STRADA Jurnal Ilmiah Kesehatan
DOI: 10.30994/sjik.v9i2.525
ISSN: 2252-3847 (print); 2614-350X (online) Vol.9 No.2 November 2020 Page.1718-1723

Core Stability Exercise For Low Back Pain: A Literature Review

Entan Afriannisyah[1]*, Lucky Herawati[2], Melyana Nurul Widyawati[1]
[1]*Poltekkes Kemenkes Semarang, Semarang, Indonesia*
[2]*Poltekkes Kemenkes Yogyakarta, Yogyakarta, Indonesia*
* *afriannissyah@gmail.com*

ABSTRACT
Back pain is a major health problem in the world. This back pain is experienced by athletes, pregnant women of late trimester pregnancy and postpartum mothers. So far, back pain can be treated using chemical drugs which have side effects on the body. Physical activity is an alternative option to help with back pain. Core stability exercise is a non-pharmacological method that can relieve back pain symptoms in sufferers. This literature review aims to analyze the benefits of core stability exercise in patients with low back pain. The research method used by the author is a literature review using databases through Pubmed, Science Direct, Ebsco, and Google Scholar from 2009 to 2019 This article discusses core stability exercises in people with low back pain. The results of the literature search show that core stability exercise can reduce low back pain and improve quality of life.

Keywords: Core Stability Exercise, Low Back Pain, Athlete, Pregnancy, Postpartum

Received November 1, 2020; Revised November 15, 2020; Accepted November 21, 2020

STRADA Jurnal Ilmiah Kesehatan
DOI: 10.30994/sjik.v9i2.525
ISSN: 2252-3847 (print); 2614-350X (online) Vol.9 No.2 November 2020 Page.1718-1723

BACKGROUND

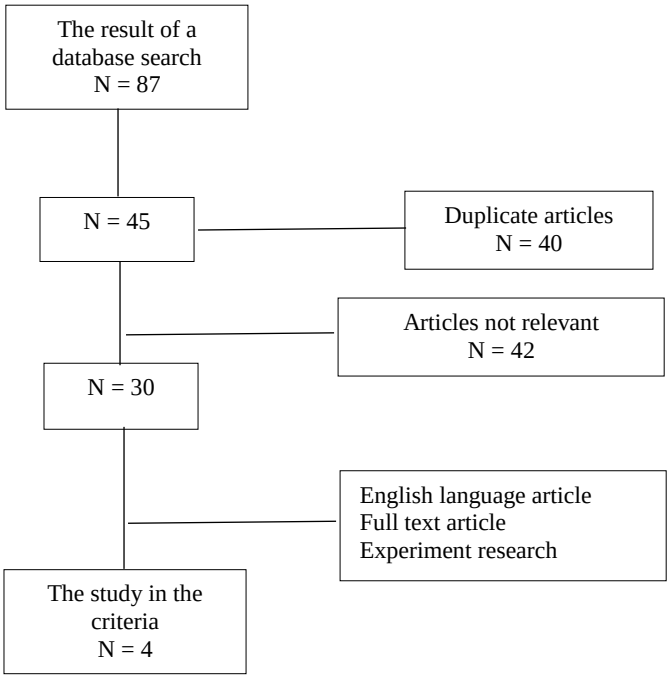
Lower back pain is included in the top 10 symptoms of disease every year in health care facilities in the world (1). Everyone can feel low back pain in some Low back pain sufferers, whether an athlete or worker with heavy physical activity, pregnant women and postpartum mothers. Core stability exercise is a sport that has been practiced by athletes to reduce low back pain.(2) Core stabilization exercises are an important component of low back pain rehabilitation. (3). Based on research back pain is caused by several factors such as pregnancy, obesity, and workload activities. The prevalence of low back pain in pregnancy is 57% in the world.(4). Pregnant women who experience lower back pain during pregnancy have a 2.47-fold risk of experiencing low back pain after delivery.(5). The prevalence of low back pain in mothers in the first year after giving birth is 21% to 82%.(6)To reduce back pain, it is not only enough to use pharmacological therapy that has been given so far, we need to pay attention in the long term that giving drugs has side effects that are not good for body health. Moreover, it is given to pregnant women and nursing mothers because it can also affect their children.(7)(8) This core stability exercise is a non-pharmacological method that is used to minimize side effects on the body and reduce low back pain in sufferers.

