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Introduction

360° Test Labs has been retained to perform functional testing of a HealthyLine Therapy Mat. A 19" x 31" Therapy mat inset with 1" diameter tourmaline discs in a 11 x 22 grid of approximately 12.5" x 25" was provided. Included was a controller, approximately 3" x 5" x 1" with a power button, temperature setting dial, a two digit LED display and a metal "EMF" contact. The LED normally displays the mat temperature (°C), and displays set-point temperature when the temperature dial is rotated. Two cords exit the controller: a 3 foot cord with a plug for a standard NEMA 5-15R receptacle, and a 30" cord with a plug to mate with the receptacle on the therapy mat.

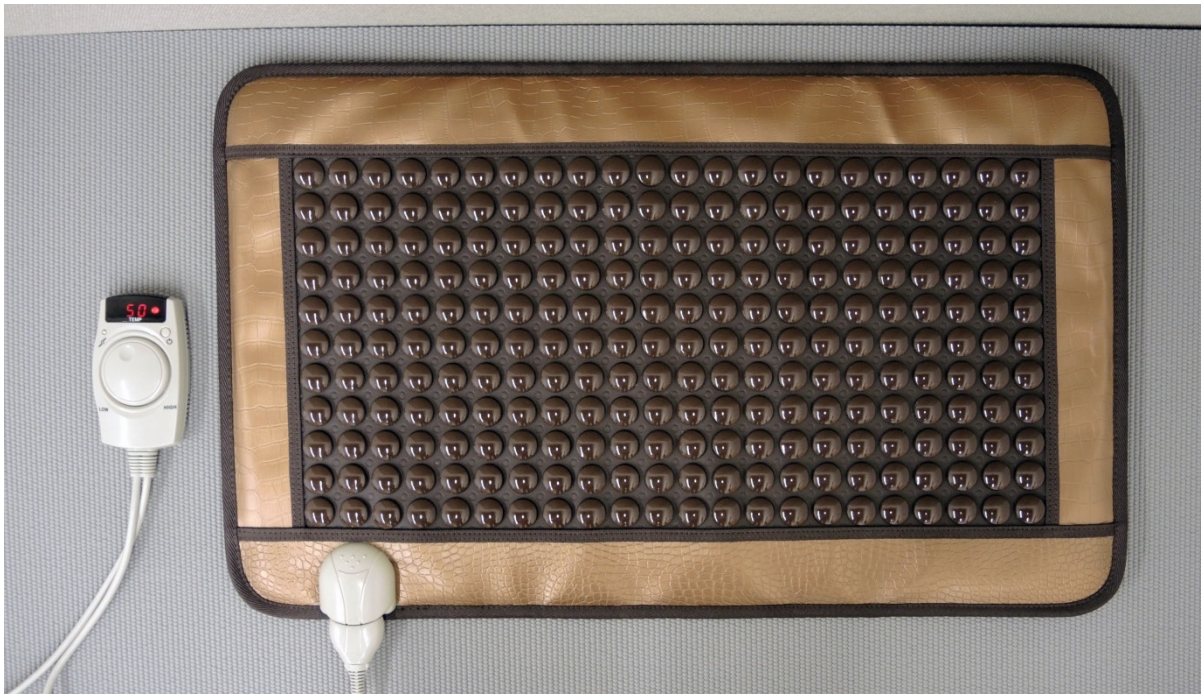

Figure 1: HealthyLine Therapy Mat and Controller

Build Quality

A non-destructive inspection of the therapy mat and controller was conducted. The outer cover and stitching appears to be of good quality with well - attached stones. The plastic controller housing is of sturdy construction containing a printed circuit board, the construction of which is typical of the industry standard for mass production items.

The controller consumes approximately 100 watts when the mat is being heated and approximately 0.5 watts when not heating. Uncovered, in a ambient temperature of 24°C, the mat warmed to 25°C above ambient in approximately 35 minutes and stabilized to around 26°C above ambient after about 60 minutes while the displayed temperature matched the actual overall temperature of the stones within a few degrees. Shown below are thermal images of the therapy mat stabilized at a set temperature of 50°C, which shows the temperature variation across the mat.

