INDIRECT ESTIMATION OF THE AEROBIC AND THE ANAEROBIC FITNESS OF JUDOKAS

Jemni Moném¹, Miladi Jalel²

(Anglia Ruskin University – Cambridge¹, United Kingdom, Institute of Sport and Physical Education. Sfax², Tunisia)

Judo is a very demanding sport in term of energetics, strength, power and stamina. Upper and lower body parts are particularly involved during the 5 min combat. Isotonic and isometric contractions are intensely performed to either hold or to project the opposition. High anaerobic qualities as well as important aerobic base are vital, enabling judokas to perform successive combats rarely separated by more than 10 minutes.

Objective: to investigate heart rate, blood lactate and recovery indices during intense exercise and during specific shuttle run tests in judokas.

Method: Six male judokas [20.14 (1.86) yrs, 65 (6.27) kg, 1.69 (0.05) m] participated in this study. Two tests were performed: (1) 2 min intense exercise including 30 sec push-ups followed immediately by 90 sec half O-Goshi projection exercises against a similar weight partner (Ushi-komi); (2) 15 m specific shuttle run test where the judoka had to project a similar weight partner at each boundary of the distance using the O-Goshi projection technique. This test is a variation of the 20 m shuttle run test (Beau et al. 1989). Running speed was increased every 2 min and set by a CD player. Hear rate (HR) was monitored by a Bauman and Haldi Sport-tester BHL 6000 (Lyon, France). Blood lactate (BL) was assessed before and after the tests using an electro-enzymatic analyzer (640 Roche, Germany).

Results: Judokas performed 37.57 (3.95) push-ups during the 30 sec and 99.14 (12.99) O-Goshis during the 90 sec of test (1). Hear rate showed a quick increase during the first part of test (1) [114.28 (20.7) to 156.71 (10.64) b.min⁻¹] then a slower increase rate to a quite constant plateau at the end of the test [156.71 (10.64) to 187 (6.56) b.min⁻¹] without attaining maximal values. Maximal BL was 7.83 (1.44) mmol.l⁻¹.

The average estimated VO₂ max achieved by Test (2) was 52.27 (4) ml.kg⁻¹.min⁻¹ according to Vandewalle and Friemel (1989). Judokas’ average maximal aerobic speed was 12.24 km.h⁻¹. Heart rate plateaued at the end of test (2). It attained 194 (07) b.min⁻¹ which represented 97.52% of the maximal theoretical HR. Maximal BL was 8.82 (0.93) mmol.l⁻¹. Judokas showed a quite good recovery index at 2 min post shuttle run test (0.45) according to Viladin et al (1988).

Conclusion: this initial investigation showed an average aerobic quality of the judokas. Their performance during the 2 min all out effort was quite good. Blood lactate values were high enough to reach consistent maximal levels during both tests.

Key words: Shuttle-run-test, Hear rate, Blood lactate

References:


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