English edition 02/2011

Reflex 40

The Kieser Training Magazine

70 – a powerful number

Apparently, it is the destiny of women to be pigeonholed as the proverbial weaker sex. We think that belongs by right in the realms of the cliché! With one exception: If we look at the physical differences between men and women, there is some truth in that outmoded myth of the weaker sex. Of course, there are strong women, just as there are weak men. However, on average women only achieve 70% of the strength of men, assuming identical age and size.

70

The reason why women are not as strong is primarily a distinct lack of muscle. On average, 40% – 50% of the male body consists of muscle, whereas in women it is just 25% – 35%. The reason is testosterone, the male sex hormone. Although women do have testosterone, it is present in much smaller quantities. Testosterone is responsible for muscle build-up and so men quite simply benefit from more advantageous hormonal status.

However, not all muscle groups display the 70% rule. Strength tests at Kieser Training have shown that the difference in strength is less in the lower body. For example, the strength of female leg muscles is about 74% – 78% that of men. In contrast women fare less well when it comes to arm strength where most women only achieve 63% – 65% of male strength. Despite that statistic, what counts in the final analysis is how diligently men and women train. On that score, women do just as well as men: exactly 50% of Kieser Training customers are female – and we find that great!

Strong enough for Match Point?

From the 20th of June to the 3rd of July it's game, set and match at Wimbledon with top players once again spending hours powering the yellow ball over the net. Often, it will be a single, almost imperceptible but powerful movement that will decide the match. Strength – along with technique, tactics, endurance, speed and coordination – is a crucial factor in determining the success of both professional and amateurs alike.

To ensure you win the point and the match, we recommend that you supplement your tennis training with targeted strength training twice a week – irrespective of whether you play for pleasure or have higher ambitions. Why? A lack of strength limits performance; an increase will provide you with the strength you need to win the match.

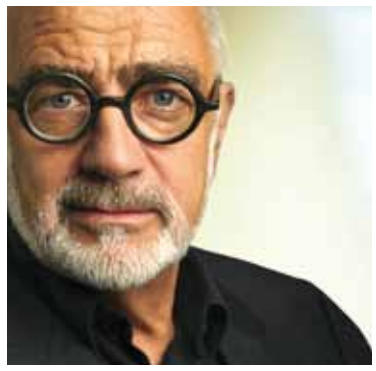
Tennis puts a strain mainly on the leg, trunk and back muscles together with shoulders, forearms, wrist and ankle joints. "Tennis players often suffer from typical muscle imbalances and other associated problems," says Dr. Babar Abbas of Kieser Training London. "An extremely common problem is severe back pain, which is usually caused by a weakness in the deep spinal muscles," continues Dr. Abbas. "However, the real problem is not just pain but the lack of ability to hit the ball with sufficient clout due to pain inhibition or muscular imbalances. To hit a tennis ball properly, you must be able to rotate the trunk and this requires strength in the back as well as the abdominal muscles. As a general rule, you cannot play an athletic game of tennis unless you have a strong muscle corset." According to Dr. Abbas, "tennis combines quick spurts, sudden stops, continuous changes in direction and hard returns," all of which puts an enormous strain on joints, ligaments and tendons. Playing tennis or any other sport without adequate strength training will lead to muscle spasms, joint injuries, ligament sprains and tendinopathies, such as the dreaded tennis elbow.

According to Dr. Abbas, Kieser Training develops both general muscles and the specific muscles involved in performance. "We can prepare a specific training programme for tennis and other sports. Proper strength training will serve as a foundation for stamina, speed and endurance in sport". He also emphasises the importance of training "not just for muscle strengthening but also for strengthening bones, tendons, ligaments and joints. .Not only increases performance but also reduces the risk of injury". Kieser Training offers specific machines for effective training, e.g. the F3 (back extension) strengthens the deep back muscles, the E4 and E5 (internal and external shoulder rotation) train the muscles in the rotator cuff and the H3 and H4 (wrist pronation and supination) stabilise the wrists.

