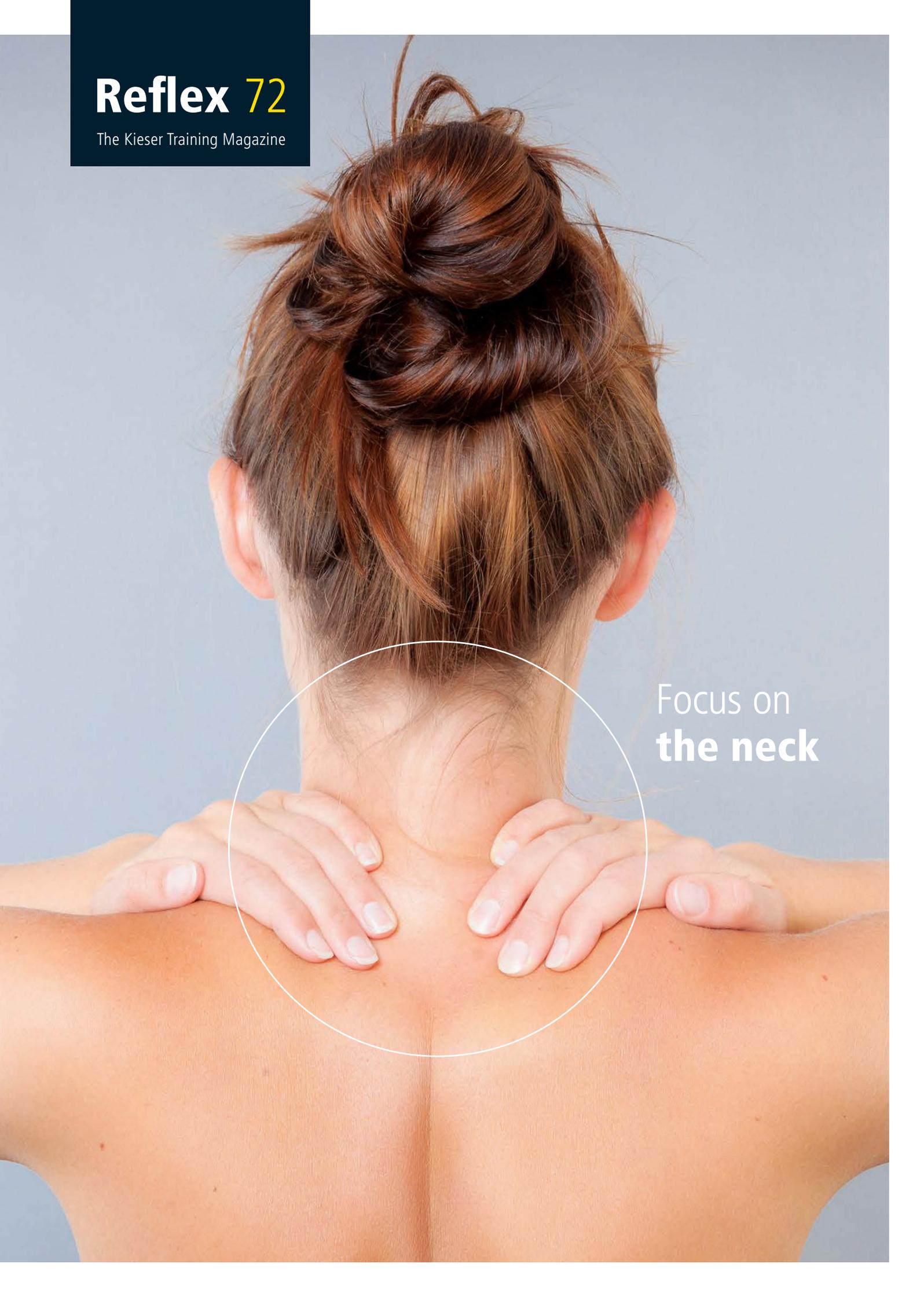


Reflex 72

The Kieser Training Magazine



Focus on
the neck

Strong figures



90 per cent of the population in Switzerland, 81 per cent of the population in Germany and 77 per cent of the population in Austria own a smartphone and use it a lot.

27

kilos of weight pull on our cervical spine, muscles, ligaments and tendons each time we bend our head forwards by 60 degrees while using our smartphone, tablet, laptop or while reading. This places an immense load on our necks – especially if the muscles can't cope with the load.

