Reviewer’s report

Title: Intra-rater reliability of hallux flexor strength measures using the Nintendo Wii Balance Board

Version: 1 Date: 10 May 2015

Reviewer: Alfred Gatt

Reviewer’s report:

This is a very interesting paper that demonstrates the possibility of the use of readily-available equipment (Wii Balance Board) for clinical and research applications, as opposed to the highly expensive laboratory equipment such as force plates. The authors are to be commended for originality. Overall, the paper is very readable, although the discussion could be expanded somewhat and perhaps written better in order to stimulate the reader to continue perusing this new and quite interesting testing modality.

Points that need addressing:

Some comments from the authors relating to validity are certainly warranted. To what extent are the authors confident that the new proposed method, which is evaluating force (or pressure) under the interphalangeal joint of the hallux, actually measuring flexor hallucis brevis strength? Can the anatomy of the plantar aspect of the hallux (e.g. ipj prominence) affect this? They need to make it clear to the reader that increased force is directly related to increased FHB strength, and not to other factors.

Authors rightly commended that they attempted to minimize compensatory strategies from the trunk and ankle; however, no mention at all as to whether foot posture was controlled. Since foot posture is directly related to arch height and consequently arch length, this could have a significant effect on results.

Although ‘healthy individuals’ were recruited, there are no comment whether other related factors such as pinch callus and hyperextension of the interphalangeal joint were controlled for. Also an assessment for normal first metatarsophalangeal joint range of motion is considered an essential requisite before actual testing. Did any of the participants have hallux limitus or rigidus?

How was data extracted? Was the balance board connected to the Wii, or was it interfaced to a pc or other logging equipment? What was actually measured, force (page 5, para 3) or pressure (page 8 para 2)? How was force represented on the device, in Newtons? How was pressure represented on the device, in KiloPascals, or in any other format?

How was it possible to ensure that participants actually applied 50% of their perceived maximal effort? (Page 6, last para)
It would be of interest to the reader to know why ICC (3,3) was chosen instead of other ICC classes.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests