'TEMPORARY FATIGUE' IS NOT APPARENT IN ELITE YOUTH SOCCER PLAYERS

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Introduction
Recent time-motion analyses have identified and described the phenomenon of 'temporary fatigue' (Bradley et al., 2009; Mohr, 2003), whereby high-intensity running in the 5-min subsequent to the most intense period of the match is lower than the match average. However, the velocity bands used in these time-motion studies to characterise temporary fatigue omit high-intensity actions such as collisions, accelerations, decelerations and turns that occur at velocities below the thresholds applied (typically ~ 15 km•h^{-1}). Therefore the aim of this study was to examine temporary fatigue as defined in the literature, but using both velocity and tri-axial accelerometer data, the latter of which can quantify high-intensity actions.

Method
20 elite male youth soccer players (Age: 17 ± 1 yrs; VO$_{2max}$: 61 ± 6 ml•kg^{-1}•min^{-1}) wore 5 Hz GPS (MinimaxX, Catapult, Australia) units during 21 competitive league fixtures (5 ± 3 matches per player) during the 2008/09 and 2009/10 seasons. Locomotor activities in arbitrary velocity bands, and tri-axial accelerometer data (Player Load - PL) were derived from the GPS system and classified into pre-defined 5-min periods. High speed running (HSR) was reported as the distance covered at ≥ 15 km• h^{-1}. Peak HSR distance represented the greatest distance covered in a 5-min period specific to each match instance. The HSR performed in the subsequent 5-min interval, and the mean of the remaining 5-min periods were compared as in previous research. The PL was reported as a vector magnitude, which sums the frequency and magnitude of accelerations in all three axial planes using a 100 Hz accelerometer. The peak PL was compared to both the subsequent and mean values as described above.

Results & Discussion
The HSR distance covered in the peak 5-min period was 178 ± 42 m, with a 47 ± 23 % decrease observed in the subsequent interval (94 ± 46 m). However there was no significant difference between HSR in the subsequent and mean (88 ± 25 m) 5-min epochs. The peak PL was 92.0 ± 18.7 AU, with a smaller decrement denoted in the subsequent interval (22 ± 12% decrease) in comparison to HSR. Furthermore, the PL denoted in the subsequent period (71.7 ± 17.4 AU) was significantly greater than the mean PL (67.8 ± 13.6 AU; p = 0.003). These results suggest that temporary fatigue is not observed in elite youth players when quantified using either HSR or PL with pre-determined 5-min periods.

Conclusion
This data suggests that either the players monitored in the current study adopted a pacing strategy, or alternatively that pre-determined 5-min periods are not sensitive enough to detect transient fatigue.

References
Bradley *et al*. (2009). *J Sports Sci*, 27 (2): 159-168.
Mohr *et al*. (2003). *J Sports Sci*, 21 (7): 519-528.