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A scoping review of the use of elastic therapeutic tape for neck or upper extremity conditions

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ABSTRACT

Study design: Scoping review.
Introduction: Elastic therapeutic tape is a relatively new intervention for treating a variety of injuries; however, there is little evidence to support its effectiveness for neck or upper extremity conditions.
Purpose of the study: This scoping review examines current evidence on the recommended application, purpose and effectiveness of elastic therapeutic tape for treating neck or upper extremity conditions.
Methods: A scoping review was conducted to examine the evidence in 14 peer-reviewed published articles that reported on the use of elastic therapeutic tape for neck or upper extremity conditions.
Results: Six studies reported statistically significant changes to pain with the use of elastic therapeutic tape. Only three studies found statistically significant changes to range of motion.
Conclusions: Elastic therapeutic tape may play a role in reducing short-term neck and upper extremity pain, however future high quality studies that contribute to the evidence base for its use are needed.
Level of evidence: N/A

Background

Kinesiotape, a form of elastic therapeutic tape, was developed by Dr. Kenso Kase (a chiropractor) in the 1970's and is a relatively new elastic therapeutic tape used for treating a variety of injuries.[1,2] Since that time, different names and brands of elastic therapeutic tape have emerged, such as Kinesiotex Tape, K-Ttape, Kinaesthetic Tape, K-Ttex Tape, Dynamic Tape, Rocktape and Spidertech Tape.[3] Kinesiotape gained increased recognition after it was donated to 58 countries for use during the 2008 Olympic Games and was used by many high profile athletes. The theory behind elastic therapeutic tape is that it supports injured muscles and joints and helps to relieve pain by lifting the skin and allowing improved blood and lymph flow.[4] It is reported that the tape can be applied to any muscle or joint in the body. Elastic therapeutic tape is made of tightly woven elasticized cotton fibers and the glue on the back is acrylic, highly durable and waterproof so the tape can be worn for up to a week, during which time it will withstand vigorous movement, sweat and total immersion in water.[1,3] Equally important is the fact that the tape does not contain any medication or drugs – all the reported benefits come from the tape's elasticity.[4,5]

Despite its popularity and widespread clinical use, there is relatively little evidence to support the effectiveness of elastic therapeutic tape/Kinesiotape, let alone for specific neck and upper extremity conditions. From medical, social and economic perspectives, prevalence studies highlight that the burden of disease from neck and upper extremity conditions is substantial and there is a continual need to identify the most effective and economically feasible interventions for their optimal management and rehabilitation.[6] To date, evidence regarding the effectiveness of elastic therapeutic tape/Kinesiotape has relied predominantly on case reports, small pilot studies and research on healthy participant groups.[7,8] Three high quality systematic reviews have been completed since 2010 by Bassett et al,[7] Kalron and Bar-Sela[8] and Morris et al[9] Three studies included in these reviews relate to

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taping for shoulder impingement syndrome and neck pain, however no other studies on upper extremity conditions met their respective inclusion criteria.

With regard to using elastic therapeutic tape for upper extremity conditions in particular, there appears to be some anecdotal evidence that merits using elastic therapeutic tape as an addition to existing treatment modalities, but broader, systematic examination of the available literature on this topic is needed in order to clarify the clinical benefits for neck and upper extremity conditions. At present, upper limb therapists who incorporate elastic taping in their clinical practice are required to construct a treatment plan using the manufacturer's information, their own experience, and previous clinical observations. This exposes them to the risks associated with prescribing a treatment modality that has uncertain clinical efficacy, cost-effectiveness, and/or safety.

Purpose and research questions

The purpose of this scoping review is to examine the recommended application, purpose and effectiveness of elastic therapeutic tape/Kinesiotape, a relatively new but widely used treatment modality, in managing neck and upper extremity conditions. The specific aims of the scoping review are to (1) facilitate the understanding of the use and implementation of elastic therapeutic tape for neck and upper extremity conditions in clinical practice; and (2) review the current evidence of its effectiveness for the treatment of neck and upper extremity conditions.

Identification of the research question

The specific scoping review question is: "What is known from the existing literature about the recommended application, purpose and effectiveness (including types of outcome measures) of elastic therapeutic tape in the treatment of neck and/or upper extremity disorders?"

Methods

A scoping review method was used based on the framework outlined by Arskey and O'Malley.[10] Scoping reviews are a useful way to facilitate a systematic approach to survey a specific body of literature as it enables researchers to 'map a field of study' in a particular area of interest. A scoping review is relevant in situations in which reviewers are interested in fields of research that have only emerging levels of evidence.[11] Due to the lack of randomized controlled trials for the effectiveness of elastic therapeutic tape, especially related to neck and upper limb disorders, a scoping review was deemed the most suitable approach as it is able to include a broader range of studies and articles, including both empirical and non-empirical sources of information. It is important to note that, unlike systematic reviews, a scoping review does not consider the quality of studies as a first criterion, rather the objective is to understand the extent and level of empirical work that has been completed within a defined subject area. A scoping review of the topic can then form the basis from which researchers can begin to delve deeper into specific methodological issues and develop informed research questions.

This scoping review followed the five stage framework developed by Arskey and O'Malley[10]: (1) identification of the research question; (2) identification of relevant studies; (3) selecting the studies; (4) charting the data; and (5) collating, summarizing and reporting the results. Reporting results includes the use of numerical summaries that describe study characteristics (e.g. study location, year of publication, methods).

Identification and selection of studies

A search was conducted for English, peer-reviewed documents in the following electronic bibliographic databases: OVID Medline, CINAHL and ProQUEST. There was also a search for grey literature in ProQUEST Dissertations and Theses. Keywords used included 'elastic therapeutic tape,' 'therapeutic tape,' 'elastic tape,' 'taping' and 'kinesiotape.' As this scoping review aimed to include all studies, no limitations were placed in terms of publication date and publication type. The search was conducted by the three authors between July and September 2013 and initially yielded 866 studies. These studies were subsequently narrowed down to studies relating to the neck or upper limb and then further narrowed down to relevant studies for this scoping review.

Inclusion criteria

The retrieved studies were then screened to identify documents for the review based on the following inclusion criteria:

- The document reported on a primary study that examined elastic therapeutic tape as a treatment modality for people with neck and/or upper extremity conditions.
- The document provided a description of how the elastic therapeutic tape was used for a particular condition and/or population.
- The study was written in English.
- Participants in the studies were adults over 18 years of age.
- All study designs were included (e.g. randomized controlled trials, quantitative studies, qualitative studies or mixed methods).
- The study was published within the past 10 years.

Exclusion criteria

Documents were excluded based on the following criteria:

- If the document contained mostly descriptive or conceptual content, instead of empirical research.
- The content of the document was duplicated in another source that was retrieved (e.g. systematic reviews were excluded that reviewed articles already included as part of this scoping review).
- If the document was not related to the use of elastic therapeutic tape as a primary treatment modality.
- If the study was written in another language other than English.
- On-line web based reports were not included for this scoping review due to discrepancies in reliability and validity of data.

Charting the data and collating, summarizing and reporting the results

Selected documents were reviewed by the three authors and information was extracted and tabulated using Excel software. The first author of this study initially examined all articles which were then reviewed by the remaining authors to enhance consensus and ensure higher accuracy in reporting of the results. The following categories of information for each study were extracted: publication date, location of the research, sample population characteristics (e.g. age, gender), health condition/injury, purpose of the study, duration of intervention, research approach, outcomes and level of evidence. The study search, selection and data extraction process are outlined below in Fig. 1.