

# Reflex 49

The Kieser Training Magazine



Photos: Stephan Orth/SPIEGEL ONLINE

**Dear Reader,**



It strikes me that very few of us manage to develop enough muscle – and enough strength – when we are young. During our middle years, life is particularly hectic and so we don't do enough to preserve the meagre muscle mass that we do have. Our muscles simply lack the right type of resistance.

This means that as we get older and the natural degenerative processes kick in, our decline starts from a very low base – a trend accelerated by the normal strains of daily life. No sooner have we reached our maximum height than our waistline starts to expand and fat replaces muscle.

We lose strength and gain weight; our strength to bodyweight ratio deteriorates as does our health and vitality.

In this edition we explain how strength training can help delay these degenerative processes and the associated ageing and keep us biologically younger. In this column, Professor Worm explains that an adequate intake of amino acids is essential for natural muscle build-up.

Enjoy!

Patrick Meier

Chief Branding Officer  
Kieser Training AG Zürich

## Strength for the extremes of the Arctic

**450 miles across the icy wilderness: Following in the steps of his grandfather, journalist Stephan Orth travelled to Greenland for the greatest adventure of his life. However, before departing he stocked up on strength at the Kieser Training facility in Hamburg-Eimsbüttel.**

I weigh 80 kg and was planning to pull a pulk sled weighing 120! It would be interesting to see who was actually pulling whom. However, I found my first few steps on the Greenland ice cap surprisingly easy and had reason to be grateful for the strenuous strength training of previous months.

I am no Arctic pro and had attempted to get fit for my polar adventure in the shortest possible time: my training had included winter camping in the Czech Republic, a week-long ice tour in Norway and a course in crevasse rescue.

Exactly 100 years ago, my grandfather was a member of the Swiss Greenland Expedition of 1912 who completed the full traverse of the ice cap; a feat previously achieved by only one other per-

son – the Norwegian Fridtjof Nansen – and his route was much shorter.

I had discovered my grandfather's diary in an old wooden box and it was his words that inspired me to emulate his achievement. I had been particularly moved by one passage: He described how a few days into the trip, the dog sleds fell into an ice lake and it was only with extreme difficulty that the men's lives were saved. If they had lost their reindeer skin sleeping bags and stoves, none would have survived the expedition and I would have never been born.

The leader on my trip was Wilfried Korth, a professor of geodesy who had already completed the Greenland traverse three times on skis. As my trip progressed, my respect for

the achievements of that earlier team grew and grew.

I coped well with the physical exertion of walking up to 18 miles per day. I had done considerable endurance training before I left and my sports physician at Kieser Training in Hamburg had given me a fairly strenuous programme for my legs, trunk and back.

Since my return, I have scaled down my training and am doing slightly fewer exercises. However, the training plans are simply filed away as I am planning another Greenland expedition in 2014.



**KIESER**  
**TRAINING**

STRENGTH FOR HEALTH

# “Too much rest in old age is a killer”

This quote from Werner Kieser sums it up well: Physical inactivity is the greatest risk to health and strength in older life. In contrast, physical activity means that it is much more likely that we will remain energetic, mobile, and able to enjoy life.

We cannot alter our chronological age: No pill, hormone, oxygen therapy or other “molecular” procedure will stop the clock ticking. However, this does not mean that we simply have to accept the ageing process and its effects. Quite the contrary! We can exert a significant influence on our biological age.

Apart from our genes, it is primarily personal lifestyle that determines whether the body and brain remains fit and healthy.

