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Article Citation:

Zachary G. Fox, Jason P. Mihalik, J. Troy Blackburn, Claudio L. Battaglini, Kevin M. Guskiewicz (2008) Return of Postural Control to Baseline After Anaerobic and Aerobic Exercise Protocols. *Journal of Athletic Training*: September/October 2008, Vol. 43, No. 5, pp. 456-463.

doi: 10.4085/1062-6050-43.5.456

Original Research

Return of Postural Control to Baseline After Anaerobic and Aerobic Exercise Protocols

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Abstract

Context: With regard to sideline concussion testing, the effect of fatigue associated with different types of exercise on postural control is unknown.

Objective: To evaluate the effects of fatigue on postural control in healthy college-aged athletes performing anaerobic and aerobic exercise protocols and to establish an immediate recovery time course from each exercise protocol for postural control measures to return to baseline status.

Design: Counterbalanced, repeated measures.

Setting: Research laboratory.

Patients Or Other Participants: Thirty-six collegiate athletes (18 males, 18 females; age = 19.00 ± 1.01 years, height = 172.44 ± 10.47 cm, mass = 69.72 ± 12.84 kg).

Intervention(s): Participants completed 2 counterbalanced sessions within 7 days. Each session consisted of 1 exercise protocol followed by postexercise measures of postural control taken at 3-, 8-, 13-, and 18-minute time intervals. Baseline measures were established during the first session, before the specified exertion protocol was performed.

Main Outcome Measure(s): Balance Error Scoring System (BESS) results, sway velocity, and elliptical sway area.

Results: We found a decrease in postural control after each exercise protocol for all dependent measures. An interaction was noted between exercise protocol and time for total BESS score ($P = .002$). For both exercise protocols, all measures of postural control returned to baseline within 13 minutes.

Volume 43, Issue 5
(September/October 2008)

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Athletic Training



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Print ISSN 1062-6050

eISSN 1938-162X

Frequency Bimonthly:

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Conclusions: Postural control was negatively affected after anaerobic and aerobic exercise protocols as measured by total BESS score, elliptical sway area, and sway velocity. The effect of exertion lasted up to 13 minutes after each exercise was completed. Certified athletic trainers and clinicians should be aware of these effects and their recovery time course when determining an appropriate time to administer sideline assessments of postural control after a suspected mild traumatic brain injury.

Keywords: [balance](#), [fatigue](#), [recovery](#), [concussions](#), [mild head injuries](#), [mild traumatic brain injuries](#)

Zachary G. Fox, MA, ATC, contributed to conception and design; acquisition and analysis and interpretation of the data; and drafting, critical revision, and final approval of the article. Jason P. Mihalik, MS, CAT(C), ATC; J. Troy Blackburn, PhD, ATC; Claudio L. Battaglini, PhD; and Kevin M. Guskiewicz, PhD, ATC, FNATA, FACSM, contributed to conception and design, analysis and interpretation of the data, and drafting, critical revision, and final approval of the article.

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Paul McCrory, Willem Meeuwisse, Karen Johnston, Jiri Dvorak, Mark Aubry, Mick Molloy, and Robert Cantu. (2009) Consensus Statement on Concussion in Sport: The 3rd International Conference on Concussion in Sport Held in Zurich, November 2008. *Journal of Athletic Training* **44**:4, 434-448

Online publication date: 1-Jul-2009.

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