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Reflex 36

The Kieser Training Magazine

Strength ...

... for posture

Stop reading for just a moment and think about your posture! Then, continue reading. How would you describe your posture – is it more akin to a wet rag? If so, why not try a small experiment: first of all, raise your shoulders towards your ears, then roll them back and down. Now imagine a piece of string is attached to the top of your head pulling you gently upwards. Your back is straightened and your rib cage is raised. The base of your spine is stretched as far as the pelvic floor with both feet firmly on the ground. You are suddenly aware of muscles working together to straighten you.

You are already demonstrating a stance to both yourself and those around you. The message conveyed is not just one of good body posture. Those who stride upright through life display self-confidence and courage. In contrast, if you let your shoulders sag, you convey a lack of self-esteem or even anxiety. That's why a person who displays courage is described as having backbone. Muscles do indeed strengthen the back but they also allow us to hold our head high and face the world with equanimity.

Muscles bestow on our inner being that expressive strength that allows us to convince those around us. In the final analysis, posture is not just what we have but what we express.

Much of current understanding of health and fitness is still medieval
(Illustrations from "Hieronymi Mercuriulus De Arte Gymnastica Libri Sex", by Girolamo Mercuricole, published in Venice in 1659)

The lack of movement myth

Seemingly all health experts continue to purport the myth that any kind of movement is your key to physical health. This makes it easy for all sorts of fads and trends in sport and fitness to sell themselves, regardless of their actual benefit. Not unlike some medieval recipes for potions.

The healing effect of certain plants has been known for many centuries but it was years before we identified the active ingredients that produced this effect. Finding, preparing and using medicinal herbs was always a ritual affair. Certain herbs could only be plucked at certain times – at full moon or on specific Christian holy days, for example. Their preparation, chopping, cooking and mixing with other ingredients, was accompanied by all kinds of magic spells, prayers and invocations of the spirits. The Middle Ages have bequeathed unto us so many recipes, from which we can clearly see that attendant circumstances and rituals were often awarded the same if not higher importance as the substance itself. Science, progressively on the march forward, gradually did away with all this. Chemists isolated the active ingredients, and industry produced them synthetically in large volumes. The triumphant progress of modern medicine had begun.

If we apply the same logic to our knowledge of physical culture, we soon realise that our current understanding is similar in its extent to Man's understanding of plants in the Middle Ages. Somehow everyone simply "knows" about the health-promoting values of physical activity, but nobody is sure about precisely what produces these effects. Of course there are theories, and theses and other enthusiastic works that do illuminate partial aspects of the "whole". An overall concept, however, has yet to be provided. In practice a dervish-like actionism dominates, as if to say: "Just do something – that's the main thing!" So it can hardly be any surprise that year-by-year, season-by-season, "new" types of sport are thought up, fitness fashions are created and trends sent spinning through the world. It might well be that an inclination to all things "new" and the need for variety is just human nature, but the extent to which this happens betrays its lack of depth. The essence of the matter has not yet been identified – neither by supposed laypeople, nor by the experts that often view their specialist area from an astonishingly narrow perspective.

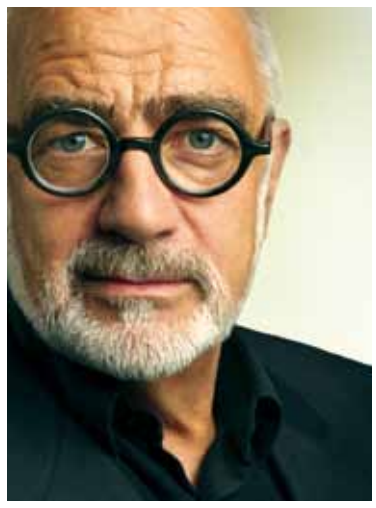
Doctors still recommend "sport" to combat the lack of movement from which we allegedly suffer. However, even this choice of words misses the point. Would you say to the hungry that what they lack is crockery? The problem is not a lack of movement. Movements per se have no intrinsic quality. But because movement – contingent on the earth's gravitational pull – mostly involves overcoming resistance and therefore can trigger a training effect, we have once again confused matters and think that movement in itself is the "substance".

