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PHYSICAL ACTIVITY**

THE EFFECT OF PROLONGED REPEATED MODERATE INTENSITY EXERCISE ON CYTOKINE CONCENTRATIONS IN ADULTS

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KEYWORDS: Myokines, IL-6, TNF-alpha,

PURPOSE

Previous studies showed that cytokine concentrations are affected by the intensity and duration of one bout of exercise (1, 2). The cytokine responses after consecutive days of exercise have not been studied before, nor whether the responses differ between men and women. Therefore, the aim of this study was to assess cytokine responses after repeated bouts of exercise and compare those responses between men and women.

METHODS

50 male (58.9 ± 9.9 years old) and 50 female (50.9 ± 11.2 years old) individuals were measured during four consecutive days of walking exercise. Participants walked 30, 40 or 50km, at a self-selected pace. Blood samples were collected one or two days prior to the start of the exercise (baseline) and at every walking day post-exercise. Blood samples were analysed for IL-6, IL-8, IL-10, IL-1beta and TNF-alpha concentrations.

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RESULTS

All cytokine concentrations increased from baseline to post-exercise at day 1 ($p < 0.001$). These concentrations significantly decreased from day 1 to day 2 ($p < 0.001$), except for IL-1beta. IL-10 was higher in men than in women after the 1st day of exercise, IL-6 was higher in men after the 2nd day, and IL-1beta and TNF-alpha were higher in men during all days.

CONCLUSION

The exercise-induced change in cytokines after day 1, attenuated on subsequent days. Men and women showed different baseline levels and similar exercise responses. These results suggest that muscles adapt rapidly to this type of exercise.

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AUTHORSHIPS

The study was designed by R. Terink, C.W.G. Bongers, M.T. Hopman, and M.R. Mensink; data were collected and analyzed by R. Terink and C.W.G. Bongers; data interpretation and manuscript preparation were undertaken by R. Terink, C.W.G. Bongers, M.T. Hopman, R.F. Witkamp, M.R. Mensink, and J.M.T. Klein Gunnewiek. All authors approved the final version of the paper.

DECLARATION

We declare that the results of this study are presented clearly, honestly, and without fabrication, falsification, or inappropriate data manipulation.

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