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### *Clinical Trials Study*

**Endothelial progenitor cells mobilization after maximal exercise according to heart failure severity**

Christos Kourek, Eleftherios Karatzanos, Katherina Psarra, Georgios Georgiopoulos, Dimitrios Delis, Vasiliki Linardatou, Gerasimos Gavrielatos, Costas Papadopoulos, Serafim Nanas, Stavros Dimopoulos

### **Abstract**

#### BACKGROUND

Vascular endothelial dysfunction is an underlying pathophysiological feature of chronic heart failure (CHF). Patients with CHF are characterized by impaired vasodilation and inflammation of the vascular endothelium. They also have low levels of endothelial progenitor cells (EPCs). EPCs are bone marrow derived cells involved in endothelium regeneration, homeostasis and neovascularization. Exercise has been shown to improve vasodilation and stimulate the mobilization of EPCs in healthy people and patients with cardiovascular comorbidities. However, the effects of exercise on EPCs in different

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## Blood Flow Restriction Exercise Attenuates the Exercise ...

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**Endothelial progenitor cells** (EPCs) are a vasculogenic subset of **progenitors**, which play a key role in **maintenance of endothelial** integrity. These **cells** are **exercise-responsive**, and thus **exercise** may play a key role in vascular repair and maintenance via **mobilization** of such **cells**. Blood flow **restriction exercise**, due to the augmentation of local tissue hypoxia, may promote **exercise-induced EPC mobilization**.

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## Endothelial progenitor cells in cardiovascular disease and ...

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The discovery of **endothelial progenitor cells** in the 1990s challenged the paradigm of angiogenesis by showing that **cells** derived from hematopoietic stem **cells** are capable of forming new blood vessels even in the absence of a pre-existing vessel network, a process termed vasculogenesis.

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It is known that EPC **mobilization** from the bone marrow occurs in response to **endothelial** injury, where EPCs migrate and differentiate into mature **endothelial cells** to repair the injured site and maintain proper **endothelial** integrity and function. 3 However, it has been also shown that circulating EPCs are increased in pressure-induced ...

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Nov 23, 2018 · **Endothelial** dysfunction and cellular repair in **heart failure** with preserved ejection fraction: response to a single **maximal exercise** bout. ... Repair of deficient endothelium is possible through **endothelial progenitor cells** ... we postulated that a single **maximal exercise** bout recruits EPC and TA, in analogy to HFrEF patients.





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Oct 01, 2016 · **Exercise training** (ET) promotes **endothelial repair mechanisms** in CHF by **mobilization of progenitor cells from BM**, increasing their number and ...

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**Publish Year:** 2016

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