

Publication

Exercise, Arterial Crosstalk-Modulation, and Inflammation in an Aging Population: The ExAMIN AGE Study

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4352543**Author(s)** Streese, Lukas; Deiseroth, Arne; Schäfer, Juliane; Schmidt-Trucksäss, Arno; Hanssen, Henner**Author(s) at UniBasel** [Streese, Lukas](#) ; [Hanssen, Henner](#) ;**Year** 2018**Title** Exercise, Arterial Crosstalk-Modulation, and Inflammation in an Aging Population: The ExAMIN AGE Study**Journal** Frontiers in Physiology**Volume** 9**Pages / Article-Number** 116**Keywords** aging, vascular function, exercise, arterial stiffness, retinal vessels

Background: Age is a key determinant for the development of cardiovascular disease and higher age coincides with an increased prevalence of obesity and physical inactivity. The study examines the influence of physical activity on aging processes of physiological systems focusing on the mechanisms of vascular aging. Methods/Design: The study consists of two parts. The cross-sectional approach aims at examining the association of physical fitness and cardiovascular risk with large and small artery function in healthy older active (HOA, n = 40) and sedentary (HOS, n = 40) persons as well as older sedentary individuals with increased cardiovascular risk (OSR, n = 80) aged 50–80 years. In the interventional approach, the OSR group is randomized into a 12-week walking-based high intensity interval training (HIIT) group or a control condition, aiming at examining the effects of HIIT on arterial function in diseased older adults. Active lifestyle is defined as >9 metabolic equivalent of task (MET) per week and sedentary as ≤3 MET/week. Inclusion criteria for OSR are overweight or obesity (body mass index ≥ 30 kg/m²) plus at least one additional cardiovascular risk factor. The primary outcome is arterial stiffness as determined by aortic pulse wave velocity (PWV). The secondary outcomes are retinal arterial and venous diameters. Further cardiovascular assessments include peripheral PWV, central haemodynamics, retinal endothelial function, carotid intima media thickness, cardiac strain and diastolic function as well as autonomic function and inflammation. Physical fitness is measured by a treadmill-based spiroergometry to determine peak oxygen uptake. Discussion: The aim of the study is to demonstrate the importance of and need for specific physical activity programs for seniors to achieve healthier aging as a longterm goal. Vascular function defines disease- and age-related end organ damage and represents the potential to contain health at older age. This research will identify cardiovascular biomarkers that best resemble underlying cardiovascular risk in age and disease. The integrated approach will help define new recommendations for treatment guidance of exercise therapy in an aging population.

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