Title: Weight Bearing Coupled with Low Magnitude Stimuli to Improve Low Bone Mass in Patients with Rett Syndrome

IRB# 2011-071
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Synopsis:

Studies have demonstrated that young individuals with Rett Syndrome (RS) have markedly reduced bone density and mass, a frequent co-morbidity which seems to progress with increasing age. Subsequent low-trauma skeletal fracture has been estimated to be four fold higher than the general population rate. These fractures result in further immobilization and progression of disability.

There are multiple risk factors for impaired bone acquisition and poor bone quality; though the primary cause of the bone deficits observed in females with RS is poor muscle function and lack of weight bearing loads via standing and or walking.

Bone grows and mineralizes in response to the magnitude of the forces to which it is subjected. This capacity of bone to respond to mechanical loading with increased bone strength is greatest during growth in childhood. Building strong dense bones in childhood is preventative for the development of osteoporosis later in life.

The proposed study will uniquely target the loading deficits of females with RS using Vibration Platform Therapy (low magnitude mechanical stimuli). This simple, non-invasive therapy has been used in the home for less than 20 minutes per day with success to promote bone formation in other patient populations. Its feasibility and effectiveness in females with RS has not been studied. This pilot and feasibility study will provide information on physical and logistical barriers, sample size and recruitment strategies for the development of a planned larger study.