

Therapeutic Physical Training, Sport Medicine and Physical Rehabilitation

UDC 796:615.825-055.26

THE ROLE OF THE PHYSICAL ACTIVITIES IN PHYSICAL REHABILITATION PROCESS IN PREGNANT WOMEN

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<https://doi.org/10.29038/2220-7481-2018-02-102-110>

Abstracts

Pregnancy and childbirth are a significant physical strain on the body of every woman. Fetal bearing and labor activity require the pregnant to strengthen the functioning of all organs and systems of the body. The purpose of the study is to theoretically substantiate the peculiarities of physical rehabilitation of pregnant women in the prenatal period. The material presented in the article indicates that motor activity during pregnancy contributes to the normalization of the psychological state of women during pregnancy, the formation of a generic dominant, prevents the development of stress and promotes the preservation and strengthening of the health of the mother and offspring, and thus the health of the family. Also, physical exercises allow you to effectively prepare for childbirth and facilitate the rapid course of the maternity and post-natal period. They have positive emotions, mood improves, confidence in a favorable pregnancy, full development of the fetus, overcoming difficulties with bearing a fetus and during childbirth, the birth of a normal healthy child. Pregnant women, who exercised on the proposed program, noted the tonic, health and general strengthening effect of the classes.

Key words: pregnancy, program, physical exercises, physical rehabilitation.

Ігор Григус, Марина Човпило, Дорота Ортенбургер. Роль фізичної активності в процесі фізичної реабілітації вагітних. Вагітність і пологи є значним фізичним навантаженням на організм кожної жінки. Виношування плода та пологова діяльність вимагають від вагітної посиленого функціонування всіх органів і систем організму. *Мета дослідження* – теоретично обґрунтувати особливості проведення фізичної реабілітації вагітних жінок у передпологовому періоді. Представлений у статті матеріал свідчить, що рухова активність під час вагітності сприяє нормалізації психологічного стану жінок у процесі вагітності, формуванню родової домінанті, перешкоджає розвитку стресу та сприяє збереженню й зміцненню здоров'я матері та потомства, а тим самим – і здоров'ю сім'ї. Також фізичні вправи дають змогу ефективно підготуватися до пологів і сприяти швидкому протіканню пологового та післяпологового періоду. У них виникають позитивні емоції, покращується настрій, створюється впевненість у сприятливому перебігу вагітності, повноцінному розвитку плода, подоланні труднощів із його виношуванням і під час пологів та народження нормальної здорової дитини. Вагітні, які займалися фізичними вправами за запропонованою програмою, відзначили тонізуючий, оздоровчий і загальнозміцнювальний ефект занять.

Ключові слова: вагітність, програма, фізичні вправи, фізична реабілітація.

Игорь Григус, Марина Човпило, Дорота Ортенбургер. Роль физической активности в процессе физической реабилитации беременных. Беременность и роды являются значительной физической нагрузкой на организм каждой женщины. Вынашивание плода и родовая деятельность требуют от беременной усиленного функционирования всех органов и систем организма. *Цель исследования* – теоретически обосновать особенности проведения физической реабилитации беременных женщин в предродовом периоде. Представленный в статье материал свидетельствует, что двигательная активность во время беременности способствует нормализации психологического состояния женщин во время беременности, формированию родовой доминанты, препятствует развитию стресса и способствует сохранению и укреплению здоровья матери и потомства, а тем самым – и

здоровью семьи. Также физические упражнения позволяют эффективно подготовиться к родам и способствовать быстрому протеканию родильного и послеродового периода. У них возникают положительные эмоции, улучшается настроение, создается уверенность в благоприятном течении беременности, полноценном развитии плода, преодолении трудностей с вынашиванием плода и во время родов, рождением нормального здорового ребенка. Беременные, которые занимались физическими упражнениями по предложенной программе, отметили тонизирующий, оздоровительный и общеукрепляющий эффект занятий.

Ключевые слова: беременность, программа, физические упражнения, физическая реабилитация.

