

# Reflex 35

The Kieser Training Magazine

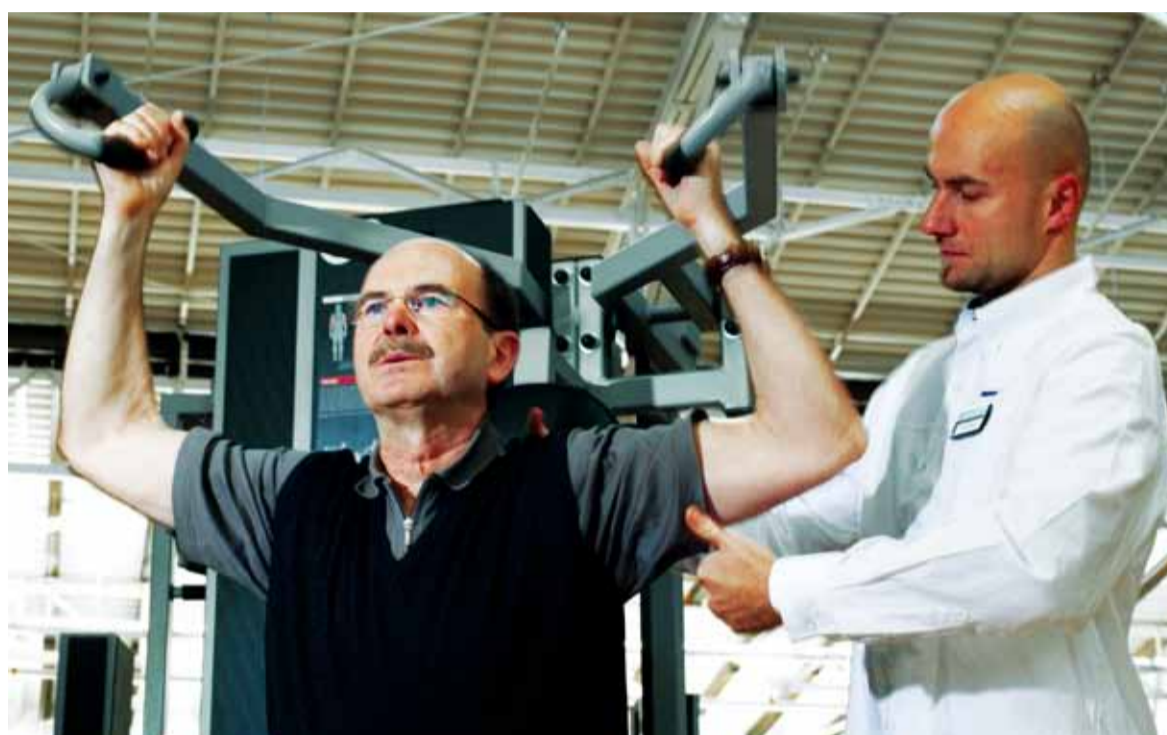
## Strength training ... ... increases vitality

A tricky question: Can you save time? Even the Michael Ende character "Momo" had to deal with this dilemma: The little girl in the novel fought bravely against the time-thieves who tricked people out of their time and so forced them into a vicious circle of ever shorter days – a feeling all too familiar to all of us! We feel that time is constantly running out, creating an energy void that robs us of our strength – a void that we then seek to fill by increasingly frenzied activity. As a result, time seems so valuable that we find it far too precious to spend on strength training. However, this is tackling the problem from the wrong end.

The investment in Kieser Training is definitely worthwhile: Not only does it strengthen our muscles but it also boosts our energy levels. More than 50% of those participating in our study "Kieser Training works" reported that training eliminated stress and 83 % found that the time doing strength training provided a welcome respite from the hectic pace of everyday life.



**The result: Thanks to strength training we increase our output at work, play and in everyday life. This, combined with the fact that debilitating symptoms disappear and blood-sugar levels improve, means that we feel more energetic. We have more strength to carry less weight: this not only makes "jumping for joy" easier, but virtually doubles our vitality levels.**



Study participant Hans-Ulrich Meißner going through his supplementary programme in Medical Strengthening Therapy  
Photo: © Kieser Training/Götz Schleser

## Kieser Training works

**Less pain, more strength, better productivity: Participants in the study "Kieser Training works" started out with differing goals. After six months, almost all of them said: Kieser Training works!**

Back in January 2009, Kieser Training set out to verify its effectiveness with a unique multi-centre study involving 531 volunteers in 119 facilities across the whole of Germany. It recruited the volunteers through advertisements throughout the country, expecting a couple of thousand applicants given the degree of confidential information that was required from them.

