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Do dietary supplements have beneficial health effects in industrialized nations: what is the evidence?

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Author information

Abstract

BACKGROUND: Dietary supplements are regularly used by at least half of the American population, yet the health benefits of these agents are unclear.

OBJECTIVE: A systematic review to determine the benefits and risks of dietary supplements in Westernized societies.

DATA SOURCES: MEDLINE, Embase, Cochrane Register of Controlled Trials and citation review of relevant articles.

STUDY SELECTION: Randomized, placebo-controlled clinical trials in non-pregnant Westernized adults that evaluated clinical outcomes of nutritional supplements.

DATA EXTRACTION: Data were abstracted on study design, study size, study setting, patient population, dietary intervention and clinical outcomes. The outcome of each study was classified as non-beneficial, beneficial or harmful according to whether the end-point(s) of interest reached statistical significance.

DATA SYNTHESIS: Sixty-three studies met the criteria for our systematic review. No benefit was recorded in 45 studies, with 10 of these showing a trend towards harm and with two showing a trend towards benefit. Four studies reported harm with increased cancer deaths (n=2) and increased fractures (n=2). Two studies reported both a harmful as well as a beneficial outcome. A beneficial outcome was reported in 12 studies; 6 which studied vitamin D and three which investigated omega-3 fatty acids. While a benefit was reported in one study each which investigated Vitamin E, folic acid and Ginkgo biloba this benefit was not confirmed by larger and more adequately powered studies.

CONCLUSIONS: With the possible exceptions of Vitamin D and omega-3 fatty acids there is no data to support the widespread use of dietary supplements in Westernized populations; indeed, many of these supplements may be harmful.

Spine (Phila Pa 1976). 2006 Apr 20;31(9):E254-62.

The McKenzie method for low back pain: a systematic review of the literature with a meta-analysis approach.

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Abstract

STUDY DESIGN AND OBJECTIVES: Meta-analysis of randomized controlled trials to evaluate the effectiveness of the McKenzie method for low back pain (LBP).

SUMMARY OF BACKGROUND DATA: The McKenzie method is a popular classification-based treatment for LBP. The faulty equation of McKenzie to extension exercises (generic McKenzie) is common in randomized trials.

METHODS: MEDLINE, EMBASE, PEDro, and LILACS were searched up to August 2003. Two independent reviewers extracted the data and assessed methodologic quality. Pooled effects were calculated among homogeneous trials using the random effects model. A sensitivity analysis excluded trials reporting on generic McKenzie.

RESULTS: Eleven trials of mostly high quality were included. McKenzie reduced pain (weighted mean difference [WMD] on a 0- to 100-point scale, -4.16 points; 95% confidence interval, -7.12 to -1.20) and disability (WMD on a 0- to 100-point scale, -5.22 points; 95% confidence interval, -8.28 to -2.16) at 1 week follow-up when compared with passive therapy for acute LBP. When McKenzie was compared with advice to stay active, a reduction in disability favored advice (WMD on a 0- to 100-point scale, 3.85 points; 95% confidence interval, 0.30 to 7.39) at 12 weeks of follow-up. Heterogeneity prevented pooling of studies on chronic LBP as well as pooling of studies included in the sensitivity analysis.

CONCLUSIONS: There is some evidence that the McKenzie method is more effective than passive therapy for acute LBP; however, the magnitude of the difference suggests the absence of clinically worthwhile effects. There is limited evidence for the use of McKenzie method in chronic LBP. The effectiveness of classification-based McKenzie is yet to be established.

Original Article

Efficacy of prone lumbar traction on chronic discogenic low back pain and disability

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Objective: To compare the outcomes of prone and supine lumbar traction in patients with chronic discogenic low back pain.

Design: Prospective, randomized control trial.

Setting: Urban Physical Medicine and Rehabilitation clinic.

Participants: A total of 124 subjects with chronic low back pain (LBP) and evidence of a degenerative and/or herniated inter-vertebral disk at 1 or more levels of the lumbar spine, who have not our exclusion criteria.

Intervention: A 4-week course of lumbar traction, prone or supine in case and control groups consecutively, consisting of six 30-minute sessions every other days, followed by four 30-minute sessions every 3 days.

Main Outcome Measures: The numeric Visual pain rating scale and the Oswestry Disability Index (ODI) were completed at pre-intervention and discharge (within 2 weeks of the last visit).

Results: A total of 124 subjects completed the treatment protocol. We noted significant improvements for all post-intervention outcome scores when compared

with pre-intervention scores ($P<0.01$). Also found significant difference between 2 groups in favor of prone traction ($P<0.01$)

Conclusions: Traction applied in the prone position for 4 weeks was associated with improvements in pain intensity and ODI scores at discharge, in a sample of patients with activity limiting LBP. However, because we lacked a reasonable long time follow-up, we cannot imply a long lasting relationship between the traction and outcome, and a long time follow-up is suggested.

CONCLUSION

The ANOVA for a repeated measures design found significantly less lumbar sacrospinalis muscle activity during traction in the prone position, right and left sacrospinalis muscles combined, than during traction in the supine position. An analysis of covariance determined that the differences between muscle activity during traction in the prone and supine positions was not significantly affected by differences in sex, age, height, weight, treatment order, time of treatment, electrical noise levels prior to treatment, and electrical noise levels after treatment.

