

**kybun**   
Switzerland



# Strong feet make healthy people

Latest knowledge on the biomechanics of the human gait

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## Background of the kybun MechanoTherapy



*Karl Müller in a paddy field in the mid-1980s*

For over one hundred years, the principle that the shoe has to support and guide the foot, has been valid in the shoe industry. This basic principle has been deeply imbedded in the consciousness of physicians, shoe manufacturers and consumers. Even today physicians prescribe orthopedic arch supports for problems with feet, knees, hips, and back. The causes of the complaints, such as lack of strength, coordination, and movement of the foot, are often not recognized and only the symptoms are treated.

In the nineties, the Swiss Karl Müller, discovered the health enhancing advantages of walking on elastic springy clay ground when he lived in the middle of the rice paddies in Korea. To bring the rice paddy feeling into the everyday life of modern



man, the engineer developed the shoe with the round sole. This unsteady sole was contrary to the shoe industry's basic principle of «supporting, guiding, absorbing» and it was massively attacked by science, medicine and the shoe industry.

Thanks to the mostly positive reactions for the body, the round, unsteady sole became a worldwide success and to this day has sold over 10 million times. It has turned the shoe industry upside down and is copied by over 100 companies today. But Karl Müller wanted more. He envisioned developing the perfect rice paddy feeling when standing and walking for the everyday life of modern man, because he believes that the therapeutic reaction is more positive, the more perfectly the feeling on the foot complies with the elastic springy rice paddy feeling.

Therefore he sold his share in MBT in 2006 and again started from scratch with the kybun concept. After having researched and developed for years, Müller and his team succeeded in perfectly imitating the rice paddy feeling and in bringing it into civilized man's everyday life for any kind of use.

The technologies of MBT and kybun differ fundamentally. While the MBT has a crescent sole with a hard disc, the kybun sole consists of an elastic springy air-cushion. The elastic springy kybun sole activates the foot muscles when walking. This is the main prerequisite for a natural walking position because the foot, the foundation of the human body, must be dynamically strong in order to absorb shocks and to guide the body into an upright posture.



## The foot – key to every healthy body

The foot is the key to the solution of the most common back, knee, vein, and foot problems as well as the prevention of overweight and falls at an advanced age. This is due to the fact that most problems of the musculoskeletal system (signs of overexertion in the front and back area of the foot as well as knee, hip and back problems) start at the foot. This can be demonstrated schematically by means of two bottles. When the bottle is on the ground, it is stable. On ever skyscraper the foundation is the widest part and the construction becomes narrower towards the top.

The foundation must still be buoyant and dynamic to be able to withstand an earthquake for instance. Just like the skyscraper, the foundation (the foot) must be the strongest component of the human body to keep it in good shape for a long time to come. When the foot is weakened, the body reacts like a bottle which is standing on its cap. In this position the bottle is no longer stable. The same is true for the body. A weak foot leads to signs of overstress in all joints, e.g. the iliosacral joint (point at which the spinal cord and the pelvis are joined) and the spinal cord.

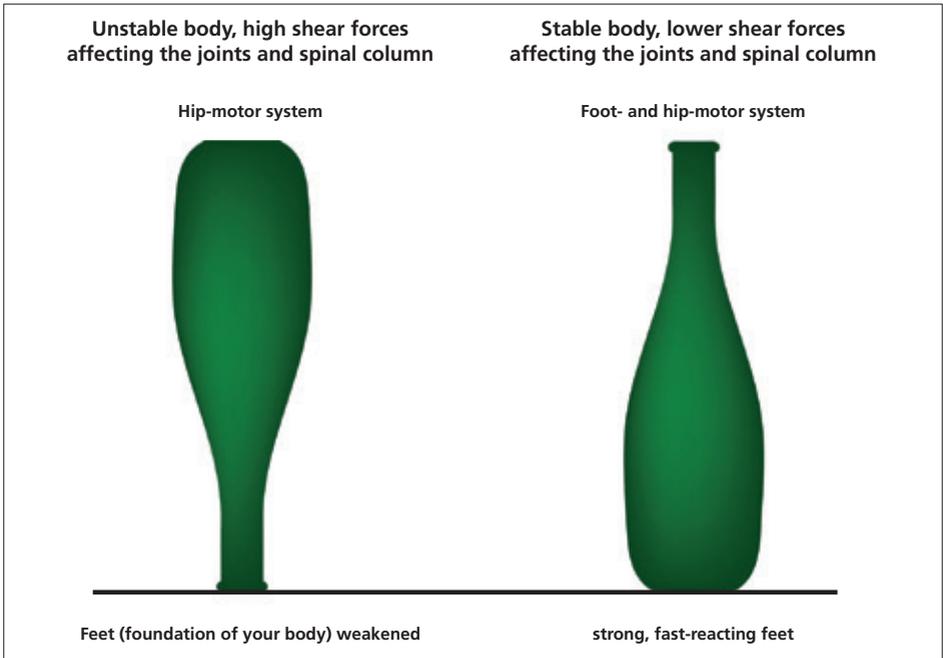


Fig. 1: The foot as the foundation of your body

## Causes of a weak foot

### The quantity of movement

100 years ago, man walked 15 km a day, today just 800 m. In the present time, people spend the day mostly sitting down. This does not only lead to an insufficient training of the foot but also to shortening of the muscles, dysbalances and tensions in the entire body. Daily exercise is essential for strong feet, a relaxed musculature, and healthy joints. Apart from the quantity of movement, the quality, i.e. the correct pressure on the joints and the spinal cord plays a vital role. Hereby two gait and posture patterns can be distinguished: the foot-oriented gait and the hip-oriented gait.

### The quality of movement

What the engine is for the car, the muscles are for the human musculoskeletal system. The muscles move the joints. The muscles which power the foot, knee, and hip joints, supply the main contribution to the locomotion of the human gait. Without arms man could not move along so fast and dynamically. A runner without arms would be slower and would get neck pain because the impetus of the arms contributes in no small measure to loosening the neck muscles. This way, each muscle contributes to the propulsion of the human gait but the two main motors which contribute to the gait are the «foot motor» and the «hip motor».

