

# REFLEX

THE KIESER TRAINING MAGAZINE

# 157



## BACK IN SHAPE AT LONG LAST

ILONA GEESE HAS REGAINED HER ZEST FOR LIFE AND WORK

**ILONA GEESE LOVES HER WORK AS A NURSE. SHE ALSO LOVES BEING ACTIVE AND WALKS AND CYCLES REGULARLY. SWIMMING IS WHAT SHE ENJOYS MOST, OFTEN THREE TO FIVE TIMES A WEEK – OR AT LEAST SHE DID. SHE HAD TO STOP WHEN HER KNEES AND BACK PACKED UP! THANKS TO KIESER TRAINING SHE IS NOW BACK ON HER FEET.**

Ilona Geese has been a nurse for 28 years and works in Accident & Emergency. She is on her feet non-stop for the full 8-hour shift helping patients. This has affected her joints. As she explains, "I have serious arthritis in both knees as well as a neuroforaminal stenosis of the lumbar spine – the latter is a narrowing of the openings in the spinal column where the spinal nerves exit.

As a result, Ilona developed severe back and knee pain and

her mobility was significantly reduced. "When I got out of bed in the morning I had to wait a while before I could actually stand, let alone walk," explains the 46-year-old. "Even then, I felt like an 85-year-old".

Apart from the frustration of being unable to do sport, she was worried about her job as a nurse. To help others, she had to be strong herself and able to trust her own body. Ilona had to rely on medication just to continue working.

To get back in shape, she tried fitness studios. The first two were disappointing. "I spent at least an hour doing repetitions but it had no effect."

She heard about Kieser Training from a friend. "I was pleasantly surprised even after the first session: Expert advice, friendly staff and a pleasant atmosphere. Here, the focus was on people."

After three months, Ilona was thrilled with her progress. "My aim had been

to reduce the pain and restore my ability to work and do day-to-day activities – and I succeeded. I was able to halve the number of painkillers and some days I can dispense with them completely."

The 46-year-old is delighted. In particular, her legs are much stronger. "Everything is working again: I am enjoying my work and life is fun again – and at long last I can resume swimming. I shall definitely be sticking with the training." ■



Twice a week Ilona Geese, a nurse, travels to her nearest Kieser Training Studio – more than 35 miles away. Despite the distance, she is extremely motivated – in just 3 months she has reduced her consumption of pain killers by half.

## WE'D LOVE TO HEAR YOUR STORY

Do you have an experience or story about Kieser Training that you would like to share? Why did you start training? How has it changed your life?

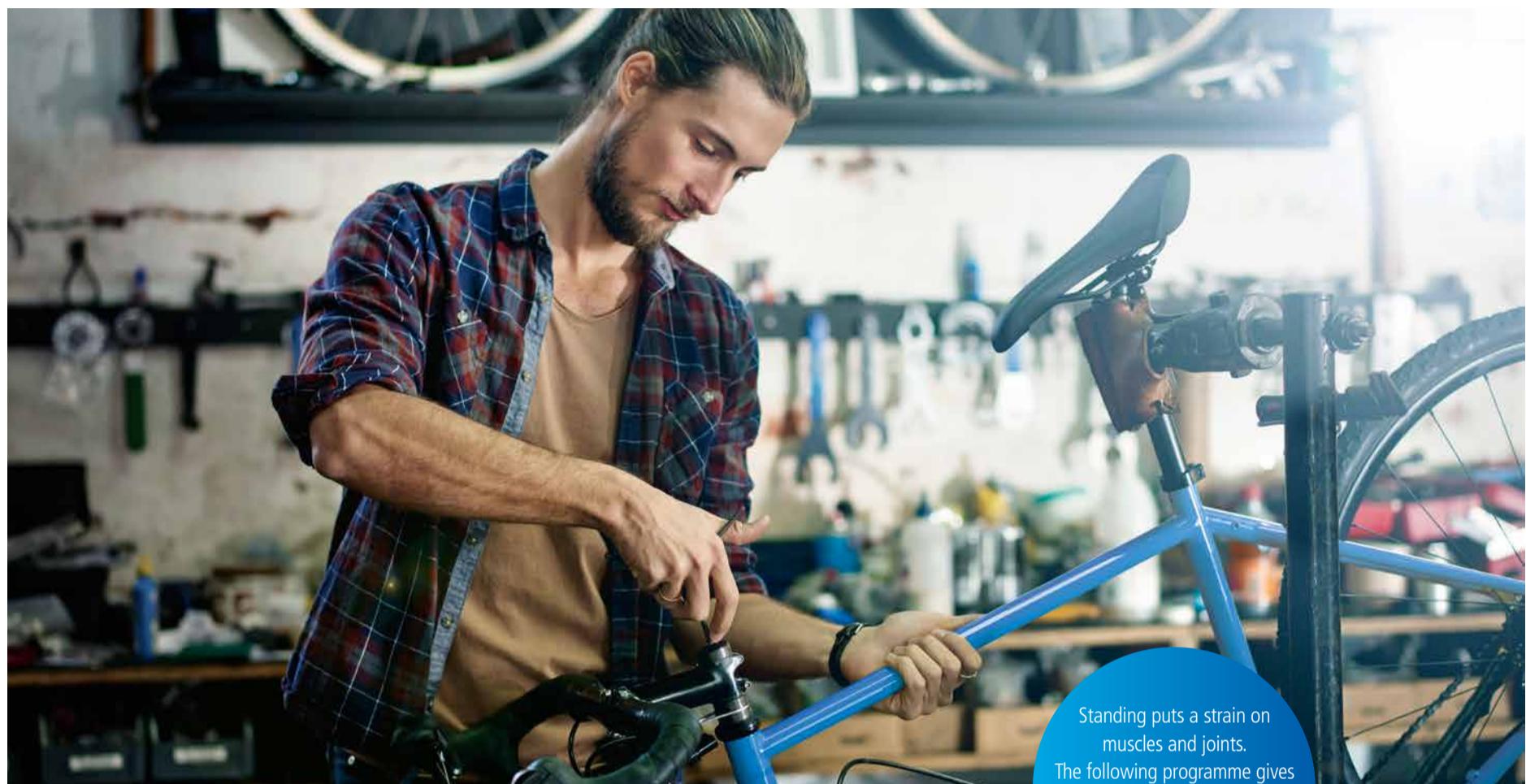
We should love to hear from you.

