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Is the Special Judo Fitness Test (SJFT) Index discriminative for children?

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1. Introduction

In the last 20 years, judo coaches and researches have widely used the SJFT (Sterkowicz, 1995), considered one of the basic instruments in monitoring the training progress of highly qualified competitors. The test is performed on the tatami with three judo practitioners from approximately the same weight categories. The athlete who is being tested stands in between the other two athletes, who are positioned 3 m apart from the tested subject on opposite ends. At the 'Hajime' command, the subject attempts at throwing the two assistants by "Ipon-seoi-nage" in three separate series: 15 seconds the first, while Series 2 and 3 last 30 seconds each. There are two 10-second breaks between the series. Its resulting index – formula based on total of throws (TT) and heart rate (HR) – seems to be reliable and consistent tool for physical condition assessment in junior and senior athletes. Nevertheless, there is a lack of reports about the use and efficiency of this test in children (Drid, Trivić, & Tabakov, 2012). Thus, the aim of the present study was to perform SJFT in children to analyse differences between groups of age and competition level.

2. Methodology

A total of 35 children were submitted to the specific test. Participants were divided into three groups: U13 amateur (n=11; age=12.3 ± 0.6 years; judo practice=4.7 ± 3.6 years), U16 amateur (n=12; age= 15.3 ± 1.0 years; judo practice=7.4 ± 2.5 years) and U16 advance (n=12; age= 15.5 ± 0.8 years; Spanish National Judo Team). Informed consent was provided by all participants' parents. To guarantee consistency of the measure, practitioners were grouped in threes considering similar height and weight categories. Two evaluators recorded TT and HR (RS 300X SD Polar) during the test. Statistical analysis included Factorial ANOVA and post-hoc pair-wise comparisons with Tukey correction. Effect size between groups (ES) was estimated by calculating eta squared (η^2).

3. Results

Results from SJFT Index were statistically similar between U13 amateur, U16 amateur and U16 advance groups (16.8 ± 3.3; 14.5 ± 2.4; and 14.3 ± 1.2 respectively; F=3.10; p>.05), and considered as "poor" and "very poor" if compared with elite judokas standards (Franchini, de Moraes, Takito, & Kiss, 2009).

No differences were found in HR right after the test (196.1 ± 13.1; 190.9 ± 8.3; and 187.3 ± 7.9 bpm; F=2.15; p>.05; ES=.20). However, we observed large number of TT in U16 compared to U13 (24.4 ± 2.9 and 24.1 ± 1.9 vs. 20.3 ± 3.6=2.15; F=5.50; p<.01; ES= .32), but better HR recovery values 1 minute after in U13 compared to U16 groups (135.7 ± 20.8 bpm vs. 159.4 ± 13.7 and 154.5 ± 11.1 bpm; F=8.12; p<.01; ES=.31).

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4. Discussion and conclusion

Main findings revealed that HR recovery - as well as recovery in general - was faster for children and adolescents than for adults. On the other hand, HRmax is higher and anaerobic capacity is lower in these groups compared to adults. This suggests that better cardiovascular recovery might offset anaerobic capacity deficiency, and vice versa in judo athletes from this group of age. Thus, SJFT index appears not to discriminate for children, being necessary to adapt test requirements or propose a new formula. Future studies might implement additional aerobic and anaerobic tests to help to explain these differences.

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