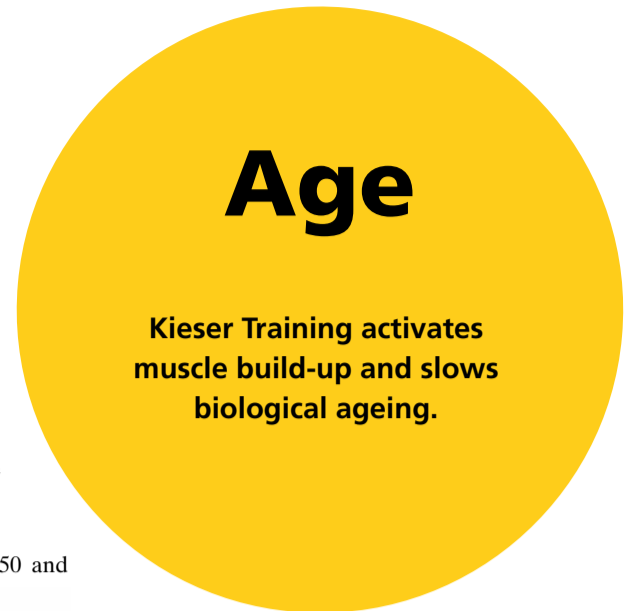
Scientists have identified physical inactivity as a primary cause of many age-related disorders and frailties. Life can become a burden if we are

unsteady on our feet, worry about coping with daily challenges, fear that we might fall and hurt ourselves or develop back or joint pain, heart or circulatory disorders, osteoporosis or other metabolic disorder.

The problems do not start when we “retire”. We have banished strenuous

physical activities from modern life with drastic consequences: muscle strength and endurance start to decline from the age of 25.