The response of 49,000 volunteers was far more than Kieser Training had bargained for, but was also a potent demonstration of how much trust the brand has, even among non-customers, as a serious player in the health market. "This put Kieser Training in a unique position to conduct a highly valuable study into the workings of strength training by collecting enormous amounts of data across a whole country with its standardised procedures. If a university tried to emulate such a study, the cost would simply be prohibitive," said Prof. Dr. Dietmar Schmidtbleicher of the Institute for Sports Science at the

Johann Wolfgang Goethe University of Frankfurt, who was a member of the independent scientific panel that accompanied the study.

The 531 volunteers of all ages and backgrounds, some with serious musculoskeletal problems, others quite fit but not into strength training, set out to train twice a week for six months. They were regularly monitored on their progress, both objectively in terms of strength and mobility, and subjectively on how they felt they were benefiting from the regime. (please refer to page 3 for detailed results on pain reduction and go to [www.kieser-training.com/quality/study](http://www.kieser-training.com/quality/study) for more detailed information on the study).

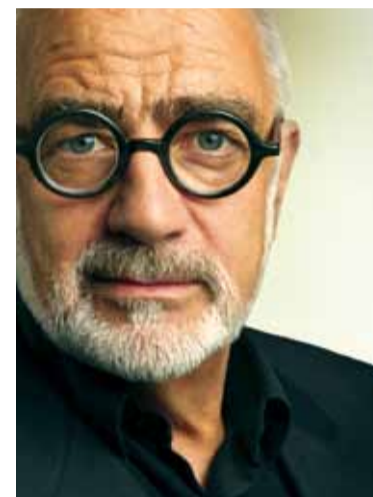
"To walk again without injections," was what Hans-Ulrich Meissner wanted. After a prolapsed disc a couple of years earlier, the 65-year-old just could not get rid of the pain. Instead of spending time on his beloved golf course, he regularly went to his doctor for an injection into his

lower back – but that usually only helped briefly.

"Not surprising, because 80% of all back pain originates in weak spinal muscles. Only the symptoms are usually treated, not the origins of the pain," said Dr. Sven Goebel, Head of Research and Development at Kieser Training HQ in Zurich, Switzerland. "The best remedy is clearly targeted strengthening."

With Medical Strengthening Therapy, Meissner improved the strength of his deep lumbar spine muscles by 55.4 per cent in the six months of the study he had volunteered for. "Since training with Kieser, I no longer need any injections. The persistent back pain has disappeared," said the self-employed engineer. "I had already said farewell to my dream of ever playing golf again. But recently, I was able to play a round – with no problems at all."

## Dear Reader,



Strength training for health purposes provides the basis for a healthy life. It strengthens muscles and combats back pain, osteoporosis and metabolic disorders. It also increases our productivity. In short: Kieser Training works.

Our nation-wide study in Germany last year enabled us to scientifically confirm what we already knew from countless customer feedbacks. The results speak for themselves: at the end of the 6-month period, the level of pain experienced by participants had dropped by an average of 36%.

That was no surprise to us. Strength training allows you to tackle the origins of your problems and to make your body more resilient. These stronger muscles will be particularly effective in protecting sensitive areas, such as intervertebral discs and your spine as a whole.

We also welcomed the fact that 98 % of participants were satisfied with our training. This evidence should help establish strength training as an activity as common as brushing your teeth. Kieser Training may not be particularly fun, but it will make you happy!

