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Physiological Characteristics of Three Levels of Male Judo athletes

Harat, I., Kislev-Cohen, R.

Wingate Institute

INTRODUCTION:

Judo is a combat sport that relies on anaerobic abilities such as strength, power and anaerobic capacity, in addition to grip strength and specific judo technique. The aim of this cross-sectional study was to evaluate the physiological profile of judo athletes from various levels and to identify physiological determinants for judo success.

METHODS:

38 athletes of the men's national judo team, from 3 levels, various weight classes and ages (cadets + Juniors [CJ]: n=14, age=17.04±1.4; Non-Olympic seniors [NOS]: n=20, age=21.6±1.9; Olympic seniors [Oly]: n=4, age=28.6±2.7) were tested for various anaerobic physiological qualities.

The selected tests were: countermovement jump (CMJ), drop jump from a 40 cm box (DJ), maximal grip strength (Grip) and upper body Wingate anaerobic test with a resistance of 6% of bodyweight (WIN). In addition, 5 RM strength measures of 3 exercises (squat, hang power clean and bent-over row) were gathered from the athletes' ongoing strength program.

All measures were normalized for body mass or competition weight class. The dependent variables were world judo ranking and an internal quality ranking based on success in national vs. international competitions.

For CJ, a coach estimated their level (high vs. low level) based on success in national competitions alone since these young athletes were yet to compete at international level. A comparison was also made between the three age categories.

RESULTS:

While some significant differences were found between groups (CMJ peak power, grip strength, WIN peak power [PP], WIN mean power [MP] and strength levels), most between-group differences disappeared when normalized. The only remaining significant differences were WIN test relative PP (p=0.022) and relative MP (p=0.001). Post hoc analysis revealed a significant difference in relative WIN PP between CJ and NOS (p=0.027) but not between NOS and OLY, and in relative WIN MP between CJ and NOS (p=0.001) and CJ and OLY (p=0.039), but not between NOS and OLY. No differences were found in any of the variables between success levels in CJ. Since OLY contained only 4 athletes, this comparison was made for all seniors (NOS + OLY), with no differences found between national and international level senior athletes.

CONCLUSION:

It was not possible to differentiate high vs. low level athletes in our cohort. When comparing the three groups, only WIN relative PP and relative MP were significantly different between groups while other measures lost significance when normalized. This strengthens the notion that anaerobic power and capacity are relevant to judo. Success in Judo is multifaceted. Future studies should further explore relevant judo physiological tests, including aerobic capacity, with a greater sample of elite athletes, while considering non-physiological factors (e.g. psychological and technical) as significant determinants of success.

Topic: Training and Testing

Presentation Poster

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