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Introduction

- Exercise is used in the prevention and treatment of age-related chronic inflammatory diseases. The notion that exercise creates an anti-inflammatory environment is central to its therapeutic benefits (Petersen and Pedersen 2005)(Gleeson, Bishop et al. 2011).
- High-intensity exercise has greater anti-inflammatory effects than moderate-intensity exercise in young people by augmenting the release of skeletal muscle interleukin-6 (IL-6) (Ostrowski, Schjerling et al. 2000). This intensity effect is not known in older people.

The aim of this study was to assess the acute response of plasma IL-6 and the anti-inflammatory response of IL-10 following high and moderate intensity cycling in older adults.

Participants

Participants were free of diabetes, cardiovascular and inflammatory diseases. Participants completed a maximal incremental cycling test to determine peak work load and cardiorespiratory fitness (VO_2 peak).

Table 1: Participant Characteristics (Data are mean \pm SD)

	Male	Female	All
N	22	3	25
Age (y)	68 \pm 6	68 \pm 8	68 \pm 6
VO_2 peak (ml.kg ⁻¹ .min ⁻¹)	30.21 \pm 7.22	21.70 \pm 4.32	29.19 \pm 7.48

Methods: Experimental design

Participants completed 3 experimental visits in random order: Moderate intensity continuous exercise (MOD), High intensity interval exercise (HI) and non-exercise control (CON). Blood samples were taken pre-exercise, mid-exercise and 0, 20, 40, 60 and 90 min post exercise (Fig.1).