**Werner Kieser**

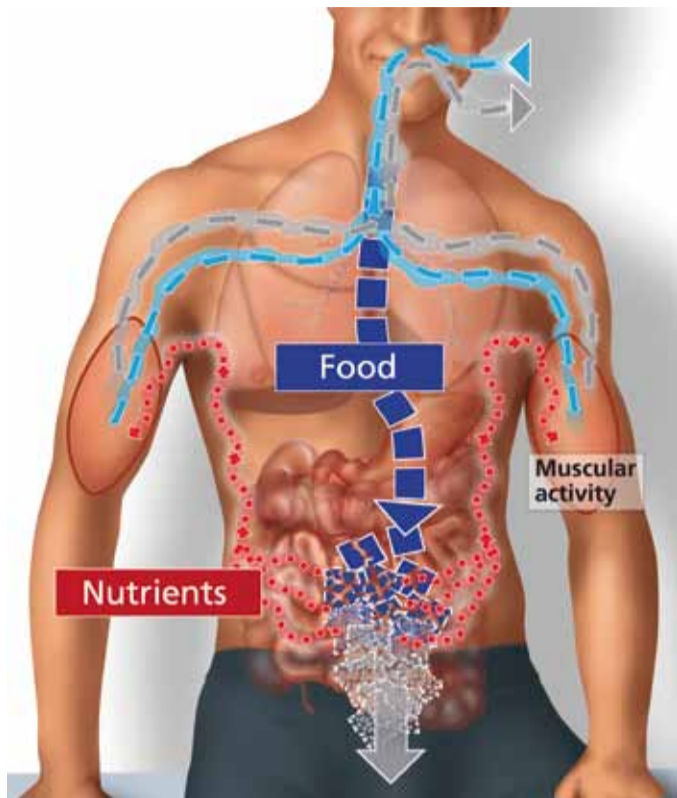
# KIESER TRAINING

STRENGTH FOR HEALTH



# Metabolism: Life's engine

Without metabolic processes life would not exist – they are an essential control mechanism providing the body with energy.



The term “metabolism” comes from the Greek for change and relates to the process of transformation occurring in the body. The nutrients contained in our diet are released

into the mouth, stomach and intestines where they are broken down into individual components and then transported by the blood to the relevant target organs, where they are transfor-

med, re-processed or absorbed. This complex interaction is controlled by hormones and enzymes and it serves to build up, maintain and clean substances in the body. Our metabolism is therefore a permanent flow of energy and substrate.

### Mitochondria – miniature power stations

This process results in the creation of new cells, hormones and blood components. It also supplies the mitochondria responsible for energy production. These miniature power stations are found in every cell in the body – the more metabolically active a cell the more mitochondria it has. Between 1,000 and 2,000 of these minute energy plants can be found in each and every muscle cell. A trained muscle cell has twice as many mitochondria as an untrained one and can thus generate considerably more energy.

Individual nutrients in our diet use the metabolic process in different ways: carbohydrates are converted into various monosaccharides (simple sugars); proteins are converted into amino acids and fats into smaller fat units.

### Carbohydrate metabolism: “turbo-charge” for the brain and muscles

Our digestive tract breaks down bread, pasta or muesli into glucose and the resultant monosaccharides are then delivered to the blood. They provide a quick supply of energy always available to cells and muscles and are particularly important for the brain.

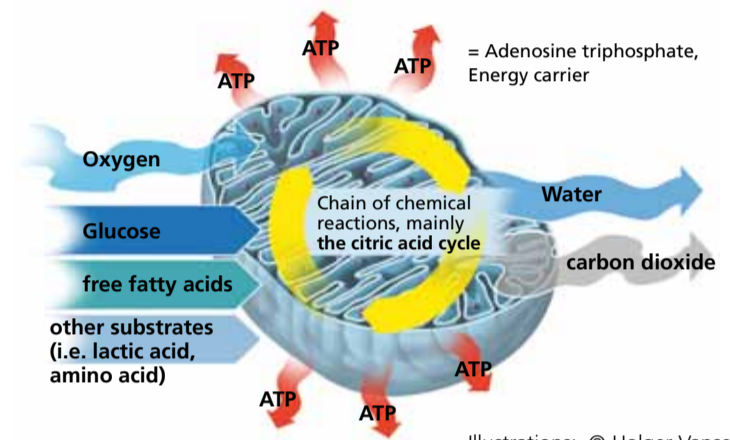
### Protein metabolism: the cell architect

Some 20 % of the human body consists of amino acids; they help to build and repair our body cells. Nine

of the twenty amino acids are essential, i.e. the body cannot manufacture them itself and relies on our diet to provide them.

### Fat metabolism: an inexhaustible energy store

Despite their bad reputation, fats are essential for bodily functions and with their high calorific value they are our greatest source of energy. Unfortunately they can be stored in almost unlimited amounts and the consumption of too many calories results in fat deposits that are dangerous to health.



