

IMPLEMENTATION AND PERIODIZATION OF PHYSICAL EXERCISE IN THE POSTPARTUM PERIOD CASE STUDY

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***Abstract:** Scientific studies on exercise during the postpartum period have led to an important development of knowledge in this area. The realization of most research of this kind appeared, mainly, against the background of the existence in specialized publications of some controversies regarding the effects that these practices have on the process of restoring the body after pregnancy.*

***Key Words:** periodization, physical exercise, postpartum period.*

1. INTRODUCTION

The present study was carried out of the desire for a better understanding of the impact of physical exercise on women in the postpartum period, as well as due to the need to develop a periodization of physical exercise based on certain specific parameters such as the level of physical preparation prior to pregnancy, the evolution of the pregnancy or the type of birth.

The research undertaken looked at a series of determinant parameters for the assessment of the quality of life of the woman in the postpartum period such as: the changes felt during pregnancy compared to the changes felt at the end of the postpartum physical training program, tests of muscle strength for the upper and lower train, the evolution heart rate during physical exercises, the level of fitness as well as the anthropometric assessment of body circumference. Following a preliminary research of the statistical

data related to natural growth both worldwide and at the level of our country, we can highlight the following aspects:

- worldwide natural increase highlights the fact that the number of births is twice as high compared to the number of deaths reported annually, and this index is continuously increasing in favor of the birth rate.
- with regard to Europe, Eurostat highlights that the population of the European Union, as a whole, registers the same upward trend (in 2015 it was 508,401,408 inhabitants and will reach 528,567,808 inhabitants in 2050, increasing by 20,166,400 inhabitants).
- in Romania, the data published by the National Institute of Public Health highlight the fact that in 2015 the population was 19,870,647 inhabitants and will undergo a process of decrease until the year 2050, reaching 16,331,359 inhabitants, less by 3,539,288 inhabitants, which means a 17.8% decrease in population, thus our country is among the countries with the largest decrease in population. In this context, we can affirm that special attention must be paid to this complex process which is represented by conception, the prepartum period, birth and the postpartum period.

2. THE PURPOSE OF THE RESEARCH

The research undertaken aimed to highlight the beneficial effects that physical exercises performed by women during pregnancy have on the body.

3. RESEARCH OBJECTIVES

- ✓ Delineation of the effects of physical exercises performed before pregnancy and continued during pregnancy.
- ✓ Determining a minimum necessary period of physical exercise prior to conception.
- ✓ Establishing the risks that may occur as a result of performing physical exercises on both the pregnant woman and the fetus.
- ✓ Establishing the consequences that physical exercises performed only during pregnancy can have on women's bodies.

4. RESEARCH TASKS

In order to achieve the objectives of the research, the following tasks were foreseen:

- ✓ - the study of the specialized bibliography;
- ✓ - development and application of questionnaires on the sample of investigated subjects;
- ✓ - the collection and interpretation of the results following the application of the questionnaires;
- ✓ - development of fitness programs;
- ✓ - application of fitness programs;
- ✓ - analysis of the results according to the particularities of the subjects (natural birth/caesarean section, first/second pregnancy).

5. RESEARCH HYPOTHESES

- The periodization of physical exercise according to the stages and evolution of pregnancy will have beneficial effects on the pregnant woman's body.
- In the postpartum period by continuing individualized fitness programs, recovery will be positively influenced in terms of physical condition and psycho-emotional states.

6. RESEARCH SUBJECTS

In the study, 8 women in the prepartum period with different characteristics were co-opted. The most important parameters by which pregnant women could be differentiated were represented by the type of birth, weight level before, during and after birth, single or multiple pregnancy, fitness level before pregnancy, family climate specific or not to the pre and postpartum period. We note that all pregnant women were informed about the participation in this study and agreed to the use of the data obtained for the purpose of developing a scientific paper without the authors assuming pecuniary benefits from the publication of the study or the various articles containing information regarding the evolution of the subjects throughout the duration of the study.

The number of subjects included in the study was limited precisely so that they could be carefully monitored, the training programs being developed individually according to the particularities and needs of each individual subject and each training session was held on a 1 to 1 basis (subject - program coordinator) thus being able to implement the proposed program as thoroughly as possible and carefully monitor the entire course of the subjects during the study. Outside of the training sessions, the subjects benefited from permanent individualized consultation, being able to contact the program coordinator at any time throughout the duration of the study to communicate various situations or ask for advice and help in implementing a daily routine that favors a good physical and mental evolution of pregnancy or the postpartum recovery period, as the case may be.

Throughout the duration of the research, the evolution of the subjects was monitored directly through the method of observation, measurement and assessment of progress with the help of tests and specific means, but also indirectly through the application of a series of questionnaires at different stages of pregnancy evolution in order to determine the perception of pregnant women on the changes felt throughout the duration of the program and the evaluation of the quality of life both during the gestational and postpartum periods.

7. PLANNING PHYSICAL EXERCISE IN THE PRENATAL PERIOD

7.1 Stage I

The program began with a 12-week adaptation period that coincided with the first trimester of pregnancy. Depending on the history of the pregnant woman (sedentary/practiced physical exercises before conception) and the indications of the medical personnel, the physical activity started as follows:

- during the first 6 weeks, the pregnant woman only took part in daily physical activities such as outdoor walks, regular household chores, occasional shopping, etc.
- between 6-12 weeks, 2 training sessions were introduced into the weekly routine, which included exercises in the fitness room to maintain muscle tone and joint mobility, as well as a swimming session and physical exercises with the help of submersible devices if pregnant want this.

