

Reflex 39

The Kieser Training Magazine

39 – a powerful number

Even though it can be said that humans are all different, deep down we are all identical – at least in terms of warmth. The core body temperature for all of us is a cosy 37° Celsius. And that's it! It does not matter how warm or cold it is around you, the body wants to keep internal organs in a good mood and working properly and so it maintains a temperature at which they feel comfortable.

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However, there is an exception: The ideal core temperature for sport or exercise is about 39°, which is why the mantra for anyone about to begin a sporting activity is to warm up in order to achieve the efficient temperature of 39°. But there's a snag as studies have shown: Neither jogging nor intensive interval training will raise core temperature by the crucial 2° Celsius and recreational athletes won't even manage a 1° increase during their actual activity. In addition, an excessive level of warm-up will exhaust you before you even start training. Many people in fitness centres thrash about in vain trying to achieve that increase. Admittedly, they may well get their muscles up to the ideal state, but by the time they reach the last exercise in their circuit, the warm-up effect will be long gone.

So what is the solution to this dilemma? Once again, the answer lies in our muscles: When a muscle contracts, the blood supply is reduced and, with it, the supply of oxygen to the muscle tissue – this is what generates an increase in heat. What this means in practice is that Kieser Training heats up each muscle directly with the first few repetitions of each exercise. So when the muscle reaches the crucial period of fatigue, its temperature is at its ideal level. No need to pound the treadmill. It happens automatically with each exercise and it's the same for everyone.



Foto: © Kieser Training/Michael Ingenweyen

Melbourne back pain study supports international findings

Globalisation may have come a long way – but the health sector maintains a very national outlook and demands local confirmation of the effectiveness of treatments even if there are plenty of international studies confirming it.

Kieser Training comes across this phenomenon in almost every new market it enters and the upside is that these studies invariably confirm the effectiveness of our approach. The latest such study was carried out in Melbourne.

Last year Dr John Carlson and Mr Geoffrey Mackay, Research Directors for Back & Beyond: Centre for Lower Back Pain Research, carried out a study with the help of patients at the South Melbourne Kieser Training facility. A total of 380 patients completed the 12-18 sessions of therapy, with their progress closely monitored by the researchers.

What the study showed was that Kieser Training's Medical Strengthening Therapy (MST) significantly improved lower back strength and mobility, both for men and women, regardless of their varying degrees of back pain at the outset of the treatment. More importantly, the participants reported a significant decline in pain and disability following MST.

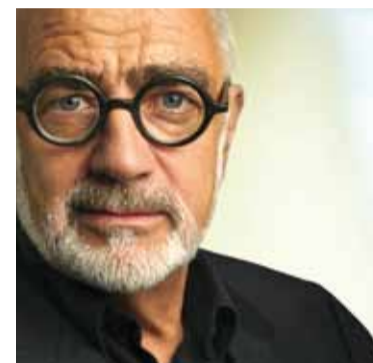
For the managing director of Kieser Training in Australia, Tony Smith, and physiotherapist and manager of the South Melbourne Kieser Training centre, Tim Dettman, the findings are a welcome validation. "Whilst there have been major studies done into the effectiveness of lumbar extension therapy in treating back pain before, they've been done in the US and Europe," says Smith. "This is the first time there has been research of this kind in Australia and it's further validation in an independent and separate part of the world that the earlier results are conclusive about the benefits of lumbar extension therapy. The fact that our results are consistent with those in Europe and the US is great."

This is also good news for the South Melbourne Kieser Training franchise that prides itself on being a pioneer in bringing this approach to Australia. "We see 8 - 10 new customers per week and 90% will have back-related issues and we will treat them using the lumbar exercise machine and then encourage them to continue with Pre-

ventive Strength Training (PST) so that long-term issues are unlikely to arise again," Dettman explains. He is also excited by the further research potential into back pain. "Our target is 500 new customers per year for MST in each franchise in Australia. When we have 10 franchises, this will translate into 5,000 new customers a year for our research data pool."

