



**\*\*Media Advisory\*\***

**New Findings Presented at World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO 2015) Support Potential for a New Approach to Increasing Tolerance to Loading in Human Bone without Drugs using Osteogenic Loading Apparatus.**

**WHO:** International Osteoporosis Foundation

**WHAT/WHEN:** Last week the World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO 2015) hosted a symposium showing a potential new metric of bone health; functional bone performance, and an opportunity for ambulatory individuals with low BMD to increase both BMD and function when absorbing impact, in an effort to avoid fracture. Dr. Cory Huck of the University of Wisconsin, School of Health Promotion and Human Development, at Stevens Point, and Dr. John Jaquish, Chief Science & Technology Officer of Performance Health Systems, conducted the analysis. A summary of the findings is below:

- **Objective:** To determine valid functional bone performance metrics and adaptation from multiple-of-bodyweight (MOB) compressive force loading using an impact level loading exercise apparatus from a population of 2380 adult males and females.
- **Results:** The MOB force/loading levels in the DXA subset (which resulted in a 7% increase in hip BMD, and a 7.7% increase in spinal BMD) was correlated to the MOB forces seen with the larger population showing spine and lower extremity loading with  $2.89 \pm 1.02$  SD and  $9.67 \pm 3.68$  SD MOB, respectively.
- **Conclusion:** This data presents the opportunity for a new metric of functional bone performance, and an opportunity to consider a supplementary treatment option for ambulatory individuals with low BMD.

**WHERE:** World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO 2015) in Milan, Italy.

**ABOUT PERFORMANCE HEALTH SYSTEMS:** Performance Health Systems LLC, the manufacturer of bioDensity™ osteogenic loading devices, specializes in delivering advanced technology solutions through its health and wellness equipment.

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# World Congress on Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (WCO-IOF-ESCEO 2015): Non-sponsored Symposia Abstract

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## FUNCTIONAL BONE PERFORMANCE MEASUREMENTS AND ADAPTATIONS USING NOVEL SELF-APPLIED BONE-LOADING EXERCISE APPARATUS

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**Objective:** To determine valid functional bone performance metrics and adaptations from multiple-of-bodyweight (MOB) compressive force loading using an impact level loading exercise apparatus from a population of 2380 adult males and females.

**Materials and Methods:** Forces that compress bone stimulate adaptive response of BMD growth, in accordance with Wolff's Law; bone that can tolerate more load is of greater density [1]. Further, clinical fracture risk assessment is determined by a combination of BMD analysis and level of general physical function (i.e., age/ability) [2]. A novel apparatus that allows for these compressive forces to the level required to have an effect on osteoblastic function has been shown to produce osteogenic effect. This was confirmed in subset test with pre-post DXA in both hip and spine with 14 subjects ( $P < 0.001$ ), who adapted to comfortably tolerate forces of both spine and lower extremity loading with 3.13 and 9.18 MOB respectively [3]. Globally

networked osteogenic loading (OL) systems provide standardized protocols. Query for data analysis included patients/subjects who utilized the OL apparatus for 12 or more sessions; partaking in the therapy at a clinically focused, supervised facility for one year.

**Results:** The MOB force/loading levels in the DXA subset was correlated to the MOB forces seen with the larger population ( $N = 2380$ ) showing spine and lower extremity loading with  $2.89 \pm 1.02$  SD and  $9.67 \pm 3.68$  SD MOB, respectively.

**Conclusion:** These data present a new metric of functional bone performance, and an opportunity to consider a supplementary treatment option for ambulatory individuals with low BMD.

### References:

1. Wolff J. (1892). The Law of Bone Remodeling. Springer, (Marquet and Furlong, 1986 trans. from German 1892 edition).
2. Kanis, J. A., Johnell, O., Oden, A., Dawson, A., De Laet, C., & Jonsson, B. (2001). Ten year probabilities of osteoporotic fractures according to BMD and diagnostic thresholds. *Osteoporosis International*, 12(12), 989-995.
3. Jaquish, J. (2013). Multiple-of-bodyweight axial bone loading. *Osteoporosis International*. 198; 24(4), s594-s595.

### Conflict Disclosure:

J. Jaquish has ownership/financial interest in Performance Health Systems, LLC., manufacturer of OL apparatus. Data shared by physicians whose patients were using the OL apparatus.