Exercise Guidelines for Pregnant and Postpartum Women

Michele Dell Pruett, PhD, ATC[1] and Jennifer L. Caputo, PhD, CSCS[2]
[1]Department of Sports Sciences, College of Physical Activity and Sport Sciences, West Virginia University, Morgantown, West Virginia; and [2]Department of Health and Human Performance Middle Tennessee State University, Murfreesboro, Tennessee

SUMMARY

RECOMMENDATIONS ON EXERCISING DURING PREGNANCY AND POSTPARTUM HAVE EVOLVED OVER THE PAST DECADES. THIS ARTICLE PROVIDES CURRENT GUIDELINES FOR EXERCISING DURING PREGNANCY AND POSTPARTUM. BACKGROUND INFORMATION ON THE PHYSIOLOGICAL CHANGES DURING PREGNANCY IS COVERED, AND THE BENEFITS, CONTRAINDICATIONS, AND BARRIERS TO EXERCISE FOR THIS SPECIAL POPULATION ARE HIGHLIGHTED. FURTHERMORE, RELEVANT RESEARCH PERTAINING TO THE IMPORTANCE OF EXERCISE DURING THIS STAGE OF A WOMAN'S LIFE WILL BE EXAMINED. IT IS IMPORTANT TO NOTE THAT EVERY PREGNANT WOMAN BE MEDICALLY PRESCREENED FOR CONTRAINDICATIONS TO EXERCISE AND SHOULD SPEAK TO HER HEALTHCARE PROVIDER BEFORE STARTING OR CONTINUING AN EXERCISE PROGRAM DURING PREGNANCY.

BACKGROUND AND CURRENT GUIDELINES ON EXERCISE DURING PREGNANCY

Exercise recommendations during pregnancy and postpartum continually evolve. Based on concern for the developing fetus, before 1985, pregnant women were told by their healthcare providers to rest and not to engage in physical activity (17). More recently, in 2002, the American College of Obstetricians and Gynecologists (ACOG) announced that moderate exercise for 30 minutes or more per day, on most if not all days of the week, was recommended for women with low-risk pregnancies. Also, it was considered safe for sedentary women to start a new exercise program during pregnancy (2).

Currently, the ACOG's recommendations for pregnancy and postpartum, in the absence of medical/obstetrical complications, include regular exercise at least 3 times per week for 30–40 minutes (continuous activity being preferable to intermittent activity). It is recommended that pregnant women avoid exercise in the supine position after the first trimester, and caution is needed during exercise where there could be a loss of balance, especially in the third trimester. Pregnant women who exercise should augment heat dissipation by adequately hydrating, wearing appropriate clothing, and exercising in optimal environmental surroundings. Because many of the physiological and morphological changes of pregnancy persist 4–6 weeks postpartum, these recommendations should also be followed after delivery. These guidelines reflect our current understanding of the many changes that occur to the body during pregnancy (2,13).

PHYSIOLOGICAL CHANGES DURING PREGNANCY

A normal gestation period is approximately 240 days divided into trimesters. During this time, the most apparent change that occurs is an increase in body weight. In 2009, the Institute of Medicine released new guidelines for weight gain during pregnancy. It was suggested that women who are underweight (<19.8 kg/m^2) gain 28–40 pounds, those who are normal weight (19.8–26.0 kg/m^2) gain 25–35 pounds, those who are overweight (26.1–29.0 kg/m^2) gain 15–25 pounds, and those who are obese gain 11–20 pounds (5). These guidelines were designed to combat a variety of health issues that arise from entering pregnancy overweight or gaining excess weight during pregnancy (5).

There are many musculoskeletal changes because of pregnancy. Posture and balance are negatively affected because of change in body weight. Locomotion and proprioception are also influenced. This is why it is recommended that pregnant women avoid activities with an increased risk of falling, such as horseback riding. Approximately half of women experience some kind of low back pain during pregnancy. There is also an increased laxity of connective tissue (3).

Women who become pregnant undergo many cardiovascular changes. Heart rate, both at rest and during submaximal

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work, rises (11). This begins as early as 2–5 weeks into the pregnancy and continues into the third trimester. Resting heart rate, on average, increases 8 beats per minute by the eighth week and nearly doubles by the end of pregnancy (11). In addition, between weeks 10 and 20, there is an increase in blood volume (11). The increased heart rate, blood volume, and stroke volume contribute to an increased resting cardiac output as early as the fifth week of pregnancy (11). Last, systolic blood pressure, in normal pregnancy, remains stable because of a decreased peripheral vascular resistance, although diastolic blood pressure may decrease (11).