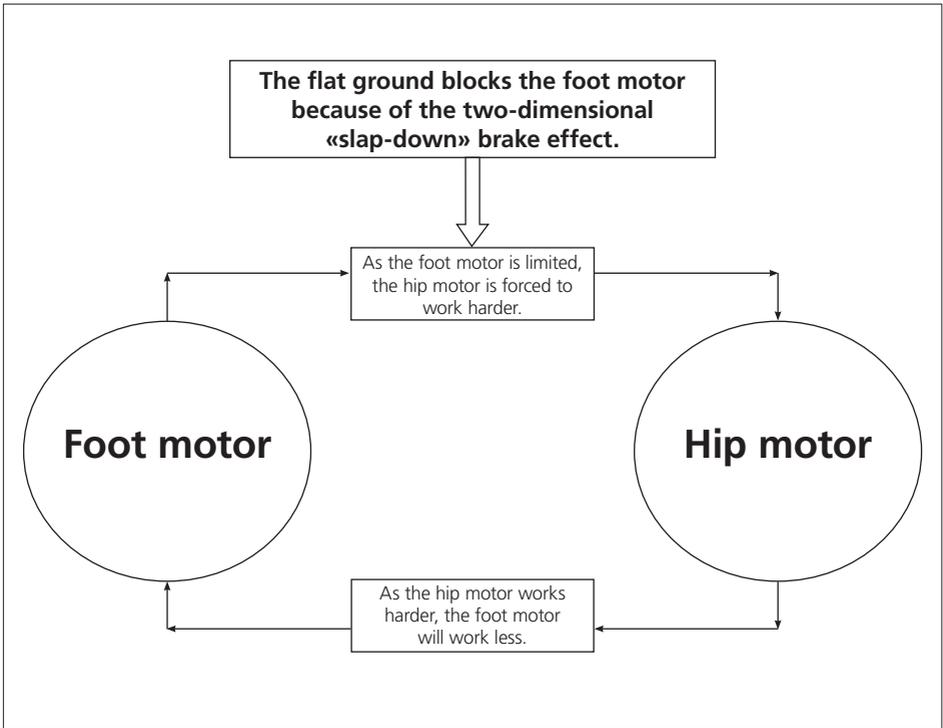


Fig. 2: Interaction between foot motor and hip motor

## The hip oriented gait

### Cause

Civilized man moves on flat streets in mostly heeled footwear. This limits the mobility of the foot joint and therefore inhibits the foot motor. Arch supports further block the movement of the foot.

When the foot is limited in its mobility, the hip motor compensates in order to still move forward fast and forcefully. For this reason, civilized man mainly uses the hip motor for walking. Thigh muscles are activated to take one step forward and to more or less put one foot in front of

the other. Hereby the foot motor is less active than when the primitive people walk barefoot.

As a reaction to intense hip activity, the hip flexors pull the upper part of the body forward which, after some time, produces the typical, forward bent old-age gait with shortened muscles, tension, strain on joints, and relieving postures.

On the other hand, a strong, foot oriented gait straightens the posture, stretches

and relaxes the muscles, evens out dysbalances, and breaks the vicious circle of relieving posture and overstress.

When primarily the hip motor is active and the foot motor limited, the foot motor switches itself off completely after some time. This «switch» is often visible in the gait of older people. They just lift the hip and use the foot only to put it down.

Not the foot is moving the body forward but the force of the hip. The hip is very active, whereas the feet, which should actually be the main motor, are practically no longer functioning.

### Impact

A lifelong of high hip activity often results in overstress in the hip and lumbar vertebra areas. Blockages in the iliosacral joint are the result. This is called a hip-oriented as opposed to a foot-oriented gait pattern.

Flat surfaces and heeled shoes limit and weaken the foot. The shear forces (horizontal forces in the joints) are very strong. Musculoskeletal system disorders, e.g. back and joint problems, inflammation of the Achilles' tendon, and overstress of the foot, are mostly caused by a weak foot and unnatural gait and posture patterns.

## The natural, upright gait

When walking barefoot on natural, uneven ground, foot motor and hip motor interact in an ideal way. This is shown by observations of primitive people who move as nomads on natural ground. They have a tall, slim stature and show an even musculature, as well as an upright posture. Their foot motor does most of the work. The hip motor rather turns backwards, i.e. the thighs push away to the back more than pulling the step forward. The natural cooperation between the two motors allows the musculoskeletal system to stay healthy as long as possible.

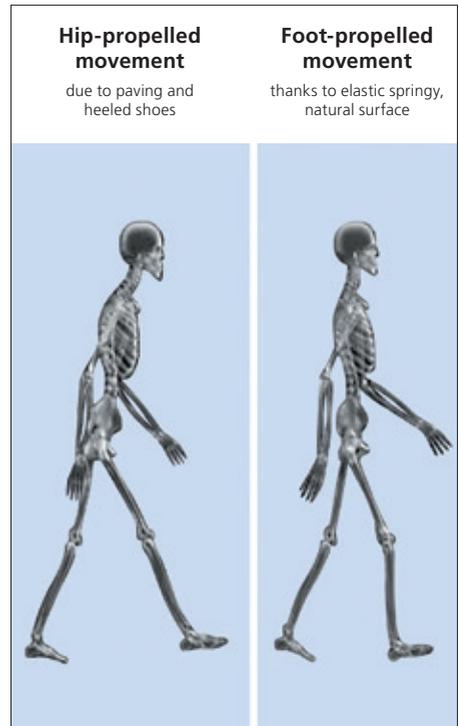


Fig. 3: Human hip- and foot-propelled movement

### Change of the gait pattern through strengthening of the foot

A switch to a natural, foot-oriented gait is recommended for everyone. When changing the gait and posture pattern the reactivation of the foot motor as well as the loosening of the hip motor is the priority. The body straightens up. The hip motor is naturally integrated in the propulsion system.

With the switch to a foot-oriented gait, there is a great chance that complaints about the musculoskeletal system are soothed or vanish altogether because the cause of the complaints, an incorrect gait and posture pattern, is herewith eliminated.

This change in the gait and posture pattern can be demonstrated with the Leaning Tower of Pisa.

Should you want to straighten the Leaning Tower of Pisa, its foundation would need to be straightened from the bottom using a considerable amount of strength.

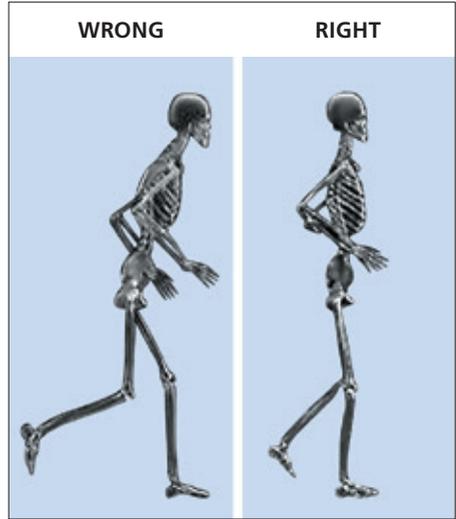


Fig. 4: The right and wrong way to walk

### Change of the gait pattern through strengthening of the foot

Man functions unequally on the right and the left side. Therefore, the right and left hand, as well as the right and left foot are different with regards to strength and coordination. Each person has a supporting leg and a jumping leg. Out of habit, man always stands on the same

