The Effect of Continuous Shortwave Diathermy on Hamstring Flexibility
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Context: Continuous shortwave diathermy (CSWD) is a deep heating modality found to increase tissue temperature greater than 4 degree Celsius at a depth of 4 centimeters. Little research regarding the effectiveness of CSWD has been conducted. Objective: The objective of this study was to determine the effectiveness of a single session of CSWD and passive stretching (PS) to increase the flexibility of the hamstring (HS), as measured by an active straight leg raise (SLR) test, immediately post-treatment and 24-hours post-treatment as compared to a single session of PS alone. Design: The design of this study included a pre-intervention measurement of HS flexibility, a treatment intervention (CSWD with PS or PS alone), a post-intervention measurement of HS flexibility and a 24-hour post-intervention measurement of HS flexibility. Setting: The study was conducted in a University research laboratory. Patients or Other Participants: Subjects consisted of 60 healthy, student volunteers with decreased hamstring flexibility as measured by active SLR test of less than 70 degrees. Subjects were required to be free of any lower extremity pathologies at the time of participation. Subjects were divided into two groups for treatment intervention; CSWD and PS (n=40) or PS alone (n=20). Interventions: Pre-intervention hamstring flexibility measurements were taken three times and an average was calculated. Each subject was then treated with either CSWD for 20 minutes at an intensity of 50 watts followed by passive hamstring stretching three repetitions for 30 seconds each or with passive stretching alone. After the therapeutic intervention, subject’s SLR was again measured three times and averaged. Subjects in the CSWD group were also asked to return 24 hours after treatment intervention to determine possible carry-over effects. Main Outcome Measures: The main outcome measure of this study was the change in HS flexibility pre and post-treatment intervention and 24-hours post-treatment intervention. Data was analyzed using T-Tests to examine differences between groups. Results: Both CSWD coupled with PS and PS alone resulted in a statistically significant change in flexibility between pre and post-intervention measures (p < 0.001). CSWD coupled with PS showed a greater increase in flexibility (13.7 degrees) when compared to PS alone (8.1 degrees) (p < 0.01). CSWD coupled with PS demonstrated a statistically significant change in flexibility 24 hours after intervention when compared to pre-intervention results (p < 0.001). No change was noted when comparing flexibility immediately after CSWD coupled with PS and measures 24 hours post-treatment. Conclusions: Both CSWD coupled with PS and PS alone are effective methods for increasing hamstring flexibility in healthy subjects. CSWD coupled with PS demonstrates greater increases in flexibility than PS alone. Additionally, improvements in flexibility noted with CSWD coupled with PS were found to be present 24 hours after application. Word Count: 446.