Smith says the latest research is just the start to helping underline the value of Kieser Training methods. "The underlying message of our claim "Strength for Health" is starting to resonate with Australians as they become aware of the effectiveness of our treatment. As our presence grows and more and more health professionals learn about us, we foresee a time when our MST and PST programmes become fully endorsed and supported by insurers. Research such as that conducted by Back and Beyond is an important validation of the merits of Kieser Training, not only as therapy, but as an important preventive measure as well."

Dear Reader



An odd experience accompanies the international expansion of Kieser Training: In every new country we enter, the authorities, insurers and the medical community ask for studies; not international studies, but national studies.

I was always convinced that the postulates of science were internationally valid. But evidently they are not. What's the reason for that inconsistency? The fact that we all belong to the same species should lead to the conclusion that the musculoskeletal problems we have to face must be universal.

The insistence on national studies must have other reasons. Either they mistrust foreign scientists or they want to be the ones who figured out the truth. Or are they simply generating business for their own academics? None of this would be illegal – but it can hardly be seen as an efficient use of resources.

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KIESER TRAINING

STRENGTH FOR HEALTH

Shoulders – multipurpose, just like a Swiss Army knife

Do the ironing, blow dry your hair, hang up curtains, lift a crate full of bottles, hold a drill, paint a wall or throw a ball – these are just a few of the many movements that use our shoulders every day, in most cases without a problem. The muscles involved are strong and capable of precision control. They are also extremely mobile because the glenoid cavity is flat and only about a quarter the size of the head of the humerus (top of the acromion).

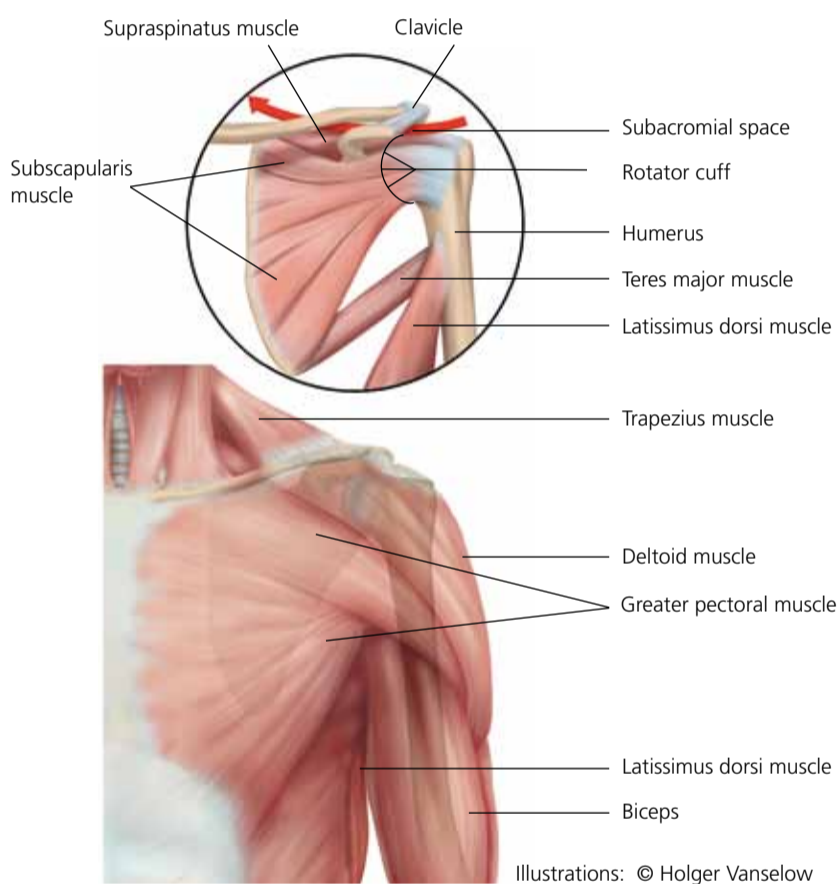
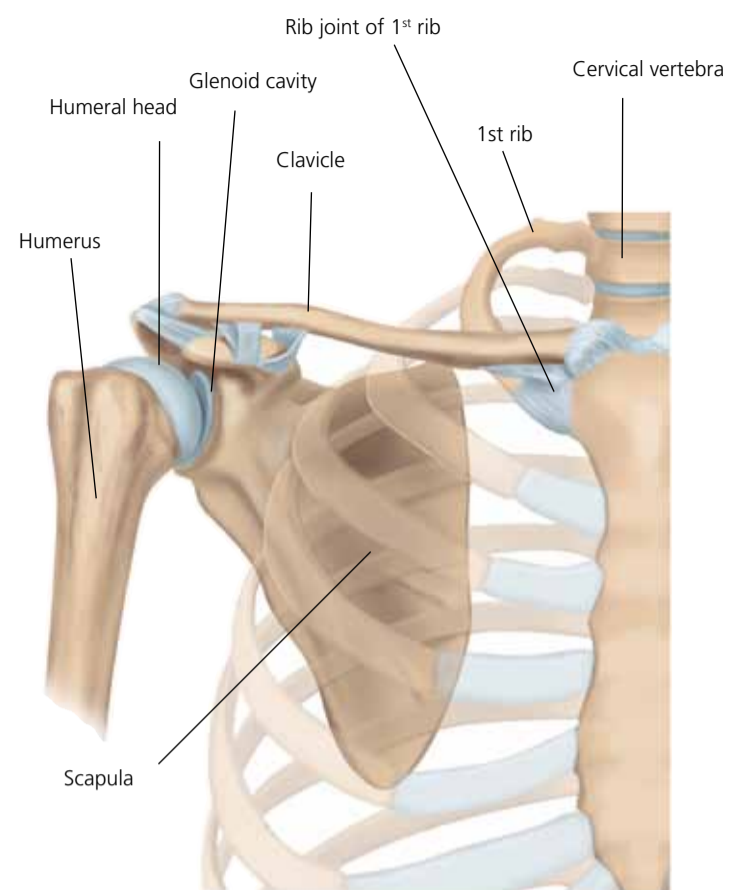
The shoulder joint enjoys contact
The shoulder joint is not an isolated part of the body. It has indirect contact with the sternum via the top of the acromion and clavicle; also, via the costo-vertebral joints, it has contact with the rib cage, which in turn results

