**The Efficacy of Two Thermal Modalities and the Effect on Hip Flexion**

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**Abstract**

Was there a difference between hamstring flexibility ROM following diathermy versus thermal ultrasound modality treatments. The null hypothesis (Ho) suggested there was no difference in ROM when comparing thermal ultrasound treatments to diathermy treatments on flexibility. The Ha (alternative hypothesis) suggested there was a significant difference between the two treatments (p<.05).

**Methods**

Twenty-two healthy college students aged between 19 and 25 participated in this study.

1. The participant were given instructions and more information about the study, and the modalities being used in this study while the researchers measure baseline ROM with a goniometer.

2. The participant was positioned supine.

3. The skin was prepped for ultrasound with an alcohol pad and then conductive gel was placed on the treatment area (distal hamstring tendons). (3 min)

4. Diathermy treatment was performed on one leg while ultrasound was completed on the other leg.

5. Diathermy parameter: continuous, 800 microsecond burst duration, 800 bursts per second, 800 microsecond interburst interval, and root mean square average of 48 W.

6. Ultrasound parameters: 3 MHz, 1.5 W/cm², for 7 minutes.

7. At the end of the treatment, range of motion was measured immediately after treatment.

8. The participant were tested with a goniometer by a certified Athletic Trainer after 2 minutes, 5 minutes and 10 minutes post treatment.

9. The participant then rested in the supine position in between testing.

All testing was conducted in Sports Medicine Lab. Each participant attended data collection for 45 minutes. The testing consisted of modality treatments and then goniometric measurements to evaluate hamstring flexibility. Participants were informed to wear a T-shirt, loose fitting athletic shorts, and running shoes.

**Results**

The effects of diathermy and thermal ultrasound were analyzed utilizing a two-way analysis of variance (time x groups) indicated a significant relationship of time. Mauchly’s sphericity was significant at the p<.05 level therefore Huynh-Feldt correction was utilized. F(3,553,149.232)= 9.100 p<.000. Results demonstrated that the use of both thermal ultrasound and shortwave diathermy produced a statistically significant effect on hamstring flexibility ROM over a period time.

**Conclusion**

The results of this study demonstrated that the use of both thermal ultrasound and shortwave diathermy produced a statistically significant effect on hamstring flexibility range of motion over a period time. Although range of motion increased, there was no significant difference between the increases in range of motion when comparing the two modalities; shortwave diathermy and thermal ultrasound. Regardless of which treatment intervention is used, the results suggested that flexibility exercise should be initiated immediately up to 2 minutes following the modality treatment for maximal benefit. This is shown through the decreases in flexibility when measured five minutes post modality treatment.

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**References**


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**Intro**

Proper extensibility of the human body’s musculature is important for the reduction of injuries. The hamstring muscle group is especially important when discussing flexibility since even a slight decrease can be detrimental to an athlete’s performance. Increasing the core temperature above four degrees Celsius will enhance areas vigorously, inducing muscle relaxation and reducing muscle spams and joint stiffness. These two deep heating modalities can provide immediate increases in range of motion. The use of Diathermy should be more effective than ultrasound since the hamsrings are large and it can increase temperature in larger areas, but research shows very minute benefits (Draper, et al., 2002). Studies completed by Ahmed, et al., (2014) and Akbari, et al., (2006) resulted in increased range of motion within the hamstrings due to ultrasound usage combined with stretching. However, there is a gap in the literature comparing the effectiveness of these two modality treatments on large muscle groups.