# Individual Research Project Presentations Day 10th June 2024, Kent and Medway Medical School.

# The acute and recovery effects of combined isometric and high intensity interval training sessions on office and ambulatory blood pressure.

**Student**[a]**:** Rowan Boddy | **Supervisor(s)**[b]**:** Dr Katrina Taylor

## Abstract

**Background:** Hypertension is associated with development of cardiovascular disease, a major cause of death worldwide. Multiple training methods have been implemented as conservative options to reduce blood pressure (BP); two common methods being high-intensity interval training (HIIT) and isometric exercise training (IET). To date there has been minimal research into combining these two training methods to assess a possible cumulative effect on BP reductions. This study aimed to investigate potential benefits of a combined HIIT and IET exercise training session on both short- and long-term BP reductions.

**Methods:** 10 healthy adult participants were recruited to take part in two training sessions combining both HIIT and IET in two different forms. Throughout each session, and in the immediate recovery period, intermittent BP, and heart rate (HR) monitoring was performed, recorded using a Dinamap vital signs monitor. Following completion of each session, participants were fitted with a Welch Allyn 6100 ambulatory BP monitor to record several haemodynamic markers across the 24-hour period following exercise. Participants also completed a 24-hour baseline ambulatory monitoring as a control.

**Results:** Significant reductions in systolic blood pressure, diastolic blood pressure and heart rate were present in the immediate period following completion of both exercise sessions (all $p<.05$). There was no significant difference in reduction of BP when directly comparing both exercise sessions ($p>.05$), however a significant difference in the effect on HR was observed ($p<.05$). A significant reduction in HR following the watt bike protocol was seen 2-hours post exercise ($p<.05$), but no significant reductions in any other haemodynamic markers were seen across the 24-hour ambulatory monitoring for either training session (both $p>.05$).

**Conclusions:** The findings are consistent with existing literature that both HIIT and IET are effective training methods for producing BP reductions in the immediate period following

exercise. A small sample size and confounding variables led to insignificant results in the analysis of long-term training effects which, if rectified, may allow for a significant change in BP to be observed in future studies.

**Keywords:** Blood Pressure | High-Intensity Interval Training | Isometric Exercise Training

[a] 4th Year Medical Student, Kent and Medway Medical School, Canterbury, United Kingdom

[b] School of Sport and Exercise Science, Division of Natural Sciences, University of Kent, Canterbury, United Kingdom

**Main contact email:** rowansamb@gmail.com