We suffer from a lack of resistance! That is all. Only resistance forces the muscles to tension and therefore triggers a training effect. The notion of complaining about the lack of movement is actually only one of numerous misconstructions[1] in the field of fitness training – but it is possibly the one with the most serious consequences, because it has caused armies of fitness freaks to literally run in the wrong direction for almost 30 years now.

[1] These kinds of misconstructions are common practice. A typical example is the opinion that sweating is "healthy". Here, too, we bestow causal and health-promoting importance on an accessory symptom (which is counter-productive from a physiological point of view).

Excerpt from
"Die Seele der Muskeln"/
"The soul of the muscles"
by Werner Kieser
first published in 1997
to be published in English in 2011

Dear Reader,



20 years ago I decided to take Kieser Training beyond Switzerland. As a first step, I granted a Master Franchise License for my home market to free me up for the new challenge.

Now I want to take direct control again to further develop my concept in its country of origin and will therefore not renew the expiring agreement at the end of this year. No deal could be reached on taking over the existing facilities in Switzerland. These facilities will contnue operations under a new name.

Kieser Training AG will start a new Swiss chain from January 2011. It is our aim to cover the entire country in a few years, including regions where we have not been present to date.

While the proven concept of Kieser Training will remain unchanged, the new facilities will have the newest machines, including types currently being developed. Some conceptual developments of the past years will now be introduced in Switzerland as well. Swiss Kieser Training customers will continue to benefit from access to over 130 facilities across Europe, in Australia and Singapore.

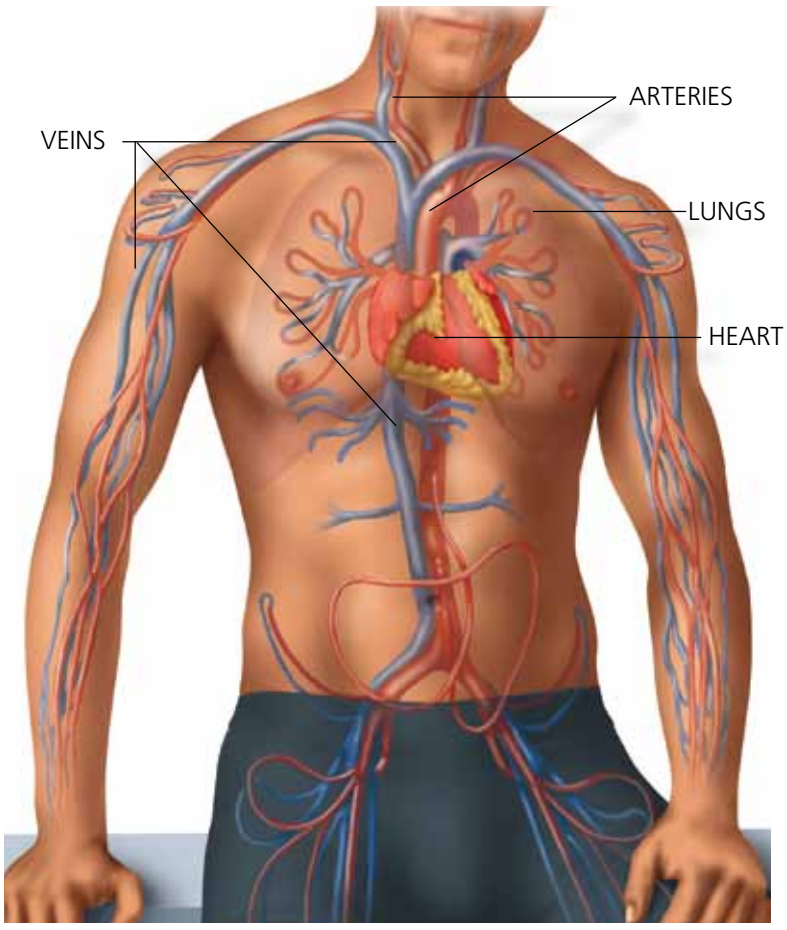
Werner Kieser

KIESER TRAINING

STRENGTH FOR HEALTH

The cardiovascular system: it's all down to one muscle

When it comes to muscle interaction, there's one muscle that dictates the pace – the heart.



