

Reflex 33

The Kieser Training Magazine

Your muscles cheer you up

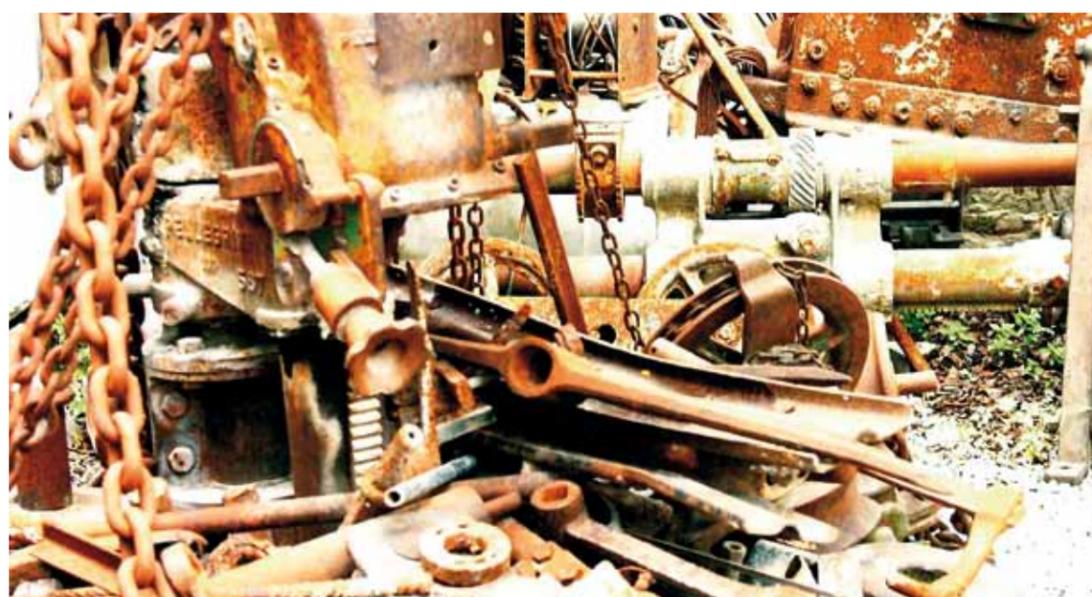
Pardon us, but may we spoil your foul mood? We have the perfect antidote to ill humour, tiredness, lack of training motivation and those general feelings of doom and gloom. What's our secret? Lifting weights! Guaranteed side effects included! Strength not only enlivens tired muscles but revives the spirit as well. It's logical when you come to think about it! Low back pain is such a curse and if we eliminate it then, hey presto, the clouds lift and cares disappear. And what's more, it's amazing for the posture. With that newly acquired back strength, we can walk tall in the truest sense of the word and our mood benefits. Try the following for yourself: First of all, let your whole body sag: hunch your back, let your shoulders droop and drop your chin - the classic posture of misery into which we all unfortunately fall. Now, straighten your back, extend the chest, pull the shoulders back and let your head tower



Photo: © Michael Ingenweyen

over your spine. Notice the difference, it feels really good doesn't it?

Why: our posture acts like a mood barometer for the mind and we can quite simply switch on a good mood by consciously changing the way we hold our body. And what's more: if we stand straight, we radiate uprightness, success and self-confidence and – just between ourselves, it is an effect that is not lost on others and influences how attractive others find us.



It all started on the scrap yard

"It is not only the musculoskeletal system that develops with resistance. Similarly, ideas materialise and develop their momentum against a plethora of obstacles that try to stifle them."

"You should train with weights. That will soon put you right". These were the words of Ramon, a Spanish professional boxer back in 1958 following a pleural injury suffered during training prior to an important boxing bout. The club's doctor had banned me from training and competition for six months - a harsh sentence for a youngster who loved his sport. When I mentioned Ramon's recommendation to him, he smiled indulgently and said: "What an idea, you cannot speed up the recovery process. Rest is what you need." I also mentioned Ramon's suggestion to my trainer and he said "Weights? That's the worst possible thing in your situation. You have talent and we have great hopes for you. Don't ruin your career before it has really started."

