

**Massage Gun Use at a Lower Frequency Does Not Alter Blood Flow**

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**ABSTRACT**

Data has shown that whole body vibration can affect blood flow velocity in arteries and improves cutaneous blood flow. However, there is very limited information available on therapeutic localized vibration. Massage guns have become very popular with little to no research validating their efficacy. It is currently unknown if massages guns can affect arterial blood flow. **PURPOSE:** To determine if massage gun treatment at 30Hz improves and retains blood flow in the popliteal artery as compared to a control condition. **METHODS:** There were 12 participants in this study (8 males and 4 females). The mean age was  $22.7 \pm 1.6$  yrs, the mean height was  $181.1 \pm 11.8$  cm, and the mean weight was  $78.2 \pm 16.2$  kg. Participants wore shorts that allowed us to access their popliteal artery using ultrasound imaging. Participants wore electrodes to control the measurement of blood flow from widest artery diameter. Participants lay prone with a foam roller under their ankles to slightly elevate their feet. After ten minutes of rest, ultrasound imaging was used to find the participant's popliteal artery behind the knee and took two baseline measurements. We measured the mean velocity of blood flow (TA<sub>mean</sub>) and volume flow (VoIF). We measured subjects on 4 different days (30Hz at 5 minutes, 30Hz 10 minutes, Control 5 minutes, Control 10 minutes). Measurements of TA<sub>mean</sub> and VoIF were measured at multiple time points after treatment. **RESULTS:** A two-factor repeated measures analysis was performed. Each subject was measured under all levels of condition (1=30hz 5 min, 4=Control 5 mi, 5=30hz 10 min, 8=Control 10 min) and time (baseline, post, post1-5, 7, 9, 11, 13, 15, 17, 19). TA<sub>mean</sub> is significantly greater in 30Hz versus control ( $p=0.0349$ ). TA<sub>mean</sub> varies across time, and the effect of the condition on TA<sub>mean</sub> is related to time ( $p=0.0104$ ). There is not a significant difference in flow between 30Hz and control ( $p=0.2425$ ). Blood flow varies across time ( $p<.0001$ ) but the effect of condition (30Hz or control) is not related to time ( $p=0.0610$ ). **CONCLUSION:** Use of a massage gun at a lower frequency setting of 30Hz may cause slight increases in velocity but does not increase mean blood flow as compared to control. Lower frequency settings on massage guns may not be benefit blood flow in the massaged muscle group.