The plus in terms of performance is that strong muscles allow you to jump higher and further, run faster, hit the ball harder and really accelerate it. In addition, the greater your range of motion, the better equipped you are to produce strength from unusual positions. But that's not all: The Kieser Training tennis programme also increases endurance, and so you tire less quickly and continue to hit challenging returns for longer. In particular, improved inter- and intra-muscular coordination and more explosive strength means faster reactions; as a result, you serve better, volley more energetically and make spectacular returns.

Stay on the ball – we'll be happy to advise you.

Dear Reader



Whether for radio, route planning or as a travel guide, those of us with smartphones will use "apps" – small applications of variable value. The Internet is now swarming with apps for health and fitness applications. You can count your steps and calories or calculate your BMI. There are also apps extolling the virtues of fitness programmes that suggest that they can replace personal instruction from a trainer.

I am often asked to develop a "Kieser app". Do you really want one? Imagine the scene; you are firmly secured in a machine and are giving your muscles a really hard time. Suddenly, an instructor grabs your smartphone, checks the machine settings or weights and enters corrections.

Sometimes the simplest solutions are the best ones. Individual training plans and their management belong in the hands of specialists and no app in the world can replace that – however smart it may be. Although the training card may look somewhat antiquated, it is still the best way to monitor progress. I would also say to those who think that they can achieve their aims entirely without the aid of documents. You are just training your memory!

Werner Kieser

KIESER TRAINING

STRENGTH FOR HEALTH

HIP

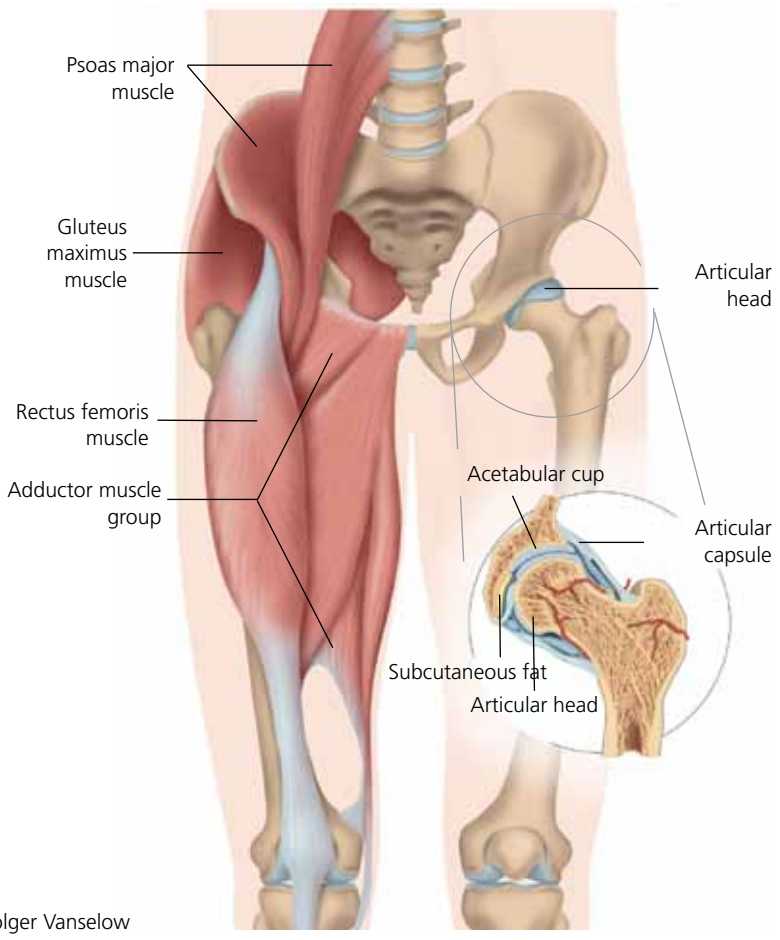
The human hip joint is well constructed for its intended use: standing and walking.
It is the largest ball-and-socket joint in your body. The "ball" is the rounded end of the femur (femoral head). The "socket" is a concave depression in the lower side of the pelvis (acetabulum). The femoral head fits into the acetabulum to form the hip joint. This anatomy allows for plenty of motion within the joint — for instance, walking, running and climbing.