I was fascinated by the contradiction between the clear rejection of the "experts" and the specific but simple advice from the "practitioner", obviously backed up by experience. I wanted clarity. Ramon showed me how to train with weights. Within a few weeks, I had recovered from my injury and the respiratory pain had disappeared. However, the most amazing thing was that my physical condition had improved beyond all recognition. My doctor was amazed.

My trainer sulked. The changes in my body and my speedy recovery turned me into an enthusiast for a training that was almost unknown at that time.

Boxing gradually lost its magic for me. I started to look at the literature on "strength". What little I found in German came from East Germany, mostly translations from Russia. However, most of the literature was in English and so I learned English.

I was spurred on by the feeling that I had discovered something of importance albeit not yet recognised. I became my first guinea-pig. I had been a somewhat weedy lightweight. I soon became a powerful middle-weight and within 2 years an even more powerful light-heavyweight. My mother thought that I had gone far enough. She didn't like my appearance and said it wasn't normal. However, her concerns were unjustified as by then I had reached the limit of my genetic potential.

When I saw my first fitness club,

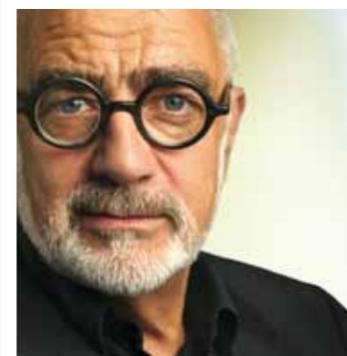
I was convinced that this was where my future lay. I was enthusiastic but had no money. I needed money for the "iron". There was no such thing as a "fitness industry" at that time and all I had were a few illustrations from American journals. I found the iron I was looking for in a scrap yard. It was rusty and unattractive but it was cheap – only 40 centimes per kg. The plan was to use the pipes and bars to make the circular discs needed for the dumbbells. I then looked round for a second-hand welding torch, a drilling machine and a few hand tools. The result – my first gym.

(excerpt from Werner Kieser: "Age no bar to health", first published in German in 2005, to be published in English in 2010)



Photos: © Werner Kieser

Dear Reader



It was by chance, and I was lucky, that I opened my first gym before the fitness wave started sweeping across Europe. At that time neither fashion nor big money was involved in that business; in fact it was no business at all. The very few gyms which existed were led by pure idealists, people who were in search of the most productive exercise rather than worrying about their cash-flow. It took a lot of patience and time to get my members to work out seriously. This has not changed: strength training is no fun, but it makes happy. Not only do people get rid of pain which they believe to be an inevitable part of ageing, but they feel permanently better due to their increased strength – and the corresponding feeling of lightness.

What has changed is the technology. Within the last forty years only two inventions were made, but fundamental ones. Firstly, the invention of the cam in exercise machines allowing to train the muscles according their physiological strength curve and secondly, the pelvis fixation in the lower back machine that made it possible to test and train those deep spinal muscles which are primarily responsible for eliminating back pain. These inventions have not made workouts easier, but more productive. This means less time spent training and safer training procedures. Efficiency, based on valid scientific data, will continue to be our goal.

I am happy that this first issue of our customer magazine in English marks a new milestone in spreading our concept across the globe.

KIESER TRAINING

STRENGTH FOR HEALTH

Stability pact: Ligaments and Tendons

Ligaments provide the flexible link between bones and other bones. Tendons are their partners in this process and connect muscles to bones. Together, ligaments and tendons keep the musculoskeletal system stable and ensure that movements are fluid and effective.

The two shells of a mussel are joined together by a ligament. Similarly, our joints have ligaments consisting of connective tissue formed of collagenous fibres. As with the mussel, ligaments provide a flexible bone-to-bone connection and effectively regulate movement – after all, humans are not required to point backwards with the end of their feet! Tendons are part of this stability pact; they keep the musculoskeletal system stable and allow it work. Tendons connect muscles and bones and are made up of closely packed connective fibres. These fibrous bundles are covered by a tendon sheath, which increases the stability of tendons and their resistance to tearing.