METHODS

The research method used by the author is literature review. The author uses several databases such as Pubmed, Science Direct, Ebsco, and Google Scholar. Keywords used include core stability exercise, lowback pain, pregnant, postpartum, athletes. The literature used is written in English and Indonesian, publication years starting from 2009-2019, Randomized Controlled Trial (RCT), studies that provide massage interventions, studies that report the incidence of low back pain.

RESULTS AND DISCUSSION

The results from the research database were 87 articles. A total of 45 articles have similarities or similarities to the title, 42 articles are irrelevant. After using inclusion and exclusion criteria, 4 articles were found to be suitable for this literature



STRADA Jurnal Ilmiah Kesehatan
DOI: 10.30994/sjik.v9i2.525
ISSN: 2252-3847 (print); 2614-350X (online) Vol.9 No.2 November 2020 Page.1718-1723

Table 1. Study Characteristics

Source	Title	Respondents	Exercise frequency	Duration	Result
Bagherian S. 2018	The Effect of Core Stability Training on Functional Movement Patterns in Collegiate Athletes (9)	100 respondents aged 18-22 years	3 times a week for 8 weeks	30-35 minutes	The results showed that eight weeks of core stability training was effective at improving functional and movement patterns dynamic posture control in college athletes p = 0.001
Naeem A, Khan DA. 2015	Effectiveness Of Core Stability Exercises In Management Of Gestational Back Pain In Second And Third Trimester(4)	60 respondents were pregnant in the 2nd and 3rd semester, aged 17-40 years	2 times a day, 4-5 per week for 1 month	10-15 minutes	The results showed that mothers who received exercise during pregnancy did not show an increase in back pain, disability and no side effects in the intervention group experienced a decrease in pain p = 0.003
There Chaudry, Farah Rashid. 2013	Effectiveness of core stabilization exercises along with postural correction in postpartum back pain.(10)	103 respondents aged 20-40 years	2 times a day (morning-evening) for 3 days	30 minutes	The results showed that the intervention group prevented injury and reduced chronic low back pain after delivery p = 0.000
Mohhamed Saleh. 2018	Effect of core stability exercises on postpartum	34 respondents aged 20-40 years	3 times a week for 6 weeks	25 minutes	Core stability exercises can reduce pain and disability in the

DOI: 10.30994/sjik.v9i2.525
ISSN: 2252-3847 (print); 2614-350X (online) Vol.9 No.2 November 2020 Page.1718-1723

	lumbopelvic pain(11)				intervention group p = 0.001
Riska Damayanti Sitompul. 2014	Provision of Core Stability Exercise Can Increase Lumbar Stability in Trimester III Pregnancy(12)	24 respondents	3 times a week for 3 weeks	30 minutes	Provision of core stability exercise can increase lumbar stability in the third trimester of pregnancy. in the intervention group p = 0.002.

a. Theoretical Concept

Low back pain is a very common health problem worldwide and a major cause of disability affecting workplace performance and general well-being. Low back pain can be acute, sub-acute, or chronic. Low back pain is relatively common causing negative impacts on the health of athletes, pregnant women and women after childbirth. In athletes pain occurs because musculoskeletal injury is an inherent risk of athletic participation.(9)This pain can be caused by several factors such as the angle of insertion of the pelvic and abdominal muscles which can be affected by these postural changes, thus affecting postural biomechanics. Obesity, multiparity, fetal macrosomia, flaccid abdominal muscles, polyhydramnios and multiple pregnancy are major predisposing factors.(13) The causes of gestational back pain during pregnancy include mechanical, postural, hormonal changes while a study found weakness of the abdominal muscles and pelvic muscles affects core stability but it is not clear why. (14) The cause of low back pain in postpartum mothers is due to the influence of abdominal muscle dysfunction, namely diastasis recti abdominis which reduces the integrity of the thoracholumbar fascia, postural tension in the musculoskeletal system due to prolonged labor, and improper breastfeeding position. (15)