730

kilos is the weight we deploy in our battle to combat neck pain – using the CE, our computer-assisted Cervical Extension machine. Our training not only helps your neck withstand the strains of everyday life, but it also helps correct your posture.

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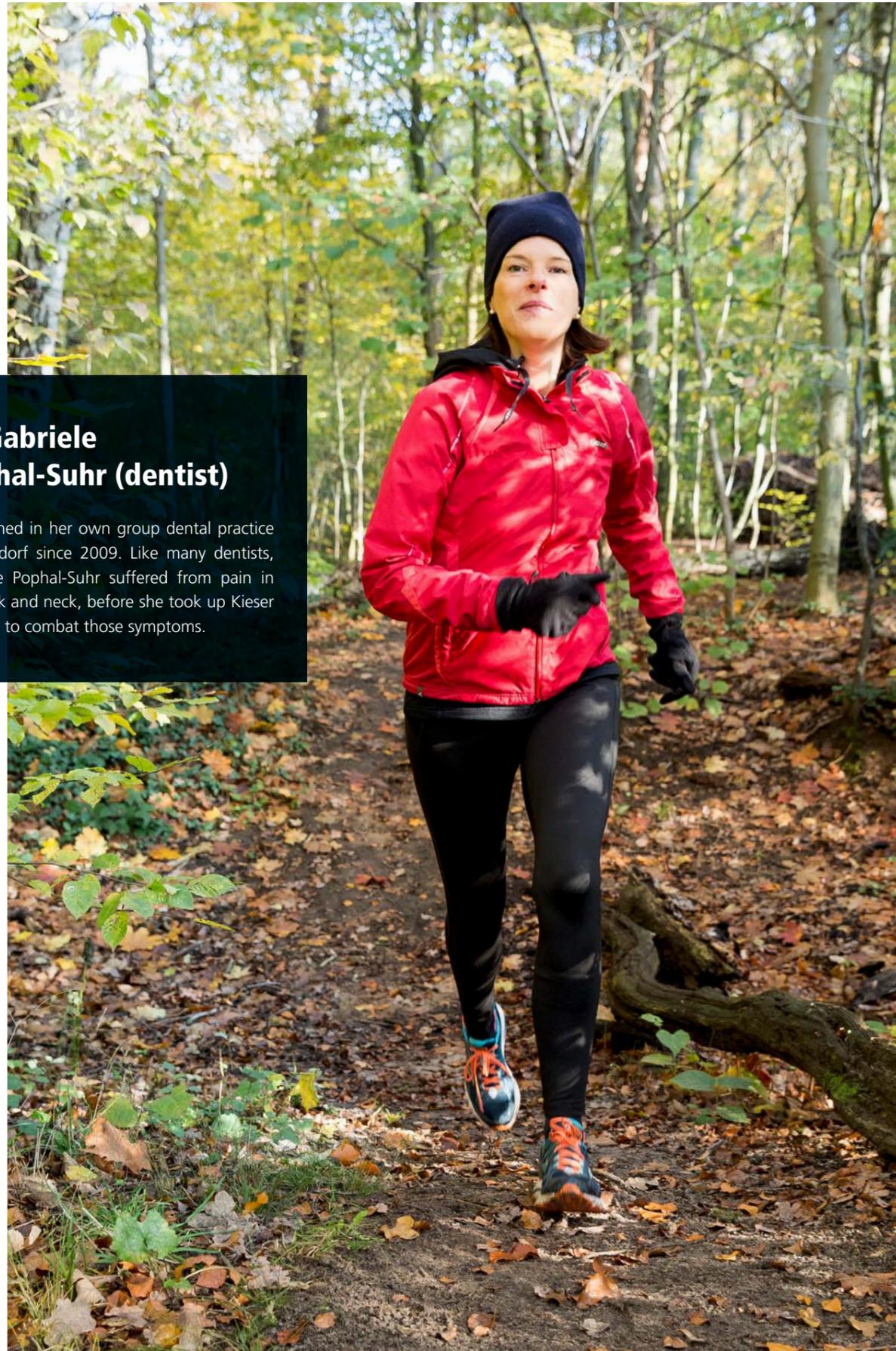
Dear Readers,

For a great many of us, neck pain is a burden that stays with us day in day out and is one of the typical symptoms that arise in the office. Fortunately and despite the many hours I spent at my desk every day, I have so far been spared suffering from that problem. In my view, the reason for that has to do with my well developed neck muscles. There is no doubt that anyone who spends hours with their head bent forwards looking at a smartphone or laptop or who sits in the same position in front of a monitor is not only placing a strain on their neck, but on their head and shoulder area as a whole. Simply keeping your head upright, moving your neck or making sure that your workstation is ergonomically designed, is not enough. When it comes to ensuring that your neck stays pain-free, your muscles play a key role. So why not take some time to focus on strengthening your stabilising neck muscles using our computer-assisted Cervical Extension machine? This may help you maintain an upright posture at all times and prevent you from suffering any symptoms.