Photo: © Festo

Suspend a car from a tendon!

Our strongest tendon is the Achilles tendon which is 12 cm in length. It connects the heel to the triceps surae muscle and we use it to walk and run. It can withstand a tensile load in excess of one tonne and so you could hang

a VW Beetle from it. Tendon lengths vary but here too nature has devised an ingenious and yet economic system. Muscles need space and the body ensures that they are not packed into a space that is too small for them. We need long and narrow fingers as otherwise we would be unable to play the piano and so the thick belly of the muscles required for finger movement are located in

the forearm. The connection with the bones in the finger is provided by long tendons.

What strengthens or weakens the stability pact?

Tendons and ligaments are living tissue and so need care and attention. As with any other biological system, their response to a carefully measured load is to increase functional capacity. In

other words, if you subject them to weights, they become stronger and more resistant. Function improves. However, if tendons are subject to an excessive load, e.g. the constant stop and go movements involved in squash, tennis, football or monotonous movements at work (keyboard marathons) they become irritated and inflamed. Moreover, if calcium is also deposited, the symptoms become chronic. This happens particularly with the shoulder, hip and knee tendons and also the forearm and Achilles tendons. Although the Achilles tendon is extremely strong, it is actually a weak point and so is vulnerable. It derives its name from the Trojan hero Achilles who was killed by an arrow in the ankle. In fact, it tears regularly – 20,000 times per year in Germany alone. This happens mainly with those who are overweight and do not exercise. If the tendon is strengthened by strength training, this does not happen.

Doctor's Tip

Torn ligament – what now?

Ligaments and muscles are a continuous double act: our ligaments secure and our muscles move and stabilise joints. In reality, most of us don't give ligaments a second thought until we injure one. For example, if we stumble, our muscle reflexes should provide protection. If they don't, the associated ligament has to withstand the entire load on its own. This can overstretch the ligament and tear it. However, a torn ligament does not have to mean surgery. Whenever there is a tear to the anterior cruciate ligament in the knee, specialists are all too keen to recommend sophisticated surgery – and what patient would not be beguiled by modern minimally invasive techniques? However, studies have shown that although surgery restores the stability of the knee, it is not so good at preventing wear, i.e. the arthrosis. It has also been clearly established that what the knee requires is active muscle stabilisation; if the biceps muscle of the thigh is strong, it can compensate almost 100% for damage to the anterior cruciate ligament – even without surgery – and the joint can even cope with sports such as tennis. B7 (seated leg curl), B1 (leg extension) and B6 (leg press) are useful exercises to include in your strength training programme although it may be necessary to adjust the range of motion and training weight if you have pre-existing arthrosis in the knee. If we injure the lateral ligaments in the ankle, the recognised standard treatment – fortunately – is rest and an orthosis (orthopaedic device): Unlike the powerful muscles and short strong tendons that move the knee, the ankle is moved and stabilised by somewhat slender muscles and long and thin tendons running from the ankle to the foot. This remains a weak point in human anatomy. So, if we injure our lateral ligaments or if they are constitutionally weak, it is worth trying to improve muscle stabilisation by training on the B8 (tibia dorsiflexion) and the J1 (calf raise).

What effect does Kieser Training have on...

... Ligaments and Tendons?

It's so practical: When it comes to strength and the body's ability to withstand loads, there is no need to train ligaments and tendons separately. They are part of the musculoskeletal stability pact that is kept in tiptop form by muscle training – provided we follow certain rules.

A stimulating liaison

When we tension muscles, we also train ligaments and tendons. This is because the process of muscle contraction also stretches and stimulates ligaments and tendons. This stretching stimulus improves their metabolism, which can be somewhat sluggish. The resultant secretion of growth hormones means that tissue

forms new cells and increases its strength and load tolerance. At the same time our susceptibility to injury is reduced.

Slow is best

Strength training stimulates the growth of ligaments and tendons – like muscles they become thicker. However, the process is much slower. This is one reason why we shouldn't increase training workload too quickly as ligaments and tendons lag behind muscles in their response to stimuli. Tendons require about 10 weeks to increase strength and to increase thickness requires longer-term training.

