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Research Paper Review

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Effect of Taping on Spinal Pain and Disability: Systematic Review & Meta-analysis of Randomized Trials

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ABSTRACT

BACKGROUND: Taping is a widely used therapeutic tool for the treatment of musculoskeletal disorders, nevertheless its effectiveness is still uncertain.

PURPOSE: The purpose of this study was to conduct a current review of randomized controlled trials (RCTs) concerning the effects of elastic and nonelastic taping on spinal pain and disability.

DATA SOURCES: MEDLINE, CINAHL, EMBASE, PEDro, Cochrane Central Register of Controlled Trials (CENTRAL), Scopus, ISI Web of Knowledge, and SPORTDiscus databases were searched.

STUDY SELECTION: All published RCTs on symptomatic adults with a diagnosis of specific or nonspecific spinal pain, myofascial pain syndrome, or whiplash-associated disorders (WAD) were considered.

DATA EXTRACTION: Two reviewers independently selected the studies and extracted the results. The quality of individual studies was assessed using the PEDro scale, and the evidence was assessed using GRADE criteria.

DATA SYNTHESIS: Eight RCTs were included. Meta-analysis of 4 RCTs on low back pain demonstrated that elastic taping does not significantly reduce pain or disability immediately posttreatment, with a standardized mean difference of -0.31 (95% confidence interval=-0.64, 0.02) and -0.23 (95% confidence interval=-0.49, 0.03), respectively. Results from single trials indicated that both elastic and nonelastic taping are not better than placebo or no treatment on spinal disability. Positive results were found only for elastic taping and only for short-term pain reduction in WAD or specific neck pain. Generally, the effect sizes were very small or not clinically relevant, and all results were supported by low-quality evidence.

LIMITATIONS: The paucity of studies does not permit us to draw any final conclusions.

CONCLUSION: Although different types of taping were investigated, the results of this systematic review did not show any firm support for their effectiveness.

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BACKGROUND INFORMATION

Taping is often used in rehabilitation and manual therapy settings to treat musculoskeletal disorders. Several types of taping are available; however, they can be generalized into two major categories: non-elastic/rigid and elastic taping (1). Rigid types are thought enhance joint support, increase joint proprioception, and restrict movement (2). On the other hand, elastic taping is purported to support fascia, muscles and joints, enhance joint proprioception, and decrease pain/inflammation (1). In spite of its popularity, the evidence in favour of elastic taping remains scarce. The authors performed a systematic review to determine the effectiveness of various taping methods in decreasing spinal pain and disability.

PERTINENT RESULTS

Eight articles were included for review, including a total of 409 patients (range = 20-148 patients per study).

Elastic-taping vs. sham/placebo/no treatment for low back pain (LBP):

- Four studies were judged as homogeneous and a meta-analysis was performed for these studies only. The effect size of elastic taping vs. sham/placebo/no treatment was small and insignificant.
- A medium and significant effect size was shown in one study which assessed lumbar spinal pain one month after intervention. A second study which assessed pain 2 months post-treatment, showed a small and insignificant effect size.
- Four high-quality studies on the PEDro scale assessed disability immediately post-treatment. Overall, the effect size of elastic taping vs. sham/placebo/no treatment was small and non-significant.
- Using the GRADE criteria, there is low-quality evidence that elastic taping reduces pain at 1 and 2 month follow-up compared to sham/placebo/no treatment.
- One study assessed disability one month post-intervention. The effect size was small when disability was assessed using the ODI and very small when using the Roland Morris Disability Questionnaire. In the study that assessed disability 2 months post-intervention, the effect size was small and insignificant.
- Generally, only low quality evidence exists according to the GRADE criteria.

Non-elastic taping vs. placebo for LBP:

- One high-quality study assessed pain immediately post-treatment and at 1 month follow-up. The effect size of taping vs. placebo was medium and significant in the immediate post-treatment period, but small and insignificant at one month follow-up. There is low quality evidence, according to the GRADE criteria.
- One high-quality study assessed disability immediately post-treatment and at 1 month follow-up. The effect size of taping vs. placebo was medium but non-significant in the immediate post-treatment period, and small and insignificant at one month follow-up. Low-quality evidence exists, according to the GRADE criteria.

