Informing Your Practice with Reviews Published by the Cochrane Back Review Group: Conservative Interventions for Neck and Back Pain

Victoria Pennick, Irina Schelkanova, Andrea Furlan

In her editorial in the winter 2009 issue of *Physiotherapy Canada*, Allison Francis outlined a number of online resources that are available to physiotherapists in their quest to find current evidence to inform their practice.¹ One of the resources listed as “by subscription only” was *The Cochrane Library* (<http://www.thecochranelibrary.com>). This valuable resource was freely available to all Canadians with Internet access to the end of 2009, as a pilot project organized by the Canadian Cochrane Centre and the Canadian Health Libraries Association. Negotiations for ongoing funding were still in progress at the time of writing; however, abstracts and plain-language summaries continue to be free to all readers. We would like to take this opportunity to give you a brief overview of one the Review Groups that publish and maintain Cochrane Reviews that can help to inform your practice.

The Cochrane Back Review Group (CBRG) is one of 52 Review Groups that produce and maintain systematic reviews on the effects of health care. The goal is to provide the most current information to inform clinical decisions at the individual, institutional, and policy levels. The scope of the CBRG is primary and secondary prevention and treatment of neck and back pain and other spinal disorders, excluding inflammatory diseases and fractures. The CBRG is hosted by the Institute for Work & Health (<http://www.iwh.on.ca>), an independent, not-for-profit research organization located in Toronto, Ontario, whose mission is to conduct and share research with workers, organized labour, employers, clinicians, and policy makers to promote, protect, and improve the health of working people. The CBRG also receives funding from the Canadian Institutes of Health Research and from the Canadian Agency for Drugs and Technologies in Health.

Our authors, editors, and peer referees are inter-

national, multidisciplinary practitioners and researchers in the field of neck and back pain. The editorial team comprises two co-ordinating editors, a managing editor, a librarian, two editorial assistants, an editorial board, and an advisory board that provides peer review. Completed protocols and reviews are published quarterly in *The Cochrane Library*. Our reviews can be accessed via <http://www.thecochranelibrary.com> by browsing ‘by review group,’ or via the CBRG’s website (<http://www.cochrane.iwh.on.ca>). Access to *The Cochrane Library* is available by subscription or without charge, depending on the jurisdiction.

The CBRG published 40 reviews and 11 protocols (reviews in progress) in *The Cochrane Library* 2009, issue 3, released on July 8, 2009. It is the policy of The Cochrane Collaboration to update reviews every two years and to withdraw them if they are out of date. Review teams are currently updating a number of reviews that we expect to be published over the next few months.

The year 2008 was a busy and exciting one. The Cochrane Collaboration released an update of the *Handbook for Systematic Reviews of Interventions*² and Review Manager 5, the software used for producing reviews (March 2008), and the CBRG Editorial Board finished their “Updated Methods for Systematic Review in the Cochrane Back Review Group.”³ There are several new features in the handbook, the updated guidelines, and the software that have been developed to make our reviews more transparent and user friendly.

It is recognized that differences in the design and conduct of individual studies can affect the validity (risk of over- or underestimation of the true intervention effect) and rigour of the findings and final conclusion of a systematic review. Assessing the risk of bias (internal validity—the confidence with which we can “believe” the results) of included studies is an integral step in systematic reviews. For over a decade, the CBRG has recommended the use of 11 criteria to assess the risk of bias in primary studies. The new *Cochrane Handbook*² recommends one that has not previously been considered, bringing the currently recommended number to 12. The 12 criteria assess sequence generation, allocation concealment, blinding of study participants, completeness and similarity of outcome reporting, similarity of impor-

Victoria Pennick, Irina Schelkanova, and Andrea Furlan: The Cochrane Back Review Group, Institute for Work & Health, Toronto, Ontario.