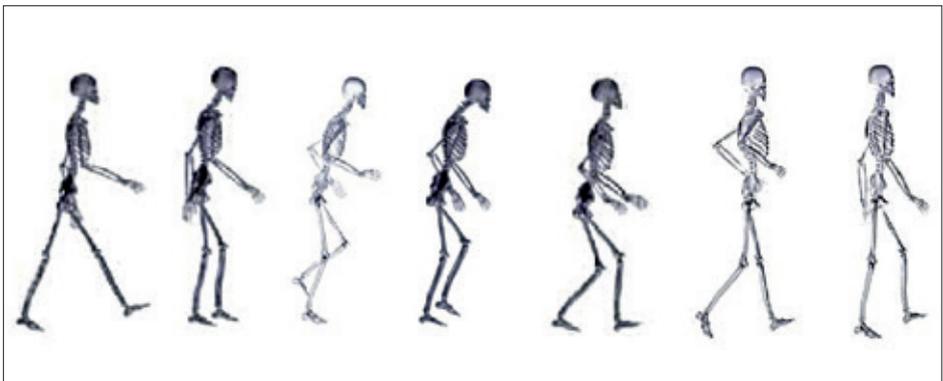


Fig. 5: From a hip-oriented to a foot-oriented gait

leg. Because civilized man walks on flat, hard surfaces most of the time, the strong foot becomes stronger and the weak foot weaker. The asymmetry is increased. This can lead to vast differences between the left and the right regarding strength and coordination.

This uneven strength in the left and the right leg is joined in the iliosacral joint and the hip area and can lead to a functional pelvic obliquity which can look like uneven length of the legs. As a consequence scoliosis, tension in the lumbar vertebra

area, overstress of the back, hip and knee joints as well as of the feet can appear. Would man walk daily on natural ground, the asymmetry of feet and legs would be evened out.

The left and the right foot motor would be evenly trained so that both feet work likewise. The transition to a foot-oriented gait and posture pattern is made possible by elastic springy materials. How the special characteristics of this material strengthen the foot is explained in the following chapters.

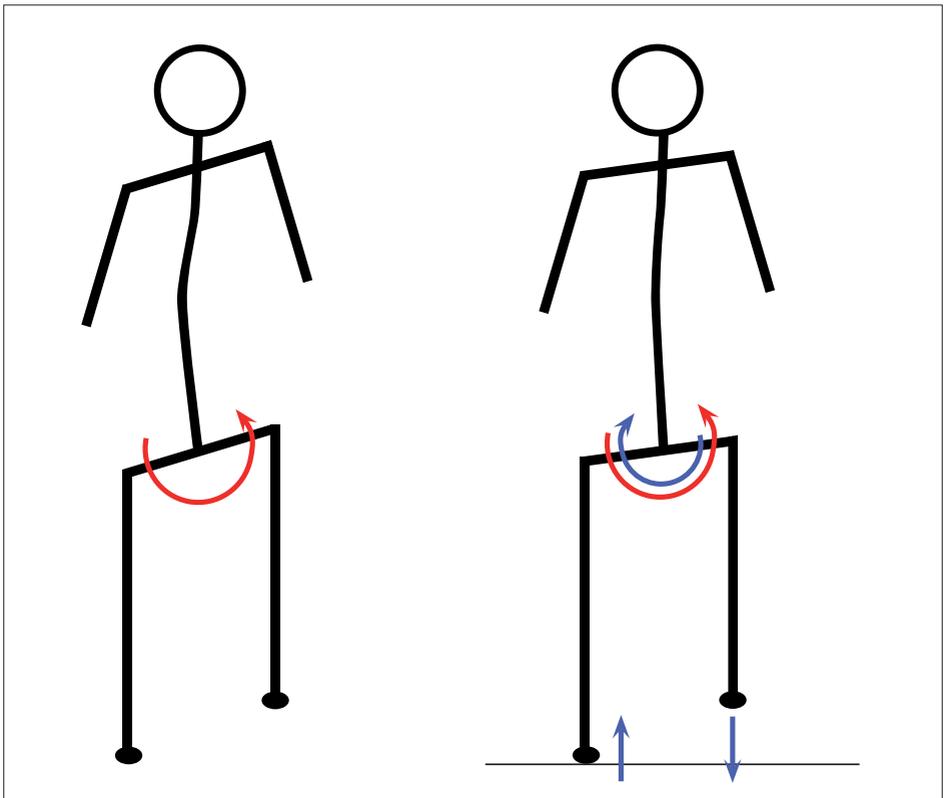


Fig. 6: Compensating for asymmetries by means of dynamic standing on soft, supple materials



## Standing on elastic springy materials

### The special characteristics

During his many years in Korea, Karl Müller discovered the clay ground of the rice paddies. Especially when the water is slowly draining from the rice fields, the clayey ground is extremely pleasant to walk on. Karl Müller researched for years to find which artificial surface is the most similar to this elastic clay ground. Thereby he found materials which consist of multi-component polyurethane (PU).

Müller optimized these materials with regard to three parameters. He was looking for a multi-component PU which:

- » is extremely soft but
- » still has a high rebound effect and
- » hardly tires

This elastic springy multi-component PU is used by the kybun MechanoTherapy. Its special characteristics make it the ideal material to walk and stand on.

Standing on elastic springy material has three main effects. Firstly, the sole of the foot is completely filled due to the softness. Because of the elasticity there is, however, no static support effect compared to arch supports rather there is a dynamic springing of the foot. The foot is relieved, constantly moved and practiced. Standing for a long time is effortlessly possible. A further positive effect of the elastic springy material is the reduction of asymmetries in the body.

The second effect is the training of the foot and entire muscle chains with respect to strength and coordination. The third

effect is due to the elasticity of the material. When standing, one slightly vibrates (similar to a trampoline). Thereby small power impulses are sent through the musculature which keeps the musculoskeletal system in a constant springing movement.

The muscles relax because the slight springing encourages the intra-muscular cooperation. The muscles transfer the forces from one muscle area to another. This cooperation of the muscles has a tension easing effect. You already feel this effect after a few seconds of vibrating on the elastic springy material.

A further positive effect of the elastic springy material is the reduction of asymmetries of the human body. Dynamic standing on elastic springy materials trains the left and right foot motor likewise with regard to strength and coordination.

kybun MechanoTherapy utilizes the positive characteristics of the elastic springy material on the human body. The surfaces in our civilized world are

flat and hard. Therefore there is a need for footwear with which, in everyday life, man can walk just like on natural ground. Walking on elastic springy material is made possible by the kybun air-cushion sole.

Your foot muscles are strengthened daily by standing on the kybun mat, elastic spring base and thus allow for a change to a natural, foot-oriented gait pattern which holistically improves your health.