Illustrations: © Holger Vanselow

## What effect does Kieser Training have on ...

### ... your metabolism?

Strong muscles not only help us run faster, jump higher and lift heavier weights but as our largest metabolic organ they – along with the liver – play a key role in ensuring that our sugar and lipid metabolisms work correctly.

#### Basic metabolic rate – energy metabolism at rest

At rest, the body needs some 1,500 – 2,000 kilocalories per day, i.e. the amount required to maintain vital functions. This is known as our basic metabolic rate and muscles on their own account for 20 – 40 % of this figure. This daily energy consumption is closely related to the percentage of muscle in the body – the more muscle we have the higher the basic metabolic rate.

#### Energy consumption during strength training

Strength training has a direct effect on our calorie requirements. Studies have shown that 30 minutes of muscle training can increase calorie consumption in women by up to 200 kilocalories and in men by up to 300 kilocalories.

#### Energy consumption after training

In addition, there is the so-called after-burn effect. Even after we have finished training, metabolic activity remains higher and more energy is used. This is because the regenerative mechanisms occurring in the body also require energy. Studies have shown that the increase in consumption during the first 15 minutes after training is 14 kilocalories and up to 23 kilocalories in the first hour, i.e. the more intensive the training the greater the after-burn effect.

#### Reduction in blood fat levels and body fat

However, muscle training has a positive effect on more than just calorie consumption. It also aids fat metabolism: Scientific studies have

level of HDL cholesterol beneficial HDL and reduces the LDL cholesterol detrimental LDL. It was also discovered that the calorie consumption resulting from a higher basic metabolic rate, training and after-burn reduces the percentage of body fat.

#### The bottom line

Strength training can even have a positive effect on those with a metabolic syndrome, i.e. where the metabolism is disturbed. This is because it has an effect on the dangerous vicious circle of obesity, high blood pressure, high cholesterol and high blood sugar levels. In addition to changes in diet and doing endurance training, muscle training can also reduce the risk of heart attacks, strokes and diabetes.

## Doctor's Tip

### What to do about adult-onset diabetes ...

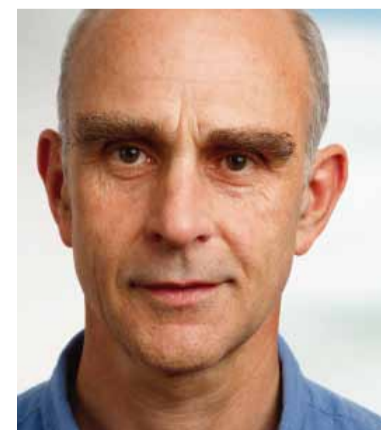
Type 2 diabetes mellitus is frequently known as adult-onset diabetes. However, a more appropriate term would be “inactivity diabetes” because it has little to do with age. The major causes are poor diet and not using skeletal muscles enough to achieve muscle fatigue. This explains why the sugar metabolism of young adults and even children is increasingly out of kilter.

When we eat, the pancreas releases insulin. Insulin acts as a messenger and “unlocks” special receptors in muscle and other body cells, allowing them to absorb glucose. In this way energy is delivered to the mitochondria. For those predisposed to “adult-onset diabetes”, the sensitivity of insulin receptors is reduced, whereby the level of this reduction is directly related to the level of muscle usage: The less demands we put on muscles, the more resistant cells become to the message relayed by insulin and so cells are less able to absorb glucose. Excess glucose in the blood is converted into fatty acids and deposited as fat in the body. The pancreas seeks to compensate this by producing more insulin. However, the oversupply of insulin slows down the catabolic process that breaks down fat deposits and also damages blood vessels. If blood sugar and insulin levels are too high, there is an increased risk of heart attack or stroke.

Although medication can increase insulin production in the pancreas or increase the sensitivity of muscle cells to insulin, the results are purely cosmetic in that it only deals with the symptoms – with uncertain effects for health.

As a doctor, my recommendation is that you be proactive: The best “medication” against diabetes – irrespective of age – is intensive strength training combined with sustained exercise and a healthy diet! This reduces blood sugar and insulin levels and so significantly reduces the risk of illness.

If you have any questions, please ask the doctor in your Kieser Training facility who will be pleased to advise.



