Title: Metabolic demands and replenishment of muscle glycogen after a rugby league match simulation protocol.

Authors: Warren J. Bradley, Marcus P. Hannon, Victoria Benford, James C. Morehen, Craig Twist, Sam Shepherd, Matthew Cocks, Samuel G. Impey, Robert G. Cooper, James P. Morton, Graeme L. Close

PII: S1440-2440(17)30275-X
DOI: http://dx.doi.org/doi:10.1016/j.jsams.2017.02.005
Reference: JSAMS 1469

To appear in: *Journal of Science and Medicine in Sport*

Received date: 2-9-2016
Revised date: 24-1-2017
Accepted date: 6-2-2017

Please cite this article as: Bradley Warren J, Hannon Marcus P, Benford Victoria, Morehen James C, Twist Craig, Shepherd Sam, Cocks Matthew, Impey Samuel G, Cooper Robert G, Morton James P, Close Graeme L.Metabolic demands and replenishment of muscle glycogen after a rugby league match simulation protocol.*Journal of Science and Medicine in Sport* http://dx.doi.org/10.1016/j.jsams.2017.02.005

Metabolic demands and replenishment of muscle glycogen after a rugby league match simulation protocol.

Warren J Bradley[1], Marcus P Hannon[1], Victoria Benford[1], James C Morehen[1], Craig Twist[2], Sam Shepherd[1], Matthew Cocks[1], Samuel G Impey[1], Robert G Cooper[3], James P Morton[1] and Graeme L Close[1]

[1]Research Institute for Sport and Exercise Sciences, Liverpool John Moores University, Tom Reilly Building, Liverpool, L3 3AF, UK

[2]Department of Sport and Exercise Sciences, University of Chester, Parkgate Road, Chester, CH1 4BJ, UK

[3]MRC Arthritis Research UK Centre for Integrated Research into Musculoskeletal Ageing, University of Liverpool, Liverpool, UK

Address for Correspondence:

Professor Graeme Close

Research Institute for Sport and Exercise Sciences, Tom Reilly Building, Byrom St. Campus, Liverpool John Moores university, Liverpool, UK, L3 3AF: 0151 904 6266,

g.l.close@ljmu.ac.uk

Abstract

Objectives: The metabolic requirements of a rugby league match simulation protocol and the timing of carbohydrate provision on glycogen re-synthesis in damaged muscle were examined.

Design: Fifteen (mean ± SD: age 20.9 ± 2.9 y, body-mass 87.3 ± 14.1 kg, height 177.4 ± 6.0 cm) rugby league (RL) players consumed a 6 g·kg·day-1 CHO diet for 7-days, completed a time to exhaustion test (TTE) and a glycogen depletion protocol on day-3, a RL simulated-match protocol (RLMSP) on day-5 and a TTE on day-7. Players were prescribed an immediate or delayed (2-h-post) re-feed post-simulation.

Methods: Muscle biopsies and blood samples were obtained post-depletion, before and after simulated match-play, and 48-h after match-play with PlayerLoad and heart-rate collected throughout the simulation. Data were analysed using effects sizes ± 90% CI and magnitude-based inferences.