

The Effect of Hydration on Repeated Box Lifting Technique in Hyperthermic, Dehydrated, and Fatigued Athletes

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Background: Hyperthermia, dehydration, and fatigue separately and in combination affect neuromuscular control, increasing musculoskeletal injury risk. The purpose of this study will be to evaluate the effectiveness of a hydration plan to replete sweat-induced fluid losses on repetitive boxing lifting (RBL) technique. A randomized counterbalanced controlled crossover design will evaluate the effectiveness of this individualized hydration plan. Five minutes of RBL will be conducted in a temperature controlled lab before and after 90 min of intermittent exercise in mild heat (~26°C, 35% relative humidity). The hydration group will replace fluid equal to sweat losses during the exercise bout while the control group will receive 100 mL every 15 min. Two dimensional sagittal plane ankle, knee, and hip movement and vertical ground reaction force will be measured during the RBL protocol to evaluate box lifting technique. We expect to find less hip and knee flexion during post-exercise RBL in the control group suggesting maintaining hydration during physical activity in the heat preserves proper neuromuscular control, reducing musculoskeletal injury risk.