The heart is our most important muscle; it works continuously and pumps blood through the body. This flow of blood allows oxygen and carbon dioxide, nutrients and metabolic products, hormones and immune cells to circulate through the vascular system. In so doing, it regulates the heat of the body.

Pump the size of a fist

The heart is about the size of your fist and weighs 350 grams. Every day, it transports about 10,000 litres of blood through the body and adapts the speed of its beat to the level of physical activity. At rest, the heart only needs to beat 60 to 80 times per minute, whereas the pulse rate for an adult can increase to 200 beats per minute when using the muscles required for walking, climbing stairs or doing strength training. The greater the effort, the faster the heart has to work in order to provide the body with everything it needs. As with other muscles, regular training increases the strength of the heart muscle. A trained heart works more efficiently; stroke volume increases and pulse rate drops. This means that the heart has a longer period in which to rest between two contractions and blood flows more easily through the heart muscle.

Illustration: © Holger Vanselow

Miles of tubing

In addition to the heart with its role as our central pumping station, the circulatory system for the blood comprises a vast network of arteries, veins and capillaries with a length approaching 140,000 kilometres, i.e. about 87,000 miles. The fine capillary vessels are responsible for the exchange of nutrients and gas between blood and cells. Despite this enormous length, it takes no more than one minute for arteries to transport oxygen-rich blood to every single cell. The oxygen is transported by red blood cells – so-called erythrocytes, which contain haemoglobin capable of binding gas molecules.

Completion of the cycle

After that, the oxygen-depleted blood flows back through the veins into the heart and on to the lungs where it absorbs more oxygen before it returns to the heart and is again pumped into the cycle. We have some five to six litres of blood flowing through our enormous vascular system at all times and what makes this possible is blood pressure. Blood pressure is quoted as a maximum and minimum figure – depending on whether the heart is contracting or relaxing. The ideal is a resting blood pressure of 120/80 mmHg although rates of up to 130/85 mmHg are normal.

Erratum Reflex 35, Page 2

The last edition had an error in the legend for the diagram showing mitochondria. During the metabolic process, glucose and oxygen are converted into water and carbon dioxide, and not nitrogen.

What is the actual effect of Kieser Training on ...

... the cardio-vascular system?

Endurance training used to be default for those wanting to strengthen their heart and circulation and protect themselves from illness. However, strength training also provides the desired effect.

For a long time, the protection for the heart provided by machine-based muscle training went almost unnoticed. However, there is increasing scientific evidence that strength training is beneficial not just for our musculoskeletal and metabolic systems but for the cardiovascular system as well. As a result, strength training is now regarded as an essential part of prevention and rehabilitation programmes for patients with cardiovascular problems. No wonder, because its range of effects is considerable.

Increasing muscle efficiency reduces the strain on the heart

Trained muscles provide more support for the body and its movements; the body becomes more efficient. Trained muscles, unlike untrained ones, need to activate fewer fibres and so increases in pulse rate and blood pressure are less. The heart needs less oxygen and so strong muscles can protect the heart by reducing the strain on the heart in daily life.

A strong heart improves performance

Studies have shown that regular strength training also improves endurance. It improves oxygen intake. The left ventricle fills more quickly and so the stroke volume is increased. At the same time, the resting heart rate – an indicator for endurance fitness – is lower.
In addition, strength training improves the absorption of blood sugar into the muscles. For those with diabetes, this improves metabolic control and reduces the risk of a heart attack or a stroke.

