STATISTICAL ANALYSES PLAN

Acute exercise and coronary heart disease risk markers in healthy male smokers and non-smokers

Version 1

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Statistical analyses plan

The data collected will be analysed using the software package SPSS (SPSS version 23, SPSS Inc., Chicago, IL). The distribution of the outcome variables will be explored using histograms. Normally distributed data will be presented as mean (SD). Variables deemed to show a positively skewed distribution will be natural log transformed prior to analysis, and negatively skewed variables will be reflected before natural log transformation. These data will be presented as geometric mean (95% confidence interval) and analysis will be based on ratios of geometric means and 95% confidence intervals for ratios.

Physical characteristics and exercise responses will be compared between smokers and non-smokers using linear mixed models with smoking status included as a fixed factor. The homeostasis model assessment of insulin resistance (HOMA-IR) will be calculated as follows (Matthews *et al*. (1985) *Diabetologia* 28: 412–419):

$$\text{HOMA-IR} = \frac{Fasting\ glucose \times Fasting\ insulin}{22.5}$$

Total area under the plasma concentration versus time curve (AUC) will be calculated for plasma constituents and blood pressure using the trapezoidal method. Linear mixed models will be employed to examine differences in dietary intake, habitual physical activity and sedentary time, HOMA-IR and fasting and AUC plasma constituents and blood pressure with condition (exercise versus control) and group (smokers versus non-smokers) included as fixed factors. Models for habitual physical activity and sedentary time will include wear time as a covariate. Differences in postprandial plasma constituents and blood pressure over time will be examined using linear mixed models repeated for condition, group and time.

Absolute standardised effect sizes will be calculated by dividing the difference between the mean values (exercise versus control or smokers versus non-smokers) with the pooled standard deviation. In the absence of a clinical anchor, an effect size of 0.2 will be considered the minimum important difference, 0.5 moderate and 0.8 large (Cohen 1988 *Statistical power analysis for the behavioural sciences,* 2nd edn., Lawrence Erlbaum Associates, Hillsdale (NJ)). Statistical significance will be accepted as *P* < 0.05.