Introduction. The demographic situation in Ukraine is getting better, but the number of cases of the pathological course of pregnancy does not decrease. There is high level of miscarriage, infertility, maternal and infant mortality, artificial interruption of unwanted pregnancy, oncological morbidity of the reproductive sphere etc. The low level of pregnant women's health greatly increases the risk of maternal and childish pathology, also it's a reason for the high frequency of the complicated childbirth, which causes to the reproductive loss. The expectation of the birth of healthy children is doubtful because of unsatisfactory condition of pregnant women's health. However, despite of all specialists' efforts and the progress of the modern medical science, the situation in regard to complications of the pregnancy and the perinatal pathology remains one of the most important problems in our country [2; 6; 10].

The analysis of special literature showed that pregnancy and labor are extremely serious tests for women physically and psychologically. Physical changes are meant like all systems of the organism changes, namely: cardiovascular, digestive, respiratory, nervous, hormonal, and musculoskeletal [1; 8; 9]. Regarding to psychological changes, they manifest mainly in behavior and perception of other people. A lot of researches noticed unfavorable impact of mother emotional stress on pregnancy and childbirth.

H. Malyhina, E. Vetchanina, T. Pronina revealed that pregnant women typical pathologies with emotional stress are toxemia of the first part of pregnancy (46%), early progress of gestoses (45%), chronic placental insufficiency in the third trimester (56%). As a result children are born in a state of hypoxia of varying degrees in 76% of cases and in 28% of cases they need long-term rehabilitation therapy. Emotional stress sign in 16% of cases leads to preterm labor, in 10% of cases leads to miscarriage [4; 12].

A. Zaharov systematized psychological factors, which promote emergence of emotional stress during pregnancy, among them anxiety is an important one. So, we notice that psychological stress leads to different perinatal problems. Timely correction of psychological condition is an analogue of prevention of labor activities anomalies and an analogue of painless labor contractions [5; 7].

Besides, the complexes of corrective exercises, which are proposed in Ukraine, are outdated and standard. They are used not enough so there is necessity of their improvement and implementation into practical activity.

Objective is to justify prosecutorial physical rehabilitation features theoretically in pre-natal period.

Research methods: the analysis and generalization of data of special scientific and methodical literature connected with curative physical culture during pregnancy; exploring and generalization of experience of rehabilitation specialists as to using physical rehabilitation during pregnancy in pre-natal period; method of medical documentation analysis; processing Internet sources.

The results of the research. Pregnancy is a special period in women life, which continues on average 270-275 days. A lot of women want to live actively during pregnancy, while pregnancy can provide motivation for others, who live less actively, to start using exercises for their health improvement and keeping fit. During pregnancy there are some changes, for instance organism adaptation to childbirth and preparing everything necessary for his intrauterine existence. Also pregnancy period becomes the reason for double pressure for future mother and influences all aspects of woman's life changing all organism systems and their functions.

Changes in the body of women during pregnancy are divided into two groups: aimed at the maintaining the well-being of the fetus and the well-being of mother.

The modern vision of pregnancy is due to social changes that were initiated in the late 19th and early 20th centuries. One hundred years ago, most women during pregnancy were not only working hard physically, but at the same time they did not think about a proper, nutritious diet, not only for them, but for their future baby.

In our time, engaging in physical activity during pregnancy has become a very popular area. Already there are trainers who specialize only in the development of programs for pregnant women, they carry out

special classes, according to the individual characteristics of each pregnant woman, during which women feel comfortable and safe. This aspect is crucial because the specialist should choose the exercises and the length of their implementation. In addition, these coaches work together with a pregnant physician, which minimizes the occurrence of any threats.

With the help of physical exercises during pregnancy you can promote the following effects: to maintain normal body weight and reduce excessive accumulation of fat in the body; to maintain or improve the cardiovascular system, muscular strength and endurance, flexibility; to improve the position and mechanics of the pregnant body through training classes; to help reduce the complaints of the musculoskeletal system; to help reduce minor inconveniences during pregnancy; prevention and elimination of problems associated with gestational diabetes, hypertension and preeclampsia; reducing stress and improving self-esteem.

Safe and accessible physical rehabilitation should be used to prevent complications that develop during pregnancy. Particular attention is paid to changing lifestyle, eating habits and exercise, in order to create the most safe and comfortable conditions for the proper development of the child and the protection of women's health.