in contact with the thoracic and cervical vertebrae. The shoulder blade itself can move to and fro and rotate several centimetres against the ribs. In most cases, therefore, shoulder movements are composite movements.

As the top of the acromion is much larger than the glenoid cavity, stability is provided by the ligaments and muscles. The muscles – in what is known as the rotator cuff which surrounds the top of the acromion – provide protection in all directions and centre it in the cavity. The supraspinatus muscle plays a major role here, e.g. it prevents a dislocation of the joint if we throw something. Similarly, the other “rotators” help to move and protect the joint working together with the teres muscles,

the pectoral muscles, the latissimus dorsi muscle, the deltoid and trapezius muscles, not forgetting the biceps and triceps muscles. In total, it requires 26 muscles to ensure that the shoulder works properly.

And what if the shoulder does not work properly?
It’s good to have that degree of flexibility but sometimes it comes at a price – in the form of inflammation, calcific deposits, chronic wear on the tendon with a partial or complete rupture of the tendon or even worse: the dreaded and painful “frozen shoulder”. Nowadays, shoulder problems are common in all age groups, but are most prevalent in the 50 - 60 age group. The best solution is to prevent them developing in the first place.



Illustrations: © Holger Vanselow

What effect does Kieser Training have on ...

... shoulder stability?

Shoulder problems can be triggered by a wide range of factors. In everyday life, we tend to rotate our shoulders forwards and this causes a muscle imbalance. This imbalance can be intensified by repetitive movements or a sport-related strain. If we fall, we sometimes put out an arm to save ourselves and this impact or direct bruising can cause shoulder bursitis or a ruptured tendon. Sometimes, if there is previously undiagnosed damage, sleeping in a position that puts undue strain on the shoulder can be enough to trigger extreme symptoms.

