

Influence of physical activity on the proper course of pregnancy, delivery and postpartum period

Magdalena Korzyńska-Piętas¹, Katarzyna Dziaduszek¹, Beata Bolek²,
Grażyna Jolanta Iwanowicz-Palus¹, Agnieszka Maria Bień¹

¹ Department of Basics of Midwifery, Faculty of Health Sciences Medical University of Lublin

² Student Scientific Association at the Department of Basics of Midwifery, Faculty of Health Sciences Medical University of Lublin

Korzyńska-Piętas M, Dziaduszek K, Bolek B, Iwanowicz-Palus G, Bień A, M. Influence of physical activity on the proper course of pregnancy, delivery and postpartum period. *Med Og Nauk Zdr.* 2018; 24(3): 162–165. doi: 10.26444/monz/94624

Abstract

Introduction. The systematic activity before pregnancy is one of the main factors which influence an active approach to this unique state. The habit of physical activity has a very positive effect on the pregnant woman's body. It is a key factor affecting the mother's health and well-being. Many adaptive changes in anatomy and physiology occur in the female body during pregnancy. Physical activity in pregnancy affects the better adaptation of woman's body to the new situation, also influences the course of delivery and postpartum.

Objective. The aim of the study is presentation of the influence of physical activity on the proper course of pregnancy, delivery and postpartum period.

Brief description of the state of knowledge. Pregnancy is a special period in every woman's life. Waiting time for the delivery, however, requires preparation before conception and during pregnancy. Factors affecting the normal course of pregnancy, delivery and postpartum are [1–2]:

- planned pregnancy and its acceptance and joy of the birth;
- regular check-ups and taking necessary tests;
- physiotherapy and professional psychopathological preparation for delivery in accordance with the principles of psychoprophylaxis,
- giving up stimulants and other substances that might have a negative impact on the developing fetus;
- rational diet which ensures the optimal metabolic state of the body.

Summary. Physical activity during pregnancy is a significant factor which influences the health and well-being of women. Moreover, physical activity positively affects the functioning of individual body systems and improves its mental condition.

Key words

pregnancy, delivery, postpartum period, physical activity

INTRODUCTION AND OBJECTIVE

According to ACOG and Royal College of Obstetricians and Gynecologists recommendations all women should have the opportunity to be active during pregnancy and postpartum period. Properly selected exercises might improve woman's well-being, glucose levels and help maintain optimal body weight. If a woman was active before pregnancy she can continue this kind of lifestyle. The intensity of exercises should be adjusted to her condition[1].

Any actions taken by a pregnant woman to prepare her body for delivery are described as postpartum rehabilitation. These exercises focus on the work of individual muscle groups, as well as breathing exercises, familiarization with relaxation techniques or increasing the overall physical fitness of the body. The purpose of the rehabilitation is to teach pregnant woman to control the muscles that take an active part in the delivery and relax uninvolved muscles. These activities also bring other positive effects, they ensure better efficiency of the body [2, 3].

Woman's physical activity should be always consulted by a gynecologist who should decide if patient could continue sport. Exercise during pregnancy should not be continued immediately if any of the following symptoms appear: spotting/ bleeding, risk of miscarriage or preterm delivery, placenta previa, cervical incompetence, oedema, proteinuria, hypertension and gestational diabetes mellitus, anemia, fetal hypotrophy, infections[1, 2].

The presented article describes the influence of physical activity on the proper course of pregnancy, delivery and postpartum period.

Influence of physical activity on the course of pregnancy.

There are no physiological contraindications to being physically active during pregnancy. The correctness of this opinion is well reflected by the fact that the pregnant woman's exercise capacity of is similar to that presented by non-pregnant woman. It was noted that this capacity increases between 25–32 week of pregnancy. This is due to adaptive changes in the cardiovascular and respiratory systems [2, 3].

A woman's lifestyle and physical activity before and during pregnancy have many positive consequences. A few hours of movement per week greatly reduces the risk of diseases that often affect society, such as diabetes, obesity, hypertension, coronary heart disease or various mental disorders, such

Address for correspondence: Grażyna Jolanta Iwanowicz-Palus, Medical University on Lublin, Faculty of Health Sciences, Staszica 4-6, 20-081 LUBLIN, Poland
E-mail: spupalus@gmail.com

Received: 2018-08-17; Accepted: 2018-08-27

as: neurosis, depression. These diseases might be the cause of serious pregnancy or perinatal complications. Moreover, exercises during which the diaphragmatic breathing is used improve the efficiency of the respiratory system and circulatory system, the result is better oxygenated blood [4].