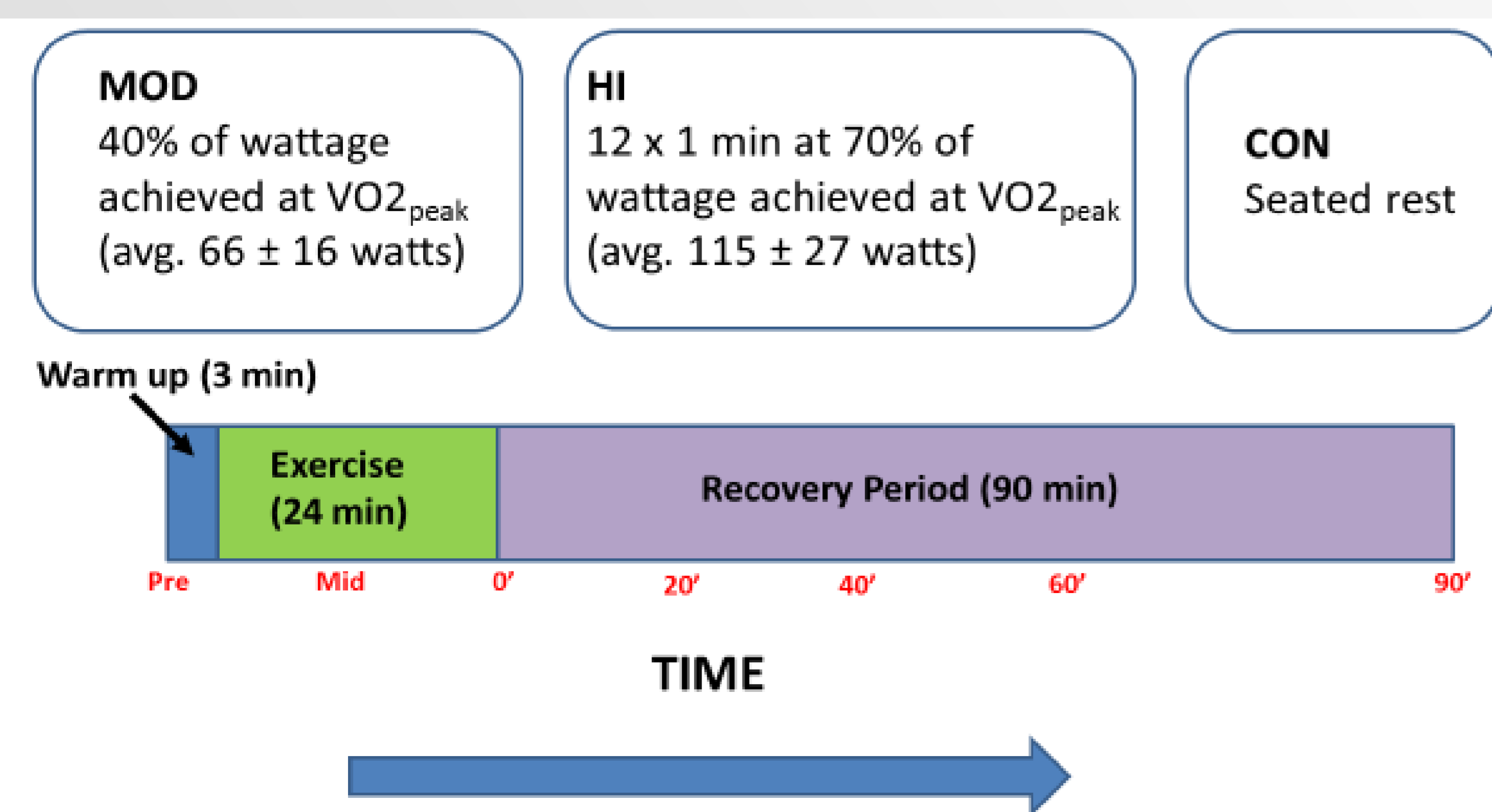


Figure 1: Experimental design for the study. Data are mean \pm SD

Trials were separated by at least 3 days and were performed at the same time of day under consistent laboratory and preparatory conditions.



Sample analysis

Blood plasma was separated by centrifugation (1500 x g for 15 min at 22°C) and stored in aliquots at -80°C.

Samples were then analysed in duplicate using commercially available sandwich ELISA kits (Ebioscience). Time and trial effects were analysed using RM-ANOVA.

Results: IL-6

There was no significant change in circulating IL-6 in response to exercise (Fig.2).

There was also no effect of exercise intensity on the IL-6 response to exercise ($p > 0.05$).

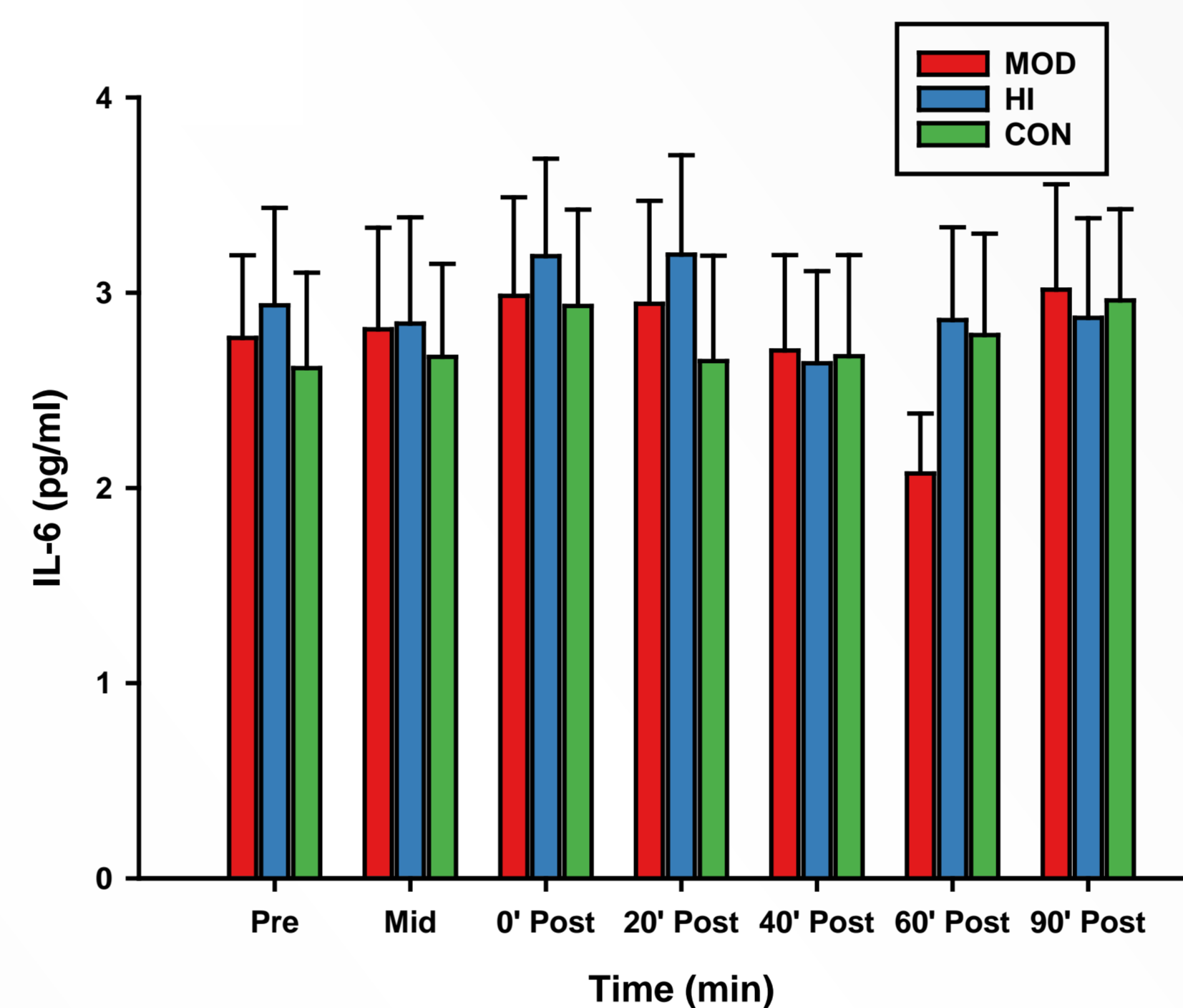


Figure 2: The IL-6 response to exercise. Data are mean \pm SEM.

