

## 18- THE EFFECT OF SUPPLEMENTATION WITH A CYSTEINE DONOR ON MUSCULAR PERFORMANCE

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**ABSTRACT:** Oxidative stress contributes to muscular fatigue. Glutathione (GSH) is the major intracellular antioxidant, whose biosynthesis is dependent upon cysteine availability. We hypothesized that supplementation with a whey-based cysteine donor (Immunocal (HMS90)) designed to augment intracellular GSH, would enhance performance. Twenty healthy young adults (10 m) were studied pre- and 3 months post-supplementation with either Immunocal (20 gm/day) or casein placebo. Muscular performance was assessed by whole leg isokinetic cycle testing, measuring Peak Power and 30-sec Work Capacity. Lymphocyte GSH was used as a marker of tissue GSH. There were no baseline differences (age, ht, wt, % ideal wt, Peak Power, 30-sec Work Capacity). Follow-up data on 18 subjects (9 Immunocal, 9 placebo) were analyzed. Both Peak Power (mean±se: 13±3.5%,  $p<0.02$ ) and 30-sec Work Capacity (13±3.7%,  $p<0.03$ ) increased significantly in the Immunocal group, with no change (2±9.0 and 1±9.3%) in the placebo group. Lymphocyte GSH also increased significantly in the Immunocal group (35.5±11.04%,  $p<0.02$ ) with no change in the placebo group (-0.9±9.6%). This is the first study to demonstrate that prolonged supplementation with a product designed to augment antioxidant defenses resulted in improved volitional performance.

**Key words:** oxidative stress, exercise