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Prat-Luri A, de los Rios-Calonge J, Moreno-Navarro P, Manresa-Rocamora A, Vera-Garcia FJ, Barbado D. Effect of Trunk-Focused Exercises on Pain, Disability, Quality of Life, and Trunk Physical Fitness in Low Back Pain and How Potential Effect Modifiers Modulate Their Effects: A Systematic Review With Meta-analyses. *J Ortho & Sport Phys Ther.* 2023;53(2):64-93.
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Study Design: Systematic Review with Meta-analyses

Abstract:

OBJECTIVE: To analyze the effect of trunk focused exercise programs (TEPs) and moderator factors on chronic nonspecific low back pain (LBP).

DESIGN: Systematic review with meta-analyses.

LITERATURE SEARCH: We searched the PubMed, Scopus, Embase, SPORTDiscus, and CENTRAL databases from their inception to June 2022.

STUDY SELECTION CRITERIA: We included randomized controlled trials comparing TEPs to control or general exercises.

DATA SYNTHESIS: We used random-effects models to calculate the standardized mean difference (SMD) plus confidence interval (CI) and heterogeneity (*I*²) for pain, disability, quality of life, and trunk performance. The impact of moderator factors was analyzed through meta-regression.

RESULTS: Forty randomized controlled trials (*n* = 2391) were included. TEPs showed positive effects for all outcomes versus control (SMD 0.90–2.46; 95% CI, –0.04 to 4.96; *I*² 61%–98%). There were small effects in favor of TEPs versus general exercises for pain (SMD = 0.20; 95% CI, 0.03–0.37; *I*² = 13.4%) and disability (SMD = 0.20; 95% CI, 0.02–0.38; *I*² = 0%). Trunk and/or hip range-of-motion improvements were associated with greater reductions in pain ($P < .01$; $\beta = 0.56$; 95% CI, 0.25–0.87) and disability ($P < .01$; $\beta = 0.66$; 95% CI, 0.27–1.05). Low body mass was associated with higher pain reduction ($P = .03$; $\beta = -0.17$; 95% CI, –0.32 to –0.02).

CONCLUSIONS: Trunk-focused exercise programs had positive effects on pain, disability, quality of life, and trunk performance compared to control groups, and on pain and disability compared to general exercises. Increasing trunk and/or hip range of motion was associated with greater pain and disability reduction, and lower body mass with higher pain reduction.



Key Findings: Interventions focusing on the use of TEPs for patients with CNSLBP can provide significantly greater reductions in pain and disability when compared to no intervention, minimal intervention, or hands on/hands off interventions. This article also found that TEPs have the potential to promote a faster recovery, since over half of the trials analyzed showed improvements beyond the 30% threshold from baseline for pain and disability. With low certainty, the authors concluded that TEPs produced a large effect on trunk extension endurance, trunk strength, and trunk/hip ROM when compared to controls, all of which are variables that can predict the recurrence of future LBP. For those studies that analyzed the outcome measure of trunk/hip ROM, the participants who had larger gains in this area had greater reductions in pain and disability. The authors also found a significant association between BMI and pain in programs that used TEPs, suggesting that the addition of a weight loss intervention to TEPs would be beneficial. Lastly, this article was not able to appropriately analyze the moderator effects of training factors due to the studies analyzed having a lack of detailed descriptions on the exercise variables used.

Reviewer Summary: CNSLBP makes up a large percentage of patients that present to outpatient physical therapy clinics. As this article points out, CNSLBP is multifactorial in nature and there is often a strong psychosocial component to this population's pain presentation and prognosis. Due to this multifactorial nature, our approach to providing interventions for this population should also be multifaceted and realistic in our expectations, plan of care, and prognosis. This article provides good evidence for the use of one particular intervention that could be beneficial for improving pain, disability, and QoL for this population. However, there are multiple limitations to this study as it relates to their methodology and study selection. Within the 40 studies selected for final analysis, there was great variability amongst training characteristics, which limits the ability to determine the influence of TEPs training modulating factors on outcomes. Other limitations are the high risk of bias and low certainty of evidence for all outcomes within the studies selected, which limits what we can take away from this article for clinical application. Despite correlation between TEPs and improved pain, disability, and QoL, there is not a direct cause-effect relationship between these variables and the results should be interpreted with skepticism. Nevertheless, this article may provide some further insight into the use of a more specific exercise intervention to help address the multifactorial nature of CNSLBP. In my opinion, an individualized approach to the management of this population that includes a variety of interventions will be the most effective, but the use of trunk-focused exercises may aid in the process of helping this patient population break down the barrier of pain, reach goals, and live a higher quality life.