Similar to the cardiovascular system, the respiratory system undergoes many changes during pregnancy. These adaptations occur to provide for maternal and fetal needs. The respiratory responses to pregnancy, at rest, parallel the responses that occur during aerobic conditioning (15). However, the mechanisms for the change are diverse. There is a temporary remodeling of the thoracic cage because of pregnancy-induced hormones (15). This results in a reduction in residual volume and expiratory reserve volume and an increase in inspiratory capacity (15). As long as these physiological and morphological changes are considered in program design, there are many benefits to exercise during pregnancy and after delivery.

BENEFITS OF AND CONTRAINDICATIONS TO EXERCISE DURING PREGNANCY

Exercise during pregnancy may help the mother have a greater sense of well-being, increase energy, improve sleep, and help with weight control (13). A decrease in back pain and enhanced muscular strength and endurance have also been noted (7). Exercise may lead to shorter labor and fewer obstetric interventions as well as improve glycemic control in gestational diabetes, especially in obese women (7,13).

When starting a new exercise program, it is advisable to begin in the second trimester rather than in the first trimester because many women experience nausea and morning sickness during the first. The PARmed-X for Pregnancy questionnaire is an example of a tool that can be used by healthcare workers and trainers to screen women interested in participating in physical activity during pregnancy (3). This tool was developed in Canada by the Canadian Society for Exercise Physiology and is endorsed by The Society of Obstetricians and Gynaecologists of Canada (3). The form can be used to gather pertinent medical history and a recent activity profile. This questionnaire helps provide practical prescriptions for participating in aerobic and strength-conditioning activities during pregnancy (3).

When choosing a mode of exercise, it is important to select activities that minimize risk of loss of balance and fetal trauma. Ideal exercises include those that are weight supportive and involve minimal center of gravity displacement. Thus, aquatic exercises, like aqua jogging and water aerobics, are excellent choices during pregnancy. Yoga classes can also be streamlined and modified for women who are pregnant. Some of the poses that are practiced aid in comforting low back pain and assist with balance. In addition, Kegel exercises may be performed. Kegel exercises aid in strengthening the pubococcygeal muscles and help prevent stress incontinence (10).

Overall, there are a few activities that should be avoided during pregnancy. Some activities the pregnant mother should avoid are horseback riding, downhill skiing, ice hockey, gymnastics, bicycling, and inverted positions. These activities have a higher risk for falling and could put mother and fetus at risk. Scuba diving is also unsafe during pregnancy because of the hyperbaric stress, and Bikram yoga is unsafe because of the hyperthermic environment. Similarly, hot tubs should be avoided. Last, martial arts that include sparring should be avoided because of risk of abdominal trauma.

Additionally, exercise intensity and duration should not be increased during the third trimester to avoid conflicting maternal-fetal demands. Highly fit pregnant women should not train at intensities higher than 80% of their aerobic power (15). At higher intensities, risk to the developing fetus and mother may outweigh the benefits (15). Therefore, athletic competition is not recommended during pregnancy (15).

Useful tools to monitor exercise intensity are the modified heart rate target zones for aerobic exercise during pregnancy and Borg's rating of perceived exertion. The modified heart rate target zone uses maternal age and beats per minute or beats every 10 seconds. The Borg's scale is used often, and a rating of 12–14 is appropriate for most pregnant women (3,11). This would be considered the "somewhat hard" range of perceived exertion. Last, another measure for exercise intensity would include the "talk test." As the talk test implies, the woman exercising is at a comfortable intensity when she is able to carry a conversation during exercise (3). The previously mentioned monitors during pregnancy and exercise should be used for the well-being of mother and fetus.

Even though there are many positive outcomes to exercise during pregnancy, there are some contraindications to exercise during pregnancy. Exercise that is not recommended during pregnancy includes in the case of preterm labor, preterm rupture of membrane, pregnancy-induced hypertension, incompetent cervix, persistent second to third trimester bleeding, and intrauterine growth restriction. Uncontrolled type 1 diabetes, thyroid disease, and other serious cardiovascular, respiratory, or systemic disorders are also contraindications. Last, a growth-restricted fetus and multiple gestations of triplets or higher may be contraindications during pregnancy (2,3).