According to the recommendations of ACOG (American College of Obstetricians – Gynecologists), regular physical activity brings significant benefits to a pregnant woman. According to experts, benefits of the moderation of physical activity during pregnancy are the following: reducing the risk of gestational diabetes, improving psychological health, fitness support, limiting cesarean section rate and operative delivery and faster recovery after childbirth. In addition to this, it has been shown that physical activity during pregnancy reduces the risk of pre-eclampsia and positively affects on glucose levels of women with a history of diabetes mellitus. Women who did not perform their exercises before pregnancy are recommended postponement to increase the load, whereas those who were trained before pregnancy can continue at a good state of health.

Safe and dangerous types of physical activity during pregnancy (according to ACOG).

Safe activity: walking, swimming, exercising on a stationary exercise bike, orbitrack, walking on steps, etc., jogging (for women who had been practicing this jogging before pregnancy).

Dangerous activity: Contact sports: hockey, boxing, football, basketball, handball, rugby, activity that is accompanied by high risk of falling: equestrian sport, artistic gymnastics, skiing, snowboarding, surfing, diving, rock climbing, etc. Yoga or pilates require positions that impair the venous outflow from the lower body [13;14].

Threatening symptoms requiring termination of physical activity of a pregnant woman (ACOG) are the following: bleeding from the genital tract, regular painful uterine contractions, discharge of amniotic fluid, shortness of breath in the beginning of workout, dizziness, headache, chest pain, muscle weakness with a loss of equilibrium, pain or edema of the ankle [13; 14].

It is possible to be engaged in curative physical training only with the permission of a doctor. There are certain contraindications that are either temporary or even permanent in which it is strictly forbidden to be engaged in curative physical training. These include: guests fever conditions, edema, nephropathy, preeclampsia, eclampsia, uterine bleeding, self-abandoning; miscarriage in anamnesis with a negative Rh factor; increase in blood pressure; exacerbation of chronic diseases; infectious diseases; purulent processes in any organs and tissues; sharply expressed early and late toxicosis of pregnant women; polyhydramnios; threat of miscarriage; pain syndromes, caused by muscular efforts; divergence of the pubic joints; sharply expressed ptosis of internal organs; strong fatigue and bad health; violation of coordination of movement; concomitant diseases with which the exercise therapy is contraindicated; destructive forms of tuberculosis; decompensated states in the presence of progressive diseases of the cardiovascular system. The bronchial asthma attacks, gynecological operations, adiposity, initial stages of hypertension, eclampsia during the previous pregnancy, previous pregnancy, neuroses, neuralgia, compensated defects of heart, expansion of the veins of the lower extremities and other diseases of the past are not contraindications [3; 11; 15].

As a result of the analysis and elaboration of various special medical literatures, it has been found that moderate physical activity positively affects the body of the pregnant woman not only during pregnancy but also contributes to the positive course of the maternity and postpartum period. According to various scientific works and studies the basic principles of constructing a program and method of conducting classes in different trimesters of pregnancy have been founded and generalized. The studies of various authors on the effective use of physical exercises during pregnancy have been also analyzed and worked out.

Our research has been conducted on the basis of the Rivne Central District Hospital. The research involved 12 pregnant women in the II – III trimesters who would give birth for the first time, aged 19 to 32 years. The study period covered three months. Measurement of indicators has been carried out at the beginning and at the end of the research.

At the initial stage of the work, an individual examination of pregnant women has been conducted in the form of a survey using methods developed by J. Taylor, T. A. Nemchinov, V. V. Boyko and with the help of the “Spielberger questionnaire”.

Pregnant women have been also asked to fill in a questionnaire (PARmed-X for pregnancy), on the basis of which for each of them have been selected exercises that fit them, in accordance with their activity.

Researchers have shown that during pregnancy, every second woman experiences a degree of back pain or in the pelvic area. Although there are several well-founded tools for assessing back pain for the general population, they are not suitable for use by pregnant women and have not been tested with this methodology. Since the nature of the pain during pregnancy is not only different, but also often accompanied by the pelvic belt component, the researchers have developed their own assessment of mobility, especially for pregnant women – PregnancyMobilityIndex. This index consists of subjects related to the daily activities selected through literature studies and clinical experience. This index has been also offered our pregnant women and has been conducted at will.

The poll also included a general and a special anamnesis. General anamnesis consisted of: passport part; complaints; ancestral anamnesis; diseases that had been postponed: in childhood, in adulthood, during pregnancy; working conditions and living conditions. When collecting a special anamnesis, attention has been paid to menstrual, sexual and reproductive functions, as well as the course of this pregnancy. In addition, objective methods of investigation have been analyzed, including laboratory ones, the results of which almost did not deviate from the normal anamnesis.