Between the ages of 50 and

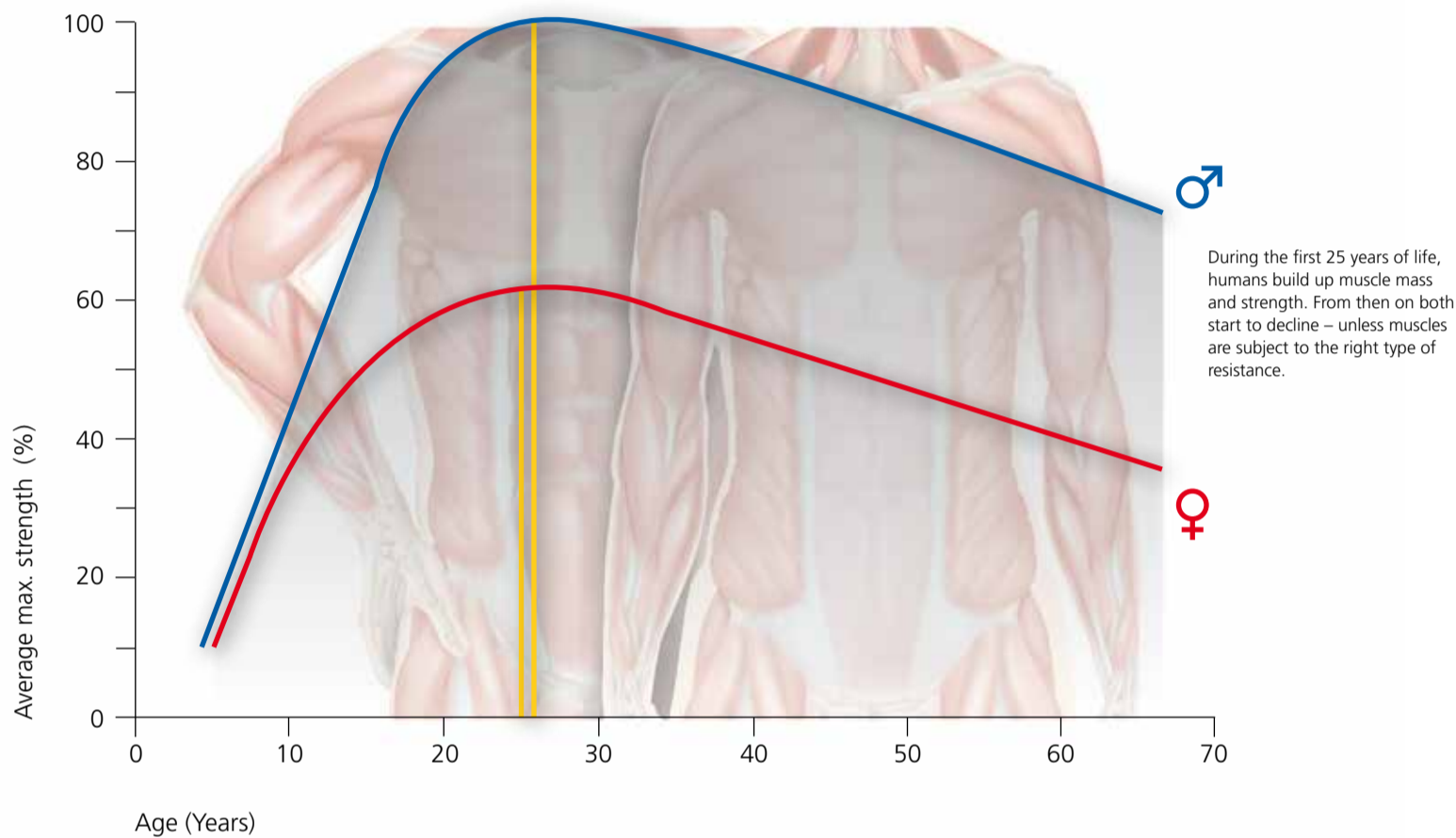


60, we lose some 15% of our strength and then a further 30%-40% in old age. Nobody should have to put up with the frailties of old age.

Lifestyle is the key to successful ageing. Strength training for health combined with a balanced diet, a sensible approach to stimulants such as alcohol or chocolate, regular exercise and social contact are more effective than expensive medication.

However, what do we doctors do to maintain lifelong health? We merely treat the symptoms leaving patients to bear the supposed burdens of old age with the patience of Job. We should be using our current knowledge and initially treat such age-related disorders with targeted training. Only if that is not enough, we should treat with drugs.

Illustration:  
© Holger Vanselow



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

The US researcher Maria Fiatarone was the first person to demonstrate the phenomenal effect of strength training. In 1994, she published a report on a study of a group of residents in a Boston care home aged between 86 and 96 who did strength training for the buttock and thigh muscles three times a week. After 10 weeks, their strength had increased by an average of 113%, walking speed by 12% and muscle mass by almost 3%. This showed that strength training for the elderly not only works but is something that the elderly can manage.

Particularly surprising is the rapid increase in strength during the first few weeks of training. If muscles are unaccustomed to strength training, training produces a muscle stimulus that activates the “sleeping” muscle fibres. This stimulus also has an effect on the larger fibre bundles and this increases muscle contraction. Cooperation between nerves and muscle fibres is improved allowing the body to exploit this new potential in full before it bothers with the development of new resources. Strength training also has an effect on other structures in the body; it improves

the quality of the tissue within these structures and this in turn increases their load capacity. This applies equally to muscle fibres, tendons, cartilage and bone tissue. Our muscles are either made up of “endurance fibres” (slow-twitch), which contract slowly or fast-twitch fibres, which contract quickly and vigorously. We need fast-twitch fibres to avoid potential falls or obstacles. As we get older, we need to do intensive strength training in order to maintain our dynamic balance.

At the metabolic and hormonal level, strength training promotes these build-up processes: testosterone in the testicles is increased as are the growth hormones in the pituitary gland. However, muscle fibres themselves also produce other substances (“myokines”) that have a hormone-like effect on a range of organs. Myokines promote muscle build-up and the burning of fat. They increase the efficiency of glucose combustion in our muscles and keep blood vessels elastic. They reduce blood pressure, protect the body from heart attacks and strokes and help avoid obesity. BDNF (brain-derived neuro-

trophic factor) is an example of a very particular myokine. It acts as a messenger for the brain and promotes the development of new brain cells and improves the links between the more than 100 billion cells. It is no surprise that intensive muscle activity can improve brain performance and in some cases it is better for depression and the early stages of dementia than drug treatments.

