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THERMOTEX™ THERAPY SYSTEM INFRARED HEATING PAD VERSUS A CONVENTIONAL HEATING PAD AND A HOT TOWEL

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HYPOTHESIS:

Many consider the hindquarters and especially the gluteal muscles the "engine" of the horse. Intense, high level training places great physical demands upon these muscles. Standardbred racehorses not only have to have speed but also endurance and stamina. This breed of horses, because of the training regimes utilized, places an incredible amount of stress upon these muscle tissues.

Traditionally, placing a hot towel then an electric heating pad and then a stable blanket, to hold all of this in place, is the standard treatment for muscle soreness in this area. This system, although cumbersome, does have some degree of success but how deep does the heat really go? Does the Thermotex™ Therapy System Heating pad provide an easier and deeper penetrating heat to this anatomical area?

GOALS:

These are the questions that will be answered by this endeavor:

1. How deep within the tissue will the heat from the traditional hot towel/electric heating pad penetrate?

2. How deep within the tissue will the Thermotex™ Therapy System Infrared heating pad penetrate?

3. Will there be any side effects such as skin soreness, pain or dehydration with the traditional treatment?

4. Will there be any side effects such as skin soreness, pain or dehydration using the Thermotex™ Therapy System Infrared heating pad?

PROCEDURE AND METHODOLOGY:

Two four-year-old standardbred racehorses were chosen at random. Each animal had to meet the following criteria:

1) Both animals were in good health and free of any visible signs of lameness.
2) No medications either systemic, intraarticular or topical had been administered to these animals within the past three weeks.
3) The level of training was similar for each animal.
4) Over the past two weeks, no other physical therapy modalities were administered to them.

Each of the equine subjects will serve as their own control. A thermocouple probe will be placed at varying depths within the musculature. On the right side of the gluteal area a Thermotex™ Therapy System heating pad will be used to treat the musculature whereas on the left side the traditional treatment of a warm moist towel covered by a heating pad will be used.

Thermocouples will be placed at 1/2 centimeter intervals to a depth of six centimeters. The first will be placed just beneath the skin. The remainder will be placed centrally within the *gluteus medius* muscle at the stated depths.

Therapy will last twenty minutes with both the electric heating pad and the Thermotex™ Therapy System infrared heating pad set at their highest settings. Temperatures will be recorded at five minute intervals at each depth.

RESULTS AND DISCUSSION:

The literature states that the muscle tissue must rise at least five degrees to increase the metabolic rate of the muscle cells. There is a "therapeutic window," with the application of heat, where it is beneficial and not at a level that is causing pain.

The normal skin temperature of the horse is approximately 90° Fahreheit. Therefore, the source of heat to the tissues must be greater than this level to increase the underlying tissue temperatures. Application of temperatures greater than 133° Fahreheit, for a prolonged period of time, will cause skin sensitivity and eventually damage to the dermis. Gentle deep penetrating heat is ideal therapy for this muscle tissue.

Data was collected and revealed the following results:
(See table)

1) The Thermotex™ Therapy System infrared heating pad achieved both a higher level of temperature within the tissues and a greater depth of penetration within the musculature.
2) The temperature of the musculature rose faster and stayed at a therapeutic level longer with the Thermotex™ Therapy System infrared heating pad than using the conventional heating pad and a hot towel.
3) Upon digital palpation there wasn't any soreness or pain elicited by either treatment.
4) If there was any dehydration by either treatment, it was minimal.

SUMMARY AND CONCLUSSIONS:

The scientific evidence provided by this study allows the following conclusions:

- The Thermotex™ Therapy System infrared heating pads provide a very therapeutic, deep penetrating form of heat to the musculature.

- ❖ The temperature within the muscle tissue rises faster and is maintained at a therapeutic level longer when compared to the conventional therapy.

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ANIMAL ONE: TEMPERATURE MEASUREMENTS AT INCREASING DEPTHS OVER TIME

DEPTH	INITIAL		FIVE MINUTES		TEN MINUTES		FIFTEEN MINUTES		TWENTY MINUTES	
(CM)	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
1	98.6	98.8	102.2	102	105.8	104	105.5	103.8	106.2	104.4
1.5	98.4	98.5	102.4	102.4	105.5	104.2	105.5	104	106	104
2	98.4	98.4	102.4	102.4	105.6	103.8	105.5	103.8	106.2	104
2.5	98.4	98.6	102.6	102	105.5	103	105.2	102.8	105.8	102.5
3	98.8	98.6	102.6	101.2	105.2	101	105.2	101.2	105.6	101
3.5	98.6	98.4	102.2	100.4	104.6	100.2	104.8	99.8	105.2	100.2
4	98.4	98.4	101.8	98.8	102.4	98.6	104.2	98.8	104.8	98.6
4.5	98.6	98.5	101.6	98.6	102.6	98.5	103.8	98.4	105.2	98.4
5	98.5	98.4	101.8	98.5	102.5	98.4	103.8	98.6	104.8	98.5
5.5	98.5	98.5	102	98.4	102.6	98.4	103.8	98.6	104.5	98.4
6	98.2	98.4	102.2	98.4	102.5	98.4	103.6	98.5	104.4	98.5

ANIMAL TWO: TEMPERATURE MEASUREMENTS AT INCREASING DEPTHS OVER TIME

DEPTH	INITIAL		FIVE MINUTES		TEN MINUTES		FIFTEEN MINUTES		TWENTY MINUTES	
(CM)	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT	LEFT
1	99.8	99.6	103.6	101.5	106.8	103.4	106.6	103	106.8	103.2
1.5	99.5	99.4	103.4	101.4	106.6	103.4	106.6	102.8	106.8	103
2	99.8	99.5	103.4	101.2	106.2	102.8	106.6	102.8	106.6	103.2
2.5	99.8	99.6	103.6	101.2	106.2	102	106.4	102.4	106.6	102.8
3	99.6	99.6	103.5	101.2	106.5	101.6	106.4	101.2	106.5	101
3.5	99.5	99.5	103.2	100.8	106.4	101.5	106.2	100.5	106.5	100.2
4	99.4	99.6	102.8	100.5	105.6	101.4	106.4	100.6	106.4	100.2
4.5	99.2	99.8	102.5	99.6	105.4	99.8	105.8	99.6	106.2	99.8
5	99.4	99.8	102.6	99.5	103.8	99.6	104.8	99.4	105.6	99.6
5.5	99.6	99.5	102.5	99.5	103.8	99.5	104.8	99.5	105	99.5
6	99.4	99.4	102.2	99.5	103.6	99.5	104.5	99.5	105.2	99.5