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## Women pregnancy and sports

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### Abstract

Many women stand in their lives before one question-of family or child? When is the best time to have it, and what I want to accomplish before and also after childbirth. The same applies to the world of sport. On the contrary, many times it happens that successful athletes decide to end the career at an early age because of prioritizing the family, or vice versa—they prioritize sport at the expense of their family. The aim is to show that it may not always be the choice of either-or, but that it may be possible to combine maternal duties with the sport provided certain principles are followed. The research consists of three parts. The first part focuses on the period of pregnancy, ongoing changes in it (physical, psychological, etc.) and exercises that can be included in this period. The second chapter focuses on the period after childbirth and also on sports possibilities for mother and child life. To find the right path between sport and family life is not an easy way, but not impossible. Last part consist of contraindications and recommendations for a women during pregnancy while exercising.

**Keywords:** mother, baby, sport, health, family

### Introduction

Sport has always been an integral part of human life. Already in prehistoric times we can talk about some form of sport in the form of religious rituals, hunting and fighting simulation. At the beginning the sport was only the prerogative of men. For the first time women at the Olympic Games started from 1900 in Paris, where they were admitted to the races in tennis and golf (Novotný, 2011) [9]. Some opinions says, that sport can have a negative impact on women's health. He appeared to claim that the sport causes infertility and women change in men. Embarrassment evoked and sportswear for women. Although the contents of women's sports expanded, still where there a lots of doubts about women's in sport and impact of professional sport on the health of women. "Women's, are losing womanhood" (Yüksel, 2008) [13].

Anyway the proportion of woman's at the Olympic Games continues to a rising trend, however it still does not correspond to the current development of women's sports industry and is significantly behind man's (Dovalil, 2004) [3]. So the question is: whether this distinction can be overcome in the future and achieve equality of men and women? Much discussed is the fact that unlike men, woman often must choose between sports career and a family. Women athletes (and particularly the top), it never had in the sport easy. This paper are focusing on female athletes (professional and recreational), which decided to give up the sport even in the case of family. Aim is to show that it may not always be the choice of one or another way, but that may be path following by certain principles combine maternal duties with the sport, and even at professional level. Many authors focus on the similar problem before this paper (Hargreaves, 1996; Hartmann-Tews & Pfister, 2003; Heywood & Dworkin, 2003) [4, 5, 6], but any of those specifically on the same problem.

### Methods

The paper consists of three parts. The first part focuses on the period of pregnancy, ongoing changes in it (physical, psychological, etc.) and exercises that can be included in this period. The second part of the paper focuses on the period after childbirth and also on sports possibilities for mother and child.

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Last part consists of contraindications and recommendations for a women athlete while exercising during the period of pregnancy. This study is descriptive and the data are secondary and were collected from valid documents. This study aims to investigate the way for girls and woman's how to do not stop with sport and also have a „normal“ family life.

## Results

In pregnancy, it is necessary to compensate specifically targeted exercise unilateral burden that arises during this period. The whole body of a woman affects several processes: the development of the fetus and placenta, hormonal changes etc. Changes which take place in a woman's body during pregnancy, essentially concern all organs'. With increasing weight of the embryo woman balances the weight of abdominal curl in the lumbar spine. Exceptions are backaches. Among others, also occurs to weaken or rectus abdominis muscles. Peristalsis slows down and there are frequent constipations, breast muscles are stretched and subsiding due to an increase in volume of the mammary gland, musculoskeletal system is burdened with increasing weight. Pregnancy is also associated with stomach and nausea, loss of appetite and moods, especially in the early months of pregnancy (Brown, 2014). Doctors consider a reasonable increase in the weight of women during pregnancy from 11.5 to 14.0 kg. From this increase should be a child 3.5 kg, 0.5 kg placenta, 1.5 kg increase in blood volume, 1.0 kg magnification uterus, 1.0 kg amniotic fluid, and 1.5 kg enlarge breasts, fat depot 2.5 to 5.0 kg. Especially because pregnancy affects the female body, it is appropriate to include adequate physical activity to offset the negative effects. Of course, only if it is a low-risk pregnancy. Examples of suitable health exercises may be

- Exercise for pregnant women (Fit ball).
- Exercise for the development of habits of correct posture, focusing on the correct position of the pelvis.
- Exercises to strengthen muscle balance.
- Exercise to maintain good condition soles feet (Bejdáková, 2011) <sup>[1]</sup>.

