Fiscal Year:	FY 2004	**Task Last Updated:**	FY 04/03/2006
PI Name:	Rubin, Clinton Ph.D.		
Project Title:	A Low Intensity Mechanical Countermeasure to Prohibit Osteoporosis in Astronauts During Long-Term Spaceflight		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Biomedical countermeasures		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HHC**:Human Health Countermeasures		
Human Research Program Risks:	(1) **Osteo**:Risk Of Early Onset Osteoporosis Due To Spaceflight (No longer used, July 2020)		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	clinton.rubin@sunysb.edu	**Fax:**	FY 631-632-8577
PI Organization Type:	UNIVERSITY	**Phone:**	631-632-8521
Organization Name:	State University of New York		
PI Address 1:	Department of Biomedical Engineering		
PI Address 2:	Center for Biotechnology		
PI Web Page:	http://www.bme.sunysb.edu		
City:	Stony Brook	**State:**	NY
Zip Code:	11794-2580	**Congressional District:**	1
Comments:			
Project Type:	FLIGHT	**Solicitation / Funding Source:**	ILSRA 2001
Start Date:	02/01/2003	**End Date:**	07/31/2004
No. of Post Docs:	0	**No. of PhD Degrees:**	
No. of PhD Candidates:	0	**No. of Master' Degrees:**	
No. of Master's Candidates:	1	**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:	0	**Monitoring Center:**	NASA JSC
Contact Monitor:	McCollum, Suzanne	**Contact Phone:**	281 483-7307
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Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):			
Grant/Contract No.:			
Performance Goal No.:			
Performance Goal Text:			
Task Description:	Osteoporosis, the progressive loss of bone density and strength that cripples tens of millions on our planet, distinguishes itself as perhaps the greatest physiologic obstacle to an extended human presence in space. The principal objectives of this proposal are to establish the efficacy of a unique, mechanical countermeasure to inhibit bone loss - and muscle strength- in the lower appendicular skeleton of astronauts and payload specialists during International Space Station missions. Using a ground based model of microgravity, the tail-suspended rat, we have shown that brief exposure (10 minutes) to extremely low magnitude (0.25g, engendering		
Rationale for HRP Directed Research:			

Research Impact/Earth Benefits:	Two clinical studies, evaluating the efficacy of the device, are to be published in the March issue of J. Bone & Mineral Research. In the first study, the intervention is shown to prevent osteoporosis in a group of post-menopausal women. In the second study, the intervention is shown to stimulate bone formation in children with cerebral palsy.
Task Progress:	Two clinical studies, evaluating the efficacy of the device, are to be published in the March issue of J. Bone & Mineral Research. In the first study, the intervention is shown to prevent osteoporosis in a group of post-menopausal women. In the second study, the intervention is shown to stimulate bone formation in children with cerebral palsy.
Bibliography Type:	Description: (Last Updated: 10/22/2009)
Articles in Peer-reviewed Journals	Ward K, Alsop C, Caulton J, Rubin C, Adams J, Mughal Z. "Low magnitude mechanical loading is osteogenic in children with disabling conditions." J Bone Miner Res. 2004 Mar;19(3):360-9. Epub 2004 Jan 27. PMID: 15040823 , Mar-2004
Articles in Peer-reviewed Journals	Rubin C, Recker R, Cullen D, Ryaby J, McCabe J, McLeod K. "Prevention of postmenopausal bone loss by a low-magnitude, high-frequency mechanical stimuli: a clinical trial assessing compliance, efficacy, and safety." J Bone Miner Res. 2004 Mar;19(3):343-51. Epub 2003 Dec 22. PMID: 15040821 , Mar-2004