Endurance training versus strength training

In contrast to endurance training, moderate strength training puts less strain on the cardiovascular system. The heart rate and hormonal stress levels remain lower and even the increase in blood pressure is only moderate (and less than during endurance training), provided we observe the following rules: avoid forced exhalation, do each exercise slowly and without jerking, do 9 – 12 repetitions at medium intensity and don't clench the fist excessively.

To sum up: strength training done correctly is good for the heart and a valuable adjunct to endurance sport.

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Doctor's Tip

What to do about high blood pressure?

High blood pressure is one of those insidious diseases that is only evident when it's too late. All you can do is check your blood pressure regularly and if in doubt consult a heart specialist. If blood pressure exceeds the normal rate of 130/85 mmHg, you are at greater risk of a heart attack or stroke The other main risk factors are being overweight, with too much fat around the abdomen, higher than normal levels of blood fat, smoking, higher than normal levels of blood sugar and an incidence in the family of heart attacks and strokes. For 90% of patients with high blood pressure, the causes are genetic disposition and life style.
You cannot change your genes but you can change your life style. Start by changing it – preferably before you need medication.

- Stop smoking. Smoking is the greatest self-inflicted risk.
- Try and achieve a weight where you feel good. Consume high-quality vegetable fats with a high percentage of unsaturated fatty acids.
- Take regular exercise. This maintains the elasticity of blood vessels and aids weight control: if possible walk or cycle and when you can avoid using the car, lifts or escalators. In addition, do some sport.
- When you exercise outdoors, you absorb vitamin D through your skin. Vitamin D is needed not just for strong bones but also for muscles and blood vessels. This absorption of vitamin D can reduce blood pressure in the same way that medication for high blood pressure does.
- Strength training creates the foundation needed for healthy (endurance) sport. The increase in muscle and strength aids movement and also protects the musculoskeletal system from injury. In addition, strength training is extremely good for your vascular system: For those with high blood pressure, strength training reduces resting blood pressure by an average of 5 mmHg.

If despite doing the above, you are unable to control your blood pressure, you will need medication to avoid a stroke or heart attack.

Dr. med. Martin Weiß
GP and specialist in chirotherapy and Medical Strengthening Therapy

