Review articles

Exercise & Pregnancy: Review article

P.H.R. Sathara De Silva*
National Hospital, Sri Lanka.
Corresponding author: *satharadesilva@gmail.com
Senior Registrar, Sports and Exercise Medicine.

Abstract

Physical activity during pregnancy provides significant health benefits for both mother and fetus, including reduced risks of gestational diabetes, hypertension, pre-eclampsia, excessive weight gain, urinary incontinence, and postpartum depression. This narrative review was conducted using the PRISMA guidelines and VIESE framework (Verification, Identification, Evaluation, Synthesis, and Evidence-based recommendation), synthesized evidence from databases such as PubMed, Scopus, and WHO sources, focusing on clinical trials, guidelines, and systematic reviews related to prenatal exercise. The findings support the use of standardized screening tools like PARmed-X for Pregnancy and ePARmed-X+ to assess readiness for exercise. WHO recommends 150- 300 minutes of moderate-intensity aerobic activity weekly for pregnant women, along with light resistance training, flexibility exercises, pelvic floor training, and breathing techniques. The Borg RPE scale (3–6) is a practical method for monitoring exercise intensity. Key components of a prenatal exercise program include structured warm-up and cool-down phases, aerobic exercises like brisk walking, and posture-supporting movements such as bird-dog and pelvic tilt. Pelvic floor exercises—including Kegels, squats, and reclined cobbler pose—are essential for preventing incontinence and promoting smoother delivery. Proper hydration, environmental safety, and gradual progression are critical considerations. Although more research is needed on resistance training, current evidence supports its safety when modified for pregnancy. Overall, a customized, trimester-specific exercise plan tailored to a woman's symptoms, tolerance, and pre-pregnancy fitness level can optimize maternal and fetal outcomes. This review underscores the importance of integrating evidence-based, individualized physical activity programs into prenatal care.

Keywords: *pregnancy exercise, prenatal physical activity, pelvic floor training, VIESE methodology*

Introduction

Pregnancy requires a well-thought-out, customized physical activity program because of its unique physiological features. For healthy pregnant women without any exercise restrictions, exercise is advised (1). The risks associated with a sedentary lifestyle during pregnancy are becoming recognized (2). Both the mother and the fetus benefit from physical activity during pregnancy. Reductions in the risk of pre-eclampsia, gestational hypertension, gestational diabetes mellitus, excessive weight gain, low back pain, urinary incontinence, delivery complications, and neonatal complications are among the advantages. It also reduces or eliminates postpartum weight gain and the symptoms of depression (3). As of right now, there is no evidence that physical exercise lowers birth weight or raises the risk of stillbirth. As a result, it is generally recommended that healthy pregnant women without any contraindications to exercise be encouraged to participate in regular physical activity both during and after pregnancy (4).

DOI: https://doi.org/10.4038/sljsem.v3i1.25

Pre-participation screening for exercise prescription

Before being prescribed an exercise regimen, pregnant women should always be assessed for pregnancy-related issues that can make physical activity at the time undesirable (5). According to ACSM, pregnant women should have a pre-participation health screening using either the electronic Physical Activity Readiness Medical Examination (ePARmed-X+) or the Canadian Society for Exercise Physiologists Physical Activity Readiness Medical Examination for Pregnancy (PARmed-X for Pregnancy) questionnaire (4).

Exercise prescription

The World Health Organization recommends 150-300 minutes of moderate-intensity aerobic exercise each week, along with muscle-strengthening activities, for pregnant women who are sedentary and physically active (6). Additionally, it was indicated that stretching lightly may be beneficial. Women who were physically active or regularly participated in vigorous-intensity aerobic exercise can continue to do so during pregnancy and the postpartum phase (7). It also recommends cutting back on sedentary time and replacing it with any amount of exercise (including light intensity). For women who are not used to exercising, it is preferable to begin carefully and increase the frequency, intensity, and duration of their workouts over time (8). Urine incontinence may also be less common if daily pelvic floor exercises are added (9). It has been demonstrated that physical activity improves health, thus it should be recommended for all pregnant women who do not have any contraindications. Each pregnant woman should have a customized exercise prescription based on her past activity levels, pregnancy symptoms, discomforts, and physical capabilities (1).