Low back pain affects people of all ages, from children to the elderly, and is a very frequent reason for medical consultations to provide pain relief therapy.(16). *Core stability exercise* has a working principle, namely the core (Core) is described as a 'Box Core' which consists of 29 pairs of muscles consisting of a diaphragm as a roof, pelvic floor muscles as a base, abdominal muscles as the front side, Paraspinalis (Erector spinae) and gluteal as a back side, all help stabilize the spine, pelvis, and kinetic chains during functional movement. (2)

Core stability exercise is a sport that has been practiced by athletes to reduce low back pain.(3) Core stability exercise has also been studied regarding its effectiveness against back pain of pregnant women, effectively reducing back pain with p value 0.000 <α (14) *Core stability exercise* can increase muscle contraction, so that coordination of muscle activity increases and pain is reduced.(17)

b. Benefits of Core Satability Exercise

*Core stability exercise*originally practiced by athletes to improve performance, prevent injury, and reduce low back pain. Dysfunction in the muscles of the lower back will cause muscle spasm, resulting in pain.(2) Core stability exercise makes vasodilation, hence increased blood circulation. This results in an increase in the supply

DOI: 10.30994/sjik.v9i2.525
ISSN: 2252-3847 (print); 2614-350X (online) Vol.9 No.2 November 2020 Page.1718-1723

of nutrients and oxygen to the myofacial tissue which decreases muscle spasm or tension in the injured fascia, thereby decreasing pain.(18) But now core stability exercise is also often used for low back injury rehabilitation programs (2). Some of the other benefits of core stability exercise include: stabilizing the lower back (lumbar), core stability exercise causes an increase in intraabdominal pressure due to contraction of the diaphragm, pelvic floor muscles and abdominal muscles, thereby potentially increasing spinal stability, maximizing balance and mobility extremities and improve neuromuscular coordination.(19)

CONCLUSION

Back pain is an inconvenience felt by sufferers because it can hinder daily activities, so far pain can be relieved by using analgesic drugs. If used in the long term, nalgesic drugs can have side effects that are not good for the health of the body. To reduce low back pain and minimize the effects of pharmacological treatment, non-pharmacological methods such as core stability exercises are used, which can increase spinal stability and thus reduce low back pain.

REFERENCES

1. Manusov EG. Low Back Pain, An Issue of Primary Care Clinics in Office Practice. United State of America: Elsevier Inc; 2012.
2. Akuthota V, Ferreiro A, Moore T, Fredericson M. Core Stability Exercise Principles. Am Coll Sport Med [Internet]. 2008;7(1):39–44. Available from: https://doi.org/10.1097/01.CSMR.0000308663.13278.69
3. Wang X, Zheng J, Yu Z, Bi X, Lou S, Liu J, et al. A Meta Analysis of Core Stability Exercise versus General Exercise for Chronic Low Back Pain. Plose One [Internet]. 2012;7(12):1–7. Available from: https://doi.org/10.1371/journal.pone.0052082
4. Naeem A, Khan DA. Effectiveness of Core Stability Exercise in Management of Gestasional Back Pain in Second and Third Trimester. Ann Allied Heal Sci. 2015;1(1):5–9.
5. Bergstrom C, Persson M, Mogren I. Pregnancy Related Low Back Pain and Pelvic Girdle Pain Approximately 14 Months After Pregnancy. BMC Pregnancy Childbirth [Internet]. 2014;14(48):1–12. Available from: http://www.biomedcentral.com/1471-2393/14/48%0ARESEARCH
6. Bennett RJ. Exercise for postnatal low back pain and pelvic pain. J Assoc Chart Physiother Women's Heal [Internet]. 2014;115:14–21. Available from: https://pdfs.semanticscholar.org/30fe/2585f1503dde7315e8bf57c4e5dc29230c16.pdf
7. Bakkeheim E, Carlsen K., Carlsen LK. Paracetamol Exposure during Breastfeeding and Risk of Allergic Disease. Acta Paediatr Int J Paediatr [Internet]. 2011;100:2–3. Available from: https://doi.org/10.1111/j.1651-2227.2011.02261.x
8. Matheson I, Lunde P, Nottariani L. Infant Rash Caused by Paracetamol in Breastmilk? Pediatrics. 1985;76(2).
9. Sajad Bagherian, Khodayar Ghasempoor, Nader Rahnama EAW. The effect of core stability training on functional movement patterns in collegiate athletes. 2012;
10. S. C, F. RS, S.I. HS. Effectiveness of core stabilization exercises along with postural correction in postpartum back pain. Rawal Med J [Internet]. 2013;38(3):256–9. Available from: http://www.scopemed.org/fulltextpdf.php?mno=32651%5Cnhttp://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=emed11&NEWS=N&AN=2013516465

