Physical activity throughout pregnancy: A prescription for improved maternal/fetal health

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Introduction

The health benefits of physical activity have been described for millennia. Extensive research has demonstrated the benefits of physical activity on wellbeing, chronic disease risk, and longevity in most populations. Despite this, pregnant women have historically been told to rest and relax. For many years, women were encouraged to live a sedentary lifestyle during their pregnancies out of fear of harm to the developing baby, despite there being no evidence to substantiate such claims. In 1985, the first guidelines for prenatal exercise were developed and provided guidance for women who were interested in being physically active during their pregnancy. At the time, this field of research was just beginning to emerge, and as such, the original recommendations were primarily based on expert opinion and very little supporting evidence.

In the subsequent 30 years, research in this area has exploded. We now know that pregnancy is a unique period in a woman’s life where positive lifestyle behaviours, such as physical activity, can significantly affect her own health and the health of her baby. Currently, there are more than a dozen prenatal physical activity guidelines around the world, yet, fewer than 15% of pregnant women actually meet these recommendations and reap the associated health benefits.1 This is of particular importance as pregnancy complications, including gestational diabetes mellitus, preeclampsia, excessive gestational weight gain, and newborn macrosomia, have risen dramatically over the past few decades and their development can be linked to modifiable risk factors.2,3 As such, clinicians and researchers alike have begun to investigate the risks of physical inactivity during pregnancy on both maternal and infant health. The aim of our work was therefore to develop a clear, evidence-based physical activity guideline for use throughout pregnancy that contributes to improving short- and long-term health of both mother and baby.

SUMMARY

Being physically active throughout pregnancy can be beneficial for both mother and baby. But how much and at what intensity is recommended?

This WellSpring highlights the new 2019 Canadian Guideline for Physical Activity throughout Pregnancy which provides a specific prescription to engage in physical activity that is both safe and beneficial for mothers and babies.
How was the guideline developed?

In 2015, our research program led a team of Canadian and international experts to begin the redevelopment of the Society of Obstetricians and Gynaecologists of Canada (SOGC)/Canadian Society for Exercise Physiology (CSEP) 2019 Canadian Guideline for Physical Activity throughout Pregnancy. This guideline followed the methodological strategy outlined in the Appraisal of Guidelines for Research and Evaluation (AGREE) II instrument. The Guideline Consensus Panel consisted of researchers in the field of prenatal exercise: methodological experts (AGREE II, Grading of Recommendations Assessment, Development and Evaluation [GRADE]; statistician, and librarian), exercise professionals and representatives from CSEP, SOGC, the College of Family Physicians of Canada, the Canadian Association of Midwives, the Canadian Academy of Sport and Exercise Medicine, Exercise is Medicine Canada, and a public health representative (the Middlesex London Health Unit).

Utilizing input from pregnant women provided prior to the initial meeting, the Guideline Consensus Panel selected 20 “critical” and 17 “important” outcomes related to maternal and fetal health. This initiated a two-year review process that culminated in the preparation of 12 systematic reviews. These reviews described the impact of prenatal exercise on maternal and fetal health outcomes, as well as the balance between benefits and potential harms of physical activity during pregnancy.

A second meeting of the Guideline Consensus Panel was held in 2017 to review the evidence and draft the recommendations. In 2018, feedback was sought from stakeholder groups and pregnant women and was used to revise the recommendations. The final version of the Guideline was then reviewed and endorsed by SOGC and CSEP. The Guideline was jointly published by the Journal of Obstetricians and Gynecologists of Canada (JOGC) and British Journal of Sports Medicine (BJSM) in the November 2018 issues of both journals. Additionally, a process paper outlining the Guideline development and 12 systematic reviews were simultaneously published.

What is the guideline?

