

The whiplash victim will be helped by the chapters on treatment options and exercises and reassured by the excellent section on common fallacies" (Dr Martin F Gargan, M.A. [Oxon]. F.R.C.S., Association for the Advancement of Automotive Medicine).

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Abstract Objective To evaluate effectiveness of physiotherapy management in patients experiencing whiplash associated disorder II, on clinically relevant outcomes in the short and longer term.

Design Systematic review and meta-analysis. Two reviewers independently searched information sources, assessed studies for inclusion, evaluated risk of bias and extracted data. A third reviewer mediated disagreement. Assessment of risk of bias was tabulated across included trials. Quantitative synthesis was conducted on comparable outcomes across trials with similar interventions. Meta-analyses compared effect sizes, with random effects as primary analyses. Data sources Predefined terms were employed to search electronic databases. Additional studies were identified from key journals, reference lists, authors and experts.

Results 21 RCTs participants, 9 countries were included. Interventions were categorised as active physiotherapy or a specific physiotherapy intervention. Differences between participants, interventions and trial designs limited potential meta-analyses. Conclusions Inconclusive evidence exists for the effectiveness of physiotherapy management for whiplash associated disorder II. There is potential benefit for improving range of movement and pain short term through active physiotherapy, and for improving pain through a specific physiotherapy intervention.

Article summary Article focus Physiotherapy intervention is recommended in whiplash associated disorder II, although the most beneficial intervention and the effectiveness of physiotherapy management are unclear. The objective of this systematic review was to evaluate the effectiveness of physiotherapy management in patients experiencing whiplash associated disorder II, on clinically relevant outcomes in the short and longer term. There is potential benefit for improving pain and range of movement short term through active physiotherapy and for improving pain through specific physiotherapy interventions. This potential benefit merits further consideration in a properly powered clinical trial with attention to ensure low risk of bias. Strengths and limitations of this study The strengths of this review are its focus to physiotherapy intervention and the most common whiplash associated disorder II classification requiring physiotherapy intervention. A limitation is that differences between participants, interventions and trial designs limited potential meta-analyses. Surprisingly, no chronic interventions were comparable for analysis, considering the high number of patients experiencing chronicity with whiplash associated disorder.

Introduction Road traffic accidents are the primary cause of whiplash, a soft tissue injury to the neck following an acceleration-deceleration mechanism of injury. The classification system is widely used in clinical practice 15 and guidelines. Existing systematic reviews instead tend to focus on a range of whiplash associated disorder classifications and a broad range of conservative intervention strategies such as educational videos, include studies of non-traumatic neck pain, and lack rigorous assessment of the risk of bias of included studies. No review has included trials published post 2000. The effectiveness of physiotherapy for the whiplash associated disorder II population is therefore unclear.

Materials and methods A systematic review was conducted according to a predefined protocol based on the method guidelines of the Back Review Group of the Cochrane Collaboration 19 and the Cochrane handbook. Studies not written in English were excluded rather than restricting the inclusion of studies, thereby providing information of potential bias. Acute and chronic presentations were included and analysed separately. Mixed populations of different classifications of whiplash associated disorder were included if patients presenting with whiplash associated disorder II formed part of the population. Interventions Any physiotherapy outpatient management intervention was included.

Information sources Each of the following databases was searched using sensitive topic based search strategies

to the end of December Selected internet sites and indexes: Cochrane Back Review Group. Cochrane Cervical Overview Group. Personal citations for key authors in the field. The searches used predefined terms. Box 1 provides two examples of the searches utilised. Box 1 Medline Ovid 31 December 1. Acute whiplash or cervical spine disorder or cervical spine injury. Manual therapy or manipulation or massage. Clinical trial or randomised controlled trial or RCT. WAD II or whiplash associated disorders or whiplash injury or whiplash patients or whiplash syndrome. Conservative approach or conservative intervention or conservative management or conservative therapy. Physical approach or physical intervention or physical management or physical therapy. Transcutaneous electrical nerve stimulation or TENS or thermotherapy or electrical stimulation or heat or electrotherapy. Posture or postural and balance or traction.