In the respiratory system of a pregnant woman, these changes are observed:

- increasing the number of breaths and elongation of apnea
- increase in vital capacity and inspiratory capacity
- increase in tidal volume
- increased minute ventilation and follicular ventilation [4].

All these changes positively affect the gas exchange conditions and also limit the respiratory discomfort that occurs in pregnancy. The role of these changes in the tolerance of physical exertion during childbirth is also significant [5, 6].

As a result of the exercises the rate of metabolic and digestive processes that occur in the body increases which prevents excessive weight gain. Moreover the level of lactic acid is also reduced. The physiological values of weight gain during pregnancy vary considerably. These discrepancies are related to physical activity, but also result from, among others, how much weight the woman weighed before pregnancy, what was the BMI etc. Regardless of the amount of extra kilograms, they do not affect the musculoskeletal system. The body posture of women in the 1st and 3rd trimester of pregnancy is changed. An increase in the angle of the pelvic anteversion and the deepening of the physiological lumbar lordosis observed. Studies were carried out to demonstrate the effect of isometric exercises in pregnancy on lumbar lordosis. The results clearly indicated that values of lumbar lordosis in women performing isometric exercises were significantly lower than in the control group as early as in the 6th week of the puerperium. Other studies were designed to compare the position of the pelvis, thorax, head and natural curvatures of the spine in relation to each other depending on the activity of the pregnant woman. It has been proven that the lifestyle of a pregnant woman, as well as the amount of physical activity, might affect the postural response of the body, which might reduce pain in pregnancy and labour [7–9].

Back pain is very common problem among more than half of the pregnant women. The period in which most of women experience the problem is the third trimester. As studies show some patients feel the pain for few months, and even years after delivery. There is no effective position to prevent the occurrence of pain. The pain might be intensive during sitting, walking and light work. Most of the patients claim that the pain often leads to limitations in performing daily activities. The risk of back pain in pregnancy is lower if the woman was physically active before conception. Moreover gymnastic exercises might hasten the recovery of pain in the spine [10–13].

Women who are physically active during pregnancy does not complain on varicose veins, haemorrhoids, backache, swelling, calf cramps, nausea, and headaches. It was observed that these women does not have stretch marks on the skin, although the main determinant of the problem is genetic predisposition [14, 15].

It is commonly known that exercises have positive influence on mental state. Among women who were active during pregnancy the lower level of anxiety, stress and less frequent mood declines are observed in comparison to these preferred sedentary lifestyle [16, 17].

Studies carried out in recent years allow to conclude that the practice of physical activity by pregnant women reduces the incidence of pathologies such as preterm delivery, pre-eclampsia and eclampsia. Moreover, women who are active rarely give birth prematurely. It is commonly known that the fear of preterm delivery is the main reason why women give up physical activity in pregnancy. According to many studies, physical activity positively affects the duration of pregnancy [18, 19].

Influence of physical activity on the course of delivery.

Many studies have been conducted to check the impact of physical activity on the course of delivery. Studies on the method of termination of pregnancy showed that active pregnant women were more likely to have a vaginal delivery. Among women who had sedentary lifestyle Caesarean section was more popular. Moreover in many cases these women gave up trying to give birth naturally, for fear of excessive physical exertion. It was observed that motor activity in pregnancy affects the spontaneous onset of uterine contraction [20, 21].

The influence of physical activity on pain tolerance during delivery has been fully studied. Women who were active during pregnancy, at birth do not have as much demand for opioids as women who were not physically active. The maternal blood tests show lower values of beta-endorphin levels in exercising women, hence a better tolerance of pain by this group. These pregnant women are strongly convinced that they could control themselves. This translates into a more active attitude. The woman co-works with medical staff, but she does not expect to take any action towards her, including those aimed at speeding up the delivery or pain relief. Women who are physically inactive reveal a stronger sense of external pain control, depending on factors beyond their control or the result of coincidence [22, 23].

Women who are physically active have very often a low pain threshold, which means that they are less likely to require anesthesia during delivery. It is noticed that epidural anesthesia is performed four times more often at the pregnant woman's request in physically inactive women. Women practicing physical activity declared lower levels of stress and anxiety in relation to childbirth and also felt less physical effort related to childbirth, which allowed them to regain physical fitness and mental balance in childbirth more quickly [5, 24, 25].

