

Abstract

Title: The influence of water temperature on the rate of recovery during repeated isometric exercise.

Objectives: The aim of this thesis is to assess the effect of water temperature on immersion of forearm to water for the sake of speeding up the recovery process during repeated isometric performance.

Methods: Five male subjects from the students of FTVS (average age 22 ± 3 years) underwent three measurements with repeated exercise to exhaustion with various kinds of rest periods. The exercise was represented by three series of intermittent isometric contraction of the finger flexors until exhaustion with 20 minutes rest period. The rest period was represented by the immersion of forearm into cold water (8°C ; 15°C ;) as well as by a passive rest. Saturation O_2 of saturated hemoglobin (SmO_2) was monitored by the spectrometer throughout the entire measurements at flexor digitorum profundus.

Results: The reliability of measurements was $\text{rel}=0,79$ with standard deviation $\text{SD}=27,3\text{s}$ and standard measurement error $\text{SEM}=12,5\text{s}$. The least effective method of recovery was passive recovery. Decrease in the time between the first, second and third contraction respectively was 35s, 34s respectively. Immersion in 15°C water under recovery phase led to improvement in the second contraction by 43s and by 27s in the third contraction. 8°C water was most effective recovery method. This increased the length of contraction in the second contraction by 53s and by 66s in a third contraction compared to the first contraction.

Conclusion: Cold water immersion (CWI) leads to significantly faster recovery process after intermittent isometric exercise until exhaustion if compared to a passive recovery. Immersion in 8°C water during the recovery phase is more effective than immersion in 15°C water.

Keywords: cold water immersion, fatigue, recovery, strength abilities, cooling