POSTPARTUM EXERCISE AND BARRIERS TO EXERCISE

The postpartum period is a critical transition time for women. This period can affect both the physical and the mental health of a new mother. Besides caring for a new member of the family,

there is also the thought of getting back to prepregnancy weight. Both pregnancy and postpartum periods have been suggested as important contributors to increased health problems, such as obesity among women.

A new mother with an uncomplicated pregnancy and delivery generally will get the "green light" to start exercise from her healthcare provider 6 weeks after delivery, during the routine postpartum evaluation; however, a cesarean delivery typically will add a few additional weeks to heal (3). Considering the fatigue of delivery and added newborn care, an initial exercise regimen should begin with a reduction in intensity and duration (3).

Exercise provides many positive physical and psychological benefits after pregnancy. Not only are the physical outcomes of an exercise program being gained, but the postpartum woman also has valuable time to herself. Unfortunately, many postpartum women have conflicts at home and work and have difficulty getting into an exercise routine. There is a need for research on the barriers to exercise with postpartum women, including lack of time and family support. Thornton et al. (16) examined the role of social support among postpartum Latino women. They suggested that informational and emotional support of husbands has the most important and consistent influence on participants' weight, eating, and physical activity practices.

In addition to the support at home, a woman may find support from other women who are going through or have gone through the same life events. Social support is one of the most prominent influences on physical activity behavior and is an important determinant of success in altering health habits (6). Therefore, social support and childcare assistance are key elements for a successful postpartum exercise program.

IMPORTANCE OF EXERCISING DURING PREGNANCY AND POSTPARTUM

Pregnancy is a time when significant physiological changes occur. For some women, pregnancy may also represent the beginning of weight control issues (14). Furthermore, many obese women attribute their adult weight gain to pregnancy (8). Linne, Rossner, et al (8,9) stated that 73% of the women at their obesity clinic indicated pregnancy was a trigger for marked weight gain and the majority of women gained more than 10 kg after each pregnancy. There are several factors that may be involved in the course of weight development after pregnancy.

One of the strongest factors for retaining weight after pregnancy is the amount of weight gained during pregnancy (9). At least in the short term, excessive weight gain during pregnancy is associated with high weight retention after pregnancy (9). Other factors that have been studied are smoking cessation, socioeconomic factors such as low income, and changes in activity leading to a more sedentary lifestyle after pregnancy (9). Excess weight gain during pregnancy and lifestyle changes postpartum are likely to be significant contributors to weight retention and obesity among women.

Pregnancy can be considered one of the few times a woman is encouraged to gain weight in her lifetime. However, an excess weight gain during pregnancy is associated with increased health problems, such as hypertension, delivery complications, and postpartum weight retention (4). Furthermore, maternal weight gain and prepregnancy body mass index have been positively correlated with birth weight (12). Overweight babies are at a higher risk for obesity later in life, which can also include health concerns, such as type 2 diabetes (12).

The ACOG recommends an aggressive approach to preventive weight management in all overweight and obese women before conception, during pregnancy, and after delivery (1). This statement solidifies the importance of weight management for women of child-bearing age. It is understandable that the postpartum period is a difficult transition time in a new mother's life, including changes with the daily routine and new responsibilities. It is also a critical time to maintain or begin, in some cases, a healthy lifestyle, including physical activity.

SUMMARY

Current guidelines from the ACOG encourage women with a noncomplicated pregnancy to begin and/or stay physically active during pregnancy. As long as precautions are taken to educate women on potential contraindications to exercise and modifications to exercise routines are made to protect both mother and fetus, there are many positive outcomes to exercise during and after pregnancy. Once a pregnant woman has been medically prescreened to assure there are no contraindications to exercise, healthcare providers and physical trainers are encouraged to refer and provide safe opportunities for exercise in this population.

Michele Dell Pruett *is currently the undergraduate athletic training clinical coordinator at West Virginia University in the College of Physical Activity and Sport Sciences.*

Jennifer L. Caputo *is an associate professor in the Department of Health and Human Performance at Middle Tennessee State University.*

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