#### **The positive effects:**

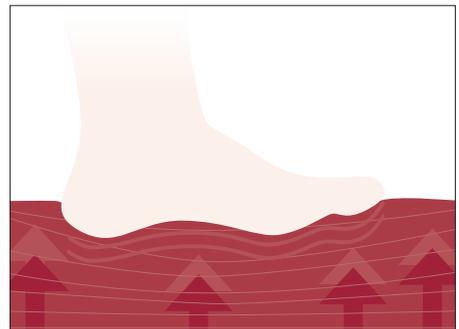
- ⊕ tensions and blockages in the iliosacral joint can be alleviated
- ⊕ pelvic lopsidedness is reduced
- ⊕ joints are evenly stressed
- ⊕ painless walking and standing at an advanced age becomes possible

#### **The elastic spring base of the kybun mat**

The kybun mat is a elastic spring base from high-quality multi-component PU. While a traditional PVC mat only feels soft at the surface and deeper down quickly appears hard and inert, on the kybun mat the foot sinks in deeply and softly. At the same time

#### **Dynamic standing on elastic springy material**

- ⊕ enables standing for hours without exertion or tiring
- ⊕ eases tension
- ⊕ trains the foot motor
- ⊕ keeps joints constantly in motion without overstraining
- ⊕ stretches shortened muscles
- ⊕ evens out relieving postures and straightens posture



the PU material allows the foot to bounce back like on a trampoline.

Because of the natural foot movements on the elastic springy base, the posture is balanced. This specifically addresses the deeper lying muscle layers.

The material does not tire even after intensive use for long periods of time. The PU has a very high depth of sinking in and at the same time a high rebound. Whereas the PVC surface is soft but the foot only sinks in slightly.

Due to the very high, «impulse active» crush zone of the PU material which the foot sinks into, the muscles contract much more slowly than on the lower sink in depth of the PVC mat, which leads to benefits such as less limping, better relaxation, comfortable standing, and more motivation to stand rather than sit.

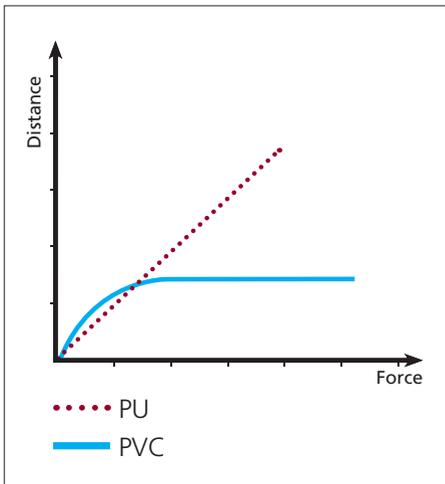


Fig. 7: Force-distance curve; comparing PU and PVC

## Fields of application

The kybun mat can be used manifold. With pre-existing orthopedic problems three basic exercises should be regularly performed at the beginning to strengthen the musculature.

These exercises train the coordination between the foot, lower leg, and thigh musculature and improve the shock absorber effect of the musculature with respect to the knees. When executing the exercises standing up, there is less risk

of incorrect pressure on the body than when walking. Because when walking incorrect pressure can occur due to steps which are too long or too much vigorous rolling motion of the foot. The kybun mat additionally offers the possibility to just integrate it into everyday life, thereby reducing passive sitting. Making phone calls, watching television, working at the computer, and many more activities can be executed on the kybun mat, upright in motion.

## The three basic exercises to strengthen the musculature

### The uprightly stretched vibration exercise

Very fast vibrating with stretched knees and upright body. Take a short break after vibrating on the kybun mat for 10-20 seconds.

The exercise can be repeated as often as desired.



### Stepping in place in an upright posture

Marching in place for 20-30 seconds. Then take a short break. Hereby, a high body tension is important.

The exercise can be repeated as often as desired.

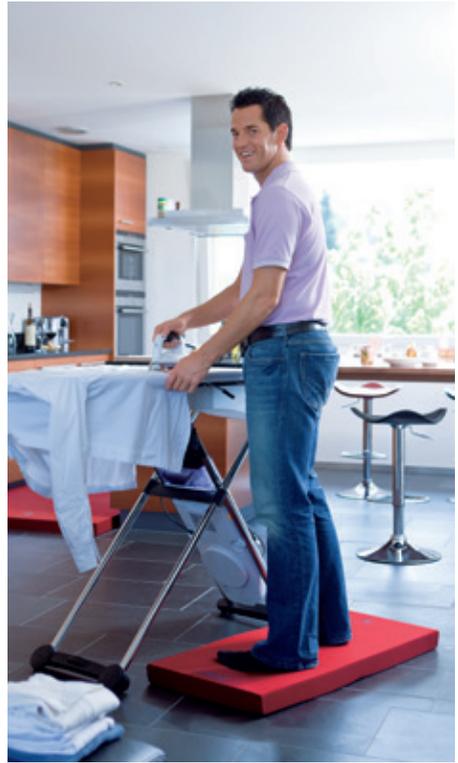


### Light trotting in place in a stretched posture

Trotting in place for 20 seconds. Hereby the thighs are totally loose and are hardly lifted. The body is upright.

The exercise can be repeated as often as desired.





## The kybun mat makes everyday life more active

**At the office:** Many people who work in an office suffer from tension, dysbalances, and complaints in the shoulder and neck area. Reason for the physical complaints: passive sitting. Working on the kybun mat at an height-adjustable desk is a healthy alternative.

**In therapy:** The kybun mat does not heal any illnesses but can soothe the pain of many ailments or even make them disappear. Standing and walking on the elastic spring kybun mat stretches and

strengthens deep-lying muscles, improves coordination, and supports the blood flow.

**At home:** At home there are many possibilities of standing on the elastic spring base: ironing, making phone calls, hair drying, writing or playing an instrument. the kybun mat trains the small muscles, dissolves tension and positively influences one's wellbeing.

**At school:** Children have a natural urge to exercise. In the classroom however,



they are told to sit still; and that for several hours a day. High desk and kybun mat are the alternative at school. While standing softly on the elastic spring base, muscles from head to toe are being used to ensure a natural, upright posture. With a height-adjustable desk, a bad posture, such as when sitting, is a thing of the past.

**In sports:** Professional and amateur athletes train and regenerate on the kybun mat. Training on the kybun mat improves acceleration speed and coordination skills.

Professional clubs, such as HC Davos, Young Boys Berne and HSV, integrate the kybun mat into their training program. In the area of rehabilitation and during a regenerative phase, the kybun mat actively promotes relaxation and accelerates the healing process after injuries.

## Initial Reactions

Changing to the foot-oriented gait is recommendable for everybody. This change is facilitated by the kybun mat.

The reactivating and strengthening of the foot motor as well as the loosening of the hip motor are in the foreground. With the change to a foot-oriented posture, there is a great chance of reducing musculoskeletal system pains or making them disappear entirely because these ailments are connected largely to the fact that man has acquired an incorrect gait and posture pattern through walking in normal shoes on flat ground.

