

# South African Sports Medicine Association Position Statement on Exercise in Pregnancy

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## Abstract

There are many concerns about exercise during pregnancy, with medical advice historically dissuading women from continuing or initiating regular exercise programmes. However, research has shown that high levels of exercise are not associated with an increased incidence of negative events.

Currently, many women of childbearing age wish to continue with their exercise programmes during pregnancy. Appropriate guidance and exercise counselling by the attending care provider can fulfil this need. This position statement aims to assist pregnant women and their care providers in assessing the merits and benefits of improving and maintaining fitness during this period.

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## Introduction

This position statement is based on a review of available evidence and international guidelines on exercise in pregnancy and in the postpartum period. It aims to assist pregnant women and their care providers in assessing the merits and benefits of improving and maintaining fitness during this period.

There are many concerns about exercise during pregnancy, with medical advice historically dissuading women from continuing or initiating regular exercise programmes. However, research has shown that high levels of exercise are not associated with an increased incidence of negative events such as infertility, miscarriage, congenital malformation, premature labour, premature rupture of the membranes, placental abruption, cord entanglement, fetal distress, abnormal labour, significant growth restriction or maternal injury.<sup>1</sup>

Currently, many women of childbearing age wish to continue with their exercise programmes during pregnancy. Appropriate guidance and exercise counselling by the attending care provider can fulfil this need.

## Recommendations

In support of the guidelines set out by the American College of Obstetricians and Gynecologists (ACOG),<sup>2</sup> the Society of Obstetricians and Gynaecologists of Canada (SOGC) and the Canadian Society of Exercise Physiology,<sup>3</sup> this statement suggests the following:

In the absence of either medical or obstetric complications, all pregnant women should be encouraged to participate in aerobic and strength-conditioning training at a moderate intensity on most or all days of the week.

Reasonable goals of aerobic conditioning should be to maintain a good fitness level throughout pregnancy without trying to reach peak fitness or train for an athletic competition.

Activities that will minimise the risk of loss of balance and fetal trauma should be chosen by pregnant women wishing to exercise. These include a wide range of activities that minimise the risk of falling and abdominal injury, such as walking, jogging/running, hiking, low-impact aerobics, swimming, cycling – stationary/spinning, rowing, cross-country skiing and dancing. High-risk activities include contact and collision sports, vigorous racquet games, gymnastics, horseback riding, skating, skiing (snow and water), hang gliding and scuba diving.

Women should be advised that adverse pregnancy or neonatal outcomes are not increased for exercising women.

Initiation of pelvic floor exercises in the immediate postpartum period may reduce the risk of future urinary incontinence.

Women should be advised that moderate exercise during lactation does not affect the quantity or composition of breastmilk or impact on infant growth.

## Contra-indications to exercise in pregnancy<sup>2,3</sup>

### Absolute contra-indications

- Haemodynamically significant heart disease
- Restrictive lung disease
- Incompetent cervix/cerclage
- Multiple gestation at risk for premature labour ( $\geq$  triplets)

- Persistent second- or third-trimester bleeding
- Placenta praevia after 26 weeks' gestation
- Ruptured membranes
- Preterm labour
- Pre-eclampsia
- Uncontrolled type 1 diabetes, thyroid disease or other serious systemic disorders, e.g. chronic bronchitis, uncontrolled seizures.

#### Relative contra-indications

- Anaemia (defined by the World Health Organization as <10 g/dl in pregnant women)
- Unevaluated maternal cardiac arrhythmia
- Extreme morbid obesity
- Extreme underweight (BMI <12)
- Intra-uterine growth restriction in current pregnancy
- Poorly controlled hypertension
- Orthopaedic limitations, such as degenerative joint disease and joint instabilities.

#### Exercise prescription

As with all treatment that is prescribed, the risk-benefit balance needs to be assessed. In the case of exercise during pregnancy, the risk of a sedentary lifestyle is likely to be more detrimental than an active one.

The effects of not exercising during pregnancy include loss of muscular and cardiovascular fitness, excessive maternal weight gain, raised risk of gestational diabetes or pre-eclampsia, development of varicose veins and increased risk of physical complaints such as dyspnoea, lower back pain and poor psychological adjustment.<sup>4</sup>

Because of the various physiological and anatomical changes that occur during pregnancy, the type of exercise chosen by pregnant women needs to be:

- Safe – there should be minimum injury risk to both mother and fetus
- Comfortable – especially as the pregnancy progresses.

One also needs to consider the type, intensity, duration and frequency of exercise sessions in order to balance potential benefits with potential risks.

#### Forms of exercise

As in the general population, developing and improving fitness with both cardiovascular exercises and strength training exercises is recommended in pregnancy.<sup>3,5</sup>

A wide range of activities such as walking, jogging/running, hiking, low-impact aerobics, swimming, cycling – stationary/spinning, rowing, cross-country skiing and dancing have not been shown to have any adverse effects in pregnant women. However, in the presence of pelvic instability symptoms, i.e. posterior pelvic pain, sacro-iliac joint pain or pelvic girdle pain, activities such as walking may aggravate the condition.<sup>6,7</sup>

The type of exercise prescribed needs to be individualised in accordance with the woman's skills, abilities and preference.