Warm-up, Warm down/Cool down and Flexibility exercises

Warm-up activities assist the body in adjusting to the physiological, biochemical, and bioenergetic demands of the conditioning phase by increasing the temperature of the skeletal muscles, stimulating regional blood flow, and fostering the proper cardiovascular responses for conditioning phase. Muscle discomfort and musculoskeletal injuries are reduced as a result (10). Warm-up exercises are light-to-moderate-intensity aerobic activities that are done for at least five to ten minutes before aerobic training. According to WHO physical activity guidelines, gentle stretching is recommended during pregnancy instead of conventional stretching and may be beneficial (11). The warm-down phase consists of at least five to ten minutes of light to moderate aerobic activity (6). The removal of metabolic waste products from the skeletal muscles and a slow recovery of heart rate and blood pressure are made possible by this stage. In addition to mild stretching exercises like seated ankle flexions, arm circles, and elbow flexions that can be done 10–15 times per side, as well as wrist stretches, seated straight-leg calf stretches, and posterior shoulder stretches that can be done twice per side (each repetition consists of 30sec static stretch), the mothers were instructed to warm up and cool down with slow walking for five minutes (4).

Conditioning

Aerobic exercises

Because it is easy to perform anyplace, requires little skill, and is believed to engage large muscle groups for a prolonged amount of time, brisk walking can be selected as the aerobic activity. After teaching the mother how to utilize the Ratings of Perceived Exertion (RPE) scale, it is advised that she start with mild to moderate physical activity (Borg scale 3-6) (4).

Resistance exercises

Resistance training during pregnancy has not been extensively studied, but what is known so far does not support either the idea that it has a negative effect (e.g., no difference in gestational age, caesarean delivery, or preterm labor; delivery of infants with normal birth weight at term) or that it improves outcomes (e.g., lower incidence of LBP, shorter labor duration, shorter recovery time, and quicker return to activity after delivery) (8). Women who routinely perform resistance training are encouraged by the ACSM to continue doing so during pregnancy and to discuss program modifications with their physician (4).

Pelvic floor exercises

Two sets of 15–20 repetitions of the Kegel exercise (3-5 seconds hold per repetition).

Eight kegel exercises for pregnant women.

1. Tailor sit

Figure 1. (8)

The simplest and most straightforward kegel exercise to perform throughout pregnancy is the tailor sit.

Steps involved

1. Maintain a straight back while sitting on the floor.
2. Bring your foot soles together.
3. Lean gently in front of you until your leg and hip muscles start to stretch a little. Keep your back straight. Avoid using your hands to press your legs.
3. Hold on while you count to five.
4. Relax.(8)

2. Tailor press

The tailor press promotes blood circulation and lessens back pain. As the uterus advances, this gives the baby some extra room.

Steps involved

1. Maintain a straight back while sitting on the floor.
2. Bring your foot soles together.
3. Pull your hands slightly toward your body by placing them beneath the ankle.
4. Breathe in while placing your hands beneath your knees.
5. Keep your knees pressed down.
6. Press your hands up against your knees and push them slightly upward.
7. Hold for ten seconds.
8. Exhale.(9)

3. Garland pose/Pelvic floor exercise.

Figure 2.(9)

Steps involved

1. Bend slightly forward while sitting on the floor (see photo for placement).
2. Squeeze the muscles in the pelvic floor. Squeeze and hold as if you were stopping the urine in mid-stream.
3. Ten seconds must be spent contracting the muscles, holding the squeeze, and then letting them release.
4. Repeat this procedure ten to fifteen times daily. (8)

4. Pelvic tilt

One of the best kegal exercises to do when pregnant is the pelvic tilt.

Steps involved

1. Place your back against the floor and lie flat.
2. Stiffen and tighten your abdominal and buttock muscles.

3. Gently move your pelvis upwards.
4. Maintain that posture for roughly ten seconds. (9)

5. Squats

Squats help prevent the pelvic muscles from weakening during pregnancy by keeping them active. Additionally, squats aid with hip opening. Pregnancy does not require the use of weights. Squats are ideal throughout the first trimester of pregnancy. (8)

Steps involved

1. Place your feet shoulder-width apart and stand upright.
2. You should point your toes forward.
3. For balancing support, you can extend your hands outward.
4. Lower yourself to a squatting position. (Only descend until you feel comfortable).
5. After that, go back to the initial fundamental position. As you come back, begin to squeeze your glutes.
6. Repeat 10-15 times a day.(9)

6. **Breathing**

Pregnant women may experience breathing difficulties due to hormonal changes. You could feel like you can't get enough breath at times. The uterus pushes the diaphragm during pregnancy, which restricts the lungs' capacity to breathe (8).