Address correspondence to Victoria Pennick, The Cochrane Back Review Group, Institute for Work & Health, 481 University Avenue, Suite 800, Toronto, ON M5G 2E9 Canada; Tel.: 416-927-2027 ext 2142; Fax: 416-927-4167; E-mail: vpennick@iwh.on.ca.

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tant characteristics at baseline, compliance and co-interventions. Other risks of bias can be added as indicated by the intervention and the outcome.

Because of the high risk of bias and the heterogeneity of important components in many trials in this field, the CBRG used Levels of Evidence to help synthesis the results, first used in the 1994 *Guidelines for the Management of Acute Low-Back Pain in Adults*.² Following a new approach introduced in the updated *Cochrane Handbook*,³ the *Updated Method Guidelines* now recommend that the overall quality of the evidence for each outcome be assessed using an adapted GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach.⁴ More than 20 other organizations, including the World Health Organization (WHO), the American College of Physicians, and the Canadian Agency for Drugs and Technology in Health (CADTH), have adopted the GRADE approach.⁵

Five domains are considered in assessing the quality of the evidence: (1) limitations of the study design; (2) inconsistency, (3) indirectness (inability to generalize), and (4) imprecision (insufficient or imprecise data) of results; and (5) publication bias across all studies that measure that particular outcome. The quality starts at “high” when at least 75% of RCTs with a low risk of bias provide consistent, direct, generalizable results for the outcome, and is reduced by one level for each of the domains not met. The CBRG has found that if more than six criteria are met and there are no serious threats to the internal validity of the study (e.g., >50% of participants lost to follow-up), a study can be assessed as having a low risk of bias.⁶

Cochrane reviews are intended to help people make well-informed decisions about health care research. Drawing conclusions about the practical usefulness of an intervention entails making trade-offs, either implicitly or explicitly, between the estimated benefits, harms, and costs. However, making specific recommendations for an action goes beyond a systematic review and requires additional information and informed judgments, which are typically the domain of clinical practice guideline developers.

The CBRG welcomes both consumers and experienced authors and referees to the group. We invite you to join online (<http://www.cochrane.iwh.on.ca>) to receive periodic newsletters that will keep you abreast of initiatives in The Cochrane Collaboration in general and the Cochrane Back Review Group in particular.

SUMMARY OF REVIEWS

Table 1 provides a list of our published reviews that may be of particular interest to *Physiotherapy Canada* readers. The full list and text of publications can be found in *The Cochrane Library* or on the CBRG website. Many of the reviews have been incorporated into inter-

national guidelines for the management of neck and back pain.

Our editorial office can be reached by e-mail at cochrane@iwh.on.ca. Please do not hesitate to contact us should you have any questions.

Details of Reviews Highlighted in Table 1 (*The Cochrane Library* 2009, issue 3)

