



## 50 YEARS KIESER TRAINING AT THE START THE QUESTION WAS WHY DOESN'T EVERYONE DO IT?

### WERNER KIESER

My lungs hurt every time I took a breath. Suffering from pleural contusions, the doctor at my boxing club had told me to stop fighting and training for six months. That was in 1957. A Spanish professional boxer who just happened to be there said that I would soon get better if I did strength training. He showed me the main exercises and he was right; contrary to the doctor's prognosis the pain disappeared within a few weeks. To me, it seemed like a miracle. Despite having a body type known as "ectomorph", i.e. skinny, I was quickly developing muscles.

Unlike today, muscles were not "cool" back then. My mother followed my training with a degree of scepticism. "You look worse and worse; you will soon be like Linder." Linder was the powerfully built farmhand on the neighbouring farm. When I turned up to train three months later, my fellow boxers stared at me in the shower and asked whether I had been working as a lumberjack. Back then, the view was that boxers should avoid strength exercises at all costs! People were convinced that they slowed you down and made you inflexible. I on the other hand was convinced that strength training eliminated pain, made you strong and attractive. I wondered why everyone did not do it.

Years later, when I was in the cellar of my parents' house soldering scrap iron to make the equipment for my new studio, my father came in. Even though I had tried to explain my plans several times to him, he asked: "Seriously, what are you doing?" I put down the soldering iron and replied "I am making a studio for people who also want to

train – and I plan to make a living from it." My father looked at me with something approaching pity: "Do you really believe that people will come along and actually pay to slave away on such equipment? Are you crazy?" I thought for a moment. "Yes, possibly, but there are others who are probably just as crazy."

My first studio was no great shakes: a building tucked away at the back of a yard. It was due for demolition. It had no heating, although I did not notice this until winter came. It did have water and so I came up with an innovative solution for a shower in the washroom: I drilled holes in the water pipe in the ceiling! You just had to remember to turn off the main tap after you had finished.

A year later, the excavators and demolition balls arrived at the house but in the meantime I had found new premises in the city centre. As I carried the heavy equipment – it weighed several tonnes – down the stairs of the studio and loaded it into the pickup truck I had hired, I wistfully thought of my former yoga teacher, Selvarajan Yesudian: It was much easier for him. He only had to move a few yoga mats.

Once at the new premises at Grüngasse 21 in Zürich, business really took off. In 1967, exactly 50 years ago, I formed a one-man limited company. The number of customers increased to more than 200. This was followed by the arrival of the fitness craze from the United States. I cannot be credited for that, but it certainly helped: I was already up and running. Suddenly everybody wanted to train. This

increase in customers also brought with it competition such as the John Valentine chain of clubs in Switzerland. They offered saunas, whirlpools and sunbeds. I thought I should follow suit and so I introduced such "passive" facilities as well. My customer base continued to grow – but despite that my mood sank. Increasingly, the customers just sat around in the sauna, relaxation area or solarium. That did not make people strong and so I removed everything that made no contribution to successful training. One-third of my customers terminated their contracts but the two-thirds that remained were pleased with what I had done. I realised that they were my target group.

*"Saunas, relaxation areas and sunbeds don't make people strong"*

In 1972, I read an article in "Iron Man" written by Arthur Jones of Florida. He had developed training machines that used a completely new principle that solved the problem that I had been working on for years. I bought the Nautilus machines developed by Jones and was probably the first to do so in Europe. Customers thought they were absolutely great and within a few months customer numbers had

[Continued on page 4](#)

# ARCHITECTURE OF THE SPINE

The spine is the body's flexible support: its ingenious design, comprising 24 movable vertebrae plus the sacrum and the coccyx together with 23 intervertebral discs and ligaments, makes it both stable and flexible.

The spinal column is not straight; fortunately, it has natural curves. This gives the spine its double S shape that enables it to absorb stresses and strains.

## LOAD-BEARING VERTEBRAE

The load bearers in the design are the vertebrae. The vertebrae in the neck are the smallest and the size increases gradually with the largest being those in the lumbar region. That's logical if you think about it; after all the lumbar vertebrae have to support the entire weight of the upper body. With the exception of the top neck vertebra, each vertebra consists of a body, an arch and the various processes to which the ribs and muscles are attached. The latter are innervated via the spinal nerves that exit the spinal canal at specific points. The well-protected spinal cord runs through the spinal canal. In addition, spinal mobility is aided by small facet joints that connect the individual vertebrae. The surfaces of the articular processes are crucial in determining the mobility of individual spinal segments.

## INTERVERTEBRAL DISCS AND LIGAMENTS

The discs between the vertebrae cushion the load. They have a gel-filled centre that can absorb water:

It can be likened to a sponge; it absorbs water when relaxed and expels it when under load. In this way the discs absorb nutrients. If they are healthy, the pressure applied by each vertebra tends to push the adjacent vertebrae apart – with an almost hydraulic action. The discs distribute the load and reduce the strain on the spinal structures. As the fibrocartilage of the disc is firmly attached to the neighbouring vertebrae, this protects the segment and so increases its stability.

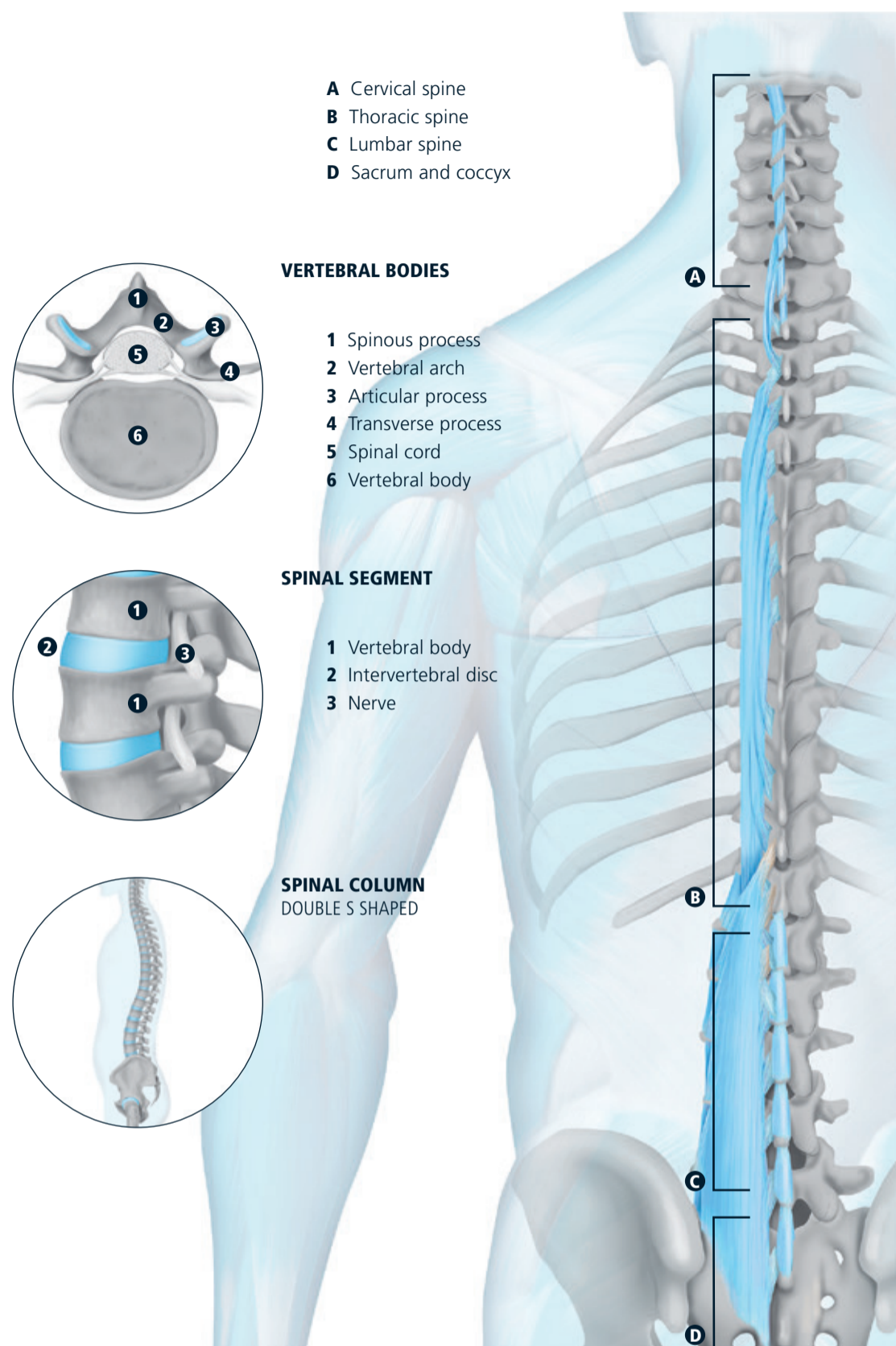
The ligaments also provide some level of stability. In total, there are six systems that bind the vertebrae and discs together, keep them in position and so protect them. However, be warned: Without our back extensor muscles, the spine is an unstable design.



