

SWACSM Abstract

Effect of Localized Vibration Using Massage Gun at 40hz and 50hz on Blood Flow

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ABSTRACT

Data has shown that whole body vibration can positively affect blood flow, however, there are very few studies on the effect of localized therapeutic vibration on arterial blood flow. Occupational studies looking at localized vibration effects on skin blood flow normally include high frequency settings. In the last few years, massage guns have become popular, but they operate at lower frequencies. Currently, there is no data on the effects of localized vibration from massage guns on arterial blood flow. **PURPOSE:** To compare the effects of two different frequencies of localized vibration on blood flow in the popliteal artery. **METHODS:** 12 subjects participated in this study (8 males and 4 females). Mean age was 22.7 ± 1.6 years; mean height was 181.1 ± 11.8 cm; mean weight was 78.2 ± 16.2 kg. Participants wore shorts to give access to the popliteal artery. Participants were hooked to ECG leads to control measurement of artery diameter and then laid on a treatment table in a prone position with a foam roller under their ankles. Once at resting heart rate, baseline blood flow readings were taken using ultrasound, which measured TA Mean and Volume Flow. The participants were then randomly given a 5-minute treatment of control with no vibration or vibration at 40hz or 50hz. Blood flow readings were taken immediately post-treatment and then every minute for 5 minutes after. **RESULTS:** A two-factor repeated measures analysis was performed. Each subject was measured under all levels of condition (Control 5 min, 40hz 5 min, and 50hz 5 min) and time (baseline, post, post1-5). TA Mean and Volume Flow for both 40hz and 50hz were significantly greater than control ($p=0.0020$ and $p=0.0110$ respectively). The effect of time was significant ($p<0.0001$), with both treatment conditions being different from control over time ($p=0.0013$). **CONCLUSION:** Use of a massage gun at 40hz and 50hz for 5 minutes results in increases in blood flow that stay elevated up to 5 minutes after treatment. While there is no statistical difference between 40hz and 50hz, the mean difference in blood flow is greater for 50hz. Use of a massage gun may assist in muscle recovery since it does enhance muscle blood flow.