We hope you enjoy reading this edition, which is all about your neck.

With warm wishes,
Michael Antonopoulos
CEO, Co-owner

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Training principle no. 7



Dr Gabriele Pophal-Suhr (dentist)

established in her own group dental practice in Burgdorf since 2009. Like many dentists, Gabriele Pophal-Suhr suffered from pain in her back and neck, before she took up Kieser Training to combat those symptoms.

“Strength isn’t something you develop automatically. You have to do something and keep doing it.”

Dr Gabriele Pophal-Suhr suffered from frequent neck pain. Since 2018, however, she has been using Kieser Training again – and has managed to get rid of her symptoms.

Dr Gabriele Pophal-Suhr has just finished work and is out on a run on her usual route through the Eilenriede, a forest located to the east of Hannover. She loves working out. “I love the forest, the fresh air and especially the peace. When I’m out here, I’m completely on my own. There are no noises or distractions and I can completely switch off.”

Gabriele Pophal-Suhr is a dentist and is therefore a member of a profession that frequently suffers from chronic back complaints. “I had muscular imbalances, pain in my cervical spine and recurring tensions in my neck.” Often, she sits “as if frozen” in an uncomfortable position on her stool next to the treatment chair. “Whenever I’m on that stool, I always have to look to the left at my patient and need to stretch my upper body quite far in order to see anything inside the patient’s mouth.”

When, about ten years ago, she suffered a slipped disc following the birth of her daughter, she visited an orthopaedic specialist,

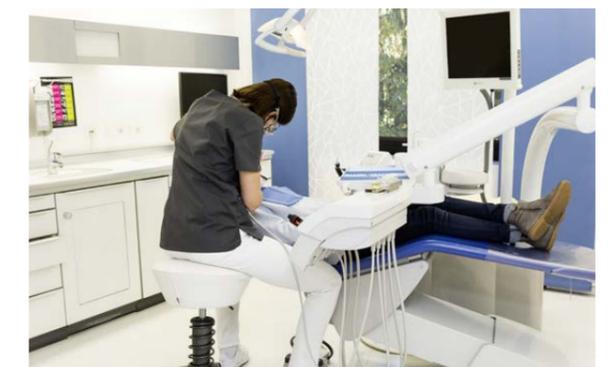
who prescribed a medical strength-building therapy. Gabriele Pophal-Suhr therefore started to follow a tailor-made training programme from Kieser Training using the Lumbar Extension machine, to strengthen her spinal extensor muscles. The training programme also included additional exercises to strengthen her postural muscles and “they actually did me a lot of good.” Gabriele completed a total of 16 units, until her pain had disappeared.

For the time being, in any case. After that, everyday life took its toll. Gabriele Pophal-Suhr had only just started practising dentistry independently in a joint practice of her own. “I had an obligation to perform and put my own needs to one side. If your children are small and you’re also working for yourself full-time, you simply don’t have the time to focus on yourself as well.”

In the meantime, however, Gabriele was attending a conventional fitness studio and going jogging occasionally, though that was of

no benefit at all to her neck or back pain. When the pain returned, she went back to the orthopaedic specialist, who once again advised her to strengthen her muscles in a targeted way. “I knew that if I went ahead and did it, things would get better.”

In 2018, she therefore started on a programme of training from Kieser Train-



ing again. This time, her programme included using the Cervical Extension machine twice weekly, in order to strengthen the extensor muscles in her neck.

This targeted training worked: “After spending long periods in a seated position, I still occasionally feel tension, but no longer as frequently as I did before.

I also don’t need to take headache tablets as often as before.” In the meantime, Gabriele Pophal-Suhr is following a programme of “upkeep training”, which involves training on the CE only once a month, in order to maintain the successful outcome of her training.

That upkeep training doesn’t only focus on the back and neck. Gabriele

also notices the benefits while jogging and skiing: “Before, I had trembling knees after three days on the slopes, but now, those symptoms of fatigue are a thing of the past. I’ve become stronger and feel fitter overall, which makes jogging and skiing a lot more fun.”

