Do elite endurance athletes report their training accurately?

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Introduction

Recently, training characteristics of elite athletes have been described with a focus on basic aspects of training volume and intensity distribution over time-frames from weeks to an entire season. The key method for quantifying training characteristics is self-reported (SR) training in diaries.

Despite the importance of self reported training data in describing endurance training best practice and developing testable training hypotheses, we have failed to identify previous studies validating the accuracy of SR training data provided by elite level athletes regarding session duration or intensity distribution. Therefore, the purpose of this study was to validate the accuracy of SR training duration and intensity distribution in elite endurance athletes.

Methods

Twenty-four elite XC skiers (25 ± 4 yr, 67.9 ± 9.88 kg, 75.9 ± 6.50 mL \cdot min⁻¹ \cdot kg⁻¹) SR all training sessions during a ~14 d altitude training camp. Heart rate (HR) and some blood lactate (La) measurements were collected during 466 training sessions. SR training was compared to recorded training duration from HR monitors, and SR intensity distribution was compared with expert analysis (EA) of all session data.

Results and discussion

SR was nearly perfectly correlated with recorded training duration (r = .99), but SR was 1.7% lower than recorded training duration (P < .001). SR training duration was also nearly perfectly correlated (r = .95) with recorded training duration > 55% HRmax but SR was 11.4% higher than recorded training duration > 55% HRmax (P < .001) due to SR inclusion of time < 55% HRmax (Figure 1). No significant differences were observed in intensity distribution in zones 1-2 between SR and EA comparisons, but small discrepancies were found in zones 3-4 (P < .001) (Figure 2).

Conclusions

This study provides evidence that elite endurance athletes report their training data accurately, although some small differences were observed due to lack of a SR “gold standard”. Daily SR is a valid method of quantifying training duration and intensity distribution in elite endurance athletes. However, additional common reporting guidelines would further enhance accuracy.

Figure 1. Relationship between SR and recorded training duration in each session (n=466). Dotted line indicates line of identity. PANEL A shows recorded training duration including HR values < 55% HRmax and PANEL B shows recorded training duration excluding HR values < 55% HRmax.

Figure 2. Mean ± SD percentage of time spent in each of the five intensity zones (n=24). Open bars denote SR, while filled bars represent EA. EA - zone 1 includes HR values < 55% HRmax matching SR. Panel A: zone 1, panel B: zones 2-5. *Paired Samples T Test, P ≤ .001.