The Efficacy of Stabilization Exercises for Chronic Low Back Pain: A Systematic Review

Dinda Nur Fajri Hidayati Bunga, Arum Rahmawati Virgin, Maulana Arif Murtadho, Maretta Sekar Dewi

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia
dindabungalolong@gmail.com

Keywords: Low Back Pain, Exercise, Stabilization Exercise, Chronic.

Abstract: Background: Non-specific low back pain (NSLBP) is described in a recent review of national guidelines as a diagnosis of exclusion, where pain caused by a suspected or confirmed serious pathology or presenting as a radicular syndrome have been ruled out. The treatment includes the correct body mechanics and ergonomics training, postural awareness training, strengthening exercise, trunk stabilization exercise, stretching exercise. This systematic review aimed to explain the effectiveness of stabilization exercise against a decline in the level of pain and disability in patients with chronic nonspecific low back pain. Methods: The methods used by searching articles database SCOPUS, capping the results journals that do is the year of publication of the journal are restricted to start 2011-2017. Assessment of Risk of Bias on this review using a special Chocerane for research in methods of Randomized Control Trial (RCT). Results: This therapy can implied in medical surgical nursing especially musculoskeletal disorder. Stabilization exercise can be used as an option therapy to reduce the pain in chronic low back pain but must be with expert supervision. Conclusions: The results of this review indicate that stabilization exercise have significant influence towards a decrease in the level of pain and decrease disability.

1 INTRODUCTION

Chronic low back pain is one of the most common and costly musculoskeletal pain syndromes, affecting up to 80% of people at some point during their lifetime (Kofotolis, Vlachopoulos, & Kellis, 2008). A majority of LBP resolves within 6 weeks, while others take about 12 weeks to resolve (Ahmed, Shaphe, Iqbal, Khan, & Anwer, 2016). Non-specific low back pain (NSLBP) is described in a recent review of national guidelines as a diagnosis of exclusion, where pain caused by a suspected or confirmed serious pathology or presenting as a radicular syndrome have been ruled out (Akhtar, Karimi, & Gilani, 2017). Lack of specific sources to explain the symptoms have raised challenge in the management of CNLBP. It seems that factors other than simple mechanical explanations contribute to patients’ symptoms. Therefore, treatment protocols addressing control and coordination of spinal muscles are thought to be effective in the management of CNLBP (Salavati et al., 2016).

There are varieties of treatment modalities available in the management of LBP. The treatment goals are to relieve pain, reduce muscle spasm, improve range of motion (ROM) and strength, correct postural problems, and ultimately improve functional status. The treatment includes the correct body mechanics and ergonomics training, postural awareness training, strengthening exercise, trunk stabilization exercise, stretching exercise (Ahmed et al., 2016).

The trunk muscles have an important role to maintain the spinal stability. Without the support of the trunk muscles, the spinal column is unable to carry normal physiological loads (Ahmed et al., 2016). Stabilization exercises involve coordination exercises and muscle independent activity (including transversus abdominis muscles) maintain a pain-free position and movement. This exercise is equipped with posture control, normal breathing patterns, and pelvic muscle exercises (Salamat et al., 2017).

Therefore the aim of this systematic review was to determine whether there are more recent interventions showing efficacy in treatment of low back pain for chronic low back pain.
2 METHODS

Literature Search Strategy

The strategy had seven components which were combined: (1) low back pain AND (2) exercise OR (3) stabilization exercise AND (4) chronic OR (5) nonspecific NOT (6) Pilates, NOT (7) Yoga. The specific focus of the search was any intervention (prevention or treatment) for chronic low back pain. All randomised controlled trials from phase one and two were assessed for eligibility using strict inclusion and exclusion criteria and were all critically appraised using the same risk of bias assessment.

Searching the Databases

Searching the databases yielded 2,385 potentially relevant studies. 1423 excluded based on title and 962 abstracts were scanned. 327 full-text studies were retrieved with 312 studies being excluded as they did not meet the eligibility criteria. Searching the reference lists of the included studies did not result in the inclusion of other studies. Reasons for exclusion included lack of appropriate randomization, including non-nursing subjects in the study population, Iranian language, and failing to measure appropriate outcome measures. Fifteen studies matched these inclusion criteria.

Searching the Database Inclusion and Exclusion Criteria

Inclusion and exclusion criteria

Study design

Only studies (from phase one and two) of completed randomized controlled trials published in peer-reviewed journals written in English was included.

