THE EXTENT OF CAFFEINE'S IMPACT ON THE VASCULATURE DEPENDS ON THE BASAL TONUS OF THE VASCULATURE

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Introduction

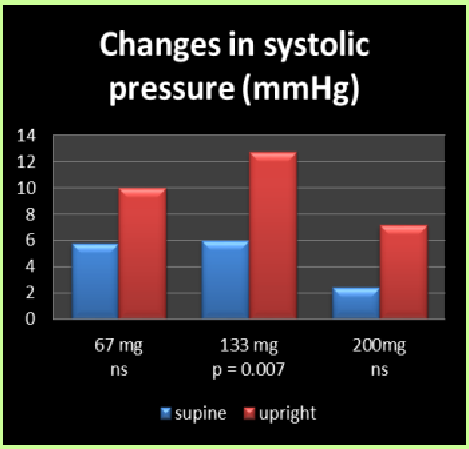
Caffeine has a pressor effect in non-tolerant caffeine groups and increases blood pressure by acting on the vascular system without affecting cardiac parameters. The basal tonus of the vasculature tonus is regulated by neural and hormonal signalling so as to generate a sufficient supply of blood to the body's organs is maintained. Consequently vascular tonus varies according to body posture and activity. This study addresses the question:

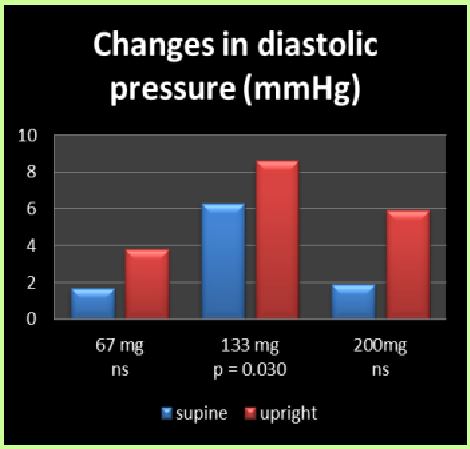
Does caffeine's impact on the vasculature vary between postures?

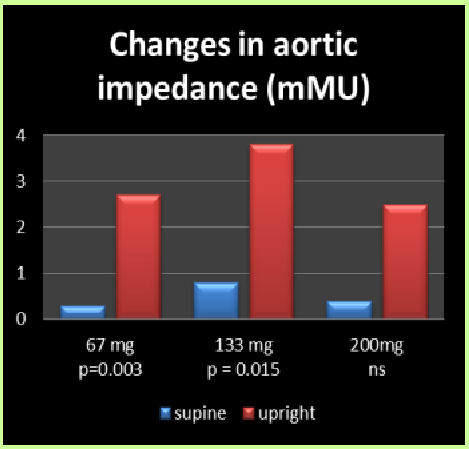
Procedure and analysis

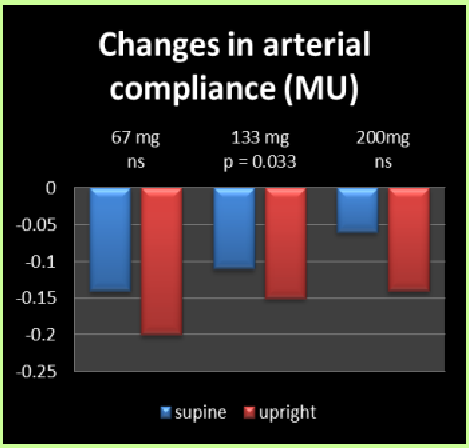
Cardiovascular responses following the ingestion of capsules containing caffeine (67, 133 and 200 mg) were compared with a placebo in a double-blind, randomised design without caffeine abstinence. Participants followed their self-determined consumption pattern. Pre-intervention and post-intervention (30 and 60 minutes) 90 s continuous cardiovascular recordings were obtained with the Finometer in the supine and upright postures.

Post-intervention recordings were averaged to produce a single measure. The data was analysed using a 2 x 2 x 2 (pre/post x placebo/caffeine x supine/posture) within- participants Repeated Measures ANOVA.









Discussion

We postulate that the pharmacological effects of caffeine on systolic pressure, diastolic pressure, arterial compliance and aortic impedance are more pronounced in the upright than the supine posture because the endothelium is sensitised by the increased tonus of the vascular system making it more susceptible to caffeine's pressor effects. The effect of posture on pharmacodynamics is unclear but this study's findings indicate that posture has a major influence on the pharmacodynamics of caffeine and perhaps other cardiovascular drugs. If assessments of caffeine's effect on blood pressure are to be applicable to everyday situations there is a need to incorporate the concept of postural pharmacological dynamics into research models.