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MASAI BAREFOOT TECHNOLOGY IN SPORTS

Prevention. Recovery. Comeback.
Physiological performance enhancement
through training of sensorimotor skills.

MBT physiological footwear
For all those who work "with movement".



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MOVEMENT AND SENSORIMOTOR FUNCTION.

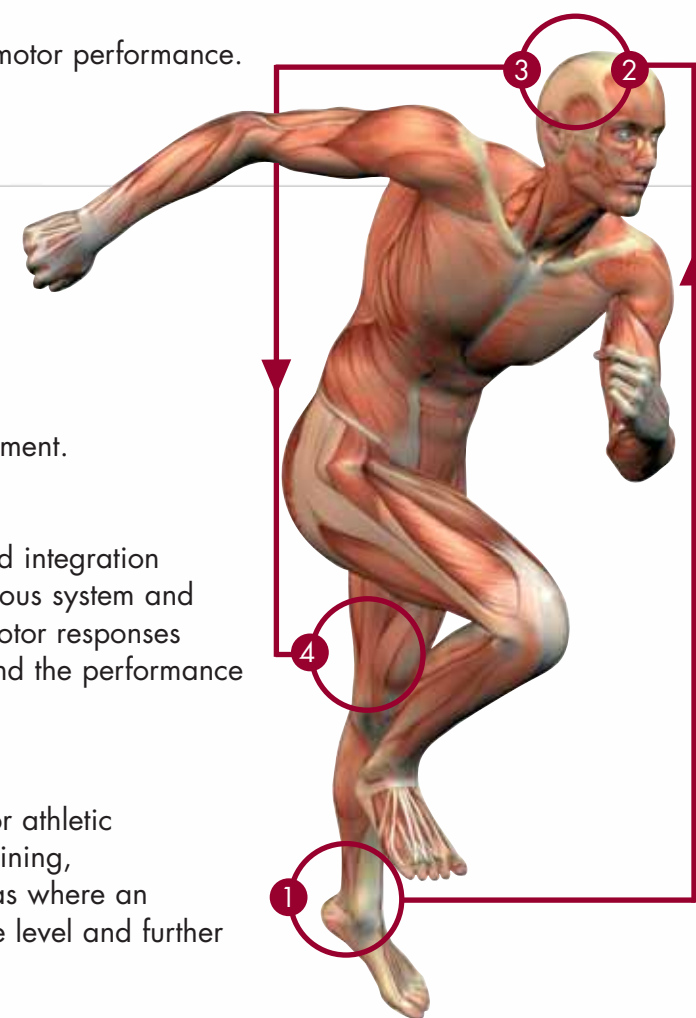
Movement is the combination of sensory and motor performance.

Therefore movement requires:

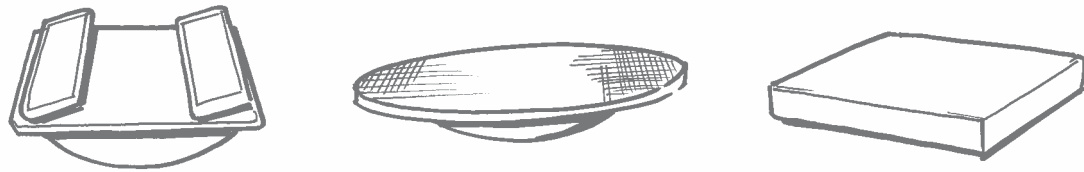
- 1 the sensory uptake and transfer of information,
- 2 the processing and bundling of this information with the central movement programmes,
- 3 the generation of signals for muscle control,
- 4 and their conversion into coordinated movement.

Sensorimotor function describes processing and integration of the signal by the various centers of the nervous system and central command generators, as well as the motor responses resulting in muscle activation for locomotion and the performance of functional tasks and joint stabilisation.

Considering this:
Sensorimotor training is extremely important for athletic performance. By focussing on sensorimotor training, performance can be improved in relevant areas where an athlete has stagnated at a certain performance level and further development of performance has stopped.



Sensorimotor training equipment:



MBT physiological footwear fundamentally differs from traditional sensorimotor training equipment:

The use of MBT means:

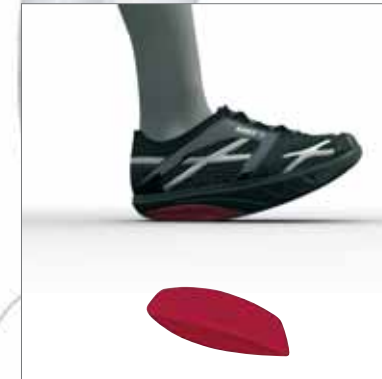
- the transfer of sensorimotor demands in sport and exercise-specific movement patterns and
- the integration into activities of daily life.