There is no unambiguous opinion about the influence of physical activity on the condition of the pelvic floor muscles. One studies showed that the frequency of birth canal injuries during labor was similar as in the control group. The number of perineum notches also did not correlate with the performance or abandonment of activities. However, there are many studies that clearly indicate a lower rate of perineal trauma and a lower incidence of perineum during delivery in physically pregnant women [5, 13, 26].

It is commonly known that the duration of labor is shorter in physically active women. Most likely, the cervix is characterized by a shorter set-back time, women feel less painfulness of the contractions and relatively less blood loss is observed in the second and third stages of delivery. The shorter duration of labor positively affects both the woman and the fetus and newborn. Statistical analysis clearly shows that newborns of women who are physically active during pregnancy receive a higher grade on the Apgar scale [5, 27].

The impact of physical activity on the postpartum period.

The postpartum period is a special period in a woman's life, characterized by the vastness of changes aimed at restoring the state from before pregnancy. The sheer number of these changes and numerous risk factors mentioned by scientists predispose to a variety of emotional disorders after childbirth [16, 28, 32].

Postpartum depression and postnatal depression are the most common psychiatric complication. It is estimated that even 30 to 75% of mothers display symptoms of depression. The highest severity of symptoms is observed between 3 and 5 days after the birth of the child. Postpartum depression affects a woman in later weeks of postpartum. The disease could affect 10–20% of mothers. To prevent the occurrence of the above disorders, childbirth classes comprise a holistic care of a pregnant woman together with her partner. In every type of facility, the emphasis is on physical exercise. There is a mechanism explaining the influence of exercise on depression, which works especially during pregnancy and postpartum. It is based on several psychological theories, including the theory of "self-confidence". The authors of the theory claim that if a person believes in his/her own abilities, the body is automatically encouraged to take on the challenge of doing physical exercise. The challenge motivates us to continue solving problems, and at the same time increases self-esteem and improves mood, thanks to it a smaller percentage of patients manifesting clinical symptoms of postpartum depression is observed [16, 17, 28, 29].

Numerous scientific studies report that physical activity affects the rate of regression of pregnancy changes in the postpartum period [9, 18].

The effects of these changes in the circulatory system are influenced, among others, by the delivery route and the type of anesthesia used during delivery. The changes in cardiovascular hemodynamics carry an increased risk of circulatory problems in patients who are suffering from cardiac defects or diseases, hypertension, and vessel abnormalities. It should be emphasized that healthy patients are not completely safe in the first days of postpartum. It has been noticed that physically active pregnant women have better cardiovascular parameters, and therefore the most common changes are without complications [15, 18, 32].

During the postpartum period, uterus changes the most. Immediately after childbirth, it weighs 1 kg and after 6 weeks approximately 100 grams. The reduction of the size is favored by constant contractions and closing of the lumen of the blood vessels, which are open after the delivery of placenta. The process of the endometrium and placenta renewal is more efficient and faster in patients who are physically active. In addition, they have less blood loss, which affects the health and wellbeing [30].

In the postpartum period there is an increased risk of venous thrombosis, stress urinary incontinence, dehiscence of linea alba, decreased abdominal muscle tone, which affects the lowering of abdominal and pelvic organs. Properly chosen exercises protect against these complications, and in the case of symptoms they might be a part of the treatment. Physical activity reduces the probability of problems with the proper functioning of the digestive system, positively affects the alternation of matter, thus allowing the loss of excess kilograms accumulated during pregnancy [30, 31, 32].

SUMMARY

Physical activity during pregnancy is a significant factor conditioning the health and well-being of women. Physical activity positively affects the functioning of individual body systems and improves its mental condition. Increasing the physical capacity is necessary for the natural birth. Physical activity reduces its duration and the time of regeneration of the body, faster return to pre-pregnancy form are the most important benefits of regular exercising during pregnancy and postpartum period.