Kieser Training reduces the strain on the cardiovascular system. Strong muscles need 30% less oxygen than weak muscles to carry out the same workload. Strong muscles are more efficient because the heart has to supply less oxygen-rich blood. That reduces the strain on both a healthy but also a diseased heart. For that reason, international guidance recommends strength training for health as a basic treatment for high blood pressure, weak heart muscles and a narrowing of the coronary arteries.

Strength training increases strength, mobility, and stamina and improves health in a range of ways. Surveys have shown that the elderly rate mobility

and independence in old age extremely highly. With Kieser Training, there is a good chance that you will achieve them.



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### Reflex

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# News from our Research and Development department

How can we increase and retain strength quickly and with minimum effort? What is the best way to reach our maximum genetic strength? Both questions that staff in the Kieser Training R&D department ask themselves on a regular basis. A recent study compared various methods designed to help highly trained customers overcome stagnating strength increases.

Anyone who does regular muscle training will become stronger within a few months. Initially, this is achieved by improvements in the coordination between muscles and nerves. The body only starts to build up muscle when this improved coordination is not enough to cope with the higher weight. When that happens, the muscles increase in size and become stronger. For that process of adaptation to occur, the training must exceed a specific stimulus threshold, i.e. strength will not increase unless the training exceeds this threshold. To guarantee this, Kieser Training uses the principles of high intensity training – HIT for short: HIT means doing one strenuous set during which the muscle works to capacity for 60-90 seconds. “If you train regularly in this way, you will achieve a very high level of strength within one to two years. However, after that progress often plateaus,” explains Frank Rothe, a member of the Kieser Training R&D department. Kieser Training offers a range of intensification methods, e.g. the pre-fatigue method and the negative or semi-negative method that are designed to help experienced highly trained customers overcome this stagnation and achieve their maximum genetic potential. “We can trigger a further increase if we vary the machine or the exercise or if we increase its intensity,” explains Rothe.

There is another method of training that can trigger adaptive processes in those who are already highly trained: what is known as Rest Pause Training (RPT). With RPT – unlike HIT – the muscle is not worked to fatigue



From left to right: Frank Rothe (R&D department), Angela Kijewski (customer), Professor Jürgen Gießing (University of Koblenz-Landau), Heiko Luge (Manager Berlin-Charlottenburg)

© Christof Rieken

within 60-90 seconds but the training stimulus is triggered by a higher intensity and a longer period under load. With RPT, you pause after each repetition and set down the weight. As a result, the muscle relaxes and is supplied with blood. This slows down the build-up of acid and allows the muscle to be used for longer. “In our study we wanted to compare the effectiveness of these two training methods,” explains Rothe, who managed the study. The study was supervised by the renowned sports scientist Professor Jürgen Gießing from the University of Koblenz-Landau. A total of 60 experienced Kieser Training customers with an average age of 42 trained twice a week for 10 weeks. On average, participants had been training with Kieser Training for 4 years and had comparable strength levels. One group used the HIT training method, including intensification

methods for 60-90 seconds to muscle failure. If members of this group were able to crack the 90-second target, they increased their weight at the next session by 5%.

The other group did RPT and used a much heavier weight. Each member started with 15 individual repetitions per exercise and an interval of 5-20 seconds between each repetition. At each subsequent session, they increased the period under load if possible by a further repetition. When they could do 18 full repetitions, they increased the weight at the next session by 2%-5% and started again with 15 repetitions. The control group continued normal build-up training and trained for 60-120 seconds until muscle failure.

“The results of strength tests before and after the study showed that both

the HIT and RPT groups significantly increased their strength compared with the control group,” explained Rothe. “However, we did not find any relevant difference between the HIT and the RPT methods.”