Training combats these effects

In order to prevent shoulder problems, it’s worth taking a closer look at the various options offered by Kieser

Training. The E4/5 exercise machine is an excellent tool for strengthening and stretching the rotator muscles. The seat height, angle and intensity of the exercises can be modified to suit your individual needs or as specified at the medical evaluation. However, with both exercises it’s important to start off at low intensity and only increase this gradually depending upon tolerance. However, not even the best rotator exercises can resolve the situation if you have round shoulders and the back is unduly curved. In this case, you will need to do additional exercises to help straighten the back.

Improve posture

For example, the C5 strengthens the muscles that pull the shoulders

back and straighten the rib cage. The torso arm (C3) strengthens and stretches the entire spine. The seated dip (D7) exercises the muscles that pull the shoulders down towards the rear ribs and stabilises them. The 4-way neck rear (G5) completes the programme. The lateral raise (E2) helps to strengthen the deltoid muscle and so aids abduction. However, this exercise should not be done if the rotators are too weak or damaged. If you have shoulder problems, you will be told at the medical evaluation what exercises you should do and at what weight and intensity. Of course, Kieser Training offers several other exercises that help stabilise the shoulders and improve our posture. We just have to use them wisely.

Doctor’s Tip

What should you do for a shoulder impingement?

If your doctor says you have a shoulder impingement, this is not a diagnosis but merely a description of a condition. It means there is too little space in the tendon tunnel beneath the top of the acromion and so the bones, tendons and bursae are rubbing against each other. There are three stages of impingement: a spontaneously reversible inflammation; an advanced tendon degeneration that may include changes to the bone; and, finally, a rupture of the tendon. This mainly affects the supraspinatus muscle. A doctor can identify the cause by checking what movements are restricted, and consulting X-rays, ultrasound or an MRI scan.

You have probably already decided to avoid movements that involve raising

the arms above the head. In addition, the doctor will prescribe medication to reduce the inflammation or may give you a cortisone injection into the joint cavity itself. Acupuncture, electrotherapy, shock-wave therapy, and low dosage radiotherapy are also used. However, if such conservative treatment is unsuccessful, surgery may be indicated.

What action can you take? Well, the strength of the muscles attaching to the humerus and which pull the top of the acromion downwards is extremely important. If these muscles are strong, more space beneath the top of the acromion is available. This reduces pressure and the inflammation subsides. As it is actually the latissimus dorsi muscle that pulls the

humerus away from the glenoid cavity, the first exercise to consider is the C1, but only if the starting position is significantly limited. In addition, the C3 or C7 can be included – depending upon tolerance. The D7 strengthens the muscles that pull the shoulder blades down. The D6, with its vertical and horizontal handhold options, is useful for both strengthening and stretching. Sometimes, the gentle pressure exerted by the weight on the upper arm during the G1 can also be beneficial. The E2 is an option in certain cases, but particular care is required. In the medium to long term, the E4 and/or E5 can be introduced at low intensity.

It’s important to understand, however, that strength training for those

with a shoulder impingement requires plenty of patience.

All texts on this page by Sibylla Stecher



Sibylla Stecher was a doctor for eight years in the MST department in Frankfurt and now works in rehabilitation medicine.

Reflex

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Strength meter – the muscle tester



Small but effective – a good description for the brand new “machine” at Kieser Training! What’s special about our innovative strength meter is that it is designed not to strengthen muscles, but to measure their strength. The tests are carried out on normal training machines and consist of three exercises using different muscle groups. The methodology, including the analysis

process, was specifically developed for Kieser Training customers by our Research Department.

Benefits: it provides detailed information specific to age and gender; it indicates actual strength levels in various parts of the body; identifies current deficits; and compares your strength with that of others. Instructors can

use the results to plan more targeted training programmes and monitor training objectives. Regular tests are particularly useful for customers doing maintenance training at a reduced level. The tests ensure that customers are training at a sufficient level and are not at risk of losing strength gains already achieved. We recommend testing regularly every six months.

