

OBSTETRIC REHABILITATION

Chapter 1

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Pregnancy

Pregnancy is the most sensitive and enjoyable part of women's life⁽¹⁾ and is a normal process in the woman's life cycle. Physiological changes during pregnancy affect the biochemistry and anatomy of organs, systems. Pregnancy is the ideal time to adopt a healthy lifestyle due to increased motivation and frequent access to medical control. According to the American College of Obstetrics and Gynecology (ACOG), pregnant women with no complications should be encouraged for aerobic and strengthening exercises⁽²⁾. There is evidence that exercise during pregnancy is beneficial for both mother and fetus health⁽³⁾. Although the benefits of exercise are known, most pregnant women adopt a sedentary life and inactivity throughout their pregnancy, with the concern that the baby will suffer harm⁽⁴⁾. According to ACOG, sedentary life poses a great health risk for pregnant women⁽²⁾. In the first trimester of pregnancy, a rapid transformation of the hormonal system begins (an increase in the number of estrogen and progesterone receptors)⁽⁵⁾. Estradiol and progesterone, serotonin, dopamine and norepinephrine affect the neurotransmitter system and cause emotional disorders⁽⁶⁾. In addition, women are afraid of miscarriage⁽⁷⁾. In the second trimester, emotions are usually balanced. A renewed increase in anxiety and uncertainty occurs due to impending birth in the last quarter of pregnancy. Women's physical self-esteem is reduced due to changes in appearance, which in turn triggers the development of depression⁽⁶⁾. It is known that depression reduces the quality of life of pregnant women and significantly reduces their ability to provide appropriate care for their newborn babies⁽⁸⁾. Depression during pregnancy can lead to psychological problems in early childhood, poor academic performance, and impaired social functioning⁽⁹⁾. Furthermore, according to WHO data, depression during pregnancy

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Referances

1. Sieber S, Germann N, Barbir A, et al. Emotional well-being and predictors of birth anxiety, self-efficacy, and psychosocial adaptation in healthy pregnant women. *Acta obstetricia et gynecologica Scandinavica*. 2006; 85(10), 1200-1207.
2. American College for Obstetricians and Gynecologists. ACOG Committee Opinion No. 650: physical activity and exercise during pregnancy and the postpartum period. *Obstet Gynecol*. 2015; 126(6):e135-e142. doi:10.1097/AOG.0000000000001214.
3. Tinloy J, Chuang CH, Zhu J, et al. Exercise during pregnancy and risk of late preterm birth, cesarean delivery, and hospitalizations. *Womens Health Issues*. 2014;24(01):e99–e104 Doi: 10.1016/j.whi.2013.11.003
4. Szumilewicz A, Wojtyła A, Zarębska A, et al. Influence of prenatal physical activity on the course of labour and delivery according to the new Polish standard for perinatal care. *Ann Agric Environ Med*. 2013;20(02): 380–389.
5. Fraś M, Gniadek A, Poznańska-Skrzypiec J, Kadłubowska, M. Styl życia kobiet w ciąży. *Hygeia Public Health* 2012, 47, 412–417.
6. Poudeving MS, O'Connor PJ. A review of physical activity patterns in pregnant women and their relationship to psychological health. *Sports Med*. 2006; 36, 19–38.
7. Gong X, Hao J, Tao F, et al. Pregnancy loss and anxiety and depression during subsequent pregnancies: Data from the C-ABC study. *Eur. J. Obstet. Gynecol. Reprod. Biol*. 2013; 166, 30–36. [CrossRef] [PubMed]
8. Born L, Zinga D, Phillips SD. Update on the treatment of depression during pregnancy. *Therapy* 2006; 3, 153–161. [CrossRef]
9. Eastwood J, Ogbo FA, Hendry A, et al. The Impact of Antenatal Depression on Perinatal Outcomes in Australian Women. *PLoS ONE* 2017; 12, e0169907. [CrossRef] [PubMed]
10. Stewart DE, Robertson E, Phil M, et al. Postpartum Depression: Literature Review of Risk Factors and Interventions; University Health Network Women's Health Program; Toronto Public Health: Toronto, Canada, 2003.
11. Kossakowska K. Kwestionariusz rozpoznawania objawów depresji poporodowej—Polska adaptacja i psychometryczna ocena kwestionariusza Postpartum Depression Screening Scale (PDSS). *Post Psychiatr. Neurol*. 2012; 21, 123–129.
12. Kloos AL, Dubin-Rhodin A, Cantor Sackett J, et al. Wpływ zaburzeń nastroju i ich leczenia na ciążę, płód i dziecko. *Curr. Psychiatry Rep*. 2010; 12, 96–103. [CrossRef] [PubMed]
13. Coll CVN, Domingues MR, Goncalves H, et al. Perceived barriers to leisure-time physical activity during pregnancy: a literature review of quantitative and qualitative evidence. *J Sci Med Sport*. 2017;20(1):17-25. doi:10.1016/j.jsams.2016.06.007.
14. Gustafsson MK, Stafne SN, Romundstad PR, et al. The effects of an exercise programme during pregnancy on health-related quality of life in pregnant women: A Norwegian randomised controlled trial. *BJOG*, 2016; 123, 1152–1160. [CrossRef] [PubMed]

