Title: The utility of instrumented dual-task gait and tablet-based neurocognitive measurements after concussion

Authors: David R. Howell PhD, Alexandra Stillman MD, Thomas A. Buckley EdD, Brant Berkstresser MS, Francis Wang MD, William P. Meehan III MD

PII: S1440-2440(17)30992-1
DOI: http://dx.doi.org/10.1016/j.jsams.2017.08.004
Reference: JSAMS 1594

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

Received date: 24-5-2017
Revised date: 3-8-2017
Accepted date: 8-8-2017

Please cite this article as: Howell David R, Stillman Alexandra, Buckley Thomas A, Berkstresser Brant, Wang Francis, Meehan William P.The utility of instrumented dual-task gait and tablet-based neurocognitive measurements after concussion.*Journal of Science and Medicine in Sport* http://dx.doi.org/10.1016/j.jsams.2017.08.004

The utility of instrumented dual-task gait and tablet-based neurocognitive measurements after concussion

David R. Howell PhD[a-c*], Alexandra Stillman MD[d], Thomas A. Buckley EdD[f,g], Brant Berkstresser MS[e], Francis Wang MD[e], William P. Meehan III MD [a-c, h]

Author Affiliations

[a] The Micheli Center for Sports Injury Prevention, Waltham, MA, USA

[b] Division of Sports Medicine, Department of Orthopaedics, Boston Children's Hospital, Boston, MA, USA

[c] Brain Injury Center, Boston Children's Hospital, Boston, MA, USA

[d] Department of Neurology, Beth Israel Deaconess Medical Center, Boston, MA, USA

[e] Harvard University Health Service, Cambridge, MA, USA

[f] Department of Kinesiology and Applied Physiology, University of Delaware, Newark, DE, USA

[g] Interdisciplinary program in Biomechanics and Movement Science, University of Delaware, Newark, DE, USA

[h] Department of Pediatrics and Orthopedic Surgery, Harvard Medical School, Boston, MA, USA

*Corresponding Author

Corresponding author: David R. Howell, PhD. Division of Sports Medicine, Boston Children's Hospital. 20 Hope Ave., Suite G01. Waltham, MA, USA, 02453. Phone: 1-781-216-2865. Fax: 1-781-216-3093. Email: David.Howell2@childrens.harvard.edu.

Abstract

Objectives: Quantitative and non-invasive measurements acquired by neurocognitive or gait evaluations are useful concussion management components. Emerging technology has allowed for the development of portable and objective tests which may be potentially useful across many settings where evaluations take