Machine of the Month – B1

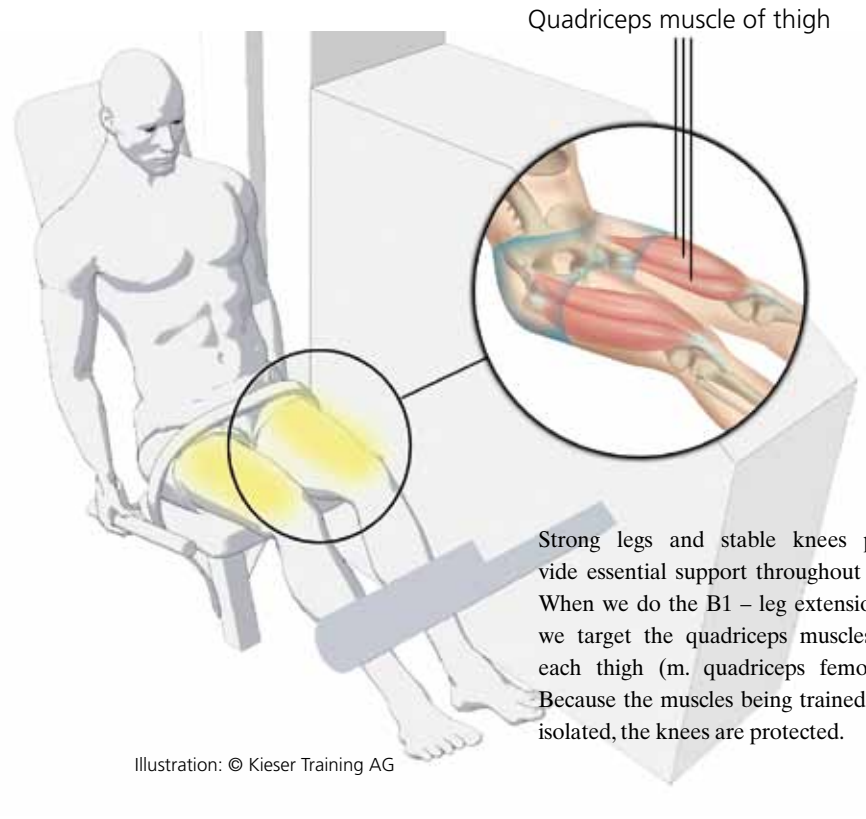


Illustration: © Kieser Training AG

Strong legs and stable knees provide essential support throughout life. When we do the B1 – leg extension – we target the quadriceps muscles in each thigh (m. quadriceps femoris). Because the muscles being trained are isolated, the knees are protected.

This exercise is included in almost all programmes for newcomers. It is simple to do and so beginners can concentrate fully on doing the exercise correctly and smoothly.

At the start of the exercise, the legs are bent. To do the exercise, straighten the legs fully. During the entire exercise, keep the legs rotated outwards slightly by 20° – 30° with toes pointing towards the knee. Hold this position for 2 seconds – for muscle strengthening this is particularly important. We rarely use the muscle in this position and so it is often weaker at this point. At the same time, this phase also extends the antagonists, i.e. the biceps muscles of the thigh (m. biceps femoris).

In terms of effective training, it is important to continue this exercise until you can no longer complete a full repetition.

Expert's Tip

During the first 20 training sessions, the main aim is to get used to doing the exercises and so increasing the weight is not paramount. Here we gradually attune muscles, ligaments and tendons to the load and getting used to doing the exercise correctly.

During this phase, the 60 – 90 second period can be exceeded as you are not yet training at full intensity. Even when you first start, try to avoid giving help to the muscles being trained, i.e. don't wriggle or turn/swing the body and make sure that all other muscles are relaxed. This applies particularly to facial, neck and hand muscles – as they are all too keen to take part in every single exercise.

Many newcomers to training ask about breathing during the exercise. The rhythm of your breathing does not have to be the same as the rhythm of

the exercise. The two important things to remember are to continue breathing and to avoid forced exhalations.

During this phase, the main aim of training is to correct the so-called strength curve for the main joints and to restore full range of motion.

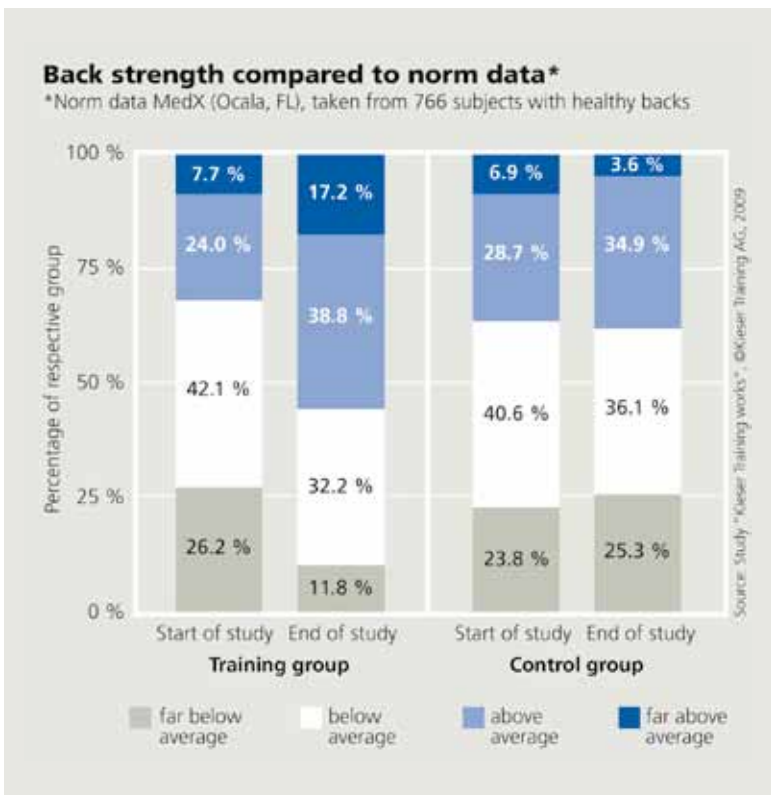
Ulrike Reitmann
Research Department Kieser Training

