

# The influence of inflation rate on the hematologic and hemodynamic effects of intermittent pneumatic calf compression for deep vein thrombosis prophylaxis

**Morris RJ, Giddings JC, Ralis HM et al (2006).**  
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## Abstract

## Overview

The aim of this study was to identify if two different types of calf IPC systems, one with a rapid inflation profile and the other with a more gentle profile, influenced haematological and haemodynamic outcomes. Although both systems suppressed pro-coagulant activation, the rapid inflation device did not increase global fibrinolysis whereas the gentle system did.

## Design and methodology

Twenty healthy male volunteers had a two- hour session where both legs had IPC garments with standard default pressure settings applied. After a minimum of 2 days the procedure was repeated using the alternative device. Blood samples for fibrinolytic and blood coagulation components were obtained without using a tourniquet from the antecubital vein immediately before and after each of the IPC sessions. Doppler ultrasound flow velocity measurements were taken immediately after the commencement of IPC, after 1 hour and immediately before cessation of IPC.

## Results

Both IPC systems reduced procoagulant activity whereby PAI-1 (PAI is an inhibitor and favours coagulation) was reduced and both tPA (favours anticoagulation) and TFPI activity were increased (TFPI is an important regulator of the extrinsic clotting system. Increased amounts inhibit aspects of the cascade resulting in anticoagulation being favoured.)

The gentle IPC device was significantly able to increase the global fibrinolysis compared to the rapid inflation device.

## Conclusion

It is unclear why the gently inflating system was able to increase global fibrinolysis whereas the rapid inflating system was not. Certain systems with rapid inflation profiles may not provide optimal DVT prophylaxis.