Every step taken burdens one of the hips with three to four times the body weight. A pad consisting of connective tissue and fat that acts as a shock absorber is located deep in the acetabulum. The joint is surrounded by a stiff capsule strengthened by strong ligaments. These ligaments operate like a screw and stabilise the joint, depending upon the hip position. When in flexion, the ligaments are applied loosely, allowing good movement, but with increasing extension the ligaments "tighten" and hold the hip securely when fully extended.

Hip muscles
The hip is surrounded by thick muscles. The posterior muscles behind the hip consist of the gluteals. The inner thigh is formed by the adductor muscles. The main adductor function is to pull the leg inwards towards the other leg. The muscles that flex the hip are in front of the hip joint and include the iliopsoas muscle. This deep muscle begins in the lower back and pelvis region and is connected to the inside edge of the upper femur. The rectus femoris is another hip flexor. It is one of the quadriceps muscles, the largest group of muscles on the front of the thigh. Smaller muscles from the pelvis to the hip help to stabilize and rotate the hip.

Hip degeneration
The most common cause of a hip joint disorder is increasing destruction of the joint cartilage. This can develop into coxarthrosis. As the protective cartilage is worn away, bare bone is exposed within the joint.
Hip arthrosis typically affects people over 50 years of age. It is more common in people who are overweight and weight loss tends to reduce the symptoms associated with hip arthritis. There is also a genetic predisposition of this condition, demonstrating that hip arthrosis is generally passed on to new generations within families. Other factors which can contribute to the development of hip arthritis include traumatic injuries to the hip and fractures to the bone around the joint.

Interestingly, the severity of the destruction of the joint cartilage does not necessarily correspond to the discomfort suffered by the patient.



Illustrations: © Holger Vanselow

What effect does Kieser Training have on …

… hip arthrosis?

The symptoms of coxarthrosis normally start in the groin. Initially, pain only occurs after intensive physical exertion but later occurs at rest as well. Typically, pain occurs first thing in the morning with the initial few steps being difficult and painful. It is as if the joint has gone rusty. The pain becomes less after walking a short distance. As the condition progresses, mobility and the distance you are able to walk without pain both decline. At an early stage, inward rotation and leg abduction become restricted, making it difficult to dress or put on shoes and socks. The joint is stiff and this, combined with the loss of cartilage, shrinkage of the joint capsule, flexion contracture and a shortening of the hip flexors often makes one leg seem shorter than the other. To avoid the pain, patients develop a distinctive limp. A recurring inflammation of the hip joint may also cause pain at night which disturbs sleep.

Training recommendations:
Customers with coxarthrosis should train on A1, A2, A3 and A4 with the backrest in the middle position, if possible through the entire ROM. Tolerance depends less on the severity of the arthrosis and more on the extent of the inflammation. Hip abduction is most effective if the flexion is 60°. This corresponds roughly to the middle position of the backrest on A3. In addition, the abduction angle can be improved by rotating the leg outwards slightly.

Regain muscle balance
Hip arthrosis is invariably accompanied by changes to the joint capsule and often by serious muscle imbalances. Typically, the hip flexors (iliopsoas muscles) and adductors are shortened and the hip extensors and abductors are weak. The aim should be to strengthen extensors (A1) and abductors (A3) at high intensity and to train the hip flexors (A2) and adductors (A4) at low to medium intensity, whilst emphasising extension. This not only helps to eliminate strength deficits but also corrects the overall muscle imbalance. B6 can be incorporated into the programme as soon as the customer can cope with the basic programme. Training intensity should depend upon tolerance but customers should not exploit the strength potential on B6 in full as it is often very high. Pain may be activated on both B6 and J1 if latent hip arthrosis exists.

Doctor's Tip

Treatment for hip prosthetics

Treatment of coxarthrosis aims to reduce pain and improve joint mobility. If conservative treatment does not provide adequate relief, a prosthetic hip replacement may be considered.
Hip replacement surgery normally eliminates the pain and improves the hip function. The replacement joint lasts a minimum of 10 – 15 years, after which further surgery may be necessary to replace the implant.

Rehabilitation after hip replacement has evolved from daily walking or floating in a swimming pool, using supervised exercise programmes which are monitored and controlled by experts in rehabilitation using various international protocols. However, despite the lack of consensus in post-surgical rehabilitation, experience with patients who work on pre-intervention strength and flexibility confirms that they experience less post-operative pain faster and achieve better results.

