

## **2. METHODOLOGY**

In the course of the research, a series of pedagogical experiments with middle-aged women was conducted on the basis of fitness clubs “Russkiy Fitness” and “Gold Fit” in Yekaterinburg for several months.

One of the experiments was held for 3 months (September, October, November) on the basis of fitness clubs “Fresh-Fitness”. The experiments involved 12 women aged 40 to 50, whose goal was to lose weight on the account of fat. Almost all of them suffered from first (28–30%) or second (31–35%) degrees of obesity. Before training, the women were examined to analyze the presence of excess weight, obesity, and fat tissue percentage. Each participant was given recommendations on nutrition. The preparation was divided into 3 stages: preparatory stage, and stages 1 and 2. The preparatory stage lasted for 10 days and included motivating discussions, recommendations on nutrition, measurements, and common meetings. The first stage (21 days) included laying the foundation: setting the right exercise techniques and strengthening the core muscles (GOLENKO, 2007).

At this stage, the participants worked with simple movements only, gradually moving on to complex ones. During the remaining time (the second stage), the group was engaged more intensively, adding complex movements and including such training methods as the interval one and the method of repeated efforts. The training took part 3 times a week in the preparatory and first stages and 4 times a

week in the second stage. Training used the trainers such as TRX Suspension Training and TRX Rip Trainer (rotary training), a functional frame that allows to work in any plane of movement, ropes, stuffed balls, and wobbly platforms. The group practiced special exercises for all muscle groups, consisting mainly (70–80%) of the rotational exercises with the use of suspended equipment. Each participant could trace his pulse on the screen during the training, and the coach could correct and let the participant rest, or vice versa, to increase the tempo and load. It was taken into account that the best fat burning zone is between 65 and 75% of the maximum heart rate (KHAYRULLIN, 2016).

As the authors believe, restoring normal posture requires restoring the normal intermuscular balance. For this purpose, it is advisable not only to train weakened muscles but also to stretch and relax the shortened hypertonic ones (PETERSON & PETT, 2010). These processes should be parallel. Moreover, the more correctly the imbalance is revealed and the adequate physical loads are assigned, the more purposefully one may carry out the correction, and the better the result is. The specifics of the posture correction consist of the simultaneous combination of two aspects. First of all, it is affecting the muscles that are stretched and weakened by power exercises and exercises to develop strength endurance. This point also includes strengthening the weakened muscles of the spine, shoulder girdle and lower limbs involved in maintaining proper posture. The second point is stretching and relaxing the hypertonic muscles. Flexibility exercises are necessary to accelerate the recovery of permanently loaded

muscles and to achieve the optimal length of the shortened muscle groups resulting from a prolonged non-optimal pathologic posture (KANOVSKAYA, 2009).

To identify the health benefits of the workout, a sociological study was conducted among the participants in the social network group “Vorkaut Yekaterinburg | ofitsialnaya gruppa” in VKontakte. The survey asked a number of questions, including the following: “How do you assess your state of health before starting the workout?”, “How do you assess your state of health for today?”, “Do you think that workout training improves your health?”, “Can you recommend workout to others to improve their health?”. More than 4000 follow this group. The majority of them participated in the questioning.

The analysis of the research results was carried out using methods of mathematical statistics. The reliability of the results was determined by Student’s t-test (PATTERSON, 2006).

### **3. RESULTS AND DISCUSSION**

As a result of the experiment on using functional training for weight control in middle-aged women, the following data were obtained (Table 1).

Table 1: Dynamics of the studied indicators for the period of the experiment

	Bodyweight, kg	Percent body fat	Visceral fat assessment, points	Muscle mass, kg	Percent of body water
X1	71.17	32.31	14.3	40.67	47
X2	67.05	29.79	11.9	39.68	52.9
t	<b>2.11</b>	<b>2.53</b>	<b>3.96</b>	0.76	<b>2.82</b>
P	<b>&lt;0.05</b>	<b>&lt;0.05</b>	<b>&lt;0.01</b>	>0.05	<b>&lt;0.05</b>

As can be seen from Table 1, the majority of indicators had significant (reliable) improvements. The weight fell by more than 4 kg on average. At the same time, the percent of body fat decreased by 3%. Visceral fat significantly decreased ( $P < 0.01$ ) and became normal (normal index is from 0 to 12 points). The reduction of muscle mass was also observed, but it was less significant than in other indices. However, a significant reduction in muscle mass was not required. The purpose of the experiment was to reduce visceral fat, which was achieved in a three-month period. At the same time, the percent of body water increased without exceeding the norm (45–60%), which indicates a reduction in body fat – the more weight is lost due to the fat component, the more the percent of body water increases. Muscles use oxygen; the more is the muscle mass, the more is energy consumption, the greater is the loss of calories.

Thus, the experiment revealed that these metabolic and power training are effective from the point of view of fat loss with minimal

loss of muscle mass, due to the greater number of muscles that are involved in the training process. Functional training on the TRX suspended trainers and TRX Rip Trainer, as well as double adjustable lifts, allows to involve at least 80% of working muscles in one exercise, creating variability of movements, engaging more muscle tissue, maintaining the elasticity of tissues, and as a result, reducing the risk of injury from repeated exercises. Functional training with suspended systems sometimes involves difficulty coordinated but at the same time safe movements in training, which increase the strength of the core muscles, mobility in the joints, and allow achieving better results in other exercises aimed at weight control (Fitness Anywhere..., n.d.). People training with TRX suspended trainers after a month began to try new movements in other functional trainers and successfully used them to adjust the weight, combining them with suspended and rotational training. After the study, the authors got feedback from the participants not only about the weight loss but also about the greatly improved well-being after training and the experiment. Women participating in the experiment strengthened their deep muscles (core muscles) by this forming the basis for further fitness or even sporting purposes.

