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Specificity of the "ABS+FLEX" fitness program for overweight women

Summary

The work deals with the problems of the second period of women mature age. There are presents the results of testing the fitness program "ABS + Flex" for reducing body weight. The program involves the power class of mixed-format, aiming at the elaboration of the abdominals and lower back, also to develop flexibility with stretching exercises. The dynamics of average group indicators of the morphofunctional state of the examined group of women with increased body weight showed a positive result of the developed methodology.

Keywords: physical activity, psychological and physical condition, women with higher body weight

Volume 6 Issue 1 - 2023

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Received: February 04, 2023 | **Published:** February 16, 2023

Introduction

In modern society, characterized by socio-economic instability, environmental degradation, and an increase in psycho-emotional tension, the requirements for physical condition, especially for the working population, are significantly increasing. It is well known that any socio-economic or political problem of the state cannot be solved without the participation of women, who have constituted an average of more than 51% of the population over the past 50 years, and in the social sphere the contingent is the overwhelming majority upto 70%.[1] Women perform a variety of social, reproductive, family, educational, production and public functions.

However, with age, the physical condition, physical qualities and motor skills of a person change significantly. There are significant changes in the coordination of movements: the accuracy of their execution decreases, the pace and mobility slow down, the speed of reaction decreases, the speed of mastering new motor actions decreases.[2,3] Due to the fact that the second period of the mature age of women (35-55 years) is the flowering of creative abilities (the time of professional maturity), the problem of prolonging their creative activity and longevity, counteracting age-related involutional changes and increasing the physiological reserves of the body of women of this age attracts special close attention of specialists.[4,5]

Nevertheless, at the moment, a system of proper norms and assessments of physical fitness for various age and sex groups of the population has not been developed. People independently try to determine for themselves the norm of the external form, without delving into what means to acquire it and how this will affect health condition.

Nowadays, many men and women want to lose weight. Therefore, fitness has become more and more intense in people's lives. A detailed study of human physiology and anatomy constantly brings theoretical adjustments and clear justifications to physical exercises. Trainings began to be thought out in such a way that they most organically fit into the general way of life of a person: so that they do not lag behind the rhythm of life, so that they correspond to the temperament and initial physical fitness of a given person.

All characteristics of a person's body weight are divided into three categories: underweight, normal body mass and overweight.[6] So, all these categories of people usually want to choose the most optimal set of exercises for themselves, aimed, respectively, at reducing, maintaining or slightly increasing weight. It is immediately clear that the weight loss program will not benefit everyone. It is obvious that having a desire to lose weight and aiming at weight loss in your workouts will only be good for those people who are overweight. Local weight loss means a reduction in the volume of one part of the body while the other remains unchanged. Techniques designed to do this include special diets, surgical fat removal, electrical stimulation, and increased exercise.

In recent years, numerous body shaping methods have been especially popular, the ones promising to make a person slim and beautiful, but without the slightest effort on his part. However, it should be clearly understood that no, even the most powerful "splitter" of fats in itself is not able to get rid of excess weight. And there are several reasons explaining this fact.

First, extracting fat from cells in problem areas of the body is very difficult. Secondly, there is a lot of other, more accessible fat in the body, which will be consumed in the first place. Thirdly, even if the fat is safely broken down into fatty acids, there exists a problem of their disposal, otherwise, if they are not used properly, they will be deposited somewhere again. Thus, regardless of which methods are chosen to affect adipose tissue, they should provide the following processes:

a) lipolysis (the process of splitting fats);

b) inhibition of lipogenesis (the process of formation of fats in the body);

c) improved blood supply to adipose tissue and muscles;

d) removal of excess fluid from adipose tissue.[7]

For an adult organism, which no longer needs material for tissue construction, the most reliable way to get rid of fatty acids is muscle work.[7] However, contrary to popular belief, achieving effective fat oxidation through exercise is not easy as it seems. During intensive work (for example, during classes in the gym), carbohydrates are burned predominantly in the muscles, and the oxidation of fatty acids, on the contrary, is suppressed. Only during moderate and prolonged loads (for example, when walking) the muscles use fats as an energy source. In thin people, the ability of muscle tissue to oxidize fats increases during exercise. On the contrary, in overweight people, training no longer significantly affects the rate of fat oxidation.[8] Diet and reasonable physical activity are the main factors that trigger the

transformation of adipose tissue, so it makes no sense to start body shaping measures against the background of overeating and physical inactivity. The latter position determined the hypothesis of our study. It was assumed that the identification of the characteristics of the physical condition of women in the second period of adulthood would allow developing the "ABS + flex" fitness program for women with increased body weight, which would affect the development of the physical indicators of the examined group of women, justifying the regulation of the diet and increasing the level of motor activity in them. This, in turn, will contribute to the start of body shaping actions, excluding the radical methods mentioned above.