Please send your story to [reflex@kieser-training.com](mailto:reflex@kieser-training.com)

We will of course contact you first if we plan to publish it. ■

# FIT TO DROP AFTER STANDING ALL DAY?

HOW TO STAND AND YET REMAIN RELAXED



**WHETHER YOU WORK AS A SURGEON OR CARE WORKER, CHEF OR WAITER, HAIRDRESSER OR SALES ASSISTANT, TRADESMAN OR MANUAL WORKER, YOU ALL HAVE ONE THING IN COMMON. YOU SPEND MOST OF YOUR WORKING DAY STANDING UP. OFTEN AFTER LONG PERIODS OF STANDING AT WORK, MANY OF US FEEL FIT TO DROP AT THE END OF THE DAY; IN TIME WE DEVELOP MEDICAL PROBLEMS.**

"Standing is not in itself the problem," says chief physician, Dr Sascha Sajer, a specialist in physical medicine and general rehabilitation. Problems mainly arise because we adopt a non-physiological posture.

"For example, if you are a hairdresser or dentist, you are often forced into an unnatural posture in order to do certain things. This means that you tend to use one side of the body more than the other or overload the muscles," explains Dr Sajer. "In time, poor posture

causes the muscles to contract and muscle tension to develop. The spine and the joints then lack stability and this in turn inevitably leads to premature wear and pain. In most cases, the problems affect the back or shoulder.

To ensure you stand relaxed throughout the day, you need to take preventive action. First of all, muscles must be strengthened and ergonomics improved. Dr Sajer, who is also a sports doctor and works for Kieser Training in Vienna, stresses that many people arrive with back or neck problems. With these customers, we can alleviate the neck pain using the G5 or Cervical Extension Machine. For the back we use the F3 or Lumbar Extension Machine. These machines build up the deep muscles in the cervical and lumbar spine."

Targeted muscle strengthening can also benefit manual workers who are not only on their feet for hours but are lifting heavy loads. "They may look like

bodybuilders and so not need additional training but often an analysis of the back muscles on the Lumbar Extension Machine reveals that the deep back muscles are extremely weak. In this case, we can usually achieve quick results with targeted training."

## Strain on the blood vessels

If you stand for long periods, you also put a significant load on the vascular system. In order to prevent varicose veins, Dr Sajer strongly recommends including the calf muscles in your training programmes. At work, it's also important to activate your so-called muscle pump at regular intervals. This can be done by taking a short walk, running on the spot or standing regularly on tiptoes in order to shift your weight. As Dr Sajer explains: "When you contract the calf muscles and then release them, venous blood in neighbouring veins is pumped back towards

the heart." In addition, if you have to stand still for long periods, e.g. when doing surgery, don't be afraid to wear support stockings. They encourage the backflow of blood.