With this transition of the gait and posture pattern, initial reactions can occur with some people. With this change, the body reverts to the total stretching and completely executes the motion. For joint and back problems irritations may occur or inflammation may increase at the beginning.

Also in the hip area which is now no longer spared but rather activated, irritations

may occur. These initial reactions can be largely prevented by a slow training build-up and specific exercises. If orthopedic problems already exist, it is recommendable to regularly execute the basic exercises presented in the previous chapter.



## Walking on elastic spring materials

Elastic material lets the foot sink in deep while walking. It also has a large crush-collapsible zone. This way the musculature and the joints are stressed sparingly. The elasticity enables a high coordinative training effect.

This can be shown with a test on a scale which is fitted to the floor. When walking over this scale at a normal speed with one foot, the indicator immediately jumps to the top and quickly falls back down to zero again.

On the blue curve you can see that at the moment the heel touches the scale, the indicator temporarily darts over the actual

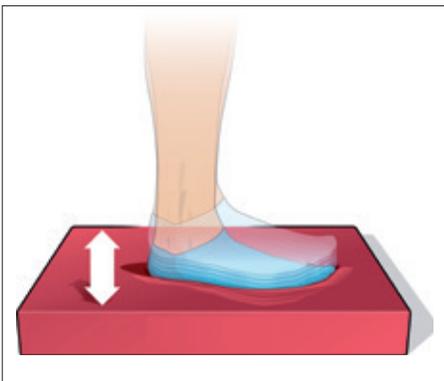


Fig. 8: The trampoline effect of the kybun mat

body weight. For a man of 75 kg, the indicator would show up to 90 kg. Then the indicator falls down because the other leg gives the impetus so that the weight falls below 75 kg. When accelerating over the first toe, the force is again a bit higher than the body weight.

When we put a elastic material on the scale, the course of the indicator is the same as the red curve. The indicator does not rebound as much. The stress is less. It is important to note that the increase of the curve is much flatter. At the beginning, the force does not jump high so quickly. This is a sign that the musculature relaxes much slower and therefore the joints are spared.

These specific characteristics of the elastic material have a positive influence on limping. One usually limps to avoid pain; one only stands very shortly on the painful side and stresses the relieving side more and longer. On the elastic material, the leg «spared» beforehand automatically

stands longer. The stress on the right and left side evens out. The muscles which are unconsciously «afraid» of stress and pressure, feel the pleasant softness and contract more slowly. The painful side can be stressed much longer with less pain. Here tension and blockages in the iliosacral joint area are dissolved. Blows to the knee and hip joints occur less. One walks more upright. At an advanced age one can walk much longer without pain.

## The kybun shoe

In the kybun shoe the foot stands directly on a elastic mat, which gives the foot the freedom of movement in all directions. Through the elasticity and the instability upwards, downwards, to the outside and inside, the musculature is optimally trained. The joints are spared and the back musculature relaxed as in no other foot gear.

### Fields of application

The kybun shoe is an everyday shoe which can be worn the entire day. It is particularly suitable for people who stand at work or have physically strenuous jobs. The elastic springy kybun sole (air-cushion sole) prevents heavy legs, burning feet, back pain, and vein ailments. Because the elastic material always dynamically adapts to the form of the foot's sole, the kybun shoe is also ideal for all foot problems.

For athletes the kybun shoe is suitable for warming up and for cooling down after training or competitions.

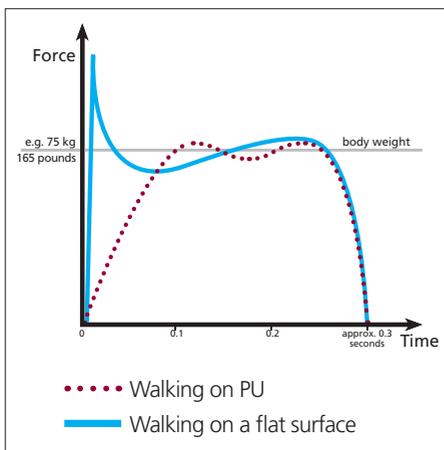


Fig. 9: Force-time diagram



### **Initial Reactions**

When changing the gait and posture pattern with the kybun shoe, the body reverts to the total stretching, completely executes the movements again, and carries out the movements completely. Due to this sudden change, initial reactions can occur. For all medical indications, overexertion, irritations or even inflammations can occur due to the changed stress on the «weak spot».

It is recommendable to wear the kybun shoe with care for the first few days to see whether the body shows any initial reaction. In case of reactions, it is advisable to proceed according to the recommendations of the indication descriptions, to only slowly increase the training in the kybun shoe and to regularly

repeat the relevant exercises. For some it is recommended to start the training with the kybun mat and to wear the kybun shoe only when the feet have already been sufficiently trained on the kybun mat.

[www.kybun.com/en/faq.html](http://www.kybun.com/en/faq.html) gives detailed information on the background of such initial reactions and tips for the use in problem cases.

Individual consultations for medical problems are available for customers via email: [beratung@kybun.ch](mailto:beratung@kybun.ch)



## The kybun shoe and the kybun mat for medical indications

### Hallux valgus

Hallux Valgus is a chronic crookedness of the first toe in the first metatarsophalangeal joint. This incorrect position is either inherited or «trained» by overexertion (bad footwear, i.e. shoes that are too high or too tight). In therapy, foot gymnastics has proven valuable because the foot musculature must be strengthened. In addition, the person affected should avoid supporting and guiding shoes as well as orthopedic arch supports because these relieve and weaken the foot musculature. As a consequence, the Hallux Valgus

becomes worse. The kybun shoe offers the foot sufficient space. The toes are not constricted and can move freely. Due to the supple air-cushion sole, the foot muscles are permanently activated and trained.

After some time, the pain of the inflammation decreases because the musculature is strengthened and becomes more resistant. The training of the foot musculature by the elastic springy air-cushion sole can initially increase the inflammation because the musculature is strongly challenged.

Therefore it is important that the training is planned individually. The customer should not stand in the kybun shoe for too long, but rather walk in it. When walking, a vigorously rolling foot motion needs to be avoided. Stepping down with the entire sole would be ideal. It is recommendable to start the training with the kybun mat and to wear the kybun shoe only when the musculature has already been strengthened with the three basic exercises on the kybun mat.

If the musculature is too weak or the customer has trained too much, temporary wearing of normal shoes is recommended (possibly even with the arch supports), i.e. the customer alternates between the kybun shoe and the shoes he has worn so far. For some customers the change between kybun shoe with arch supports and without arch supports is also advisable. Standing for too long must be avoided.

A regular training with the kybun shoe and the kybun mat is important. However, training with the kybun mat and the kybun shoe should never be done to the point of overexertion. At the beginning, the foot should therefore rest regularly in a normal shoe. The longtime goal is to wear the kybun shoe as an everyday shoe.

