Acute creatine supplementation and water polo performance
Cort Michelle#, Mujika Iñigo#, Burke Louise#, Royal Kylie#
#Department of Sports Nutrition, Australian Institute of Sport, Australia
#Department of Physiology, Australian Institute of Sport, Australia
#Department of Performance Psychology, Australian Institute of Sport, Australia

Introduction
Despite the widespread use of creatine (Cr) supplementation in team sports that involve repeated bouts of intermittent, high intensity activity, the results of Cr supplementation studies on field-based performance measures in specific sports are scarce and equivocal. Water polo matches involve repeated bouts of high intensity movement over the course of a 36 minute game. This match play fits the characterisation of exercise likely to benefit from Cr supplementation, but this hypothesis has not been tested. Accordingly, this study was undertaken to investigate the effects of an acute Cr supplementation regimen on the performance of elite male junior water polo players undertaking sport-specific tasks involving repeated exercise efforts.

Methods
On two occasions, 7 days apart, 13 players performed a series of water polo specific performance tests and an exercise protocol simulating the workload typically undertaken in a competitive men’s water polo game. Each testing day consisted of 2 x 20m sprints, vertical reach, maximum shooting speed and the water polo intermittent shuttle test in the morning and the water polo specific fatiguing test, comprising of a fatiguing drill and shooting test, in the afternoon. After the initial testing sessions, subjects were matched for physical and performance characteristics and were assigned to either a Cr (5g of Cr, 4 times per day for 6 days) or a placebo group (same dosage of a glucose polymer) using a double blind research design.

Results
Body mass (BM) increased in the Cr group (76.9 ± 7.9kg to 77.9 ± 7.5kg, p<0.02); however no change was observed in the placebo group (75.5 ± 8.8kg to 77.0 ± 8.5kg). The Cr group’s performance in the water polo specific fatigue test also showed a trend towards reduced performance post supplementation in sets of sprints 2, 3 and 4. However the placebo group showed a trend towards improved performance in each of the four sets of sprints (refer to Figure 1).

Discussion/Conclusion
The major finding of this investigation was that acute creatine supplementation by elite male junior water polo players did not improve performance in a variety of sports-specific measures. By contrast we found a trend to reduced performance in a number of measures compared to a placebo group. The current study supports the suggestion that an increased body mass may impair capacity for weight-dependent activities such as swimming (1,2). It cannot be ruled out however that chronic supplementation with creatine may result in enhanced training adaptations and increased lean muscle mass, which could improve water polo performance.

References