

209 NOVEL APPARATUS PROVIDES COMPRESSION FORCES ON BONE RESULTING IN OSTEOBLASTIC ACTIVITY J. Conviser¹, S. Calcaterra¹

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Introduction: Wolff's Law describes the relationship between bone geometry and mechanical influences on bone and suggests that when significant forces are applied to bone, the compression will stimulate an adaptive response. Exercise is recommended as a treatment option for those diagnosed with osteoporosis. However, traditional exercise has not been able to create the forces needed to stimulate bone growth in a safe and effective manner. A novel apparatus that allows for significant compressive force to the level required to have an effect on the osteoblastic function offers high force production with short duration, ie osteogenic loading (OL) was utilized. OL has been suggested as a non-pharmaceutical option to improve bone health.

The purpose of this study was to examine if OL was 1) safe and 2) effective for individuals dealing with osteoporosis.

Methods: Fifteen women ranging in age from 56-84 years from three independent clinical locations with a diagnosis of osteoporosis were selected to participate in a one-year study using a new exercise device that allows the individual to create significant forces on the bone with four unique exercise movements. All three centers had the same equipment, settings and protocol. Subjects completed a minimum of 48 sessions once a week over the year, each session lasting approximately 15 minutes. DEXA scans were conducted at the same testing location for both pre-and post-assessments. Subjects self-reported their body weight, weekly minutes of traditional exercise, diet and prescription medications.

Results: Of the 15 subjects, 10 individuals demonstrated a significant reduction (improvement in bone) in their mean DEXA score, 3 had no significant change and 2 individuals showed a further degradation in their bone density. Within the 4 movements (chest press, leg press, abdominal crunch and vertical lift), forces generated were 2x - 10x body weight with no injuries reported with any subject.

These data suggest that a non-pharmacologic exercise solution is available to individuals diagnosed with osteoporosis. Further study is required with larger sample sizes and greater demographics. Additional research is needed to validate OL as a viable and safe strategy for bone reformation.

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