

Pregnancy and Exercise; a brief review

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Recently, women have become much more aware of the advantages of physical fitness during pregnancy. Pregnant women want to know the appropriate type and amount of exercise that will benefit them without harming their baby. The recent controversy surrounding an attempt to ban pregnant women from playing netball has also heightened the demand for information surrounding risks of exercise in pregnancy.

The current understanding is that physical exercise is to be recommended during pregnancy but women need to be aware of potential dangers and contra-indications.



Of significant concern has been the reported association of exercise in early pregnancy with spontaneous abortion. The data surrounding this issue is confused and has largely been drawn from retrospective data. More recently, however, prospective studies have been undertaken to test whether vigorous aerobic exercise (exercise aerobics, running) during both the periconceptional period and early pregnancy increases the incidence of abnormal early pregnancy outcome. These studies have not consistently shown an increase in spontaneous abortion or the number of adverse late pregnancy events in physically fit women continuing exercise aerobics or running at intensities between 50% and 85% of maximum. The exception was a study that prospectively scored 'physical strain' around the time of implantation, which did report an association with later spontaneous abortion. In this study, the adjusted risk ratio was 2.5 (95% CI = 1.3-4.6) for women who reported physical strain higher than average at day 6 to 9 after the estimated date of ovulation.

Strenuous exercise may lead to transient elevations of body temperature, especially if it is done in a warm environment. If the elevated body temperature persists, especially during the first eight weeks of gestation, a time of organogenesis, there is concern that birth defects may occur. Evidence from experimental animal studies shows an association between hyperthermia and malformation, but human data is lacking. Nevertheless, it is appropriate to advise hydration and limits to exertion in early pregnancy in order to minimise the effect of exercise on core body temperature.

The benefits of a supervised physical conditioning program on both pregnancy outcome and the subjective experience of pregnancy include a decreased duration of hospitalisation and a decreased prevalence of Caesarean section. In addition, pregnant women in a supervised exercise program nearly all tend to report a psychologically better experience throughout their pregnancy and labour. Clinical indicators of acute fetal distress (irregular fetal heart pattern, meconium, and a lower Apgar score) are also less frequently seen in women who exercise. However, studies of women who engaged in strenuous aerobic exercise, particularly in the third trimester, have shown growth. At birth, the offspring of such vigorously exercising women weighed less (3.38 +/- 0.06 kg vs 3.58 +/- 0.07 kg) and had less body fat (9.5% +/- 0.8% vs 12.6% +/- 0.6%). However, at 1-year follow-up, all morphometric parameters were similar, and no clinically significant between-group differences were observed in performance on either psychomotor or mental scales. It would appear that after control for confounders and covariates, a maternal structured exercise frequency of 5 times per week or more in the third trimester is strongly associated with a lower birth weight (adjusted odds ratio, 4.61). Interestingly, exercise frequency of two or less times per week was also modestly associated with a lower birth weight (adjusted odds ratio, 2.64). Best neonatal outcomes were seen in women engaging in

moderate levels of exercise during pregnancy.

Based on these and other studies, the current thinking is that mild or moderate exercise is not harmful to a normal, healthy pregnant woman or to her fetus. Regular mild exercise, such as walking, cycling, and swimming, should be encouraged for all pregnant women. Pregnant women can safely increase the exercise program to improve physical performance as long as the increase is gradual and under medical supervision. Naturally, the selection of exercises should reflect a consideration of the changes in the patient's weight, body habitus, and balance to minimise the risk of injury.

Benefits of a supervised physical conditioning program during pregnancy include women spending less time in hospital, a decreased prevalence of Caesarean section and a psychologically better experience throughout pregnancy and labour.

Current recommendations from the American College of Obstetricians and Gynecologists are that pregnant women exercise for no longer than fifteen minutes at a time, 3 or 4 times per week, and that they maintain a pulse rate of less than 140 beats per minute and a core body temperature of less than 38 degrees Celsius. These guidelines have been in effect since 1985 and are designed to be safe for 99.9 per cent of pregnant women. A previous history of fetal growth restriction, acute fetal distress, or the presence of diabetes or arterial hypertension is not a contra-indication to supervised exercise in pregnancy, but they are usually taken as a contra-indication to strenuous exercise or sportpregnancy. Additional contra-indications to strenuous exercise and sport during pregnancy include a history of repeated miscarriage, threatened premature labour, defects of the cervix, and other conditions associated with an increased risk of prematurity.

Vigorous and body contact sports are perhaps best avoided in pregnancy, as the hormonal and body changes of pregnancy brings with it alterations in balance and musculoskeletal stability that favour the occurrence of trauma. There are also sport-specific concerns. Basketball and soccer have their association with anterior cruciate ligament injury. Scuba diving raises the question as to whether a fetus may not be protected from decompression problems associated with decompression disease, and is usually advised against in pregnancy. Snorkelling, however, can still be undertaken. While important gaps in knowledge regarding exercise and pregnancy remain, the available data suggest that moderate exercise on a regular basis during a healthy pregnancy carries minimal risk for a woman and her baby.