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## SLEEP PATTERNS OF ELITE FEMALE FOOTBALL MATCH OFFICIALS DURING WEURO2022: IMPACT OF PROXIMITY TO MATCH DAY, KICK-OFF TIME AND ROLE ON MATCH DAY

Tarnowski, C.A.1, Helsen, W.F.2, Qaqaya, N.Y.2, Rollo, I.R.1

1 Gatorade Sports Science Institute, PepsiCo R&D Life Sciences, UK, 2 Union of European Football Associations <UEFA>, Switzerland

### INTRODUCTION:

Sleep has numerous important physiological and cognitive restorative functions that are particularly important to elite sports performers and, therefore, also to elite match officials. Athletes are advised to achieve sufficient sleep duration (> 7 hours) and quality (>85%) per night. Elite athletes are reported to have poorer quantity and quality of sleep in comparison to the general population. However, there is currently no research into the sleep habits of elite football match officials who are exposed to similar physical and perceptual-cognitive demands. Therefore, the aim of this study was to examine the impact of proximity to match day (MD), kick-off (KO) time and role on MD on sleep patterns of elite female match officials during the 2022 UEFA European Womens Football Championship (WEURO 2022).

### METHODS:

Sleep was measured over  $18 \pm 5$  days in nine elite female football match officials (age:  $39 \pm 4$  y) during a 25-day international tournament (WEURO 2022). Wrist-worn actigraphy (Biostrap EVO, USA) was used to measure night-time sleep duration (h:min), sleep onset and wake time (h:min), and sleep efficiency (%; percentage of time in bed spent asleep). Data was analysed by proximity to MD: Training Day (TD; pitch/gym based, at least +/-2 days from MD), MD-1, MD and MD+1; KO time: 17:00 PM or 20:00 PM; and, Role on MD: Referee or Fourth Official. Data are shown as mean  $\pm$  SD (range), with statistical significance set at  $p < 0.05$ .

### RESULTS:

Sleep duration was  $7:20 \pm 1:20$  (6:20 – 8:04), with no difference between type of day (MD:  $6:46 \pm 1:38$ , TD:  $7:25 \pm 1:16$ , MD-1:  $7:37 \pm 1:18$  and MD+1:  $7:12 \pm 1:12$ ,  $p > 0.05$ ). Total time in bed was lower on MD ( $7:22 \pm 1:29$ ) compared to MD-1 ( $8:25 \pm 1:19$ ) and TD ( $8:15 \pm 1:07$ ,  $p < 0.05$ ). Sleep onset time was later on MD ( $00:54 \pm 1:22$ ) compared to MD-1, MD+1 and TD ( $23:39 \pm 1:07$ ,  $23:58 \pm 0:52$  and  $23:27 \pm 0:52$ ,  $p < 0.01$ ) and sleep wake time was later on MD ( $8:06 \pm 0:58$ ) compared to TD ( $7:42 \pm 0:48$ ,  $p < 0.05$ ). An 20:00 PM KO resulted in later sleep onset time ( $01:29 \pm 01:04$ ) compared to 17:00 PM KO ( $00:00 \pm 1:21$ ,  $p < 0.01$ ), with no differences observed in sleep wake time ( $p > 0.05$ ). Accordingly, sleep duration was shorter after 20:00 PM KO compared to 17:00 PM KO ( $6:00 \pm 1:05$  vs.  $8:06 \pm 1:38$ ,  $p < 0.01$ ), as well as total time in bed ( $6:44 \pm 0:59$  vs.  $8:22 \pm 1:38$ ,  $p < 0.01$ ). No differences were observed in any variables between Referee and Fourth Official performance ( $p > 0.05$ ). Sleep efficiency was  $89 \pm 7\%$  (81-96%) throughout the tournament with no differences observed between type of day, KO time or role on MD ( $p > 0.05$ ).

### CONCLUSION:

Elite female football match officials, on average, achieved the recommended sleep duration and quality during WEURO 2022, however there was large interindividual variation. Sleep duration was <7 h on MD and after 20:00 PM KO, likely due to a later sleep initiation and non-compensatory wake time. As such, individualized sleep hygiene strategies which consider match scheduling are recommended.

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