## Hallux rigidus

The Hallux Rigidus is a pain due to overexertion, i.e. arthrosis of the first metatarso-phalangeal joint. The conventional therapeutic measure is the



Fig. 11: X-ray of a bunion (Hallux valgus)



Fig. 12: X-ray of a stiff big (Hallux rigidus)

use of an arch support which supports the foot. The arch support limits the mobility of the first metatarso-phalangeal joint and therefore diminishes the pain.

This measure is counterproductive in the long run. After some time, the first metatarso-phalangeal joint reacts even more sensitive to movement and as a consequence hurts even sooner. The arch support therefore also creates compensatory movements when walking.

### The kybun shoe has the following effect:

- ⊕ the distribution of the pressure when rolling is essentially more even
- ⊕ the forces are more evenly distributed
- ⊕ the first metatarso-phalangeal joint is spared but not limited in its mobility
- ⊕ the first metatarso-phalangeal joint is still movable but with less force
- ⊕ the mobility stays intact and the cartilage tissue can reconstruct itself
- ⊕ the pain diminishes or disappears

The foot does not completely execute the rolling motion. Instead, the motion is compensated for in the knee and partly transferred to the other side so that the other joints can become overexerted.

For existing orthopedic problems, the three basic exercises to strengthen the musculature should be done regularly (see page 15).

A slow increase in training is important. In addition to the kybun shoe, the regular execution of the three basic exercises on the kybun mat is advisable. Secondly, the same measures as for the Hallux Valgus have to be carried out.

## Chronic inflammation of the Achilles' tendon

The chronic inflammation of the Achilles' tendon is a consequence of overstress. Very often it occurs to athletes, mainly runners and football players, due to incorrect stress or overexertion. For non-athletes inflammation of the Achilles' tendon occurs due to relieving postures. When a person has knee pain, this knee is unconsciously relieved, the other side overstressed, and in that way an inflammation of the Achilles' tendon is often triggered. Relieving postures also always occur by back pains or foot problems.

Walking on elastic springy materials causes a gentle stress to the musculature. Thus the tendon is no longer irritated and the inflammation can subside. With every step on elastic springy materials, the tendon is

### **Therapy for chronic inflammation of the Achilles' tendon is done in three steps:**

- ⊕ stretch lower leg muscles
- ⊕ reduce irritation and stress on the tendon
- ⊕ increase blood flow to the tendon tissue

stretched. In addition, muscle pump and veins are activated. The tendon tissue has a better blood flow, fresh blood and oxygen can reach the tendon which supports the healing of the inflammation.

It is important not to change into normal shoes as long as the inflammation of the Achilles' tendon still exists. The customer should wear the kybun shoe all the time because in normal shoes the tendon is irritated again and again and the inflammation cannot subside.

## Varicose Veins

Varicose veins are veins in which the venous valves are insufficient. Venous valves are particularly numerous in those veins in which the blood must be transported contrary to gravity (e.g. in the legs).

Venous valves act like a valve and are responsible for the blood flowing towards the heart. As the blood flow in the veins mainly takes place through forces from outside veins (contractions of the musculature) the venous valves are also responsible for the blood not to flow backwards during resting periods but is transported, step by step, towards the heart.

Through frequent sitting and incorrect walking, the venous blood is not pushed upwards sufficiently and the weight of the blood destroys the venous valves. When walking, the veins are squeezed more, the harder the foot motor is working. When the ankle is active, the muscular pump of the lower leg musculature is at work.

The venous tubes are squeezed and the blood is pressed upwards. When walking in supporting, guiding shoes on flat surfaces, the motion of the ankle is limited and therefore the activity of the muscular pump is also reduced. When standing on flat surfaces, the muscular pump is hardly working either. The weight of the blood pushes the venous valves through and produces varicose veins.

This can be thwarted when the foot motor is activated by walking on elastic springy materials, such as e.g. on the kybun sole. Thereby the muscular pump is vigorously activated and the venous blood forcefully pumped towards the heart again. Equally, when standing on the elastic springy kybun mat, the lower leg musculature is constantly moved whereby pumping the venous blood upwards and relieving the veins.

The kybun mat cannot cure varicose veins. The pressure on the remaining functioning veins is better distributed, though. This way the veins are relieved which counteracts the development of new varicose veins.

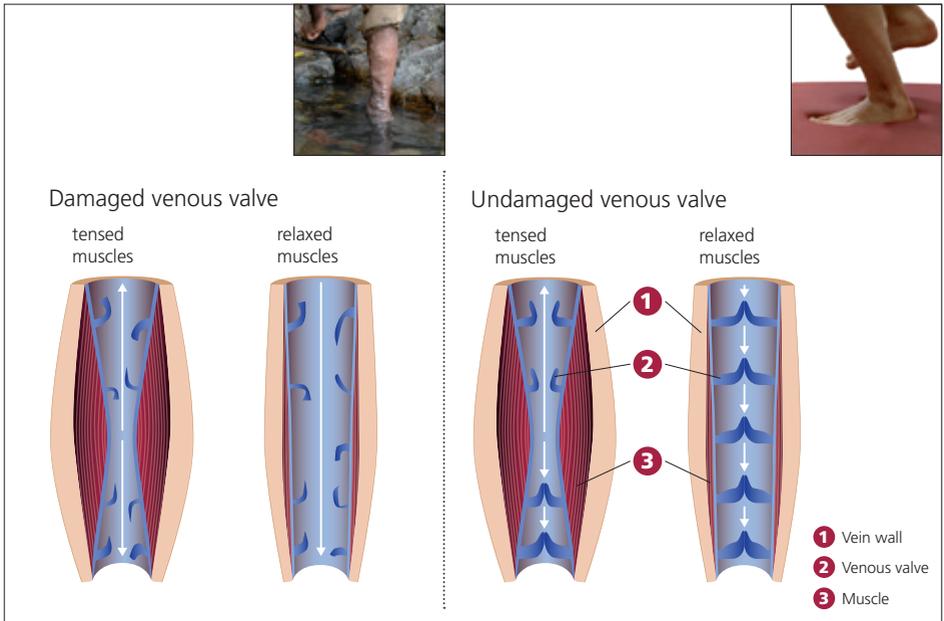


Fig. 13: Depiction of healthy and unhealthy blood flow

## Back Pain

The spinal column is a very complex construction. It consists of 24 vertebrae. Facet joints join the vertebrae, transverse processes at the thoracic spine join the spinal column with the ribs of the thorax. The intervertebral discs between the vertebrae are very flexible and resilient.

The ligaments join the bones and guide the movements. Many small and large muscles move the spinal column. The main function of the spinal column is the facilitation of motion and the protection of the inner organs.

