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Abstract

Heart Rate Distribution and Aerobic Fitness Changes During Preseason in Elite Soccer Players †

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Abstract: Aim: Soccer is characterized as an intense intermittent team sport. Heart rate (HR) is used to monitor the players' training response, as well as to quantify microcycle and mesocycle training intensity during preseason and in-season periods. The purpose of the present study was to quantify the preseason training intensity distribution in elite soccer players and then examine the relationship between HR distribution and changes in aerobic fitness. **Material & Method:** Sixteen elite professional soccer players (age, 26.8 ± 3.8 years; weight, 77.8 ± 7.7 kg; height, 1.79 ± 0.06 m; mean ± SD) participated in the study. Aerobic fitness was evaluated with VO_2max, running velocity at VO_2max (v-VO_2max) during a laboratory incremental aerobic test and with the distance completed during an interval shuttle run test (ISRT), before and after preseason. HR of each player was measured using a short-range telemetry HR transmitter strap at 5-s intervals during all training sessions of the preseason. The absolute (min) and relative (%) time spent in high-intensity HR zone (90–100% of HRmax) during the preseason period was calculated for each player. **Results:** VO_2max and distances completed during ISRT improved significantly ($p < 0.05$) by 3.3 ± 2.1% and 29 ± 16%, respectively. The time (%) players spent in high-intensity training was significantly correlated ($p < 0.01$) with the changes (%) in distance completed during ISRT. **Conclusions:** These results provide useful information about the HR quantification during preseason in elite soccer players. Additionally, coaches have to take into consideration the time soccer players spend in high-intensity training for optimal endurance responses when planning and implementing the preseason training period.

Keywords: aerobic fitness; heart rate; soccer