5% rule

Quite often, our muscles cope well with training and we are tempted to up the weight; however, the crux of the matter is that tendons represent a weak point as it is they who transfer weight to the bones. If you increase the load too quickly, you can trigger painful irritations and inflammation. So, stick to the 5% rule when doing Kieser Training: If you can work for at least 60 seconds on a machine, you may allow yourself a 5% increase in weight at your next session – but no more.

Connection with bones

In addition, strength training strengthens the connection between

bones and tendons and in some cases, bones form a prominence that provides a better attachment with the tendon. This also protects against injury and increases load tolerance.

Significant performance plus

When we do fast or even explosive movements, strength is transferred more easily from muscles to bones as we "lose" less energy in our firmer ligaments and tendons as they are better able to withstand loads: The results are impressive: response times are shorter, speed in sports increases and we are better protected in the event of a fall.

Reflex

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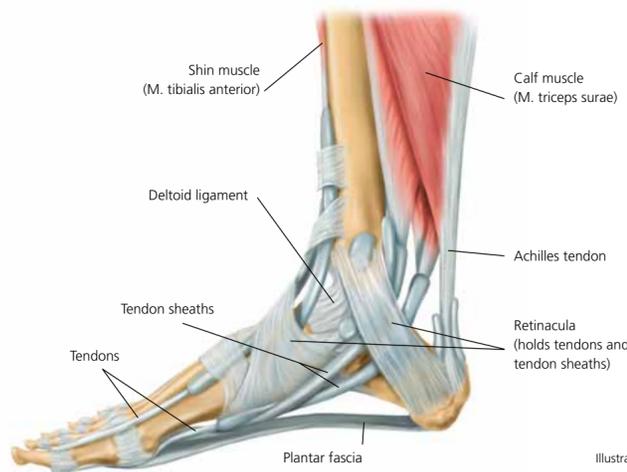


Illustration: © Holger Vanselow

Machine of the Month

The J-Tower may not look that spectacular but it can be used for 5 different exercises: calf raises (J1) strengthen the calves, regular side bends (J9) firm up the waist, front chins/parallel chins and dips train the arms, shoulders and back and J5 strengthens the triceps, i.e. the back of the upper arms. Both chins and dips require a minimum level of strength – after all, you must be able to lift your own bodyweight. As well as doing preparatory training on other machines (C1, C5 and H1), it can be helpful to do the so-called negative variations of exercises on the J-Tower as this speeds up the process of achieving this aim. When using the J-Tower, use the hip belt for calf raises (and even chins) as this allows an additional weight to be transferred from the weightstack to the body. For side bends, use the hand grips and for triceps extension use the rope.

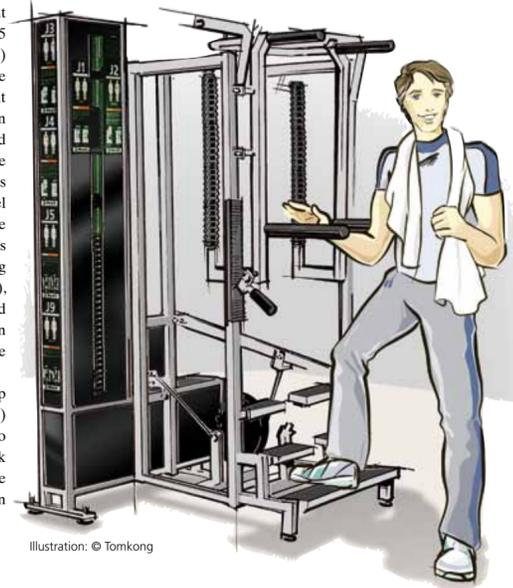


Illustration: © Tomkang

Latest research: strength against cancer

For many years cancer patients were told to take things easy. However, the strict ban on any form of sport has now been superseded and to date there have been more than 40 controlled clinical trials on the effects of physical exercise during and after cancer treatment. Initially, preference was given to endurance training but recent research has shown that strength training can also be useful in the recovery process and in fact accelerate it.

