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# NOVEL PHYSIOTHERAPIES

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### Jumping mechanography: A novel tool for measuring muscle function in musculoskeletal and rheumatic diseases

**Statement of the Problem:** In the study of muscle performance, movement has to be described in terms of velocity and acceleration. Force causes acceleration; movement is the action of force along a distance in a certain time, and is therefore measured as power. Our purpose was to study differences in muscle function of pre and postmenopausal women and women with rheumatic diseases.

**Methodology & Theoretical Orientation:** 257 women were included in the study separated in three groups: Group POST OST included 61 osteoporotic postmenopausal women taken anti osteoporotic drugs and calcium/vitamin D supplementation (mean age  $65 \pm 9.6$  years), group POST HEALTH consisted of 117 healthy postmenopausal women (mean age  $62.9 \pm 9.8$  yrs), Group RHEUM included 20 women with rheumatic diseases (mean age  $58.85 \pm 13$  yrs), and group PRE included 59 healthy premenopausal women (mean age  $35 \pm 7.6$  yrs). For the measurement of objective parameters of movement, we used the mechanography system in Leonardo platform (Novotec, Pforzheim, Germany) which measures forces, calculates through acceleration, the vertical velocity of center of gravity and also using force and velocity it calculates and power of vertical movements. We also calculated the personal power after weight adjustment, i.e., Power/Weight parameter.

**Findings:** Height was decreased, while BMI and weight increased significantly with age. In groups POST OST, POST HEALTH, RHEUM, all measured parameters were statistically decreased in comparison with group PRE. No statistical significance was found among POST HEALTH and POST OST (postmenopausal) women.

**Conclusion & Significance:** Muscle mechanography is a novel tool to assess physical performance. It gives to the clinician additional information, while quantitatively assesses muscle function, for planning and evaluating locomotor therapy in women. Muscle mechanography promises to have advantages over currently used tools.

### Biography

Yannis Dionyssiotis is specialized in Physical Medicine and Rehabilitation. He has clinical experience as Psychiatrist including experience in a variety of clinical settings as Clinician, Researcher, Clinical Instructor and Consultant. He holds a thesis in Osteoporosis and Metabolic Bone Diseases from National and Kapodistrian University of Athens. He also has Senior European Board Certification in PRM, Facharztanerkennung in Germany (PRM) and is registered Physician in the UK. He has an extensive list of professional presentations and publications in the areas of rehabilitation, spinal cord injury, multiple sclerosis and osteoporosis. He is the Co-Editor of *Journal Frailty, Sarcopenia and Falls* and Elected Member of the Board of International Society of Musculoskeletal & Neuronal Interactions (ISMNI), of Prevention Committee of International Spinal Cord Society (ISCOS) and of Hellenic Osteoporosis Foundation (HELIOS).

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