Steps involved

1. First, breathe normally.
2. Take a deep breath gently now. (Inhale via your nose.)
3. Allow your chest to raise as the air fills your lungs.
4. Completely release your breath (Through mouth this time). (8)

7. Reclined cobbler pose

The pelvic floor is under a lot of strain throughout pregnancy, particularly in the final month. Muscles are relaxed in the reclined cobbler stance. relieves lower body stress (9).

Steps involved

1. Sit comfortably upright, supported by a pillow and block.
2. Bring your feet soles together.
3. Pull your legs inwards.
4. Put a little pressure on your knees (they should be away from each other)
5. Only remain in the position until you you are comfortable. (9)

8. Bird dog

Figure 3(11)**.**

A good exercise for the second trimester is bird dog, which works all the muscles at once, including the pelvic floor (11).

Steps involved

1. Place your hands and legs on the floor in a table position. Place your hands beneath your shoulders. Put your knees beneath your hips.
2. Hold your back straight.
3. Raise the other leg and one of your hands. Extend them.
4. When you feel the weight of the belly, move the hand and leg inside and out.
5. Do ten to fifteen repetitions (11)

Cool-down

Walking for five minutes at a slower pace than during the conditioning phase.

Considerations during exercises

Prevent heat exhaustion by dressing appropriately and avoiding physical activity when it's too hot, especially when there's a lot of humidity. To stay hydrated, sip water prior to, during, and following physical activity. The metabolic demand rises by 300 kcal per day during pregnancy. Women should consume more calories in order to fulfill this demand as well as the requirement for physical exercise (4). However, these ought’s to be successful

with a sensible weight gain that is suitable for the stage of pregnancy. Steer clear of activities that require physical contact, increase the chance of falling, or could reduce oxygenation (e.g. activities at high altitude by unaccustomed individual). Following the first trimester of pregnancy, refrain from doing anything that requires supine position. Prolonged isometric contraction, immobile standing, and the Valsalva maneuver should be avoided during any exercise. Pregnant women should all be informed by their healthcare provider about the warning signs that indicate when to stop, limit physical activity, and seek prompt medical attention if they appear (4). These includes,

- Vaginal bleeding or (amniotic) fluid leakage
- Shortness of breath prior to exertion
- Dizziness, feeling faint, or headache
- Chest pain
- Muscle weakness
- Calf pain or swelling
- Decreased foetal movement
- Preterm labor

Special considerations

If a pregnant woman is considering participating in sports or exercising more than is recommended, she should consult a trained health care provider. When returning to physical activity after a Caesarean delivery, it should be done gradually and under a healthcare provider's supervision (2).

References

1. Mottola MF, Davenport MH, Ruchat SM, Davies GA, Poitras VJ, Gray CE, et al. 2019 Canadian guideline for physical activity throughout pregnancy. Br J Sports Med. 2018;52(21):1339–46.

2. Albright E. Exercise During Pregnancy. Curr Sports Med Rep. 2016;15(4):226–7.

3. Artal R, O'Toole M. Guidelines of the American College of Obstetricians and Gynecologists for exercise during pregnancy and the postpartum period. Br J Sports Med. 2003;37(1):6–12.

4. Liguori, G., Feito, Y., Fountaine, C., & Roy, B. (2021). ACSM's guidelines for exercise testing and prescription (Eleventh edition). Wolters Kluwer.2021;6:357.

5. Artal R. Exercise during pregnancy and the postpartum period. Clin Obstet Gynecol. 2003;46(2):496–9.

6. World Health Organization. WHO Guidelines on physical activity and sedentary behaviour, Web Annex, Evidence Profiles. Who [Internet]. 2020;535.

7. Dean A, Sciences H, Kingston RI, Island R, Edith PC, Heart BF, et al. Advanced fitness assessment & exercise prescription. Vol. 35, Choice Reviews Online. 1998. 35-6295-35–6295 p.

8. Hooley JS. Kegel exercises. J Fla Med Assoc. 1993;80(3):213.

9. Mottola MF. Exercise Prescription for Overweight and Obese Women: Pregnancy and Postpartum. Obstet Gynecol Clin North Am. 2009;36(2):301–16.

10. Robert-McComb JJ, Norman RL, Zumwalt M. The active female: Health issues throughout the lifespan, second edition. Act Female Heal Issues Throughout Lifespan, Second Ed. 2014;1–595.

11. University of Michigan Health. Kegels: Female Pelvic Floor Exercises What are Kegel exercises? 2016;1–4.

Figure 1. (8) - Tailor Sit

Figure 2.(9) - Garland Pose/Pelvic Floor Exercise.

Figure 3(11) - Bird Dog