15. World Health Organization. Physical Activity. Available online: <https://www.who.int/dietphysicalactivity/pa/en/> (accessed on 9 March 2019)
16. Bullock-Saxton JE. Changes in posture associated with pregnancy and the early post-natal period measured in standing. *Physiotherapy theory and practice*. 1991; 7: 103-19.
17. Maly BJ. Rehabilitation principles in the care of gynecologic and obstetric patients. *Arch Physical Medicine Rehabilations*. 1980; 61: 78-81.
18. Arıkan Beyaz E, Özcan E. Gebelikte Görülen Kas-İskelet Sistemi Kaynaklı Ağrılar ve Tedavi Yaklaşımları. *Türk Fiz Tıp Rehab Derg*. 2005; 51(2):65-68.
19. Nascimento SL, Surita FG, Cecatti JG. Physical exercise during pregnancy: a systematic review. *Curr Opin Obstet Gynecol*. 2012;24:387-394.
20. Ramirez-Velez R, Aguilar de Plata AC, Escudero MM, et al. Influence of regular aerobic exercise on endothelium-dependent vasodilation and cardiorespiratory fitness in pregnant women. *J Obstet Gynecol Res*. 2011;37:1601-1608.
21. Muktabhant B, Lawrie TA, Lumbiganon P, et al. Diet or exercise, or both, for preventing excessive weight gain in pregnancy. *Cochrane Database Syst Rev*. 2015;6:CD007145.
22. Hegaard HK, Pedersen BK, Nielsen BB, et al. Leisure time physical activity during pregnancy and impact on gestational diabetes mellitus, pre-eclampsia, preterm delivery and birth weight: A review. *Acta Obstet Gyne Scan*. 2007;86:1290-1296.
23. Liddle SD, Pennick V. Interventions for preventing and treating low-back and pelvic pain during pregnancy. *Cochrane Database Syst Rev*. 2015;9:CD001139.
24. Kluge J, Hall D, Louw Q, et al. Specific exercises to treat pregnancy-related low back pain in a South African population. *Int J Gynaecol Obstet*. 2011;113:187-191.
25. Youngstedt SD. Effects of exercise on sleep. *Clin Sports Med*. 2005;24:355-365.
26. Da Costa D, Rippen N, Dritsa M, et al. A self-reported leisure-time physical activity during pregnancy and relationship to psychological well-being. *J Psychosom Obstet Gynaecol*. 2003;24:111-119.
27. Robledo-Colonia AF, Sandoval-Restrepo N, Mosquera-Valderrama YF, et al. Aerobic exercise training during pregnancy reduces depressive symptoms in nulliparous women: a randomised trial. *J Physiother*. 2012;58:9-15.
28. Barakat R, Pelaez M, Montejo R, et al. Exercise during pregnancy improves maternal health perception: a randomised controlled trial. *Am J Obstet Gynecol*. 2011;204:402.e401-407.
29. Marquez-Sterling S, Perry AC, Kaplan TA, et al. Physical and psychological changes with vigorous exercise in sedentary primigravidae. *Med Sci Sport Exerc*. 2000;32:58-62.
30. Da Silva SG, Hallal PC, Domingues MR, et al. A randomized controlled trial of exercise during pregnancy on maternal and neonatal outcomes: results from the PAMELA study. *International Journal of Behavioral Nutrition and Physical Activity*. 2017; 14(1): Article 175 DOI 10.1186/s12966-017-0632-6.
31. Genest DS, Falcao S, Gutkowska J, et al. Impact of exercise training on preeclampsia: potential preventive mechanisms. *Hypertension*. 2012; 60(5):1104-1109 DOI 10.1161/HypertensionAHA.112.194050

