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

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5.0 Summary

The findings of the current study suggest that certain gait characteristics are affected during walking in a shoe of unstable construction.

Although many of the kinematic variables remained unchanged, there were significant differences in both the trunk and the ankle angles. MBT shoes promote less forward lean during locomotion suggesting a more upright posture. Although not confirmed by the present study, the probable effect is a shift in the centre of mass position closer to the centre of the base of support, possibly aligning the body more optimally for locomotion. This, in conjunction with the lower hip moments experienced in the MBT condition may suggest reduced loading of the lower back. The changes in the ankle plantar flexion / dorsiflexion angle at the ankle, was primarily due to the reduced plantar flexion following initial contact during the MBT condition when compared to the normal condition.

Kinetics at each of the joints of the lower limb were different between the MBT and normal conditions. The lower moments experienced at these joints suggests a resultant decrease in joint loading.

The major finding from analysis of the ground reaction force data is the suggestion that there is a higher incidence of transient peaks when wearing normal shoes compared to MBTs. There is some evidence suggesting that transient forces transmitted through the skeleton are the primary aetiological factor in the development of many musculoskeletal disorders. These include, osteoarthritis, stress fractures, plantar fasciitis and achilles tendonitis and low back pain (Whittle, 1999).

This initial study into the effects of an unstable shoe construction suggests that MBTs alter certain gait characteristics and that with frequent use they may reduce the incidence of some musculoskeletal problems.