If a customer is about to undergo total hip replacement, one-to-one supervised strength training will provide optimum preparation. Naturally, restricted mobility must be taken into account. Muscle imbalances should be reduced. This period before surgery should be used as intensively as possible in order to strengthen the lumbar/pelvic/hip regions and also to train the shoulder girdle and arm, including the grip function (important for using crutches).

If the time remaining before surgery is less than 6 months, it may be appropriate to increase training frequency to three sessions per week. Training should only be reduced to medium or low intensity if the customer cannot tolerate high-intensity training.

Following total hip replacement, training may be resumed at low intensity after 6 weeks, provided that there are no complications. Customers generally come following completion of the standard rehabilitation period and are able to cope well with the training load. Training at high intensity must be avoided until 12 weeks after surgery. To achieve a good range of motion, the backrest on A3 and A4 should be set in the middle position and the hip rotated slightly outwards. On A1, A2 and B6, hip flexion should normally not exceed 90° even in the long term.

Dr. Emilia Pérez Martínez and her two fellow doctors at Kieser Training Barcelona, Dr. Christian Carreras and Dr. Filippo De Caneva, are the authors of this page covering the subject hip.

Impressum

Publisher/Copyright
Kieser Training AG
Kanzleistrasse 126
8026 Zurich, Switzerland

CEO
Michael Antonopoulos

Editor
David Fritz
reflex@kieser-training.co.uk

Regular Contributors
Tania Schneider, Ross Biddiscombe

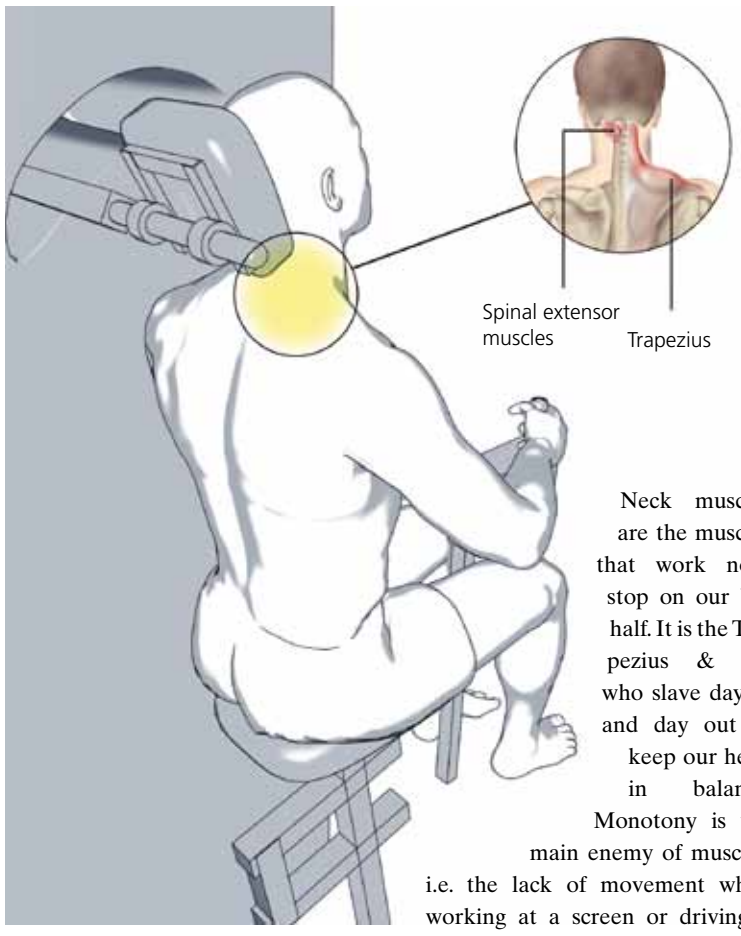
Translations
Sue Coles, Dr. Billaudelle & Partner

Layout
Fritsch Publishing, St.-Paul-Straße 9
80336 Munich, Germany
www.fritsch-publishing.de

