

O29: Whole Body Vibration In Children With Osteogenesis Imperfecta

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Objective: The study evaluate the effect of a new physiotherapeutic concept combined with Whole body vibration (WBV) on the mobility of long term immobilized children and adolescents with a severe form of osteogenesis imperfecta. Osteogenesis imperfecta (OI) is a hereditary primary bone disorder with a prevalence from 1 in 10 000 to 1 in 20 000 births. The most severe symptoms are recurrent fractures specially in the long bones and a muscular hypotension. Due to fractures most of these children are suffering from long periods of immobilisation. Additionally to the immobilisation they are affected from a loss of muscle (sarcopenia) and from a secondary loss of bone mass.

Subjects and Interventions: The patients participated in an intensive multimodular rehabilitation program for 2 weeks at the beginning and for one week after 3 months. One important part in the rehabilitation-programme is a WBV-training which is conducted by the patients over a time period of 6 months at home. During the stay at the rehabilitation center patients and parents are instructed how to train on the Galileo-vibration platform. 14 children with Osteogenesis imperfecta (f=5; m=9; OI-type III, n=9; OI-type IV, n=3; OI-type I, n=2) participated in this programme over time period of 6 months.

Results: Because of the heterogeneity of motor impairment in the patients in this pilot trial the present results are not comparative between different individuals. All patients had an individual benefit from the training in their activities of daily life and are shown in table 1:

1	R.J.	Independent transfer from and in wheelchair, starts walking with crutches
2	Ö.E.	Able to reach standing position on her own
3	L.M.	Increase of walking distance
4	M.A.	Increase of walking distance with walker, no need for orthosis
5	M.E.	Transfers independently from lying to sitting
6	P.C.	More trunk rotation while sitting
7	H.J.	Getting dressed and undressed independently
8	Sch.M.	Increase of walking distance (7,5m → 20m)
9	vH.J.	Reaches standing position without help
10	N.B.	Independent transfer sitting - standing, increased handgrip
11	D.A.	Walking becoming saver and more symmetrical
12	H.T.	Increase of walking distance
13	L.N.	Transfer from dorsal position to sitting without support
14	F.J.	Takes more weight on his forearms

During training there was no increase in fracture rate or in musculo-skeletal pain. One patient suffered from a dislocation of a telescopic rod. This patient has had a dislocation before participating in the rehabilitation programme and one during the period he used the WBV. In all other patients there were no dislocations of any intramedullary rods.

Conclusions: The integrative functional physiotherapy combined with the Whole Body Vibration with the Galileosystem may be a promising approach to improve mobility in children and adolescents severely affected with osteogenesis imperfecta.