Purpose and objectives

The purpose of our study is to increase the level of motor activity of women of the second period of mature age with increased body weight in the "ABS + flex" training system, as well as to increase their interest in health-improving training in the fitness system. To achieve the stated goal, it was necessary to solve the following tasks: to study the problems of health-improving fitness that can increase the motor activity of women in the conditions of socio-biological progress; select funds and develop an experimental fitness program "ABS+Flex" for overweight women; identify the level of physical and physiological readiness of the examined group of women; to determine the effectiveness of the "ABS + Flex" fitness program for overweight women in the health fitness system.

Materials and methods

The methodological basis of this work is represented by the following research methods: theoretical analysis and generalization of data from specialized literature; analysis of the health-improving and training process in the system of fitness classes; pedagogical observations; anthropometry method; functional testing methods; methods of testing physical abilities; pedagogical experiment; method of mathematical processing and interpretation of statistical data.

Methods for testing the morphofunctional state

i. The heart rate beats before the load and after it was determined by palpation on the wrist of the studied blood artery for 10″ after performing 20 squats – beats/min.

ii. Stange test – holding the breath on inspiration. After a full inhalation and exhalation, take a normal breath, and then hold your breath – in seconds.

iii. Hench test – holding the breath on exhalation. After a full inhalation and exhalation, take a normal inhalation and exhalation, and then hold your breath – in seconds.

iv. The height was determined in centimeters using a stadiometer in the medical office.

v. Body weight was measured in kilograms using the floor scales.

vi. BMI – body mass index was calculated by the formula:

$$BMI = \frac{weight(kg)}{height(m^2)}$$

Methods for testing physical ability

Within the framework of this study, it is necessary to determine the dynamics of the development of the physical abilities of the examined women, for which the parameters of strength endurance, flexibility and general endurance were taken.

Strength endurance

i. Abdominal muscles – flexion and extension of the body trunk from a supine position, arms crossed on the chest – the number of times performed in 30 seconds;

ii. Back muscles – keeping the body trunk in a deflection from a prone position, hands in the lock at the back of the head – in seconds;

iii. Legs muscles – squats on one leg, standing at the support and holding it with your hand, the other hand on the belt – the maximum number of times.

Flexibility

i. When bending while standing on a gymnastic bench – the distance from the fingertips to (-) or after (+) the edge of the bench in centimeters;

ii. Pelvis of the femoral joint in the split position – the distance from the groin to the floor - in centimeters.

Organization of the study

The development of an experimental program should provide for the morphological and functional characteristics of the female body, which to a large extent determine the content and methodology of the classes. The overweight women deserve a special attention, since their calorie consumption is much higher even when performing simple exercises, and this causes an increased work of the cardiovascular and other functional systems. In addition, if you are overweight and have a sedentary lifestyle, you should never start training with high aerobic loads.

The "ABS+Flex" fitness program is a mixed-format strength class aimed at working out the abdominal and lower back muscles, as well as developing flexibility using stretching exercises. The lesson consists of two parts: the first half of the class is aimed at training the rectus, oblique muscles of the abdomen and the latissimus dorsi, the second at the development of flexibility and plasticity. In this regard, our program involves three stages.

At the first stage, the tasks of gradual adaptation of the women's body to physical activity were implemented. Classes were held exclusively with their own weight with a small number of repetitions from 7-10 to 12-15. Exercises for the development of flexibility included those muscles and muscle groups that were involved in strength work. The duration of the stage was 4 weeks.

Stage II was aimed at gradually increasing the load. Along with an increase in the number of repetitions of exercises up to 20-25, exercises with expanders, dumbbells and light weights (0.5-1.0 kg) were also included. The flexibility exercises were performed in a static mode with posture fixation up to 20 s. This given stage was designed for a period of 14 weeks.

