

Your genes determine how your heart rate responds to exercise

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Your genes can determine how your heart rate and blood pressure respond to exercise—and may act as an early warning of future problems with your heart or blood vessels—according to new research published in *The Journal of Physiology*.

When people [exercise](#), their [heart](#) rate and blood pressure increase. However, the magnitude of this increase is different for different people. Previous research has shown that abnormally large increases in blood pressure during exercise makes it more likely that people will suffer from future [high blood pressure](#). Therefore understanding why people react differently to exercise is important as this can help to identify risk factors and enable early monitoring or treatment of individuals at risk.

Until now it has not been known why the response to exercise varies between different people. This new research has found that genetic differences in receptors found in skeletal muscles can contribute to this different response. Receptors are groups of specialised cells that detect changes in the environment and cause some kind of response. The scientists identified that the presence of two common genetic mutations in receptors found in

skeletal muscle led to higher blood pressure during exercise compared to people who did not have them, particularly in men.

The research conducted by the University of Guelph (Canada), involved measuring heart rate and blood pressure of 200 healthy young men and women before and during a handgrip exercise, plus analysing their DNA for genetic [risk factors](#).

While the study is limited by the sample size and the specific type of exercise used, the effect of these genetic variants in the skeletal muscle receptors was significant. Further work will be needed to look at other types of exercise and to replicate this finding.

Philip J. Millar, corresponding author of the study commented on the findings of the results 'This research suggests the presence of these receptors can contribute to larger blood pressure responses during exercise—a risk factor for future problems with the heart or blood vessels. It is important to examine why we saw this difference mainly in men, and to understand the specific mechanisms behind how these genetic variants influence their [heart rate](#) and [blood pressure](#) responses to exercise.'

More information: TRPV1 and BDKRB2 receptor polymorphisms can influence the exercise pressor reflex, *Journal of Physiology* (2018). [physoc.onlinelibrary.wiley.com ... doi/10.1113/JP276526](https://physoc.onlinelibrary.wiley.com/doi/10.1113/JP276526)

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