## Both feet firmly on the ground

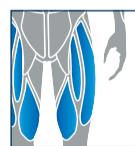
It's equally important to distribute your weight evenly on both feet and use the complete sole. "Many people unwittingly stand on one leg and are lopsided," says Dr Sajer. He also stresses the importance of good ergonomics in the workplace. The issue should be taken seriously and suitable guidelines developed. If necessary, employees should be given appropriate aids – muscle strength alone cannot always compensate for a poor posture and heavy loads. ■

## PROGRAMME FOR STANDING ACTIVITIES\*



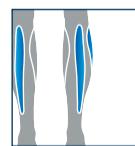
### L1/F3 LOWER BACK

Strong muscles in the lower back stabilise the spine, improve posture and protect facet joints and discs.



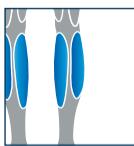
### B1 FRONT THIGH MUSCLES

The front thigh muscles extend the leg at the knee – essential when standing or walking for long periods during the working day.



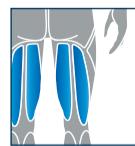
### B3/B4 ANKLES

Strong foot muscles ensure ankle stability.



### J1 CALF

Strengthening the calf muscles with an emphasis on the stretching phase helps avoid Achilles tendon problems and supports the work of the muscle pump in the calf.



### B5 REAR THIGH MUSCLES

The rear thigh muscles bend the leg at the knee – essential when standing or walking for long periods during the working day.



### C1 UPPER BACK

The latissimus dorsi muscle allows you to pull the arms backwards and raise and lower them. This muscle has primary responsibility for shoulder health.



### F2 ABDOMEN

The abdominal muscles stabilise the position of the pelvis and help maintain an upright posture.



### D6 CHEST

Pectoral muscles allow you to place your arms in front of the body. Strength training with an emphasis on the stretching phase prevents shoulder pain.



### G5 NECK

Strengthening the trapezius muscle alleviates tension and shoulder pain.

\*Selection

# OF MUSCLEMEN AND WEAKLINGS

AN INTERVIEW WITH DR. SC. ETH DAVID AGUAYO

AT KIESER TRAINING, WE AIM TO BUILD UP MUSCLE AND INCREASE MUSCLE FORCE. BUT WHAT IS THE CONNECTION BETWEEN THE TWO AND IS A BIGGER MUSCLE ALWAYS STRONGER? "NOT NECESSARILY," SAYS DR DAVID AGUAYO.

Dr Aguayo, we exercise so that we can build up muscle and increase our strength. Yet, from time to time, we look astonished as someone of slender stature lifts the same weight as a muscleman. Is strength not the result of strong muscles?

First of all, we need to define what we mean by an increase in muscle force, also known as strength. When we say we are "stronger" we actually mean that we have improved the motor task, as recently described by Dr Marco Toigo. This means that adequate resistance training improves the ability to move a given mass from A to B or hold a mass. In everyday language we refer to this as becoming stronger or more powerful. So, an increase in strength or to be more accurate an improvement in our motor task ability is based on neural or muscular adaptations or a combination of the two. More "strength", therefore, is not necessarily the result of more muscle mass.

You talk about neural adaptations, i.e. adaptations that emanate from the nervous system. How do such adaptations manifest themselves?

Think back to when you first started resistance training. You were probably able to increase the weight stack or time under tension relatively quickly despite the fact that there was no marked change if you looked in the mirror. That was a neural adaptation. You had improved your ability to activate the muscle and so this initial improvement was the result of this activation rather than a change in the muscle itself.

What happens to the body when these adaptations occur?

Toigo & Boutellier described it succinctly back in 2006. Neural adaptations occur at various levels:

1. Firstly, resistance training changes the cortical fields in the cerebral cortex: In layman's language that means that the areas housing the nerve cells that activate and control muscles increase in size. Conversely, without muscle activity the muscles are absent from the cerebral cortex and they atrophy.

2. Secondly, adaptations can occur at motor units level. A motor unit consists of a motor neuron, i.e. a motor nerve cell, and the muscle fibres innervated by this neuron. Resistance training increases the rate at which the nerve impulses hit the muscle fibres. This is known as an increase in the impulse frequency or firing rate: the higher the firing rate, the greater the resultant strength.



