

# Exercising During Your Pregnancy

There has been much debate about whether exercising during a pregnancy is a good idea for the mother and fetus. Some have suggested that the possible risks outweigh the benefits. Before 1980 little was known about the effects of physical activity on the unborn baby and mother so most doctors simply sided with caution and recommended that pregnant females abstain from physical exertion. Early studies began in 1976 where research trials examined the effects of strenuous activities on pregnant sheep. The conclusions were very surprising. The early animal experiments demonstrated that the fetus tolerated the thermal and circulatory stresses of exercise well in later stages of pregnancy (Clapp 1980). Several more recent studies support the participation of pregnant females in a structured training regimen. However, like any training regimen aimed at a special population it is important to get all the facts before making any recommendations.

During pregnancy a woman's entire circulatory system changes dramatically to accommodate the needs of the body, as well as the increasing needs of her developing fetus. These are the same changes that cause the unpleasant symptoms associated with pregnancy such as nausea, fatigue, constipation, and bloating. Although these symptoms cause discomfort they can reassure a pregnant female that she likely has a healthy pregnancy. These cardiovascular adaptations begin as soon as the fertilized egg implants itself into the endometrium (womb). The cells that will

eventually make up the placenta release hormonal signals that initiate smooth muscle relaxation and reduce responsiveness in most of the muscle cells in a woman's blood vessels (Dukekot et al 1993, Hart 1986). The result is that both the elasticity and volume of the entire circulatory system increases virtually overnight (Clapp 1998).

This creates a circulatory volume depletion problem. This problem is quickly handled by an increase in blood plasma brought about by hormones released from the heart and adrenal glands. These changes cause an increase in blood, chamber, and stroke volume over time, which means an increase in cardiac output of about 40% (Capeless and Clapp 1989)! The uncomfortable symptoms reflect the vascular underfill and last until the blood volume expands completely. Symptoms usually resolve by about the fourth month (end of first trimester).

The final circulatory adaptation to pregnancy is a reduction in the stress hormones epinephrine and norepinephrine. The result is a low-resistance, high volume, high flow-rate allowing the mother's body to handle additional stress. Even with the increased blood flow, the pressure in the vessels remains low due to the high degree of relaxation and dilation of the vessel walls (Nisell 1985). Although these changes are very similar to those experienced by highly trained endurance athletes, all of these changes occur without any training at all.

## Additional adaptations to pregnancy

- Increased ability to dissipate heat
- Decreased heart rate response as the length of pregnancy increases
- Increased delivery of oxygen
- Increased delivery of nutrients to tissue

With all the physiological changes that occur within pregnant females, their bodies become predisposed to better handle the application of physical stress. Regular exercise can provide

many maternal/fetal benefits. Now, it should be understood that the word exercise means different things to different people. Exercise as it is described hereafter includes

cardiorespiratory training and is based on the assumption that the female has previously engaged in at least regular aerobic exercise for 20-30 minutes 3x/wk. This is not to suggest that other activities cannot be engaged in, but are beyond the scope of this brief article.

Continued regular exercise during pregnancy offers a variety of benefits, which can lead to a healthier mother and fetus. Women who exercise during their pregnancy can experience a reduced weight (7 lbs) and fat gain (3% less) and retain less fat after pregnancy (Clapp & Little 1995). Likewise, in studied females, the length of active labor and the complications associated with labor were reduced. Clapp (1998) suggests that females that continue exercising through their pregnancy are more likely to feel better, recover more rapidly, and deliver closer to term. Additionally, the women studied had no identifiable maternal ill effects from either exercise during the pregnancy or with early resumption (2 weeks) of exercise after pregnancy (Clapp 1998). These findings indicate that exercise may help regulate a normal pregnancy and provide positive outcomes for females that engage in safe exercise activities.

The mothers aren't the only ones that may benefit from exercise either. Scientists examined the fetal response during activity in hundreds of physically active females. They found that heart rates increased with increased intensity, duration and was relative to the mode of exercise used (Clap & Caeless 1993, Clap & Tomaselli 1996). They examined fetal bowel function and respiration to determine the stress experienced by the unborn child (Hatoum 1997). Their findings were that the fetus's handled the stress of exercise very well in women with previous exercise conditioning. Researchers also found that placental sizes in

exercising- pregnant females were larger, which suggests an increase in nutrient and oxygen delivery and greater waste removal (Jackson 1995, Clapp & Rizk 1992). Additionally, those babies born to the exercising mothers were leaner, more responsive, and adapted to their surrounding better than those born to the non-exercising control groups. Interestingly, females that stopped exercise during mid-pregnancy had the fattest babies. It is hypothesized that the increased placenta size in response to the early exercise caused an overfeeding effect, which was compensated for by the exercising to term group because of the higher caloric expenditure in response to the exercise.

With all this information it is easy to assume that every woman should exercise throughout her pregnancy. This is not always the case. Contraindications to exercise in early pregnancy include prior absent or infrequent menstrual periods, injury, acute illness, vaginal bleeding in early pregnancy, intractable nausea and vomiting, and sudden onset of new pain, especially in the abdomen or pelvis. Absolute contraindications to exercise in later pregnancy include light vaginal bleeding, rupture of the membrane that surrounds the baby, pregnancy induced hypertension, poor fetal growth, placental disease, symptoms of labor, multiple birth pregnancy, previous multiple miscarriages, history of premature birth, and any maternal disease. Relative contraindications include history of poor fetal growth, history of rapid labor, extreme overweight or underweight (mother), sedentary lifestyle, palpitations or arrhythmias and anemia. When any irregular symptoms are experienced, exercise should be discontinued and the problem should be immediately reported to the primary care physician.

### **Recommendations for Exercise**

- **Use regular, sustained, weight-bearing exercise**
- **Use moderate intensity and duration**
- **Use Borg rating scale for perceived exertion - expect differences in heart rate response throughout the pregnancy**

- **Decrease exercise volume if symptoms of overtraining develop in the mother or the baby**
- **Avoid jerky, bouncing and wide ROM movements as well as exercises that cause compression forces, straining or change in direction**
- **Avoid exercise in the prone position after the fourth month**
- **Warm-up and cooldown should be performed before and after exercise**
- **Avoid maximal stretching**
- **Stop exercise at the onset of fatigue and report unusual symptoms**
- **Fluid consumption should be scheduled**
- **Avoid environments with excessive environmental stress**
- **Be cautious of low back pain and joint laxity later in the pregnancy**
- **Always chart the progress and review it for physiological changes**

The approach to exercise prescription for healthy women during the reproductive process should reflect the same principles used when not pregnant. Education and an integrated holistic approach to fitness will best serve the exercising mother. The focus should be on better health with a decreased emphasis on reaching new goals or attaining a competitive status. The right type of exercise, including program factors, is

individually specific. Cardiovascular exercise at moderate intensity and duration should be the staple of the program. Close monitoring of the female for fatigue, injury, intensity and duration are important aspects of a supervised program and should be charted and reviewed for possible signs of a problem. Additionally, every healthy pregnancy should be under the watchful eye of a primary care provider who should provide needed feedback as symptoms arise.