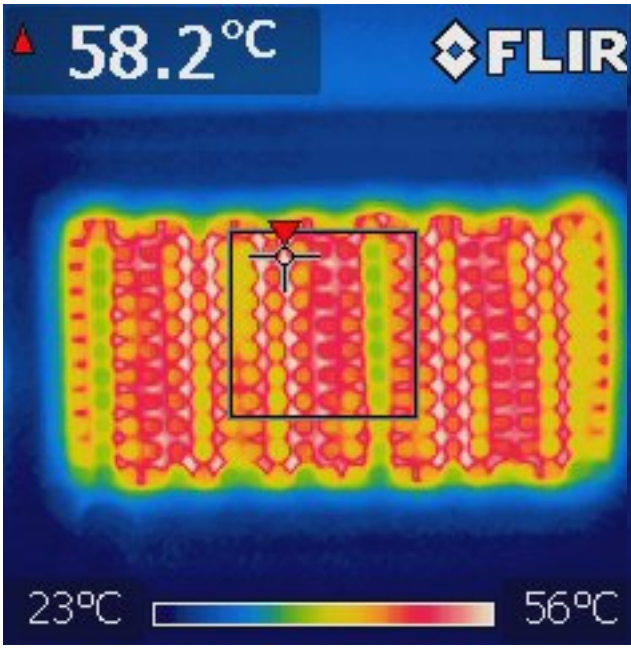

Figure 2: Highest temperature @ 50° set point

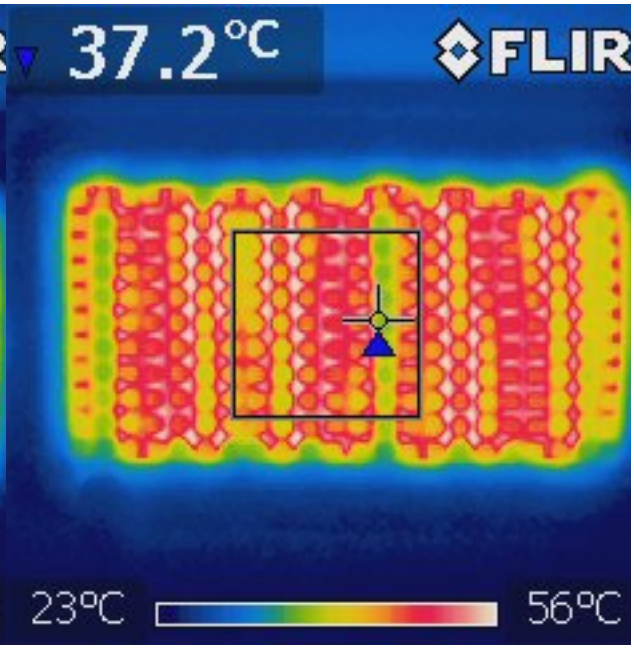

Figure 3: Lowest temperature @ 50°C set point

The temperature of the warmest stones was typically about 10°C cooler than the underlying mat, while the cooler stones were about 10°C cooler than the warmest stones.

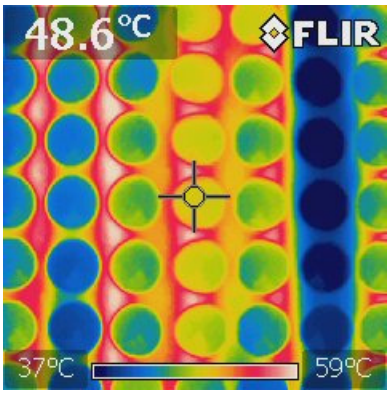

Figure 4: A warmer stone

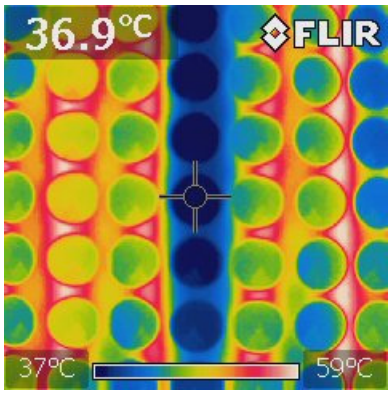

Figure 5: A cooler stone

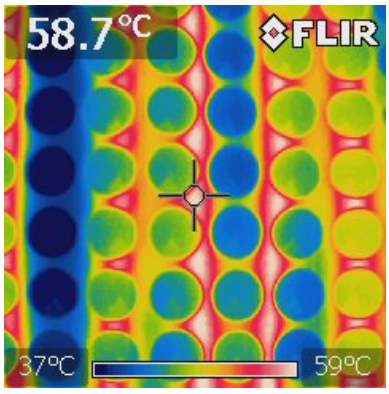

Figure 6: Underlying mat

Negative ION Detection

Negative Ion production by the therapy mat was measured by turning the mat on with the temperature set to maximum. The mat was maintained in this state for two hours to allow the mat to stabilize. For the detection of negative ions, an AlphaLab, Inc. AIC 2 air ion counter was utilized. An initial baseline measurement was made directly over the therapy mat with the counter supported approximately 1" above the center of the mat and set on its lowest range of 0-1990 ions/cm^3 before the mat was energized; resulting in a reading that varied from -0.02 to 0.02. Another measurement was made after the mat had been allowed to temperature stabilize for two hours.

