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Rethinking Prenatal and Postpartum Exercise

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Abstract

Regular physical activity and structured exercise during pregnancy and postpartum are strongly associated with improved maternal and infant health outcomes; however, confusion persists among clinicians, fitness professionals, and patients regarding the safety, intensity, and appropriate modes of exercise across the perinatal period. The objective of this paper is to synthesize current evidence on aerobic training, resistance training, flexibility and mobility work, and high-intensity training (HIT) to provide clear, practical, and mode-specific recommendations that support safe, enjoyable, and effective movement during pregnancy and postpartum.

Introduction

Across all modalities, research demonstrates that exercise is both safe and beneficial when individualized, symptom-guided, and appropriately modified. Aerobic exercise improves cardiometabolic function, regulates gestational weight gain, reduces the risk of gestational diabetes, and supports glucose control without increasing the risk of fetal distress. Resistance training has been shown to reduce musculoskeletal pain, improve functional strength, and support glucose regulation, with emerging evidence suggesting benefits for fetal growth patterns and long-term child development. Recent studies also indicate that properly scaled high-intensity training (HIT)—whether resistance-based or aerobic—can be performed safely by both athletic and recreationally active pregnant individuals, with normal maternal and fetal physiological responses.

Common safety considerations across modalities include thermoregulation, hydration, energy availability, symptom monitoring, and awareness of trimester-specific biomechanical changes. Postpartum participation requires additional attention to pelvic floor function, tissue healing, and a structured return-to-play progression. Collaboration between clinicians and qualified exercise professionals enhances safety, increases adherence, and expands access to safe programming.

Overall, contemporary evidence supports the inclusion of diverse exercise modes during pregnancy and postpartum. Clear, individualized, and coordinated guidance can empower pregnant and postpartum individuals to participate safely in meaningful physical activity that supports lifelong health.

Physical Activity During Pregnancy

Physical activity (PA) during pregnancy or postpartum often feels like uncharted or “murky” territory for individuals and their healthcare providers. Yet, a large body of research demonstrates that regular movement confers significant benefits for maternal, fetal, and postpartum health. The American College of Obstetricians and Gynecologists (ACOG) reaffirmed its 2015 Committee Opinion emphasizing that physical activity is safe for most individuals and can be continued throughout all trimesters with appropriate modifications.[1]

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Despite this guidance, many clinicians and patients still lack clarity on what those modifications should entail and how to balance safety with the benefits of staying active.

The growing popularity of higher-intensity and resistance-based exercise presents both opportunities and challenges for clinicians. As exercise practices evolve, healthcare professionals must be equipped to provide clear, evidence-based recommendations that empower pregnant and postpartum individuals to remain active. However, physical activity remains under-discussed in prenatal care; in one study, approximately 40% of pregnant individuals reported initiating the conversation themselves because clinicians did not raise the topic.[2] Even when guidance is provided, guidance often lacks specificity regarding frequency, intensity, or mode.

This commentary summarizes current evidence on perinatal exercise and translates it into practical guidance for clinicians, fitness professionals, and public health practitioners working with pregnant and postpartum individuals.

Current Trends in Guidance

Guidance on perinatal exercise must evolve alongside shifts in public health, fitness culture, and scientific evidence. Clinicians play a critical role in helping patients understand how to exercise safely; however, many report barriers such as limited time, insufficient training, and low confidence in prescribing exercise for this population.[3] One proposed solution is to refer to an exercise professional.

ACOG's most recent guidance encourages individuals with uncomplicated pregnancies to engage in aerobic and strength-based exercise three to four days per week (up to daily) at moderate intensity (approximately 60–80% of age-predicted maximal maternal heart rate) for 30–60 minutes per session.[1] Recommended exercise includes a combination of multiple modes of exercise. These recommendations reflect a shift toward inclusive, "safe to do" language that promotes autonomy and confidence.[4]

Shared decision making and health coaching frameworks can further support individualized exercise planning. Clinicians do not need to act as exercise specialists; collaborating with qualified exercise professionals familiar with trimester-specific and postpartum adaptations can help translate medical guidance into practical, personalized programs.