Tab. 1, Fig. 1. show the results of the rapid test by Pirogova, which have been recorded in pregnant women at the beginning of the research.

Table 1

Indicators of the physical condition of pregnant women at the beginning of the study

№	Indicators of the physical condition	V.1	V.2	V.3	V.4	V.5	V.6	V.7	V.8	V.9	V.10	V.11	V.12
1	The nature of labor activity	1	3	1	3	1	1	1	3	3	3	1	1
2	Age	18	20	20	18	20	18	16	20	16	18	20	16
3	Motor activity	5	0	10	5	0	0	5	0	0	0	5	10
4	Body weight	10	6	10	6	6	6	6	6	0	6	10	10
5	Pulse in a state of rest	12	0	8	6	8	3	2	9	0	0	5	10
6	Blood pressure	20	15	20	15	20	15	15	15	15	15	20	20
7	Complaints	5	0	5	0	0	0	0	0	0	0	0	5
	Total amount of scores	71	44	74	53	55	43	45	53	34	42	61	72

We observe that the level of physical tone of the most pregnant women corresponds to an average degree and ranges from 53 to 54 points. There is a low level of physical condition of pregnant women, which is 34-35 points.

In addition to the rapid test in the exploration, the following tests were used to detect anxiety levels: “Scale of reactive and personal anxiety” (Spilberger’s questionnaire), “Personal scale of anxiety” (J. Taylor, adaptation by T. A. Nemchinov), “Tendency to unmotivated anxiety” (V. V. Boyko).

The results obtained after these tests are presented in Table 2 and Figure 2.

As you can see, the indicator for the “scale of lies” (T.A. Nemchinov) does not exceed the norm. This indicates that the answers are true. In the “scale of situational anxiety” (J. Taylor) we observe that of 12 pregnant there are only 3 in a moderate degree of anxiety. The rest of the same have a high level of situational anxiety. With regard to personal anxiety, 8 women had a high level, and 4 women had a moderate

level. In the “alarm scale” 1 pregnant woman had a very high level, 10 pregnant women had high level, and 1 woman had average level with a tendency to high.

Table 2

Indicators of the level of anxiety of pregnant women at the beginning of the research

№ of pregnant	Spilberger’s questionnaire		Taylor’s scale		Unmotivated anxiety
	scale of situational anxiety	personal anxiety	scale of lies	alarm scale	
1	53	62	5	32	6
2	50	50	3	39	9
3	45	43	2	27	8
4	35	40	3	22	3
5	47	67	5	35	10
6	61	72	4	37	6
7	49	40	4	36	6
8	58	70	4	46	8
9	52	62	3	38	7
10	42	49	2	35	7
11	43	44	3	28	8
12	47	49	5	34	10

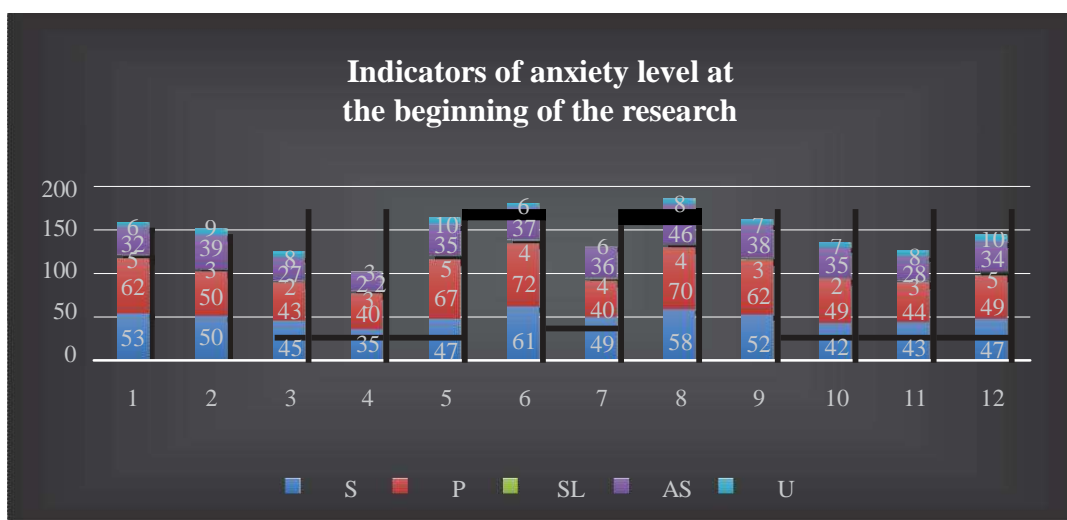


Figure 1. Indicators of the level of physical condition of pregnant women at the beginning of the study

