The Effects of Kinesio Tape and Stretching on Shoulder ROM

Ai Ujino, MS, ATC, LAT; Lindsey E. Eberman, PhD, ATC, LAT; Leamor Kahanov, EdD, LAT, ATC; Chelsea Renner, MS, ATC, LAT; and Timothy Demchak, PhD, LAT, ATC • Indiana State University

Context: Kinesio tape (KT) is theorized to increase joint range of motion (ROM) by a mechanism that differs from that of stretching exercises. Objective: To investigate the combined effects of KT and stretching on shoulder ROM. Participants: Healthy volunteers (n = 71) ranging in age from 18–40 years, with no history of shoulder injury (29 males and 42 females). Interventions: Participants were randomly assigned to three treatment groups (KT only, Stretch, and KT/Stretch). Main Outcome Measures: Posttreatment ROM measurements were obtained with a digital inclinometer on day 1 and day 4. Results: Analysis of variance identified a significant difference among groups for the magnitude of change in shoulder ROM, $F(2,68) = 3.268, p = 0.044$, which was greatest for the KT group (mean change = 9.20 ± 17.91). Conclusion: The results suggest that KT can increase shoulder ROM. Stretching was not found to have an effect on shoulder ROM, regardless of whether it was used alone or in combination with KT.

Key Points
- Kinesio tape alone increased glenohumeral total arc of motion in healthy individuals.
- Stretching and the combination of Kinesio tape and stretching did not change range of motion in healthy populations.
- Stretching and the combination of Kinesio tape and stretching may have a greater impact in unhealthy, motion restricted patients.

Kinesio tape (KT) is a treatment method theorized to improve joint range of motion (ROM) in the neck and lumbar spine, but the effect of KT on the shoulder has not been investigated. Shoulder injuries that are common in athletics include instability, impingement, and rotator cuff tendinopathy. The complexity of shoulder girdle function contributes to the variety of injury types, any of which may be associated with restriction of glenohumeral ROM. Shoulder ROM is highly influenced by scapular dyskinesis/instability, muscle tightness, tendon thickening, and capsular restrictions resulting from scar tissue formation.

KT is currently used in clinical practice in conjunction with joint mobilization, ROM exercises, and active/passive stretches, but no evidence of a beneficial effect on shoulder ROM is available.

KT is believed to have therapeutic effects that promote edema reduction, pain control, increased ROM, and blood and lymphatic flow within underlying tissue. Because of its elasticity, KT is theorized to increase interstitial space by lifting the skin over the targeted treatment area, which is the mechanism believed to decrease pain, increase blood and lymphatic circulation, and increase joint mobility. Multiple therapeutic interventions are often administered concomitantly, which provided the rationale for assessment of KT with stretching for improvement of shoulder ROM.

Procedures and Findings
We used a quasi-experimental post-test design with three groups: (a) KT only (KT),
(b) stretching only (Stretch), and (c) KT combined with stretching (KT/Stretch). We measured posttreatment shoulder internal rotation (IR) and external rotation (ER) ROM on two days (day 1 and day 4). Participants in the Stretch and KT/Stretch group completed a 3-day home stretch program. On the basis of the available evidence, we hypothesized that KT and KT/stretch groups would demonstrate increased ROM.

A total of 71 healthy individuals (29 males, 42 females, 18–32 years of age) with no history of shoulder injury provided informed consent for participation in the study. We used a digital inclinometer (Digital Inclo-Matic Series; CheckPoint Professional, Torrance, CA) to measure shoulder IR and ER ROM (Figure 1). The intra-tester reliability of digital inclinometers has been reported to range from 0.79–0.94. A random number generator was used to assign participants to the three groups (KT = 23, Stretch = 22, KT/Stretch = 26) and the researchers who obtained ROM measurements were blinded to group assignments. ROM measurements were obtained with the participant in a supine position, with the shoulder in 90° of abduction and the elbow in 90° of flexion (Figure 2A). For ER measurement, an examiner stabilized the scapula and applied manual force to the participant’s wrist to passively induce ER until the spine of scapula started to tilt posteriorly (Figure 2B). A second examiner aligned the digital inclinometer and obtained the measurement. A similar procedure was used to induce IR until the coracoid process started to rise (Figure 2C). The digital inclinometer was aligned with the ulnar shaft and the ulnar styloid process for both measurements, and the same examiner obtained all of the measurements for every participant. Shoulder ROM was derived from the addition of the ER and IR measurements.

The KT treatment consisted of the application of two tape strips to the dominant shoulder for stabilization of the scapulothoracic joint (Figure 3). One “I” strip of tape covered the skin surface from the anterior portion of the glenoid rim to the inferior border of the lower trapezius (Figure 4A and B). With the exception of the first and last 2 inches of adhesion to the skin, the tape strip was applied with a 50% stretch of its elasticity. A second “Y” strip of tape covered the skin...