

NON-INVASIVE ARTERIAL PRESSURE IS A POOR SURROGATE OF CARDIAC AND VASCULAR FUNCTION IN ELITE ATHLETES AT REST AND AFTER MODERATELY INCREASED OXYGEN DEMAND.

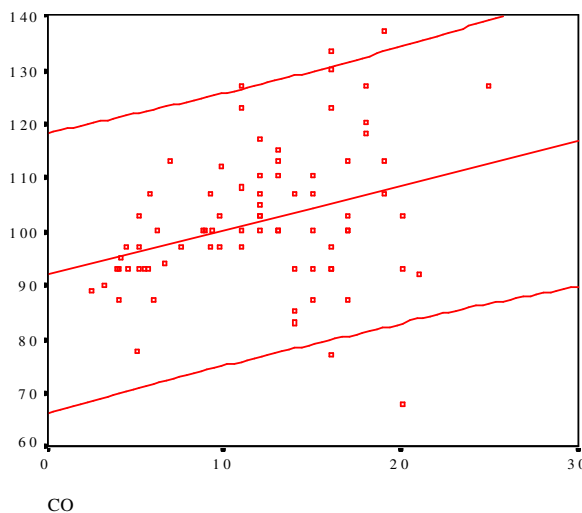
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Background: Arterial pulse pressure has recently been proposed as a method for objective assessment of cardiovascular performance despite the dissociation of vascular and cardiac function. This is particularly important in sepsis, where oxygen supply demand mismatches require focus on discrete cardiac or vascular therapies. This study was to compare non-invasive arterial pressures with CW Doppler ultrasound determined cardiac output (CO) and systemic vascular resistance (SVR) in elite athletes at baseline and after increased oxygen demand induced by incremental exercise.

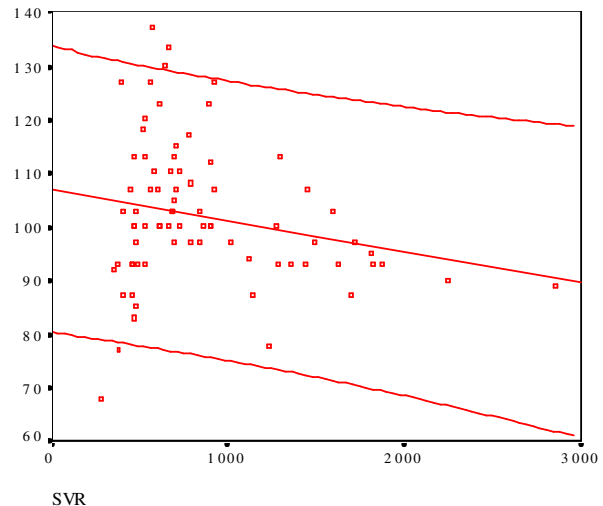
Method: Baseline sphygmomanometric blood pressures (BP) and transaortic Doppler COs (CO_{uscom}) were acquired contemporaneously in 26 elite rowers at rest. Measures were repeated after achieving 52%, 62% and 72% of peak oxygen consumption and mean arterial pressures (MAP) were compared to CO_{uscom} and SVR_{uscom} using paired sample t-tests and linear regression.

Results: MAP poorly correlated with SVR, HR, SV, CO and CI over 77 paired measures.

	MAP v SVR	MAP v HR	MAP v SV	MAP v CO	MAP v CI
r	-0.216	0.219	0.302	0.322	0.287
p	0.059	0.056	0.008	0.004	0.011



$$CO = 0.126MAP - 0.860 \text{ l/min}$$



$$MAP = 0.056 SVR + 107 \text{ l/min}$$

Conclusion: Arterial pressures showed poor correlation with CO and SVR at baseline and during increased oxygen consumption, suggesting that arterial pulse pressure measurement is a poor physiologic analogue of either cardiac or vascular function.