1. SCOPE AND PURPOSE OF GUIDELINE

- **Objective:** This guideline provides recommendations regarding physical activity throughout pregnancy in the promotion of maternal, fetal, and neonatal health.

- **Target population:** All pregnant women without contraindications
  - **Absolute contraindications** to exercise: ruptured membranes, premature labour, unexplained persistent vaginal bleeding, placenta praevia after 28 weeks’ gestation, pre-eclampsia, incompetent cervix, intrauterine growth restriction, high-order multiple pregnancy (e.g., triplets), uncontrolled type I diabetes, uncontrolled hypertension, uncontrolled thyroid disease, and other serious cardiovascular, respiratory or systemic disorder.
  - **Relative contraindications** to exercise: recurrent pregnancy loss, gestational hypertension, a history of spontaneous preterm birth, mild/moderate cardiovascular or respiratory disease, symptomatic anaemia, malnutrition, eating disorder, twin pregnancy after the 28th week, and other significant medical conditions.

- **Target users:** Pregnant women, and target users including obstetric care providers, policy makers and fitness and health professionals who provide guidance on the impact of prenatal health activity on maternal, fetal and neonatal health outcomes.

- **Outcomes:**
  - The outcomes evaluated were maternal, fetal or neonatal morbidity, or fetal mortality during and following pregnancy.

2. REPORTING OF RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Strength of Recommendations</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong Recommendation</td>
<td>Most or all pregnant women will be best served by the recommended course of action.</td>
</tr>
<tr>
<td>Weak Recommendation</td>
<td>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</td>
</tr>
</tbody>
</table>
individual’s circumstances, preferences, values, resources available or setting. Consultations with an obstetric care provider may assist in decision-making.

### Quality of Evidence

<table>
<thead>
<tr>
<th>Quality of Evidence</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Quality</td>
<td>The Guidelines Consensus Panel is very confident that the estimated effect of physical activity on the health outcome is close to the true effect.</td>
</tr>
<tr>
<td>Moderate Quality</td>
<td>The Guidelines Consensus Panel 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.</td>
</tr>
<tr>
<td>Low Quality</td>
<td>The Guidelines Consensus Panel’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.</td>
</tr>
<tr>
<td>Very Low Quality</td>
<td>The Guidelines Consensus Panel 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.</td>
</tr>
</tbody>
</table>

### 3. KEY RECOMMENDATIONS

#### a. Physical Activity Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Strength of Recommendation</th>
<th>Quality of Evidence</th>
</tr>
</thead>
</table>
| 1. All women without contraindication should be physically active throughout pregnancy.  
  - Specific subgroups examined:  
    - Women who were previously inactive  
    - Women diagnosed with gestational diabetes mellitus$^a$  
    - Women categorized as overweight or obese (pre-pregnancy body mass index ≥25 kg/m$^2$)$^b$ | Strong | Moderate |
| 2. Pregnant women should complete at least 150 min of moderate-intensity physical activity each week to achieve clinically meaningful health benefits and reductions in pregnancy complications.  
  - 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). | Strong | Moderate |
### Recommendation

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Strength of Recommendation</th>
<th>Quality of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Physical activity should be accumulated over a minimum of 3 days per week; however, being active every day is encouraged.</td>
<td>Strong</td>
<td>Moderate</td>
</tr>
<tr>
<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</td>
<td>High</td>
</tr>
<tr>
<td>5. Pelvic floor muscle training (PFMT) (e.g., Kegel exercises) may be performed on a daily basis to reduce the risk of urinary incontinence. Instruction on the proper technique is recommended to obtain optimal benefits&lt;sup&gt;a&lt;/sup&gt;.</td>
<td>Weak</td>
<td>Low</td>
</tr>
<tr>
<td>a. Resources: Instructions / Video</td>
<td></td>
<td></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&lt;sup&gt;d&lt;/sup&gt;.</td>
<td>Weak</td>
<td>Very Low</td>
</tr>
</tbody>
</table>

### Footnotes:

<sup>a</sup>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 in women diagnosed with gestational diabetes mellitus.

