ECCENTRIC HAMSTRING WEAKNESS POST-TREADMILL RUNNING IS UNRELATED TO ANGLE OF PEAK TORQUE OR AEROBIC CAPACITY

Opar, D. 1), Shield, A. 1), Williams, M. 2), Porter, K. 2) & Raj, I. 3)

1) School of Human Movement Studies and Institute of Health and Biomedical Innovation, Queensland Univ. of Technology, Australia
2) School of Exercise Science, Australian Catholic Univ., Australia
3) School of Medical Sciences, Royal Melbourne Institute of Technology Univ., Australia

Keywords: hamstring, injury prevention, intermittent running

Introduction

Intermittent running protocols often cause greater losses in eccentric than concentric knee flexor strength[1] which increases the risk of hamstring strain injury [2]. It is not known whether the extent of this decline can be predicted on the basis of the knee flexion angle of peak torque or aerobic capacity.

Methods

Fifteen recreationally active males completed a 45 minute soccer-specific treadmill running protocol. Maximal aerobic capacity ($VO2_{max}$) was determined in the days prior to the treadmill run. Concentric and eccentric isokinetic strength of the knee flexors and concentric strength of the knee extensors was recorded prior to, immediately and 15 minutes after running. Knee flexor angle of peak torque was determined from isokinetic data.

Results & Discussion

Treadmill running caused eccentric knee flexor weakness without altering concentric knee flexor or extensor torque. In terms of eccentric knee flexor strength loss and changes in the functional hamstrings to quadriceps ratio, two distinct distributions were observed suggesting the existence of high and low responders to intermittent running. Neither angle of peak knee flexor torque nor aerobic capacity differed between high and low responders, although high responders were weaker in concentric tests of knee flexor strength.

Conclusion

Neither angle of peak knee flexor torque nor aerobic capacity predicts the extent of eccentric knee flexor weakness after soccer specific treadmill running. Future studies should explore other variables which may impact upon knee flexor weakness after soccer-specific running.

References

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