EFFECT OF TEMPORAL FEEDBACK VIA VISUAL CUES ON PACING STRATEGY AND PERCEIVED EXERTION

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Abstract
Pacing strategy is any conscious or subconscious planned behaviour that acts to regulate and optimise intensity during exercise while preventing permanent harm to physiological systems (Ansley et al., 2004). Intensity of exertion during exercise is consciously manifest as the perception of effort. Notably, perceived effort of exertion during constant load exercise increases as a function of elapsed time independent of changes in physiological variables (Noakes et al., 2004). Ulmer (1996) proposed that pacing during exercise is predetermined based upon available energy sources, prior experience and expected duration and is characterised by a conservative pattern designed to prevent premature subjective fatigue.

Both a time-dependent rise in perceived exertion and an anticipatory pacing strategy require an element of temporal perception; the cues for such ‘zeitgebers’ or ‘timekeepers’ during dynamic exercise have not been investigated. Therefore, the aim of this study was to investigate the role of environmental visual cues in informing temporal perception and the perception of effort during exercise.

Six well-trained cyclists completed a familiarisation trial, a maximal incremental exercise test and two 16-km time trials. Throughout the control trial subjects were provided continuous performance feedback. Subjects scored their rating of perceived exertion (RPE) when they had completed 25%, 50% and 75% of total distance. During the deprivation trial subjects cycled in a darkened room and were deprived of all visual and performance cues. Subjects were instructed to indicate when they believed they had completed 25%, 50% and 75% of total distance and to call out their RPE score at these points. At the end of both time trials subjects were asked for a final RPE score.

Elapsed distances were underestimated in the deprivation time trial by 6.5% and RPE tended to be lower, although this did not reach significance. The pacing patterns were different between the control and deprivation time trials; however, completion times were similar (1635.9 ± 112.5 s vs 1686.6 ± 136.1 s, respectively). Therefore it appears that the deprivation of visual cues causes temporal compression so that more time passes than is realised. However, the overall rate of energy expenditure was similar suggesting a pre-programmed workrate. Furthermore the perception of effort during exercise appears to be linked with anticipated time remaining, independent of workload.

References

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