Chapter 2 : Injury Pain And Pain Recovery A New Model

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Myer, Virginia; a rambling candidate Tuesday, reprised in vintage, troubling, stream of consciousness, at a campaign-style rally in Phoenix, Arizona; and, yesterday, an inspirational unifier, back on teleprompter, at the American Legion convention in Reno, Nevada. About all this schizophrenia, CNN exclaimed: And now there is my new book " Whiplash! And 5 the media are wrong: This country is not in an epidemic of racism or anti-Semitism. But the media frenzied coverage of racists does not forewarn; it emboldens these thugs with credibility, spreads their message of hate, and gets them new recruits. The headline conjures up a stereotype of Jews in control, a Jewish conspiracy against Bannon. They were concerned about how they were being viewed by the Jewish community. Jewish liberals have pilloried Ivanka and Jared for months. As for Breitbart being anti-Jewish, the late Andrew Breitbart was Jewish, as are many of its top editors and writers, and not secular, but observant Jews. The Breitbart site has rallied not against Jews, but against Jew-haters. On the alter of multiculturalism, we provide entitlements and sacrifice the historic assimilation of immigrants. Once they wanted to learn English. Now our ballots are printed in multiple languages. How ugly is it out there? Heretics, Barbarians, and Jews. Media, Scheduling and Advance" defined modern political campaigns. He has testified numerous times as a court-recognized expert, including on campaigns, media, and polling. He has conducted 2, polls and focus groups and pioneered in innovative sampling methodology, question formats, and analytics; he consulted on strategy for hundreds of political campaigns, including historic ballot measures. He is extensively published in American media and a frequent television and radio analyst. He has helped formulate major policy, ranging from free market and libertarian issues to national security to criminal justice reform. He served on federal, state and local government commissions. To read more of his reports " Click Here Now. Posts by Arnold Steinberg.

Chapter 3 : Manual Therapy and Exercise for Neck Pain: Clinical Treatment Tool-kit - Physiopedia

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What are the effects of treatments for uncomplicated neck pain without severe neurologic deficit? Systematic reviews and randomized controlled trials RCTs found limited evidence that manipulation or mobilization improved symptoms compared with other or no treatment in people with neck pain. Systematic reviews and RCTs have found that active physiotherapy reduces pain compared with passive treatment, and that exercise programs reduce pain compared with management that does not include exercise programs. One RCT provided limited evidence that pulsed electromagnetic field treatment reduced pain compared with sham treatment. We found insufficient evidence on the effects of analgesics, NSAIDs, antidepressants, or muscle relaxants for neck pain, although they are widely used. Several drugs used to treat neck pain are associated with well-documented adverse effects. RCTs provided insufficient evidence to compare effects of multimodal treatments with other treatment in people with uncomplicated pain. Systematic reviews found insufficient evidence about the effects of these physical treatments. Soft Collars and Special Pillows. We found no RCTs of sufficient quality on the effects of soft collars or special pillows. Three RCTs found no significant difference between patient education advice or group instruction with or without analgesics compared with no treatment, stress management, placebo, or usual care. What are the effects of treatments for acute whiplash injury? Systematic reviews and subsequent RCTs provided limited evidence that early mobilization reduced pain compared with immobilization or rest plus a collar. Early Return to Normal Activity. One small RCT provided limited evidence that electromagnetic field treatment reduced pain after four weeks but not after three months compared with sham treatment. One RCT found that multimodal treatment reduced pain at the end of treatment and after six months compared with physical treatment. We found no RCTs of drug treatments in acute whiplash injury. One RCT found no significant difference between different home exercise programs in pain or disability. What are the effects of treatments for chronic whiplash injury? One RCT provided limited evidence that percutaneous radiofrequency neurotomy reduced pain compared with sham treatment after 27 weeks. One RCT found no significant difference between multimodal treatment physiotherapy plus cognitive behavior treatment in disability, pain, or range of movement at the end of treatment or at three months. One RCT found no significant difference between physiotherapy alone and multimodal treatment physiotherapy plus cognitive behavior treatment in disability, pain, or range of movement at the end of treatment or at three months. What are the effects of treatments for neck pain with radiculopathy? Surgery Versus Conservative Treatment. One RCT found no significant difference between surgery and conservative treatment in symptoms after one year. Definition In this topic, we have differentiated uncomplicated neck pain from whiplash, although many studies, particularly in people with chronic pain duration more than three months, do not specify which types of people are included. Most studies of acute pain duration less than three months are confined to whiplash. We have included under radiculopathy those studies involving people with predominantly radicular symptoms arising in the cervical spine. Neck pain often occurs in combination with limited movement and poorly defined neurologic symptoms affecting the upper limbs. The pain can be severe and intractable, and can occur with radiculopathy or myelopathy. In the United Kingdom, about 15 percent of hospital-based physiotherapy, and in Canada 30 percent of chiropractic referrals are for neck pain. With chronic pain, mechanical and degenerative factors often referred to as cervical spondylosis are more likely. Some neck pain results from soft tissue trauma, most typically seen in whiplash injuries. Rarely, disc prolapse and inflammatory, infective, or malignant conditions affect the cervical spine and present as neck pain with or without neurologic features. Prognosis Neck pain usually resolves within days or weeks but can recur or become chronic. In some industries, neck-related disorders account for as much time off work as low back pain. Neck pain causes severe disability in 5 percent of affected people. Whiplash injuries were more likely to cause disability than neck pain from other causes; up to 40 percent of sufferers

