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The Influence of High Load Training on Reaction Time in Cyclists

Nederhof, Esther; Lemmink, Koen A. P. M.; Zwerver, Hans J.; Meeusen, Romain

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Nederhof, Esther¹; Lemmink, Koen A.P.M.¹; Zwerver, Hans J.²; Meeusen, Romain FACSM³

Author Information

¹Center for Human Movement Sciences, University Medical Center Groningen, University of Groningen, The Netherlands.

²Sports Medicine, University Medical Center Groningen, Groningen, The Netherlands.

³Department of Human Physiology and Sports Medicine, Free University, Brussels, Belgium.
Email: e.nederhof@rug.nl

Overtraining syndrome (OTS) is seen as a serious threat by athletes and coaches because performance is deteriorated in OTS. Central fatigue has also been mentioned as an accompanying symptom of OTS which could possibly be measured through tasks of psychomotor speed. Since the only cure to OTS is (relative) rest, it is of utmost importance to prevent it.

RESULTS: of studies into markers have been contradictory, partly because researchers who study the effects of high load training claim to study OTS whereas these athletes were at most functional overreached (FO; Meeusen et al., In Press).

PURPOSE: The purpose of the present study is investigate whether changes in psychomotor speed are already present in early stages of overtraining.

METHODS: Fourteen cyclists have completed an incremental exercise test, two questionnaires and the finger pre-cueing task (FPT) three times: before, right after and two weeks after a training camp. Maximal work load, heart rate, oxygen uptake and mood states were used to determine training status. The FPT is a complex four-choice reaction time task in which pre-cues reduce the task to a two-choice reaction time task in three out of four conditions (Miller, 1982). A control group of fourteen age and gender matched active individuals completed the FPT at the same time as the cyclists.

RESULTS: Five out of fourteen cyclists showed performance decrements and worsened mood states and were classified as overreached. Because performance and mood states had improved two weeks after the training camp, their status was specified as FO. Seven athletes did not show differences on performance or mood states after the training camp and were classified as well-trained (WT). Two athletes showed disturbed mood states before but not after the training camp and were excluded from analysis. A repeated measures ANOVA showed no significant difference between the FO, the WT and the control group. However, the interaction between time and group showed a trend ($F = 2,30$, $p = .079$). The FO group showed longer reaction times compared to the control group right after the training camp.

CONCLUSIONS: The RESULTS show that psychomotor slowness as an indication of central fatigue is not present in FO. This could be because FO is part of normal training and signs and

symptoms of OTS are still mild. Future research should point out whether psychomotor slowness is present in non-functional overreaching and/or OTS. Meeusen R, Duclos M, Gleeson M, et al. Prevention, diagnosis and treatment of the overtraining syndrome. Eur J Sport Sci; In Press. Miller J. Discrete versus continuous stage models of human information processing: In search of partial output. J Exp Psychol 1982;8: 273–96.

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