Effects of four different times of day on various aspects of maximal short-term physical performance in youth football players

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Résumé

Introduction: Football's anaerobic demands are a key physiological factor in player performance, likely varying throughout the day and affecting competition outcomes (Sabzevari Rad et al., 2021). However, most studies on time-of-day (TOD) effects have overlooked young athletes, despite increasing trends in early sports specialization (Myer et al., 2015). The present study aimed to investigate the effect of different times of day (TOD) on various aspect of maximal short-term physical performance among adolescent football players.

*Intervenant

Methods: In a randomized order, 19 adolescent male football players with neither chronotype (age: 14.58 ± 0.7y) were tested at four different TOD sessions at (08:00h, 11:00h, 15:00h, and 18:00h) with an in-between recovery period of ≥48 h. During each test session, the oral temperature (OT), medecine ball throw test (MDT), 5m sprint test (5m-T), 20m sprint (20m-T), illinois agility test (IAT), and illinois agility test with ball (IAT-B) were evaluated.

Results: While OT had significantly increased at 15:00h and 18:00h (both $p < 0.001$) compared to 08:00h, no significant difference was detected at 11:00h ($p > 0.05$). Post hoc test revealed that compared to 08:00h, (MDT, 5m-T, 20m-T, IAT, and IAT-B) significantly increased at 11:00h ($p < 0.001$, $p < 0.001$, $p < 0.001$, $p < 0.01$, and $p < 0.001$ respectively), 15:00h ($p < 0.001$, $p < 0.001$, $p < 0.01$, $p < 0.001$, and $p < 0.05$ respectively,) and 18:00h (all $p < 0.001$). Likewise, no significant difference was revealed between 11:00h and 15:00h (all $p > 0.05$). When compared to 18:00h, a significant difference was demonstrated at 11:00h ($p < 0.05$; $p < 0.01$; $p < 0.05$; $p < 0.05$ respectively) and 15:00h ($p < 0.01$, $p < 0.001$, $p < 0.001$, and $p < 0.001$ respectively) slots.

Discussion: The current outcomes align with a recent meta-analysis (Ravindrakumar et al., 2022) that revealed that late afternoon and early evening (between 16:00h and 07:30h) are most favorable TOD for short-term maximal physical performance. Moreover, it has been repeatedly documented that acrophase is often detected in the late afternoon (Souissi et al., 2008), and that short-term maximal performance exhibits circadian and diurnal fluctuation with amplitudes ranging from 2 to 26% (Facer-Childs & Brandstaetter, 2015).

Conclusion: In summary, there was a significant effect of TOD on the maximal short-term physical performance. The current results highlight the superiority of a late afternoon slot (18:00h) to complete optimal maximal performance comparing to morning (08:00h, 11:00h) and early afternoon, (15:00h), which could affect whole athletic performance. In practice, athletes should favour a late afternoon slot to train as this allows them to achieve the best level of performance.

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