

The Research File



Summary from the Canadian Fitness and Lifestyle Research Institute and ParticipACTION

Issue 08-08/12

Exercise and pregnancy: Benefits and determinants

Exercise during pregnancy is associated with numerous health benefits for both mother and her offspring.¹ Exercising may help prevent gestational diabetes, type 2 diabetes development later in life, excessive weight gain during pregnancy, obesity and heart disease.¹ Furthermore, active pregnancy may alleviate physical discomfort, and complications during labour and birth; as well as speed up the recovery after birth.¹ Active pregnant women are less prone to depressive symptoms during and after pregnancy and have a more positive self-image.¹ In healthy low-risk pregnancy, mild to moderate exercise seem to be no threat.¹

PARmed-X for Pregnancy guidelines specify certain contraindications to exercise.² Among absolute contraindications are ruptured membranes; persistent second or third trimester bleeding; premature labour; high-order pregnancy (e.g. triplets); pre-eclampsia or pregnancy induced hypertension; uncontrolled diabetes; hypertension; thyroid disease, and other cardiovascular or systemic disease.² Relative contraindications to exercise are



Brought to you by the Canadian Fitness and Lifestyle Research Institute in collaboration with ParticipACTION.





the following: previous spontaneous abortion or premature labour; mild/moderate cardiovascular or respiratory disease (e.g. asthma); anemia; eating disorders; twin pregnancy after 28th week, or other significant medical conditions.²

Aerobic activity is the most important form of exercise for pregnant women, majority of whom engage in walking.¹ *PARmed-X* for Pregnancy guidelines recommend exercise 3-4 times per

week, and monitoring of intensity of exercise through appropriate age-related heart rate range.² Pregnant women should start exercising in duration of 15 minutes and slowly increase to 30 minutes. The exercise should begin with a warm-up and end with a cool-down of 10-15 minute in duration of lower intensity.² Examples of exercises for brief warm-up and cool-down are relaxation exercises, stretching and calisthenics.² Physical

activity during pregnancy should be low-impact or non-weight bearing endurance exercise that uses large groups of muscles (e.g. stationary cycling, walking, swimming, low-impact aerobics, aquatic exercise).²

Despite all the benefits, many pregnant women do not get enough exercise.³ In their literature review, Gaston and Cramp examined determinants of exercise during pregnancy.³ The authors searched several databases and internet search engines between 1986 and 2009 for the following keywords: pregnancy, prenatal, exercise, physical activity, demographic predictors, psychosocial predictors and correlates.³ Out of 139 articles identified through electronic search and manual cross-referencing of references, 25 studies met the inclusion criteria and were included in the review.³ The following study designs were noted: prospective cohort (13 studies), single time-point cohort (6 studies), retrospective cohort (one study), cross-sectional (4 studies), and case-control (one study).³ Pregnant women, postpartum women and non-pregnant women were included in the studies. Studies with postpartum women were included,

What have we learned?

- Exercise during pregnancy is beneficial for mother and her baby.¹
- Some of the benefits of exercise during pregnancy are lower weight gain, lower rates of gestational diabetes and type 2 diabetes later in life, and better cardiovascular health. In addition, decreased physical discomfort, reduced complications during labour and birth, better mental health, and faster post-partum recovery are observed.¹
- Most pregnant women engage in walking, one of the recommended aerobic physical activities.²
- Pregnancy is related to decrease in physical activity.³
- Higher income, higher education, being white, not having other children at home, and being active prior to conception are associated with higher exercise engagement.³
- Women intending to have children should be encouraged to engage in physical activity before their pregnancy.³

because they provided retrospective measures of exercise during pregnancy.³

Some studies reported inconsistent findings. For instance, three studies found that younger age was related to higher levels of exercise; whereas four studies found that greater age was related to higher levels of exercise and seven found no difference.³ Women in their first trimester were almost two times more likely to engage in exercise according to one study; on the other hand another study did not observe this relationship.³ Higher education was a positive predictor of exercise according to eight studies (five studies did not find this association).³ Six studies found that having at least one other child was related to lower levels of exercise participation.³

One study found the opposite findings—women with more children in the household had a greater average daily energy expenditure.³ In terms of race or ethnicity, two studies found white women to be more active, two studies found no difference between black and white women; however these studies indicated that Asian and Hispanic women were more likely to be inactive.³

Findings related to exercise, and its association with employment status, marital status and pre-pregnancy weight were inconsistent across studies.³ Five studies reported that socioeconomic status was positively associated with exercise level in pregnant women - women with greater household income were more likely to be physically active.³

Significant association between pre-pregnancy exercise levels and exercise during pregnancy was observed in six out of seven studies; women who exercised more prior to pregnancy remained more active.³ Theory based predictors were addressed in eight studies, majority of which found intention to be a significant predictor of behaviour.³ Exercise had a positive impact on health outcomes as reported in seven studies – women felt better and experienced fewer symptoms related to pregnancy.³

In conclusion, regular exercise is associated with positive physical and mental health outcomes, and it should be encouraged during pregnancy.^{1,2,3} Certain barriers that are observed can be addressed by health educators, and future research should further explore determinants and outcomes of exercise during pregnancy.³



References

1. Mottola MF. Exercise and Pregnancy: Canadian Guidelines for Health Care Professionals. WellSpring. Alberta Centre for Active Living. 2011 Aug; 22(4) <http://www.centre4activeliving.ca/publications/wellspring/2011/aug-exercise-pregnancy.pdf>
2. Canadian Society for Exercise Physiology. PARmed-X for Pregnancy. Physical activity readiness medical examination. 2002 <http://www.csep.ca/cmfiles/publications/parq/PARmed-Xpreg.pdf>
3. Gaston A, Cramp A. Exercise during pregnancy: a review of patterns and determinants. J Sci Med Sport. 2011 Jul;14(4):299-305. Epub 2011 Mar 21.

This research file describes findings from individual studies included in the review paper by Gaston and Cramp. Please see the review paper for the references to the individual studies.¹