Modes of Perinatal Exercise

A growing body of research has investigated the effects of various exercise modes on healthy pregnant populations, often including fetal outcomes. Once approached with caution, exercise is now recognized as a safe and powerful tool for improving maternal and fetal health.[4,5] The following sections summarize key evidence, safety considerations, and practical recommendations for the common modes of perinatal exercise.

Physical Activity and Exercise in General

Benefits and Overview

ACOG states that physical activity poses minimal risk and offers meaningful health benefits before, during, and after pregnancy.[1] Physical activity includes any movement that increases energy expenditure, while exercise refers to structured training aimed at improving specific physiological systems.

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In a recent publication, Koschel noted that "The physical and psychological demands of labor mirror that of an athletic endeavor," reinforcing the value of fitness-based approaches during pregnancy and postpartum recovery.[6]

A robust body of evidence shows that physical activity and structured exercise reduce excessive maternal weight gain, improve inflammatory profiles, improve lipid profiles, enhance mental health, and reduce common pregnancy-related symptoms such as low-back pain.[7–9] Individualized programming that supports consistency is essential.

Safety

Pregnancy involves continual anatomical and physiological adaptations that require appropriate exercise modifications. Symptoms such as fatigue, nausea, dizziness, musculoskeletal discomfort, shortness of breath, and balance changes should guide both long-term planning and day-to-day decisions.

The pregnant individual's healthcare and exercise team must distinguish between absolute contraindications (e.g., severe respiratory disorders, placental abruption, vasa previa, severe preeclampsia) and relative contraindications (e.g., mild preeclampsia, placenta previa, preterm premature rupture of membranes).[5] Many conditions once considered absolute contraindications have been reclassified, emphasizing the need to stay current with ACOG and professional exercise organization guidelines.

Pregnancy increases heat production, skin vasodilation, and sweating.[10] Due to cardiovascular adaptations, heart rate alone may be an unreliable measure of intensity during physical activity or exercise.[11] Importantly, the historical recommendation to keep a pregnant individual's heart rate below 140 beats per minute is no longer considered necessary and is not supported by current guidelines. Therefore, rate of perceived exertion or the talk test are preferred monitoring tools. Intensity, duration, and environment should be modified if heat dissipation is compromised or if metabolic demands are elevated such as with gestational diabetes.

Remember to modify positions throughout pregnancy and monitor for the need. Many times, pregnant and postpartum individuals are told they will know when or their body will tell them, but athletes sometimes override these messages, so it is important for the professional to continually monitor and offer modifications when signs show the need, especially after the first trimester.

Pregnancy is characterized by increased insulin resistance, hepatic glucose output, and maternal fat metabolism during exercise.[12] Healthy individuals without diabetes have a low risk of hypoglycemia during aerobic exercise.[1] In contrast, those with pregestational diabetes or insulin-treated gestational diabetes may experience exercise-related hypoglycemia and require individualized monitoring, nutrition strategies, and insulin adjustments. Postpartum, lactation and fluctuating insulin needs can further increase glycemic variability in insulin-treated diabetes.[13]

As pregnancy progresses, exercise intensity, volume, and mode should be adjusted to account for cardiovascular adaptations, increased ligamentous laxity, shifting center of mass, altered thermoregulation, and changes in venous return.[14,15] Postpartum considerations include pelvic floor status, diastasis recti, tissue healing, sleep disruption, breastfeeding-related energy demands, and psychological readiness. Gradual, structured progression reduces risk and supports long-term recovery.

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A daily readiness assessment may help to protect the individual and ensure individualization with training both during pregnancy and postpartum. Interprofessional communication is also critical. Exercise professionals should monitor symptoms, reinforce safety, and refer out when medical assessment is needed.

