

## Texas ACSM Poster Presentation

**Title:** The influence of different length between match microcycles on neuromuscular, hormonal and perceptual responses in professional rugby league players

**Authors:** Blake D McLean<sup>1,2</sup>, Aaron J Coutts<sup>1</sup>, Vince Kelly<sup>2,3</sup>, Michael R McGuigan<sup>4</sup>, Stuart Cormack<sup>5</sup>

**Institutions:** <sup>1</sup> School of Leisure, Sport and Tourism, University of Technology, Sydney, Lindfield, NSW, Australia. <sup>2</sup> South Sydney Rugby League Football Club, Redfern, New South Wales, Australia. <sup>3</sup> School of Human Movement Studies, University of Queensland, St Lucia, Queensland, Australia. <sup>4</sup> New Zealand Academy of Sport, Auckland, New Zealand. <sup>5</sup> Essendon Football Club, Essendon, Victoria, Australia.

**Classification of first author:** Undergraduate

**Abstract:** Optimal recovery between matches is critically important in team sports. Indeed, altered neuromuscular performance, hormone levels and increased fatigue can manifest in under recovered team sport athletes. However, the recovery patterns in these variables in the days following professional rugby league matches is unknown. The purpose of this study was to examine the influence of different between-match training periods on neuromuscular, hormonal and perceptual measures in professional rugby league players. Following familiarization, 12 professional rugby league players from the same team were assessed for changes in countermovement jump (CMJ) (force, power, flight time), perceptual responses (fatigue, well being and muscle soreness) and salivary hormone (testosterone (T) and cortisol (C)) levels during 5, 7 and 9 day periods between matches. Measures were taken 4h prior to the initial match, and then 1, 2, 4, 6\*, 7\*, 8\* and 9\* days following (\*depending on group). All training was prescribed by the coaches and monitored using the session-RPE method. Lower daily training load was completed on the 5-day compared with the 7 and 9-day conditions ( $p < 0.05$ ). Some CMJ variables (flight time and flight time:contraction time), perception of fatigue, well-being and muscle soreness were reduced in the 2 days following the match in each condition ( $p < 0.05$ ). All CMJ variables returned to near baseline values following 4 days in each condition. Both CMJ maximum and relative power were lower in the 7 day condition when compared with the 9 day condition ( $p < 0.05$ ). Fatigue levels were reduced at 48 h in the 7 and 9-day groups ( $p < 0.05$ ) but had returned to baseline in the 5-day group. All perceptual measures returned to baseline levels prior to the following match in each condition and followed changes in training load. Salivary T and C did not change in response to the match. These results show that neuromuscular performance and perception of fatigue are reduced for at least 48 h following a rugby league match but these can be fully recovered within 4 days. CMJ variables involving flight time appear to be best for assessing acute fatigue caused by a match, and variables involving power may be useful in assessing accumulated fatigue. The perceptual measures were sensitive to both acute fatigue and accumulated fatigue. The salivary hormone analyses were of limited value for assessing recovery. These findings show that with correct training, it is possible to recover neuromuscular, perceptual and endocrine measures within 4 days after a rugby league match.