Effects of motivational music during warming up at various time of day on several aspect of maximal short-term physical performance among female athletes

Houda Bougrine*[1,2], Imed Gandouzi[3], Ismail Dergaa[4,5], Julien Maitre[6], Abdulwahed Ahmed Alaizari[7], Osama Aljuhani[7], Thierry Paillard[6], and Nizar Souissi[8]

[1]University Pau and Pays de l'Adour, E2S UPPA, MEPS Laboratory, Tarbes, France – University Pau and Pays de l'Adour – France

[2]Physical Activity Research Unit, Sport and Health (UR18JS01), National Observatory of Sports, Tunisia – Tunisie

[3]Molecular Basis of Human Pathology Laboratory, Faculty of Medicine of Sfax, Tunisia – Tunisie

[4]High Institute of Sport and Physical Education of Ksar Said, University of Manouba, Mannouba 2010, Tunisia – Tunisie

[5]High Institute of Sport and Physical Education of El Kef, University of Jendouba, El Kef, Tunisia – Tunisie

[6]University of Pau et des Pays de l'Adour, E2S UPPA, MEPS Laboratory, Tarbes, France – University of Pau et des Pays de l'Adour, E2S UPPA – France

[7]Department of Physical Education, College of Sport Sciences and Physical Activity, King Saud University, Riyadh 11451, Saudi Arabia – Arabie saoudite

[8]Physical Activity Research Unit, Sport and Health (UR18JS01), National Observatory of Sports, Tunisia – Tunisie

Résumé

Introduction: The existing literature confirms that TOD significantly influences short-term maximal performance (Bougrine et al., 2022a; Bougrine, Salem, et al., 2023), and that music offers promising benefits (Chtourou et al., 2017; Eliakim et al., 2007). However, studies integrating both variables remain scarce, especially among female athletes' populations. This study examined how self-selected music during warm-up influences time-of-day (TOD) effects on short-term maximal performance in female handball players.
Methods: Eighteen female athletes (age: 16.16 ± 0.38 years) completed eight randomized sessions under two warm up conditions: with (Yes-MUS) or without (No-MUS) listening to self-selected motivational music, at four distinct times of day (08:00, 11:00, 15:00, and 18:00). A minimum recovery period of 48 hours was provided between sessions. During each session, oral temperature (OT), countermovement jump (CMJ), medicine ball throw (MBT), 20-meter sprint (20m-ST), and Illinois agility test (IAT) were recorded.

Results: The findings indicated that OT and all physical performances improved from

*Intervenant

08 :00h to 18:00h (all $p < 0.001$). The amplitude of diurnal variation was attenuated in the Yes-MUS condition for CMJ (5.7% vs. 2.3%), MBT (13% vs. 6.6%), 20m-ST (5.9% vs. 3.3%), and IAT (7.1% vs. 4.7%) compared to No-MUS. Likewise, OT variation remained unchanged across conditions (both 3.2%). Compared to No-MUS condition, performance improvements under the Yes-MUS were significant at all times : 08:00 (all $p < 0.001$), 11:00 (CMJ, MBT: $p < 0.01$; 20m-ST, IAT: $p < 0.001$), 15:00 (CMJ : $p < 0.01$, MBT : $p < 0.05$, 20m-ST : $p < 0.001$, IAT : $p < 0.001$), and 18:00 (CMJ : $p < 0.05$, MBT : ns, 20m-ST : $p < 0.05$, IAT : $p < 0.01$).

Discussion :

In line with the current findings, several investigations have demonstrated that the peak anaerobic performances were observed in the afternoon between 16:00h and 18:00h (Bougrine et al., 2022b; Bougrine, Nasser, et al., 2023) compared to morning among female team sports athletes. Furthermore, these results are consistent with earlier findings that suggest listening to music during warm-up can help minimize diurnal fluctuations in physiological performance (Chtourou et al., 2012).

Conclusion: These findings suggest that self-selected motivational music during warm-up blunts diurnal performance variations and enhances anaerobic capacity in female athletes, particularly during suboptimal morning hours. Listening to music during warm-up may be an effective strategy to counteract diurnal declines in performance and optimize training outcomes among female athletes.

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