

# THE EFFECT OF OBESITY ON AORTIC STIFFNESS IS AGE DEPENDANT

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**Background** Aortic pulse wave velocity (PWV), a measure of central arterial stiffness, is an independent predictor of cardiovascular and all-cause mortality and has been associated with numerous cardiovascular risk factors. However, data on the association between obesity and aortic stiffness have been mixed, with some studies showing a positive association, others a negative association and others apposing effects between the sexes.

**Methods** 221 adult volunteers (127 female, age range 18–72 years, mean 40.3 years) were recruited via advertisement. Exclusion criteria included a history of cardiovascular-related disease, including hypertension, hypercholesterolaemia or diabetes. Central PWV was measured in the thoracic aorta using MRI. Total body fat mass was measured with multi-frequency bioelectrical impedance analysis.

**Results** Multiple linear regression analyses showed that, when age, sex and systolic BP were adjusted for, higher body fat composition was associated with lower aortic PWV ( $p=0.004$ ). These effects were similar for both men and women ( $p=0.60$  for a sex by body composition interaction). Further analysis revealed a significant age by body fat interaction ( $p<0.001$ ) such that, in young adults obesity predicted a lower PWV whereas in older adults obesity predicted higher PWV.

**Conclusions** These results show that the effect of obesity on aortic stiffness is age-dependant and are able to consolidate some previously inconsistent findings within the literature. These findings may reflect morphological and physiological differences in obesity at different ages.