Research Review Corner: July/August 2009

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Study Title: High-quality trials on preventing episodes of back problems: systematic literature review in working-age adults

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Background Information:

It is well known that back problems (BPs) are common and very expensive on an individual and societal level. There is a vast amount of scientific literature on back pain, and a substantial number of high-quality trials now exist to provide an evidentiary basis for the prevention of new back pain episodes. The purpose of this systematic review was to analyze these prospective controlled trials to evaluate the effectiveness of various prevention interventions aimed at reducing BPs in working-aged adults.

Pertinent Results:

- Interventions evaluated in the studies included clinical or educational approaches (exercise or education), personal appliances (back supports or shoe inserts), ergonomic equipment (lift assists etc.), activity modifications (changes in physical activities or work duties), and administrative or social interventions (such as work policies or social changes).

- 20 prospective controlled trials met inclusion criteria and evaluated the following interventions: exercise (8), ergonomic/back education (4), stress management (1), lumbar back support belts (4), shoe inserts (2), and programs for reducing lifting tasks as work via policy change, training, or mechanical lifting devices (4)

- All 20 trials included had high quality scores, 90 per cent investigated workplace settings, and 50 per cent involved health care workers

- five trials measured objective outcomes, while 15 measured only subjective outcomes

- Meta-analysis was not performed due to substantial heterogeneity of interventions, outcomes, and study designs

- Exercise was the only intervention found to be effective - 7/8 trials reported statistically significant reduction in BPs

- five of the seven successful exercise programs included 45-60 minutes of supervised exercise, twice per week for 3-12 months (most also encouraged additional exercise without supervision)

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Specific exercise techniques included McKenzie, active and passive back extensions, core stabilization, "Williams" exercises1, and Mensendieck trunk exercises2

- NO other intervention was found effective in reducing BPs

- Negative results were found in all studies on ergonomic/back education, stress management, lumbar supports, shoe inserts, and programs for reducing lifting tasks

Conclusions and Practical Application:

This systematic review had very consistent results, providing strong evidence to either support or refute the use of various interventions for reducing back problems in working-aged adults. In summary, there is strong evidence that exercise programs are effective and that other interventions (ergonomic, back school, stress management, back supports, shoe inserts, and programs for reducing lifting) are not effective for reducing back problems.

The positive results regarding exercise from this review are consistent with previous literature reviews on this topic 3-5. The effectiveness of varied exercise approaches may suggest a general benefit of exercise beyond specific physiological goals of increasing strength, endurance or flexibility. Although it cannot be claimed with certainty, it is within reason that patients performing exercise interventions gain a sense of confidence and self-empowerment from exercise that can improve their clinical outcome, and health in general. The take- home point, from this study (and others,) is to get your back pain patients active and incorporate some form of exercise in their plan of management!

Study Methods:

This study employed rigorous methodology that is consistent with systematic review recommendations from the Cochrane Back Review Group. Three authors independently reviewed potential studies. Articles were included only if they were high-quality, prospective randomized controlled trials (RCTs) that assigned interventions aimed at reducing back problems to individuals or pre-existing groups; or other controlled trials that assigned such interventions to pre-existing groups that appeared to be equivalent at baseline for factors that could affect outcomes. All studies had to adequately present quantitative results and utilize acceptable clinical or functional outcome measures:

- Objective outcomes: filing a work injury claim, work time loss, and/or costs related to back pain episodes

- Subjective outcomes: patient recall of frequency/duration, symptom severity, functional disability, or back treatment or limitations related to back pain

"Back problems" in this review were defined as back symptoms or activity limitation caused by back pain or back-related limb symptoms (this is similar to the well known AHCPR Back Guideline). Patient populations for the included studies were between the ages of 18-65, with or without current symptoms or prior back problems. Studies including patients with serious spinal pathology or other non-spinal causes of referred back pain were excluded. •

Additional References:

- Donchin M et al. Secondary prevention of low back pain: A clinical trial. Spine 1990; 15: 1317-1320.

- Soukup MG et al. Exercises and education as secondary prevention for recurrent low back pain. Physiother Res Int 2001; 6: 27-39.

- Lahad A et al. The effectiveness of four interventions for the prevention of back pain. JAMA 1994; 272: 1286-1291.

- Linton SJ, van Tulder M. Preventive interventions for back and neck pain problems: what is the evidence? Spine 2001; 26: 778-787.

- Tveito TH, Hysing M, Eriksen HR. Low back pain interventions at the workplace: a systematic literature review. Occup Med 2004; 54: 3-13.

This brief review is a sample of the content posted weekly on Research Review Service and is one of over 60 reviews available per year of the latest scientific literature in chiropractic. RRS is approved for 4.0 CEUs/year by CMCC.

Dr. Shawn Thistle is the founder and president of Research Review Service Inc., an online, subscription-based service designed to help busy practitioners to integrate current, relevant scientific evidence into their practice. Shawn graduated from CMCC and holds an Honours Degree in Kinesiology from McMaster University. He also holds a certificate in Contemporary Medical Acupuncture from McMaster University, and is a Certified Active Release Techniques (ART®) Provider. For more information about the Research Review Service, visit www.researchreviewservice.com .