Dr. med. Martin Weiß  
GP and Specialist in Chirotherapy and Medical Strengthening Therapy

## Reflex

### Publisher

Kieser Training AG  
Kanzleistrasse 126, 8026 Zurich  
Switzerland

### CEO

Michael Antonopoulos

### Editor

David Fritz  
reflex@kieser-training.co.uk

### Regular Contributor

Michaela Rose

### Layout

Fritsch Publishing  
St.-Paul-Strasse 9, 80336 Munich  
Germany

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## Machine of the month

# Lumbar-Extension-Machine

We can improve or even eliminate the problems associated with a loss

of muscle mass caused by physical inactivity and a lack of resistance by specifically strengthening the back muscles that stabilise the spine.

The Lumbar Extension Therapy machines provide effective training for muscles that are very difficult to target.

Normally when you straighten your back, the erector spinae muscles do not work on their own but work with the gluteal and leg muscles in what is known as a muscle chain (refer to article “5 Questions on ...”). On the LE machine, they can't work with other muscles. The LE machine has a special restraint system consisting of pelvic roller pad, foot rest, thigh pad and thigh belt. This ensures that the auxiliary muscles are “deactivated” and the exercise is done solely by the erector spinae muscles. By isolating the muscles, we can target the erector spinae and so strengthen them. This is why therapy is so effective and successful.

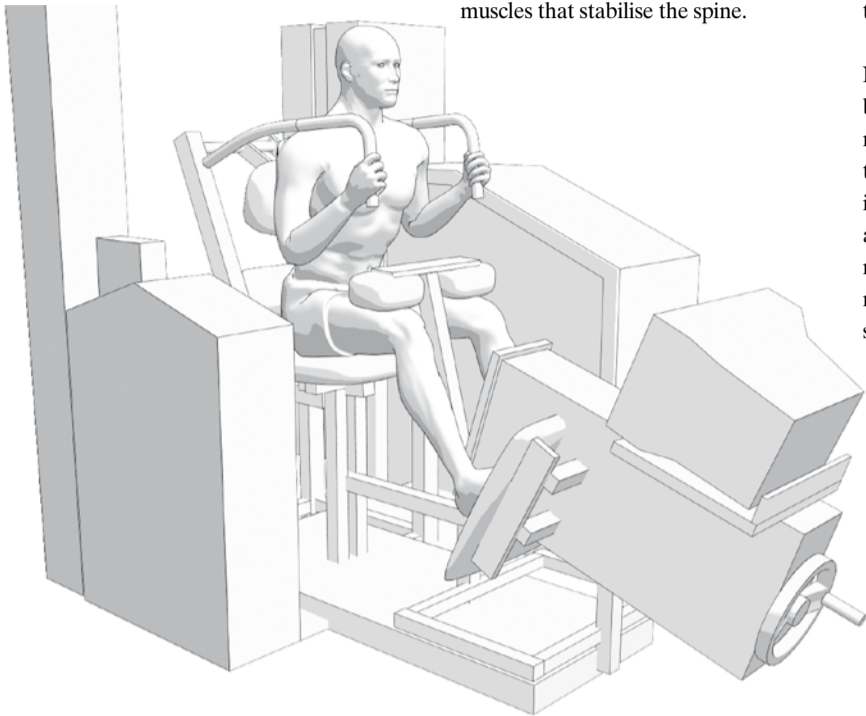


Illustration: © Kieser Training AG

## Expert's Tip

Do you suffer from chronic back pain, facet joint dysfunction, prolapsed disc or nerve-root irritation? You don't have to – in 8 out of 10 cases, the cause is weak erector spinae muscles, the deep back extensor muscles that keep the spine erect and stable.

To train these muscles, I recommend Medical Strengthening Therapy: The medical professional at your facility will design a special programme based on a precise diagnosis of the strength of your erector spinae and the range of motion of the spine. During subsequent training, you will be accompanied by a therapist.

A recent study showed how effective therapy is: After just three months, participants in the study reported a 36% reduction in pain intensity and a reduction of 42% in the impairment caused by that pain. Many patients reported reduced pain after just three sessions – if we can break the vicious circle of pain followed by exercise



avoidance to minimise that pain, we can increase strength levels exerted in both training and daily life.

For more information, please contact the Medical Strengthening Therapy Department in your facility.