The results of the ascertaining experiment asserted that slouching in modern women who want to do fitness is an extremely common phenomenon. The group training in fitness clubs “Russkiy Fitness” and “Gold Fit” are attended by only about 140 people. Of these, a variety of posture disorders were revealed in 55 people (39.3%). Lateral curvature, scolioses were observed in 15 people

(10.7%) and slouching, respectively, in 40 people (28.6%). The problem of posture deformation and especially slouching in middle-aged women, firstly, really exists, and, secondly, requires active action on its elimination.

Based on the quantitative tests conducted during the transforming experiment, the following patterns of the dynamics of the main studied parameters were revealed (Table 2).

Table 2: Dynamics of mean values ( $M \pm m$ ) of anthropometric indicators and medical-pedagogical tests of control (C) and experimental (E) groups

Indicators	Group	Number of examination			
		I	II	III	IV
Chest rise, cm	C	8.3 ± 0.62	9.4 ± 0.62	9.4 ± 0.62	10.5 ± 0.57
		8.1 ± 0.51	9.6 ± 0.49	10.4 ± 0.49	11.6 ± 0.32
Degree of spinal curvature, cm	C	1.85 ± 0.10	1.84 ± 0.11	1.76 ± 0.10	1.69 ± 0.11
		1.86 ± 0.13	1.81 ± 0.10	1.73 ± 0.11	1.60 ± 0.11
Degree of spinal column flexibility, cm	C	11.2 ± 1.03	10.5 ± 1.05	9.0 ± 0.98	7.6 ± 0.96
		12.5 ± 2.34	11.4 ± 2.15	9.9 ± 1.92	8.3 ± 1.86

Joining hands behind the back, points	C	2.5 ±	2.6 ±	2.9 ±	3.5 ±
		0.38	0.42	0.41	0.46
	E	2.0 ±	2.3 ±	2.3 ±	3.4 ±
		0.52	0.31	0.25	0.42

Note:  $n_{(C)} = 10$ ,  $n_{(E)} = 10$ . Differences in the mean values are statistically reliable ( $p < 0.05$ )

Such an anthropometric indicator as chest rise showed an outrunning growth in the experimental group. According to experts in sports medicine, chest rise is a criterion not only for the degree of development of the respiratory system but also a reliable integral indicator of the general state of human health. Such a criterion as the degree of spine curvature also demonstrated a positive dynamic at a faster pace during the period of observations in the experimental group compared to the control group. Similar signs of progress can be seen from the spine column flexibility test.

The next three tests characterize the ability of the examined women to bend in the back as much as possible, joining their hands behind their backs. During the examination, this ability increased: in the experimental group it increased by 1.4 points (from 2.0 to 3.4 points), against 1.0 points (from 2.5 to 3.5 points) in the control group.

The results of the test assessing the mobility of the cervical spine showed that the ability to extend the head in the bent forward position during the study was significantly increased in the participants from the experimental group. In particular, during the first assessment, women could extend their necks only slightly more than 30° (an

average of 1.6 points). By the time of the second and third measurements, stable growth of this indicator is observed. After the fourth assessment, it reached 2.4 points. At the same time, in the control group, this indicator did not change during the whole experiment and remained at the level of 1.66 points.

Based on the test results, it can be concluding that in all women of the experimental group there was a noticeable positive dynamic in the state of the functional capabilities of the spine (especially the cervical spine), the chest and back muscles. The authors believe that these tests are highly informative and at the same time easy and affordable for use in fitness clubs. These tests combined with qualitative research methods reliably prove the efficiency of the developed technique of posture correction in middle-aged women with slouching.

The results of the studies showed a significant improvement in the posture of the participating women. The degree of kyphosis decreased markedly. All the participants in the experiment improved the strength parameters of the back, chest and abdomen muscles. Women themselves noted that performed exercises shape the waist, make their shape slim and trim. In addition, they contribute to the normalization of the intestine, which may also be considered as a health-improving point.

The respondents showed that they took the experiment in the training seriously. The power training program offered to them aroused considerable interest, enthusiasm and increased the level of motivation for further self-improvement. All of the participants felt

good after training. The control group did not show any significant changes in the improvement of the psycho-emotional state (KNYAZEVA & PLATONOVA, 2007).

Most athletes noted their health condition as satisfactory (28.8%) and good (36.5%) when answering the question “How do you assess your state of health before starting the workout?”. Only 18.5% called their health state a perfect one. At the same time the question “How do you assess your state of health for today?” was answered differently. Positive dynamics is observed in the answers. Thus, the percentage of satisfactory condition decreased to 20.4% and the percentage of good and excellent conditions increased to 46.3% and 27.8% respectively. It may be assumed that workout training contributed to the positive dynamics of the health status of the respondents.

We also found out whether the athletes themselves think that workout training improves their health. Most respondents’ answers were positive (81.5%). At the same time, the majority (83.3%) are ready to recommend workout to others for improving their health.

Based on the results obtained, it can be concluded that workout activities really help to improve the health of people.

#### **4. CONCLUSION**

The conducted research revealed the health-improving effect of fitness techniques that combine traditional and innovative approaches.

Indeed, the introduction of functional training, workout, and power pilates into the work of fitness clubs has significantly improved (according to the results of the experiments and observations) many indicators of physical development, functional state, motor preparedness of those involved. Also, due to the novelty of the means and methods used, the psycho-emotional state of the participants has improved. In particular, the results revealed the positive impact of functional training on weight control, and of power pilates and strength training on slouching elimination. A sociological survey of those engaged in various types of fitness made it possible to reveal a significant improvement in health indicators through the use of functional training, workout and power pilates and other innovative techniques in combination with traditional approaches to health preservation. This confirmed the hypothesis put forward in this study.

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