Optimal muscle relaxation occurred between the 6th and 10th minute during traction in the prone position, and between the 8th and the 10th minute during traction in the supine position. Traction treatment beyond the 10th minute actually caused a slight increase in muscle activity. Further

Bakker EW, et al. Spine (Phila Pa 1976). 2009.
Show full citation

Abstract

STUDY DESIGN: Systematic review.

OBJECTIVE: To review and critically evaluate the past literature for spinal mechanical load as risk factor for low back pain (LBP).

SUMMARY OF BACKGROUND DATA: LBP is a costly health problem worldwide, and treatments are often unsuccessful. Therefore, prevention might be more beneficial in the management of LBP. With respect to prevention, the knowledge of risk factors is essential. From the literature, exposures involving spinal mechanical load is frequently discussed as a potential risk factor for LBP. For a better understanding of this risk factor, we performed a systematic review of the literature. Additionally, we evaluated exposures of spinal mechanical load for possible dose-response relations with LBP.

METHODS: We systematically searched Medline, Embase, PsycINFO, and CINAHL databases (without language restriction) for full-report publications of prospective cohort studies, evaluating spinal mechanical load during work and/or leisure time activities as risk factors for nonspecific LBP in patients (>18 years of age) free of LBP at baseline. We assessed the methodology of each article and extracted information on population, response rates, characteristics of LBP, exposures, and estimated association(s), using standardized forms. We performed a best evidence synthesis of the obtained information.

RESULTS: In total, 18 studies were eligible (all rated as high methodologic quality) reporting on 24,315 subjects.

CONCLUSION: We found strong evidence that leisure time sport or exercises, sitting, and prolonged standing/walking are not associated with LBP. Evidence for associations in leisure time activities (e.g., do-it-yourself home repair, gardening), whole-body vibration, nursing tasks, heavy physical work, and working with ones trunk in a bent and/or twisted position and LBP was conflicting. We found no studies, thus no evidence, for an association between sleeping or sporting on a professional level and LBP.

Reporting of Rehabilitation Intervention for Low Back Pain in Randomized Controlled Trials: Is the Treatment Fully Replicable?

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Author information

Abstract

STUDY DESIGN: Methodological review of randomized controlled trials (RCTs).

OBJECTIVE: To assess the quality of reporting of rehabilitation interventions for mechanical low back pain (LBP) in published RCTs.

SUMMARY OF BACKGROUND DATA: Reporting of interventions in RCTs often focused on the outcome value and failed to describe interventions adequately.

METHODS: We systematically searched for all RCTs in Cochrane systematic reviews on LBP published in the Cochrane Database of Systematic Reviews until December 2013. The description of rehabilitation interventions of each RCT was evaluated independently by 2 of the investigators, using an ad hoc checklist of 7 items. The primary outcome was the number of items reported in sufficient details to be replicable in a new RCT or in everyday practice.

RESULTS: We found 11 systematic reviews, including 220 eligible RCTs, on LBP. Of those, 185 RCTs were included. The median publication year was 1998 (I-III quartiles, 1990 to 2004). The most reported items were the characteristics of participants (91.3%; 95% confidence interval [CI], 87.3-95.4), the intervention providers (81.1%; 95% CI, 75.4-86.7), and the intervention schedule (69.7%; 95% CI, 63-76). Based on the description of the intervention, less than one fifth would be replicable clinically. The proportion of trials providing all essential information about the participants and interventions increased from 14% (n=7) in 1971 to 1980 to 20% (n=75) in 2001 to 2010.

CONCLUSION: Despite the remarkable amount of energy spent producing RCTs in LBP rehabilitation, the majority of RCTs failed to report sufficient information that would allow the intervention to be replicated in clinical practice. Improving the quality of intervention description is urgently needed to better transfer research into rehabilitation practices.

LEVEL OF EVIDENCE: 1.

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FACET ORIENTATION AND TROPISM: ASSOCIATION WITH ACCELERATED DEGENERATION OF STABILIZING STRUCTURES IN LOWER LUMBAR SPINE.

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Abstract

The influence of facet orientation and tropism on the process of spinal degeneration has been extensively studied during the last few decades, but there are still many controversies and conflicting results in this field of research. The biomechanical cause of accelerated degeneration of stabilizing structures in lower lumbar spine lies within the combination of several factors, but two most important ones are compressive load and more coronal facet orientation that offers less resistance against torsional loading. Axial rotation of lower lumbar spine is undoubtedly associated with higher strain in disc annulus, and enhanced range of secondary rotational movements may be even more significant for the progression of annular degeneration. Accordingly, more pronounced facet tropism could be having part in faster progression of disc degeneration in lower lumbar spine, as indicated by a number of recent studies. More sagittal facet orientation in patients with a higher facet osteoarthritis score at lower lumbar segments is very likely related to arthritic remodeling commonly seen in other synovial joints. There is also a possibility that it could be associated with the adaptation to partial loss of lumbar lordosis, as both coincide with advanced age.