The muscles in our neck

Our neck extensor muscles run in strands along the spinal column and form part of our spinal extensor muscles, which extend from the back of the head to the sacrum. Their main task is to stabilise the spinal column and keep the body upright. They are a system consisting of different groups of muscles that link the vertebrae together, keep them in position and ensure effective load distribution. This system of muscles actually protects all of the structures that make up the spinal column. The neck extensor muscles are grouped into an inner and outer strand, which form a functional unit. Both strands work together when we extend, turn, or lean our head to one side.

Strengthening our neck through strength training – these are the benefits:

- Stabilises the spinal column
- Helps us maintain an upright posture
- Protects us from premature fatigue and overloading
- Prevents muscle tension and symptoms
- Reduces neck pain



Concentrated knowledge



CE – stands for Cervical Extension (neck stretching). Weighing in at 730 kilograms, this large machine is the showpiece of all neck machines, as it allows the neck extensor muscles to be trained in isolation. These can be difficult to reach using conventional methods. The back of the head rests on a pillow. Use the neck extensor muscles to stretch these muscles and then guide them into the flexion position with respect to the sternum. Isolation can be achieved if the instructor fixes the upper body with a shoulder strap and a chest pad. Additional benefits: the net weight of the head is balanced out by a counterweight and the resistance can be finely adjusted. When raising your head, avoid stretching your chin upwards or sliding your head forwards like a tortoise. When bending, simply make a double chin and then move your chin towards the breastbone. Using the CE, you will quickly reach your goal. Many people feel the benefits for the first time after two or three training units. Thanks to the one-to-one supervision from our trained instructors, even patients suffering pain need not fear pushing their muscles to their limit.

 **For further information about the CE's younger sister, the G5, please visit:**
kieser.com.au/training/exercises/

Better a strong neck than a painful neck



by Monika Herbst

The smartphone is a brilliant invention. It enables us to communicate with others while on the road, read articles or find our way in a foreign city. It has a less positive effect on users' necks, however – particularly if you spend hours leaning over it with an incorrect

posture. Instead of suffering from symptoms, it is better to strengthen the muscles in your neck.

For increasing numbers of people, the smartphone is something that accompanies them every day: in Switzerland, around 90 per cent of residents have one, whilst that figure is 81 per cent in Germany and 77 per cent in Austria. And it is something that is used intensively. According to a survey carried out in Germany by the German Association for the Digital Economy, we spend an average of 2 hours 32 minutes on our smartphones on weekdays. In the USA, surveys have established that 77 per cent of the population

use their mobile phone for an average of 3 to 4 hours and that does not include the time that those same people spend on tablets and laptops.

Tasks that our muscles find easy to perform when we're in an upright position become very hard work when leaning forwards. When we look at the display, we mostly bend our head forwards and therefore also bend our cervical spine. To keep our head in that position, our neck and shoulder muscles need to summon up significant strength.

On average, an adult's head weighs five kilograms and the further forward we

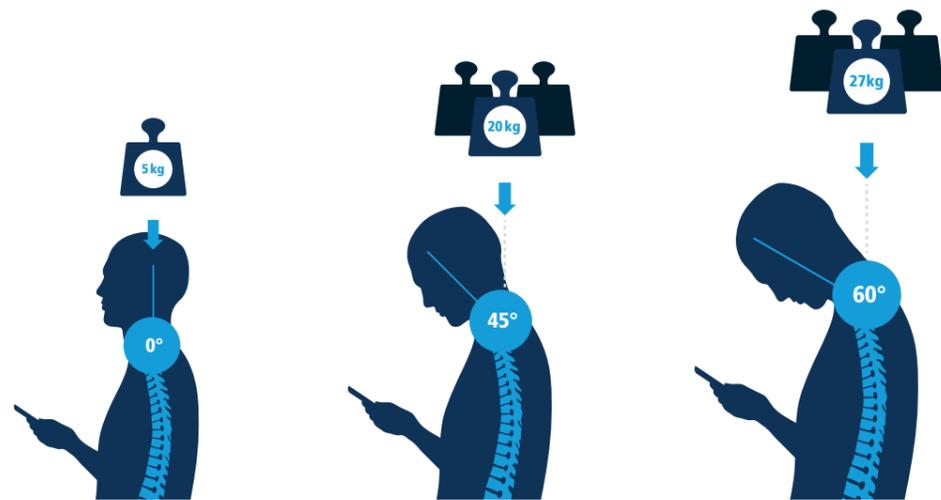
bend our head, the heavier the load. Measurements carried out by the US spinal surgeon, Kenneth Hansraj have provided us with some specific figures: if you bend your head forward by 45 degrees, a load of more than 20 kilograms is applied to your cervical spine, muscles and tendons. If that angle is increased to 60 degrees, that load increases to more than 27 kilograms. This is approximately equivalent to the weight of a seven-year-old child.