Warning signs such as vaginal bleeding, painful contractions, chest pain, amniotic fluid leakage, severe headache, dizziness, decreased fetal movement, or new pelvic pressure warrant immediate cessation of any activity and communication with a healthcare provider.

Aerobic Exercise

Benefits and Overview

Aerobic exercise includes walking, jogging, swimming, and other rhythmic activities that elevate heart rate. Aerobic exercise can help maintain or improve maternal aerobic capacity and reduce the risk of gestational diabetes mellitus by up to 49% in overweight or obese individuals.[16,17] Additional research links second- and third-trimester aerobic exercise to improved sleep quality and enhanced maternal–fetal attachment.[18] Overall, evidence strongly supports aerobic exercise as beneficial for both mother and baby.

Safety

All modes of aerobic exercise can be safe for cleared individuals. Weight-bearing discomfort may increase later in pregnancy due to increased ligamentous laxity; swimming or other non–weight-bearing options may help maintain activity during symptomatic periods.

Postpartum return-to-exercise should follow a gradual, symptom-guided progression. During labor, the pelvic floor stretches to 250% of its resting length, requiring up to six months to recover; cesarean healing may also require this time.[19] Walking is often appropriate in the first 0–2 weeks postpartum, with higher-impact activities such as running typically delayed until approximately 13 weeks with a structured return-to-play protocol—though some individuals resume earlier.[19,20]

Practical Recommendations

For uncomplicated pregnancies, individuals can follow ACOG's guidance for moderate-intensity activity.[1] Choosing modes they enjoy enhances adherence. Progression should be gradual, with attention to emerging symptoms. Non–weight-bearing or lower impact options may be useful on days when fatigue, nausea, or musculoskeletal discomfort is present. Aerobic benefits can be achieved through accumulated short bouts (e.g., 10–15-minute walks), offering flexibility across trimesters. Postpartum it is important to move in a return-to-play structure.[6,19,20]

Resistance Training

Benefits and Overview

Resistance training during pregnancy provides a wide range of physical and psychological benefits. Evidence shows that resistance exercise can limit excessive gestational weight gain, reduce low back and sciatic pain, lessen fatigue, enhance mental health, improve sleep quality, reduce pelvic pain, increase energy levels, and support glucose regulation—particularly among

individuals with gestational diabetes.[12,21,22] Pregnant persons who engage in resistance training may also experience increased uterine blood flow and reduced risk of infant macrosomia, childhood metabolic dysfunction, and improved cognitive outcomes in their children.[21]

Recent investigations and systematic reviews include participants ranging from professional athletes to recreational exercisers and previously sedentary pregnant persons.[21,23,24] Measures such as fetal heart rate, placental function, and symptoms of vena cava compression were monitored during deadlift, flat bench press, and incline bench press for both recreational and professional athletes. Fetal heart rate remained within normal range across all lifts; although heart rate increased after deadlift and incline bench press, it did not significantly change following flat bench press.[23] These findings support the safety of traditional lifting techniques in appropriately screened individuals.

Additional research confirms that experienced lifters can perform heavy resistance training during pregnancy and postpartum without increasing obstetric or neonatal complications. Experienced athletes appear to tolerate heavy loads with fewer adverse responses compared to individuals without prior resistance training experience.[24]

Safety

Although evidence is promising, exercise professionals and healthcare providers should remain attentive to safety considerations and individual responses. Beginning in the second trimester, prone exercises should be avoided, and supine positions should be limited to short durations.[21] In the heavy-load resistance training study, one recreational athlete (1 of 41 participants; 48 total assessments) experienced transient symptoms of vena cava compression following a supine exercise. Symptoms resolved quickly, and fetal heart rate remained within normal range throughout the session, underscoring the need for individualized monitoring and modification.

