Active v. Passive Recovery: The Most Effective Level Relative to Swimming Performance

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ABSTRACT

To examine the effects of active recovery at two levels of intensity, as compared to passive recovery, on subsequent performance. Four male (height, 174.4 ± 8.1 cm; body mass, 73.5 ± 5.6 kg) and five female (height, 164.1 ± 7.9 cm; body mass, 65.0 ± 4.9 kg) members of a collegiate swim team participated in this study. All participants completed three randomly assigned experimental sessions that consisted of a 100-yd maximal-effort swim (TT1) followed by a 10 min recovery period at a specified intensity, and a subsequent 100-yard maximal effort swim (TT2). The PAS recovery condition involved passively resting on the side of the pool, while ACT50 and ACT65 involved freestyle swimming at intensities corresponding to 50% and 65% of each individual's average velocity for a 100-yd sprint, respectively. Heart rate and RPE were also recorded after both TT1 and TT2. Performance time, heart rate, and RPE were analyzed using a one-way repeated measure ANOVA to evaluate for change between maximal effort trials. There was a significant difference among the means in change in performance time from TT1 to TT2 ($F_{(2,16)} = 5.34$, $p = 0.02$), with the intensity of recovery accounting for 40% ($\eta^2 = 0.40$) of this change (Table 1). Mean change in performance time was 1.18 s higher in the PAS recovery condition than in the ACT65 condition ($p<0.05$), while only 0.49 s higher than the ACT50 condition (*NS*). While the majority of the participants added time in TT2 across conditions, they added less time after the ACT65 recovery condition. Mean change in heart rate and RPE were not significantly different across conditions. An active recovery intensity corresponding to 65% of an individual's average velocity for a 100-yd sprint may be more beneficial to subsequent performance, as compared to passive recovery.

Table 1. Mean (SD) measures of change in performance time, heart rate, and RPE (TT1 to TT2) for each condition.

Condition	ΔPT (s)	ΔHR (bpm)	ΔRPE
PAS	1.55 (0.9) *	-2.2 (17.2)	0.0 (0.9)
ACT50	1.06 (1.2)	2.4 (8.0)	0.2 (0.8)
ACT65	0.37 (0.9) *	7.2 (10.9)	0.0 (0.5)

*Change in performance time for the PAS condition was significantly greater than that for the ACT65 condition ($p = 0.01$)