The test “Tendency to unmotivated anxiety” (V.V. Boyko) showed that only one pregnant inclination to anxiety is not observed, 9 women had a slight tendency to anxiety, and 2 pregnant women had an unreasonable anxiety that manifests itself very bright and became an integral feature of their behavior.

For this contingent of pregnant women a physical rehabilitation program has been developed based on surveys.

The program of physical rehabilitation included the using of therapeutic physical training in the form of gymnastics, dosed walking, hydrocolonotherapy, recommendations for a healthy diet, massage, psychotherapy and elements of occupational therapy. The main emphasis of the program of physical rehabilitation was on strengthening and relaxing certain muscle groups, as well as on the proper breathing that pregnant women will use during childbirth.

Every gymnastics session with pregnant women during all trimesters of pregnancy consisted of the preparatory, main and final part.

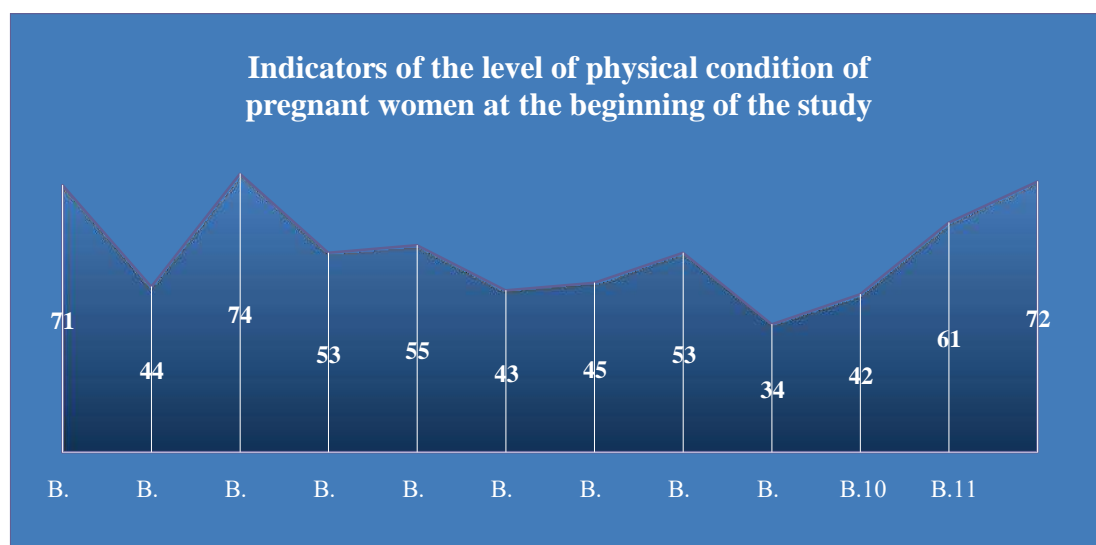


Figure 2. Indicators of the anxiety level of pregnant women at the beginning of the research

In the preparatory part, physical exercises for the lower and upper limbs, body and neck, breathing static and dynamic exercises, relaxation exercises, the most simple ordinary movements (saunter) were performed.

In the main part, the selection of exercises has always had stepped character. Depending on the trimester of pregnancy including respiratory exercises; exercises to strengthen the transverse, internal and external oblique abdominal muscles; leg flexion/extension and leg lifts exercises; rotational movements in the hip joints; exercises to strengthen long back muscles and increase the flexibility of the vertebral column; exercises for the prevention of various complications; exercises to strengthen pelvic floor muscles; exercises for the coordination of movements and attention; exercises for tension and stretching of muscles in rotation with exercises for relaxation; exercises to develop skills in the adoption of certain positions and the implementation of some movements in childbirth.

In the final part, simple applied and gymnastic exercises (walking at an average and slow pace with different positions of hands and deep breath), as well as exercises for relaxation of neck muscles, belt of lower and upper limbs, etc., were used.