Reflex on-line
www.kieser-training.com

Reflex is published quarterly

G5 – 4-way neck rear



Neck muscles are the muscles that work non-stop on our behalf. It is the Trapezius & Co who slave day in and day out to keep our head in balance. Monotony is the main enemy of muscles, i.e. the lack of movement when working at a screen or driving a car. This often causes tension because muscles are in a state of permanent contraction. What makes it even worse is that painful neck muscles can significantly affect our general well-being – and in some cases can even cause balance or sight problems. The Cervical Extension Therapy Machine provides first aid as well as long-term relief for those with serious symptoms. It is the neck expert amongst our back machines. However, if the tension is minor and symptoms only slight or if you want to prevent problems in the first place, you can use its smaller sister, the G5. It also trains both surface muscles and middle and deep neck muscles. If training is to be effective it‘s important to keep the shoulders still – otherwise you squander the benefits of this valuable exercise. The super-slow method produces particularly good results: here you maintain the load for up to 120 seconds. This will provide the best defence for neck muscles and arm them for their daily support work,

Expert’s Tip

At Kieser Training, customers usually do each exercise, if possible, over their full range of motion. This in turn increases mobility. However, when it comes to training the neck muscles on the G5, this is not necessarily appropriate because it can cause side-effects. Customers often have degenerative changes or blockages in the joints in the middle and lower sections of the cervical spine – even though they may not feel or notice anything in everyday life. However, training in the last 25% of the range of motion can trigger pain from a pre-existing damage.

When using the G5 machine, only do the range of motion that feels comfortable. Do not increase the weight unless you are able to do the exercise with an existing weight without any problems. Although the load intensity on the G5 may be lower than on other machines, you will still benefit from the valuable effects of strength training, i.e. you will mobilise and strengthen your neck, improve blood circulation in the neck muscles and improve nutrition in intervertebral discs.

As soon as you have found a training weight that keeps your neck problems in check, “freeze“ the weight. From years of practical experience we know that for men the weight should not exceed 110 lbs and for women it should not exceed 80 lbs.

Anika Stephan
Kieser Training Research Department

Latest research – this training is a HIT!

Minimum outlay for maximum return – we like that when it comes to training, particularly if there is also scientific evidence that the training works. Research by the German University of Koblenz-Landau into single-set training – similar to that offered at Kieser Training – has provided clear evidence of the effects. The study looked at High Intensity Training (HIT). With this method, you do just one set of each exercise but the maximum possible number of repetitions. “Muscles fatigue if you do several sets of an individual exercise but they also fatigue if you do one set at a sufficiently high intensity.“ This is how Professor Dr. Dr. Jürgen Gießing from the University of Koblenz-Landau explains the HIT Principle. “A muscle grows if it is subject to a stimulus in excess of a certain threshold but that does not have to be the maximum possible stimulus.“ In other words, you need a weight that makes the muscle work at a reasonable level. If you fail to achieve that, the training is ineffective.

The study involved students who trained in the fitness room for ten weeks, twice a week. They all did a total of 9 exercises. One group did traditional multi-set training consisting of three sets, i.e. a total of 27 sets per training session. The other group just did one HIT-set per exercise, i.e. 9 sets per training session. In other words, the HIT group did one third of the training done by the multi-set group. Despite that, the strength gains in the HIT group were significantly greater. Particularly impressive was the fact that almost all those in the HIT group significantly increased muscle mass in just ten weeks (on average just under 1 kg) whilst at the same time reducing their percentage of body fat.

“Intensity is crucial to successful training – if it‘s high enough, just one set of each exercise is sufficient,“ is how Professor Gießing sums up the results. “That may be strenuous but in return both men and women only need to do a limited number of exercises twice a week.“ A further benefit compared with the normal multi-set training offered by many fitness studios is that this sort of training saves you time.

Tales from the Training Floor ... A coffee in New Zealand

The best stories always come from real life – or from training. Life does not simply grind to a halt when the thousands of Kieser Training customers do their training. Quite the opposite, life goes on around them. Tales from the Training Room is the name of our new series. This time we meet globetrotter Ray Galvin who writes about his travels and training.

If there were to be a world record for the most Kieser Training facilities used, I would probably be right up there at the top. I really ought to count up the number of towns in which I have trained in the last seven years but unfortunately it’s so many that I can only hazard a guess – it would be at least 25, possibly 35 or maybe even more!

