

A digest of the preliminary evidence on the MBT from the Sheffield Hallam University, Centre for Sport and Exercise Science.

The results demonstrate the facts as presented below.

Changes in gait characteristics of a normal, healthy population due to an unstable shoe construction.

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BACKGROUND

- Back pain is the third most common bodily symptom after headache and tiredness:
 - 60 - 80% of people suffer low back pain at some time in their lives.
 - 15 - 30% of people have some low back pain symptoms everyday.
 - In 1995/ 96, 117, 560, 500 days invalidity or sickness benefit were claimed as a result of back incapacity in the UK.
 - Chronic back problems account for 85% of absenteeism due to back pain.
- Radiographic changes are seen in some joints in the majority of people aged 60 or older.
 - 20% of these older populations develop a significant clinical disease.
 - Equates to approximately 2million people presenting with osteoarthritis each year.
- Both complaints can be associated with overuse (wear and tear).
 - Microdamage to joint structures caused by cyclic loading at loads below those that would normally cause traumatic injury.
 - The rate of tissue repair does not match the rate of damage accumulation.
- The average UK citizen walks in the region of 183 miles (305 km) per year.
- Each footfall results in a loading effect on the lower limb and back.
- Reduction in the cyclic loading of the structures that comprise these joints will have a significant affect on the accumulation of microdamage.

METHOD

- 22 participants (11 male, 11 female); Age 30 - 35.
- Physically active and free from musculoskeletal injury at the time of testing.
- 8-camera digital motion capture system (Motion Analysis Corporation, Santa Rosa, CA, USA) sampling at 200 Hz.
- Kistler Type 9281CA force platform (Kistler Instrumente AG Winterthur, Switzerland) sampling at 1000Hz.
- Each participant underwent a tutorial session.
- Tested in the lab under normal conditions and then in the MBT condition.

Helen Hayes marker set incorporating a static calibration trial.

· Data analysed using OrthoTrak software (MAC) and custom MATLAB software (SHU).

RESULTS

1. MBT promote a more upright walking posture.

- Possible shift in the centre of mass position above the base of support.
- More optimal alignment for locomotion.
- Coupled with lower loading at the hip could indicate reduced loading of the lower back.

2. Reduced plantar flexion at the ankle immediately following initial contact in MBTs.

- Due to rolling over the pivot point rather than dropping of the forefoot.

3. MBT elicit lower joint movements at the hip, knee and ankle.

- The lower movements experienced at these joints suggests a resultant decrease in joint loading during locomotion. This is extremely beneficial in those individuals who have degenerative joint disease.

4. MBTs decrease the occurrence of transient force peaks.

- Clinical evidence has shown that high transient force peaks are the primary aetiological factor in the development of many musculoskeletal disorders.

5. MBT gait produces higher negative A-P forces, thereby promoting a forward propulsive force.

- Increases in the forward propulsion are probably due to the dragging motion during walking in MBTs.

MBT Training and fitting is available by visiting
Back To Work in Basingstoke, Hampshire.
Telephone 01256 351080