

Individuelle Beanspruchungskontrolle mit der Herzfrequenzvariabilität bei über 40jährigen Radsportlern

Individual control of physical performance through heart rate variability in cyclists over forty years of age.

Summary

Background: *Age is an important risk factor for increased cardiovascular morbidity and mortality. Hence, work load adjustment to individual fitness is of paramount importance in the training of elderly sportsmen in order to avoid potentially dangerous training modalities.*

Objective: *To investigate the usefulness of heart rate variability (HRV) as a means of individual work load control in demanding training situations.*

Methods: *We studied 47 ambitious cyclists aged 40 to 47 years, who volunteered to participate in a bicycle training course for at least a week. Each participant underwent a standardized protocol which consisted of a six minute supine phase and subsequent active standing for four minutes on six consecutive days. During both protocol phases RR-intervals were recorded using a minirecorder (Polar S810i, beat-to-beat). On three days, additional plasma urea measurements were performed. HRV was quantitatively assessed using time domain (SDNN, rMSSD, pNN50), frequency domain (LF-power, HF-power), and Poincaré plot (SD1, SD2) indices.*

Results: *Neither training volume nor subjective perception of work load were significantly related to any of the HRV indices investigated. Plasma urea levels were also uncorrelated to training volume or subjective perception of work load.*

Discussion: *Our results are in keeping with those of earlier studies, which investigated younger individuals and did not find an association between HRV and work load during training conditions. In our study, group means did not exhibit significant correlations regarding HRV indices and the above mentioned variables. However, in individual cases, HRV indices and plasma urea showed a clear relationship. Furthermore, in some individuals, we found subjective well-being to show a temporal relationship to Poincaré plot indices.*

Conclusions: *Further study is needed to clarify the role of HRV as a means of training control. Relevant confounders, such as age, sex, psycho-mental factors, and the like should be investigated to allow for a more detailed evaluation of the value of HRV in the context of training.*