The curious thing is that when I’m at home in Cambridge, I only manage to train once a week. England has the decided disadvantage that the only Kieser Training facility is in London and so I have to “travel“ to London every week to train. In Germany, Austria and Switzerland, the Kieser infrastructure is significantly better. This was one of the reasons why in 2004 I decided to try Kieser Training having been advised to do so by a German doctor friend of mine. Membership is valid internationally and so I now train during both business and personal trips. And the other reason? No doubt about that – my back pain. This is now much improved even if I only manage to train once a week.

However, training has another benefit. Every summer I do a long cycle tour in Europe with my partner – sometimes in excess of 1,000 kilometres. As I cycle, I pass many Kieser Training facilities, e.g. in Würzburg, Augsburg, Ulm, Stuttgart, Heilbronn, Hamburg, Zurich, Vienna and Graz. Often, I spontaneously stop to do some training when I cycle past the typical yellow and blue sign. This means that during these trips I am normally able to train twice or three times a week. I make

sure that I have a copy of my training programme in my bag. I have only forgotten it once but the facility telephoned London and asked them to fax over my training programme.

Irrespective of where I am, staff are always pleased to welcome a guest from London and give me helpful tips about how to improve my technique. Kieser Training is after all Kieser Training wherever you are! Sometimes, it’s rather surreal. Everywhere the same machines, colours, filing cabinets, lockers and showers. Only the clock tells a slightly different time and sometimes the entry sign can be a little difficult to spot.

After training, I normally manage to find a good coffee. Surely Vienna must have the best cafés. It was in Vienna that I enjoyed the most delicious espresso in the McCafe immediately below Kieser at the Franz-Josefs Station. And then there’s Freiburg: if you wander through the old town on a morning, you can get a good cappuccino in the Café Ramazzotti for only 1 euro. Sometime or other, I would like to drink a coffee in Auckland after training – after all that‘s where I hail from. I am still waiting for the opening of the first Kieser Training facility in New Zealand.

What the muscle likes to eat …

… makes us strong. To build up muscle mass and therefore energy, we not only require the perfect training dose – we also need the right nutrition. We clarify the most important questions.

Do I need special sport nutrition?
Actually you don't – you cover your nutritional and calorie requirement sufficiently with a balanced and full-value diet. The balance can often be off and too much fat ends up on the plate. The German Society for Nutrition has the following rule of thumb for nutrition: it should generally consist of maximum 50 percent carbohydrates, no more than 30 percent fat and approximately 10 percent protein. Tip: Go for low-fat variants, without doing without polyunsaturated fatty acids. You will find the essential linoleic, alpha-linoleic, omega-3 and omega-6 fatty acids in, for example, rapeseed oil, olive oil, bio-milk products, nuts and fatty seafood. Omega-3 fatty acids also slow muscular dystrophy down.

But power training increases my protein requirement, doesn't it?
Some fitness studios talk up milkshakes and protein bars with this myth. But you can confidently do without them. To build up muscle we do actually require a protein plus, but the additional requirement is significantly overrated. While, for example, women who do no sport require about 0.8 g of protein per kg of body weight, endurance sportswomen require 1.2 to 1.5 g, and strength sportwoman or bodybuilders require a maximum of 1.8 g – volumes therefore that you will easily get from eggs, yoghurt, steak or pulses. Only in old age, when the appetite abates, can protein supply sometimes be insufficient and a supplement can be beneficial. Tip: In addition to high-value protein, meat and fish also provide creatine, which makes the muscles grow faster.

Do women have different requirements to men?
Basically women require fewer calories and nutrients because they are lighter and burn less energy. Power training is proven to support stable bones; sportswomen should, however, also focus on calcium-rich foodstuffs such as milk products because of osteoporosis risks. Often feeling drained despite your training? Have your iron status checked – women need more iron and often suffer from too little. Tip: This oligo-element is found in red meat and green vegetables in particular.

What is the best to eat after training?
Not just "what" – "when" is also critical, because after a training session your muscles are especially hungry for carbohydrates and proteins. You need these for subsiding repair and regeneration processes to refill used up energy reserves in the muscles. If you leave out a meal your recovery will deteriorate and your own performance drops. Tip: Nuts and seeds provide an antioxidant that repairs cells faster after training and stimulates muscle growth.

