

Kinesiology tape in the management of musculoskeletal disorders: a summary of recent relevant research (April 2018)

Author: Andrew MacMillan for the [National Council for Osteopathic Research](#)

Key messages:

- K tape may offer short-term reduction in pain but does not appear to provide long-term pain relief.
- Pain-reducing effects of K tape may not be large enough to be significant to patients.
- K tape does not appear more effective than standard care.
- Where K tape is used to improve sports performance, studies typically report mixed or contradictory evidence, making interpretation difficult.
- K tape appears safe, relatively cheap, and no serious adverse events were reported in the literature reviewed.
- Reviews report that the literature is often low quality and methodologically flawed.

CONTEXT

This article is intended to give a brief overview of predominantly manual therapy and osteopathic-relevant research, with references provided for further reading. It is not intended to be an exhaustive account of the literature.

This summary was based on existing published systematic reviews, Clinical Knowledge Summaries, National Institute for Health and Care Excellence (NICE) guidelines, and previous Snapshot Summaries. Although it is acknowledged that osteopaths may use a range of alternative strategies to kinesiology taping, the purpose of this summary is to consider only the use of kinesiology tape in the management of musculoskeletal (MSK) disorders.

Seven systematic reviews published between February 2012 and February 2018 were reviewed to create this summary: Montalvo, Cara and Myer; Parreira *et al.*; Morris *et al.*; Ouyang *et al.*; Reneker *et al.*; Mostafavifar, Wertz and Borchers; Lim and Tay.

Background

The Kinesio tape brand was developed in the 1970s, and several similar competing products are now available (collectively referred to in this Snapshot Summary as "K tape"). It is widely used in MSK practice and has gained popularity amongst patients and practitioners in recent years, particularly in sport (Lim and Tay, 2015). However, the biological plausibility and mechanism of action has been questioned and remains unclear (Gusella *et al.*, 2014).

K tape is a non-permanent elastic tape that is affixed to the skin. It is lighter and thinner than other taping methods such as zinc oxide strapping, and it is suggested that this difference allows greater mobility and skin traction. The tape is often placed over the skin whilst the patient is in a stretched position, facilitating adhesion onto the skin and traction as the stretched position is released. The therapist assesses and decides the appropriate tape position and level of tension within the tape. The Kinesio tape manual suggests that this reduces pressure upon mechanoreceptors, thereby reducing nociceptive input as well as improving local circulatory mechanisms. Additional claimed benefits include "reduced pain intensity, realignment of joints and change in the recruitment activity patterns of the treated muscles" (Parreira *et al.*, 2014).

Kinesiology tape in the management of musculoskeletal disorders

Montalvo, Cara and Myer (2014) conducted a systematic review with meta-analysis, including studies from 2003 to 2013, focusing on pain in MSK injuries. They included 13 studies: 4 randomised controlled trials (RCTs), 1 case-controlled study, 5 randomised clinical trials, and 3 of a crossover design. The included studies used various outcome measures: visual analogue scale, pain intensity numeric rating scale, and pressure algometry.

Summarised findings from Montalvo, Cara and Myer suggest:

- K tape did not reduce specific pain measures above and beyond other modalities including home exercise, placebo taping, electrical stimulation, ultrasound, and heat.
- K tape has very few and very minor adverse effects.

The authors point out that K tape failed to achieve a "minimal clinically significant difference" for some or all measures in 6 of the 13 studies, indicating that any pain reduction may not have been meaningful to the subjects. The 3 highest quality RCTs, as judged by the 10-point PEDro scale (Maher *et al.* 2013), reported no clinically significant pain reduction. The highest quality clinical trial did achieve the minimal clinically significant difference but did not include a control or placebo group, so could not rule out placebo effects or natural progression of the condition investigated (mechanical neck pain).

Montalvo, Cara and Myer speculate that the variation in placebo techniques used in each study may have contributed to the difference in findings. They recommend that better placebo-controlled models for K taping are developed, and that related research should include subjective measures of pain since "pain is a partially psychologically-mediated outcome measure". Despite these reservations and moderate findings, the authors suggest that K tape can be used in conjunction with or in place of traditional therapies for treating MSK injuries.

