Functional testing of the MBT shoe compared to sensorimotor training

Orthopaedic biomechanics working group; Department of Sports/Sports Science. Internal report.

Prof. Dr. A. Gollhofer.

August 2007

Publication: unpublished.

MBT Model: Sole 2005

ABSTRACT

The Masai Barefoot Technology (MBT) is a training and therapy device that was developed for health oriented athletic activities. In view of the fact that the benefits of sensorimotor training for injury prophylaxis and rehabilitation are well documented, it was thought that a comparison of MBT training/therapy and classic sensorimotor training might yield useful results.

In the present study, an experimental MBT group that wore MBT shoes every day for eight weeks for no less than four hours daily was compared with an experimental sensorimotor training group that realised a conventional sensorimotor training. Rate of force development (RFD), maximum force, and postural stability were measured at baseline, after four weeks, and after eight weeks (i.e. at the conclusion of the study).

The subjects in both groups achieved the anticipated improvement in postural stability, although the results for the sensorimotor training group after four weeks of training were markedly superior to the results obtained by the MBT group. However, after eight weeks, the improvement achieved by the MBT group was on a par with that of the sensorimotor training group after four weeks. Wearing MBT shoes for a brief period (i.e. four weeks) does not allow for anything approaching the substantial improvement in postural stability that is achievable via sensorimotor training.

However, wearing the MBT does bring about continuous improvement in postural stability that over the long term matches the effect of sensorimotor training on individual mechanical parameters.

Rate of force development (RFD) in the leg extensors improved in the sensorimotor training group after four weeks, whereas no such improvement occurred in the MBT group. This is attributable to the more rapid movement frequency and the varying movement dimensions that are engendered by the sensorimotor training devices, which necessitate more rapid adaptive movements than is the case with MBT shoes, whose movements always follow the same unchanging pattern.

No improvement in maximum strength in the leg muscle chain as a whole was observed in either group. Significant improvement in calf musculature was observed in the MBT group for individual movements. This is attributable to the presumed positive effect of MBT on the biomechanical maximum-strength parameters in untrained individuals.