Once we become aware of that, it soon becomes clear that such a heavy load is not without consequences. An international review published in the Hong Kong Physiotherapy Journal

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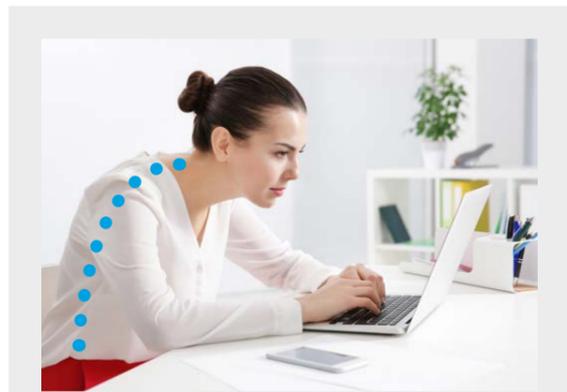
“I developed the CE in the late 1980s, on behalf of Arthur Jones. It is the showpiece of all neck machines. Since then, we at Kieser Training have implemented a great many improvements, especially in terms of the electronics and the software.”

Phil Sencil, Mechanical Engineer at Kieser Training



If we tilt our head, we apply four times' that load to our cervical spine, our muscles, our ligaments and our tendons.

Source: According to Hansraj 2014.



We typically position our desks like this: we sit slumped down in front of our monitor with our head pushed forwards like a tortoise. Our rib cage moves backwards and our head automatically sinks downwards. And in order to look straight ahead from that position, we are obliged to overstretch our neck. Can you feel how you tensely pull your shoulders upwards and what pressure is being supported by the vertebrae and the discs at the very top of your neck? An ergonomically configured desk will only help up to a point. In order to adopt a permanently upright posture, targeted muscle strengthening is indispensable.

in 2018 demonstrates that while the mobile device is being used, activity increases in all of the relevant muscles in the neck. While using a smartphone, the number of degrees by which we tilt our head and bend our neck also becomes greater and our head is increasingly pushed forwards. Accord-

ing to scientists, this may cause symptoms in our musculoskeletal system.

Long-term consequences of forced postures have not yet been investigated; however, they can be surmised. This can lead to muscle fatigue and incorrect posture and overstraining as a

result. For example, neck, head and shoulder pain.

But smartphones aren't the only things that put a strain on our neck: many people spend their everyday lives predominantly in a seated position, looking at a monitor. Beate Lauerbach sees the consequences of this every single day. As a sports scientist specialising in prevention and rehabilitation, she works as an LE/CE instructor at the Kieser Training Centre in Würzburg. Around one third of her clients present with symptoms and pain in the neck area. The good news is that "80 to 90 per cent of those symptoms are essentially due to muscle problems. In most cases, they can be prevented or treated using strength training."

The situation usually starts with minor symptoms: "The muscles in the neck and shoulders are tense and painful. This is followed by headaches and painful restriction of movement, such as when looking over your shoulder in the car,"

explains Beate Lauerbach. These are the first warning signs and that means that the time has come to take action. She goes on to explain that if you do nothing, structures may suffer long-term damage: "incorrect posture or excessive strain can give rise to symptoms of premature wear or may cause damage to the discs."

As part of a study, she investigated the effects that strengthening the muscles have on people suffering from neck pain. Of 357 patients affected, 59 had already booked an appointment for disc surgery. After completing 18 units on the CE, only two of them actually needed an operation. In all other cases, the training had helped on its own.

In order to prevent causing chronic pain, Beate Lauerbach recommends making the CE an integral part of your training, in order to stabilise the cervical spine in the most effective possible way. She also advises strengthening all of your core muscles, in order to

achieve a posture that is as upright as it can be.

Something else that is also helpful is to use your smartphone in such a way that you place as little strain on your neck muscles as possible. The measurements included in the study published in the Hong Kong Physiotherapy Journal make it clear that typing is best performed with two hands, not one, that standing is better than sitting and if seated, it's best to rest your elbows on the armrests. The last two points in particular are intended to ensure that you hold your smartphone up as high as possible, so that your head is in an upright position. That should always be your aim. And it goes without saying that the less time you spend using your smartphone, the better.