And when I want to lose weight?
Here, too, you are already well covered by the "good" fats and sufficient protein. In principle losing weight works quite easily: you should burn more energy than you take in. You save calories easiest with the "bad" fats in ready-to-eat meals, sweets or snacks. Sport ensures a calorie deficit in the energy balance – if you do not feed this minus back up again. Strength training also largely prevents the degeneration of muscle mass during a diet phase in particular. Tip: Limit carbohydrates after your evening training session – you should really have these with your breakfast or lunch. Meat or fish with vegetables and salad and cheese contribute valuable proteins for muscle building.

And what should I drink?
The body consists of 50 to 60 percent water. It is an essential component of cells, blood, lymph and digestive juices. It guarantees the blood's flowability, cell supply with nutrients and the removal of metabolic products. The body loses liquids when you sweat – performance therefore also drops. Ensure a sufficient supply of water and drink at least one and half to two litres a day. Tip for those ready to lose weight: a big glass of water works well as an eating inhibitor. Cold drinking water is also proven to increase your basal energy rate – by some 50 kilocalories per litre.

How Stephen Frears found his way to Kieser Training

Portrait courtesy of Chris Tubbs, www.christubbsphotography.com

The job of film director is many things – stressful, creative and demanding in so many ways – and Stephen Frears has been plying that trade for long enough to know that anyone making movies needs to give their body some help.

Many years ago – in fact, so long ago that he can only estimate it to be about 25 years – Stephen was told that swimming was the answer. The man, who started directing films in 1971 and has a CV that includes BAFTA awards and Oscar nominations for films such as My Beautiful Laundrette, Dangerous Liaisons and The Queen, now wonders how he managed to stick to a regime in the pool for so long.

"My job as a film director is very stressful and there is a lot of sitting down, so to help, I tried swimming. I can, in principle, see that exercise is a good thing, but I'm quite lazy and someone frightened me into trying swimming. After a number of years, I found it to be boring, I mean incredibly dull. Kieser Training is so much more fun," he says.

In fact, the 70-year-old Stephen has no history of keeping particularly fit, even as a younger man. "I didn't play a lot of games as a child, so it's only since I started getting old that I realised I needed to do something."

And so two years ago, Stephen found himself talking to a friend about Kieser Training. "She said something that caught my imagination, it was about the danger of muscles going soft in old age and how you could exercise muscles to stop that happening. That idea got into my head because at the time I was doing almost nothing."

Living in north London meant Stephen had easy access to the Kieser Training centre in Mornington Crescent. He turned up at the centre with an open mind, waiting to be convinced that what he had heard was indeed true.

"I had no knowledge about Kieser Training when I first went along. I was shown all the diagrams and then the trainers put me on the machines and I remember it was three or four lessons before I was on my own.

"At first, I was just curious and actually it's taken me quite a long time to understand how to make best use of the machines and what the statistics mean. At various times I still say 'come on, explain all this to me' – the balance between how much weight I'm using and how long I'm doing the exercises for and this business about the range of movement. Slowly I've come to understand it."

Stephen now has a commitment to the training that is unlike anything he could have imagined. "Apart from swimming, I've always walked a lot, but it wouldn't surprise me if this was the kind of training that I'll now do for good."

Stephen's main problem is that directing a film precludes him from keeping a regular training regime. "I look forward to this training and it's fun. I go twice or even three times a week when I'm in London, but then I will stop for four months to make another film and I'll get withdrawal symptoms."

But the benefit of the training is clear for Stephen who believes in his statistics. "The statistics are very precise for this type of training and this is the evidence I use. Although it's all still a bit of a mystery to me, about how everything works, I think it's doing me an enormous amount of good. I'm doing jolly well for my age, I'm keeping going."

Stephen Frears has been a director for 40 years. He studied law at Cambridge, but on graduating went straight into the film business as an assistant director and then worked in TV at the BBC and London Weekend Television.
His directorial debut was Gumshoe in 1971, but his breakthrough was with My Beautiful Laundrette in 1995.
His work has won many prizes including two BAFTAs and he has been nominated for two Academy Awards. He is married, has two sons and lives in north London.