Parreira *et al.* (2014) conducted a systematic review of K tape musculoskeletal pain, reviewing studies that investigated knee, shoulder, neck, back and foot pain. 12 studies were included in this review. All 12 studies used randomisation to allocate participants and 9 included control groups. Studies compared K tape to standard care, sham treatment, and in conjunction with standard care. The PEDro tool was used to assess each paper's quality, with scores ranging from 3 to 9 and a mean of 6.1, indicating fair to high quality. Meta-analysis was not possible due to variation in the conditions studied and the clinical settings, so the results were descriptive.

Summarised findings from Parreira *et al.* suggest:

- K tape appears no more effective than sham taping, placebo, or active comparison therapies.
- Combining K tape with other interventions did not increase effectiveness.

Similar to Montalvo *et al.*, Parreira *et al.* found that the effects of K tape failed to meet clinical or statistical significance regarding treatment effect and patient reported outcomes. Parreira *et al.* also point out that some studies conclude that K taping is effective even when their findings "did not identify significant benefit". They also postulate that media attention and marketing are the main factors in the increasing use of K tape, rather than evidence of effectiveness.

Morris *et al.* (2013) conducted a systematic review of K tape for a variety of conditions. They initially assessed 11 RCTs for quality using the Cochrane criteria (Furlan *et al.* 2009) and excluded 3 papers as they were deemed to be of low methodological quality. The remaining 8 papers looked at K tape for shoulder impingement syndrome, neck pain, plantar fasciitis, lymphoedema, stroke-related muscle spasticity, long-term low back pain, and patellofemoral pain syndrome. The only significant effect in favour of K tape was found in one study which reported that K tape in conjunction with physiotherapy gave short term relief from plantar fasciitis. However, Morris *et al.* found serious methodological flaws in this paper, and suggest that there is "insufficient evidence" to support K tape over other clinical practices.

Ouyang *et al.* (2018) compared non-elastic tape to K tape in patients with knee osteoarthritis, conducting a meta-analysis of 11 studies (6 RCTs and 5 crossover design) looking at pain and quality of life outcomes such as stair climbing. Their review focused on studies that compared taping against sham and placebo taping (i.e. theorised to have no therapeutic value) but did not review papers comparing taping to no taping. The PEDro scale was again used to assess quality, with studies' scores ranging from 3 to 9.

Ouyang *et al.* found no statistically significant or clinically meaningful benefits to K tape for osteoarthritic knee pain. They did find apparent improvements in pain and outcome measures in patients treated with rigid non-elastic tape, however they speculate that this might be due to the difference in study designs: all the K tape studies were higher quality RCTs, while the non-elastic tape studies were all lower quality crossover designs.

Reneker *et al.* (2017) carried out a review of the effect of taping on sporting performance. They looked at 15 studies which investigated a wide range of endurance, agility, power and force generation tasks including ball skills, cycling, squats, sprint speed and jump distance. Some joint velocities and moments were also reported. PEDro scores ranged from 3 to 8 points. Studies followed various designs, all randomised, comparing K tape to no tape, sham tape or other taping methods. 11 studies reported an RCT design.

Two measures demonstrated a statistically significant effect in favour of K tape over the comparison (no tape or sham tape): anaerobic power and capacity in endurance cycling, and accuracy of a soccer kick. However, Reneker *et al.* point to a lack of blinding in these trials and suggest biases could account for these results. They also point out that the trial measuring soccer kick accuracy found K tape ineffective for handball-throwing accuracy, making it difficult to draw clear conclusions.

Mostafavifar, Wertz and Borchers (2012) reviewed 6 studies with a total of 254 participants, looking at the effectiveness of K tape in improving patient outcomes following MSK injury. 4 of the studies were RCTs. The authors looked at a variety of conditions including shoulder, back and neck pain, and Achilles tendinopathy. Two RCTs suggested that K tape did not

improve outcomes for lower limb injuries. One study of long-term low back pain found no differences between K tape alone, K tape plus exercise, or exercise alone. Two studies into K tape for shoulder pain suggested benefits, although one study was of low quality.

Summarised findings suggest:

- K tape has a low risk of harm.
- K tape is relatively inexpensive.
- Patients may perceive short-term benefit despite weak evidence.

