Medicine & Science in Sports & Exercise

Issue: Volume 40(5) Supplement 1, May 2008, p S93

Copyright: ©2008The American College of Sports Medicine

Publication Type: [F-12 Free Communication/Slide - Bone 3: May 30, 2008 1:00 PM - 2:30 PM ROOM: 104]

DOI: 10.1249/01.mss.0000321853.07140.6d

ISSN: 0195-9131

Accession: 00005768-200805001-01095

[F-12 Free Communication/Slide - Bone 3: May 30, 2008 1:00 PM - 2:30 PM ROOM: 104]

Prediction of Dominant Skeletal Mass with Different Tests of Lower Limb Dominance: 918: May 30 2:00 PM - 2:15 PM

Weeks, Benjamin K.; Beck, Belinda R. FACSM

Author Information

Griffith University, Gold Coast, Queensland, Australia.

Email: B.Weeks@griffith.edu.au

(No relationships reported)

The site-specific effects of bone loading are evident when observing the effect of upper limb dominance on bone mass. For instance, studies of the upper extremity bones of tennis players have revealed greater bone mineral density (BMD) of the dominant arm. However, bone strength is commonly examined in the lower limbs, where the determination of lower limb dominance is not as straightforward as for the upper limbs. Clinicians and researchers often expressly scan the non-dominant limb.

PURPOSE: To compare the ability of a selection of questionnaires and physical tests to predict lower limb dominance in terms of bone strength in adults.

METHODS: We recruited 40 healthy men and women (20 M; 20 F) aged 18 to 30 years inclusive. Participants completed the Waterloo Footedness Questionnaire (WFQ) and answered a series of dominance-related questions. Several physical challenges were also performed, including a hop distance test, step recovery test, and tests for cerebral lateralization. Bilateral calcaneal broadband ultrasound attenuation (BUA) (QUS-2, Quidel, USA) and femoral neck (FN) BMD (XR-36, Norland, USA) were measured from all subjects.

RESULTS: The WFQ, task-related side dominance questions and the step recovery test showed significant negative relationships for both FN and calcaneal mass ($r = -0.35$ -- -0.47 , $p < 0.03$). The relationships between measures of dominance were high for some (e.g. step recovery test vs task-related side dominance questions and self-determined dominant foot vs WFQ; $r = 0.64$ - 0.75 , $p = 0.001$), but non-significant for others (e.g. dominant hop distance test vs step recovery test and WFQ vs dominant hop distance). Regression analysis revealed that none of the tests could predict the strongest heel, whereas the step recovery test predicted 22% of the variance in determination of dominant FN BMD. Addition of task-related side dominance questions and the WFQ enhanced prediction to 44% of the variance in FN dominance determination.

CONCLUSIONS: Self-determined functional side dominance is not a good predictor of skeletal strength dominance. In fact, analysis suggests that functional side dominance is inversely related to skeletal side dominance.

Copyright (c) 2000-2013 [Ovid Technologies, Inc.](#)

[Terms of Use](#) [Support & Training](#) [About Us](#) [Contact Us](#)

Version: OvidSP_UI03.10.00.104, SourceID 59019