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Neuromuscular, physical fitness, and competitive performance in high-level judo athletes

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## INTRODUCTION:

Judo is a combat sport that requires elevated levels of muscle power, aerobic fitness, strength-endurance and speed for optimal competitive performance [1]. However, little is known about these aspects during the tapering phase and their relationship with competitive performance. Therefore, this study aimed to compare muscle power, aerobic power, strength-endurance, and speed-related variables in male and female judo athletes who won medals (MW) and those who did not (NMW) in a national competition.

## METHODS:

Nineteen high-level judo athletes (9 males, 23 (22;29) years of age, 81 (73;100) kg of body mass, 4 MW; and 10 females, 22 (20;24) years of age, 63 (53;68) kg of body mass, 5 MW) who were preparing for a Brazilian national-level tournament took part in this study. During the tapering period, athletes executed tests (between 13 and 3 days before competition) to determine peak power for squat and bench press exercises (using loads between 30% and 80% of their one-repetition maximum), long-standing jump, maximal number of repetitions during a chin-up test gripping the judogi, maximum speed in a 5-s uchi-komi test, and maximum aerobic speed in judo uchi-komi test. Values are presented as median and interquartile intervals. Mann-Whitney U-test was utilized to compare MW and NMW within each group. Significance level was set at 5%.

## RESULTS:

MW and NMW did not differ ( $p>0.05$ ) in any performance-related variables: squat (W) – male: MW = 914 (900;974); NMW = 878 (751;1007); female: MW = 593 (580;627); NMW = 576 (567;611); bench press (W) – male: MW = 712 (624;789); NMW = 677 (666;697); female: MW = 359 (333;392); NMW = 372 (359;384); long standing jump – male (cm): MW = 259 (243;277); NMW = 270 (263;282); female: MW = 216 (212;222); NMW = 224 (218;225); chin-up (rep) – male: MW = 17 (12;23); NMW = 19 (17;22); female: MW = 13 (12;17); NMW = 9 (8;13); maximum uchi-komi speed (rep/min) - male: MW = 87.7 (87.3;109.7); NMW = 92.5 (86.5;94.4); female: MW = 86.8 (79.2;95.1); NMW = 93.0 (86.1;95.0); uchi-komi maximum aerobic speed (rep/min) - male: MW = 65.3 (62.2;66.7); NMW = 61.2 (55.9;65.1); female: MW = 64.3 (62.2;65.2); NMW = 60.7 (58.5;62.1).

## CONCLUSION:

Neuromuscular and physical fitness variables during the tapering period did not differ between male or female MW and NMW. It is likely that well-developed neuromuscular and physical fitness are necessary but not sufficient abilities for top-level judo performance.

1. Franchini et al. (2011) *Sports Medicine*

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