<sup>b</sup>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.

<sup>c</sup>This was a weak recommendation because urinary incontinence was not rated as a ‘critical’ outcome and the evidence was of low quality.

<sup>d</sup>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.

### b. Safety Precautions

- Women are recommended to avoid activities involving physical contact or danger to falling including, horseback riding, downhill skiing, ice hockey, gymnastics, or Olympic lifts.
- Women are encouraged to avoid non-stationary cycling as there is a greater risk of falling due to changes in body mechanics and/or environmental hazards (e.g., traffic, unsteady surfaces).
  - Alternative aerobic activities include: brisk walking, stationary cycling, swimming, aquafit, etc.
- Avoid scuba-dive throughout pregnancy, as the fetus is not protected from decompression sickness and gas embolism.
- With appropriate acclimatization, moderate-intensity physical activity at altitudes up to 1800-2500m (6000-8250ft) does not appear to significantly alter maternal or fetal well-being. However, women should be cautious of hiking in a location where they might fall.
- To avoid dehydration, women are recommended to maintain proper hydration and avoid vigorous physical activity in excessive heat and high humidity (e.g., hot yoga).
- All women should stop activity and seek medical attention if they experience any of the following symptoms:
  - Persistent excessive shortness of breath that does not resolve on rest, severe chest pain, regular and painful uterine contractions, vaginal bleeding, persistent loss of fluid from the vagina indicating rupture of the membranes, persistent dizziness or faintness that does not resolve on rest.

c. Referrals and Collaborations
- Women who develop diastasis recti are encouraged to seek advice from an appropriate healthcare provider with competence in the area (e.g., physiotherapy, chiropractic)
  - Definition: the separation of the rectus abdominis muscles by an abnormal distance. Diastasis recti might cause a bulge in the middle of the abdomen where the two muscles separate.
  - Women who develop diastasis recti should avoid abdominal strengthening exercises as this may worsen the condition, increasing the likelihood of requiring postnatal repair.
  - Continuing aerobic exercise, such as walking, is associated with decreased odds of developing diastasis recti.
- Women considering athletic competition or exercising significantly above the recommended guidelines should speak to their obstetric care provider prior to doing so.
- Elite athletes who continue to train during pregnancy are advised to seek supervision from an obstetric care provider with knowledge of the impact of vigorous-intensity physical activity on maternal, fetal, and neonatal outcomes.

d. Guideline-suggested Supplemental Resources
- The Physical Activity Readiness Medical Examination for Pregnancy (PARmed-X for Pregnancy) is recommended for use as a health screening prior to participation in physical activity.

4. METHODS OF GUIDELINE DEVELOPMENT
- Recommendations were drafted on the basis of the authors’ interpretation of the available evidence, taking into account the balance of benefits, harms and costs. In consultation with a Guidelines Consensus Panel (GCP) maternal, fetal, and neonatal outcomes were prioritized for inclusion in the supporting systematic reviews. Surveys were developed to assess stakeholders’ and
pregnant and postpartum women’s values about the feasibility, acceptability, cost, and equity of implementing or using the Guideline’s recommendations. Finalized recommendations were revised and approved by the Guideline Steering Committee (GSC). The finalized guideline was reviewed and endorsed by the GCP, GSC, and The Canadian Society for Exercise Physiology (CSEP).

- **To learn more:** [https://www.ncbi.nlm.nih.gov/pubmed/30343979](https://www.ncbi.nlm.nih.gov/pubmed/30343979)

### 5. CCGI COMMENTS

- The CCGI recommends the use of this guideline, based on its quality and reporting as per the Appraisal of Guidelines Research and Evaluation (AGREE) II tool (available upon request).
- The CCGI recommends the use of this guideline to chiropractors in Canada, based on the methodology of how this guideline was developed.
- The CCGI would like to acknowledge Drs. Kelsey Nissen, Carol Ann Weis, and Heather Hollman for their contribution in critical appraisal of this guideline.