Expert’s Tip

Did you know that strength training is an important factor in recovery after injury? Even if you can only train one leg because the other is injured, you still activate the motor pathways in the other leg. As a result, the loss of strength on the injured side is less than it would otherwise have been.

As soon as you are able to put some weight on the injured side, start by training each leg separately. This allows you to control the training intensity and the range of movement. As soon as you are able to put full weight on the injured side, you can resume normal training.

In addition, the “super-slow” method can be useful during the rehabilitation process. With this method, the weight is reduced and the exercise is done at a very slow speed. This improves the quality of the exercise and reduces the strain on the joint. Similarly, customers often tolerate negative training surprisingly well after injury. In this

case, you raise the weight with both legs, but lower it with only one.

Strength training after injury is not only useful medicine, but can be valuable before joint surgery. By training the surrounding muscles, you lay down the foundations for a rapid recovery.

In this connection, we recommend a supervised session or a medical evaluation at Kieser Training.



Anika Stephan
Kieser Training Research Department

Latest research – Quality management for muscles

Say you want to hold a cup of tea, play a keyboard, complete a training programme or master a triathlon – all impossible without muscles. Every movement – whether one requiring precise coordination or maximum strength – depends upon the contraction of muscles. Most of the time, we hardly give it a thought, but each time we want to move, an impulse is sent from the brain via the nerve fibres to the “Quadriceps & Co”. They respond by contracting.

This all happens at lightning speed with messages from the brain to the muscles travelling at about 100 metres per second. On arrival, the electrical signals from the nerve fibres are transferred to the muscle cells. This happens at the neuromuscular junction – a minute cleft between the nerve and muscle cells. Here, the signals come into contact with hard-working messengers known as neurotransmitters whose job is to transport the message through the cleft. The acetylcholine neurotransmitter is released on the nerve side

and docks with the acetylcholine receptor on the muscle side (on the muscle “antennae” so to speak). This process triggers the required contraction.

Without this mechanism, we would be completely immobile. For example, many arrow poisons inhibit these receptors and so cause complete paralysis because the acetylcholine is no longer able to dock. Similarly, disease can disturb this crucial transmission of messages through the body causing a loss of strength,

coordination and performance. This is why scientists working on muscle dysfunction also focus on this minute cleft.

Researchers from the Leibniz Institute for Age Research in Jena and the Karlsruhe Institute of Technology have now shed some light on how this mechanism actually works. They have discovered that muscle cells have an ingenious quality assurance mechanism that is responsible for the structure of these essential acetylcholine receptors. An auto-

matic process weeds out any defective receptors with the result that only working receptors are brought into use. A recently discovered protein called Rer1 is responsible for this protein sorting. Of particular interest is that, until now, it was assumed that this reduction in muscle mass and strength was solely the result of the ageing process. However, based on the latest research, it could also be that a lack of Rer1 in muscle cells is an important factor in the strength loss that occurs as we get older.

Tales from the Training Floor ... Duel at the chins bar

The best stories always come from real life – or from training. Life does not simply stop whilst the thousands of Kieser Training customers are exercising. Quite the opposite, life goes on around them. Tales from the Training floor is the name of our new series. As a starter, we have the story of an 84-year-old from Wiesbaden showing a 30-year-old a thing or two about how to do chins.



Doing chins at 84: Kieser Training customer Josefina Hardt, with Eugen Stendebach, Managing Director of Kieser Training Wiesbaden, Germany.

The Kieser Training facility in Wiesbaden affectionately regards Josefina Hardt as its mascot. Now 84 years of age, Josefina has been training in Wiesbaden for more than

10 years. She is regarded by instructors as a particularly hard-working and disciplined customer. No wonder: As a former primary school teacher who also taught sports, the

diligent Kieser Training customer has strength training in her blood – and in her responsive muscles. The amazingly fit pensioner is always keen to add a few pounds to her training weight. “She often comes up to me or one of my colleagues during training to tell me about the new personal record she has just achieved,” reports manager Eugen Stendebach.