To sum up: Both methods can trigger further increases in muscle and strength for those who are already well trained. However, the HIT method did have one advantage: With only 6-8 repetitions, the training is much quicker. On the other hand, although the RPT method took longer, this group found the training less strenuous. Kieser Training is currently investigating whether to add the RPT method to its intensification methods.



## The building blocks of strength

What role do amino acids play in muscle development? In this edition, Professor Nicolai Worm considers this issue.

One of the roles of proteins is to build up and regenerate muscles, tendons, ligaments, bones and organs. These proteins contain 20 amino acids but the body cannot produce nine of these during normal metabolic processes.

As they are essential, we have to get them from our diet.

International professional bodies recommend a daily protein intake of 0.8 grams of protein per kilogram of body-weight. It is commonly believed that this is also enough for the needs of strength athletes. However, using the latest methods to determine protein requirement, e.g. radioactively marked indicator amino acids, the actual daily requirement

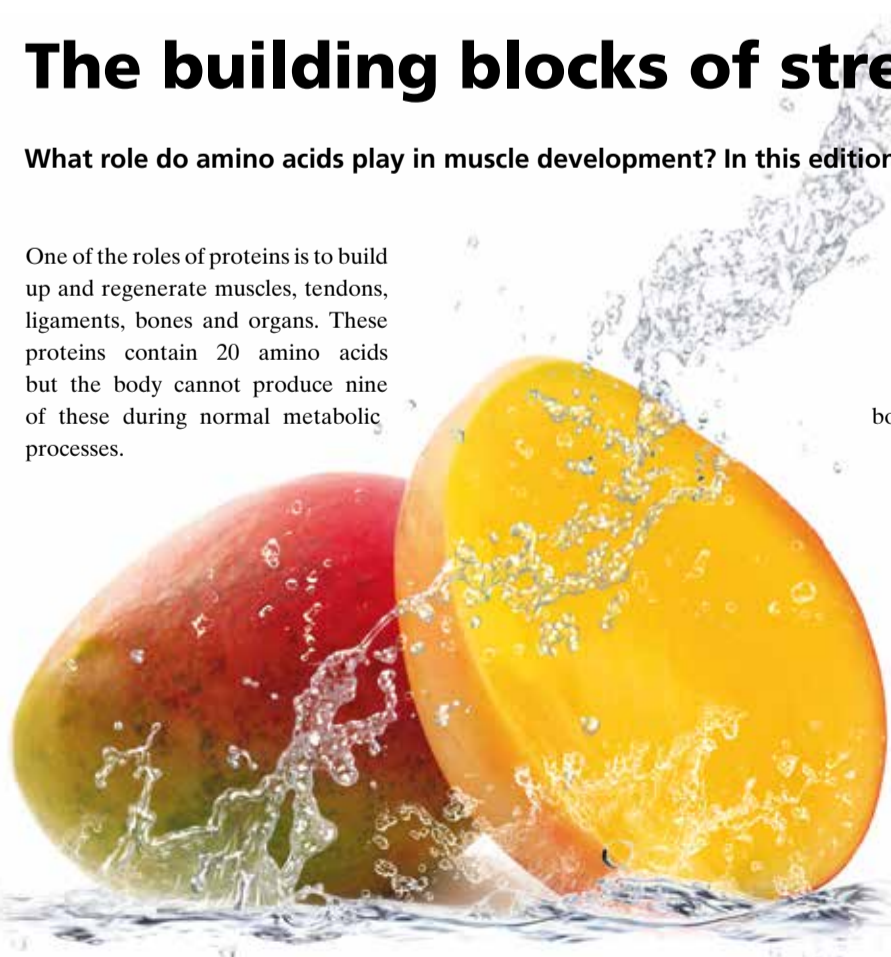
is 20% higher. Based on this method, strength athletes actually require 1.4-1.8 grams per kilogram of body-weight, i.e. a man weighing 82 kg seeking optimum muscle build-up with Kieser Training would need as much as 148 grams of protein per day. The best natural sources for high-quality proteins are meat and fish and the main sources of protein in vegetarian food are milk, milk products, eggs, nuts, pulses, tofu and other soya products. The greater the muscle mass you want, the more important the timing of protein intake. The best time is to eat some protein every three to four hours (20-40 grams on each occasion). At least one of these meals should be one hour before strength training and/or 30 minutes after it.

