

GUIDELINES AND MITIGATION STRATEGIES FOR HOT CONDITIONS IN PROFESSIONAL FOOTBALL

BACKGROUND

Elevated heat, humidity, and solar load combined with low air movement independently and additively impair performance, increase the perception of effort and the risk of heat-related illnesses. Guidelines for exercise in hot conditions generally rely on the Wet Bulb Globe Temperature (WBGT), a composite temperature measurement calculated from ambient temperature, humidity and sun exposure. Following several high-profile international and continental competitions played in hot conditions (e.g., 2014 FIFA World Cup Brazil), a series of studies showed that national team players and their managers unanimously mentioned that the hot and humid conditions during these matches made it difficult as a team to perform. Such a concern is likely to be growing in many countries across all continents. Therefore, to better protect players' health and performance during training and match play in hot conditions, we present our starting 11 Hot Tips that should be considered and facilitated by governing bodies, competition organisers, clubs, staff members and players.

VIEW OF PLAYERS AND MANAGERS ABOUT HOT CONDITIONS

FIFPRO conducted a series of cross-sectional electronic surveys to explore the views of national team players (captains) and managers on the hot conditions during the aforementioned high-profile football competitions. Players and managers unanimously mentioned that the hot and humid conditions during these matches made it difficult as a team to perform. Around half of the players stated that cooling breaks at approximately 30 minutes into the run-of-play in both halves of the matches were adequate to hydrate sufficiently, while only a minority were in favour of more cooling breaks, given the effect on increased stoppage times. Also, only a minority of the national team managers considered the weather when selecting either their starting 11 players or their tactical plan.





FIFPRO'S 11 HOT TIPS

1. Heat guidelines should be adopted and respected by football stakeholders, clubs and national teams for matches and training and embedded within regulations (e.g., Minimum Medical Requirements, Laws of the Games, Collective Bargaining Agreement for national competitions; FIFA competition regulations, Social Dialogue).
2. Heat guidelines should refer to thresholds for WBGT (especially in elite professional football) and ambient (in case a WBGT measurement device is unavailable) temperature to increase their understanding and global implementation across all levels of professional football.
3. A WBGT above 26°C (or ambient temperature above 30°C) should warrant cooling breaks during matches (e.g., at approximately 30 minutes in each half of a match).
4. A WBGT above 28°C (or ambient temperature above 36°C) should lead to the delay or postponement of matches until conditions for players and officials (and fans) are safer.
5. WBGT (and/or ambient temperature) should be measured on-site before each match and training session (e.g., two hours), and consultation between key stakeholders (e.g., players, coaches, match officials, team physicians) about potential risks should occur.
6. National and local weather forecasts should monitor the weather conditions (e.g., at least five days before each match) and estimate potential hot conditions to schedule matches (and training) optimally and provide players with a safe environment.
7. Next to additional cooling breaks, other mitigation strategies (e.g., heat acclimation/acclimatisation, cooling methods, easy availability of cool drinks all around the football field) should be planned and used for matches and training, with responsibility for their implementation resting with teams and individuals involved.
8. Stakeholders (international, continental, national) and television broadcasting companies should not schedule matches at the hottest time of day, that means avoiding mid-day or afternoon matches (i.e., full sunshine) where high WBGT is most likely.
9. A (inter)national registry of heat-related collapses and/or deaths should be developed to assess their prevalence, explore the underlying contributing factors, and improve existing guidelines and mitigation strategies.
10. While players' responses (e.g., physiological, cognitive) when exercising in hot conditions have been extensively studied, more research is needed to understand (i) how thresholds (WBGT and/or ambient temperature) in heat guidelines could evolve, (ii) how mitigation strategies, including potential modification of the laws of the game and heat acclimation/acclimatisation, could be optimally implemented and enforced in practice, and (iii) how new technologies might enable the assessment of personal factors (e.g., metabolic rate, thermoregulatory function) and contribute to the prediction of the risk of heat-related illnesses.
11. Particular attention should be given to female and youth players with regard to individual responses when exercising in hot conditions or when it comes to avoiding television broadcasts of their matches at mid-day or in the afternoon (i.e., full sunshine).

Reference



Goutteborge V, Duffield R, den Hollander S, Maughan R. [Protective guidelines and mitigation strategies for hot conditions in professional football: starting 11 Hot Tips for consideration](#). *BMJ Open Sport & Exercise Medicine*. 2023.



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