Population: Studies including people with non-specific low back pain between 18 and 65 years of age were included. Participants needed to have a minimum of three month of low back pain causing pain and/or disability and/or seeking care and/or sick leave in the previous two years. Studies involving participants with specific pathologies/conditions (e.g. pregnancy, “red flag” disorders (e.g. spinal cord compression/cauda equina, spinal cord injury, cancer, fracture) or neurological, cardiac, renal or respiratory, rheumatological conditions) were excluded.

Interventions: Dynamic Muscular Stabilization Techniques (DMST), Segmental Stabilization Exercise (SE), Core Stability Exercise (CSE), Spinal Stabilization Exercise (SSE), Rhythmic Stabilization Exercises, Trunk Stabilization Exercises (TSE), Lumbar Stabilization Exercise, Novel Stabilization Technique can be used as one of the therapy modalities of chronic nonspecific low back pain patients to reduce the level of perceived pain.

3 RESULT

Characteristics of study: participants overall total of the entire study was 606 with a range of adults aged 18-60 years and had complaints of low back pain for more than three months and have no pathological condition. Interventions used in all research is a multicomponent intervention with an average duration of therapy 3 times a week for 8 weeks with an average follow-up 1 month to 8 months. Most use the same measuring instrument, namely: the Visual Analogue Scale and Oswestry Disability Index.

Clinical outcome measures: All studies reported a pain intensity outcome measure by Visual Analogue Scale (VAS) and Disability by Oswestry Disability Index (ODI) pre- and post-intervention.

Risk of bias assessment: Assessment of risk of bias in this review using Chocrane to research by the
method of only Randomized Control Trial (RCT). We only included articles with the highest value in the assessment of which is assumed as an article with a low risk of bias in the study. Points in Risk of Bias used include Random sequence generation, Allocation concealment, Blinding of participants and personnel, Assessing blinding by outcome, Incomplete outcome data, Selective reporting, Other source of bias. The data can be seen in the table appended at the end of this review.

**Effect post treatment:** Significant effects were found statistically from almost all articles of stabilization exercise show decreasing pain levels and disability indexes. There are some articles that do not show significant changes in statistical tests but succeed in decreasing the value of pain level.

**DISCUSSION**

**4 DISCUSSION**

In general articles that have been explored in systematic reviews on these positive outcomes that stabilization exercise effective for patients of chronic nonspecific low back pain, especially at the level of pain and disability although most articles mention the intervention of stabilization exercise that they do not stand alone, but combined with interveensi Additional and specific conditions. Research Lamba, Kandpal, Joshi, Koranga, & Chauhan, 2013 reported that there were significant improvements in exercise by using swissball. Similarly, Akhtar, Karimi, and Gilani, 2017 mentions Core stability exercises using swissball effective in the long-term management of low back chronic pain. Stabilization of the core more effectively reduce the pain of the regular physical exercise in patients with low back chronic pain.

**Stabilization exercise** is an exercise models used to improve the strength and position of the body stability. This exercise refers to the ability of the body to maintain the position and movement of the central body. Repair spine posture has the effect of increasing the body's resistance to change in motion or in static and dynamic loading. Such conditions can stimulate neurons beta-A, which will cover the defense mechanism, the message delivered will stimulate the mechanoreceptors or substance that can inhibit pain stimuli.

From the above literature review, the management of low back pain with physical exercise therapy is an effective treatment and very efficiently used as an alternative to reduce pain and disability low back pain of chronic patients.

Implications: The results of the literature review stabilization exercise of various studies could be implicated in medical-surgical nursing, especially nursing musculoskeletal. Therapy can be used to be a therapeutic option to reduce pain experienced by patients with low back pain chronic but should be under the supervision of experts.

**5 CONCLUSION**

Research indicates that stabilization exercise has a significant effect on the reduction of pain and decrease level of disability. Stabilization exercise in combination with a variable or other therapies that will provide a better impact. It may be worth exploring, with high quality randomised controlled trials, the efficacy of multidimensional interventions which are more specifically tailored to the needs of patient with chronic low back pain.
REFERENCE


Yoon, JS, Lee, JH, & Kim, JS (2013). The Swiss Ball Stabilization Effect of Exercise on Pain and Bone Mineral Density of Patients with Chronic Low Back Pain, 1-4.