32. Artal R. Exercise: The alternative therapeutic intervention for gestational diabetes. *Clin Obstet Gynecol.* 2003;46:479–487.
33. Harrison AL, Shields N, Taylor NE, et al. Exercise improves glycaemic control in women diagnosed with gestational diabetes mellitus: a systematic review. *J Physiother.* 2016;62:188–196.
34. Gjestland K, Bo K, Owe KM, et al. Do pregnant women follow exercise guidelines? Prevalence data among 3482 women, and prediction of low-back pain, pelvic girdle pain and depression. *Br J Sports Med.* 2013;47(8):515-520. doi:10.1136/bjsports-2012-091344.
35. Evenson KR, Wen F. Prevalence and correlates of objectively measured physical activity and sedentary behavior among US pregnant women. *Prev Med (Baltim).* 2011;53(1-2):39-43. doi: 10.1016/j.ypmed.2011.04.014.
36. Harrison CL, Brown WJ, Hayman M, et al. The role of physical activity in preconception, pregnancy and postpartum health. *Semin Reprod Med.* 2016;34(2):e28-e37. doi:10.1055/s-0036-1583530.
37. Coll CVN, da Silveira MF, Bassani DG, et al. Antenatal depressive symptoms among pregnant women: Evidence from Southern Brazilian population-based cohort study. *J. Affect. Disord.* 2017; 209, 140–146. [CrossRef] [PubMed]
38. Piper TJ, Jacobs E, Haiduke M, et al. Core training exercise selection during pregnancy. *Strength Cond J.* 2012;34(1):55-62.
39. Schrock P. Exercise and physical activity during pregnancy. *Glob Libr Women's Med.* 2008;DOI 10.3843/GLOWM.19908.(update due to2014;cited 2014 May 15).
40. Davies GAL, Wolfe LA, Mottola MF, et al. Joint SOGC/CSEP clinical practise guideline: Exercise in pregnancy and the postpartum period. *Can J Appl Physiol.* 2003; 28(3):329-41.
41. American College of Sport Medicine. Exercise prescription ronmental considerations. In: Pescatello LS, ArenaR, Riebe D, Thompson PD, editors. *ACSM's Guidelines for ExerciseTesting and Prescription.* 9 th ed. China: Wolters Kluwer; 194-200, 2013.
42. Whaley DE. Seeing isn't always believing: self-perceptions and physical activity behaviors in adults. In: Weiss MR, ed. *Developmental Sport and Exercise Psychology: A Lifespan Perspective.*Morgantown, WV: Fitness Information Technology; 2004: 289-311.
43. Castillo-Obeso M. *Disfruta de tu embarazo en el agua: actividades acuáticas para la mujer gestante.* Barcelona: Inde. 2002.
44. King M, Green Y. (2002) *Pilates Workbook for Pregnancy: Illustrated Step-by-Step Matwork Techniques* Paperback. Berkeley, CA: Ulysses Press .
45. Narendran S, Nagarathna R, Narendran V, et al. Efficacy of yoga on pregnancy outcome. *J Altern Complement Med.* 2005;11(2):237-44.
46. Field T, Diego M, Delgado J, et al. Yoga and social support reduce prenatal depression, anxiety and cortisol. *J Bodyw Mov Ther.* 2013;17(4):397-403. doi:10.1016/j.jbmt.2013.03.010 [doi].

47. Kinser P, Masho S. "Yoga was my saving grace": the experience of women who practice prenatal yoga. *J Am Psychiatr Nurses Assoc.* 2015;21(5). doi:10.1177/1078390315610554.
48. Babbar S, Porter BW, Williams KB. The impact of prenatal yoga on exercise attitudes and behavior: teachable moments from a randomized controlled trial. *Int J Yoga Therap.* 2017; 27(1):37-48.
49. Goodrich K, Cregger M, Wilcox S, et al. A qualitative study of factors affecting pregnancy weight gain in African American women. *Matern Child Health J.* 2013;17(3):432-440. doi:10.1007/s10995-012-1011-1 [doi].
50. Kinser P, Williams C. Prenatal yoga. Guidance for providers and patients. *Adv Nurse Pract.* 2008;16(5):59.
51. Field T. (2012). Prenatal exercise research. *Infant Behav Dev.* 35:397-402.