Effects of in-water and dry-land recovery strategies on repeated 100m freestyle performance, physiological responses and perceptual status of competitive adolescent swimmers.

Taylor, D.

School of Sport & Exercise Science, University of Lincoln, Lincoln, LN6 7TS, UK.

dtaylor@lincoln.ac.uk

Introduction

There has been limited comparison between different formats of active recovery that could be adopted by adolescent swimmers, or between the more specific approaches to each type of recovery (e.g. intermittent versus continuous). Furthermore, a number of previous studies have focussed only on physiological markers of recovery (i.e. blood lactate), before inferring how swim performance might be altered as a result of these biological responses (i.e. Lomax et al., 2012). Given these points, this study examined the effects of different in-water and dry-land recovery protocols on repeated swimming performance, and associated physiological and perceptual responses, of competitive adolescent swimmers.

Methods

Sixteen regional to national level youth swimmers (m=8, f=8) were recruited from the same performance development squad (mean ± SD: age 13.9±2.5yrs, 100m freestyle PB 63.8±4.5s). Following protocol and equipment familiarisation, each swimmer completed four trials in a counterbalanced crossover design. All trials involved a standardised warm-up followed by two 100m freestyle time-trials, separated by one of four different time-matched recovery strategies (~18min). Passive recovery [REST] was performed seated on poolside. Active dry-land recovery [BAND] was performed on an exercise bench using thera-band arm-pulls and body-weight leg kicks. Intermittent in-water recovery [INT] involved 18x50m repeats, alternating between 80% and 70% of 100m PB pace. Continuous in-water recovery [CONT] consisted of 5x200m repeats at ≤65% of 100m PB pace. Trials were completed at the same time of day and were separated by 3-4 days. In addition to 100m performance times, physiological (i.e. blood lactate) and perceptual (i.e. RPE) responses were captured during each recovery period.

Results

Performance was significantly slower during the second 100m time-trial following both CONT (68.58±4.59, 70.29±4.78s) and REST (68.59±5.03, 69.50±5.17s, $p<.01$). Conversely, there were no significant differences between time-trial performances following BAND (69.12±4.98, 69.69±5.04s) or INT (68.86±4.68, 69.51±4.59s, $p>.05$). The greatest rate of blood lactate clearance between time-trials was evident during INT (2.93±0.54%·min^{-1}), which did not significantly differ to CONT (2.63±0.78%·min^{-1}) but was significantly higher than both REST and BAND (1.89±0.69 and 2.19±0.53%·min^{-1}, respectively, $p<.05$). There were no significant differences in perceived recovery or post-100m RPE across conditions ($p<.05$).

Discussion

These findings suggest an intermittent in-water recovery strategy may be the best option to maximise physiological recovery and maintain swimming performance across repeated trials, compared to continuous in-water or alternative dry-land strategies. However, in the absence of a cool-down pool, swimmers may consider stroke-specific thera-band exercises as a more effective recovery strategy than passive rest.

References

Lomax, M. (2012). J Strength Cond Res, 26(10), 2771-6.