

PHYSIOLOGY OF WOMEN'S FOOTBALL – MATCH PERFORMANCE, FATIGUE, TRAINING AND TESTING

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Introduction

The popularity of women's football has increased dramatically World Wide over the last decade and currently more than 40 million girls and women are registered football players. At the same time, the scientific evidence regarding match performance, fatigue during match-play, training and testing of elite female players has expanded (1-5) and recent studies have evaluated the exercise intensity and health effects of football training for amateurs and recreational female players (6). The WCSF 2011 key note on women's football provides an overview of the latest scientific results as well as ideas for future investigations.

Methods

Match performance and fatigue development during matches have been studied by video-based time-motion analyses and GPS measurements as well as physical testing performed before, during and after match-play (1-5). The physiological response to match-play has predominantly been determined by measurements of heart rate and blood lactate (1,4,5). Physical capacity and health status of players as well as the effectiveness of training regimes have been determined by sub-maximal and maximal laboratory tests (e.g. VO_2max), intermittent field tests (e.g. Yo-Yo IR1, Yo-Yo IE2 and repeated sprint tests) and medical assessments (e.g. DXA scans and echocardiography) (1, 4-7).

Results and Conclusion

Elite female players cover a total distance covered of 10-11 km during competitive matches and perform 10-35 sprints and 125-200 high intensity running bouts (1-5) and experience marked game-induced decrements in high-intensity activities as well as 3x30 m sprint and Yo-Yo IE2 performance (1-5). The amount of high-intensity running is closely correlated to physical fitness of the players (1-5, 7). Average heart rate is 80-90% of individual HRmax and blood lactate is 2-10 mM (1, 3-5). Elite women footballers have a superior cardio-vascular and musculo-skeletal health profile compared to age-matched untrained women (e.g. heart function, blood pressure, lipid profile, lean body mass, body mineral density), and they have a 60% higher VO_2max (55 ml/min/kg) and 6-fold higher Yo-Yo IE2 performance (1750 m) (1,4,6,7). A combination of aerobic high-intensity training ($\text{HR} > 90\% \text{HRmax}$) and anaerobic speed-endurance production training is effective in improving soccer-related fitness of top-class female football players.

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