Back pains signal that tension pulls the highly complex structures of the spinal column into malpositions. Due to the malpositions, the nerves which are sending pain signals to the brain, are irritated.

The tensions develop through overexertion, muscle dysbalances, incorrect and relieving postures which in turn occur because of incorrect walking and too much sitting.

Frequent sitting shortens the hip flexors and pulls the spinal column into a relieving posture. This develops a tendency to bend forward which pushes the intervertebral discs out of the vertebrae and irritates the nerves.

Walking on hard surfaces in shoes with heels has similar consequences. Even a small heel prevents the physiological rolling motion of the foot and limits the movement of the foot. Thereby the

movement of the knee and the hips is also limited and the bending posture of the back is increased.

Bending forward of the spinal column has the consequence that the center of gravity of the body falls forward thereby lengthening the step. More hip activity develops. The hip flexors are strengthened even more, the back thigh musculature and also the deep abdominal muscles are relieved which leads to a vicious circle of even more relieving and bending.



The forward relieving posture is complemented by a sideways relieving posture because the left and the right sides of the human body are asymmetrical. The left or the right side additionally goes into a relieving posture which leads to a contortion in the pelvic area.

Tensions develop through bending, incorrect and relieving postures, muscle dysbalances, and shortening of various muscle groups. These muscular problems can be improved or even solved by movement.

The more optimal the quality of the movement is, i.e. the more accurately the movement is scurried out, the better the muscular problems are solved. Correct movement means walking, very light jogging (trotting), or even better, a change between walking and trotting. Hereby it must be noted that the body is in a stretched posture and does not fall into a relieving posture. A lopsided strain (e.g. limping) and bending are to be avoided.

The correct execution of the exercises is explained in the exercise videos and in



Fig. 14: Model of the human spinal column

the documentation to the kybun MechanoTherapy. An optimal aid in executing the movements properly and increasing the quality, is offered by the kybun mat and the kybun shoe. On the elastic spring base of the kybun mat, the foot is neither supported nor guided and can therefore move freely. The kybun mat additionally offers the possibility to be integrated into everyday life and herewith reduces passive

### **The air-cushioned kybun sole can reduce back pain and ...**

- ◊ exercise the fine, deep muscles in your stomach, back and buttock
- ◊ give your body an erect posture
- ◊ stretch (shortened) muscles, especially the hip flexor (Iliopsoas)
- ◊ compensate for muscle imbalances, especially in the lower leg and thigh area
- ◊ improve asymmetries between the left and right legs, as the foot can sink down deep into the air-cushion

sitting. Making phone calls, watching television, reading the newspaper, and many more activities can be carried out on the kybun mat in an upright motion.

Since the kybun shoe does not limit the mobility of the foot but gives it the entire freedom to move, these unlimited movements also continue in the joints (e.g. hips). The spinal column straightens itself; the joints are more ideally placed on top of each other.

The most common reasons for back pains are malposition and muscle weaknesses due to overexertion of the musculature. With the kybun shoe and the kybun mat these can be solved. By loosening the musculature, the pain can be relieved most of the time.

The transition from supporting, guiding shoes to the kybun shoe can trigger initial reactions due to the change from a

relieving posture (bending) to a pressure posture (stretching).

This can result in the body being overstrained because of the corrected posture (e.g. stretching of the hip flexor, stretching of the lumbar spine) at the beginning. As a consequence there can be pain.

Therefore it is important to build up the training individually. The customer should not stand too long in the kybun shoe but rather walk, maybe even alternate between trotting and walking. Before wearing the kybun shoe in everyday life, it is recommendable to build up the musculature with specific exercises.

For some customers it is advisable to start the training with the kybun mat and wear the kybun shoe only when the musculature has been strengthened on the kybun mat with the three basic exercises.



## Knee pain

There are three kinds of knee pain, e.g. meniscus and patella fiber problems and arthrosis. These are wear marks on the knee, which are a consequence of longtime misapplied force on the knee joint. These misapplied forces occur when civilized man moves on hard, flat surfaces. Wearing shoes with heels leads to the passivity of the foot.

When walking on hard, flat surfaces most people take unduly long steps. This irritates the knee joint because the foot does not actively take on the forces but stressing shear forces impinge on the knee joint.



### The elastic springy kybun sole:

- ⊕ acts naturally absorbing
- ⊕ optimizes the stress on the knee and makes it more physiological
- ⊕ trains the fine musculature and balances it out
- ⊕ trains the coordination of the foot, i.e. optimizes the movement of the foot in such a way that the forces which must be absorbed, are optimally distributed and, most of all, are absorbed by the foot

Often the knee is additionally burdened because the untrained feet have the tendency to buckle inwards so that the lateral axis is inaccurate. Therefore the meniscus is overloaded or the patella fiber is irritated. The longtime effect of knocks on the knees is arthrosis.

Would man not walk in supporting, guiding shoes on hard streets and hard surfaces but always walk barefoot on meadows, the musculature of the foot as well as the lower leg and thigh area would be trained with every step. The musculature would work as an ideal shock absorber and the length of the steps would become shorter. The foot would play a more active role in the movement and therefore mainly work as a shock absorber for the knees.

A trained foot tilts to the inside less. It moves physiologically correct, i.e. the foot performs a rotating movement. This starts at the outside of the heel area and ends with pushing off over the first toe. Hereby the knee is optimally stressed.

The elastic springy kybun sole between the foot and the hard ground enables an active movement of the foot. The musculature is evenly trained and works as an optimal shock absorber.

When changing from a supporting, guiding shoe to the kybun shoe, initial reactions can occur because the weakened foot now stands on an unstable air-cushion. The entire system can be unstable for a moment so that additional stretching stimuli, due to overstress of the foot and leg musculature, can impact on the knee.

The following points are to be noted when major problems in the knee area already exist:

Even when the pain subsides after wearing the kybun shoe, it is important to limit the time of use at the beginning because extended wearing can cause overexertion which can lead to pain after some hours or even the following day.

The training should be slowly increased, i.e. the customer should wear the kybun shoe 2-3 times a day and take it off when pain or irritations occur. When the customer is

without pain, he should continue wearing the kybun shoe for a short time.

### **Tension in the Neck and Headaches**

The main reason for tension in the neck is a monotonous, incorrect seating posture. Due to a rounded back, head and shoulders glide forward. The back and neck musculature is overstressed and becomes tight because it must constantly work against gravity. As there are many shoulder muscles which lead into the head, this can cause headaches. The most important measure is the reduction of «sitting times» to avoid monotonous postures.

Many tasks can be dealt with while actively standing on the kybun mat, e.g. office work at a high desk, making phone calls or preparing meals.

The correct posture is automatically taken up on the elastic springy mat. It is important to pay attention to the height of the high desk so that the shoulders are loose when working at the computer. The arms are on the table at a 90 degree angle when writing with mouse and keyboard. The monitor is positioned so that the eyes are looking straight ahead or slightly downward at the monitor.

