

# Natriuretic Peptide Release during Exercise in Patients with Valvular Heart Disease: a Systematic Review.

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December 18, 2020

## Abstract

Aims Serum biomarkers have a potential role in the risk stratification of patients with heart valve disease and may help determine the optimal timing of intervention. Much of the published literature relates to biomarker sampling in a resting state, but the relationship of exercise biomarkers is less well described. We performed a systematic review to examine the significance of exercise natriuretic peptides on echocardiographic variables and cardiovascular events, in valvular heart disease. Methods A search for studies that assessed exercise biomarkers in patients with moderate to severe valve lesions was performed. We examined the relationship between rest and exercise BNP and also the endpoints of symptoms, haemodynamic or echocardiographic variables and clinical outcomes. Results 11 prospective studies were identified (844 participants). 61% were male and the mean age was  $55.2 \pm 9.6$  years. The majority of the blood samples were taken at baseline and within 3 minutes of stopping exercise. There was a significant increase in exercise BNP compared with rest, in patients with aortic stenosis, mitral regurgitation and mitral stenosis. Elevated exercise BNP levels correlated with mean gradient and left atrial area, and there was a relationship between a higher exercise BNP and a blunted blood pressure response, in aortic stenosis. Furthermore, exercise BNP was independently associated with cardiac events, over and above resting values, in patients with mitral regurgitation and aortic stenosis. Conclusions The results suggesting that exercise natriuretic peptide levels may have additive prognostic importance over resting levels, as well as demographic and echocardiographic data.

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