Off to the weights room:
The German Cancer Research Centre, working with the Breast Centre at

the University of Cologne prescribed machine-based strength training to 18 patients with breast cancer who were undergoing chemotherapy. The training plan lasted 3 months during which the women exercised twice a week to strengthen and stretch the back, leg and arm muscles. The effects were positive: Despite the energy sapping cancer treatment, the patients retained strength levels and suffered less from the typical exhaustion symptoms.

Increases in performance

Even patients who had already lost weight and muscle mass as a result of

cancer benefited. In a further study, the strength of patients with a range of different cancers increased by up to 20% after training femoral muscles for 8 weeks. Patients also put on weight.

Positive side-effects

Strength training can do so much more: Blood tests have shown that muscle training also improves the body's own defence mechanism against cancerous cells and improves blood formation. Similarly, it can reduce the side effects of treatment such as nausea, exhaustion, pain and problems with sleeping. In addition,

sport also improved patient well-being, self-confidence and emotional strength.

Summary of research

Strength training not only improves the physical performance and quality of life of patients but also increased their chance of survival and recovery. Major plus point: if muscles are trained, it is sometimes possible to reduce the often extreme loss of weight and muscle caused by cancer and its treatment. As a result, both endurance and strength training should be an integral part of treatment for cancer – the era of taking it easy is over.

Training programmes for cancer patients

Patients must not start strength training until a doctor has given the green light.

In addition patients should also undergo a sports medical to ensure they are physically able to do the training. Training should be done on a one-to-one basis and adjusted depending upon the health of the individual patient – all of which are of course possible at Kieser Training.

Source:
Ärzte Zeitung [Journal of German Doctors] Edition 2, 16 April 2009

5 questions ... on regeneration

Our thirst for knowledge focuses mainly on training and how we do it. However, the actual regeneration process takes much longer. Strong muscles are not solely the result of training. Below, we divulge the secrets of super-compensation.

What is super-compensation?

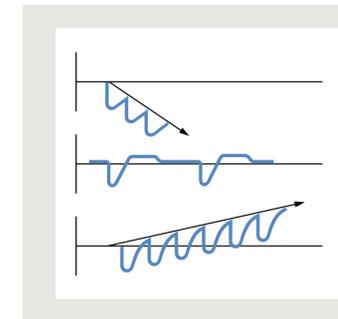
Be honest, how do you feel after strength training? Do you feel "somewhat tired"? If so, that's good because it means that you have made a good start. Training should be a challenge to the body with each session slightly exceeding current ability. You should feel tired afterwards as you only increase strength if you "overwork" the muscles. Immediately after the training session, performance drops – after all, it should be impossible to repeat the same programme immediately afterwards. However, the body is pretty astute. It realises that it was slightly too weak for the demands put

upon it and so it adapts to the training load. Pretty cool, isn't it?

It sounds paradoxical: to strengthen muscle, I first have to weaken them?

You have to overtax muscles in order to reap the benefit of an increase in performance. During the recovery period after training, the body is involved in important repair and regeneration processes. These processes are what make you stronger than you were before the training. Super-compensation is also known, therefore as "super-recovery".

It means that at the end of the recovery period, you are stronger than before the start of the last training session. The curve is upwards and the training weight can be increased.



So, I am rewarded for doing nothing?

Yes, but only between training sessions. If you sit around and do nothing for too long, you lose the small increase in performance and the strength curve returns to its original level. The secret is to know when to do the next session.

If you follow the Kieser Training guidance on training frequency, you will get it right, i.e. train twice a week and allow 2 – 3 days between each session and you will gradually improve.

When does super-compensation occur?

It's easy. Just look at your training plan. You will see that you have been able to increase your weight regularly or maintain the same weight for longer. However, if you fail to allow your body enough time to regenerate and train too frequently, there is a risk that performance declines because the required adaptation

process has not occurred. This is known as an overtraining syndrome. The rule: the more intensive the training the longer the period between individual training sessions.

What happens to muscles in this process?

