

BALANCE TRAINING AND EXERCISE IN GERIATRIC PATIENTS

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Objective measures of gait and balance which meet the criteria of reliability and validity are required as a basis for exercise regimens. We established reference values of clinically relevant locomotor and balance performances for geriatric patients. We are using these data for evaluating the effects of different therapeutic approaches to locomotor and balance disorders.

Reference values for chair rising

We administered a battery of five tests concerning neuromuscular function, locomotion and balance to a sample of 212 participants without apparent locomotor deficits (139 women, 73 men, mean age 70,5 years, SD 6,78, median 70 years, range 60 to 90 years, recruited by public announcements). The test battery comprised the „chair rising test“ for measuring lower extremity neuromuscular function (five repetitions of rising from a chair as quickly as possible with arms crossed over the chest). The test has been proven reliable, valid, sensible and predictive for falls and future locomotor status and ADL-status (Guralnik et al 1995).

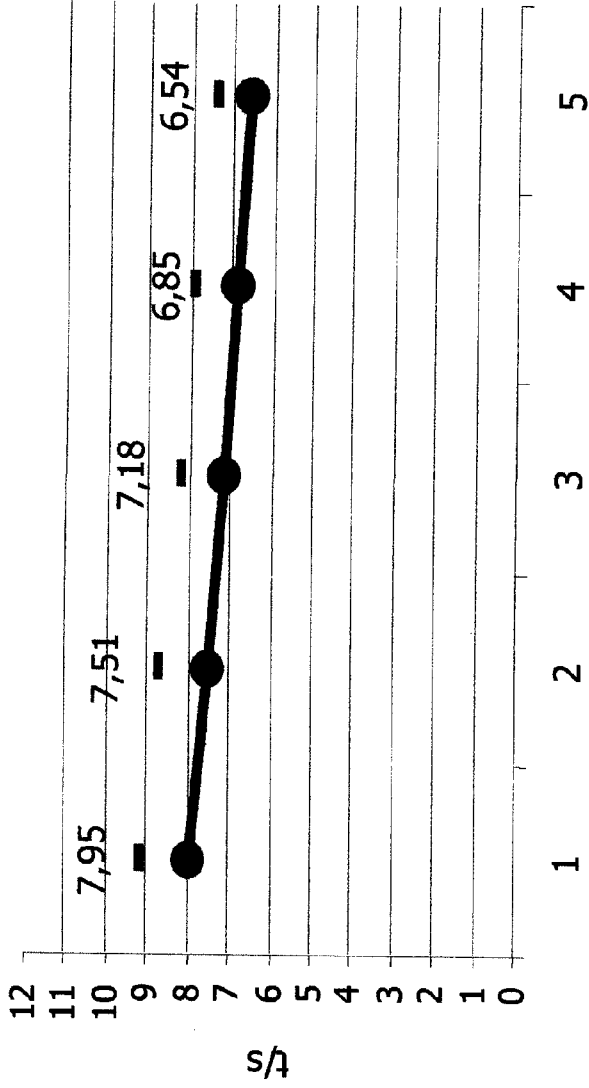
Chair rising [sec/5x], w=women, m=men

Range	Mean	SD	Median
5,4 – 19,4	9,1 (w 9,2; m 9,0)	1,97	8,9

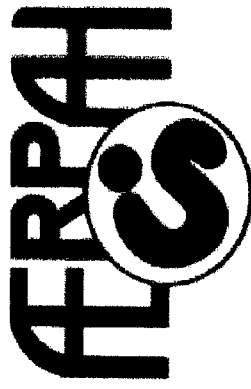
Training of balance and muscle power with Galileo 2000 - preliminary results

Galileo is a device for whole body vibration/ oscillatory muscle stimulation. The subject is standing with bended knees and hips on a rocking platform with a sagittal axle, which pushes alternatively the right and left leg 7-14 mm upwards with a frequency of 27 Hz, thereby lengthening the extensor muscles of the lower extremities. The reflexive reaction of the neuromuscular system is a chain of rapid muscle contractions. We conducted a randomized controlled trial, n=35 (age: mean 67y, range 61-85. 11 female), cross-over design, intervention group 2 months training program three times a week (each session 3x2 minutes), performance tests of all participants every two weeks). 34 subjects have finished the intervention period. They reached mean performance gains in chair rising of 18 % up to 36 %, strikingly different to the constant values of the controls! We interpret the findings as improvements in muscle power by the oscillative muscle stimulation. We have observed no serious side effects.

2 Monate Training Galileo (3x6Minuten pro Woche)
(n=34, 61- 85 Jahre, durchschnittl. 67 Jahre alt)



Messungen 1-5 jeweils 14 Tage Abstand,
Zeitbedarf Aufstehtest (5x maximal schnell Aufstehen aus Stuhl)
Aerpah-Klinik Esslingen, 18.5.1999



Krankenhausgesellschaft mbH