REFERENCES

1. The American College of Obstetricians and Gynecologists. Physical activity and exercise during pregnancy and the postpartum period. Committee Opinion No. 650. *Obstet Gynecol.* 2015; 126: 135–42.
2. Curyło M, Forczek W, Forczek B. Subiektywne metody oceny aktywności fizycznej kobiet w ciąży. *Rehabil Med.* 2014; 18(3): 25–30.
3. Torbe D, Torbe A, Ćwiek D. Aktywność fizyczna u kobiet w ciąży o fizjologicznym przebiegu. *Now Med.* 2013; (4): 174–179.
4. Gałązka I, Kotlarz B, Płóciennik A. Aktywność fizyczna kobiet w ciąży – czynniki wpływające na podejmowanie lub ograniczenie wysiłku fizycznego. *Zdrowie Dobrostan* 2013; (2): 37–55.
5. Stadnicka G, Łepecka-Klusek C, Pawłowska-Muc A. Wpływ aktywności fizycznej w okresie ciąży na przebieg porodu. *J Educ Health Sport* 2015; 5(9): 505–514.
6. Urtnowska K, Bułatowicz I, Ludwikowski G, Żukow W. Bezpieczne formy aktywności fizycznej dla kobiet w ciąży. *J Educ Health Sport* 2016; 6(5): 291–297.
7. Opala-Berdzik A, Bacik B, Kurkowska M. Zmiany biomechaniczne u kobiet w ciąży. *Fizjoterapia* 2009; 17(3): 51–55.
8. Kempiak J. Zmiany ustrojowe w przebiegu ciąży. In: Bręborowicz G (red.). *Położnictwo i ginekologia.* Warszawa: PZWL; 2013. p. 41–51.
9. Michalski T. Miejsce aktywności fizycznej wśród czynników wpływających na zdrowie. *Rocznik Naukowy AWFis w Gdańsku* 2014; 26: 5–10.
10. Gutke A, Boissonnault J, Brook G. The Severity and Impact of Pelvic Girdle Pain and Low-Back Pain in Pregnancy: A Multinational Study. *J Womens Health* 2018, 27(4): 1–8.
11. Chang H, Yang Y, Jensen M. The experience of and coping with lumbopelvic pain among pregnant women in Taiwan. *Pain Med.* 2011; 12: 846–853.
12. Gutke A, Ostgaard HC, Oberg B. Pelvic girdle pain and lumbar pain in pregnancy: A cohort study of the consequences in terms of health and functioning. *Spine* 2006; 31: E149–E155.
13. Bjelland EK, Eskild A, Johansen R. Pelvic girdle pain in pregnancy: The impact of parity. *Am J Obstet Gynecol* 2010; 203(146): 1–6.
14. Białek A, Ćwiek D, Prociak J, Fryc D. Przygotowanie do porodu. In: Ćwiek D (red.). *Szkoła Rodzenia.* Warszawa: PZWL; 2010. p. 83–120.
15. Karowicz-Bilińska A, Sikora A, Estemberg D. Fizjoterapia w położnictwie. *Ginekol Pol.* 2010; 81(6): 441–445.
16. Kowalska J, Olszowa D, Markowska D. Aktywność fizyczna i szkoła rodzenia w czasie ciąży a poziom postrzeganego stresu i objawów depresyjnych u kobiet po porodzie. *Psychiatr Pol.* 2014; 48(5): 889–900.
17. Chitryniwicz-Rostek J, Kulis A, Kreska-Korus A. Wpływ aktywności fizycznej na stan psychofizyczny kobiet w ciąży. *Med Rehab.* 2015; 19(1): 9–14.
18. Lewis B, Avery M, Jennings E. The effect of exercise during pregnancy on maternal outcomes: practical implications for practice. *Am J Lifestyle Med.* 2008; 2:441–455.
19. Evenson K, Bradley C. Beliefs about exercise and physical activity among pregnant women. *Patient Educ Couns.* 2010; 79: 124–129.
20. Prieto A, Olmedo-Requena R, Martinez-Ruiz V. Relationship between Pregnancy Body Mass Index, Physical Activity and Sedentary Lifestyles before and during pregnancy. *J Preg Child Health* 2015; 2(6): 1–7.
21. Reid H, Smith R, Calderwood C. Physical activity and pregnancy: time for guidance in the UK. *J Sports Med.* 2017; 51: 1511–1512.
22. Szumilewicz A, Wojtyła A, Zarębska A, Drobnik-Kozakiewicz I, Sawczyn M, Kwitniewska A. Influence of prenatal physical activity on the course of labour and delivery according to the new Polish standard for perinatal care. *Annals of Agricultural and Environmental Medicine.* 2013; 20(2): 380–389.