Back strength – the key to life without pain

We need strong muscles for everything we do – whether it is laughing, climbing stairs or going shopping. However, of particular importance are muscles that we use in daily life but of which we are often unaware: our lower back muscles. These muscles ensure that we can stand up and walk. If they are weak, the spine loses its main support. The result is back problems that are sometimes extremely painful. The study "Kieser Training works" involving 531 participants demonstrated that Kieser Training effectively strengthens this important muscle group. After training for six months, participants had increased the strength of their lumbar muscles by an average of 24%.

The study measured the strength of lumbar muscles, i.e. the back extensors. The results were compared with norm values calculated by the University of Florida adjusted for age and gender. The comparison showed that within six months, the percentage of those with "below average" or "significantly below average" strength had dropped from 68.3% to 44.0%. After training for 6 months, more than half of the cohort displayed strength levels above the norm for their age and gender.

A more detailed look at the distribution showed that the percentage of those with "significantly below average" strength levels had more than halved during the period of the study. In other words, the number of participants with a very high risk of pain had declined by 55%. In contrast, the strength levels of those in the control group who did not train remained the same during this period.



The results were no surprise. Back in 1995, Nelson et. al. conducted a study involving 600 people, which showed that strength training on therapy machines not only strengthened lumbar muscles but also reduced back pain in the long term. 79% of patients recorded a reduction in pain.

However, once we have achieved those initial training gains, it's important that we don't then neglect our muscles. If we do not continue with regular training, we gradually lose the positive effects of training. Having completed Medical Strengthening Therapy, it's important to train independently twice a week to ensure that muscles remain strong and are not a barrier to an active, pain-free life.

5 questions ... about strength

What is strength?
In physics, strength is mass x acceleration. In terms of training practice, strength is the ability to a contract a muscle against a resistance, i.e. to ability to generate muscle tension.
A resistance can be lifted (dynamic strength), held (static strength) or lowered in a controlled manner (eccentric strength). In our everyday life, we rarely do just one of these in isolation. We mix them. This is what happens with Kieser Training: we lift, hold and then lower the weight.

Does a muscle always produce the same strength?
A muscle is unable to produce a constant strength throughout any given movement. Muscle tension varies depending on whether a joint is being flexed or extended. For example the biceps muscle: when the arm is almost fully extended, the maximum level of strength is low; as we bend the arm, strength gradually increases and is at its maximum when the elbow is roughly at right angles. After that, if we continue to flex the arm, tension in the biceps declines. Most people have a strength deficit in the final phase of the contraction. We can test strength to identify individual weaknesses and then display them in what is known as a strength curve.

Is there more than one type of strength?
In principle, there is only one type of strength: maximum strength. However, in the science of training, a distinction is made between maximum strength, explosive strength and strength endurance. For explosive strength and strength endurance the time under load plays a role: strength endurance is the ability to hold or move a heavier weight for a longish period, i.e. not to fatigue too quickly. In contrast, explosive strength is the ability to develop strength as quickly as possible, i.e. to do an explosive movement. Both types depend upon maximum strength.

So what is maximum strength?
Maximum strength is the highest possible tension that a muscle can generate when working against a resistance. In order to obtain useable measurements for scientific and medical purposes, we need to do a static test of maximum strength. In the Medical Strengthening Therapy used by Kieser Training, we measure the maximum strength of say the deep back extensor muscles in 7 different positions. This produces a strength curve showing where the muscles are weak. It allows a comparison between ACTUAL and IDEAL strength levels so that we can also measure training gains.