The content of stage III did not provide for an increase in workload. Exercises were carried out at a moderate pace, both with their own weight and using the above equipment. The composition of the exercises differed from the first two stages in a more complex selection of means. Stretching exercises for muscles and joints extended to all muscle groups and joints. This stage lasted 8 weeks.

Experimental technique

The development of the program made it possible to draw up an experimental method of training with women of the second period

Citation: Olga A, Varvara P. Specificity of the "ABS+FLEX" fitness program for overweight women. *MOJ Sports Med.* 2023;6(1):28–31.
DOI: 10.15406/mojsm.2023.06.00135

of mature age who have an increased body weight. Fitness training was held three times a week for 60 minutes and had a three-part construction form. The duration of the preparatory part of the lesson was about 8-12 minutes. Warming up aims to raise body temperature, heart rate, prepares for the main load, and also reduces the risk of injury. It contains simple movements that warm up the main muscle groups, moving in various directions. The construction of a warm-up involved a gradual transition from a local impact on the musculoskeletal system to a regional one, and then to a global one. The exercises of this part of the lesson were of a moderate-intensive nature. The amplitude and intensity of movements increased gradually.

At the end of the preparatory part of the lesson, preliminary stretching is carried out. Both a dynamic type of stretching and a static type, performed from a standing position, are used. Its purpose is to slightly stretch the warmed muscles, which will allow you to perform movements with full amplitude in the main part of the session without the risk of injury. All major muscle groups are stretched. In particular, attention is paid to the muscles of the legs and buttocks, the muscles of the back (lumbar), chest and shoulder girdle, which are stretched smoothly, without sudden movements, with small amplitude.

The main part lasted 40-45 minutes, performed in the stalls. Here, the exercises were performed from positions distributed in the following sequence: kneeling, kneeling in emphasis, sitting and lying down. The selection of the given exercises was determined by the selective effect on certain muscle groups. The dosage was set depending on the level of preparedness of the trainees: the number of exercises in a series could be from 3-5 or more, the number of repetitions of each exercise from 7-12 to 20, 40 or more. During the period of increased load, some exercises were performed to failure. This kind of dosage contributes to the "burning" of intramuscular and subcutaneous fat of working muscles and has a training effect on them. The series used combinations of dynamic and static exercises. In order to correct a certain part of the body it have been used dumbbells, small balls with sand, rubber bands, various types of expanders, also it was performed continuously exercises with the weight of one's own body.

All muscle groups were worked out, since the initial positions from which the exercises were performed were conducive to the tolerance of problematic parts of the body individually for each student. Emphasis was placed especially on the abdominal and back muscles. A feature of the technique is that the strength exercises performed for the muscles of the body were combined with stretching exercises for the muscle groups being worked out. Thus, favorable conditions were created for repeated approaches to the same sections of the abdominal and lower back. Stretching exercises were performed in a static mode in the sitting and lying positions, that is, with the fixation of the adopted posture for a given period of time (from 10 to 20 seconds). The main attention was paid to the muscles that received the greatest load. The final part was of a restorative nature and lasted about 5-8 minutes. It included breathing and relaxation exercises. The breathing exercises had included a small auto-training. The relaxation exercises involved taking certain postures according to the yoga system and also included the auto-training. For the final part, music was used at a slow pace, which helps to calm and relax the whole body.

Results and discussion

The program presented by us was tested on a group of women that are involved in power and complex types of fitness, and showed positive results. As a result of the analysis of the obtained results of the tested parameters of physical abilities, we come to the conclusion that the developed program "ABS+Flex" for women with increased body weight demonstrated a positive effect of training (Table 1). All indicators revealed the statistical significance of the initial and final data. Of the seven parameters, two: the strength endurance of the abdominal muscles ($t = 4.94$) and right leg ($t = 4.46$), revealed the reliability of the initial and final indicators at the highest level – $\rho < 0.001$. This justifies the focus of this fitness program, which primarily involves strength exercises for the abdominal muscles, and hence the participation of the thigh muscles in the performance of the indicated movements. The remaining five parameters showed statistical significance at the level of $\rho < 0.01$, which also demonstrates the effectiveness of the exercises for women with increased body weight.

