



## PHYSICAL ACTIVITY DURING PREGNANCY: CARE AND BENEFITS

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### ABSTRACT

During the gestational period the woman undergoes several physiological and functional changes, and during this period, it is common to feel discomfort. Thus, physical activity during gestation is recommended, since it contributes to the reduction of the physical discomforts peculiar to this phase, as well as back pain, constipation, fatigue and bloating, as well as help maintain your mood more stable, your self-esteem higher and your sleep on schedule. When a woman has good physical fitness before she becomes pregnant, she is more able to maintain a good level of activity during pregnancy. With increasing numbers of women exercising regularly and exercising regularly, it is important for the clinician to stay current on the benefits and risks of sports during pregnancy in order to provide safe and accurate guidance for their pregnant woman, thus clearly transmitting the benefits that physical exercise brings to the life of the pregnant woman during these forty weeks, and with the purpose of encouraging this population and health professionals to practice structured physical exercises and oriented. Thus, this study addresses the advantages of practicing physical exercises before and during pregnancy, as well as which sports or physical activities are most recommended to favor the time of delivery. In the postpartum period also has the indication of physical activities by doctors and professionals of the area.

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## INTRODUCTION

This research addresses the importance of physical activities during pregnancy, their care and benefits. Physical exercise brings benefits to the life of the pregnant woman, from the postural improvement to the facilitation to the labor of the childbirth activities, however, physical must be guided and accompanied by a professional of the area of physical education, along with the accompaniment of the doctor, trying to develop the best exercise program to attend pregnant women in all phases of pregnancy. When she discovers that she is pregnant, a woman who practices sports should not have this routine interrupted immediately, since physical activities can greatly contribute to a healthier gestation. However, when you become aware of this new stage of your life, you should seek guidance so that your physical training will agree to this new stage. The physical or sports activities during pregnancy must be compatible so that, in addition to not causing any harm to the mother and the baby, they still collaborate with the

health of both, preparing and facilitating the moment of delivery, bringing comfort and comfort in one step so important of the feminine life. Many athletes feel good during pregnancy with the condition of continuing practicing physical activities. There are several reasons that indicate the practice of physical activities for the specific physical conditioning during pregnancy. However, it should be considered that significant changes in the female organism happen already at the beginning, that these can alter the physical capacity (REINHARDT and WURSTER, 1995). Among the most common changes in the pregnant woman's organism, the above authors cite the following: Increased total body mass; Alteration of the body weight distribution, with displacement of the center of gravity; Alteration of body structure through relaxation of tendons, ligaments and joints; Increased plasma volume; Increased cardiac output; Increased venous capacity; Changes in blood pressure regulation; Difficult thermoregulation; Increased demand for oxygen; Increased respiratory minute volume; Hyperventilation; Reduced blood-borne capacity; Hypoglycemic conditions achieved faster. According to the stage of pregnancy, these changes may manifest more or less pronounced. The present study will

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address such changes that, during pregnancy, are relevant to the practice of physical activity, as well as the benefits of physical exercise and sports before, during and after gestation. Another important aspect that the research deals with are the sports modalities most indicated by physicians and professionals in the area of physical education with all the potential of healthy life that this practice can provide to the pregnant women and their baby. Thus, it is necessary that new studies contribute to the physical education area, as well as to pregnant women and parents, given the great increase in social interest in this subject. That the practice of physical activities during pregnancy increases the quality of life, it is a fact, however, it is necessary a guidance and accompaniment not to put the pregnancy at risk. So this research addresses all these aspects, in a very enlightening way.

## MATERIALS AND METHODS

The methodology for the elaboration of this work corresponds to a bibliographical review on the theme of physical activities during pregnancy: care and benefits. The theoretical basis is based on publications of scientific literature focused on this theme. The study is also developed in accordance with ABNT standards. The literary review of the research is based on works made available by technical and academic sites, specialized magazines, virtual libraries, such as: USP, Unicamp and others. For that, some scientific articles and monographs published in the last decade were selected, with several approaches on the subject.

**Major Changes During Pregnancy:** According to Barros and Ghorayeb (2012), the progressive increase in body weight is mainly due to the increase in the size of the uterus - which after birth takes on a round and more consistent shape, measuring about 20 cm and weighing between 900 g and 1 kg. With the increase of the body weight, the distribution of the weight in the body, in the sense of a displacement of the center of gravity, changes. The onset of hyperlordosis occurs in the lumbar region and a rotation of the pelvic girdle, where the center of gravity moves backward, thus compensating for the tendency of the body to lean forward. In addition, increased flexion is observed in the region of the cervical spine (RAMOS, 2013).