Lim and Tay (2015) found K tape to be superior to “minimal intervention”, which they defined as “no taping or sham taping”. The results of this study contradicted the work of Montalvo, Cara and Myer (2014) in that they suggest that K tape plus exercise are superior to exercise or K tape alone. However, they state that “this is not surprising, as exercise [is effective] as a standalone or adjunctive treatment for chronic musculoskeletal pain.” Summarised findings include:

- K tape may be effective in managing short-term pain, but no more than other interventions
- In the long term (pain lasting more than 4 weeks) K tape may be effective when combined with exercise but not when used in isolation.

Conclusion

The evidence to date appears to be mixed, with insufficient high quality evidence of clinical benefit for K tape in the management of musculoskeletal disorders. There are some small-scale favourable studies, though these often have no adequate blinding of assessors or comparison to control groups or standard care protocols. As with much of manual therapy, blinding is difficult to implement and so contextual and psychosocial factors may influence outcomes (Poon *et al.*, 2015).

References

- Furlan, A. D., Pennick, V., Bombardier, C., van Tulder, M. Updated method guidelines for systematic reviews in the Cochrane Back Review Group. *Spine*, 2009; 34: pp. 1929-1941 Available online at <https://www.ncbi.nlm.nih.gov/pubmed/19680101>
- Gusella, A., Bettuolo, M., Contiero, F. and Volpe, G. Kinesiologic taping and muscular activity: a myofascial hypothesis and a randomised, blinded trial on healthy individuals. *Journal of bodywork and movement therapies*, 2014; 18(3): pp.405-411. Available online at <https://www.sciencedirect.com/science/article/pii/S1360859213001897>
- Lim, E.C.W. and Tay, M.G.X. Kinesio taping in musculoskeletal pain and disability that lasts for more than 4 weeks: is it time to peel off the tape and throw it out with the sweat? A systematic review with meta-analysis focused on pain and also methods of tape application. *Br J Sports Med*, 2015; 49: pp.1558-1566. Available online at <http://bjsm.bmj.com/content/49/24/1558>
- Maher CG, Sherrington C, Herbert RD, Moseley AM, Elkins M. Reliability of the PEDro scale for rating quality of randomized controlled trials. *Phys Ther*. 2003, 83(8): pp. 713–721. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/12882612>
- Montalvo, A.M., Cara, E.L. and Myer, G.D. Effect of kinesiology taping on pain in individuals with musculoskeletal injuries: systematic review and meta-analysis. *The Physician and Sportsmedicine*, 2014; 42(2): pp.48-57. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/24875972>
- Morris, D., Jones, D., Ryan, H. and Ryan, C.G. The clinical effects of Kinesio Tex taping: A systematic review. *Physiotherapy theory and practice*, 2013; 29(4): pp.259-270. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/23088702>
- Mostafavifar, M., Wertz, J. and Borchers, J. A systematic review of the effectiveness of kinesio taping for musculoskeletal injury. *The Physician and Sportsmedicine*, 2012; 40(4): pp.33-40. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/23306413>
- Ouyang, J.H., Chang, K.H., Hsu, W.Y., Cho, Y.T., Liou, T.H. and Lin, Y.N. Non-elastic taping, but not elastic taping, provides benefits for patients with knee osteoarthritis: systemic review and meta-analysis. *Clinical rehabilitation*, 2018; 32(1): pp.3-17. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/28660785>
- Parreira, P.D.C.S., Costa, L.D.C.M., Junior, L.C.H., Lopes, A.D. and Costa, L.O.P. Current evidence does not support the use of Kinesio Taping in clinical practice: a systematic review. *Journal of physiotherapy*, 2014; 60(1): pp.31-39. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/24856938>
- Poon, K.Y., Li, S.M., Roper, M.G., Wong, M.K.M., Wong, O. and Cheung, R.T.H. Kinesiology tape does not facilitate muscle performance: a deceptive controlled trial. *Manual therapy*, 2015; 20(1): pp.130-133. Available online at <https://www.ncbi.nlm.nih.gov/pubmed/25150913>

Reneker, J.C., Latham, L., McGlawn, R. and Reneker, M.R. Effectiveness of kinesiology tape on sports performance abilities in athletes: A systematic review. *Physical Therapy in Sport*, 2017 [epub]. Available online at [http://www.physicaltherapyinsport.com/article/S1466-853X\(16\)30185-7/fulltext](http://www.physicaltherapyinsport.com/article/S1466-853X(16)30185-7/fulltext)