

THE PHYSIOLOGICAL RESPONSES TO A LABORATORY-BASED SOCCER-SPECIFIC TRAINING SIMULATION (LSSTS) ON A MOTORISED TREADMILL

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Introduction

Soccer-specific match simulations in the literature may not represent the demands of soccer training as these are different from those of match-play(Rhode et al., 1988). This study aimed to evaluate physiological responses to a LSSTS on a motorised treadmill.

Methods

A LSSTS that re-created the activity profiles obtained during the training of professional players were performed on a treadmill(Jeong et al., 2009). Ten healthy subjects were monitored to evaluate the physiological loads of the LSSTS, such as HR and ratings of perceived exertion. Blood metabolites were also measured pre-, during and post-LSSTS to examine the metabolic response to the protocol.

Results & Discussion

The mean HR during the simulation($136\pm10\text{ b}\cdot\text{min}^{-1}$, $71\pm5\%$ of HR_{max}) was similar to that obtained in actual training($137\pm8\text{ b}\cdot\text{min}^{-1}$, $72\pm3\%$ of HR_{max}). Levels of blood metabolites were significantly increased both during and post-exercise compared to rest($p<0.05$) (Table 1).

Conclusion

The LSSTS initiated similar physiological stress and similar metabolic profiles to those observed in soccer. This would suggest that the protocol could be used as a model for laboratory-based investigations.

Table 1. The responses of blood metabolites following the LSSTS

	pre	20-min	40-min	post	3-hr
Glucose ($\text{mmol}\cdot\text{l}^{-1}$)	5.29 ± 0.6	5.53 ± 0.3	5.59 ± 0.7	5.89 ± 0.7	5.08 ± 0.3
Lactate ($\text{mmol}\cdot\text{l}^{-1}$)	1.57 ± 0.6	$4.64\pm2.1^*$	$5.01\pm2.5^*$	$5.30\pm2.6^*$	1.01 ± 0.3
NEFA ($\text{mmol}\cdot\text{l}^{-1}$)	0.45 ± 0.3	0.37 ± 0.1	0.44 ± 0.1	0.60 ± 0.2	$0.79\pm0.2^*$
Glycerol ($\mu\text{mol}\cdot\text{l}^{-1}$)	29 ± 19	$69\pm28^*$	$105\pm46^*$	$145\pm54^*$	$64\pm22^*$

* $p<0.05$, significant difference compared to pre-exercise value.

Reference

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