For example is unsuitable training to the exhaustion or exertion, which increases body temperature above 38°C. It is certainly bad induces if the performance of long-term increase in abdominal pressure, or is subject to retention of breath. With such performance degrades supply oxygenated blood to the fetus. Considerable influence on how a woman should do sports in the pregnancy, also will have a fact how was the woman sporty before becoming pregnant. If a woman is actively practiced sports before pregnancy, it is appropriate to certain attributes of sport pregnancy adapt. Among the sports that are recommended for pregnant women and can make women who have decided to start a sporting activity after pregnancy include:

- Walking. It may be even faster pace. The most suitable is obviously nature one.
- Swimming. Also good make same water exercise.
- Yoga. Pregnant are learned fixed posture, working with the pelvic muscles and will learn to breathe properly. Can help prevent varicose veins and pregnancy constipation. Also regulates hormonal imbalance, thereby avoiding fluctuations moods (Pařízek, 2008) <sup>[10]</sup>.

## Inappropriate physical activity

- Exercise uses of swing and quick movements.
- Jumps, exercise where you have to hold your breath.

- Lifting weights.

Specifically, they are unsuitable sports like tennis, ice skating, cross-country running. One can argue that it depends on how pregnant woman knows sports discipline and how often she was practicing before pregnancy time. In any case, these sports are caring a high risk in the second half of pregnancy. Furthermore shooting, especially of long guns (sporting or hunting) is unsuitable not only for women during pregnancy, but also during lactation. Throwback butt of a gun can cause extensive bruising of the arm or chest. Pregnant women should be also careful with swim in public pools, ponds, rivers and seas, especially in the second half of pregnancy. There is increased risk of infection (Miňovský, 2008) <sup>[8]</sup>.

## Puerperium

In the postpartum period, the uterus and birth canal returns to its original state. Even after birth, the uterus is quite large and retracts during the two weeks following the birth. To ensure that the uterus properly wrapped, it is advisable to exercise, lie on your stomach and breast-feeding. Although it may seem fast, but if a birth was without major complications a woman can begin with training almost immediately. The best positions for exercises are belly position. Particularly, important tant exercises are to strengthen the pelvic. It is also advisable exercises using the shoulders work out, exercises to strengthen the pectoral muscles, positioning the legs (to increase blood circulation), or exercise to create the habit of correct posture.

## Inappropriate physical activity

- Mass load in the form of lifting.
- Strength and endurance exercises.
- Exercise leading to vibration, shock.
- One-sided physical activity.
- Belly work out (Beránková, 2012) <sup>[2]</sup>.

## After birth

Movement is important for every human being from the first months of life. Mothers-sportswoman accustomed to regular exercise, are very often realizing this fact, so they are why trying to lead their kids to physical activity from an early age. It is particularly important in terms of psychomotor development. Due to the fact that during pregnancy a woman's body has undergone many changes, it is clear that it will also take some time before the mother returns to its original condition. In addition to impaired physical condition usually occurs as fatigue, gathered kilograms or health complications in the form of back pain or pelvic drop. The recommended rate of shedding excess pounds is around 0.5 kg per week.

Breastfeeding has an irreplaceable importance not only for the physical, emotional and psychosocial development of the child, but also for the mother alone, primarily due to a reduction in the risk of breast and ovarian cancer. Breastfeeding is one of the most energy intensive processes. One ml of human milk is about 3kJ, which means that after the conversion the quantity of breast milk during lactation fully baby breastfeeding is consumed about 2200-3000 KJ per day. During pregnancy, mom creates about 4 kilograms adipose tissue, from which it draws energy during lactation. According to the results of medical studies in developed countries, fully breastfeeding woman reduce her weight by about 0.8 kilograms per month, and that is cause only by breastfeeding (Skalska, 2014) <sup>[12]</sup>.

In the case of demanding physical activity, it is preferable to nurse a child either before exercise or after about 1.5 hours after the physical activity. During more demanding exercise occurs in the muscles of lactic acid, which gets into breast milk, and also affects its flavor, which may bother some babies, so they can even reject breast milk.