**Overload of locomotor system:** Artal (2009) writes that increased secretion of relaxin and estrogen, which occurs early in pregnancy, leads to a relaxation of the connective tissue, as well as tendons, ligaments and joints. The cartilage becomes softer, and as the synovial fluid increases, the joints in the pelvic girdle move away. The result is increased flexibility. Associated with this there is an increase in the tissue elongation capacity, which, together with the already described changes in body weight distribution, can lead to compensatory overload of specific muscle groups, such as, for example, spinal. This can lead to the appearance of characteristic problems, such as back pain (ARTAL, 2009). The author goes on to explain that increased instability of the ligaments in association with the increase in total body mass leads to overloading of the joints, especially the lower limb weight bearing joints. In this case, an increase of up to 100% in the forces acting on these joints can be observed. Injuries occur more easily, especially the twisting of the ankle joint. Despite the relaxation and instability of the ligaments and joints, pregnant women experience reduced mobility of the joints of the hands and feet in the third trimester of pregnancy due to a generalized water retention, which is expressed as "edema of

pregnancy", paresthesia and muscle weakness. Together, all these changes cause an increased risk of injuries during physical activity, especially in sedentary ones (WEINECK, 2014).

**Increased blood volume and cardiac output:** Blood volume and cardiac output start to increase between the sixth and eighth week of pregnancy, reaching peak levels at the end of the second trimester (increase of 40-50%). As a result, the increase in blood volume occurs due to a 50% increase in plasma volume and an increase of up to 20% in the volume of erythrocytes. This decreases hematocrit, the percentage of solid blood components, by about 35%. Cardiac output increases because of elevated systolic volume and heart rate (MATSUDO and MATSUDO, 2010). According to Silva (2012), blood flow may be higher due to an increase in systolic ejection volume that influences an increase in heart rate, about 10 to 15 beats per minute and the bone marrow also becomes more active, then provides increased production of red blood cells to circulate in excess fluid. The heart also suffers an increase in its size for the best accommodation of the high amount of blood produced in the body of the pregnant woman. Excess blood during pregnancy is lost through labor, which is a safety factor for the mother (SILVA, 2012). Barros (2012) describes that the most significant changes occur in cardiac output and regional blood flow distribution, according to Guyton and Hall (2006) at the twenty-seventh week of gestation, the increase in the maternal organism increases its cardiac output from 30 to 40 % above normal, and for unexplained reasons, cardiac output decreases to slightly above normal during the last eight weeks of pregnancy. Silva (2017) points out that the number of pregnant women who prioritize physical activities during the gestational phase, both in Brazil and in other countries, is still small. The culture of pregnancy did not form a conception that relates gestation to physical exercise.

In many places, individuals describe with incompatibility the moment that the pregnant woman lives with the practice of sports or simple physical activities - classifying them as harmful to both the pregnant and the fetus (SILVA, 2017). In general, it can be said that the physiological changes in a pregnancy without complications, nothing exists that represents a contraindication to the practice of physical activity, just as no type of injury to the fetus is expected. For the authors' group, the following recommendations can be made to the pregnant women: a poor supply should be avoided for the child, since, as the studies of Mc Murray et al. (1996, 45) show, aerobic activities of moderate intensity, such as a 40-minute walk or aerobic exercise, lead to a reduction in blood glucose levels, but not to hypoglycemia, which could be harmful to the fetus. Barros (2012) points out that a deficient supply to the child or risk to the fetus may, however, occur in long-term aerobic activities that would lead to an increase in body temperature. In isolated cases, they have already been observed in long distance races, increasing the internal temperature up to 41 degrees. As the developing child does not have the possibility of heat loss by their own mechanisms, such as the evaporation of sweat or respiration, it depends on the temperature gradients of the mother. With maternal hyperthermia, there is an inversion in the transmission of heat, which represents a risk for the child. Increased cutaneous circulation in the mother for heat loss means a diversion of blood flow at the expense of the child's supply, which can lead to a transient deficient supply. At the same time, an increase in fetal temperature leads to an increase in the child's energy