Elastic taping vs. placebo for people with neck pain (WAD):

- One study examined pain immediately post-treatment. The effect size compared to placebo was large and significant.
- Using the GRADE criteria, there is low-quality evidence from one trial showing elastic taping decreases pain, immediately post-treatment compared to placebo.

Elastic taping vs. no treatment for patients with specific neck pain (cervical disc herniation, radiculopathy or spondylosis):

- One study assessed pain immediately post-treatment. The effect size of taping vs. no treatment was medium and significant.
- One study assessed disability immediately post-treatment. The effect size of taping vs. no treatment was small and insignificant. Using the GRADE criteria only, low quality evidence exists.

Non-elastic taping vs. no treatment for non-specific chronic neck pain:

- One study assessing pain exists, and showed a small and insignificant effect-size.
- One study assessed disability in the immediate post-treatment period, and showed only a small and insignificant effect-size.
- According to the GRADE criteria, there only very low quality evidence exists.

CLINICAL APPLICATION & CONCLUSIONS

A total of 8 RCTs met the inclusion criteria and a meta-analysis was performed. The analysis showed that, in general, elastic taping does not significantly reduce lumbar spine pain and disability immediately post-treatment, in comparison to sham/placebo/no treatment. However, a single trial examining the effect of elastic taping on lumbar spine pain showed it was effective at one month follow-up, but not at two month follow-up. A few individual trials also showed that elastic taping may be effective in treating acute neck pain (from WAD) and specific neck pain (i.e. radiculopathy).

One low-quality trial showed that non-elastic taping effectively improves lumbar spinal pain. Neither elastic nor non-elastic taping provided significant improvement in spinal disability.

According to the GRADE criteria, there is very low- to low-quality evidence supporting taping for spinal pain and disability. The current literature therefore does not support the use of taping as a therapeutic option for spinal conditions.

STUDY METHODS

The authors searched through a number of databases for studies that evaluated the effect of taping on decreasing pain and disability in individuals with spinal pain. Published RCTs comparing either elastic or non-elastic taping to a control or comparison group were included. The studies included symptomatic adults (> 18 years of age), diagnosed with acute (< 1 month), subacute (1-3 months) or chronic (> 3 months) specific/non-specific spinal pain, myofascial pain syndrome (MPS) or whiplash associated disorder (WAD). The methodological quality of each study was assessed using the PEDro scale. PEDro scores of > 6/10 were considered high quality. Clinical relevance of the study was assessed using a series of questions:

1. Are patient characteristics and treatment settings described well enough to determine if they are compatible to those in a clinical setting?
2. Are the interventions described well enough to enable a clinician to use them clinically?
3. Were clinically relevant outcomes measured (i.e. minimal clinically important difference for each measurement scale)?

The quality of the overall evidence was judged as High, Moderate, Low or Very Low using the GRADE approach, which considers design limitations, PEDro score < 6, results inconsistency and imprecision (< 300 participants in the total body of evidence for each outcome).

STUDY STRENGTHS / WEAKNESSES

Strengths

- The authors employed thorough and demanding inclusion criteria. Although this likely limited the number of studies in their pool, the inclusion criteria protects the authors from including extremely low-quality studies (i.e. case reports, case series, of which there are many on the topic of taping), which could influence their results.

Weaknesses

- A meta-analysis could only be performed on the topic of elastic taping and low back pain. The other topics have not accumulated enough data over time to perform a meta-analysis.
- Many of the studies did not have a sample size greater than 50 participants, which is generally needed to achieve higher levels of evidence.
- All studies failed to obtain a positive score on therapist and/or patient blinding (this would be impossible, given the intervention).
- Topics such as thoracic spine pain, post-traumatic, acute-specific and non-specific neck pain were not included in the analysis because no data exists.

Additional References:

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