

## Aquatic treadmill running reduces muscle soreness following intense sprint exercise in trained men

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### ABSTRACT

Delayed onset muscle soreness is associated with muscle damage, disturbances in proprioception, and decreases in muscular power. The purpose was to determine if short duration aquatic treadmill (ATM) running reduces muscle soreness following intense sprint exercise in trained men. Twenty trained men (180.3±4.4cm, 86.3±5.8kg, 20±1yr) were recruited and randomly divided into two groups: ATM recovery (ATMRec) and passive recovery (PRec). During testing, subjects performed a warm-up followed by sixteen 110yrd cutback runs with a sprint of 60yrds, sharp change of direction, and a return sprint of 50yrds. Work to rest ratio was set at 1:3. Additionally, following exercise, the ATMRec group performed ATM running using a HydroWorx® treadmill at 5mph, 50% maximal jet resistance, and water(33°C) level at chest depth for 10min. Both groups then evaluated their level of soreness/pain using a numerical rating scale (NRS: 0-10, 0=no pain, 10=worst pain) immediately following all exercise (IPE), 24h, and 48h post exercise in the following regions: ARMS, LEGS, BACK, CHEST, SHOULDERS, HIPS, ABDOMEN, NECK, OVERALL. Data were analyzed for group x time interactions using a 2x3 Generalized Linear Mixed Model for non-parametric data ( $\alpha \leq 0.05$ ). For significant interactions, the same procedure was used to analyze between group differences at the same measurement timepoint ( $\alpha \leq 0.05$ ).

Independent Var.	Group	IPE	24h	48h
LEGS	ATMRec	3.3 ± 0.3 †	3.7 ± 0.4 †	3.2 ± 0.7
	PRec	4.5 ± 0.7 <sup>a</sup>	5.2 ± 0.5 <sup>a</sup>	3.3 ± 0.4 <sup>b</sup>
BACK	ATMRec	1.3 ± 0.4 <sup>a</sup>	0.9 ± 0.3 <sup>a†</sup>	0.5 ± 0.3 <sup>b†</sup>
	PRec	2.5 ± 0.9	2.7 ± 0.7	1.8 ± 0.6
HIPS	ATMRec	1.2 ± 0.4 <sup>a†</sup>	2.1 ± 0.5 <sup>b</sup>	1.3 ± 0.4 <sup>a</sup>
	PRec	2.5 ± 0.7 <sup>a</sup>	2.6 ± 0.5 <sup>a</sup>	1.2 ± 0.3 <sup>b</sup>
ABDOMEN	ATMRec	0.8 ± 0.4 †	1.1 ± 0.3 †	0.8 ± 0.2
	PRec	2.3 ± 0.5 <sup>a</sup>	2.6 ± 0.6 <sup>a</sup>	1.4 ± 0.4 <sup>b</sup>
OVERALL	ATMRec	2.0 ± 0.3 <sup>a†</sup>	3.0 ± 0.4 <sup>b</sup>	1.9 ± 0.5 <sup>a</sup>
	PRec	3.2 ± 0.5 <sup>a</sup>	3.5 ± 0.4 <sup>a</sup>	2.1 ± 0.3 <sup>b</sup>

Values are means ± SE for NRS scores (0-10, 0=no pain, 10=worst pain). Letter superscript = sig. diff. w/in groups across time, † = sig. diff. between groups at same measurement time point (comparisonwise  $\alpha = 0.05$ ).

Aquatic treadmill running significantly reduces perceived muscle soreness and may enhance recovery following intense sprint exercise in trained men.