This results in profiting from efficiently used exercise time and movement repetitions.

The Function:
Efficient and logical.
Physio-logical.



TECHNOLOGY / FUNCTION OF MBT.



Masai Sensor:

The heart of the technology.

The Masai Sensor is the heart of the Masai Barefoot Technology. It provides a comfortable sensation whilst walking. Through its specific material composition it produces the 3-dimensional instability to which the body reflexively reacts by increasing muscle activity.



PU-midsole with integrated balance area:

The balance area under the midfoot increases sensorimotor demands to the total system with each step. It activates a multitude of postural and joint stabilising muscles during stance and gait. The function of the masai sensor and the balance area is to allow the foot to progress forward in a controlled manner. The postural and joint -stabilising muscles stay active keeping the whole body stabilised and erect.



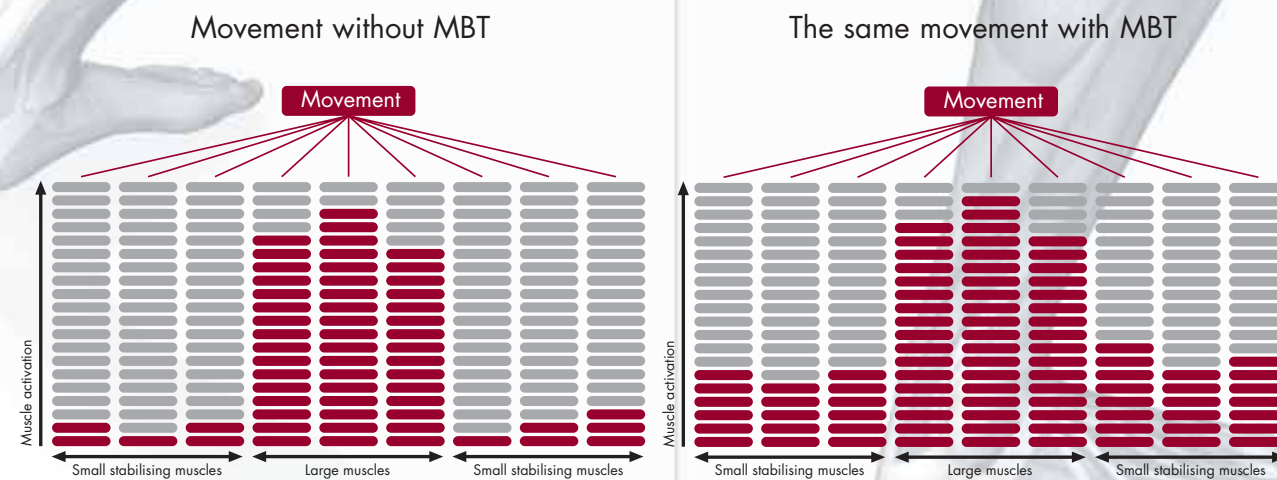
Shank:

Physiological gait pattern is reinforced with every step via a rigid shank in the sole constructed of composite TPU and fibreglass. This optimises pressure distribution under the foot whilst protecting the joints.

EFFECTS OF SENSORIMOTOR TRAINING WITH MBT.

"The MBT strengthens both, the large and the small muscles in the lower extremities. Training of the short/small muscles is reduced in normal shoes. An athlete with strong large and strong small muscles has more possibilities to act and react during sports. Thus, performance may be improved and risk of injury may be reduced."

Prof Dr. Benno M. Nigg (Human Performance Laboratory/University of Calgary)



A movement which has been automated through the sensorimotor system over a long period of time and which is being executed stereotypically through a small number of muscles. The sensorimotor system has lost its ability to adapt a movement pattern to different external circumstances and to recruit the large and small muscles which stabilise the joints in a variable manner.

Application of the MBT forces the sensorimotor system to change a set movement pattern and to react to external circumstances with the activation of many additional small stabilising muscles. As a result, these additionally activated muscles become stronger, the movement patterns are executed in a variable manner, joint stability is improved, and joint loading reduced.

MBT is the ideal sports training tool to improve performance, enhance the recovery period and to prevent and rehabilitate injuries. In addition, it has a whole range of positive benefits on movement patterns with every step taken.

Performance improving effects according to sports-motor criteria:

- **Coordination:** Improvement of the proprioception and balance capacity.
- **Strength:** Strengthening of postural and joint-stabilising muscles.
- **Endurance:** Improvement of movement economy.