Examining the indicators of the morphofunctional state of women (Table 2) who participated in the experiment, we note that out of 11 indicators, four demonstrated statistical significance of the initial and final indicators at a level of $\rho < 0.01$: the Stange test ($t = 3.14$), the Hench test ($t = 3.05$), weight ($t = 4.35$), waist circumference ($t = 3.79$). The first two indicators are represented by functional tests. Their level of reliability can be explained by the fact that the performance of strength exercises denies the process of straining, which implies a negative effect on the capillaries, first of all, of all parts of the head, which can cause hemorrhage. Therefore, the process of performing this category of exercises is accompanied by the corresponding phases of breathing, the formation of which occurred as the exercises were mastered.

Table 1 Dynamics of average group indicators of physical abilities of the examined group of women (n = 13)

			$\bar{X} \pm m_{\bar{x}}$			
Parameters (n = 10)			**initial**	**final**	**t**	**ρ**
Muscle strength endurance (quantity)	back		12,4±1,08	16,8±1,41	3,14	< 0,01
	abdominals		22,4±1,29	28,7±1,4	4,94	< 0,001
	feet	left	2,7±0,75	6,4±0,96	4,46	< 0,001
		right	3,5±0,76	6,8±0,97	3,94	< 0,01
Flexibility (cm)	bent over in an inclination		6,2±1,84	12,8±1,84	3,53	< 0,01
	hip joint	right	20,2±2,6	12,2±1,84	3,64	< 0,01
		left	20,7±2,6	13,5±2,16	3,15	< 0,01

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Table 2 Dynamics of average group indicators of the morphofunctional state of the examined group of women (n = 13)

			$\bar{X} \pm m_{\bar{x}}$			
Parameters			**initial**	**final**	**t**	**ρ**
Functional tests	Heart rate (bpm)	at rest	80,9±1,62	75,6±1,84	2,16	< 0,05
		after exercise	115,6±2,7	108,2±2,06	2,18	< 0,05
	Stange test(s)		20,5±1,41	29,2±2,38	3,14	< 0,01
	Hench test (s)		9,5±1,19	15,9±1,73	3,05	< 0,01
Anthropometry	Height (cm)		164,2±1,67	164,2±1,67	0,0	> 0,05
	Weight (kg)		74,1±1,87	68,9±1,59	3,14	< 0,01
	BMI (kg/m^2)		27,55±0,93	25,56±0,86	2,25	< 0,05
	Excursion of the thorax (cm)		5,0±0,45	6,6±0,73	2,64	< 0,05
	Circumference	chest	96,9±1,47	93,1±1,31	2,87	< 0,05
	(cm)	waist	80,5±1,53	75,3±1,35	3,79	< 0,01
		thigh	107,3±1,96	103,5±1,72	2,17	< 0,05

The second two indicators refer to anthropometric parameters that demonstrate positive results, justifying the physiological orientation of the experimental program. According to the data obtained, a weight loss of 5.2 kg corresponds to a reduction in waist circumference of 5.2 cm. These are quite good results for women who had increased body weight. And although the final data of their BMI (25.56 kg/m2) is slightly higher than the norm (19-25 kg/m2), they were able to reduce it by almost two units (1.99). With further training according to the developed program, even greater improvements in the functional state are possible. Height parameter (t = 0.0) is provided only for the purpose of calculating body mass index (BMI). Six of the group of morphofunctional parameters revealed significant differences between the initial and final data at $\rho < 0.05$. Considering the primary functional and physical state of the studied women, it can be noted that the six-month period of fitness classes has relatively improved their initial performance. In our opinion, longer health-improving training could also demonstrate better results.

Conclusion

Thus, based on the analysis of the development of physical abilities, as well as positive changes in the morphofunctional state of the studied trainees, it can be stated that the developed experimental methodology for conducting health-improving classes according to the «ABS + Flex» program is indicated for the women with increased body weight. A clearly defined goal and set tasks for weight loss not only improve the personality of a woman, but are also projected into the process of her life, developing such qualities as perseverance, patience, hard work, achieving life goals and objectives. The methodology of the "ABS+Flex" fitness program may well be used in various types of physical culture activities carried out not only with the female contingent of those involved, but also with young people and older people. In our opinion, the developed methodology can be included in the content of professional training of teachers in physical education. The use of musical material will help enrich teachers, both in terms of improving the culture of their own and those involved, and in terms of a creative approach to their profession.

Acknowledgments

None.

Conflicts of interest

The author declares that there are no conflicts of interest.

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