3. And finally, training triggers a learning process in the brain so that it is better at coordinating muscle activity. It learns not to involve muscles that might impede the movement, in other words: to let go. For example, let's take the Leg Press. When you first start training, both the front and rear thigh muscles take an active role in extending the leg. However, that inhibits the production of strength. By repeating the exercise, you learn to release the rear muscles.

If in time the exercise becomes easier, this does not necessarily mean that the muscle has increased in size. Rather it is the result of neural adaptations.

However, an increase in muscle also produces an increase in strength – sorry an improvement in our task skill? Of course, muscle adaptations are associated with improved exercise performance. If resistance training is done correctly, the body incorporates more protein in the muscle fibres and so the volume and mass of the muscle fibres increase. To be precise, three things happen: 1) an increase in the cross-sectional area of the muscle, 2) an increase in the muscle fibres' length and 3) a change in the muscle fibre type distribution.

Can you explain that in greater detail? A muscle consists of a continuum of several types of muscle fibres that differ in terms of muscle protein. They are known as "slow-twitch" and "fast-twitch" muscle fibres – previously they were referred to as "red" and "white" but one common term is now slow and fast. Maximum strength depends upon the percentage of each type of muscle fibre in a given muscle. Strength/speed experiments of muscle

fibres have shown that the maximum strength of fast-twitch muscle fibres can be up to twice as much as that of slow-twitch fibres. Regular strength training has a hypertrophic effect on all types of muscle fibres, i.e. it increases their size and so they can generate more strength.

In other words, the more "fast-twitch" muscle fibres I have, the stronger I am? In principle, yes: The strength of a muscle with an equal cross-section may vary significantly as it depends upon the distribution of individual fibre types. If the muscle is made up primarily of "fast-twitch" muscle fibres, it can produce more strength.

A larger muscle is, therefore, not necessarily stronger ... Which brings us back to where we started! You can sometimes see this on the B6. A slight exaggeration perhaps but you may have come across someone who looks like a "weakling" training alongside a "muscleman" and yet both are lifting the same weight. The production of strength is not therefore down to muscle mass. The same also applies to women, who – although they develop less muscle mass than men – sometimes train with very high weights. ■

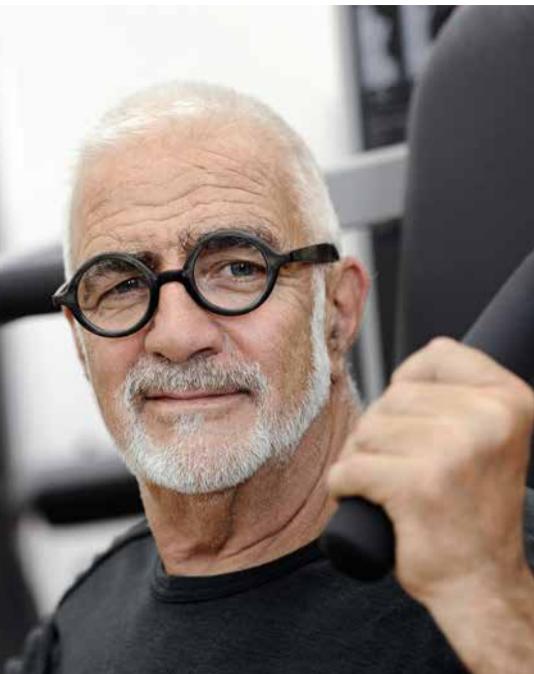


## DR. SC. ETH DAVID AGUAYO

During his university research, Dr Aguayo looked at the mechanisms associated with muscle build-up and loss. In the Kieser Training Research Department, he is investigating the interaction between stimulus and adaptation and its functional manifestation in resistance training.

## WERNER KIESER'S CORNER

### MISSED OPPORTUNITY



On 18 June, the German parliament approved legislation designed to encourage health prevention. According to the German Federal Ministry of Health the new law accords "health prevention the position in society that it deserves and stresses the need not only to tackle prevention but also to consider what keeps us healthy in the longer term."<sup>1</sup>

Sounds good! However, what is the reality? The "GKV-Spitzenverband", the central body representing health and long-term care insurers in Germany, publishes implementation guidance. This document – "Leitfaden Prävention" – identifies "areas of activity and criteria for services provided by health insurers in primary prevention and

workplace health promotion (...) and is binding on those who provide benefits locally. It forms the basis of the support, including financial, for measures designed to help people take preventative action to reduce health risks at an early date and boost their health potential and resources."<sup>2</sup>

The current version of the guidance recommends primary prevention intervention for cardiovascular diseases, Type 2 diabetes, malignant growths, disorders affecting the musculoskeletal system and connective tissue together with depression and anxiety disorders. It describes areas of activity, prevention principles, requirements, core objectives, eligibility criteria as well as the content of

individual measures and programmes. However, it also cites exclusion criteria, such as purely or predominantly machine-based offers.