Recently, Josefina went another step further. She noticed a much younger customer exerting considerable effort on the chins machine. He lowered his body for 10 seconds, climbed back up the steps and lowered his body again – 10 seconds can feel like a damned long time. He was obviously suffering as he puffed and panted, sweated and gritted his teeth. After seven repetitions he gave up.

Sympathetically but also with a hint of mischief, Josefina breezed up to him and asked: “That exercise, it’s quite difficult, isn’t it?” The man – some 50 years younger than the sprightly lady – looked at her with a pained expression and groaned: “Extremely, and probably not one for you.” Josefina immediately countered: “Maybe, but I would still like to have a go.” Shaking his head, the answer came back without hesitation: “Better not – it’s definitely too strenuous for you!”

Another customer on an adjacent machine grinned broadly. He knew the sporty lady, her unbridled ambition and her preference for particularly strenuous exercises. Without more ado, Josefina climbed agilely onto the tower unit, gripped the handles correctly, pulled herself gallantly up and then in slow motion lowered her-

self comfortably over the 10-second period. And then, to cap it all, she did five more correct chins. “She is probably the only woman in our facility to do chins,” said Eugen Stendebach with a smile. “It’s something that few men can achieve – particularly not at that age.”

The same thought was probably running through the mind of Josephine’s “opponent”, the young man who was still exhausted having just used the machine. He stood there absolutely stunned and, with a look of amazement as he watched her masterly performance. It seemed that he no longer understood the world, quietly turned away and disappeared. And Josefina Hardt? She calmly completed her chins, but not without a grin on her face. After all, it is her favourite exercise!

Sustainability is the best policy

As an international company with facilities in Europe, Australia and Asia, we at Kieser Training are very much aware of our global responsibility for the environment. Werner Kieser is a firm believer in the importance of the prudent use of natural resources. Waste, in any form, is not only unseemly and unpleasant, but it is also totally unnecessary. We describe our eight core principles of sustainability.

Principle 1:

Quality – both good on the eye and for for the environment

The most eye-catching feature of a Kieser Training facility is its use of steel – anywhere where wood from a sustainable source cannot be used. With their matt finish and clean design, our machines, hand dryers, lockers and showers not only look good but are also kind to our environment. Our facilities are more than just a window for the familiar purist design: the high-quality workmanship and almost no wear and tear primarily guarantee durability. After all, any product not replaced is one product less to manufacture. In addition, steel is easy to recycle. Similarly, our wooden floors are not only designed to look good, but we only use local species of wood.

Principle 2:

However, it's not durability at any price

Plastic is almost indestructible and, what's more, incredibly cheap. However, even the least polluting plastic will not benefit the planet. It just fills it with waste that is almost non-biodegradable. The Pacific Ocean is now contaminated by a floating carpet of plastic about the size of Central Europe – and every hour another 675 tonnes of plastic rubbish are added to the oceans of the world. This is why our engineers and designers are now under instructions to construct any new Kieser Training machines completely free of plastic.

Principle 3:

No-go area for mineral water

Training makes you thirsty. However, you won't find plastic bottles at Kieser Training – water is freely availa-



ble from the water dispensers. Not only do our water fountains need no plastic cups, the water is free. In locations where tap water is of drinkable quality, many staff fill jugs with this water and drink that instead of bottled mineral water. "Bottled mineral water is no better and requires 300 times more energy than tap water by the time it is consumed," says Werner Kieser.

Principle 4:

Economy showers

Whilst we are talking about water – and you may not have even noticed this when you showered – many of our showers now have economy shower heads. They help the environment by reducing water consumption. If we add together the amount of water saved in our 153 facilities worldwide by our more than 290,000 customers, this is a considerable reduction in our use of precious water.

Principle 5:

Provides energy but consumes no electricity

When you enter some fitness centres, it's a veritable cardio performance.

However, televisions, remote controls and background music need constant electricity, not to mention the sound pollution. In contrast, you won't find such energy guzzlers at Kieser Training. Our customers can concentrate on their training in a peaceful atmos-



phere. Our exercise machines run on muscle power and even the therapy machines get by with a minimum of computer technology. In return, training produces lots of energy.