- Furlan AD, van Tulder MW, Cherkin DC, Tsukayama H, Lao L, Koes BW et al. Acupuncture and dry-needling for low back pain. *Cochrane Database of Systematic Reviews* 2005, Issue 1. Art. No.: CD001351. DOI: 10.1002/14651858.
- Trinh KV, Graham N, Gross AR, Goldsmith CH, Wang E, Cameron ID, Kay T, Cervical Overview Group. Acupuncture for neck disorders. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD004870. DOI: 10.1002/14651858.CD004870.pub3.
- Heymans MW, van Tulder MW, Esmail R, Bombardier C, Koes BW. Back schools for non-specific low-back pain. *Cochrane Database of Systematic Reviews* 2004, Issue 4. Art. No.: CD000261. DOI: 10.1002/14651858.
- Verhagen AP, Scholten-Peters GG, van Wijngaarden S, de Bie RA, Bierma-Zeinstra SM. Conservative treatments for whiplash. *Cochrane Database of Systematic Reviews* 2007, Issue 2. Art. No.: CD003338. DOI: 10.1002/14651858.
- Kroeling P, Gross A, Goldsmith CH, Burnie SJ, Haines T, Graham N, Brant A. Electrotherapy for neck pain. *Cochrane Database of Systematic Reviews* 2009, Issue 4. Art. No.: CD004251. DOI: 10.1002/14651858.CD004251.pub4.
- Hayden JA, van Tulder MW, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low back pain. *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD000335. DOI: 10.1002/14651858.
- Kay TM, Gross A, Goldsmith C, Santaguida PL, Hoving J, Bronfort G. Exercises for mechanical neck disorders. *Cochrane Database of Systematic Reviews* 2005, Issue 3. Art. No.: CD004250. DOI: 10.1002/14651858.
- Engers A, Jellema P, Wensing M, van der Windt DA, Grol R, van Tulder MW. Individual patient education for low back pain. *Cochrane Database of Systematic Reviews* 2008, Issue 1. Art. No.: CD004057. DOI: 10.1002/14651858.
- Sahar T, Cohen M, Ne'eman V, Kandel L, Odebiyi D, Lev I et al. Insoles for prevention and treatment of back pain. *Cochrane Database of Systematic Reviews* 2007, Issue 4. Art. No.: CD005275. DOI: 10.1002/14651858.
- Yousefi-Nooraie R, Schonstein E, Heidari K, Rashidian A, Pennick V, Akbari-Kamrani M et al. Low level laser therapy for nonspecific low-back pain. *Cochrane Database of Systematic Reviews* 2008, Issue 2. Art. No.: CD005107. DOI: 10.1002/14651858.
- van Duijvenbode ICD, Jellema P, Van Poppel MNM, van Tulder MW. Lumbar supports for prevention and treatment of low back pain. *Cochrane Database of Systematic Reviews* 2008, Issue 2. Art. No.: CD00182. DOI: 10.1002/14651858.
- Martimo KP, Verbeek J, Karppinen J, Furlan AD, Kuijter PP, Viikari-Juntura E et al. Manual material handling advice and assistive devices for preventing and treating back pain in workers. *Cochrane Database of Systematic Reviews* 2007, Issue 3. Art. No.: CD005958. DOI: 10.1002/14651858.
- Furlan AD, Imamura M, Dryden T, Irvin E. Massage for low-back pain. *Cochrane Database of Systematic Reviews* 2008, Issue 4. Art. No.: CD001929. DOI: 10.1002/14651858.
- Haraldsson BG, Gross AR, Myers CD, Ezzo JM, Morien A, Goldsmith C et al. Massage for mechanical neck disorders. *Cochrane Database of Systematic Reviews* 2006, Issue 3. Art. No.: CD004871. DOI: 10.1002/14651858.
- Graham N, Gross A, Goldsmith CH, Klaber MJ, Haines T, Burnie SJ et al.

