

## Cold in the Treatment of Low Back Pain

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Low Back Pain (LBP) represents a common physical disability associated with high economic burden comparable to nosological entities such as headache, heart disease, depression and diabetes mellitus [1]. In the United Kingdom the direct health care cost of back pain in only one year was estimated to be as high as £1632 million [2].

The management of LBP embraces a wide range of operative and conservative curative interventions. A plethora of physical therapy treatment modalities have been proposed for this common even though challenging ailment. More specifically kinesiotherapy, manipulation, mobilization, back schools, electrotherapy such as transcutaneous electrical nerve stimulation (TENS), low level laser therapy (LLLT) or ultrasound, superficial heat or cold, traction, acupuncture, yoga, individual patient education, massage, behavioural treatment, and multidisciplinary rehabilitation are some of the techniques utilised for LBP non - operative treatment worldwide [3-7].

Surprisingly, although many of the aforementioned intervention strategies lack sufficient scientific evidence, many physical therapists do not conform with clinical guide lines when confronting non-specific LBP in their clinical practice and continue to include them in their therapeutic armoury [8,9].

Cold therapy is an inexpensive and relatively simple to apply treatment option in chronic LBP without any associated serious adverse effects reported. It can also be self-applied. Superficial cold treatment includes several physical therapeutic modalities such as ice, cold towels, cold gel packs, ice packs, and ice massage [3,10].

Application of cold although not recommended by most guide lines regarding the management of chronic LBP it remains a treatment option for a number of physiotherapists when dealing with this common disease. In a randomized control trial (RCT) conducted in Great Britain recording the results of routine physiotherapy in comparison with advice for low back pain, a percentage equal to 3% of the participants in this survey who used cold therapy in their physiotherapy session was detected [11].

Cold diminishes inflammation, pain and oedema and is a useful therapeutic tool for postsurgical pain and swelling [10,12]. It provokes immediate cutaneous vasoconstriction and diminishes nerve conductivity which result to oedema reduction and pain sensation decrease [5]. Although neural pathways through which cold attains its analgesic effectiveness are ambiguous, there is strong evidence that this is based on brain stem mechanisms that exert inhibitory influences on pain signals [13]. Melzack et al. state that sensory cold inputs are transmitted to the spinal cord exclusively via A-delta fibers and not C fibers [13].

Many years ago in 1967 in a non randomized clinical trial including 143 patients with either acute or chronic nonspecific LBP, Landen studied the effectiveness of massage with ice cubes in comparison with hot packs application. The author of this manuscript concluded that both methods appear to be equally effective in the relief of a symptomatic low back pain [14].

In another trial by Melzack et al., ice massage proved to be not only a safe therapeutic approach for chronic LBP but additionally a more

effective treatment modality than TENS, as regards some of the patients that participated in this study [13].

Roberts et al. conducted a non-randomised cross-over trial with 34 participants suffering from chronic low-back pain. These subjects underwent non-operative treatment using hot or cold packs for 20 mins or ice massage. The authors of this study concluded that ice massage, immediately after its application and 1 hour after its application, seems to provide significantly better analgesic results than either hot packs or cold packs in chronic low-back pain [10].

Taking into consideration the existing data French et al. in 2006 in a high quality Cochrane systematic review concluded that there is not strong evidence for the effectiveness of cold in the treatment of LBP [10]. Additionally they stated that differences between heat and cold for LBP cannot be clearly detected.

In conclusion it is obvious that application of cold modalities is not an evidence based treatment for LBP. Existing trials are not able to support this method in the clinical practice. Additionally there is lack of recent research comparing local cold therapy with modern physical methods of LBP management Future research encompassing higher-quality RCTs is needed in order to identify the frank value of this therapeutic modality when facing chronic LBP.

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