

## **Lower Leg Lean Mass is Associated with Reduced Pulse Pressure Amplification in Postmenopausal Women**

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### **ABSTRACT**

Sarcopenia, the age-related loss of skeletal muscle mass, has been associated with increased arterial stiffness (pulse wave velocity, PWV). Lower leg muscle mass has been associated with increased brachial-ankle PWV (baPWV), a measure of systemic arterial stiffness. Pulse pressure (PP) is lower in the aorta compared to the brachial artery (PP amplification, PPA), in healthy individuals. PPA decreases with aging due to increased aortic stiffening. Lower PPA is an independent predictor of cardiovascular death. It is unknown whether leg muscle mass is associated with lower PPA in postmenopausal women. **PURPOSE:** To examine relationships between leg lean mass (LegLM), PPA, and baPWV in postmenopausal women. **METHODS:** 93 postmenopausal women (aged 48 - 71 years; BMI:  $30 \pm 7$ ) underwent vascular function and body composition testing. Aortic PP was determined using applanation tonometry. baPWV and brachial PP were measured using an oscillometric device with cuffs placed on the arms and ankles. LegLM was measured by dual-energy x-ray absorptiometry. Handgrip strength was measured as the maximal voluntary contraction (MVC). The relationships between these variables were analyzed using Pearson's correlations. Significant correlations were subsequently analyzed using multiple linear regression. **RESULTS:** LegLM was correlated with baPWV ( $r = -.218, p = .034$ ) and PPA ( $r = .298, p = .004$ ). PPA was also negatively correlated with baPWV ( $r = -.261, p = .01$ ). LegLM was positively associated with PPA ( $\beta = 0.216, t = 2.320, p = .023$ ) after adjusting for age, MVC, systolic pressure, and heart rate. **CONCLUSION:** Low leg lean mass was related to vascular dysfunction measured as increased systemic arterial stiffness and reduced PPA. Greater muscle mass in the legs may be protective against increased systemic arterial stiffness and the reduced PPA associated with aging.