When you first start strength training, it is coordination that improves first, i.e. individual muscle fibres are better at working together and with more muscle fibres pulling together, strength increases. So, during this initial phase, the regeneration period may be shorter and you can train three times per week. However, after two to three months, changes occur in muscles themselves; they grow. Protein is incorporated and individual muscle fibres become thicker. During this phase the regeneration period takes longer.

Expert's Tip

The Achilles tendon is the strongest tendon in the human body. It connects the calf muscles with the heel. Although large in diameter, the Achilles tendon is prone to injury. With chronic symptoms, pain can often be eliminated by training the calf muscles with an emphasis on the extension phase.

During the exercise, keep the knees and hips stretched throughout. The position of the knee affects the length of the calf muscle and so the latter can only be fully extended if the knee is fully extended. This type of training for the calf muscles also helps to repair the Achilles tendon as the extension stimulus causes a local secretion of growth hormones and metabolism is improved. However, structural changes to the tendon take some 8 – 12 weeks to occur. If you suffer from Achilles tendon problems, we recommend that you keep this exercise in your programme permanently.



Anika Stephan
R&D Kieser Training

Column

My Kieserian Achilles heel

A heretical thought: As a Kieser customer is it OK – how can I put it – to like one of the machines a little less than all the others? A machine that if I had my way, I would banish for ever from my training world. Or to put it in plain English: May I hate the fiendish F2 just a teeny bit?

I think I may!

It's a monster that turns up every time in my Kieser Training routine. Whenever I reach Exercise 4 in my programme, it provides me with a pointed and yet merciless reminder of the existence of my abdominal muscles. They do exist – of that I am sure – because when I do other exercises, they keep going and don't fail prematurely. However, the F2 fills me with dread. I know before I start that my abdominals will give up the ghost in just 60 seconds, a ridiculously short period of time. By the time I get to the third repetition, I am already wondering how I can possibly continue to lift and lower this ludicrously low weight in the required tempo without a heave-ho action. Maybe, there's something wrong with my anatomy?

In other words, the F2 is the weak point on my path towards strength. It acts as a weighty reproach to my staying-power. It is my Kieserian Achilles heel. No doubt about it, the F2 and I have a love-hate relationship!

Michaela Rose

How to get properly into ... swimming

Swimming has long been recommended as a healthy and gentle way to improve fitness and work off extra calories and it is, provided you get the technique right.

Swimming is the quintessential training for health irrespective of age as it exercises both the cardio vascular system and muscles. Swimming is also favoured by those who have to forego other types of sport because of back pain, joint problems or because they are overweight: in water you do not have to support your own body-weight and natural buoyancy means that your weight is only one-tenth of that on land. In addition, water acts as a brake on movements and so reduces the risk of injury. Finally, water offers a high degree of resistance and so is effective training.

Avoid swan necks and screw kicks

Most amateur swimmers use breaststroke to gain forward momentum. However, they tend to tense the neck in order to keep the head above the surface of the water. As a result, the body is too upright in the water and this reduces speed. In addition, it puts an unnecessary load on cervical vertebrae and neck muscles and so causes tension. If, as well, you swim with what is known as a screw kick, the pelvis is askew and leg movements are not synchronous. Strength is exhausted without much forward progress. It can also cause knee problems. The right way: stretch the body so that it lies flat in the water. Imagine the head as an extension of the spine and only lift it out of the water to breathe. Breathe during the arm stroke. If you have knee

problems, it is less strain on the knees if you do breaststroke arms with crawl legs.

How to breathe

For beginners, the crawl is easier to learn. It is also inherently a faster stroke and so you can plough up and down the pool more quickly. If you keep your head under water, this almost automatically ensures that the body remains horizontal in the water. However, what needs a little practice is the breathing technique. The right way: always breathe in and out on the same side, i.e. breathe in either when you do the right arm stroke or when

you do the left arm stroke but do not alternate. Do not lift your head to breathe. Just turn it to one side and keep the upper body straight.

In order to make maximum use of the brief period above the surface of the water, always breathe out under water.