Each pregnant woman recommended the use of aqua aerobics as an independent exercise at least 2 times a week for 45 minutes, as it is proved that swimming in water not only hardens of the body of the pregnant woman, but also trains the respiratory muscles, increases the lung capacity, stimulates blood circulation, provides a beneficial effect on the placenta and the fetus, which is also accustomed to hypoxia due to a decrease in the oxygen capacity of the mother.

At the final stage, a survey was conducted again, which allowed a subjective and objective assessment of the pregnancy status. The results of the pregnancy examination at the end of the study are presented in Table 3, 4 and Image 3, 4.

Table 3

Indicators of the physical condition of pregnant women at the end of the research

№	indicators of physical condition	Pr.1	Pr.2	Pr.3	Pr.4	Pr.5	Pr.6	Pr.7	Pr.8	Pr.9	Pr.10	Pr.11	Pr.12
1	the nature of labor activity	1	3	1	3	1	1	1	3	3	3	1	1
2	age	18	20	20	18	20	18	16	20	16	18	20	16
3	motor activity	10	10	10	10	10	10	10	10	10	10	10	10
4	body weight	10	6	10	6	10	6	6	10	6	6	10	10
5	pulse in rest	12	0	10	6	8	3	2	9	0	0	10	13
6	blood pressure	20	15	20	15	20	15	15	20	15	15	20	20
7	complaints	5	5	5	5	5	5	5	5	5	5	5	5
	count of scores	76	59	76	63	74	58	55	77	55	57	76	75

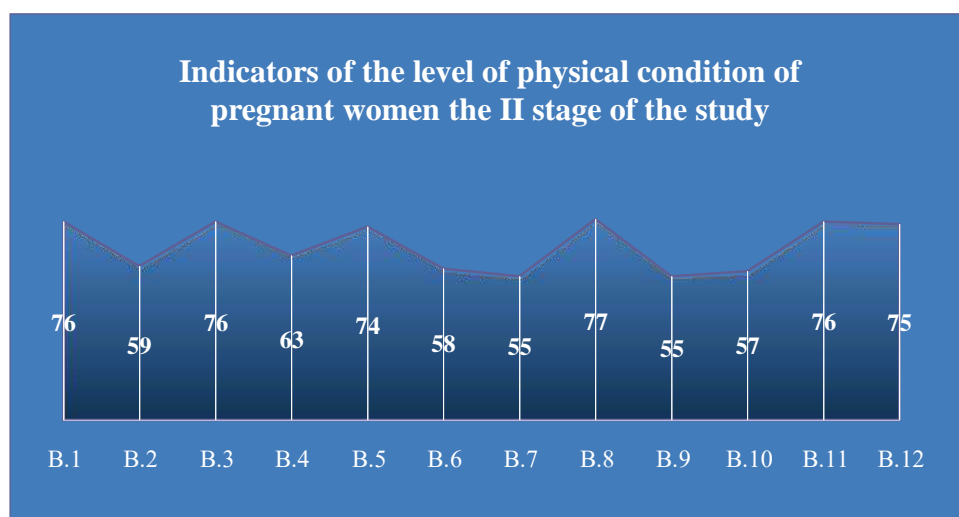
Table 4

Indicators of anxiety level in pregnant women at the end of the research

№ of pregnant	Spielberg's questionnaire		Taylor scale		Unmotivated anxiety
	CT	OT	ШБ	ШТ	
1	42	54	2	28	3
2	46	47	3	26	2
3	43	39	3	27	4
4	25	29	3	2	3
5	40	35	2	21	5
6	39	43	2	24	6
7	38	30	1	16	5
8	41	40	2	25	7
9	44	42	3	23	6
10	32	31	2	13	2
11	28	34	1	3	4
12	29	26	3	4	2

