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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". 4567890123456789012345678901234567890123456789012345 www.swissmasai.com 490 <u>608429466388006663456866007223666676.9666</u>28

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MOVEMENT AND SENSORIMOTOR FUNCTION.

Movement is the combination of sensory and motor performance.

Therefore movement requires:

- 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.

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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.



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.





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.

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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

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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."

.....



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.

The same movement with MBT

Movement

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

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.

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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.

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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(PSL) 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

10000

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



Standing on one leg with figures:





Lunges with a long barbell rod:





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1st place World Cup Overall 2005/2006 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

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Fairpa.



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

Pict.3:

Land on the forefoot, immediate stabilise to the balance area, thus absorbing shock until reaching the starting position.

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

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

Pict. 2 Lower into a knee bend

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One legged stand on the rope:



Pict.1

Lunges with ankle work:





Pict.2

Knee bend with barbell:

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Pict. 1-3

Pict.4+5

Sensor

Pict.1

(takeoff leg).

Pict.2-4

jump.

Pict. 5

Stabilise on the Masai Sensor (takeoff leg). Roll forward. Jump.

Land on the forefoot of the other leg and roll back to the Masai

Step up on the Masai Sensor

Roll forward over the balance

area. Take off into a straight

Option: additional forward/back rolling on the

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

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supporting leg.

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One legged jumps sidewards:

One legged straight jump:

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Passing on one leg:

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Pict. 1 Inclined standing position on the Masai Se

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

Options: one legged, eyes closed.

Stabilise on the balance area of the supporting leg.

Guide the (other) leg back along the rope.



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).

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Pict.1

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

Pict.2 Sink into a lower position.

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123456789012345678901234567890123456 20001 0,0002 0-0003 0,0011 1234567 THE SCIENCE Prof. Dr. Benno M. Nigg Author Human Performance Laboratory, University of Calgary Institute Title Walking Effect of an Unstable Shoe Construction on Lower Extremity Gait Characteristics (2004)



Masai Sensor. Arms stretched sidewards. 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 3 hand rotations, etc.

intervention group."

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"MBT strengthens the small muscles with small lever with respect to the rotational axes

"MBT acts as a mechanical training device for the muscles crossing the ankle joint."

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

"MBT increases muscular activity of the calves, hamstrings and the gluteal muscles

"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

Praxisklinik Rennbahn für Orthopädie und Sportmedizin, Muttenz Basel, Schweiz (2007) The MBT as a therapeutic shoe in the rehabilitation of ankle instability.

"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

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Author Institute Title	Claus Beyerlein, Diplomarbeit (2003) Institut für Sportwissenschaft, Universität Tübingen The effect of a neuro-muscular training on coordinative skills after rupture of the anterior cruciate ligament, with respect to the Masai Barefoot Technology (MBT)	UNIVERSITY OF	"The MBT strengthens the la lower extremities. The small athlete with strong large and and react during sport activi
Key Message	"Significant improvement of coordinative skills during single leg stance while stabilising the ankle joint(medio-lateral and antero-posterior direction)."	CALGARY	injuries should decrease." Pr
Author Institute	Elisabeth Ritter, Diplomarbeit (2004) Medizinisch-Technische Akademie für den physiotherapeutischen Dienst am	Sheffield Hallam University	"With frequent use, MBTs m skeletal problems, such as a and achilles tendonitis and l Dr. Rav Naik, Orthopaedic physic
Title Key Message	Ausbildungszentrum West für Gesundheitsberufe, Innsbruck Balance training in football with Masai Barefoot Technology "Improvement of balance in football players through regular application of the MBT."	UNIVERSITY of SALZBURG Department of Sport Science and Kinesiology	"The instability of the MBT p speed of movement and acc adequately and quickly to n UnivProf. Dr. Erich Müller President of the European College Science and Kinesiology University
Author Institute Title	Bernadette Rojacher Diplomarbeit (2004) Akademie für den physiotherapeutischen Dienst, Klagenfurt MBT and balance – a comparative study of the Masai Barefoot Technology and an unstable training device.	SCHIGYMNASIUM STAMS	"At the Ski-College in Stams work under ideal conditions workouts and movement and stability and alignment work after a hard workout." Rupert
Key Message	"Improvement of balance skills in all subjects after a two months intervention period." (in the MBT group as well as the MFT group). "The thesis that Masai Barefoot Technology can be used preventative for improvement of balance and proprioception can be confirmed."	MASS Austria	"The Physiotherapists and N accompany the Austrian Na and competition days. We c muscular coordination and f Mag. Dr. Alexander Aichner, Head of

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0015 0-0016 0-0017 0-0018 0-0019 0-002 large and especially the small muscles in the all muscles are less trained in normal shoes. An ind small muscles has many possibilities to act tivities. Thus, performance should increase and Prof. Dr. Benno M. Nigg

may reduce the incidence of some musculoosteoarthritis, stress fractures, plantar fasciitis d low back pain."

sician and co-author of the Sheffield Study

provokes randomised variety of position, cceleration. This improves the skill to adapt new situations during a defined movement."

ge of Sport Science, Head of the Department of Sport sity of Salzburg – Austria

ms a young and motivated team of coaches ns. We use modern equipment for athletic analysis. MBT is an integrative part of our joint orkout, and is important during active recovery ert Gürtler, Sports Coach Ski-College Stams

Masseurs of the IMSB Medical Pool National Teams on more than 1000 training e apply the MBT to improve joint stability, d for active recovery." of Medical Pool IMSB