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reported symptoms even after 15 years of follow-up. Get immediate access, anytime, anywhere. Choose a single article, issue, or full-access subscription. Earn up to 6 CME credits per issue.

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Chapter 5 : Neck Pain - Clinical Evidence Handbook - American Family Physician

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But, the electrical energy is not created by the light bulb. The electrical energy is created in a location far away and brought to the light bulb using electrical wires. Pain is an electrical signal in the brain. The pain electrical signal is brought to the brain by nerves. As a rule there are exceptions, the brain does a good job at identifying the body region that initiates the electrical signal. The point is that the electrical signal in the brain for pain is created at another location and brought to the brain by nerves. The brain will identify the tissue as the generator of the electrical signal that the brain interprets as being painful. Studies looking at whiplash injuries consistently identify the facet joints as the primary source of chronic whiplash injury pain 1, 2, 3. The second most common tissue source of chronic whiplash injury pain is the annulus of the intervertebral disc. If nociceptive excitation threshold is achieved, a local electrical signal will be initiated and travel to the brain where the signal is interpreted as being painful. Studies looking at chronic low back pain consistently identify the intervertebral disc as the primary source of the electrical signal that travels to the brain 4, 5. A number of studies have shown that when the human intervertebral disc degenerates, the nociceptive nerve fibers in the annulus can migrate into the nucleus pulposus, allowing the nucleus itself to be the tissue source of the nociceptive electrical signal 6, 7, 8. The electrical signal from the injured tissue to the brain is not carried on a single neuron, but rather on a series of neurons. The electrical signal carried from one neuron to next neuron must cross a physical gap, a synaptic gap. The signal is carried across the synaptic gap by chemicals that are produced and released by the first neuron, carried across the synaptic gap to the second neuron where the electrical signal is re-established and continues towards the brain. The synaptic gap, or synapse is very important because it is a site where the electrical signal to the brain has the potential to be modified enhanced or reduced. In fact, in , Omoigui states 9: It is rational that the treatment of these patients should include anti-inflammatory strategies. Conservatively, proven helpful anti-inflammatory strategies include the local application of ice 11, supplemental omega-3 fatty acids fish oil 12, 13, 14, and low-level laser therapy. An important addition to this discussion is the contribution of muscles to pain. Any direct injury to a muscle can cause inflammation and therefore pain. Chronic musculoskeletal pain often has a significant muscle contribution. A simple explanation of the muscle-pain model is presented by Rene Calliet, MD, and involves these sequential steps. This causes the alpha motor neuron to increase its production and release of the chemical acetylcholine into the nerve-muscle myoneuro junction, causing the muscle to contract increasing the interdigitation of the contractile proteins. This is the classic afferent-efferent spinal cord reflex. Thus, chronic pain results in chronically contracted muscles. Chronically contracted muscles will cut off its own blood supply, resulting in both internal ischemia and an accumulation of metabolites waste products. Muscle ischemia and accumulated waste products create an inflammatory response, altering the nociceptive threshold, generating a pain-producing electrical signal to the spinal cord. It is rational that the treatment of the muscle component of chronic pain syndromes myofascial pain syndromes would include ischemic compression 16, 17, 18, spray and stretch techniques 16, 17, 18, needle acupuncture 21 and low-level laser therapy. It was not until their work was published in the journal Science in that it generated widespread attention. Any therapy which induces motion into articular structures will help inhibit pain transmission by this means. Mechanoreceptors proprioceptors are specialized neurons that register the way we live, exist, and function in a gravity environment. These mechanoreceptors are abundant in facet joint capsules, annulus of the disc, paraspinal ligaments, and muscles 27, 28, 29, 30, 31. The muscles become an important player in chronic spinal pain syndromes because of overlapping feedback loops: An important basis for Dr. They clearly showed the interrelationships between spinal pain and the contraction of the segmental muscles, reducing the movement parameters of that region of the spine. In later works, Dr. Indahl and colleagues were able to show that by firing the mechanoreceptors of the facet joint capsules they could inhibit both the spinal cord reflex to the segmental muscles and also inhibit pain. This would close the pain gate. Brodeur also makes the point that

