MIHAJLO PUPIN TECHNICAL FACULTY

Validity and Reliability of a New Specific Parkour Test: Physiological and Performance Responses. Frontiers in Physiology, 2019, VOLUME=10, PAGES=1362

Scientific paper

Padulo Johnny, Ardigò Luca Paolo, Bianco Massimo, Cular Drazen, Madic Dejan, Markoski Branko, Dhahbi Wissem

Main aim of this study was examining validity and reliability of using a new specific Parkour repeated sprint ability test (SPRSA) for assessing repeated sprint ability while facing obstacles and establishing between-day reliability and sensitivity of SPRSA related to its physiological and performance responses. Thirteen high-level traceurs (three females) performed in random order and twice eight tests for assessing a total of 23 variables: SPRSA (a typical maximal-speed shuttle run interspersed with four Parkour competition-common fundamentals) and seven established fitness tests, core stability, hand-grip, vertical-jump, long-jump, pull-up, 300-m shuttle run (as a field test for anaerobic capacity), and Leger test. Except for muscular elasticity index of vertical jump test (intra-class Correlation Coefficient model 3,1 [ICC3;1] = 0.54 [fair]), fitness tests' ICC3;1s resulted excellent (ICC3;1: 0.93–1.00). SPRSA total time and time of its fastest sprint (SPRSA peak time) were significantly correlated with the majority of core stability (r: 0.79 to 0.59; $P < 0.01$–0.05), jumping (r: 0.78 to 0.67; $P < 0.01$–0.05), pull-up tests (r: 0.86; $P < 0.01$), 300-m shuttle run test total time (r: 0.77–0.82; $P < 0.01$), and Leger test-estimated VO2 max (r: 0.78; $P < 0.01$).

Principal component analysis (PCA) of the 23 variables led to extraction of four significant components (each due to different variables' combinations), which explained 90.2% of 23 variables' total variance. SPRSA (i.e., total and peak time) showed high reliability (ICC3;1: 0.991–0.998 and standard-error-of-measurement %: 0.07–0.32). Finally, SPRSA showed high sensitivity (smallest-worthwhile-change %: 0.29–0.68). Considering its excellent logical and strong ecological validity, SPRSA may serve as a valid specific field test for Parkour sport. In addition, thanks to its high reliability and sensitivity, this test is suitable for monitoring, evaluating, and programming training processes for Parkour practitioners in repeated sprint ability involving crossing obstacles.