needs, which can mean a temporary calorie deficit. According to Gallup (2014) the most feared aspect, however, is the teratogenic (leading to malformations) effect of hyperthermia observed in animal experiments and, in isolated cases, also in humans, which can lead to central nervous system and trauma, with increased risk of premature contractions or placenta damage. Trauma can occur through the practice of inappropriate sports modalities, which would lead to placental injury or premature contractions. These can be triggered by an increase in the secretion of catecholamines caused by stress. Intense physical activity leads to a dramatic increase in adrenaline and norepinephrine stress hormones. Because, in pregnant women, norepinephrine is secreted in greater amounts than adrenaline, there is an increased risk of premature contractions. While adrenaline has a "relaxing" effect on the uterus, increased concentrations of noradrenaline may cause uterine irritability and thus lead to early onset of contractions (GALLUP, 2014). According to Hanlon (2009), umbilical cord twisting and pocket rupture, through external mechanical stimuli Weineck (2014) recommends that in the sense of practicing physical or sports activities, the following recommendations should be observed: at the beginning of pregnancy activities should be maintained physical conditions that were already practiced, however, with a progressive reduction until the second and third quarters; in endurance activities one must ensure adequate intake of carbohydrates; physical activities should only be performed at submaximal intensity; one should avoid high body temperatures in aerobic activities or sports in high ambient temperatures, which, in extreme cases, could lead to a change in the fetus; extreme accelerations, braking and body turning around their axes should be avoided; sports injuries should be avoided in pregnancy as their diagnosis and therapy (radiographs, in certain cases of surgery, anesthesia) and subsequent immobilization may lead to an increased risk of thrombosis. According to Butterfield (2014) when and to what degree one can practice physical activities during pregnancy, depends on the so-called absolute and relative contraindications. Follow-up is necessary in order to avoid disruptions and disturbances that the consequences can trigger.

**Butterfield (2014) states that Table 50 provides an overview on the subject:**

#### ABSOLUTE CONTRAINDICATIONS

- Of legal medical origin:
  - Acute and chronic heart pathologies
  - Limitations of lung function
  - Acute infectious diseases
  - Considerable hypertensive disease
- Of gynecological origin:
  - Previous abortion history 3)
  - Increased susceptibility to premature contractions, insufficiency cervical, pouch rupture
  - Growth of twins
  - Placenta previa and or uterine bleeding
  - Reservation of intrauterine development
  - Poor supply indication for baby

#### CONTRAINDICATIONS RELATING TO

- Of general medical origin:
  - Hypertension essential
  - Cardiac arrhythmias or palpitations
  - Anemias or other blood disorders
  - Thyroid disease
  - Diabetes mellitus
  - Extreme overweight or very low weight
  - Sexperimentalism
- Of gynecological origin:
  - Previous history of inappropriate intrauterine development
  - Fast history of extremely fast deliveries
  - Presentation of buttocks in the last trimester

**Adequate Sports Models For Pregnancy:** According to Brazil (2015) for pregnant women, mainly predominantly aerobic sport modalities are recommended.

**According to Leitão (2010) the special advantages of aerobic activities are**

prevention of formation of thrombosis, varicose veins and hemorrhoids; improvement of oxygen delivery to the mother and child through increased blood and plasma volume. Experimental studies show that in trained mothers with aerobic exercises they present significantly lower reductions in the uterus circulation during physical and psychological stress than in sedentary women. The trained organism, unlike the untrained one, does not react immediately to low intensity loads with increased stress hormones and concomitant vasoconstriction; reduction of psychological stress, which could favor the emergence of complications in pregnancy and childbirth; increase overall physical fitness during pregnancy until delivery and even during postpartum (LEITÃO, 2010).

Hanlon (2009) states that it is recommended - without restrictions: modalities such as running in low intensity (jogging, heart rate up to 130bpm); hiking up to 2000m altitude, cycling, aerobics and other forms of gymnastics and dancing. Especially recommended is swimming (the water temperature should not be less than 20 degrees nor more than 35 degrees), running in the water and water aerobics. Water activities help to reduce the tendency to form edema, in addition, they overload less joints and allow a well-dosed aerobic training to maintain the general level of conditioning.

With controlled intensity (sub-maximum level), it is recommended: running, rowing, cross-country skiing (not above 1500m altitude), squash, tennis, badminton, table tennis and sailing. Hanlon (2009) points out that recommendations with restriction are: due to the high risk of injury and fall are recommended with a lot of restriction until the 16th week of pregnancy, rollerblading or ice skating, riding and alpine skiing (up to 2000m altitude). Not recommended or allowed only in restricted form are: collective sports and fighting (sports with ball, boxing, judo, fencing, etc.); modalities with a high risk of falls (water skiing, surfing, Olympic gymnastics); physical exercise at altitudes above 2000m and 2500m altitude (altitude training, mountain climbing); marathon and triathlon races; diving with oxygen balloon; modalities involving the performance of Valsalva maneuver and exacerbated elevation of blood pressure, such as bodybuilding and weight lifting; extreme sports like parachuting, hang gliding and bungee jumping.

#### Conclusion

Although it is already recognized the contribution of the practice of regular physical activity and oriented during pregnancy, there is still no consensus in establishing the ideal conduct for this practice. We did not find in the reviewed literature, any type of standardization of activity recommended by specialized organs. Each author established the type of activity of interest in the study, its duration, intensity and frequency, making it difficult to compare the results found in the different articles. However, based on the review, it was concluded that when indicated, the practice of regular, moderate, controlled and guided physical activity can have beneficial effects on the health of the pregnant woman and the fetus.

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