Pregnant persons also have an increased risk of diastasis recti due to connective tissue laxity and abdominal expansion.[25] While diastasis recti cannot be fully prevented, strengthening the anterior abdominal wall and reinforcing optimal posture may reduce severity and support postpartum recovery. Online, low-cost postpartum core rehabilitation programs may offer accessible options for treatment.[25,26] During training sessions, coaches and clinicians should monitor for abdominal “coning” or excessive doming. If present, the movement should be modified or stopped, and the focus shifted to core stabilization strategies.

Practical Recommendations

When meeting with a pregnant or postpartum client it is important to first complete initial screening for movement safety and resistance training knowledge, focusing first on foundational strength: the individual should move with a neutral spine, with pelvic stability, and proper breathing mechanics before progressing to weighted or heavy lifting loads. For pregnant individuals, because there is need for flexibility with programming, full-body functional movements are important to implement for each day unless symptoms are limited and the individual is an experienced athlete who trains with split days currently.

During the postpartum transition it is important to know the limits and return-to-play basics for increasing progression.[6,19] Attention to the pelvic floor and core stabilization is important when the individual is medically cleared. The idea of static supine then prone movements to quadruped, and on is important to remember to ensure long-term strength and beneficial

outcomes.[19] Continually monitoring for fatigue and other symptoms that may interfere with progression, as mentioned above.

High-Intensity Training

Benefits and Overview

High-Intensity Training (HIT) can be a safe and effective exercise mode during pregnancy and postpartum when appropriately individualized. HIT is generally defined as repeated short bouts of high-effort activity interspersed with low-intensity recovery and may incorporate both cardiovascular and resistance-based formats. During pregnancy, intensity must be prescribed relative to the participant's fitness level, symptoms, and trimester-specific considerations.

Growing evidence supports the safety of well-designed HIT protocols during pregnancy. In a resistance-focused study, pregnant individuals in the second and third trimester performed lifting at 70–90% of their 10-repetition maximum with free breathing, as well as 90% 10RM using the Valsalva maneuver. No fetal bradycardia occurred, and umbilical blood flow indices remained within normal limits.[27] Similarly, an aerobic HIT study using 1-minute bouts at near-maximal to maximal effort demonstrated normal maternal and fetal responses, with no bradycardia or abnormal umbilical artery metrics.[28] Additional work examining mixed-modality HIT protocols found them safe when sessions were individualized and enjoyment was high—factors associated with reduced symptom burden and improved adherence.[29]

Collectively, this research suggests that HIT may be feasible for pregnant individuals already accustomed to higher-intensity exercise, as well as those transitioning from moderate-intensity training under proper supervision.

Safety

The foundational safety considerations for HIT mirror those of aerobic and resistance exercise, but the rapid fluctuations in intensity warrant additional vigilance. High-intensity efforts increase metabolic heat production.[10] As mentioned above, pregnant individuals experience altered heat dissipation due to increased metabolic rate and cardiovascular demands; therefore, HIT sessions should prioritize cool environments, hydration, and sufficient recovery intervals.

High-intensity work increases carbohydrate utilization.[30] Pregnant individuals, especially those with gestational diabetes or insulin-treated diabetes, may require individualized glucose monitoring, pre-session carbohydrate intake, or insulin adjustments to reduce the risk of hypoglycemia.

Rapid directional changes, jumping, or unstable surfaces may be less tolerated later in pregnancy due to balance changes and pelvic girdle discomfort.[31] Technique, stability, and symptom monitoring should guide exercise selection.

Certain HIT movements produce high intra-abdominal pressure. Participants should be monitored for abdominal coning, which may indicate an increased risk for diastasis recti symptoms.[25] Modifications and alternative movement patterns should be used as needed.

As with all forms of exercise during pregnancy, the appearance of warning signs mentioned above require immediate cessation and referral to a healthcare provider.