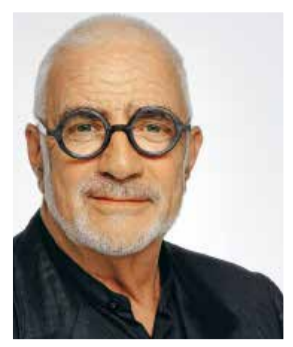
### Mango Lassi with soya milk (serves 1)

- ½ ripe mango
- 50 g yoghurt
- 50 ml soya milk
- 50 g natural tofu
- 3 ice cubes

This is an extremely easy drink to prepare: place all ingredients in a blender or mixer and blend for 45 seconds at maximum speed.

- Ca. 260 kcal
- 29% protein
- 41% fat
- 30% carbohydrate
- 86 kcal per 100 g





## Kieser's Corner

### The importance of research

“Why do you need a university?” This was what Professor Vert Mooney of the University of San Diego asked when I told him I wanted to commission a university to find the most efficient training method. After all, why should I waste my customers' time? “You already have an unrivalled database that no university or clinic can match, i.e. thousands of ‘test subjects’ who train on the basis of standard principles.”

Vert Mooney was a leading American orthopaedic specialist. He was constantly amazed by the lack of interest shown by colleagues in strengthening therapy whereas he himself used the F1 machine to treat children with scoliosis.

So, I decided to set up my own Research and Development department.

Of course, we work with universities where there is an overlap of interests.

This was the case with our most recent study when we compared the effectiveness of the High Intensity Training (HIT) method (including intensification methods) and the Rest Pause Training (RPT) method (see page 3). Our scientific advisor during this research was the sports scientist Professor Jürgen Gießing from the University of Koblenz-Landau, who has studied HIT for many years and published several books on HIT. I should like to thank Professor Gießing for his involvement.

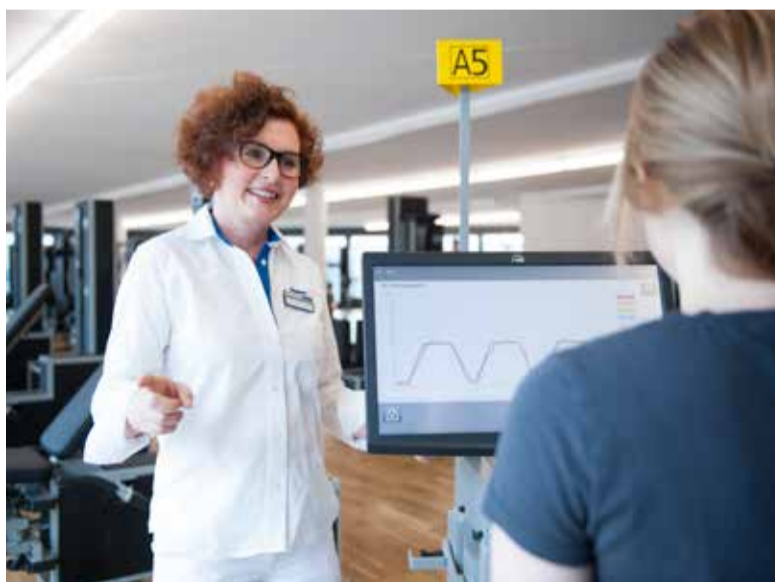
## The A5 – training for enjoyable sex

**Small muscles but big effect: strong pelvic floor muscles improve our enjoyment of sex. Dr Gabriela Kieser explains why.**

### What is the role of pelvic floor muscles?

The pelvic floor is the muscular platform beneath the pelvis. It is a sheet of muscles about the size of two hands shaped like a shell and about the thickness of the palm. The muscles support the pelvic organs and as they also enclose the urethra and anus, they play a major role in preventing incontinence.