There is general consensus that the following activities should be avoided in pregnancy:

- **Scuba diving.** Both mother and fetus are at increased risk of decompression sickness at all stages of pregnancy. Furthermore, the fetus is at risk of potential congenital defects. Maternal risks include gastro-oesophageal reflux, reduced inspiratory reserve, and poor equalisation due to pregnancy-related swelling of the mucosa.

There is also a potential risk for miscarriage, particularly if there has been a previous history thereof.<sup>8</sup>

- **Exercise at altitude** greater than 6 000 feet, which places too much hypoxic stress on the mother.
- **Contact or falling.** Any activities that have a greater risk for contact or falling and could therefore result in trauma to the mother or fetus, e.g. soccer, gymnastics.
- **Motionless standing.** There is a decrease in cardiac output in this position.

Because of compression of the vena cava by the gravid uterus, some women may show signs of symptomatic hypotension in the supine position after 16 weeks of pregnancy. Exercise in a supine position therefore remains controversial. It would consequently be prudent to limit exercise in the supine position and also to advise the patient that should she experience dizziness in this position, an alternate exercise needs to be performed.<sup>1-5,7</sup>

Research on strength training is limited; however, consensus is that using relatively low weights through a dynamic range of movement is a safe and effective form of resistance training. Conditioning exercises help maintain posture and prevent low back pain. One needs to pay attention to correct technique, including correct breathing and avoiding Valsalva manoeuvres.<sup>5,9</sup>

#### Exercise intensity

Intensity is the most difficult and controversial element of a pregnant woman's exercise regimen. Much attention has been paid to limiting the heart rate to restrict 'adverse effects'. However, current recommendations are more liberal than is commonly known. It has been shown that as a result of the variability of maternal heart rate responses to exercise, target heart rates cannot be used to monitor exercise intensity in pregnancy. An upper level of safe exercise intensity has not been established and the Center for Disease Control (CDC) and American College of Sports Medicine (ACSM)'s definitions of moderate exercise of 3 - 4 METS (metabolic equivalent where 1 MET=3.5 ml O<sub>2</sub> consumed/kg body weight/minute)<sup>10</sup> or any activity that is equivalent in intensity to brisk walking can also be applied in pregnancy.<sup>1,5,9</sup>

In a meta-analysis study of exercise and pregnancy, it was reported that with exercise intensities of 81% of maximum heart rate, no significant adverse effects were found.<sup>7</sup> Likewise, the ACOG guidelines has no heart rate limitation and therefore also supports a more liberal approach.<sup>2</sup>

An alternative to heart rate for monitoring exercise intensity, is the rate of perceived exertion. The Borg Scale is commonly used, whereby a score of 12 - 14 on a 6 - 20 scale indicates a 'somewhat hard' workout.<sup>3,5</sup>

In conclusion, current guidelines for exercise intensity in pregnant women recommend performing exercise that minimises hypoxic stress and the risk of abdominal injury, maintaining a heart rate between 55% and 70% of predicted maximum or a rating of perceived exertion between 12 and 14 ('somewhat hard').

#### Exercise duration and frequency

Of concern is the potential for overheating with prolonged duration of training and the subsequent teratogenic effects of hyperthermia in the first trimester. To date, this has not been shown to occur in studies of exercising women.<sup>3</sup> Even so, exercise should preferably take place in a well-ventilated and temperature-controlled environment. Take note of hydration and subjective feelings of overheating.

According to ACSM and ACOG guidelines, training sessions that accumulate to 30 - 60 minutes per day are not unreasonable. They

further recommend that in the absence of medical or obstetric contraindications, exercise may be performed on all or most days of the week.

### Warning signs

It is important to educate pregnant women about the warning signs that should signal an immediate end to training. These include:<sup>2</sup>

- vaginal bleeding
- dyspnoea before exertion
- dizziness
- headache
- chest pain
- muscle weakness
- calf pain or swelling (need to exclude thrombophlebitis or DVT)
- preterm labour
- decreased fetal movements
- amniotic fluid leakage.

These symptoms and signs warrant urgent gynaecological and/or medical attention.

### Competitive athletes

Elite athletes need to be educated about the decrease in performance that occurs with pregnancy as a result of weight gain and musculoskeletal changes. Nonetheless, training may continue during pregnancy provided the athlete pays particular attention to adequate hydration, additional caloric energy requirements and dangers of heat stress. Closer obstetric supervision is required.<sup>5,9</sup>

### Postpartum exercise

Resuming exercise postnatally depends largely on the mode of delivery. An uncomplicated vaginal delivery allows for a return to a mild exercise programme almost immediately. A delivery by caesarean section requires a 6-week recovery period before exercise is commenced.

Breastfeeding women should be advised of adequate breast support, and that exercise will not compromise milk supply, latching or infant growth.<sup>11</sup>

Special attention needs to be paid to pelvic floor-strengthening exercises.

Patients need to be reminded that exercise needs to be stress relieving and not stress provoking.

### Conclusion

Current consensus in both obstetrics and sports medicine suggests that exercising during pregnancy results in minimal risk and numerous short- and long-term benefits for both mother and baby. Hence, while acknowledging the significant anatomical, physiological and psychological changes of pregnancy, a healthy woman with an uncomplicated pregnancy should be encouraged to maintain and improve her fitness within the recommended guidelines.

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