## BACK EXTENSOR MUSCLES SUPPORT THE SPINE AND IMPROVE POSTURE

Without muscles to support it, the spine would be unstable. On its own, the spine can only withstand an axial pressure of about 0.1 bar: too low for the loads it has to withstand. For comparison purposes, lying down produces an axial pressure of about 1 bar, sitting down relaxed a pressure of 3 bar and jogging a pressure of 9.5 bar. If you lift a case of beer, this immediately exerts a pressure of 23 bar on vertebrae and discs. In addition to this axial pressure, daily activities expose us to sometimes substantial shearing, rotational or accelerating forces. It is primarily the back

extensor muscles – also known as autochthonous back muscles – that keep the spine stable. The word autochthonous roughly means "innate" as these muscles are laid down very early in the development of an embryo. They are a system made up of various muscles that connect the vertebrae, keep them in position, distribute the load evenly and protect the spinal structures. The back extensor muscles are divided into a medial and a lateral tract that together form a functional unit. They work together whenever we extend the trunk or head, lean sideways or turn.



## HOW TO BE STRONG

Book an assisted session on our Lumbar Extension Machine (LE) or Cervical Extension Machine (CE) and strengthen the deep back extensor muscles of the lumbar or cervical spine. The sophisticated design of these machines makes for particularly effective back training.

### PROCESS:

**START:** A medical professional will conduct a medical evaluation to check whether LE or CE training is right for you. If so, a specially trained instructor will design your personal programme, adjust the machine settings, determine your range of motion and if necessary measure the strength of your lumbar back extensors.

**FAMILIARIZATION PHASE:** During the first few training sessions you will be introduced gradually to the weight.

**BUILD-UP PHASE:** During the subsequent sessions, you will focus on building up the strength of your back extensor muscles.

**MAINTENANCE PHASE:** After some 12–18 sessions you can train independently on the F3.1 (F3) or G5. In addition, you should train once a month on the LE or CE. This will enable you to maintain the success of your back training for many years.

**IMPORTANT:** Make time for strengthening the back and train regularly in each of the phases. If you are interested in training on the LE/CE, just speak to us. We shall be pleased to advise!

# WHAT THE EXPERT SAYS ABOUT TRAINING ON THE LE

**Gabriela Kieser, MD, explains why training on the computer-assisted Lumbar Extension Machine is good for almost any back.**

If muscles are not given enough work, they wither and this applies equally to our back extensors. The medical term is muscle atrophy. If our muscle corset is too weak, the spine loses its natural protection. It becomes unstable. The load on the vertebrae and discs is uneven. They are subject to undue strain and so suffer premature wear and tear. The many and often painful consequences include arthritis, bulging or herniated discs, nerve irritations and inflammation.

**Some 85% of those with chronic back muscles have weak back extensors.**

When it comes to preventing and treating back problems, the most important thing is to retain or quickly restore the strength and function of the back extensors. To achieve an effective, rapid increase in strength, we recommend a 1:1 assisted session on the LE. It is the "gold standard" amongst back machines. We have been using it since 1991, i.e. shortly after it was developed by the brilliant inventor Arthur Jones and the equally brilliant machine designer Phil Sencil, who now works in our Department for Machine Development. Technically, the machine provides all that is required for highly effective back training.

