

# World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO 2016)

© International Osteoporosis Foundation and National Osteoporosis Foundation 2016

Volume 27 Supplement 1 April (2016) P281

## OSTEOGENIC LOADING PHYSICAL INTERVENTION, FUNCTIONAL BONE PERFORMANCE INCREASES AND BONE HEALTH RESTORATION

L. Freeman<sup>1</sup>, J. Jaquish<sup>2</sup>

<sup>1</sup>PATH- Research Institute, Sammamish, Washington, United States.

<sup>2</sup>Jaquish Industrial Research, San Francisco, California, United States

**Objective:** To ascertain the effectiveness, compliance and patient satisfaction of osteogenic loading (OL) type therapy device application with a community dwelling frail-elderly population with chronic conditions including osteoporosis.

**Materials and Methods:** 100 frail-elderly m/f subjects, age 72.4 (+/- 7.2 SD) were randomly selected for a 9-week trial using OL in order to isolate impact ranges of motion and allow for comfort/biofeedback mediated, axial compression of bone at multiples of subject bodyweight (MOB). Loading when using the OL modality are higher than those seen in conventional exercise: (1.26 to 1.54 MOB in the hip<sup>1</sup>).

**Results:** The population was able to show adaptation via increases in functional bone performance (FBP) greater than age matched norms over the intervention, exceeding 8.5 MOB and 2.8 MOB in the hip and spine, respectively ( $p = 0.006$ )<sup>2</sup>. Hip loading exceeded the previously identified threshold for osteogenesis (4.2 MOB)<sup>3</sup>. Loading measured via MOB was also congruent with existing OL literature showing BMD gain<sup>4</sup>.

Post intervention survey results showed subjects: 1) strongly agree that the OL influenced their decision to continue after the study; 2) agree that OL influenced satisfaction; 3) strongly agree that OL therapy impacted confidence/functional mobility; 4) had total compliance with subjects. No adverse effects were reported.

**Conclusion:** These data suggest that adding OL therapy to standard rehabilitation can have positive outcomes with frail-elderly populations suffering from multiple chronic conditions, as indicated by BMD increase, satisfaction, and overall confidence in functional mobility.

### References:

1. American College of Sports Medicine (2009). ACSM's Guidelines for Exercise Testing and Prescription, 8th ed. LWW, Philadelphia, PA.
2. Huck, C. & Jaquish, J. (2015). Functional bone perf measurements and adaptations self-applied bone-loading.. *Osteoporosis Int.* 26(1),s391-s392,NS12.
3. Tobias, J. et al. (2014) May the force be with you. *Front in Endo.* 5(20), 1-5.
4. Hunte, B., et al. (2015). Axial Bone Osteogenic Loading-Type Resistance Therapy Showing BMD and Functional Bone Performance Musculoskeletal Adaptation. *JOPA*, 3(146), 2.

Presented by: PATH- Research Institute

**Disclosures:** Second author is a paid consultant for PHS, a US-based company that manufactures OL therapy devices.