THE EFFECTS OF CONTRAST BATHS ON DORSAL AND PLANTAR PEDAL SKIN BLOOD FLOW IN AGE ADVANCED SUBJECTS VERSUS CONTROLS.

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Purpose: Contrast baths have been used as therapy for over 2000 years. It is a common belief that the alternation of hot and cold water immersion helps speed injury recovery. This is thought to be achieved via several modalities including an improvement of patient circulation. However there is very little published on contrast baths and blood flow, especially the differences in plantar versus dorsal skin blood flow in the foot, which have different control mechanisms. Furthermore, there is even less scientific literature regarding the effects of contrast baths on blood flow in age advanced subjects. Therefore, we recruited 24 subjects ranging from 24 to 52 years of age and investigated dorsal and plantar pedal skin blood flow changes during 4 consecutive cycles of 3 minutes hot and 1 minute cold contrast bath therapy.

Methods: The hot and cold water used for the contrast baths were maintained at a constant temperature of 37.8°C and 15.5°C respectively. Before beginning the experiment, subjects sat and rested for 20 minutes at room temperature (25°C). Subjects’ feet were then submerged into the hot bath for 3 minutes. The foot was then immediately transferred into the cold bath for one minute. This cycle was repeated 3 more times for a total of 4 cycles. Subject's blood flow was also measured during 15 minutes of constant hot water therapy and 15 minutes of constant cold therapy on two consecutive days. Blood flow was measured by a Laser Doppler flow meter and calculated by the Biopac MP 100 system. Acknowledge 3.8.3 software was then used to convert the blood flow to flux units. Skin temperature was also monitored via Yellow Spring Instruments temperature gage.

Results: In both young and older subjects, contrast bath hydrotherapy significantly improves dorsal and plantar foot skin blood flow more than constant hot hydrotherapy alone. However, the improvement in blood flow was more significant in the younger subjects, and plantar blood flow was significantly more affected than dorsal blood flow.

Conclusions: Our preliminary data supports the use of contrast bath therapy for the purpose of improving blood flow in the foot in both young and older patient populations. However, further larger sample size studies should be done to investigate the therapeutic effects of contrast bath therapy on blood flow.