Principle 6:

End of the paper mountain

Offices in Kieser Training facilities worldwide are almost paper-free i.e. work is done on the computer and only printed out when absolutely necessary. If too much paper is accumulated, the mantra is re-use – the back of used paper makes excellent notepads. For meetings in Head Office, we use blackboards on wheels designed by Werner Kieser rather than paper-consuming flip charts. And this edition of Reflex is printed on recycled paper – as were all previous editions.

Principle 7:

Natural air-conditioning

A pilot project in Berlin-Reinickendorf is quite amazing. The building has a clay wall that provides natural

air-conditioning. Clay is better at storing heat and humidity than other materials. "The clay wall is something new for us," explains Werner Kieser. "In future, it is likely to be preferable to use this rather than conventional air-conditioning." A clay wall breathes and so helps keep the training areas warm in winter and cool in summer – and thus saves energy.

Principle 8:

When it comes to rubbish, every little helps

Clearly, a major commitment to environmental protection will also produce a major improvement. However, in Kieser Training facilities worldwide, we also pay attention to the smaller things in the everyday life of a major company. Whether it's strict waste separation, the use of biodegradable cleaning materials or energy-efficient lighting, we consider the environmental impact of everything that we do. It's good for our world and for you as our customer.



No need to grab the handrail

Feeling good about a training session while working out in the gym or immediately afterwards is normal, but seeing the positive impact in other parts of your normal, everyday life is what almost everyone wants. Retired radiographer Sandra Levitan had spent years in pain after suffering an accident at work in 2002 and had never managed to fully repair the damage to her back despite many kinds of treatments. She joined Kieser Training in London in February last year and immediately recognised how much she enjoyed the exercises and the training. But the best feeling came after a few weeks when she noticed something different in her life – walking up stairs was no longer the struggle it used to be.

"I'm only 5ft tall and, as the years have gone by, I found myself having to pull myself up the stairs of my house using the handrail," says Sandra. "But



Sandra Levitan

after several sessions at Kieser Training, I noticed I was not grabbing the handrail any more."

Sandra's back problems began when she was assisting a colleague who was taking an X-ray of a disabled patient in the radiography department of a

London hospital. During the procedure Sandra had to hold onto the patient's wheelchair to keep the woman perfectly still, but later that day she felt a 'pop' in her back and a terrifically sharp pain.

"Although I didn't know it at the time, a disc had encroached into my spinal cord and I would get a red-hot poker pain in my left thigh. I could hardly move sometimes," she says.

Working in the medical profession meant Sandra had more knowledge than the average person about what to do to cure her pain. But despite lots of physiotherapy, she would sometimes lose the feeling in her foot. There then followed visits to an orthopaedic surgeon who said Sandra did not need

surgery, even though her condition seemed to be getting worse.

Eventually, an MRI showed the extent of the disc problem and osteopathy treatment was recommended which brought immediate short-term relief. However, she was told that the long-term answer would be to build up the core muscles in her back. Pilates then helped for a few years, but as retirement grew nearer, Sandra knew that she needed to find a better solution.

"I had read about Kieser Training programmes, but didn't know that much about them. When I was retiring a couple of years ago, I could not give myself the excuse any more of having too little time to sort out the problem with my back, so I joined!"

It was February 2010 when Sandra walked into the London Kieser Training centre in Mornington Cres-

cent. "Everything was explained and I knew what I wanted which was to increase my core strength and improve my mobility. I felt a difference early on and even when I had a serious shoulder injury, we just modified my exercises and carried on with my training."

At 67-years-old, Sandra is retired and enjoys walking as part of her exercise regime. These days, she notices that she has more energy and also better posture. "I'm very diligent in training twice a week. I remember I used to go to Pilates once a week, but after a while I would say to myself 'I could give this a miss'. But I actually look forward to the Kieser Training sessions because I know it does me good even when I'm walking up the hills near my home. Nowadays I see a steep slope and I don't have to stop or worry about it; I just get on with it and keep going."