Is the strength limit the same?
No: if you train, you gradually increase your maximum strength. Your strength limit is your personal limit. This is determined by genetic factors. If the weight is increased regularly, providing an adequate training stimulus, maximum strength will continue to increase. However, after regular training over 18 – 24 months you will reach your final strength level. After that, you only need a limited amount of training to maintain that level of strength. You should not confuse an increase in strength with an improvement in coordination: Training improves the interaction between individual muscles and the interaction between individual fibres within the same muscle. Both increase the achievable strength.

Column

In philosophy, health is that desolate limbo where we fear the worst. In the same way that we cannot avoid growing old, we cannot avoid illness. We can only enjoy anything approaching a happy life if we accept death as a fact of life or as Martin Heidegger expressed it as a determining principle of life. Moreover, health itself can only be enjoyed, if we accept illness as an unavoidable part of life. The correct interpretation of the term self-care is not to ignore illness but to integrate it into our life. As Nietzsche quite rightly wrote, the problem that Man faces is not suffering itself but the lack of an answer to that querulous cry "why do we suffer"? According to Nietzsche, humans suffer primarily from the "illness" of wanting nothingness rather than not wanting. The only way to cope with the human suffering caused by this lack of meaning is not to want, i.e. neither something nor nothing! Only if we free ourselves from any notion of what life should be can we embrace what life offers; in other words, only if we expect nothing and demand nothing from life can we find what is hidden beyond the edge of the path.

Dr. Siegfried Reusch, Editor in chief of journal "der blaue reiter" – Journal for Philosophy" www.derblauereiter.de
www.verlag-derblauereiter.de

Kieser Training – "ripe for the museum"?

Kieser Training is one of the exhibits in the "Magic Mountains – Switzerland as Energy Centre and Sanatorium" exhibition running at the Landesmuseum in Zurich until 15th August.

The exhibition, curated by Felix Graf from the Swiss National Museum and Eberhard Wolff from the Institute and Museum of the History of Medicine at the University of Zurich explores the image of Switzerland as a paradise for health – beyond just traditional medicine and pharmaceuticals.

Sanatorium of Europe

For centuries, civilised man considered the Swiss mountains as uninhabitable. Only those who grew up there could withstand the high-altitude air trapped between the mountains. The poor quality of the water was blamed for the high incidence of conditions like goitres and doctors were unanimous in the belief that the consumption of milk and its products made people fat, lazy and stupid. However, this image changed at the beginning of the 18th century and Switzerland transformed itself into the "sanatorium of Europe" .

The "Vital force" sanatorium on the Zurich mountain in its opening year of 1904
Photo ©: Bircher-Benner Archive, University of Zurich.

The four magic mountains

The exhibition takes visitors through the four "Magic Mountains" . In 1900, the term Magic Mountains was adopted as the brand name for Switzerland as "health paradise" and the symbol of its identity: Firstly, the "Magic Mountain of Vaud" with the Leysin Mountain Clinic where thousands of soldiers were treated for tuberculosis.
Secondly, the "Magic Mountain of Grison" with the Davos forest sanatorium, a luxurious site that attracted pilgrims for periods of weeks, months or even years for the high-altitude treatment for tuberculosis. Thirdly, the "Zurich Mountain" with the Vital Force sanatorium founded by Dr. Max Bircher-Benner, a Mecca for the wealthy and famous and the origin of the famous Swiss Muesli – Muesli being the only Swiss-German word to have found its way into the global vocabulary. And finally, the Magic Mountain of Ticino that was also home to the back to nature colony Monte Verità (Hill of Truth).