Table 1 Published Reviews of Particular Interest to Physiotherapists

<i>Title, Author, and Date of Review</i>	<i>Number of RCTs (participants)</i>	<i>Implications for Practice</i>
Acupuncture and dry-needling for low back pain. (Furlan et al. 2005)	35 (2,861)	The data do not allow firm conclusions about the effectiveness of acupuncture for acute LBP. For chronic LBP, acupuncture is more effective for pain relief and functional improvement than no treatment or sham treatment only immediately after treatment and in the short term. Acupuncture is not more effective than other conventional and "alternative" treatments. The data suggest that acupuncture and dry-needling may be useful adjuncts to other therapies for chronic LBP.
Acupuncture for neck disorders (Trinh et al. 2006)	10 (661)	There is moderate evidence that acupuncture relieves pain better than some sham treatments, measured at the end of the treatment. There is moderate evidence that those who received acupuncture reported less pain at short-term follow-up than those on a waiting list. There is also moderate evidence that acupuncture is more effective than inactive treatments for relieving pain post-treatment, and this effect is maintained at short-term follow-up.
Back schools for non-specific low-back pain (Heymans et al. 2005)	19 (3,584)	There is moderate evidence suggesting that back schools in an occupational setting reduce pain and improve function and return-to-work status, in the short and intermediate term, compared to exercises, manipulation, myofascial therapy, advice, placebo, or waiting-list controls, for patients with chronic and recurrent LBP.
Conservative treatments for whiplash (Verhagen et al. 2007)	23 (2,344)	Given the current evidence, no clear conclusions can be drawn about the most effective therapy for patients with acute, subacute, or chronic whiplash-associated disorders, Grade 1 or 2. There is a trend suggesting that active interventions are probably more effective than passive interventions, but no clear conclusion can be drawn.
Electrotherapy for neck disorders (Kroelting et al. 2009)	18 (1,043)	We cannot make any definite statements on the efficacy and clinical usefulness of electrotherapy modalities for neck pain. Since the quality of evidence is low or very low, we are uncertain about the estimate of the effect. Further research is very likely to change both the estimate of effect and our confidence in the results. Current evidence for PEMF, rMS, and TENS shows that these modalities might be more effective than placebo but not other interventions.
Exercise therapy for treatment of non-specific low back pain (Hayden et al. 2005)	61 (6,390)	Exercise therapy appears to be slightly effective at decreasing pain and improving function in adults with chronic LBP, particularly in populations within a health care setting. In subacute LBP there is some evidence that a graded activity programme improves absenteeism outcomes, though evidence for other types of exercise is unclear. In acute LBP, exercise therapy is as effective as either no treatment or other conservative treatments.
Exercises for mechanical neck disorders (Kay et al. 2005)	31 (2,814)	The evidence summarized in this systematic review indicates that there is a role for exercises in the treatment of acute and chronic mechanical neck disorders and neck disorders plus headache. Exercise for neck disorders with radicular findings is not assessed.
Individual patient education for low back pain (Engers et al. 2008)	24 (6,838)	For patients with acute or subacute LBP, intensive patient education seems to be effective. For patients with chronic LBP, the effectiveness of individual education is still unclear.
Insoles for prevention and treatment of back pain (Sahar et al. 2007)	6 (2,317)	There is strong evidence against using insoles for the prevention of back pain. The current evidence on insoles as treatment for LBP does not allow any conclusions to be drawn.
Low level laser therapy for non-specific low-back pain (Yousefi-Nooraie et al. 2008)	7 (384)	Based on the heterogeneity of the populations, interventions, and comparison groups, we conclude that there are insufficient data to draw firm conclusions on the clinical effect of LLLT for LBP.
Lumbar supports for prevention and treatment of low back pain (van Duijnbode et al. 2008)	15 (15,806)	There was moderate evidence that lumbar supports are not more effective than no intervention or training in preventing LBP, and conflicting evidence as to whether lumbar supports are effective as a supplement to another preventive intervention. It is still unclear whether lumbar supports are more effective than no intervention or other interventions for treatment of LBP.
Manual material handling advice and assistive devices for preventing and treating back pain in workers (Martimo et al. 2007)	11 (18,492)	Presently, many health professionals are involved in training and advising workers on MMH. This review does not provide evidence that training and advice by themselves prevent back pain.

(Continued)