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Practical Recommendations

HIT should be reserved for pregnant individuals with an existing foundation of moderate-intensity exercise and those training in this manner preconception. Postpartum, HIT may be reintroduced only after meeting strength, pelvic floor, and impact-readiness benchmarks.

Due to pregnancy-related heart rate variability, using RPE and the talk test as discussed above is important. Begin with shorter intervals (15–30 seconds) and longer recovery periods. Progress only when symptom-free and able to maintain stable breathing and core control.

Evidence suggests that HIT is safest and most effective when participants choose modalities they enjoy and feel confident performing.[29] It is important to not limit this type of training entirely. As pregnancy progresses, modifications may be needed. Modifications may include cycling, rowing, ski-ergometer, bodyweight circuits (or controlled movement resistance training circuits), and sled push/pulls to keep the individual more upright.

With the higher impact of HIT, if urinary leakage, heaviness, or pelvic pain occurs, scale intensity, reduce impact, or integrate pelvic floor coordination strategies.

Lastly, the exercise professional should encourage longer intra-session rest periods for higher intensity training and emphasize recovery days, particularly in the third trimester or early postpartum when fatigue is elevated.

Exercise Professional Recommendations

Exercise professionals should possess a foundational understanding of physiology and sound exercise programming, but not all have specialized knowledge in maternal health. While specialized certification is not required to train perinatal clients, ongoing education and professional development are essential. Several reputable credentialing organizations—such as the American College of Sports Medicine (ACSM) and the National Strength and Conditioning Association (NSCA)—require both theoretical knowledge and practical competence to earn certification and are known to be reliable.

For prenatal and postpartum individuals, it is important to seek professionals who are confident in applying current evidence-based guidelines and who understand the unique physiological changes that occur throughout pregnancy and recovery. Key aspects of perinatal support include empathy, body image awareness, and an understanding that psychological and emotional wellness may evolve alongside physical changes.

Beyond traditional certifications, there are training programs for perinatal fitness. These educational pathways help bridge the knowledge gap between medical and fitness domains and promote safer, more collaborative care.

Equally important is understanding scope of practice. While an exercise professional should be familiar with appropriate modifications for each phase of pregnancy and postpartum recovery, they must also know when to refer back to the healthcare team. Monitoring symptoms, adjusting training as needed, and maintaining open communication with clinicians ensures safety and continuity of care.

Collaboration between healthcare providers and exercise professionals allows for integration of medical guidance into training design and daily symptom-based adjustments. Beyond pregnancy,

exercise professionals should be well-versed in postpartum recovery, including pelvic floor health, diastasis recti management, and progressive return-to-exercise protocols.

Practical Applications

Ongoing collaboration between clinicians and qualified exercise professionals is essential to support safe participation and long-term adherence. No matter the mode of PA or exercise—and whether the individual is pregnant or postpartum—exercise professionals should prioritize individualized programming that centers enjoyment and symptom-guided progression. Because physiological responses vary widely, using RPE or the talk test is often more reliable than heart-rate targets. Daily monitoring for symptoms and continuous assessment during activity allow the professional to adjust mode, intensity, duration, and technique as needed. Hydration, temperature regulation, and adequate energy intake should be emphasized throughout pregnancy and postpartum. Postpartum individuals benefit from a structured return-to-play progression that accounts for pelvic floor status, tissue healing, and functional readiness.

Conclusion

Evidence supports the safety and benefits of multiple modes of physical activity and exercise during pregnancy and postpartum. When individualized and symptom-guided, these activities improve maternal cardiometabolic health, functional strength, mental well-being, and fetal outcomes. Collaboration between clinicians and exercise professionals, including clear referral pathways, enhances safety and adherence. Postpartum return-to-exercise should follow a structured progression that accounts for tissue healing, pelvic floor function, and functional readiness. Promoting accessible, enjoyable, and evidence-based physical activity and exercise empowers individuals to maintain lifelong health for both parent and child.

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