### **The kybun shoe:**

- should not be worn too long
- should be worn consciously
- should be used as an everyday shoe only when the foot is sufficiently strengthened
- is a therapy and training device which trains the movement, coordination and balancing ability of the foot



## Summary

Back, hip, knee, foot, and vein pains as well as falls at an advanced age are prevalent. The cause mostly lies in the lack of strength, coordination, and mobility of the foot. Walking on flat surfaces in shoes with (mobility impairing) heels, limits the mobility of the feet and weakens the musculature. The poor footwork when walking, is compensated for by intensive hip work. The unnatural cooperation between the foot motor and the hip motor leads to muscle dysbalances, tension, relieving and incorrect postures, which increase during the course of time. Back, hip, knee, foot, and vein complaints, pelvic obliquity as well as falls at an advanced age are therefore symptoms of lack of daily training on natural ground, for which man is built.

The analysis of the noticeably upright posture of primitive people indicates that

their gait is directly connected to their vigorous footwork which results from regular walking on natural ground. Such people do not only walk more upright but they are also live longer without back, hip, knee, foot, and vein complaints.

The kybun MechanoTherapy by Karl Müller is an empirical knowledge science which has recognized these connections and has developed products which make it possible to bring wellbeing and the effect of the elastic springy natural ground to the everyday life of civilized man.

Standing on the elastic spring base of the kybun mat and walking on the air-cushion sole of the kybun shoe trains the feet minute for minute, straightens the body, relaxes the muscles, spares the joints, and relieves the pressure on the veins.

The integration of the kybun Mechano-Therapy into everyday life strengthens the foot motor so that the hip motor is relieved when walking and the active forces in the musculoskeletal system switch from the hip and pelvis area to the feet. There is a transition to an upright, foot-oriented gait during which the body moves away from the dangerous relieving and bent posture into a complete, natural stretching where all joint movements (e.g. stretching of the knee) are executed completely. The transition to a foot-oriented gait is an efficient measure to achieve a relief of pain for such prevalent medical conditions as heel spur, Hallux, inflammation of the Achilles' tendon and much more. Thereby, not only are symptoms reduced – except for diagnosed illnesses – but causes are also treated.

The kybun shoe trains the musculature and the coordination. Wearing the kybun shoe changes the stress on ligaments, muscles, tendons, and joints. This causes a positive change in the posture and the gait pattern. During the transition, some people can have initial reactions which occur in the form of pain or inflammations.

In this case, the kybun shoe should only be worn consciously for a short time at the beginning but when possible several times a day. Mostly the daily wearing time can be already increased to one to two hours

after a few days. In most cases, the kybun shoe becomes the comfortable everyday shoe after a few weeks.

Detailed background information about such initial reactions and valuable tips for use in problem cases is available on the kybun website [www.kybun.com/en/faq.html](http://www.kybun.com/en/faq.html).

Individual consultation for medical problems is available via the email address: [beratung@kybun.ch](mailto:beratung@kybun.ch)

Should your physician not recommend you the kybun shoe or even advise against it, please refer the physician to us so that our biomechanic or medical specialist can inform him/her about the kybun MechanoTherapy.



*The head office of kybun AG in Roggwil, by Lake Constance (Switzerland)*

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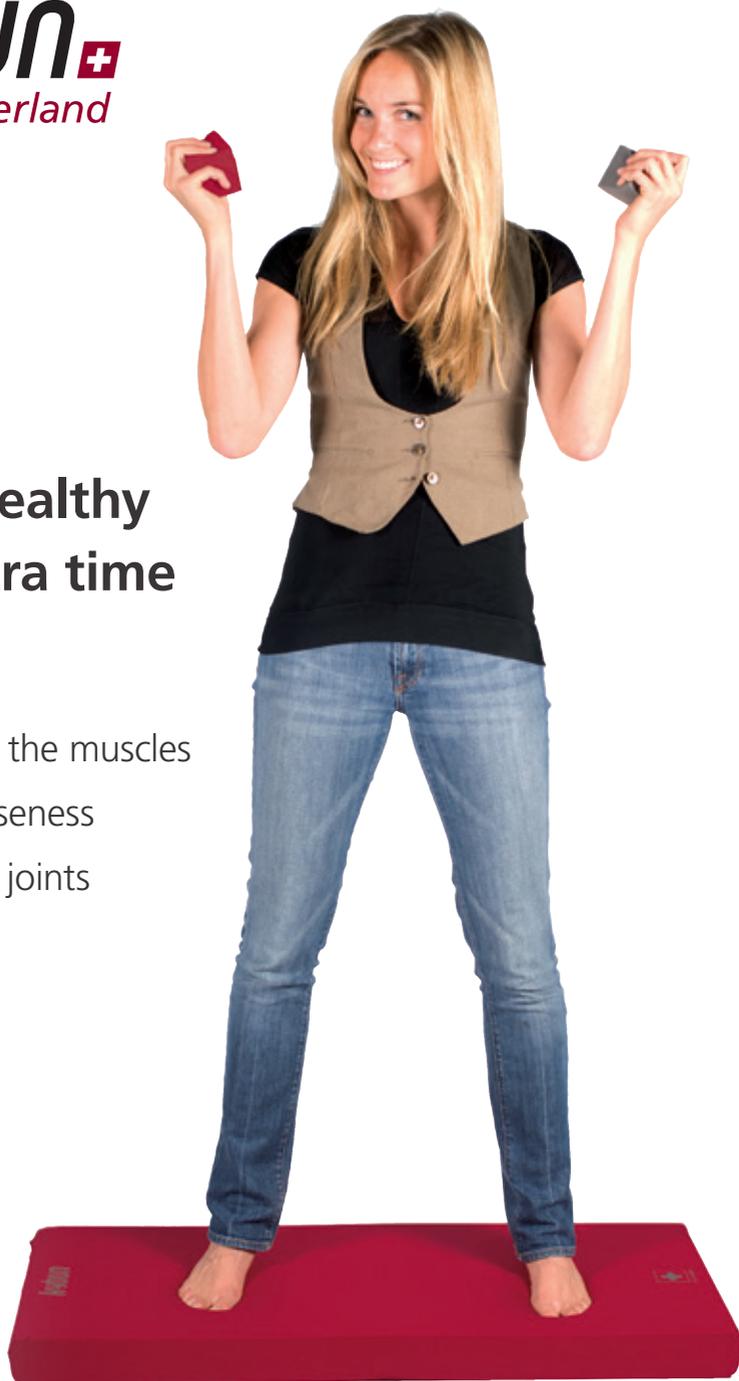
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in no extra time  
at all**

- + Strengthens the muscles
- + Relieves tenseness
- + Kind on the joints



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