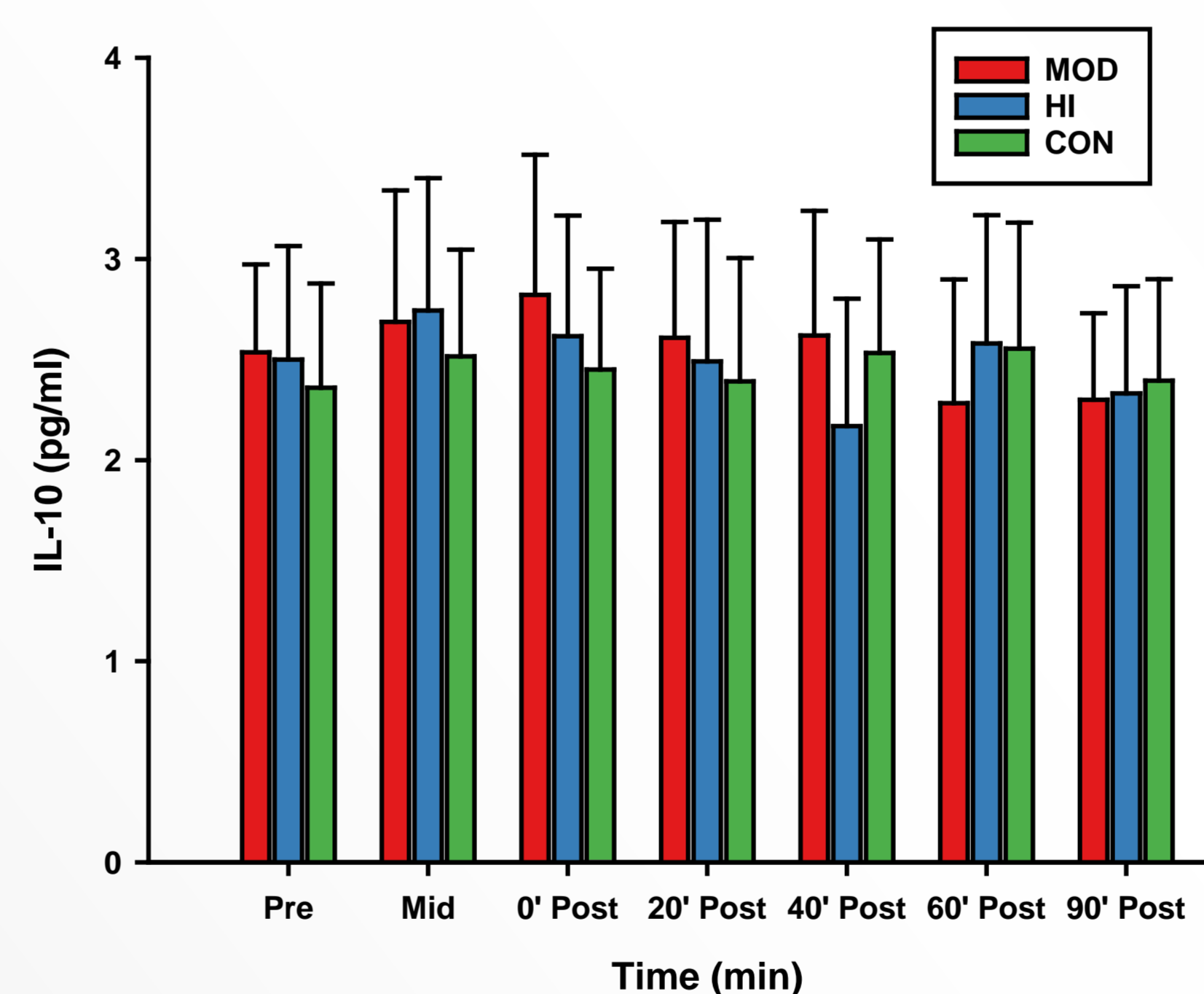


Figure 3: The IL-10 response to exercise. Data are mean \pm SEM.

Results: IL-10

There was no significant change in circulating IL-10 in response to exercise (Fig.3).

There was also no effect of exercise intensity on the IL-10 response to exercise ($p > 0.05$).



Discussion

- The prescribed exercise in this study was not sufficient to invoke an increase in circulating IL-6 or IL-10.
- This may suggest that exercise of a greater relative intensity or duration is necessary to stimulate the anti-inflammatory effects of exercise in older people.
- The effect of cardiorespiratory fitness on this response is yet to be established.