The determination of sub-maximal aerobic fitness components such as lactate threshold (LT) may be of some help to monitor training and in exercise prescription in modern basketball (Laplaud et al., 2004). Although laboratory LT detection is fairly the optimal choice for the determination of reliable and consistent results, the involved procedures are time consuming and use exercise-modes not relevant to basketball (cycling and line-running). Given that, the aim of this study was to assess the validity of a proposed exercise mode specific field-test over 20m (Intermittent Shuttle Running Test, ISRT) for lactate threshold (LT) detection in young basketball players. Fourteen basketball players (age 15.3±0.6 years, height 182±4.6 cm, body mass 71.6±6.3 kg) were submitted, in random order and on separate occasions, to ISRT and to a treadmill intermittent progressive test (TMLT) devised for the assessment of LT (4 min stages at 8,10,12,14 km h⁻¹). Each players had at the moment of the investigation at least five years of experience in youth basketball. Testing procedures were undertaken during the mid-season competitive break (December-January). Blood Lactate concentrations [La]b were assessed (Biosen 5030, EKF Industrie, Barleben, Germany) taking earlobe blood samples at rest and immediately after each of 4 min running steps considered in ISRT (9, 10 and 11 km h⁻¹) and TMLT. Exercise heart rates (HR) were monitored throughout each test using short-range telemetry (Polar NV, Kempele, Finland). During ISRT running speeds were dictated with CD-recorded audio cues broadcasted by a CD player. LT was considered the running speed attained at [La]b 1 mmol L⁻¹ above resting levels (Coyle et al., 1983). Results showed that speed at LT of ISRT and TM were significantly related (r=0.82, p<0.001). Speed at ISRT-LT showed to be significantly lower than TM-LT speed (10.1±1.7 vs 12±2.3 km h⁻¹, p<0.001). During ISRT, players attained 80±4.7, 87±4.4 and 92±3.0% of maximal HR at 9, 10 and 11 kmh⁻¹, respectively. The main finding of this study was that ISRT-LT was significantly related to the laboratory assessed LT confirming our research hypothesis. Given that, ISRT may be considered as a valid test for the assessment of LT in field condition in young basketball players. However, before using ISRT in youth basketball, reliability and sensitivity studies should be undertaken. Continuous 20m shuttle-running performed at 11 km h⁻¹ revealed to elicit HR in the range of those reported to induce aerobic fitness development in trained subjects. This inducing [La]b in the range of those reported to occur during youth basketball.

References

Keywords: Testing, Anaerobic Threshold, Team Sport