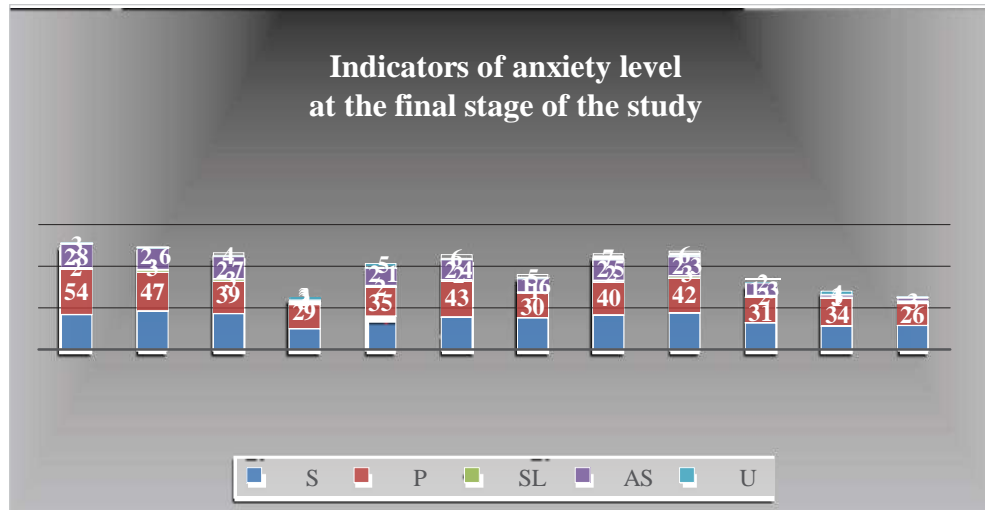
The survey shows that the physical conditions of pregnant women improved and the low level of physical condition, which was observed in 5 pregnant women at the beginning of the study, changed at the end of the study. In 7 pregnant women, the level of physical fitness corresponds to an average level of 55–74 points, while in the 5 pregnant women the level of physical fitness has risen to a high level and ranges from 75-77 points.

Comparing with the primary examination, the level of anxiety of pregnant women have decreased slightly, but not much. According to “The scale of situational anxiety” 3 pregnant women have a low degree of anxiety – (25-29 points), 8 of them have a moderate degree – (32-44 points) and 1 woman has a high degree of anxiety – (46 points). Concerning to the personal anxiety, 2 pregnant women have a high level – (47-54 points), 7 of them have a moderate one – (31-43 points) and 3 have a low degree – (26-30 points).



Drawing 3. Indicators of the express methods of the level of physical condition of pregnant women at the final stage of the research

According to “The scale of anxiety” 1 woman has a medium level of anxiety with a tendency to a low – 13 points, 5 have a medium with a tendency to high (16-25 points), 3 pregnant have a high level of anxiety – (26-28 points) and 3 have a low level – (2-4 points). Test “The propensity to non-motivated anxiety” has showed that 7 pregnant have no inclination to anxiety – (2-4 p.) and 5 have a slight inclination to anxiety – (5-7 p.).



Drawing 4. Indicators of the express methods of the level of anxiety of pregnant women at the final stage of the research

At the end of the research, we also drew attention to the fact that, if the program is developed correctly and physical rehabilitation is applied, we can observe an increase in the psycho-emotional condition, improvement of the respiratory and cardiovascular system, increasing efficiency and reduction of fatigue. In addition, future child is engaged in physical activity together with future mother. Scientists confirm that infants, whose mothers during pregnancy were engaged in therapeutic gymnastics, have better physical development and motor skills than their peers, whose mothers had a sedentary lifestyle during pregnancy. Physical exercises also allow achieve optimal mode of functioning of the basic systems of an organism in the changed conditions, and counteract a number of undesirable complications of pregnancy.

It can be concluded from the research that proper physical activity, adapted to the period of pregnancy and the health of woman is strongly recommended, but it is important to consider that certain restrictions in the implementation of intensive exercises are required during pregnancy.

Conclusions. Motor activity during pregnancy promotes the normalization of the psychological condition of women, the formation of generic dominant and prevents the development of stress and promotes the preservation and strengthening of mother's and child's health and thus the health of the family. Physical exercises also allow preparing effectively for childbirth and promoting fast delivery of the maternity and postpartum periods. Women get more positive emotions, their mood improves, they become more confident in the favorable course of pregnancy, in the full development of the fetus, in overcoming the difficulties of bearing the fetus and the birth of a normal, healthy child. Pregnant women who were engaged in physical activity on the proposed program noted toning, improving and restoring effect of physical exercises.

The prospects for further research are to develop practical recommendations for modern approaches to the use of physical rehabilitation to improve the physical and psychological condition of pregnant women, and also for the correction and prevention of complications.

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Received: 06.05.2018.