

Publication

Superior Effects of High-Intensity Interval Training vs. Moderate Continuous Training on Arterial Stiffness in Episodic Migraine: A Randomized Controlled Trial

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Author(s) Hanssen, Henner; Minghetti, Alice; Magon, Stefano; Rossmeissl, Anja; Papadopoulou, Athina; Klenk, Christopher; Schmidt-Trucksäss, Arno; Faude, Oliver; Zahner, Lukas; Sprenger, Till; Donath, Lars**Author(s) at UniBasel** [Hanssen, Henner](#) ;**Year** 2017**Title** Superior Effects of High-Intensity Interval Training vs. Moderate Continuous Training on Arterial Stiffness in Episodic Migraine: A Randomized Controlled Trial**Journal** Frontiers in Physiology**Volume** 8**Pages / Article-Number** 1086

Background:: Migraine is associated with increased cardiovascular risk and vascular dysfunction. Since aerobic exercise can reduce cardiovascular risk, the present randomized controlled trial aimed at investigating the effects of high-intensity interval training (HIT) vs. moderate continuous exercise training (MCT) on arterial stiffness in migraine patients.; **Methods::** Forty-eight episodic migraineurs were initially enrolled in the study. 37 patients [female: 30; age: 37 (SD: 10); BMI: 23.1 (5.2); Migraine days per month: 3.7 (2.5)] completed the intervention. Central blood pressure, pulse wave reflection, and aortic pulse wave velocity (PWV) were obtained by an oscillometric monitor. Incremental treadmill exercise testing yielded maximal and submaximal fitness parameters. Participants were randomly assigned to either HIT, MCT, or a control group (CON). The intervention groups trained twice a week over a 12-week intervention period.; **Results::** After adjustment for between-group baseline differences, a moderate meaningful overall reduction of the augmentation index at 75 min; -1; heart rate (Alx@75) was observed [partial eta squared ([Formula: see text]) = 0.16;; p; = 0.06]. With 91% likely beneficial effects, HIT was more effective in reducing Alx@75 than MCT [HIT: pre 22.0 (9.7), post 14.9 (13.0), standardized mean difference (SMD) = 0.62; MCT: pre 16.6 (8.5), post 21.3 (10.4), SMD -0.49]. HIT induced a relevant reduction in central systolic blood pressure [cSBP: pre 118 (23) mmHg, post 110 (16) mmHg, SMD = 0.42] with a 59% possibly beneficial effect compared to CON, while MCT showed larger effects in lowering central diastolic blood pressure [pre 78 (7) mmHg, post 74 (7) mmHg, SMD = 0.61], presenting 60% possibly beneficial effects compared to CON. Central aortic PWV showed no changes in any of the three groups. Migraine days were reduced more successfully by HIT than MCT (HIT: SMD = 1.05; MCT: SMD = 0.43).; **Conclusion::** HIT but not MCT reduces Alx@75 as a measure of pulse wave reflection and indirect marker of systemic arterial stiffness. Both exercise modalities beneficially affect central blood pressure. HIT proved to be an effective complementary treatment option to reduce vascular dysfunction and blood pressure in migraineurs.

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