AGREEMENT OF SESSION-GOAL APPROACH AND RPE-BASED METHOD TO QUANTIFY TRAINING INTENSITY DISTRIBUTION IN RECREATIONAL AND ELITE RUNNERS

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Introduction

Several methods are used to quantify the training intensity distribution. Beside the traditional heart rate registration method (HRM), the session rating of perceived exertion (RPE) has been more and more used to quantify exercise intensity and its distribution for a defined training period (Foster et al., 2001). The aim of the study was to compare HRM and RPE for quantifying exercise intensity distribution among a group of recreational runners and elite athletes.

Methods

Twelve male recreational runners (RR) and nine elite middle distance runners (ER) (VO2max RR: 64.3 ± 5.0; ER: 70.2 ± 4.8, p<0.01) performed treadmill tests to exhaustion to determine heart rate corresponding to ventilatory thresholds (VT1, VT2), maximal oxygen consumption (VO2max), and maximal heart rate. VT1 and VT2 were used to determine three intensity zones (Zone 1 < VT1; VT1 < Zone 2 < VT2; VT2 < Zone 3). During an average of 16 weeks, all training sessions (except strength training) were recorded and quantified using both HRM and RPE (n= 106 training sessions per athlete). The session-goal approach was chosen for HRM to determine to which zone a training-session should be categorized. The 10-point scale of RPE was divided into three zones to assign the training sessions as follow: Zone 1, < 4.5; 4.5 < Zone 2 < 6.5; Zone 3, >6.5 (Seiler et al., 2004).

Results and discussion

For the RR group no significant differences were found in training intensity distribution between the two methods for any zone (Zone 1: HRM 53±21% vs RPE 54±22% p=0.82; Zone 2: 29±18% vs 27±18% p=0.69; Zone 3: 18±8% vs 19±12% p=0.78). For the ER group the training intensity between HRM and RPE distribution was different in Zone 1 and 3 but not in Zone 2 (Zone 1: HRM 52±15% vs RPE 66±8% p<0.05; Zone 2: 15±14% vs 17±5% p=0.81; Zone 3: 33±8% vs 17±5% p<0.001). In total 66±13% (RR) and 68±14% (ER) of all sessions analysed could be assigned to the similar training zone by using the two different methods. The agreement within Zone 1 was better for ER than RR (95±8% vs 78±24%, p<0.05), whereas no significant difference appear for Zone 2 and 3 between the two groups (29±19% vs 46±30% p=0.11; 70±30% vs 51±15% p=0.07).

Despite a similar distribution of the training session intensities when averaged over a training period, the agreement between the session-goal approach and the session rate of perceived exertion method remains weak. In comparison to HRM, the session RPE underestimates the portion of Zone 3 trainings.