The SOGC/CSEP 2019 Canadian Guideline for Physical Activity throughout Pregnancy represents a foundational shift in our view of physical activity as more than just a positive behaviour. This Guideline provides a specific prescription for physical activity that is safe and beneficial for both mothers and their babies. Our team developed 12 systematic reviews which demonstrated that engaging in 150 minutes of moderate-intensity exercise during pregnancy was associated with a 40% reduction in the odds of developing pregnancy complications (including gestational hypertension, gestational diabetes, and preeclampsia), a 24% reduction in the odds of an instrumental delivery (e.g., forceps or vacuum), and a 32% reduction in the odds of having excessive gestational weight gain. Further, the severity of depressive symptoms, urinary incontinence, and back pain were reduced in women who were active throughout pregnancy compared to those who did not.

The benefits of prenatal activity are not just limited to the mother, as babies born to exercising women are less likely to be abnormally large (macrosomia), with no associations with adverse neonatal complications, such as growth restriction, miscarriage, or fetal mortality. Overall, the Guideline and supporting evidence show that prenatal activity can optimize health across the lifespan of two generations. This evidence-based guideline can be used by pregnant women and target users, including obstetric care providers, policy-makers, and fitness professionals, who provide guidance on the impact of prenatal physical activity on maternal, fetal, and child health outcomes.

The specific recommendations in the SOGC/CSEP 2019 Canadian Guideline for Physical Activity throughout Pregnancy are provided in Table 1 with corresponding statements indicating the quality of the evidence informing the recommendations and the strength of the recommendations (explanations follow).
Table 1: Specific recommendations in the 2019 Canadian Guideline for Physical Activity throughout Pregnancy

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Quality of evidence</th>
</tr>
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<tbody>
<tr>
<td>1. All women without contraindication (see Table 2) should be physically active throughout pregnancy. Specific subgroups were examined:</td>
<td></td>
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<tr>
<td>• Women who were previously inactive.</td>
<td>Strong recommendation, moderate quality evidence.</td>
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<tr>
<td>• Women diagnosed with gestational diabetes mellitus.</td>
<td>Weak recommendation*, low quality evidence.</td>
</tr>
<tr>
<td>• Women categorized as overweight or obese (pre-pregnancy body mass index ≥25 kg/m²).</td>
<td>Strong recommendation*, low quality evidence.</td>
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<tr>
<td>2. Pregnant women should accumulate at least 150 minutes of moderate-intensity physical activity each week to achieve clinically meaningful health benefits and reductions in pregnancy complications.</td>
<td>Strong recommendation, moderate quality evidence.</td>
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<tr>
<td>3. Physical activity should be accumulated over a minimum of three days per week; however, being active every day is encouraged.</td>
<td>Strong recommendation, moderate quality evidence.</td>
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<td>4. Pregnant women should incorporate a variety of aerobic and resistance training activities to achieve greater benefits. Adding yoga and/or gentle stretching may also be beneficial.</td>
<td>Strong recommendation, high quality evidence.</td>
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<tr>
<td>5. Pelvic floor muscle training (e.g., Kegel exercises) may be performed on a daily basis to reduce the risk of urinary incontinence. Instruction in proper technique is recommended to obtain optimal benefits.</td>
<td>Weak recommendation*, low quality evidence.</td>
</tr>
<tr>
<td>6. Pregnant women who experience light-headedness, nausea, or feel unwell when they exercise flat on their back should modify their exercise position to avoid the supine position.</td>
<td>Weak recommendation*, very low quality evidence.</td>
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</table>

Table Notes:

* This was a weak recommendation because the quality of evidence was low, and the net benefit between women who were physically active and those who were not was small.

* This was a strong recommendation because despite low quality evidence supporting physical activity during pregnancy for women categorized as overweight or obese, there was evidence from randomized controlled trials demonstrating an improvement in gestational weight gain and blood glucose, despite low quality evidence supporting physical activity during pregnancy for women categorized as overweight or obese.

* Moderate-intensity physical activity is intense enough to noticeably increase heart rate; a person can talk but not sing during activities of this intensity. Examples of moderate-intensity physical activity include brisk walking, water aerobics, stationary cycling (moderate effort), resistance training, carrying moderate loads, and household chores (e.g., gardening, washing windows).

* This was a weak recommendation because urinary incontinence was not rated as a “critical” outcome and the evidence was low quality.

* This was a weak recommendation because: 1) the quality of evidence was very low; and 2) although harms were investigated, there was limited available information to inform the balance of benefits and harms. This recommendation was primarily based on expert opinion.

