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Autor(es): Hoekstra, Sven P.; Bishop, Nicolette C.; Leicht, Christof A.

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CAN INTERVALS ENHANCE THE INFLAMMATORY RESPONSE AND ENJOYMENT IN UPPER-BODY EXERCISE?

Sven P. Hoekstra¹; Nicolette C. Bishop¹; Christof A. Leicht¹

KEYWORDS: affect; upper-body exercise; high-intensity interval training; chronic low-grade inflammation; Interleukin-6

INTRODUCTION

Compared to lower-body exercise, the acute inflammatory response to upper-body exercise might be attenuated as a result of the smaller muscle mass involved⁽¹⁾. Since populations for which upper-body exercise is most suitable (e.g. wheelchair users) are generally also at an increased risk for the development of a chronic low-grade inflammatory state, it is of interest to explore forms of upper-body exercise that could potentiate the acute inflammatory response. Since exercise has to be performed on a regular basis to experience its benefits and adherence rates might be affected by the perceptual responses to exercise⁽²⁾, this study investigates both the inflammatory as well as the perceptual responses to 3 different forms of upper-body exercise, with a particular focus on high-intensity interval training (HIIT) as an alternative exercise mode.

METHODS

Twelve recreationally active, able-bodied males performed 3 work-matched arm-crank trials in a randomised order: 30 min moderate-intensity continuous (CON), 30 min moderate-intensity with changes in cadence (CAD) and 20 min HIIT. Blood samples were taken pre, post and 2 h post-exercise to determine the plasma concentrations of interleukin (IL)

¹ Loughborough University.

Email: s.p.hoekstra@lboro.ac.uk

-6 and IL-1ra. Perceptual responses pre, during and after exercise were assessed using the Feeling Scale, Felt Arousal Scale, Ratings of Perceived Exertion (RPE) and the Physical Activity Enjoyment Scale (PACES).

RESULTS

All trials were evenly effective in inducing an acute inflammatory response, indicated by increases in IL-6 after exercise ($p < 0.001$) and in IL-1ra at 2 h post-exercise ($p = 0.003$), without differences between the trials ($p > 0.29$). More negative affect and higher RPE were reported *during* HIIT compared to CON and CAD, whereas PACES scores as reported *after* exercise were higher for HIIT and CAD compared to CON ($p = 0.005$).

CONCLUSION

When matched for external work, there was no difference in the inflammatory response to HIIT compared to moderate-intensity upper-body exercise. Although HIIT was (perceived as) more strenuous and affective responses were more negative *during* this trial, the higher ratings of enjoyment for both HIIT and CAD reported *after* exercise suggest that the inclusion of variation might enhance enjoyment in upper-body exercise. As the fashion in which upper-body exercise is performed does not seem to influence the inflammatory response, it might be advised to prescribe varied exercise to enhance its enjoyment.

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