Study title: Effects of virtual reality on cardiorespiratory fitness test results

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Statistical Analysis Plan

Analysis of data will be completed with SPSS version 29, applying an alpha level of .05. All data will be screened for data entry errors, outliers (difference scores >3.29 standard deviation units from the mean difference score between the two conditions), normality, and homogeneity of variance before formal analysis.

The primary outcome variables $\dot{V}O_{2peak}$ and workload at ventilatory threshold will be compared between conditions (Control and VR) using separate one-way repeated-measures ANCOVAs (analysis of covariance), with preference for exercise intensity subscale of the PRETIE-Q (Ekkekakis et al., 2005) as the covariate.

The secondary outcome measures of peak power, total test time, % $\dot{V}O_{2peak}$ at ventilatory threshold, heart rate (HR) at $\dot{V}O_{2peak}$, HR at ventilatory threshold, respiratory exchange ratio (RER) at $\dot{V}O_{2peak}$, and RER at ventilatory threshold will similarly be compared between conditions using a series of repeated-measures ANCOVAs with preference for exercise intensity subscale of the PRETIE-Q as the covariate.

Rating of perceived exertion (RPE) and affective valence will be analyzed with separate linear mixed-effects model analyses. Individual participants will be specified as the correlated random effect. The fixed factors will be timepoint and condition.

Results of ANCOVAs will be accompanied by partial eta squared (η^2) as a measure of effect size (small = 0.01; medium = 0.06; large = 0.14). Linear mixed-effect analysis results will use Cohen's *d* as a measure of effect size (small = 0.20; medium = 0.50; large = 0.80).