Balance Awareness and Kinesio Taping of the Ankle

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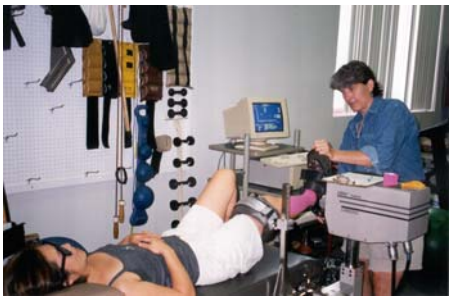
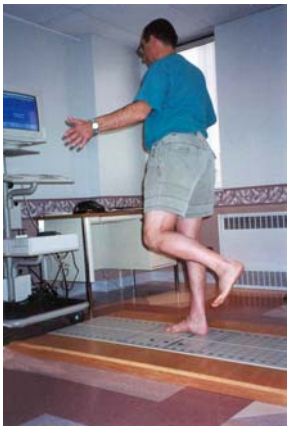
Balance in the absence of visual input, as measured by mean center of gravity (COG) sway velocity, has been shown to be improved by the application of Kinesio Tex® tape to the knee (Murray, teal. 1999). A review of the literature revealed controversial results relative to the use of bracing and athletic tape to enhance balance, proprioception and decrease risk of injury. Previous studies found that the application of various types of tape (Murray, et. al., 1999 and Simoneau, et. al., 1997) or braces (Rifat et. al., 1996) increased proprioception in the ankle. Murray, et. al. (1999) compared the differences of athletic tape and Kinesio Tex® tape and found that Kinesio taping enhanced ankle proprioception at 10° of plantar flexion. In contrast, McKay et al. (1997) and Kinzey, et. al. (1994) reported that application of bracing or athletic taping decreased their subjects' balance ability.



There has been limited research focused on the application of tape to improve balance ability and promote stability at the knee. The purpose of this study was to compare the effects of Kinesio Tex® tape to no tape on static single limb balance in individuals with no known knee pathology.

Methods: Fourteen healthy adults of both genders, ages 22-55, were used in this study. Each subject read and signed an informed consent to participate prior to initiation of experimentation. The study was a single subject repeated measures design. Exclusion criteria were significant knee pathology, laxity of knee ligaments, and current knee injury. Equipment used for analysis of balance and postural sway was the Balance Master™ (NeuroCom International, Inc., Clackamas, Oregon) with Balance Master v. 5.0 software. Qualitative data were



derived from the measurements. These data were compared using Student's T test ($p<0.05$) between each of the test conditions.

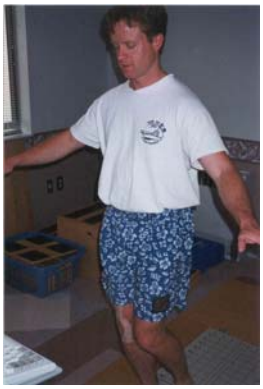
Each subject was given verbal and demonstration instruction for testing conditions. Their COG sway velocity was measured under the following conditions: 1) Single limb stance, eyes open with Kinesio Tex® tape; 2) Single limb stance, eyes closed with Kinesio Tex® tape; 3) Single limb stance, eyes open without tape; 4) Single limb stance, eyes closed without tape. Subjects were given a pretest trial of single limb stance activity lasting 20 sec. to familiarize the subjects with the test. Trials were conducted for both eyes open and eyes closed conditions. Data were collected for each of the test conditions; a 1min. rest period between trials was given. Conditions were presented in a randomized order with a 3 min. rest interval between test conditions to minimize any carryover or practice effects.

Tape Application: Tape was applied according to the method of Kase (1994) to the anterior aspect of the thigh; a second "Y" strip was anchored distal to the tibial tuberosity and applied from distal to proximal around the patella, overlying the first "Y" strip tails.

Results: T-test comparison of the testing conditions Eyes Closed with Kinesio Tex® tape vs. Without tape showed a statistically significant improvement in balance when wearing the tape ($p<0.041$). T-test comparison of the test conditions Eyes Open with tape vs. Without tape showed no statistical difference.

Discussion and Conclusions: Previous studies have shown that balance ability declines in the absence of visual input. These declines may be due to the large role that vision plays in maintenance of balance, with visual cues overriding other neural influences under normal conditions. This study concurs with these earlier findings. However, the results of this study have shown that balance was enhanced by the application for Kinesio Tex® tape to the knee. These results agree with earlier studies by Simoneau, et. al. (1997) and Rifat et, al. (1996) where balance was improved by the application of athletic tape. Other studies by Barrett et. al. (1991) and Perlou et. al. (1995) found similar results by employed an open chain method for their data collection. The closed chain, single limb stance

employed in this study may have a more functional relevance as it more closely mimics normal activity. Theories on balance strategy have proposed that balance is maintained by utilizing ankle strategies, hip strategies, and finally step strategies to respond to balance perturbations (Nashner, 1990). The results of this study suggest that there may be a previously unreported "knee strategy" employed during balance maintenance as forces from the ankle and hip must be transmitted through the knee joint and surrounding structures. In addition, the extra cutaneous input supplied by Kinesio Tex® tape in this experiment provided the stimulus that resulted in enhanced balance ability. These results are clinically relevant in that the use of Kinesio Tex® tape may be useful in proprioceptive training and may have prophylactic applications.



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