7.2 Stage II

It was carried out throughout the second trimester of pregnancy and represented an optimal period for physical activities because the fetus was in an early phase of development and did not create discomfort in the abdomen and internal organs. This stage took place in the 3+1 system (3 weeks of loading + 1 week of active recovery) and had as main objectives:

- toning the muscles of the upper and lower body;
- development/maintenance of joint mobility;
- developing/maintaining muscle elasticity;
- developing/maintaining aerobic resistance.

7.3 Stage III

It was carried out in the 2+1 system (2 weeks of loading + 1 week of active recovery) and had a variable character in terms of duration depending on the indications of the medical staff and the option of each pregnant woman. In this stage, the intensity of the effort and the muscle demand were reduced, the training lessons aimed at muscle toning took on a global character without overloading the upper or lower body and the exercises for developing and maintaining joint mobility and muscle elasticity.

Table 1. *Periodization of physical exercise in the prenatal period*

Stage I		Stage II			Stage III		
Week 0-6	Week 7-12 2session/ week	Week 13-16 3session/ week	Week 17-20 3session/ week	Week 21-24 3session/ week	Week 25-28 2session/ week	Week 29-32 2session/ week	Week 33-36 2session/ week
est	- adaptation of the body - mobility	- upper body toning - resistance + mobility - lower body toning	- upper body toning -resistance + mobility - lower body toning	- upper body toning -resistance + mobility - lower body toning	- global training toning -mobility + resistance	- global training toning -mobility + resistance	- global training toning -mobility + resistance

8. PLANNING PHYSICAL EXERCISE IN THE POSTPARTUM PERIOD

The onset of physical exercise in the postpartum period was conditioned by the type of birth (caesarean section/natural), the indications of the gynecologist regarding the possibility of practicing physical effort, the availability and desire of the pregnant woman to follow a postpartum physical training program. Entry into the postpartum

physical training program was made only with the consent of the attending physician of each pregnant woman and following an anamnesis that included the application of a questionnaire regarding the changes felt both during the gestational period and after it, anthropometric measurements and the determination of the fitness level through specific evaluation means.

8.1. The objectives of postpartum physical exercise were established according to the following particularities of each subject:

- type of birth;
- diseases prior to pregnancy;
- ailments acquired during pregnancy;
- history of practicing physical exercise prior to pregnancy;
- the recommendations of the attending physician;
- availability and desire to practice physical exercise in the postpartum period.

8.2. The postpartum training program brought together 4 stages and was carried out for 24 weeks in the 3 + 1 system (3 weeks of loading + one week of active recovery).

8.2.1. Stage I

It took place over the course of 8 weeks and had as its main objective the adaptation of the body to effort, the regaining of joint mobility and muscle elasticity and the development of aerobic exercise capacity. One week included 2 training sessions for anatomical adaptation and general strength (A1) and one training session for the development of aerobic endurance and mobility (A2).

Table 2. Weekly planning of physical exercise in stage I

Weekly planning						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A1		A2		A1		

8.2.2. Stage II

It had as its main objective the toning of the muscles of the upper body and the lower body, but also the continuation of the development of aerobic resistance and mobility. At this stage, the weekly planning included 4 training sessions as follows:

- a muscle toning session with emphasis on the lower body (A1)

- a session developing aerobic resistance and mobility (A2)
- a muscle toning session with emphasis on the upper body (A3)
- a session developing aerobic resistance and mobility (A2)

Table 3. Weekly planning of physical exercise in stage II

Weekly planning						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A1	A2		A3	A2		

8.2.3. Stage III

It consisted of 5 training sessions per week and had as its main objective the development of strength with an emphasis on the development of the upper train by grouping the agonist muscles in the same training session due to the fact that most women, in general and women in the postpartum period, in they are especially deficient in the upper body and abdominal muscles. The training sessions were distributed as follows:

- a session on the development of the muscles of the upper body with emphasis on the pectoral muscles, deltoids, triceps and the upper area of the abdominal muscles (A1- push day);
- a session developing aerobic resistance and mobility (A2);
- a lower leg muscle development session (A3-legs day);
- a session developing aerobic resistance and mobility (A2);
- a session developing the muscles of the upper body with emphasis on the entire back muscles, biceps and the lower area of the abdominal muscles (A4- pull day).

Table 4. Weekly planning of physical exercise in stage III

Weekly planning						
Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A1(push)	A2	A3 (legs)	A2	A4 (pull)		

CONCLUSIONS

Pregnant women represent a vulnerable category both from a mental and emotional point of view, but especially from a physical point of view due to the drastic reduction of physical activity during the gestational period, without being aware of the implications of this decision in the evolution and management of the pregnancy.

Sedentaryism during this period is a silent enemy that can leave an imprint on both the health of the expectant mother and the fetus. Physical activity and exercise during pregnancy are associated with minimal risks and it has been proven that most women, in the absence of contraindications or obstetric or medical complications, can benefit from individualized exercise programs, the content of which will be established in accordance with anatomical changes -normal physiological and fetal requirements.

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