Experts recommend starting with a slight movement of the load such as brisk walking, swimming, yoga or pilates until after 6-8 weeks after birth. First, it is advisable to start a ten-minute block of exercise. If it is mastered without difficulty, a woman can gradually start adding the load (duration, intensity). Running, jumping, and similar activities are therefore not suitable movement for sagging pelvic muscles. After giving birth, women should focus as soon as possible to strengthen the pelvic muscles. First, it is recommended to started with Kegel exercises (Stefanik, 2013) <sup>[11]</sup> and gradually add an additional workout exercises aimed at strengthening the body core. Another advantage of exercises to strengthen the pelvic muscles is also the fact that strength pelvic muscles protect incontinence of urine. If there is leakage of urine, should first strengthen these internal muscles and after than to start with adequate physical activity.

## Physiological Changes

### Musculoskeletal

- Weight gain
- Shifted center of gravity: due to increased lumbar lordosis caused by anterior pelvic rotation
- Increased ligamentous laxity: from increased progesterone and relaxin
- Most sports-related injuries are secondary to joint laxity and lower extremity edema

### Cardiac

- Increased blood volume: up to 50% at term
- Increased heart rate: resting HR can increase 10 to 15 bpm
- Increased stroke volume and cardiac output
- Decreased systemic vascular resistance and blood pressure

### Respiratory

- Increased tidal volume and minute ventilation: up to 50%
- Physiologic decrease of pulmonary reserve
- Increased work load with decreased oxygen availability
- Physiologic respiratory alkalosis: not always enough to compensate for metabolic acidosis of strenuous exercise

### Temperature regulation

- Dependent on hydration status and environment

### Fetal Response

- Increased fetal heart rate (FHR) 10 to 30 bpm over baseline during/immediately after exercise
- No clinically significant difference in birth weight
- Cohort study assessed umbilical artery blood flow, FHR, and biophysical profile before/after exercise: 30 min of exercise was well tolerated by fetus.
- Improved fetal tolerance of labor process

### Maternal Benefits

- Improvement/maintenance of fitness
- Decreased overall pregnancy weight gain
- Decreased incidence of gestational diabetes mellitus

(GDM)

- Improved blood glucose control in patients with GDM
- Reduced risk of preeclampsia
- Decreased intrapartum interventions including pitocin augmentation and operative vaginal or cesarean deliveries

## Recommendations for Exercise Program

### General guidelines

- Up to 40 min of moderate exercise is well tolerated by low-risk pregnant women
- Beyond 40 min, maternal glucose levels decrease and effects are unstudied
- Ensure adequate hydration
- Walking, strength training, and water exercises are safe for almost all women
- Biking is safe during the first trimester but advised against as pregnancy progresses because of balance changes and fall risk.

### Avoid activities with

- High risk of fall/impact
- High heat/humidity
- Static and supine poses
- Patients may do yoga or Pilates but should modify certain poses.

### Stop exercise if any of the following occur

- Vaginal bleeding or leaking fluid
- Regular contra Dyspnea before exercise
- Dizziness
- Headache
- Chest pain
- Muscle weakness affecting balance
- Calf pain or swelling

### Contraindications to exercise

- Hemodynamically significant heart disease
- Restrictive lung disease
- Incompetent cervix/cerclage
- Multiple gestation
- Second/third trimester bleeding
- Placenta previa after 26 wk of gestation
- Premature rupture of membranes or labor
- Preeclampsia
- Severe anemia

## Conclusion

Paper takes a look on the topic of how sportswoman can deal with their carrier and gave us some viewed from several perspectives. Firstly, was focused on historical context associated with woman. Than is offering steps how to deal with a pregnancy and after then. Step by step showing the way how is it possible to became a great athlete and also have a family. To find the right path between sport and family life is not an easy way, but not impossible. Although motherhood is a relatively long time when a woman has to leave the sport, so it is not impossible to return and gain others sporting achievements. This article points out that, when you progress in this period properly and responsibly with regard to the body and the child, return to the sport career is possible right after birth. As a proof of all this information was used in a paper some physiological and recommendation were given in last to avoid any injury during pregnancy.

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