Dr. Sven Goebel, Research Department Kieser Training

## Latest research – pain

### Strength training reduces pain by an average of 36 %

In the study conducted under the banner “Kieser Training works”, Werner Kieser demonstrated the effectiveness of his method of training (refer to cover page). One of the most interesting results was the positive effect that strength training had on the participants' vulnerability to pain. The study, conducted by the Research & Development Department of Kieser Training, involved 531 participants from the 119 Kieser Training facilities in Germany who trained twice a week for 6 months under normal training conditions. At the start of the study, 8 out of 10 participants had painful symptoms. By the end of the 6-month period, 42 % had eliminated their pain completely. To collect the required data, we used self-assessment

questionnaires. Participants were asked to indicate on a scale of 1 to 6 the level of physical pain in the preceding four weeks. On average, participants recorded a drop of 36 % in their pain levels during the course of the study.

Physical pain is important in everyday life because it acts as a warning and so helps the body protect itself from further damage. Our instinct, particularly with back pain, is to avoid any movement that triggers pain. However, in most cases, this means that we adopt an unbalanced posture. Certain muscle groups are put under undue strain and so become tense. This intensifies the pain and the result is a vicious circle. If we rest the spine, our muscles are not subject to an



adequate load. They become weak and are no longer able to work properly. Well-trained muscles support and protect the musculoskeletal system by acting as a corset.

An effective remedy is to build up strength by doing moderate machine-based training. The “Kieser Training works” study showed that the reduction in pain also reduced the disabling effects of pain: The “Effects of Pain Index” (EPI) was used to measure the effect pain had on the mood, sleep, recreation and vitality of participants. At the end of the study, the EPI of participants who had been in severe pain and who completed Medical Strength Therapy showed a 50% reduction in the disabling effects of pain.

## 5 Questions... about muscles

### One muscle rarely works on its own – in most cases several muscles work together.

#### How does a muscle work?

A muscle contracts. That's all it can do. The brain sends out a message telling it to contract – this message travels along the spine and when it reaches the motor end-plate the nerve fibres transfer it to the muscle fibres. The command can be voluntary or involuntary. When a muscle contracts, it moves a bone in one or more joints – the movement therefore based on the principle of tension and counter-tension.

#### What is the role of an agonist?

Muscles are not lone warriors; both the agonist and antagonist are on the

same side and work together. In most cases, one muscle will have prime responsibility for the movement and it is called the agonist. For example, let's look at leg extensions on the B1; as you would expect, the muscles with prime responsibility are the leg extensors on the front of the thigh.

#### So what does the antagonist do?

To ensure the movement is properly coordinated the antagonist has to do its bit. In our B1 example, the antagonist would be the leg flexors at the back of the thigh. Acting as antagonists, the leg extensors gradually yield and are thus extended. This

braking action serves to regulate the movement. If the leg is then moved in the opposite direction, the antagonist contracts. Similarly, with a leg curl on the B7, the leg flexors at the back of the thigh act as agonist and the muscles at the front of the thigh become the antagonist. In other words, depending upon the machine used, muscles are agonist for some of the time and antagonist at other times.

#### What is a muscle chain?

There are few movements in the body that are the result of the actions of a single muscle. In most cases, a movement is a complex interaction

between several muscles or even muscle chains. For example on the B6 (leg press), you use not only the thigh muscles but also the gluteal muscles (buttock muscles). In this case, they form a muscle chain.

#### How do muscles work in an exercise with a rhythm of 4-2-4?

During strength training, when you tighten (i.e. contract) a muscle you are working against a resistance. Kieser Training uses the three main ways in which muscles work. When you lift the weight, muscles contract and so become shorter. You overcome the resistance and the weight

is raised. This concentric movement corresponds to the first four seconds of each repetition. During the next two seconds, the weight is held, the muscle remains tightened but is not contracted further. Even this static hold provides an adequate training stimulus. During the final four seconds in which the weight is lowered, your muscles work in an eccentric way, i.e. they are stretched under tension and so slow down the movement to lower the weight – this acts as a further, extremely intense stimulus to the muscles.



