



Controlled Whole body vibrations to decrease fall risk and improve health related quality of life in elderly patients.



Olivier BRUYERE^{1,2,3,4}, Marc-Antoine WUIDART⁴, Elio di PALMA⁴, Margaret GOURLAY⁵, Olivier ETHGEN^{1,2,3}, Florent RICHY^{1,2,3}, Jean-Yves REGINSTER^{1,2,3}

1. WHO Collaborating Center for Public Health Aspects of Osteoarticular Disorders, Liège, Belgium 2. Department of Epidemiology and Public Health, University of Liège, Liège, Belgium. 3. Bone and Cartilage Metabolism Unit, University of Liège, Liège, Belgium 4. Haute Ecole André Vésale, Liège, Belgium 5. UNC-Chapel Hill, NC, USA

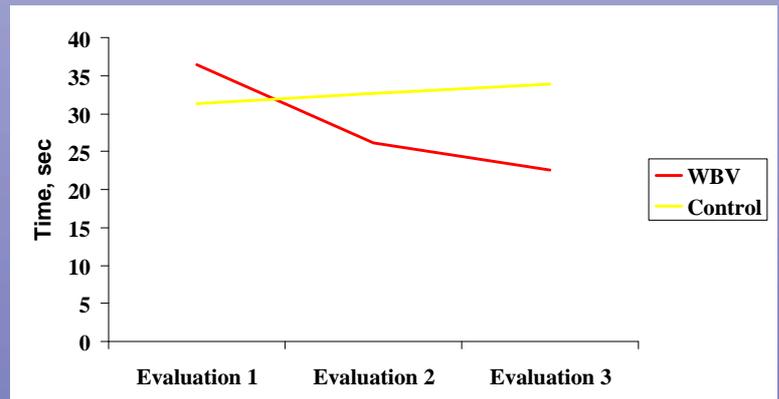
Objective: To investigate the effects of controlled whole body vibrations (CWBV) exercises on global health in elderly patients.

Methods: 42 volunteers patients, resident in a nursing home, were randomized to either a vibration group or control non-treated group. The vibration intervention consists of a 6-week CWBV training (4 x 1 minutes series, 3 times a week) employed by standing on a vertical vibrating (10 Hz in the first and the third series and 27 Hz in the second and fourth ones) platform (Galileo 900®). Different validated tests were performed, at the beginning and at the end of the study, in all patients. Quality of life was assessed by the 9 subscales of the SF-36 questionnaire: physical function (PF), social function (SF), role emotional (RE), role physical (RP), mental health (MH), vitality (V), pain (P), general health (GH) and health change (HC). Quality of walking, as well as the balance were assessed by the Tinetti test. The “get-up-and-go” test was used to assess the motor capacity.

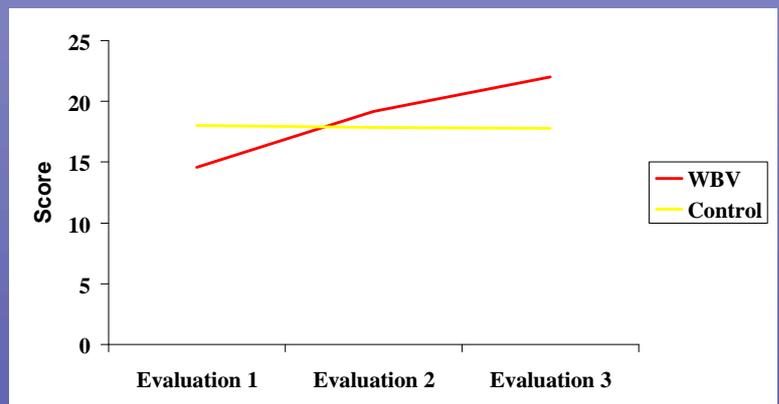
Results: Baseline characteristics of the two groups (22 patients in the vibration group and 20 in the control group) was not statistically different except for age (84.5 (5.9) years in the treated group and 79.0 (6.9) years in the control group, $p=0.008$). After 6 weeks of treatment, 7 items (PF, SF, RE RP, V, P, GH) of the SF-36 improved significantly in the CWBV group compared to the control group, with, for example, 143% of improvement in PF ($p=0.0002$ between the two groups), 41% in P ($p=0.004$), 60% in V ($p=0.0006$), and 23% in GH ($p=0.0002$). Improvement of 57% in the quality of walking, assessed by the Tinetti test, was also observed in the treated group compared to only 2% in the control group ($p=0.0003$). For the equilibrium, improvement was 77% in the CWBV group and the worsening was 1% in the control group ($p=0.001$). Eventually, a decrease of 39% of the time to performed the get-up-and-go test was also observed, after 6 weeks, in the treated group, compared to an increase of 14% in the control group.

Conclusion: Fast and easy exercises, 3 times a week during 6 weeks, using a CWBV apparatus, could improve the quality of life, the walk, the balance and the motor capacity in elderly patients. Longer studies with more patients are needed to assess the impact of such benefits.

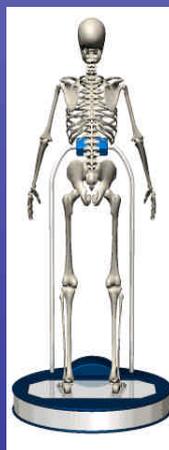
Evolution of the Get up and go



Evolution of the Tinetti global score



Galileo 900 Apparatus



SF-36 changes after 18 sessions (Absolute value)