The LE – a milestone on the road towards a healthy back



On 8 October 1987 at the Waldorf Astoria in New York, Arthur Jones presented his latest machine to the world – the Lumbar Extension machine (LE). The innovative feature of this machine was that it made it technically possible to give an authoritative functional diagnosis and to strengthen specific muscles deep in your back.

Later that same year, Werner Kieser ordered five machines. The LE has now been in use at Kieser Training for 30 years. For many years, the company has been producing them itself, which has enabled it to make a number of improvements, such as in terms of the software and the measuring instruments. While some people call it an instrument of torture, others believe it works miracles. But the fact of the matter is that this ground-breaking technology has enabled a great many people to get rid of their back problems once and for all.

Blockages

Dr Martin Weiß, General Practitioner and Chirotherapy Specialist

What do we mean by blockages?

Vertebral blockages refer to reversible, functional disorders of the spinal column that limit or prevent movement. These can occur in any of the vertebral joints, as well as on the flexible connections to the head, ribs and pelvis. The most significant causes of vertebral blockages include physical inactivity, a lack of muscular stability and muscular imbalances and a predominantly sedentary lifestyle.

What are the typical symptoms?

Pain occurs in the area of the blockage and its intensity will vary. In other words, the pain will come and go. On good days, it may disappear almost entirely, only to be reactivated once you make a false move. Once you move, the pain will return. If you remain sitting, standing or lying down for too long, the pain will increase and that may severely affect your sleep, for example. In many cases, the pain will radiate into your arms and legs or into your rib cage, especially around your heart. Whilst a disc problem always radiates into one leg or one arm, the pain caused by a blockage usually radiates into both arms and legs. In the case of blockages in the cervical spine, headaches, dizziness and tinnitus can occur.

What are the consequences?

Without a clear diagnosis, the patient won't experience the benefits of treatment. One of the things that can happen is that the pelvis may become twisted, which is why the legs may seem to be of different lengths. Insoles are sometimes prescribed in such cases. If, for example, the pain is radiating from the thoracic spine into the heart area or into the arms, this often results in unnecessary investigations, as heart problems are suspected. If the blockage is not resolved, it gives rise to a vicious circle of pain, tension and pain. The patient then becomes increasingly distressed. Ultimately, this frequently results in psychotropic drugs being prescribed, which is unnecessary.

Can blockages be resolved by means of Kieser Training?

Yes and no. On the one hand, existing blockages may be



resolved by the mobilising effects of training, whilst on the other hand, the training may even reactivate blockages, causing pain. It really depends on the area concerned. For example, blockages in the cervical joints or in the middle and upper lumbar vertebral joints can frequently be resolved by means of this training. In the case of blockages in the costal vertebral joints, however, this is rarely successful and is almost never successful in the case of blockages in the lower lumbar vertebral and sacro-iliac joints.

What do you recommend?

Successful treatment consists of three things: 1. gentle manual therapy, 2. mobilisation exercises carried out by the patient him/herself and, as an essential component for long-term success, 3. muscle strengthening to provide stability. The last of these is crucial, as the muscles serve to stabilise the spinal column and the joints. In the long term, it will therefore reduce the risk of blockages.

Sometimes, when a blockage is released, the bones will make a noise. But where does that noise come from?

Noises occur due to a sudden vacuum during manipulation of the small joints in the spinal column and the costal vertebral joints – just like the noise that we hear when pulling a suction cup away from a surface. However, if gentle manual treatment techniques are used such noises only occur rarely.

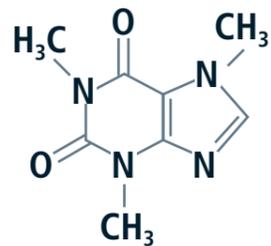
“Thanks to the regular and well supervised training I received at Kieser, I am now in good physical condition overall, even though I’m 60 years old. But I have one weak point that turned out to be persistent – my neck. I therefore had to perform therapeutic exercises every few months to combat the pain and tension that I was feeling in my neck and shoulder area. One thing that I could only do to a limited degree was knitting, which is something that has always brought me a lot of enjoyment. When the centre installed a new computer-assisted training machine for the neck area in autumn 2018, I gained renewed hope and immediately signed up for two sample training sessions in early October. That same week, my daughter told me that she was expecting her first child. The neck training therefore came just at the right time and quickly proved effective. Not only have my symptoms disappeared, but I’ve already finished making a baby bonnet, baby cardigans and a baby blanket.”