DOI: 10.30994/sjik.v9i2.525
ISSN: 2252-3847 (print); 2614-350X (online) Vol.9 No.2 November 2020 Page.1718-1723

11. Saleh MSM, Botla AMM, Elbehary NAM. Effect of core stability exercises on postpartum lumbopelvic pain: A randomized controlled trial. J Back Musculoskelet Rehabil. 2019;32(2):205–13.
12. Sitompul RD, Luh N, Andayani N, Indrayani AW. Pemberian Core Stability Exercise Dapat Meningkatkan Stabilitas Lumbal Pada Kehamilan Trisemester III. 2013;2. Available from: https://ojs.unud.ac.id/index.php/mifi/article/view/8441
13. Thabet AA, Alshehri MA. Efficacy of Deep Core Stability Exercise Program in Postpartum Women with Diastasis Recti Abdominis : A Randomised Controlled Trial. J Musculoskelet Neuronal Interact [Internet]. 2019;19(1):62–8. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6454249/
14. Naeem A, Khan DA. Effectiveness Of Core Stability Exercises In Management Of Gestational Back Pain In Second. 2015;1(1):5–9. Available from: http://aahs.kmu.edu.pk/index.php/aahs/article/view/33
15. Copot D, Ionescu C. Objective Pain Assessment : How Far Are We ? EC Anaesth J. 2018;1:11–4.
16. Allegri M, Montella S, Salici F, Valente A, Marchesini M, Compagnone C, et al. Mechanisms of low back pain: A guide for diagnosis and therapy [version 1; referees: 3 approved]. F1000Research [Internet]. 2016;5:1–11. Available from: https://doi.org/10.12688/F1000RESEARCH.8105.1
17. Khairunnisa A, Jannah R. Trunk Balance Exercise dan Strength Training Exercise Menurunkan Nyeri Punggung Bawah Pasca 12-18 Bulan Pasca Salin. J Ilmu dan Teknol Kesehat [Internet]. 2018;6(1):15–24. Available from: https://doi.org/10.32668/jitek.v6i1.76
18. Hastuti B santi, Wibawa A, Muliarta MI. Pemberian Core Stability Exercise Lebih Meningkatkan Keseimbangan Statis Daripada Balance Beam Exercise Pada Siswa Sekolah Dasar Negeri 11 Sumerta Denpasar. 2009;14:3–6. Available from: https://ojs.unud.ac.id/index.php/mifi/article/view/13115
19. Sitompul RD, Andayani NLN, Indrayani AW. Pemberian Core Stability Exercise dapat Meningkatkan Stabilitas Lumbal pada Kehamilan Trimester III. Maj Ilm Fisioter Indones. 2014;2(2).