## Benefits of LE training

Increases the strength of back extensors

Increases the range of motion of the lumbar spine

Stimulates the process of bone regeneration

80% of people plagued by pain are free or almost free from pain

94% maintain this success even 12 months after completion of the build-up training on the LE

9 out of 10 patients with prolapsed discs where surgery was indicated can avoid the surgery



### GABRIELA KIESER, MD

is a practicing doctor and specialist in strengthening therapy. In 1990, she opened a practice for strengthening therapy in Zürich, the first in Europe. She was one of the first to treat chronic back pain exclusively with strength training. As a result of its great success, Gabriela Kieser and her husband Werner Kieser made medical strength training an integral part of Kieser Training.

## SUMMARY OF MAIN BENEFITS

### ISOLATION

When we straighten the torso, our back extensors work in conjunction with the strong hip extensors, i.e. the gluteal muscles and the muscles at the back of the thigh. To target the back extensors, we need to interrupt this muscle chain. It has been shown that you can only achieve this if you fully isolate the pelvis and for this you need the complex technology of the LE machine.

### CAM TECHNOLOGY

Our back extensors are stronger in the flexion phase than in the extension phase. The LE machine uses a so-called cam (as do all our machines) that varies the resistance; it is higher during flexion than it is during extension. This allows an effective strengthening of the target muscles throughout their entire range of motion.

### OFFSETS UPPER BODY WEIGHT

Bend fully forward and then stand upright keeping your back straight. You will feel a resistance; that is actually the gravitational force that you have to overcome with the weight of your upper body. We measure this weight and offset it with a counterweight on the LE. This allows a precise, personalised training resistance.

### FACT

The LE allows you to target your back extensors and strengthen them safely, effectively and quickly. In fact, there are very few back problems where LE training is not recommended or helpful.



## FINGER ON THE PULSE OF SCIENCE EFFECTIVE STRENGTHENING

### DAVID AGUAYO, PHD KIESER TRAINING RESEARCH DEPARTMENT

Back pain has many causes and its manifestations are myriad. Almost 50% of those with chronic pain have problems with their musculoskeletal system, in particular the spine. This results in major reductions in quality, both at the personal level and for society.

In Germany, 6 out of 10 adults complain of lower back problems at least once a year. The symptoms and the resultant absences from work mean that many working days are lost. The costs are high: On average, the cost of one back patient is in the order of 1,300 euros. Direct costs, e.g. treatment and medication, generate less than 50% whereas more than half are indirect costs, i.e. absence from work. As a general rule, the higher the level of pain, the more expensive it is: It is estimated that back pain causes a loss of some 49 billion euros to the German economy. Statistics show that women with back pain are more likely to generate costs than men. It is assumed that women visit their doctor more frequently. Despite that, the actual costs for men are higher.

Our internal Kieser Training statistics show that isolated strengthening of the back muscles significantly increases strength: A national study throughout Germany showed that on average 64% of participants were free from pain after the training. The rest had only residual problems. 15% reported a significant reduction in the level of pain, i.e. on average 8 out of 10 people benefited from targeted strengthening and that is not all: Even better was the fact that they maintained this success in the longer term with minimum effort. Basically, a reduction in back pain reduces the burden on the economy.

## Continued from page 1

doubled. I was faced with a dilemma: expand or turn potential customers away – I opted for expansion.

If there was ever a genius in this industry, it was undoubtedly Arthur Jones. He remained my chief professional mentor until his death. Jones' called me one night: "Werner, we've solved the back problem!" He had developed the Lumbar Extension Machine that allowed a targeted training of the deep back extensors.

I flew to the US and looked at the machine and the results of research by the University of Gainesville. I then ordered the machine. In 1990, my wife, medical doctor Gabriela Kieser opened the first practice for medical strengthening therapy in Europe. No injections, pills or massage treatments – just strength training. The results were clear; with strength training, nine out of ten people were able to avoid

back surgery. We integrated back training into our concept and in the same year decided to strengthen the backs of our German neighbours. After a difficult start in Frankfurt and Hamburg, the tide turned and within 6 years we had opened more than 100 studios.

What we did was very specialist and so we needed to set up our own research department. The impetus for this came from Professor Vert Mooney, at the time one of the top ten orthopaedic surgeons in the United States. I discussed with him the possibility of cooperating with universities. He asked me why we needed such cooperation? "With your customer numbers, you have a ready-made database much larger than any university or clinic anywhere in the world. Simply recruit a few good researchers and do your own research."

