

**THE PHYSICAL AND PHYSIOLOGICAL  
CHARACTERISTICS OF ELITE FEMALE  
SOCCER PLAYERS**

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## **i. ABSTRACT**

Despite the growing popularity and professionalism of female soccer in recent years, a physical analysis of elite female players has not been thoroughly conducted. The activity profiles of male soccer players during matches and training have been well documented, and coaches of female teams often rely on data from men's soccer to prescribe conditioning programs and develop training load monitoring benchmarks. Therefore, the aim of this thesis was to investigate the physical and physiological characteristics of elite female soccer players during training and competitive matches. The physical and physiological characteristics of elite female soccer players were analysed across a playing season (including a week of preseason training), during a sample of small-sided training games, as well as during competitive Australian national league (W-League) matches. The key findings of this research were: 1) sprint performance and training demands declined across the course of a playing season, 2) total and exercise energy expenditure was 11,692-12,242 kJ and 2,695-2,538 kJ, respectively, 3) smaller small-sided (training) games can be used to develop repeat acceleration ability and aerobic capacity while larger small-sided (training) games can be used to develop maximal speed, 4) the high-speed and sprint characteristics vary according to playing position and time period of the match, and 5) the acceleration and deceleration profiles vary according to playing position and intensity. The findings from this research thesis can be used to develop match-specific conditioning and change of speed programs, as well as develop training load monitoring benchmarks.

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## iv. PUBLICATIONS

### Peer Reviewed Publications

1. **Mara, J.**, Thompson, K. G, Pumpa, K. L, Periodisation and Physical Performance in Elite Female Soccer Players. *International Journal of Sports Physiology and Performance*. 2015. 10(5): 664-669.
2. **Mara, J.**, Thompson, K. G, Pumpa, K.L Assessing the Energy Expenditure of Elite Female Soccer Players: A Preliminary Study. *Journal of Strength and Conditioning Research*. 2015. 29(10): 2780-2786.
3. **Mara, J.**, Thompson, K. G, Pumpa, K.L. The physical and physiological characteristics of various-sided games in elite female soccer. *International Journal of Sports Physiology*, 2016, In press.

### Conference Communications

1. **Mara, J.**, Thompson, K.G, Pumpa, K.L Physical Performance of Small-Sided Games in Elite Female Soccer Training. *World Congress on Science and Football Conference*, Copenhagen, Denmark, 2015.
2. **Mara, J.**, Thompson, K.G, Pumpa, K.L Training Phase and High-Speed Performance in Elite Female Soccer. *Exercise and Sports Science Australia Conference*, Adelaide, Australia 2014.
3. **Mara, J.**, Thompson, K.G, Pumpa, K.L Assessing the Energy Expenditure of Elite Female Soccer Players. *Sports Medicine Australia Conference*, Canberra, Australia, 2014.

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