

The effects of physical activity mediated in pregnancy outcomes during pregnancy

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Abstract: Health transition and birth quality of pregnant women are associated with pregnancy outcome. Current research has been shown that appropriate physical activity during pregnancy could improve pregnancy outcomes in pregnant women, which was also beneficial for fetuses. In this review, we will discuss the effects of physical activity involved in pregnancy outcomes and their potential association with clinical care during pregnancy.

1. Introduction

Physical activity considered any body movement caused by contraction of skeletal muscles, which lead to energy loss in body^[1]. Pregnancy outcome is composed of maternal health outcomes and infant health outcomes. There are increasing evidences indicated that physical activity during pregnancy could improve pregnancy outcomes^[2, 3].

2. Physical Activity during Pregnancy

2.1 Physical Activity Time and Intensity during Pregnancy

The guidelines recommend by The American College of Obstetrics and Gynecology were shown that moderate-intensity physical activity for pregnant women was considered at least three days a week, 20-30 minutes each time^[4]. Healthy pregnant women were also recommend to perform at least 150 minutes of moderate-intensity aerobic exercise per week by the US Department of Health and Public Health Services. However, the scheme of activities should be individualized according to the different physical conditions of pregnant women.

2.2 Forms of Physical Activity during Pregnancy

The physical activity for pregnant women includes a broad range of activity, such as walking, health exercises and running. It is recommended that most pregnant women should insist in moderate-intensity resistance training by the American College of Sports Medicine^[5]. In addition, yoga, swimming, aquatic activities and small instrumental exercise are also involved in physical activity^[5].

3. Effects of Physical Activity Mediated in Pregnancy Outcomes

It is growing evidences indicated that physical activity has an important impact on pregnancy outcomes, which thought to be beneficial in the improvement of pregnancy outcomes.

3.1 The Influence of Physical Activity during Pregnancy for pregnant woman

3.1.1 The Risk of GDM was significantly reduced by Physical Activity

Gestational diabetes mellitus (GDM) is considered as a common complications for pregnant women.

Recent findings showed that physical activity during pregnancy could reduce the risk of GDM^[6]. The study of Hayashi et al^[7] suggested that walking could significantly reduce the level of random blood glucose for pregnant women with GDM. It was also recommend at least 6000 steps per day. Similarly, Coe et al^[8] found that moderate 30 minutes walking after meals could decrease the level of postprandial blood glucose for pregnant women with GDM. Besides, Meta analysis has shown that high-intensity physical activity in the early pregnancy could reduce the incidence of GDM to 24%, compared with lower intensity physical activity^[6]. However, the scheme of activities should be individualized according to the different physical conditions of pregnant women.

3.1.2 Physical Activity is Beneficial to Controlling the Weight Gain

It is commonly accepted that excessive weight gain during pregnancy is an important factor associated with macrosomia, gestational hypertension, postpartum hemorrhage, and cesarean section^[9]. Most studies indicate that regular physical activity during pregnancy is beneficial to controlling weight gain. Barakat et al^[2] found that moderate-intensity physical activity over 21 minutes could effectively reduce the excessive weight gain for pregnant women.

3.1.3 Physical Activity Effectively Reduced the Incidence of Hypertension during Pregnancy

Hypertensive Disorders Complicating Pregnancy (HDCP) is considered as a common complication for pregnant women. Currently, physical activity can act as potent modulators of preventing HDCP. Barakat et al^[2] found that exercise, especially aerobic exercise could significantly decrease the incidence of hypertension for pregnant women. It was suggested that aerobic exercise could induce the lower of blood pressure and enhance the function of cardiovascular autonomic. However, the mechanisms between physical activity and pregnancy-induced hypertension are still not clear enough, which deserved further study.

3.1.4 The Effect of Physical Activity on the Mode of Delivery during Pregnancy

Jiang et al^[10] found that the cesarean section rate and selective cesarean section rate were 40% lower in the more active group, compared with the low active group, which suggested that physical activity during pregnancy was link with the incidence of cesarean section. Physical activity can contribute to the delivery of the fetus through increasing the strength of the muscles of the uterine muscles, abdominal muscles, diaphragm muscles, pelvic floor muscles.

3.2 The Influence of Physical Activity during Pregnancy for Infants

3.2.1 Physical Activity during Pregnancy Reduces the Incidence of Preterm Birth

Preterm birth is the leading risk factor for neonatal death and the second leading cause of death among children under five years of age. Owe et al^[11] found that physical activity performed 3~4 times each week in the second trimester can reduce the incidence of preterm birth. It was demonstrated that physical activity during the second trimester is a protective factor for preterm birth and low body weight^[12], which may be due to prolong gestational age and protect preterm low birth weight.

3.2.2 Physical Activity Reduces the Output of Giant Children during Pregnancy

Numerous studies have found that moderate intensity and regular physical activity during pregnancy reduces the weight of newborns^[13, 14], which significantly reduces the incidence of macrosomia. It was investigated that the adverse effects of physical activity during pregnancy on birth weight was associated with maternal pre-pregnancy BMI^[15]. Critical insights focus on studying the link between pre-pregnancy BMI and physical activity.

3.2.3 Physical Activity Promotes Infant Mental Development during Pregnancy

Infancy is an important period for children's intelligence and nervous system development. Recent studies have shown that physical activity for pregnant women is associated with infant mental development^[16, 17]. Wang et al^[18] investigated 392 infants and found that mild physical activity for pregnant women was positively correlated with infant PDI. Moderate physical activity was negatively correlated with infants' MDI indicators at 1 year of age Moderate physical activity during pregnancy can effectively regulate the concentration of glucose, which improving the mental

development of the fetus.

4. Conclusion

Physical activity as a simple and non-pharmaceutical intervention factor in pregnancy care could promote the maternal and fetal health. Therefore, regular physical activity during pregnancy is critical. Based on the specific conditions of the pregnant woman, the form, intensity, and frequency of physical activity should be individualized. Critical insights should focus on studying the relationship between different stages of pregnancy and physical activity, which result in enhancing pregnancy outcomes.

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