chiropractic drop tables and Activator adjusting instruments are capable of achieving the same mechanical benefits. The primary research by Canadian orthopedic surgeon WH Kirkaldy-Willis, MD was clearly able to show that chiropractic spinal adjusting, as monotherapy, was capable of inhibiting both muscle spasm and pain. Weir Mitchell and colleagues produced important clinical descriptions of sympathetic pain on injured soldiers during the US Civil War. Many researchers have observed a psychosocial component to chronic pain syndromes, particularly in the realm of whiplash trauma recovery. The book *Autonomic Failure: A Textbook of Clinical Disorders of the Autonomic Nervous System*, shows an impressive picture my rendition below of the post-ganglionic sympathetic efferents production and release of the catecholamine norepinephrine to receptors located on the nociceptive afferent axons and dorsal root ganglions DRG. These catecholamines alter the threshold of the nociceptive afferents so that they more easily reach excitation threshold, more readily producing pain. There is mounting evidence that increased sympathetic production and release of catecholamines is a primary driver for both increased chronic pain and for the psychosocial components of chronic pain syndromes, and this phenomenon has a genetic link. This could help explain why so many with chronic pain also have an abnormal psychological profile. Humans have a gene that produces an enzyme that metabolizes sympathetically produced catecholamines. Low production of COMT has been linked to increased and chronic pain perception, including temporomandibular pain, fibromyalgia, and whiplash injury pain 40, 41. His work showed that improvement of mechanical function not only inhibited pain and muscle spasm tone, but also inhibited sympathetic activity through a spinal cord reflex. Korr would argue that one would have to adjust the correct spinal level, the level of the reduced motion, in order to appropriately inhibit the local increased production of catecholamines. **SUMMARY** The information presented here outlines the physiological explanation for the observation that chiropractic spinal adjusting helps people with chronic or acute pain syndromes. The subsequent improved mechanoreception does the following: The subsequent relaxation of the muscle reduces secondary muscle pain. Since sympathetically produced catecholamines alter the threshold of the primary pain afferent, this mechanically driven inhibition would further inhibit the nociceptive electrical signal to the brain. I have managed about 10, whiplash-injury cases. In the past 32 years, I have taught more than hour post graduate continuing education classes pertaining to whiplash and spinal trauma, including 21 years of coordinating a year-long certification program in spine trauma, certified through the International Chiropractic Association. The hope is that the information is useful in terms of enhanced understanding, as well as helping the personal injury attorney deal with insurance claim adjusters and adverse medical experts. The chiropractor sending you this Report is well versed and trained in these concepts, and can be a valuable asset in personal injury cases in terms of both academics and treatment. Additionally, these expert chiropractors have access to a monthly phone consultation with me to discuss any pertinent issues that they may be facing on a particular case. I hope that you find this Report and the referring chiropractor a valuable resource. *International Society for the Study of the Lumbar Spine: Where is the pain coming from? Spine; Oct;12 8: The origin of all pain is inflammation and the inflammatory response: Inflammatory profile of pain syndromes; Medical Hypothesis; , Vol. Volume 1, Upper Half of Body; Baltimore: Morphology, distribution, and neuropeptides; Spine; December 15, ;20 Tsitsopoulos P; An immunohistochemical study of mechanoreceptors in lumbar spine intervertebral discs; Journal of Clinical Neuroscience; Volume 17, Issue 6, June , Pages Resolution of psychological distress of whiplash patients following treatment by radiofrequency neurotomy: A randomized, double-blind, placebo-controlled, crossover pilot study; Pharmacogenet Genomics; April; 20 4: Hyperactivity of sympathetic innervation as a common factor in disease; J Am Osteopath Assoc.*

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