Switzerland as Energy Centre

The exhibition then looks at natural remedies through the elements of light, air, water and altitude. It explores "Made in Switzerland"-branded products such as Ovaltine, Rivella, Ricola and Rausch and finally strength training. The Energy Centre honours Werner Kieser as a Swiss pioneer in modern strength training, following in the tradition started by the Swedish doctor Gustav Jonas Zander (1835–1920) and the Austrian Max Herz (1865–1956). Zander's system of mechanical therapy was used until 1930 in Swiss clinics, health spas and the private homes of the wealthy. It used seemingly archaic strength training equipment with terrifying names such as the torso massage machine and rocking saddle from which we can guess that strength training was not something for the faint-hearted. Somewhat bizarre was the "Clias Helmet" invented by the Swiss father of gymnastics Phokion Heinrich Clias (1782–1854). This was a modified fireman's helmet designed for strengthening neck muscles. Visitors are invited to try the latest generation of Kieser Training machines so that they can experience the extent of progress made. According to the Exhibition Catalogue, Kieser Training is seen outside Switzerland as an expression of the trustworthy nature of Swiss health products.

Left: "Apparatus for torso hacking", right: "Jolting saddle" by Gustav Jonas Zander (1835-920)

"Clias Helmet", a modified fireman's helmet used in the 1880s to strengthen neck muscles. Museum of Swiss Sport, Basle.

www.zauberberge.landesmuseum.ch

The Pasta Principle is not enough

During the World Cup in South Africa, Kieser Training customer and celebrity chef Holger Stromberg is catering for the physical wellbeing of the German players – and is also serving up some dietary wisdom.

Mr. Stromberg, you celebrate cooking as an art. What can we discover if we look beyond just the food on the plate?
First of all, you do need to take a quick look at the food on the plate as it soon disappears. Despite what many of my guests claim, I do not regard cooking as an art. Rather, I see it as a skill that is primarily a craft. I am seeking to change food culture in Germany and make it a pleasure. For example, this includes the ambiance. I am not a traditional chef in that I do escape the confines of my white-tiled kitchen.

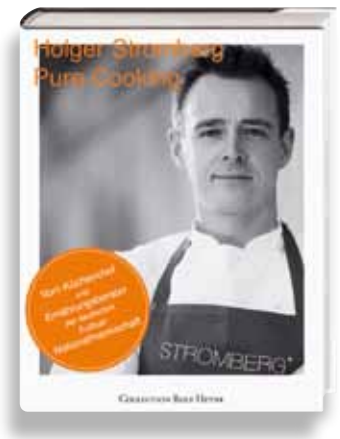
So you are not just heating up pasta for the national team?
Unfortunately, the school curriculum in Germany rarely includes nutrition and so I want to encourage players to think about what they eat. To do this, I have established a culture of communication within the team and made many changes, including the rehabilitation of pulses. We should pay attention to what we eat. It's worth it – after all, it's our No. 2 source of energy after oxygen.

Is pasta still on the menu before a game?
Of course, we still have pasta. However, not just any old pasta! Players consume their final ration of carbohydrates 3 ½ hours before a match. If the pasta is made from white flour, players quickly consume this energy and have insufficient to last the game. Wholemeal products, on the other hand, provide a longer lasting store of energy. However, other things must also be right as a poor diet will cause physical problems in the long term. Top performance is only possible if the energy mix is right.

What do you regard as the perfect energy cocktail?
Football is first and foremost an endurance sport – strength is important but it is secondary. As a result, the footballer's diet must contain in descending order of priority complex carbohydrates, protein and finally fat. However, if we want to train strength and just strength – as with Kieser Training – we need to reduce carbohydrate intake, i.e. bread, pasta, rice and potatoes and focus more on animal and vegetable proteins, i.e. eggs, tofu, pulses, nuts, fish, meat and poultry. Although fat is an essential source of energy many of us eat too much unhealthy fats. We need to develop a sense of our own body so that we instinctively know what it needs and what does it good.

You have personal experience of that ...
Unfortunately! When I was younger I paid little attention to my own diet with the result that even now I still suffer from joint problems. In addition, during the years I was building up my business I gave up all sport. Working 16-hour days, my muscles and good posture disappeared down the drain. A year ago, I made tracks for Kieser Training in serious pain and with feeble muscles. The improvement, even after the first training session, was incredible.

Please note: This interview was conducted before the World Cup Finals



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