

Combined measurement of agility and anaerobic capacity using a new field-based test.

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Introduction

Following discussions with basketball referees and coaches concerning the need for a simple, field-based test of agility and anaerobic capacity, a common training drill was modified to produce a new fitness assessment test (3 Modified Suicide – 3MS). The current study examined the validity and reliability of the 3MS in relation to a standard agility test and a standard anaerobic capacity test.

Methods

Eighty-three healthy active adults (21.4 ± 0.6 yrs; 174.2 ± 1.1 cm; 72.0 ± 1.5 kg) volunteered for this study. All procedures were approved by the James Cook University Human Ethics Committee. Following the completion of a pre-screening questionnaire and provision of written consent, all participants completed the Illinois agility test followed by the new field-based test, 3MS. The 3MS consisted of running three, modified suicide runs with 30 seconds rest between the first and second run, and 45 seconds rest between the second and third run. Final heart rate and time to complete each run were recorded. Two to seven days later, participants completed the 3MS followed by a 30-second maximum anaerobic capacity test on a cycle ergometer. Peak power and total work expended during the anaerobic capacity test were recorded. Reliability of the 3MS was determined by intraclass correlation coefficients (ICC), while validity was determined via correlations between the 3MS and the Illinois agility and between the 3MS and anaerobic capacity/power test.

Results

Significant test-retest reliability correlations ($ICC > 0.95$, $P < 0.01$) were obtained for the 3MS. Significant correlations were obtained between the 3MS and Illinois agility times ($r > 0.88$, $p < 0.01$) while significant negative correlations were obtained between 3MS times and 30-second anaerobic relative work ($r > -0.82$, $P < 0.01$), and between 3MS times and 30-second relative peak power ($r > -0.79$, $P < 0.01$). Simple regression equations for the prediction of agility, anaerobic capacity and anaerobic power from 3MS times were determined.

Discussion/Conclusions

The current study demonstrated that the 3MS is a simple, valid and reliable test for the assessment of agility and the assessment of anaerobic capacity and power. Further, the 3MS enables the combined assessment of agility and anaerobic capacity from a single, field-based test.