Maria Schmedt, a customer of the Frankfurt centre



by Dr.sc. ETH David Aguayo

Caffeine polarizes. For some it is a luxury food, for others a stimulant. In the brain it attaches itself to receptors that influence for example sleep. Blood vessels, heart, kidneys and other organs such as muscles also react to caffeine.



Current scientific evidence suggests that caffeine could acutely increase both strength, as assessed by one repetition maximum and maximal voluntary contraction tests, and muscular endurance. However, the positive effects have not yet been reported uniformly and unambiguously and depend on factors such as habituation. A clear conclusion is therefore not yet possible. Increases in physical performance seem to be possible, although this effect

might be caffeine dose- and external load-dependent. In most studies, caffeine was administered in capsule or powder forms. The effects of alternative forms such as chewing gums or mouth rinses on resistance exercise performance are still unclear.

A reduction in the rating of perceived exertion could potentially contribute to the performance-enhancing effects of caffeine supplementation, as a decrease in the rating of perceived exertion was observed in conjunction with an increase in performance after taking caffeine. However, caffeine intake seems to have no effect on pain perception. Neuromuscular, hormonal and molecular mechanisms also contribute to the potential increase in performance.

Furthermore, there is some evidence that caffeine intake, compared with placebo, leads to greater increases in testosterone and cortisol production after strength training. However, these acute changes in hormone levels are only weakly correlated to long term adjustments of strength training

Caffeine before strength training?

such as muscle growth and increased muscle strength. Therefore, these results are of questionable practical importance.

Three to nine milligrams of caffeine per kilogram of body mass are necessary to achieve a possible performance-enhancing effect. This is about 200 milligrams for a person of 70 kilograms. This corresponds to about two cups of coffee at 120 millilitres each. Coffee could therefore have a comparable performance-enhancing effect. It is recommended to take the caffeine 60 minutes before training.



Caution is called for, if you suffer from high blood pressure: Caffeine could increase systolic blood pressure, although again, not without contrasting findings. In general, caffeine seems to

be safe when taken in the recommended doses. However, at high doses, side effects such as insomnia can be more severe.

It remains unclear whether habituation reduces the performance-enhancing benefits of caffeine in strength training. The latest research does not suggest that caffeine adds any value to muscle strength or fatigue resistance in physically active people who are used to caffeine. In principle, all results cannot simply be transferred to women, since most of the studies only included male participants.

It's like nutrition – a recommendation makes little sense in this case. It's something everybody needs to decide for themselves. Test whether you can get a positive effect from it for yourself.

The actor, Jan Hartmann, is on his way to achieving a healthy back



Back pain is something that I've always suffered from, in one form or another. As an eight-year-old boy, I sometimes lay rigid on my bed and could hardly stand up due to the pain. At one point, during a physical education lesson, I picked up a set of football goalposts in the wrong way and immediately felt a stabbing pain in my back. During my first few trial lessons in golf, which I was already fairly good at, I could hardly do anything after a short while.

This was followed by injections, heat treatments and physiotherapy. But I still didn't know what exactly was going on. As the child of divorced parents, the mental aspect was also something that certainly could not be underestimated. Either way, severe back pains like those are not normal in a boy of that age, of course, and they were causing too many restrictions on my everyday life.

Cycling and playing tennis were activities that I enjoyed very much. Over time, taking part in those helped me to strengthen my body a little, simply by taking part. As a result, my back pain also decreased, but at the time I didn't associate that with the activities I was doing. Typical. If you're not in pain, you don't need to do anything to keep your body in good condition. But that was precisely my mistake!

A few years later, when I was around 30, I suffered two slipped discs in my cervical spine. Due to the pain, I started riding a racing bike, but stopped playing tennis almost

completely. I also played a round of golf from time to time, but not as often as I should have. I was hoping that my body would be able to de-stress and therefore get back into shape. Unfortunately, the opposite was the case.

In the period running up to the birth of our son, I put on eight kilos in weight, was more sedentary and did less and less exercise. The pain also got significantly worse, until I would wake up every morning, having had no rest and with pain in my entire body. Not a pleasant situation to be in when you're in your late 30s, so the time had come to do something about it. After all, I do want to be a fit father for my kids!