## Column

According to the French philosopher Merleau-Ponty, any thought that ignores the physical dimension is inevitably doomed to failure. He regarded the neglect of the physical as a misunderstanding of life itself. For him, the body was not just a canvas for random ideas, nor was it something amenable at will to unfettered manipulation by an equally free spirit. Instead he regarded it as an expression of our entire existence, the vehicle that allows Man to be in the world. According to Ponty, the body – here meaning the mind and body combined as a single unit – is “the event” in our life, it is the “expression of our entire existence rather than an external accompaniment to it, because our existence is realised in it”. Similarly with Descartes, who said that the relationship between the spirit and body “cannot be compared to the captain and his ship because the spirit is intimately fused with the body and so cannot be separated from it”. Consistent with this, Feuerbach talks of the “porous self”, a self that is not independent but is also determined by the body. Other living creatures may unfold in a closed functional unit but not so Man: In order to understand Man you have to go beyond what is immediately observable or explicable at the purely functional level.

Dr. Siegfried Reusch

Editor in chief of journal “der blaue reiter” – Journal for Philosophy”  
www.derblauereiter.de und www.verlag-derblauereiter.de

## Would you expect a car wash to be cosy and relaxing?

**Werner Kieser on being children of the Earth, vinegar-flavoured chocolates, the status quo, the fun factor, lean mass and manufacturing**

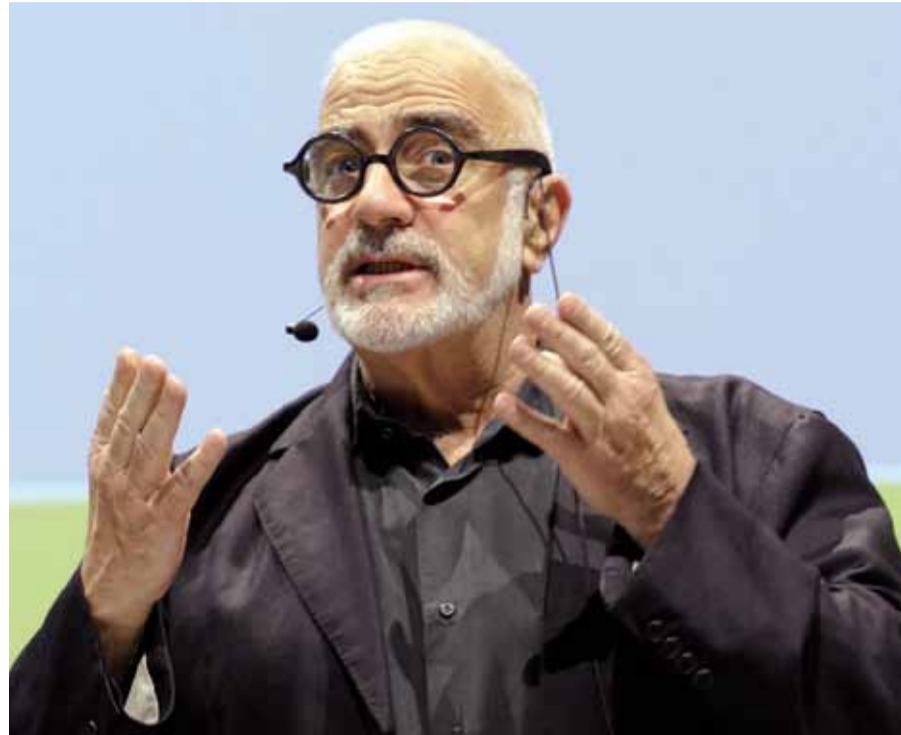


Photo: © Kieser Training/Michael Ingenweyen

**Herr Kieser: Professor Seiwert, Germany's time management expert, called Kieser Training a “purist concept without the bells and whistles” Why do you dispense with such add-ons?**

We don't train because it's fun or the “in” thing to do. We do it because we know it's necessary. As children of the Earth, the effects of gravity mean that resistance is fundamental and essential. Many seek it in sport but

sport is limited in its capacity to deliver resistance. Kieser Training offers targeted and measured resistance. That may not be attractive but it does work.

**Despite that you could package it with more bells and whistles...**

That would be a joke, just like vinegar-flavoured chocolates – eat one and you spit it out immediately – after all, you were expecting quite a different experience. We don't take

that risk and so don't promise that training is fun.

**Instead, you say it makes you happy – what's the difference?**

The training itself is not necessarily pleasant. In fact, it's hard work. It has to be, because the human body treats the status quo as the ideal. Movement in our everyday life may be just enough to maintain strength levels but without real exertion, strength will gradually decline. In contrast, strength training improves the status quo. The majority of us live with strength below optimum levels and this causes problems. It's not the training that makes us happy but its effects – with every passing day we feel

healthier, lighter and better able to cope.