These muscles are often weak and so 30%-50% of women over 60 years of age experience incontinence. As we know, inactivity and advancing years cause muscles to atrophy – a trend exacerbated by stress, pregnancy, childbirth or being overweight. To that we need to add the hormonal changes that women experience throughout their lives. For example, the hormonal changes during the menopause result in a softening of the tissue in the pelvic floor. Men have an advantage here as their pelvic floor is stronger and the surface is smaller and more robust. However, even male pelvic floor muscles become weak with increasing age. Alternatively, they may become weak following prostate surgery.



Dr Gabriela Kieser explains the new pelvic floor machine.

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### Pelvic floor training is equally important for men ...

That almost goes without saying! The pelvic floor muscles work in tandem with the muscles in the abdomen, hips and buttocks and the deep muscles of the back. Together they form the body's powerhouse and improve our posture and boost body awareness. As they are closely linked to our sex-

ual organs, strong pelvic floor muscles also improve our sex life.

Older men often suffer from erectile dysfunction, i.e. they find it difficult to maintain an erection. Strong pelvic floor muscles significantly improve erectile function as the flow of blood through the erectile tissue is actively promoted allowing erection to be

maintained. With younger men, the problem is often one of premature ejaculation. With stronger pelvic floor muscles, it is easier to control ejaculation.

### And what about women?

The vagina itself is not particularly sensitive but the surrounding muscles are much more so. Any increase in the flow of blood increases this sensitivity. In addition, if pelvic floor muscles are strong and flexible, they develop a life of their own, i.e. they contract and relax spontaneously during sexual arousal.

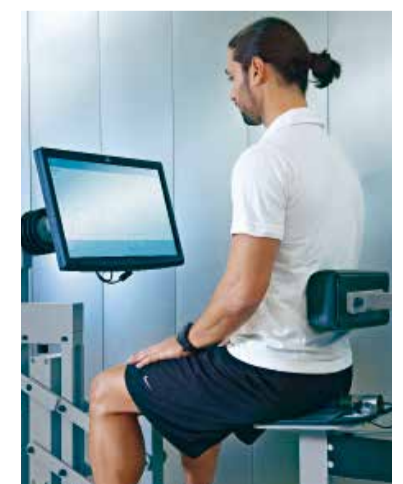
Not only is that enjoyable for the woman but her partner senses it as well. In addition, strong pelvic floor muscles make it easier for women to experience a vaginal orgasm. In other words, our pelvic floor muscles are also our “love muscles” ...

### ... and yet we ignore them.

They are regarded as private parts and so a taboo. We do not speak about them. We don't touch them. As a result few women and even fewer men have a good relationship with

their pelvic floor muscles. These muscles are not involved in the movement of a joint and so we lack any awareness of them.

In developing the pelvic floor machine, Kieser Training is the first to provide a visual feedback. The machine allows you to see immediately whether you have tensioned the right muscles and if so, what progress you are making. We hope this machine will go some way to breaking down this taboo.



Men also profit from the A5.

## Jens Wawrczeck ...

... completed his drama training in Hamburg, New York and Vienna and now regularly treads the boards. He has been involved in hundreds of audio plays and works as both a voice actor and producer. For many, he is best known as the voice of the detective Peter Crenshaw (renamed Peter Shaw for the German version) in the cult radio drama “The Three Investigators”. He has also released his own productions on his audiobook label Audoba.

### What inspires you?

Walking.

### What is your perfect day?

A day when I don't think about yesterday or speculate about tomorrow.

### What does quality of life mean to you?

Freedom.

## Steckbrief

**Date of birth:**  
12/07/1963  
**Place of birth:**  
Nykøbing, Denmark  
**Profession:**  
Actor + producer

Photo: © Uwe Tölle