Today, fifty years after I set up the company, the number of customers has increased by more than a thousand-fold. At

the start, "experts" ignored me; later they denounced me as a charlatan and later still they copied me. Science eventually caught up – with its usual delay.

Often people I did not know stopped me unprompted in the street or train or they wrote saying that I helped them eliminate their back pain or other symptoms – in most cases after a veritable odyssey of treatments. I always gave the same answer. They did it on their own. I merely provided them with the opportunity. Whenever this happened, it reinforced the feeling that what I had been promoting for the last fifty years was worthwhile. Nevertheless, the question remains the same: Why doesn't everyone do it?

## ONLY MY ILLNESS MADE ME WHAT I NOW AM.

In 2009, Chris Kolbeck lost his lower leg to cancer – and found himself.

### TANIA SCHNEIDER

The eyes are blue, the gaze welcoming, the handshake firm and the bearing proud: "Hello, I'm Chris," he says with a smile. A second later I am holding his running prosthesis in my hand. As part of our project "50 strong personalities", we are planning to photograph the triathlete wearing his prosthesis. "It feels heavy," I say. "1.5 kilos; my lower leg weighed 4.5 kilos", he replies dryly.

Chris is 33 years of age and quickly gets to the point. Something his illness taught him; bone cancer. Despite amputation and the many dreams buried with that lower leg, he regards it as a chance. "Only my illness made me what I now am."

Above all, Chris is one thing: a fighter. Before 1998, he had big dreams. However, his doctor found a tumour in his left ankle the size of a tennis ball and instead, he found himself immersed in a nightmare that did not seem to end. Over a period of 11 years he had more than 20 operations as doctors removed the ever recurring tumours, parts of his ankle and his fibula. In 2007, Chris sacrificed his left abdominal muscle. Doctors grafted it on to his lower leg in an attempt to save it, making the blow even harder to bear when in 2009 the cancer re-emerged and the doctors were forced to amputate.

Despite that, Chris, the fighter picked himself up after every operation. He now

wishes that the doctors could have amputated earlier. "I would still have my abdominal muscle and would not be fighting the posture problems or back pain that I keep in check with Kieser Training."

*"For me, strength means getting things done – both physically and mentally"*

In 2015, Chris who has a doctorate in German studies, gave up his job at the university to work as Marketing Manager for the Icelandic prosthetic manufacturer Össur. The aim of the company is a life without limitations for people with amputations. "Here, I can make a difference," says Chris and laughs. "My focus is integrating people with amputated limbs into society." That applies equally in sport. He prefers to compete and collect medals in standard triathlon events rather than those for people with an impairment, i.e. paratriathlon even if he no longer wins. "What attracts me is the journey to the destination; the friends and family who support me, the will to prevail time and time again. That is as important in sport as it is in life." He already has his next goal firmly in his sights: In 2017 he plans to do an Ironman 70.3., which consists of a 1.2-mile swim, a 56-mile bike ride and a 13.1-mile run. He is already training hard at Kieser Training in preparation.



Name: Chris Kolbeck  
Born: 24/10/1983  
Job: Marketing Manager Prosthetics Germany, Austria, Switzerland, Össur GmbH Deutschland

## IMPRINT

Reflex is published four times a year, including online. Stay informed! To subscribe to Reflex visit [kieser-training.com](http://kieser-training.com)

### PUBLISHER / COPYRIGHT

Kieser Training AG  
Hardstrasse 223  
CH-8005 Zürich

### CEO

Michael Antonopoulos

### EDITOR

Claudia Pfülb, [reflex@kieser-training.com](mailto:reflex@kieser-training.com)

### EDITORIAL OFFICE / TEXT

Tania Schneider  
[prschneidei.de](mailto:prschneidei.de)

### PROOFREADING

Dr Philippa Söldenwagner-Koch  
[lektoratbilingual.de](mailto:lektoratbilingual.de)



[facebook.com/  
KieserTrainingGlobal](https://facebook.com/KieserTrainingGlobal)

### LAYOUT

Wirz Communications AG  
[wirz.ch](http://wirz.ch)

### PICTURE CREDITS

P. 1, P. 3, P. 4, cover image:  
© Verena Meier Fotografie  
P. 2, illustrations: © Holger Vanselow

# KIESER TRAINING