**You present your concept as something very simple.**

The concept has not changed significantly. I see no reason to change it. After all, the packaging is also part of the promise and it would be wrong if the packaging failed to mirror the content. We don't claim to provide pleasure, sport or even wellness. We do claim to deliver efficiency.

**You describe Kieser Training as a producer of “lean mass” – that sounds like asceticism...**

The term “lean mass” refers to muscles, bones and tendons, i.e. fat-free mass. We need stronger muscles and higher bone density. Both demand resistance training.

**So you could liken a Kieser Training facility to a manufacturing facility?**

As I have said, we produce bone and muscle mass and so to that extent we can be compared to a manufacturing facility. This factory-type build-up is in line with our purpose. In our “factory”, we have machines that produce the right resistance for the musculoskeletal system, in the right places and at the right intensity. There is no need for anything else. Why gild the lily when it's sufficient on its own?

**So you follow the Bauhaus principle of “Form follows function”?**

Industrial architecture is ideal if you want to produce and not just represent. Many people find such architecture horrendous but possibly that's because they have a somewhat bourgeois understanding of cosiness and wellbeing. That's absurd. After all, we would not expect a car wash to be relaxing or touch our emotions. On the other hand, this reductionist form does develop its own – partially-unintended – aesthetic for those able to distinguish it.

## An unrivalled success story: 10 years Kieser Training in Austria

**The Austrians must have really been waiting for Kieser Training to enter their lives. From the moment the first site opened in March 2000, they have been tolerating waiting lists for their introductory sessions, but kept their appointments and made Austria the most successful market for the concept.**

This is not meant to belittle the hard work put in by all the staff over the years, starting with Werner Kieser himself when he had to get behind reception after his presentation on the opening day to help sell subscriptions to relieve staff overwhelmed by demand.

Today there are three facilities in Vienna and one each in Graz, Salzburg and Linz with a total of 18,000 customers. Two major resorts, Bad Tatzmannsdorf and Kitzbühel both sport a Kieser Training Selection facility – a new business model for smaller locations. The success of the concept is very well summed up by the experience of Marion Leszuk, who went to the launch event 10 years ago, joined on the spot and cannot imagine life without strength training any more.

**Mrs. Leszuk, can you remember how your friends reacted when you took up strength training at the age of 53?**

As Kieser Training was completely unknown in Austria at the time, most of them simply did not know what to make of it. They figured I had simply joined a fitness club. But what I liked most was the close supervision of my training. You just can't get it wrong, particularly if you have any problems. With the wrong training you could do more damage than good.

**So did you also benefit from the medical evaluation?**

Yes, I did. I suffer from osteoporosis; it runs in the family, so I was very pleased to be seen by the doctor who had impressed me so much in her presentation during the launch event.

**Have you seen improvements in your condition?**

My osteoporosis was diagnosed at an early stage. I have been taking drugs ever since, have regular checks and do Kieser Training. The condition has hardly progressed and I feel I have it under control. If I think of my mother – broken bones, even broken vertebrae – I've been spared all that. My mother was always in hellish pain, while I'm relatively pain free without taking any pain killers. That's worth a lot! I'm sure that's due to my strength training.

**Was it hard to get started?**

No, not at all, because the concept really agreed with me. I noticed very soon that it was doing me good and I was really looking forward to my next session. In the first year, I trained twice a week, now I find once

a week sufficient. When I started, I had very weak muscles. I'm certainly not the sporty type! But within a short time, I improved tremendously. Now, after all those years, I have reached my potential. You cannot ignore ageing – it makes a difference whether you're just past 50 or 63, as I am today.

**And how do you keep going? It's not really fun, is it?**

I still like going for my sessions, but not with quite so much enthusiasm as at the beginning. But there is one thing: The training really still does me a world of good! Somehow, I just feel lighter. I think, it's almost a bit like an endorphin rush.

**Could you imagine stopping with Kieser Training tomorrow?**

Oh no, that would be a real loss. For as long as I am healthy enough, I

will continue to renew my subscription. I want to stay fit for my two grandchildren.



Marion Leszuk, 63, was one of the very first customers in Vienna.

Photo: © www.fotoweinwurm.at