Quality of the evidence

The quality of the evidence refers to the level of confidence in the evidence, and it ranges from very low to high.

High quality: The Guideline Consensus Panel (GCP) is very confident that the estimated effect of physical activity on the health outcome is close to the true effect.

Moderate quality: The GCP is moderately confident in the estimated effect of physical activity on the health outcome. The estimate of the effect is likely to be close to the true effect, but there is a possibility that it is substantially different.

Low quality: The GCP’s confidence in the estimated effect of physical activity on the health outcome is limited. The estimate of the effect may be substantially different from the true effect.

Very low quality: The GCP has very little confidence in the estimated effect of physical activity on the health outcome. The estimate of the effect is likely to be substantially different from the true effect.
Contraindications

All pregnant women can participate in physical activity throughout pregnancy with the exception of those who have contraindications (Table 2). Women with absolute contraindications may continue their usual activities of daily living, but should not participate in more strenuous activities. Women with relative contraindications should discuss the advantages and disadvantages of moderate-to-vigorous physical activity (up to 80% maximum) with their obstetric care provider prior to participation.

Table 2: List of absolute and relative contradictions to exercise throughout pregnancy

<table>
<thead>
<tr>
<th>Absolute contraindications to exercise are the following:</th>
<th>Relative contraindications to exercise are the following:</th>
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<tbody>
<tr>
<td>• ruptured membranes</td>
<td>• recurrent pregnancy loss</td>
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<tr>
<td>• premature labour</td>
<td>• gestational hypertension</td>
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<tr>
<td>• unexplained persistent vaginal bleeding</td>
<td>• history of spontaneous preterm birth</td>
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<tr>
<td>• placenta previa after 28 weeks gestation</td>
<td>• mild/moderate cardiovascular or respiratory disease</td>
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<tr>
<td>• preeclampsia</td>
<td>• symptomatic anemia</td>
</tr>
<tr>
<td>• incompetent cervix</td>
<td>• malnutrition</td>
</tr>
<tr>
<td>• intrauterine growth restriction</td>
<td>• eating disorder</td>
</tr>
<tr>
<td>• high-order multiple pregnancy (e.g., triplets)</td>
<td>• twin pregnancy after the 28th week</td>
</tr>
<tr>
<td>• uncontrolled Type I diabetes</td>
<td>• other significant medical conditions</td>
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<tr>
<td>• uncontrolled hypertension</td>
<td></td>
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<tr>
<td>• uncontrolled thyroid disease</td>
<td></td>
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<tr>
<td>• other serious cardiovascular respiratory or systemic disorder</td>
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Strength of the recommendations

The GRADE system was utilized to evaluate the strength of each recommendation.21 Recommendations are rated as strong or weak based on the:

1) balance between benefits and harms;
2) overall quality of the evidence;
3) importance of outcomes, i.e., values and preferences of pregnant women;
4) use of resources, i.e., cost;
5) impact on health equity;
6) feasibility; and
7) acceptability.

A strong recommendation means that most or all pregnant women will be best served by the recommended course of action. However, a weak recommendation means that not all pregnant women will be best served by the recommended course of action; there is a need to consider other factors such as the individual’s circumstances, preferences, values, resources available, or setting. Consultation with an obstetric care provider may assist in decision-making.

Conclusion

This Guideline provides evidence-based recommendations regarding physical activity throughout pregnancy in the promotion of maternal, fetal, and neonatal health. Through use of these recommendations, practitioners are able to provide clear and achievable targets for women to be physically active during their pregnancies. The evidence strongly supports that by encouraging pregnant women to meet these recommendations, both mother and baby will experience significant short- and long-term health benefits.

About the Authors

Margie Davenport, PhD, is Director of the Program for Pregnancy and Postpartum Health (PPPH), Associate Professor in the Faculty of Kinesiology, Sport, and Recreation at the University of Alberta and Chair of the Guidelines Consensus Panel for the development of the SOGC/CSEP 2019 Canadian Guideline for Physical Activity throughout Pregnancy.

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References


