The MBT as a Therapeutic Device for Ankle Joint Instabilities

Xaver Kälin

swiss olympic medical center

Introduction

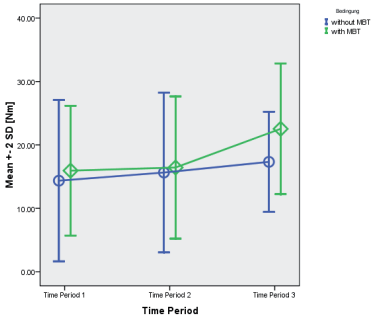
According to the literature the MBT can be used as a training device for the small foot muscles (Nigg et al, 2006, Romkes et al, 2006, Kälin et al, 2004). Therefore it should theoretically be possible to integrate this device into a physiotherapeutic program for unstable ankle joints. The aim of this study was therefore to evaluate whether the integration of the MBT into a physio-therapeutic treatment of ankle joint instabilities was more efficient or not compared to the traditional treatment.

Method

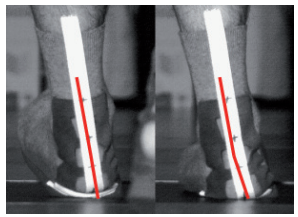
The Study was conducted as a prospective investigation using a sample of 30 patients/athletes (15 patients in the test group and 15 patients in the control group). The test group received a conservative treatment with the MBT (9 sessions). After this the test group had to wear the MBT daily for at least four hours during the next three months. The control group received a conservative treatment without the MBT (9 sessions). After this the control group had to do a 20 min. home program daily during the next three months. Both groups were biomechanically tested immediately before and after the physiotherapy as well as three months after this treatment. The biomechanical measurements included an isokinetic test of the foot's evertors, 2-D kinematics while walking barefoot across a soft surface in order to measure supination (ROM) and a plantar pressure distribution measurement while walking barefoot across a footscan 3-D plate in order to measure the medio-lateral pressure coefficient under the heel. The Man-Whitney test was used in order to compare the two groups at each time period (significance level p<0.05).

Maximum Foot Eversion Moment

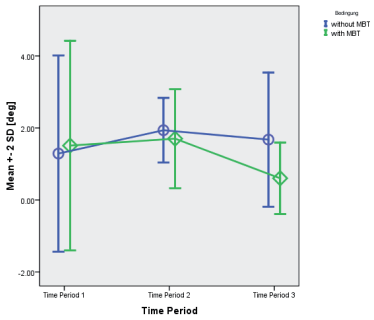
Significant difference at time period 3
Man-Whitney: p<0.05



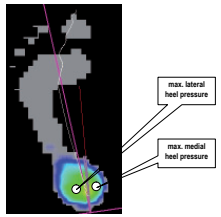
Supinatination (ROM)



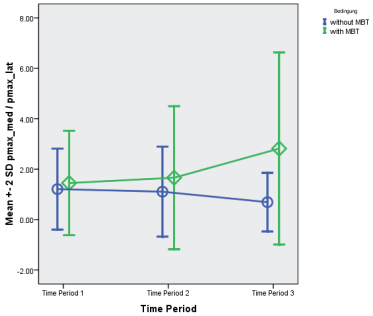
Significant difference at time period 3
Man-Whitney: p<0.01



Medio-lateral Heel Pressure Coefficient



Significant difference at time period 3
Man-Whitney: p<0.01



Results

The results showed no statistical differences between the two groups before and immediately after the treatment. Three months later, however, at the time period 3, the test group showed a significant higher maximal torque during eversion than the control group (22.5 Nm vs. 17.3 Nm, p<0.05). At the same time period the test group had a significantly reduced initial supination walking across a soft surface compared to the control group (0.6° vs. 1.7°, p<0.01) and a significantly increased medio-lateral plantar pressure coefficient under the heel (2.8 vs. 0.7, p<0.01)

Interpretation

Both treatments were aequivalent during the phase of the physiotherapy sessions. Three months later, however, the daily use of the MBT lead to an significantly increased muscle force of the peroneii in the MBT group and therefore to a better ability to control initial supination during walking across unstable surfaces. This corresponds to a reduced risk of ankle sprains and therefore to a better functional stability and to a reduced risk of a follow-up surgery also. Hence, the MBT can be integrated into the pysiotherapeutic concept to treat ankle joint instabilities without any risk and will have superior long term effects.

Literature

Nigg B et al. Effect of an unstable shoe construction on lower extremity gait characteristics. Clincal Biomechanics 21 (2006) 82-88. Romkes J et al. Changes in gait an EMG when walking with the Masai Barefoot Technique. Clinical Biomechanics 21 (2006) 75-81. Kälin X, Segesser B. Unterschiede im Bewegungsverhalten beim Gehen mit MBT (high) gegenüber dem Gehen mit Strassenschuhen. Orthopädieschuhtechnik, 12/2004.

Acknowledgements

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MBT The anti-shoe.

AMANN Orthopädie-Schuhtechnik