

K13: New Treatment Strategy on Neuro-Musculo-Skeletal Diseases in Childhood and Adolescent

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Whole Body Vibration (WBV) has been recently introduced to improve impaired biomechanical function of the musculoskeletal system in adults. The therapeutic principle is based on the activation of proprioceptive spinal circuits. These reflexes can be induced by upright standing on a vibrating platform. The frequency of vibration characterizes the type of activated spinal reflective answer. Therefore, lower frequencies decrease the muscular tonus in contrast to higher frequencies increasing the muscular tonus. The application of vibrations increased bone formation and the metabolism in skeletal muscles and skin. Interestingly, WBV is characterized to prevent the loss of bone and muscle mass in immobilized adults. WBV improves inter- and intramuscular co-ordination over induction of high-frequent muscular contractions of agonists and antagonists in the neuromuscular system.

The present data characterizes the preliminary therapeutic effects of the Cologne Standing-and-Walking-Trainer powered by Galileo on the mobility of children and adolescents affected with diseases characterized by a disease-related sarcopenia due to physical immobilization. Patients of the presented report were affected with osteogenesis imperfecta (OI), infantile cerebral palsy and Meningomyelocele (MMC). Most participants were described to have profited from the conducted exercising program despite their original reasons of immobilization. Moreover, the WBV was accepted with a high compliance by all participants. This heterogeneity and the lack of a control group are limitations in this trail. Nevertheless, the present data can be regarded as preliminary results to enhance the importance of this promising therapeutic strategy to regain mobility in severely motor-impaired children and adolescents.