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### Abstract: 2818

#### Direct evidence for therapeutic induction of arteriogenesis in patients with stable angina pectoris via external counterpulsation: a prospective controlled proof of concept trial

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**On behalf:** Arteriogenesis Network

**Topic(s):**

Angina pectoris, stable

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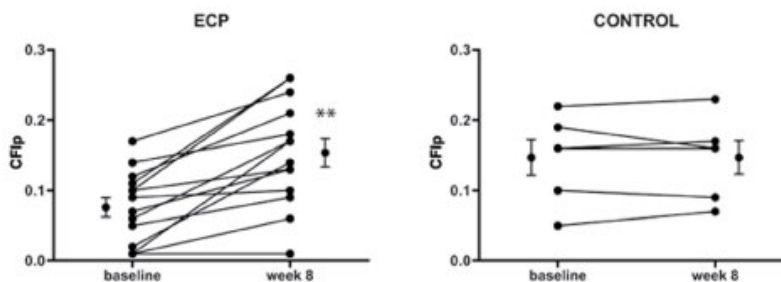
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**Purpose:** Arteriogenesis (collateral artery growth) is nature's most efficient rescue mechanism to overcome the fatal consequences of arterial occlusion or stenosis. Here we present a first proof-of-concept trial providing direct evidence for a therapeutic effect of external counterpulsation (ECP) on collateral artery growth in the heart.

**Methods:** 20 patients (age 62±2.5) with stable coronary artery disease (CAD) and at least one hemodynamic significant stenosis eligible for percutaneous coronary intervention were recruited. One group of patients underwent 35 1-hour sessions of ECP in 7 weeks. In the other group (control) the natural course of collateral circulation over 7 weeks was evaluated. All patients underwent a cardiac catheterization at baseline and after 7 weeks. The effect on collateral artery growth was assessed by invasive measurements of the pressure derived collateral flow index (CFIp, primary endpoint) and pressure derived fractional flow reserve (FFR).

**Results:** In patients treated with ECP CFIp improved significantly from 0.08±0.01 to 0.15±0.02 (p<0.001) and FFR from 0.68±0.03 to 0.79±0.03 (p=0.001). In the control group CFIp and FFR did not change after 7 weeks. The ECP-group showed a significant reduction of the CCS (p=0.004) and NYHA (p<0.001) classification, whereas the control-group remained clinically unchanged.

**Conclusions:** We here provide direct functional evidence for the stimulation of coronary arteriogenesis via ECP in patients with stable CAD. These data might open a novel non-invasive and preventive treatment avenue for patients with non-acute vascular stenotic disease.



Change of CFIp from baseline to week 8

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