With the mat energized and temperature stable the reading varied considerably, ranging from near zero up to over 2000 ions/cm^3. Most often, the reading varied between 500 and 1000 ions/cm^3.

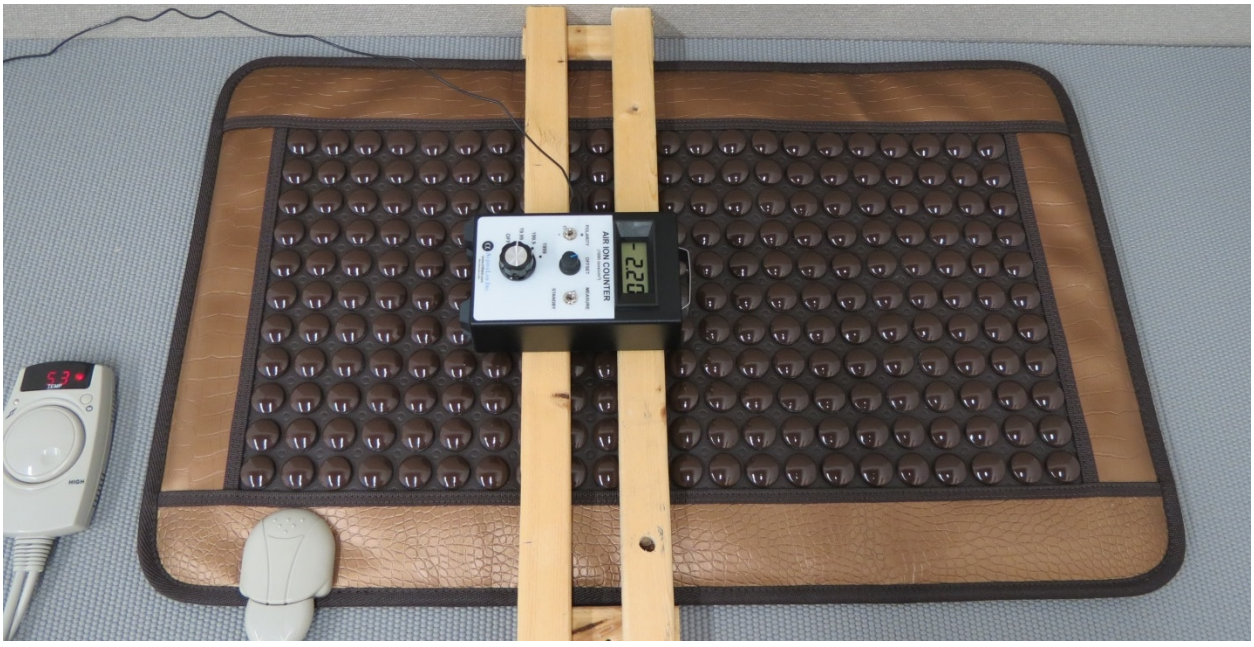

Figure 7: Ion counter with 2200 ions/cm^3 indicated (highest observed count)

Far Infrared Detection

The presence of far infrared radiation was determined utilizing a modified motion detector containing a PIR D203S pyroelectric infrared sensor with a specified spectral response of 5-14µm. The detector was modified by replacing the Fresnel lens with an opaque tube to greatly narrow the sensor field of view. The therapy mat was then placed upon a foam PVC sheet, turned on and set for a temperature of 50°C.

Figure 8: Modified motion detector

After the mat had stabilized at the set temperature, the IR detector was pointed away from the mat and the detector was then slowly pivoted toward the mat until IR detection was indicated. The process was repeated with the detector pointed away from the mat in various initial directions that then approached the mat from different directions. In each case, IR was indicated as the edge of the mat came into the field of view of the detector sensor.

CONCLUSION

Although there was some variation in stone temperature, no significant build issues were found. The thermal images suggest the variation may be due to inconsistent spacing of the heating element; further investigation would require destructive disassembly of the mat.

The negative ion count above the energized Therapy mat was as much as 2200 ions/cm^3 greater than above the de-energized mat.

Infrared between 5-14µm (far infrared) was detected radiating from the Therapy mat.

Reviewed by: SMH, ZJH, RNS