Don't let the backside sag

With back crawl, breathing is much easier. It is also kinder on the back. However, if you let the bottom sag and you raise your head, this increases water resistance and reduces speed. The right way: stretch the body to its full length and use the lane rope or something on the roof as a guide to keep you in a straight line.

Get swimming

Beginners should divide their training into blocks, i.e. split the overall distance you want to swim into manageable units, e.g. swim 10 x 100 metres or 5 x 200 metres with a rest in-between. Kieser Training is good preparation for swimming.

Targeted strength training for the arm, shoulder and back muscles is not only good for rapid progress but strengthens the entire body in a balanced way and so prevents muscle imbalances. The pullover or torso arm (C1, C3), row (C7) and chest press or arm cross (D6, D5) exercises are particularly good for a swimmer's physique.



I have reduced my handicap by 3 strokes

What customers around the globe say about Kieser Training



Fred Camilleri, 57
Kieser Training member
in Melbourne, Australia

"I have never been a fan of gyms with their music and mirrors, yet I have

always understood the benefits of exercise. Having spent a sedentary career in the IT industry, I noticed a Kieser leaflet and thought I would give it a try. I was experiencing neck pain and had been attending an osteopath 4 to 5 times per year.

I started Kieser Training 18 months ago and I could not be more impressed with the overall health benefits I have gained. I have not needed to visit the osteopath since, my pains have been eliminated and I feel much better physically.

One of my passions in life is golf and to my surprise Kieser Training has made an incredible difference

to my golf game. My increased strength has allowed me to hit the ball 10% further and my endurance around the course, my control and flexibility have all improved. I have reduced my handicap by 3 strokes. I have no doubt that this is due to my Kieser Training program. I find Kieser Training to be professional, sophisticated and very clean. The staff are to be complimented on their knowledge and ability to provide just the right level of advice and assistance. I have certainly recommended Kieser Training to my golfing mates who have commented on the noticeable improvement in my game".



Hugh Fowler, 58
Kieser Training member
in London for 9 years

After 20 years of excruciating "bad backs" I finally had micro-discectomy. After that I could not lift my daughter from her cot, had to kneel down to brush my teeth and never thought I would ski again. I tried everything, from physiotherapy, to Pilates and Alexander Technique.

It was only after a 12-week course of Medical Strengthening Therapy at Kieser Training that I began to get back to normal. I have been training regularly ever since. Now I can garden all day or go skiing without ever thinking about my back.

"We joined Kieser Training because of back problems that only increased over the years, and the dissatisfaction with the support at my sports club and physician.

I first tried the training for one month on a special offer and as the problems started to diminish, I was convinced and joined for a period of two years. My husband had doubts about joining, but after his first month of training, he also joined for two years. We find that our problems have much improved because of the

training at Kieser Training.

Furthermore, the support is very good. If you do anything wrong, you get corrected immediately, which keeps the results up.

The atmosphere at the club is very relaxed and there are never too many people around. In that way we can train at our own speed and you get full attention if you need any support. Because of the personal contact and the results in particular we stay motivated to return every week."



Josephine and Hans van Mensvoort, 55 / 56
Kieser Training members
in Eindhoven, the Netherlands

In brief

Kieser Training works. That's the title of a large scale study that Kieser Training's R&D department currently carries out in Germany.

In a nation-wide campaign earlier this year, we asked for 500 volunteers who were not training at Kieser Training to join the study that is designed to measure the effect of our training on backpain and other health issues. Candidates had to divulge quite a lot of personal information to be considered. So getting a response from 49,000 people went far beyond our expectations and indeed created considerable organisational challenges. The study with the 500 volunteers is now under way since April and lasts six months. Some of the 48,500 not selected have joined Kieser Training anyway. We hope to convince the remainder to join on the basis of the results of the study due to be released early next year.

Background of the study is the enormous socio-economic cost that back problems create in the western world. In Germany alone this cost is put at 48.9 billion Euros.

Six of the volunteers share their experience on a special web-site with blogs and videos – if you speak German, have a look on www.kieser-training-wirkt.de.