Table 1 Continued

<i>Title, Author, and Date of Review</i>	<i>Number of RCTs (participants)</i>	<i>Implications for Practice</i>
Massage for low back pain (Furlan et al. 2008)	13 (1,596)	Massage might be beneficial for patients with subacute and chronic non-specific LBP, especially when combined with exercises and education. The evidence suggests that acupuncture massage is more effective than classic massage, but this needs confirmation.
Massage for mechanical neck disorders (Haraldsson et al. 2006)	19 (1,395)	Because of the limitations of existing studies, we are unable to make any firm statement to guide clinical practice.
Mechanical traction for neck pain with or without radiculopathy (Graham et al. 2008)	7 (958)	The current literature neither supports nor refutes the efficacy or effectiveness of continuous or intermittent traction for pain reduction, improved function, or global perceived effect compared to placebo traction, tablet or heat, or other conservative treatments in patients with chronic neck disorders.
Patient education for neck pain with or without radiculopathy (Haines et al. 2009)	10 (1,660)	This review has not demonstrated the effectiveness of educational interventions in various disorder types and follow-up periods, including advice to activate, advice on stress coping skills, and "neck school."
Rehabilitation after lumbar disc surgery (Ostelo et al. 2008)	14 (1,927)	Exercise programmes starting 4 to 6 weeks post-surgery seem to lead to a faster decrease in pain and disability than no treatment. High-intensity exercise programmes seem to lead to a faster decrease in pain and disability than low-intensity programmes. There were no significant differences between supervised and home exercises for pain relief, disability, or global perceived effect. There is no evidence that active programmes increase the re-operation rate after first-time lumbar surgery.
Superficial heat or cold for low back pain (French et al. 2006)	9 (1,117)	The evidence base to support the common practice of superficial heat and cold for LBP is limited. There is moderate evidence in a small number of trials that heat-wrap therapy provides a small short-term reduction in pain and disability in a population with a mix of acute and subacute LBP, and that the addition of exercise further reduces pain and improves function. The evidence for the application of cold treatment to LBP is even more limited, with only three poor-quality studies located. No conclusions can be drawn about the use of cold for LBP. There is conflicting evidence to determine the differences between heat and cold for LBP.
Traction for low back pain with or without sciatica (Clarke et al. 2007)	25 (2,206)	The results of the available studies involved mixed groups of patients with acute, subacute, and chronic LBP with and without sciatica. They consistently indicate that continuous or intermittent traction as a single treatment for LBP is not recommended for this group. Neither can traction be recommended for patients with sciatica at present, given the inconsistent results and methodological problems in most of the studies. The review concludes that traction is probably not effective and that traction as a single treatment for LBP is not supported by the RCTs.
Transcutaneous electrical nerve stimulation (TENS) for chronic low-back pain (Khadilkar et al. 2008)	4 (585)	The evidence from the small number of placebo-controlled trials does not support the use of TENS in the routine management of chronic LBP.

LBP = low back pain; RCT = randomized controlled trial; TENS = transcutaneous electrical nerve stimulation; MMH = manual materials handling; LLT = low-level laser therapy; EMS = electronic muscle stimulation; PEMF = pulsed electromagnetic field

Mechanical traction for neck pain with or without radiculopathy. Cochrane Database of Systematic Reviews 2008, Issue 3. Art. No.: CD006408. DOI: 10.1002/14651858.

Haines T, Gross A, Burnie SJ, Goldsmith CH, Perry L. Patient education for neck pain with or without radiculopathy. Cochrane Database of Systematic Reviews 2009, Issue 1. Art. No.: CD005106. DOI: 10.1002/14651858.CD005106.pub3.

Ostelo RW, Costa LO, Maher CG, de Vet HC, van Tulder MW. Rehabilitation after lumbar disc surgery. Cochrane Database of Systematic Reviews 2008, Issue 4. Art. No.: CD003007. DOI: 10.1002/14651858.

French SD, Cameron M, Walker BF, Reggars JW, Esterman AJ. Superficial heat or cold for low back pain. Cochrane Database of Systematic Reviews 2006, Issue 1. Art. No.: CD004750. DOI: 10.1002/14651858.

Clarke JA, van Tulder MW, Blomberg SE, de Vet HC, van der Heijden GJ, Bronfort G et al. Traction for low-back pain with or without sciatica. Cochrane Database of Systematic Reviews 2007, Issue 2. Art. No.: CD003010. DOI: 10.1002/14651858.

Khadilkar A, Odebiyi DO, Brosseau L, Wells GA. Transcutaneous electrical nerve stimulation (TENS) versus placebo for chronic low-back pain. Cochrane Database of Systematic Reviews 2008, Issue 4. Art. No.: CD003008. DOI: 10.1002/14651858.

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