23. Jersey S, Nicholson J, Callaway L, Daniels L. An observational study of nutrition and physical activity behaviours, knowledge, and advice in pregnancy. *BMC Pregnancy Childbirth*. 2013; 13: 115.
24. Dudziak D, Guskowska M. Poczucie kontroli nad bólem porodowym u kobiet aktywnych i nieaktywnych ruchowo w czasie ciąży. *Post Rehab*. 2013; 1: 23–29.
25. Boguszewski D, Sałata D, Adamczyk J, Białoszewski D. Ocena skuteczności ćwiczeń relaksacyjnych i stabilizacyjnych w minimalizacji bólu lędźwiowo-krzyżowego odcinka kręgosłupa u kobiet ciężarnych. *Prz Med Univ Rzesz Inst Leków*. 2014; 12(2): 152–161.
26. Jóźwik M, Jóźwik M, Adamkiewicz M, Szymanowski P, Jóźwik M. An updated overview on the anatomy and function of the female pelvic floor, with emphasis on the effect of vaginal delivery. *Dev Period Med*. 2013, 17(1): 18–30.
27. Wójtowicz K, Krekora M, Krekora K, Biesiada L. Wpływ aktywności fizycznej ciężarnych na przebieg porodu. *Kwart Ortop*. 2011; 2: 188–196.
28. Moss S, van Oort A, Schutz Y. Physical Activity and Pregnancy. In: Vaamonde D, du Plessis S, Agarwal A (eds). *Exercise and Human Reproduction*. Springer, 2016. p. 253–285.
29. Teychenne M, York R. Physical activity, sedentary behavior, and postnatal depressive symptoms: a review. *Am J Prev Med*. 2013; 45(2): 217–227.
30. Torbe D, Stolarek A, Lubkowska A, Torbe A. Physical activity recommended in the early postpartum period. *Pomeranian J Life Sci*. 2016; 62(3): 53–56.
31. Mottola M. Exercise in the postpartum period: practical applications. *Curr Sports Med Rep*. 2002; 1(6): 362–8.
32. Iwanowicz-Palus G, Krysa J, Kipa M, Dziaduszek K, Żółkiewska B. Physical activity in the perinatal period. *J Educ Health Sport*. 2017; 7(8): 1272–1289.

Wpływ aktywności fizycznej na prawidłowy przebieg ciąży, porodu i połogu

Streszczenie

Wprowadzenie. Systematyczne uprawianie sportu przed zająciem w ciążę stanowi jeden z głównych czynników warunkujących aktywne podejście do tego wyjątkowego stanu. Nawyk podejmowania aktywności fizycznej ma bardzo korzystny wpływ na organizm kobiety ciężarnej, stanowi kluczowy czynnik wpływający na zdrowie i samopoczucie matki. W okresie ciąży w organizmie kobiety dochodzi do wielu zmian adaptacyjnych w zakresie anatomii i fizjologii. Podejmowanie aktywności fizycznej przez kobiety ciężarne wpływa na lepszą adaptację ciała do nowej sytuacji.

Cel pracy. Celem pracy było przedstawienie wpływu aktywności fizycznej na prawidłowy przebieg ciąży, porodu i połogu.

Skrócony opis stanu wiedzy. Ciąża jest szczególnym momentem w życiu każdej kobiety. Czas oczekiwania na urodzenie dziecka wymaga jednak przygotowania zarówno przed poczęciem, jak i podczas ciąży. Do czynników wpływających na prawidłowy przebieg ciąży, porodu i połogu zalicza się [1–2]: planowane poczęcia oraz jego akceptację i radość z powodu pojawienia się potomstwa; regularne wizyty kontrolne u osoby prowadzącej ciążę oraz wykonywanie niezbędnych badań; kinezystymulację oraz fachowe przygotowanie psychiczne do porodu, zgodnie z zasadami psychoprofilaktyki, rezygnację z używek i innych środków mogących mieć negatywny wpływ na rozwijający się płód; stosowanie racjonalnej diety zapewniającej optymalny stan metaboliczny organizmu.

Podsumowanie. Aktywność fizyczna podczas ciąży jest istotnym czynnikiem wpływającym na zdrowie i dobre samopoczucie kobiety. Wpływa ona pozytywnie na funkcjonowanie poszczególnych układów i poprawia kondycję psychiczną przyszłej matki.

Słowa kluczowe

ciąża, poród, połów, aktywność fizyczna