

Background: Mechanical neck pain and motor control deficits, with or without headaches, are common and often chronic conditions in the U.S.A. These impairments can be managed with a multimodal treatment approach in physical therapy. Kinesio tape is one novel treatment that is gaining popularity. There is minimal research regarding the efficacy of this technique in the management of musculoskeletal pain and dysfunction. The purpose of this systematic review was to determine if kinesio tape for muscle inhibition applied to the upper trapezius muscle decreases headache, neck pain and EMG activity in people aged 18- 50 with a diagnosis of neck pain and headache or motor control deficit.

Methods: The search strategy for this systematic review was developed and performed by 7 examiners and aimed to find all accessible studies that looked at the use of kinesio tape for muscle inhibition and its ability to decrease EMG activity, pain and/or headache in adults 18-50 years old. Six of the examiners then performed the searches using multiple databases. Appropriate articles were chosen based on inclusion and exclusion criteria. The PEDro scale was then used to score the articles to determine the strength of the evidence. Six examiners then extracted and compiled the data.

Results: We identified 565 studies through database searching. After the reviewers removed duplicates and verified articles for eligibility, 9 articles were selected to be included in the systematic review. The studies that were utilized looked at the effects of kinesio tape application for muscle inhibition on pain, or the effects on EMG activity, or the effect on both EMG activity and pain. No studies were identified that examined the effects on headache.

For studies that looked at the effects of kinesio tape application for muscle inhibition on pain, one recorded statistically significant decreases in Visual Analog Scale (VAS) score following kinesio tape application in subjects with myofascial pain of the temporomandibular joint. Another study recorded significant decreases in Numerical Pain Scale (NPRS) scores immediately after application of kinesio tape and after 24 hours in subjects diagnosed with acute whiplash injury. In a study that compared kinesio tape application and cervical manipulation interventions in patients with mechanical neck pain, both groups experienced significant decreases in NPRS scores, but differences between groups were not significant. Following kinesio tape application, patients with shoulder pain reported increases in pain-free shoulder abduction when compared to a sham tape group but there were no significant differences in VAS scores between groups.

For studies that looked at EMG activity, one study found no significant differences between groups when comparing kinesio taping for inhibition, for muscle facilitation, and no tape on grip strength and EMG activity. A second study showed a significant decrease in duration and delay of activation of lateral gastrocnemius activity during gait post kinesio tape for muscle inhibition group compared to no treatment. Another study showed no changes were in magnitude of EMG activity of the biceps femoris, vastus medialis, or vastus lateralis during barbell back squatting when comparing kinesio tape application for muscle inhibition, kinesio tape application for muscle facilitation, kinesio tape for muscle facilitation, placebo application and no tape. Lastly, Yeung et al showed no significant differences in EMG activity when comparing kinesio tape applications for muscle inhibition, muscle facilitation, and a sham application.

Ptaszkowski et al showed a significant decrease in EMG activity and VAS score after application of kinesio tape for muscle inhibition compared to post-isometric muscle relaxation on the upper trapezius muscle.

Discussion: This systematic review identified few high quality RCTs testing the effectiveness of kinesio tape application for muscle inhibition. The studies included had varied results and only one examined both EMG activity and pain. Many studies used healthy subjects making it difficult to generalize the results to clinical population. This identified several gaps in the available research, which prompted the development of a research question and study. This guided the examiners to look at the effects of kinesio tape on both pain and EMG activity together in our future study. This allows us to see if there is a correlation between decreased EMG activity of the upper trapezius muscles and decreased neck pain and/or headaches in 18-50 year olds.