What I learned was, if someone won't listen, they have to feel it for themselves! The only way to make me, and my body, healthy and strong again would involve activity and a change in my diet. As Kieser Training had helped my uncle get his ankylosing spondylitis (Bekhterev's disease) under control, the logical solution for me was to strengthen my back by starting a Kieser Training programme.

And that's what I'm doing now. Having completed my first unit, I am now on the way to developing a strong and healthy back. And it feels really good. I'm looking forward to this journey.

Power through training!
Jan Hartmann

Recipe: blueberry smoothie

In order to increase the accumulation rate of muscle protein in an effective way, it's important that a programme of intensive strength training be accompanied by a sufficient supply of protein.

Tip

- Based on the data currently available, the recommended intake is 1.5 to 2.2 grams of protein per kilo of body mass.
- A sensible step is to distribute your required daily intake across several portions.
- You should consume one portion of approx. 20 to 30 grams every 3 to 5 hours.
- In elderly people, that amount should be increased slightly to approx. 30 to 40 grams of protein per meal.
- The best thing is to consume one portion immediately after each session of strength training.



Ingredients

75 g of low-fat curd cheese
100 ml of milk (3.5% fat)
1 small teaspoon of honey
¼ of a vanilla pod

25 g of almonds (flaked)
90 g of blueberries
The juice of ¼ of a lime
¼ teaspoon of mulled wine spices

And away you go!

Stir the low-fat curd cheese together with the milk and honey until it has a creamy consistency. Scrape the vanilla from inside the vanilla pod, add to the curd cheese mixture and stir. Juice the lime and stir into the curd cheese mixture. Finely chop the almonds and toast them in a dry pan until golden brown. Sort the blueberries and wash them. Using a hand blender, finely purée the creamy curd cheese mixture together with the blueberries, almonds and the mulled wine spices until it becomes a smoothie. Pour into glasses and serve.

Tip: The smoothie is perfect to take with you when you're on the go. If refrigerated, it can be stored for 1 to 1.5 hours.

1 portion (315 g): 310 kcal, 19.7 g of protein, 16.8 g of fat, 18 g of carbohydrates

News

Kieser Training celebrates 20 years in Austria

On 9 March 2000, we set up our first Kieser Training Centre in Austria on the Julius-Tandler-Platz in Vienna. Today, we have eight centres in Austria, five of which are located in Vienna and one each in Graz, Linz and Salzburg.

Got back problems and fully insured with Barmenia?

As part of a new collaboration with Kieser Training, Barmenia will fund the cost of membership on a pro rata basis for one year, depending on how diligently you keep up your training.

A strong alliance to combat cancer

Systematic strength training forms an important component to supplement any cancer treatment. That is why Kieser Training is working in cooperation with OnkoAktiv. This registered association is pursuing the goal of establishing a network of certified high-quality training and therapy institutes all over Germany. This will allow people diagnosed with cancer, along with those who were previously affected, to continue doing their training close to home.

Werner Kieser's corner



Training principle no. 7

"Practise one set of each exercise, but keep doing it until your muscles are exhausted."

Anyone who wants their training to be effective must experience physical exertion. It's all about causing the muscle in question to produce a large amount of power until it is using every single muscle fibre in order to perform effectively. That is the equivalent of 100% utilisation.

Once the muscle is no longer capable of producing any more power, local exhaustion has been reached. You will feel that once you are unable to complete the movement in the machine, even though you want to. It's important to continue training until you reach that point, as only then will the fibres receive certain information that di-

rects them to develop. The training stimulus needs to exceed a certain stimulus threshold, so that compensatory processes swing into action. It's possible that 95 to 98 per cent utilisation may be enough. But, how can we set out to measure that? We can only be certain once the targeted muscles can go on no longer.

Once the stimulus has been triggered, "doing a second set" won't bring any greater benefit. Trainers are still recommending and taking their trainees through multiple set training. This incorrect reasoning lies in their conviction that working harder will lead to greater training success. Of

course, you may actually achieve some success by doing three or more sets – provided that during one of those sets, you reach local exhaustion. But why would you spend three times' the time and effort to achieve the same result?

So make sure you push yourself to the limit in every exercise – unless you have been instructed otherwise during your medical training advisory session. Use your willpower to continue doing each individual exercise until the muscle or group of muscles can no longer go on. Your muscle will repay you by increasing in size and strength.

"If you have problems with your back, you are a broken person."

Werner Kieser

