

## Publication

Physical activity is favorably associated with arterial stiffness in patients with obesity and elevated metabolic risk.

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**Author(s)** Königstein, Karsten; Infanger, Denis; Klenk, Christopher; Carrard, Justin; Hinrichs, Timo; Schmidt-Trucksäss, Arno

**Author(s) at UniBasel** [Schmidt-Trucksäss, Arno](#) ;

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Physical activity and cardiorespiratory fitness (CRF) are relevant modifiers of cardiovascular risk. Their independent effects on arterial stiffness have not been assessed in people with obesity. This study aimed to assess the independent effects of light (LPA) and moderate-to-vigorous (MVPA) physical activity and CRF on Pulse wave velocity (PWV).; Brachial-ankle PWV (baPWV) was measured cross-sectionally in 55 subjects (43.0±13.8 years; 66% women) with moderate cardiovascular risk. Body composition was assessed with bioelectrical impedance-analysis. Daily minutes of LPA and MVPA were measured by accelerometry and CRF (peak oxygen uptake [VO<sub>2</sub> peak]) with spiroergometry. Independent effects of LPA, MVPA, and VO<sub>2</sub> peak on baPWV were analyzed in an age-, sex-, body fat mass-, and blood pressure-adjusted ANOVA.; Every 10 minutes increase of daily MVPA was associated with a 2.8% (0.32 m/s [-0.64 to 0.001 m/s], P=0.05) reduction of baPWV, whereas LPA and VO<sub>2</sub> peak had only a little or no relevant effects on baPWV.; Higher MVPA is associated with lower composite arterial stiffness independent of CRF and the number of metabolic risk factors in patients with obesity and further metabolic risk factors. Thus, lifestyle interventions should aim for an increase in MVPA. BaPWV may improve the monitoring of favorable effects of MVPA, even if an improvement of VO<sub>2</sub> peak cannot be obtained.

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