Effects according to performance methodological areas:

- **Recovery/active recovery:** Improved removal of lactic and metabolic end-products, as with improvement of circulation and drainage of the tissues through movement. These effects are made possible through the increased activity of the musculature during the roll-over movement (calf pump).
- **Prevention:** Increase of the variability of movement control (= increased micro-variability), in order to enable a proper response to external influences. This can result in a reduced risk of injury.
- **Comeback:** Following injuries sensorimotor training can be started earlier with MBT. Amongst others, this (in this case, rehabilitative training) can be integrated into activities of daily living in the form of standing, walking and running. This results in a quicker increase of variability of movement control (= micro-variability) and improvement of the stability of the complex movement patterns (= reduced macro-variability) due to the large number of movement repetitions.

AREAS OF APPLICATION.
METHODOLOGICAL OPTIONS OF TRAINING.

The effects of MBT are due to its functionality. The MBT is not designed as a shoe for sporting competitions. It is rather an efficient supplement before and after a competition and during specific training phases.
On the following pages top athletes show methodologically meaningful areas of application.



Evelyne Leu (Ski Acrobatics)
Olympic Champion 2006
1st place World Cup Overall 2005/2006
2nd place World Championship 2005
6 victories in World Cup Races



Markus Baur (Handball)
World Champion 2007
European Champion 2004
2nd place Olympic Games 2004
2nd place World Championship 2003
2nd place European Championship 2002
3rd place European Championship 1998
Player of the year 2002 and 2004 (GER)



Philipp and Simon Schoch (Snowboard)
Simon
World Champion 2007(PSI)
2nd place World Championship 2003 (PGS)
3rd place World Championship 2003 (PGS)
2nd place Olympic Games (PS) 2006
1st place World Cup Overall 2006/2007
1st place World Cup Overall 2005/2006
2 times Swiss Champion

Philipp
Olympic Champion 2006(PGS)
Olympic Champion 2002(PGS)
2nd place World Championship 2007 (PGS)
2nd place World Championship 2007(PSI)
1st place World Cup Overall 2004/2005
2 times Swiss Champion



Marcus Grönholm (Rallye)
World Champion 2000
World Champion 2002
2nd place World Championship 2006
3rd place World Championship 2005
28 Rallye victories
5 times Finnish Champion

This example series of exercises serves to provide an insight into the diverse training options. The exercise descriptions/pictures show excerpts from the movement sequences, paying particular attention to the typical MBT rolling and standing stages.

Downhill jump:



Pict.1+2:
Stabilise on the balance area while squatting. Jump forward (squat-jump).

Pict.3:
Land on the forefoot, immediately stabilise to the balance area, thus absorbing shock until reaching the starting position.

Standing on one leg with figures:



Pict.1:
Roll back to Masai Sensor while stretching your leg at the same time.

Pict. 2
Roll forward to stand on your toes (supporting leg) while lifting the knee of the balancing leg at the same time.

Lunges with a long barbell rod:



Pict.1
Stabilise the front leg (supporting leg) on the balance area.

Pict. 2
Lower into a knee bend.



One legged jumps sideways:



Pict. 1-3
Stabilise on the Masai Sensor (takeoff leg). Roll forward. Jump.

Pict. 4+5
Land on the forefoot of the other leg and roll back to the Masai Sensor.

One legged straight jump:



Pict. 1
Step up on the Masai Sensor (takeoff leg).

Pict. 2-4
Roll forward over the balance area. Take off into a straight jump.

Pict. 5
Land on the forefoot.

Passing on one leg:



Stabilise the ankle on the balance area. Pass using the sport-specific technique.

Option: additional forward/back rolling on the supporting leg.

Full body pendulum with a partner:



Pict. 1
Inclined standing position on the Masai Sensor.

Pict. 2
Roll and absorb the impact momentum (Masai Sensor – balance area – forefoot – balance area).

Options: one legged, eyes closed.

One legged stand on the rope:



Pict. 1
Stabilise on the balance area of the supporting leg.

Pict. 2
Guide the (other) leg back along the rope.

Lunges with ankle work:



Pict. 1
Lunges (knee bend position in the lunge). Balance on the Masai Sensor of the front leg (supporting leg).

Pict. 2
Roll from the Masai Sensor through the balance area until you stand on your toes (roll forward/back).

Knee bend with barbell:



Pict. 1
Stabilise on the balance area in the knee bend (starting position).

Pict. 2
Sink into a lower position.