In its newsletter, the "DSSV", the German association of fitness and health facilities, celebrated the fact that quality-assured programmes in sports and fitness studios have been expressly included as recommendable measures for behaviour-related primary prevention. However, we are amazed that training that is solely machine-based remains ineligible – clearly disregarding scientific data and evidence and quality criteria. It also ignores the question of whether such training could achieve the core objectives defined for target groups in an efficient, cost-effective and sustained way.

As a participant reported, strength training, despite the existence of scientific evidence, has been categorised as "irrelevant to health". "Though this be stupidity, yet there is method in it." I apologise for misquoting Shakespeare but "madness" is inadequate here.

Werner Kieser

<sup>1)</sup> <http://www.bmg.bund.de/themen/praevention/fragen-und-antworten-zum-praeventionsgesetz.html> – in German only.

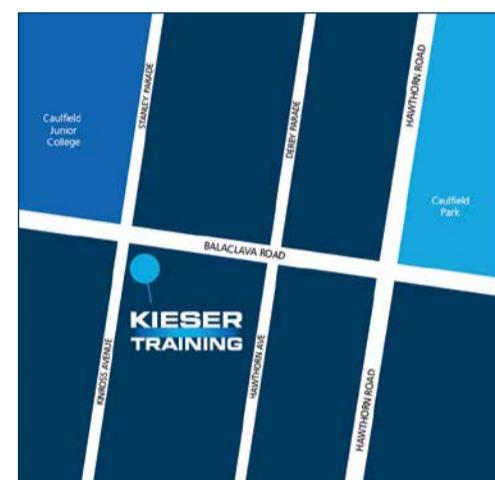
<sup>2)</sup> Implementation Guidance published by the GKV-Spitzenverband for the implementation of §§ 20 and 20a of the German Social Code dated 21 June 2000 in the version valid on 10 December 2014, page 6 (only available in German).

## KIESER TRAINING AUSTRALIA

The seventh Kieser Training studio in Australia opened in April in Caulfield. After a successful six months, Managing Director Tony Smith has thanked customers for their kind words and recommendation.

He has also thanked his team for their tremendous work and support with the development of the new studio. ■

**The new studio can be found at:**  
Level 1, 189 Balaclava Road  
North Caulfield 3161



## IMPRINT

Reflex is published three times a year, including online. Stay informed!  
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**PUBLISHER / COPYRIGHT**  
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## HOT OFF THE PRESS: NEW GERMAN EDITION OF "FULL STRENGTH"

### NEW EDITION OF GERMAN ORIGINAL OF "FULL STRENGTH" PUBLISHED IN OCTOBER BY HEYNE VERLAG

Strong skeletal muscles are essential for a strong body and play a major role in maintaining health and performance. To prevent muscle atrophy and ensure optimum performance, muscles must be subject to an adequate stimulus on a regular basis.

In the new edition of "Ein starker Körper kennt keinen Schmerz" (the title of the German original of "Full Strength"), Werner Kieser provides comprehensive information on muscles, strength and training and explains the method and training principles used at Kieser Training. Why do we need strength? How do muscles work? What is a muscle chain? Can you have strength without muscle? Werner Kieser answers all these and other questions in the new edition.

Kieser also explains the benefits of machine-based training and describes the machines, including new ones such as the B3/B4, A5, C2 and the K Tower. There are also new illustrations to accompany the description of each exercise.

In the chapter "Programme and Methods", the author explains the precise

meaning of terms such as the "analysis of current location", the difference between a correction and a maintenance programme and how those with greater experience of strength training can use intensification methods to maximise their training gain.

#### New chapters

- Strength tests
- Analysis of current situation
- Post-fatigue
- RPT and PITT-Force®
- Split routines
- Pelvic floor problems
- Foot problems and risk of falling

"The aim of strength training for health is not solely to maximise specific sporting performance. It also seeks to maximise physical condition," writes Kieser in the preface. This book provides valuable information on the long-term, successful use of the Kieser Training method. ■

The English version of "Full Strength" is currently being revised and the new edition is due to be published in 2016.

