

Exercise central haemodynamics: mechanisms and relation to end organ damage

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During exercise, optimal delivery of blood to the peripheral tissues requires an appropriate functional interaction between the heart and large arteries. Under normal healthy conditions there is an increase in systolic blood pressure as exercise intensity increases. However, some individuals experience an exaggerated elevation in blood pressure during exercise. This type of exercise response was recently shown to predict cardiovascular events and mortality, above and beyond resting blood pressure values, and independent from conventional cardiovascular risk factors. The underlying cause of this relationship is unknown, and very few studies have examined the physiological mechanisms explaining exaggerated exercise blood pressure. Recent data suggest that masked hypertension may play a causative role with respect to the increased risk associated with exaggerated exercise blood pressure. In terms of mechanisms contributing to exercise blood pressure, results of a recent invasive central haemodynamic study found that major elevations in systolic forward compression waves generated by left ventricular contraction (and not peripheral reflected waves) was the principal driver of exercise blood pressure.