Topic 1

The Physiological Impact of bioDensity™

bioDensity makes possible a safe, self-induced, neuro-musculoskeletal stimulus that provides loading up to multiples of body weight. Such loads are normally associated with impact loading (Marcus, 2006). The U.S Surgeon General states that activities that "involve impact are most useful for increasing or maintaining bone mass"(2003).

Bone Mass Density
User volunteered patient DXA Scans have shown an average 4.5% bone mass gain for individuals in the program for 3 years (n=8). (users/patients from initial Napa Valley, CA test facility). In 1993 Conroy et al., examined the relationship of bone mineral density to muscular strength in elite junior Olympic weightlifters. The purpose was to better understand the influences of the heaviest types of bone loading on bone mass density. The study compared the weightlifters to a control group, and showed that the weightlifters had a 133% greater bone mass density in the lumbar vertebrae (L2–4), using standard vertebrae BMD testing (Conroy et al. 1993). This adaptation occurs due to the high levels of load on the musculoskeletal structure, and illustrates the loading and adaptive response process that also occurs with bioDensity.

Impact Level Loading - Young Adult
The bioDensity device normative data (bioDensity server, 2011) shows the 75th percentile Leg Press Load Exposure for males between the ages of 20 to 29 (n=104) is 1,974 Lbs./895 Kg. This output represents a load many times the typical individual's body weight.

Impact Level Loading - Aging Population
The bioDensity device normative data (bD server, 2011) shows the 75th percentile Leg Press Load Exposure for females between the ages of 80 to 99 (n=33) is 612 Lbs./278 Kg. This output represents a load many times the typical body weight of a female in this age group.

Neuromuscular Recruitment and Rapid Health Changes
Bone density and neuromuscular recruitment are interrelated. With the use of bioDensity, mass becomes less porous, and nerves within the bone are become more protected. This enables individuals to tolerate greater loading forces through functional movement. As tolerance for load increases, individuals can engage larger amounts of motor neuron activation, which is further enhanced by the nature of bioDensity. The neurological change of motor learning begins this way, and as the individual repeats and speeds the action, greater neural adaptive response takes place (Hebb, 1949). Use of bioDensity engages the greatest amount of muscle cells possible and directly stimulates greater motor neuron activity. (Mookerjee and Ratamess, 1999) Seeing reported force production increases with bioDensity use indicates greater neuromuscular recruitment, which will enhance balance, posture, breathing, reflexes and speed.

bioDensity Server Query. (2011). Users/Patients from worldwide bioDensity network, 56 locations surveyed. Data prerequisites include, completion of face sheet questionnaire and up to one year of force production use. Server data analysis complete. 08-01, 2011.

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