

# The Mechanoreflex Response to Dynamic and Passive Limb Movement

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## **Abstract**

During exercise, the exercise pressor reflex (EPR) activates to increase efferent sympathetic nervous activity, increasing BP and HR, and thus increasing perfusion pressure. One component of the EPR, the mechanoreflex, has only recently been studied in terms of its central and peripheral cardiovascular effects. It has been suggested that movement causes the activation of this reflex, and the resultant physiological responses to this activation include increased CO and localized hyperemia (increased blood flow). The purpose of the present study was to isolate the mechanoreflex from the metabolically sensitive metaboreflex and to analyze the responses, while comparing two methods of movement: passive limb movement (PLM) and static stretch (SS). Central hemodynamic variables (CO, SV, HR) were measured using a Finometer, while peripheral hemodynamic variables (StO<sub>2</sub>, THb) were measured using a near-infrared spectrometer (NIRS). Both PLM and SS were shown to increase central (CO, SV, HR) variables significantly ( $p < 0.05$ ). While PLM elicited an increase in local oxygen saturation (StO<sub>2</sub>) ( $p < 0.05$ ), SS had an opposite effect with a significant decrease in saturation from baseline ( $p < 0.05$ ). For this reason, it has been postulated that SS may not be a clear isolation of the mechanoreflex, with potential activation of anaerobic metabolism, and thus activation of the metaboreflex. Future studies should bear this in mind when using models of the mechanoreflex to explore health and disease.