Walking:

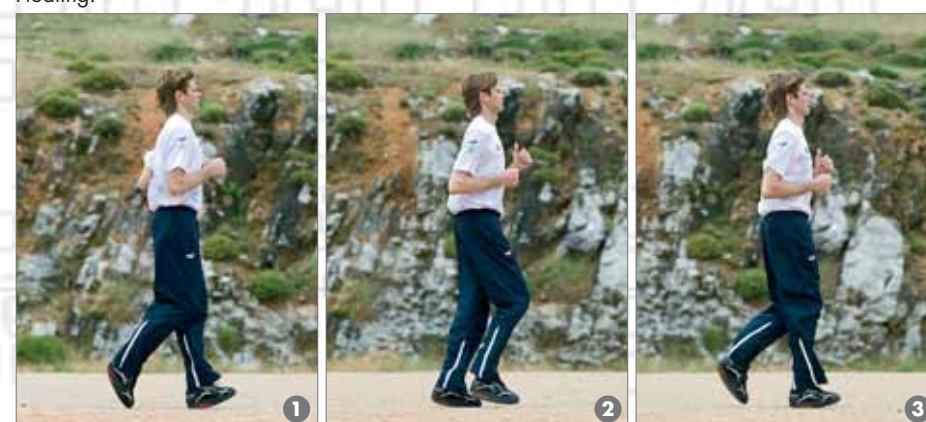


Walking with MBT is distinguished by:

Pict. 1-4:

- Controlled rolling from Masai Sensor through the balance area to the forefoot.
- Setting the feet down close to the centre of gravity.
- Straight and upright posture.

Floating:

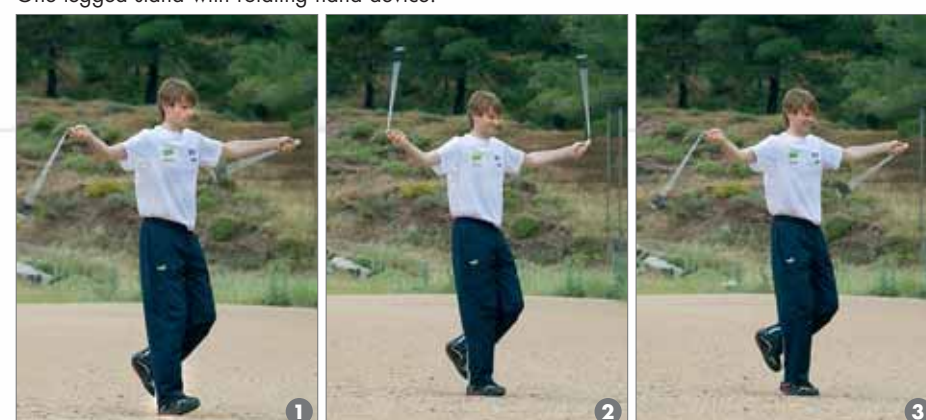


The MBT specific running movement (floating) is distinguished by:

Pict. 1-3:

- Controlled rolling from Masai Sensor through the balance area to the forefoot.
- Low running speed.
- Quick steps.
- Straight and upright posture.

One legged stand with rotating hand device:



Pict. 1-3:

Stabilise the supporting leg on the Masai Sensor. Arms stretched side-wards. Rotate the arms as an impulse for rotating hand devices.

Roll from the Masai Sensor through the balance area until you stand on your toes (roll forward/back).

Options: eyes closed, opposite hand rotations, etc.

THE SCIENCE.

Author Prof. Dr. Benno M. Nigg
Institute Human Performance Laboratory, University of Calgary
Title Effect of an Unstable Shoe Construction on Lower Extremity Gait Characteristics (2004)

Key Message "MBT strengthens the small muscles with small lever with respect to the rotational axes of the joints."
"MBT acts as a mechanical training device for the muscles crossing the ankle joint."
"Increase of oxygen consumption during walking by 2.5%."

Author Tim Vernon, Jonathan Wheat, Dr. Rav Naik and Grace Pettit (2004)
Institute Sheffield Hallam University
Title Changes in gait characteristics of a normal, healthy population due to an unstable shoe construction.

Key Message "MBT increases muscular activity of the calves, hamstrings and the gluteal muscles during walking."
"Kinetics at each of the joints of the lower limb were different between MBT and normal conditions. The lower moments experienced at these joints suggests a resultant decrease in joint loading."

Author Xaver Kälin, Tanja Schade
Institute Praxisklinik Rennbahn für Orthopädie und Sportmedizin, Muttens Basel, Schweiz (2007)
Title The MBT as a therapeutic shoe in the rehabilitation of ankle instability.

Key Message "Functional stability of the ankle joint has improved significantly in both groups during treatment phase. Both treatments (physiotherapy and exercise, and physiotherapy and MBT) have been equally successful on short term. Three months after treatment functional stability of the ankle was significantly higher in the MBT group compared to the control group. The long term benefits were significantly higher for the intervention group."



"The Physiotherapists and Masseurs of the IMSB Medical Pool accompany the Austrian National Teams on more than 1000 training and competition days. We apply the MBT to improve joint stability, muscular coordination and for active recovery."

Mag. Dr. Alexander Aichner, Head of Medical Pool IMSB