RE FLEX

THE KIESER TRAINING MAGAZINE

51

AROUND THE WORLD
TWO AND A HALF TIMES

105,358.7 KILOMETRES: THAT'S HOW FAR MANUEL JONASCH HAS RUN TO DATE. HE FINDS STRENGTH TRAINING AN IDEAL SUPPLEMENT.

Manual Jonasch used to play football but found it too dangerous. "I was constantly being kicked by opponents or falling over on often hard ground and injuring myself," says Jonasch. So, in 1980 he switched to running. Jonasch, now 50 years of age, has been running ever since.

Manuel Jonasch, born 1963, Swiss national, therapist for Medical Strength Therapy (MST), qualified fitness and Nordic Walking instructor

Since then, he has also kept a record of every run, entering the distance and time meticulously in loose-leaf sheets and later in a running diary. At the end of each year, the Swiss fitness instructor produces a summary of the entries.

Four years ago he realized that he had almost run 100,000 km. Fired up by this, Jonasch organised a run. He invited the press, friends and other runners. "We ran the last 10 km together on the track, a total of 25 laps at an easy pace. At the start of the final lap, the others formed a guard of honour and cheered me home. That day – 12 November 2011 – was one of the best days of my life," beams Jonasch.

Since then he has added a further 5,000 km. "Running is my passion," stresses Jonasch. "Others relax on the sofa but I enjoy something more active. Running helps me switch off from work. I feel reinvigorated after a run."

In pure numerical terms, Jonasch has already run 2 ½ times around the world and in so doing has worn out innumerable trainers. He packs them wherever he goes – Italy, Morocco, Spain or within his native Switzerland. "The great thing about running is that you don't need a partner or special pitch. You can run anywhere and anytime. I really like that."

Jonasch runs 5-7 times per week, each time between 8 and 12 km. On the non-running days, he does strength training. "It strengthens my joints and gives me the strength to complete my training schedule. In the past, I suffered from low back pain every autumn or winter but since starting strength training, that is a thing of the past."

Even meniscus surgery in 2010 did not stop Jonasch in his tracks. "On the day before surgery, I did strength training and three days afterwards I started medical therapy. This helped me get back on my feet quickly. Strength training is just great. It not only makes running easier; it makes life easier as well." ■

CERTIFIED
QUALITY

Kieser Training in Germany came out top in a test by the German consumer foundation, Stiftung Warentest. Looking at seven national chains, the foundation investigated the quality of the introduction given to new customers and the ongoing customer care and support. It also investigated internal training procedures and the Terms and Conditions of those companies.

Good scores for Kieser Training

Included in the test were four discount chains, two premium providers and Kieser Training – occupying a special role as a specialist in strength training for health. Conclusions: The more expensive studios did better than the discount providers. However, even the more expensive providers could have done better. Kieser Training was the only provider whose instructors were visible, attentive and responsive. Kieser Training achieved an overall 'good' grade. "Its 'customer support' was rated 'better than satisfactory'. These findings set us apart from the others and provide us with an incentive to do even better," summarizes Volker Pommerening, Manager of Quality Development at Kieser Training. ■

START THE RUNNING SEASON STRONGER

STRENGTH HELPS YOU RUN MORE SMOOTHLY, FASTER AND FURTHER

Interested in getting fit for running? Try one of our **personal running programmes**.

"Our running programmes are ideal preparation for running," explains Anika Stephan, sports scientist in the Kieser Training Research Department. "Most workers, including runners, sit down for up to 10 hours per day meaning that in most cases, muscles are seriously underworked. Kieser Training strengthens the entire body, i.e. it strengthens both the performance and supporting muscles."

Mrs Stephan knows that many runners experience strain-related problems or injuries, mainly because they are not in good physical shape. Hips, knees and ankles are particularly susceptible to injuries. Strength training minimizes the risk: "Strong muscles improve joint stability and reduce the strain on the joints. Training keeps them supple."

Exercises that strengthen the hip and leg muscles are, therefore, an integral part of any strength training programme for runners. Machines A1-A4 strengthen the hips, the B and J1 machines strengthen the leg muscles. In addition, for the first time we can now target the muscles that provide lateral ankle stability using our new B3 and B4 machines, jointly developed by Kieser Training and Dr Marco Hagen from the Institute of Sports Science at the University of Duisburg-Essen.

Running smoothly and safely

Hagen's research demonstrated that training the deep muscles on the inside and outside of the lower leg improves our control over the natural rolling action of the foot; this reduces the risk of runners going over on their ankle. As Mrs Stephan says: "At long last runners can take positive action to minimize excessive pronation and prevent typical injuries such as runner's knee, inflammation of the Achilles tendon, shin splints or an inflammation of the plantar fascia. This is much more effective than relying solely on the support provided by running shoes."

However, strength training not only helps to prevent injuries. It also improves performance. Anika Stephan explains: "Training the hip and leg muscles gives you the strength you need for a more athletic running style: it improves knee lift, gives you more strength during the push-off phase and increases stride frequency. The tendons become more elastic allowing you to reuse the impact energy generated before you push off. Overall, you run faster, particularly when sprinting."

However, you should also train the muscles not used in running. Why? "A strong torso means that you are more upright when you run; you are more stable and run more smoothly and so are immediately more efficient. You can also retain this position over a much longer distance," says Mrs Stephan. ■

HOW STRONG ARE YOU?

YOU PROBABLY KNOW YOUR BLOOD PRESSURE, CHOLESTEROL LEVELS OR OTHER HEALTH-RELATED DATA BUT WHAT DO YOU KNOW ABOUT YOUR MUSCLES?

Our strength meter identifies your current strength. The principle is very simple: The meter has a special sensor that determines the maximum strength of the main muscle groups on three different training machines.

We compare the results with reference data, weighted for gender and age. This analysis shows the strength of the tested muscles, how you compare with others and whether particular muscles lack strength.

Strength tests are useful for both beginners and regular customers. For new customers, they provide the objective data we need to plan your training. Repeated at regular intervals they provide objective evidence of your progress. This increases motivation and provides us with the data needed to plan your continued development. We recommend a strength test every six months. ■

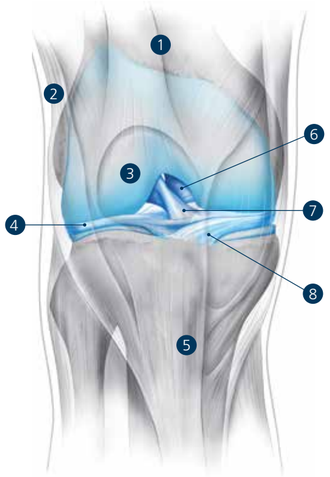
Strength tests:

- provide ideal base data; it allows us to determine your current strength and plan training. They identify the current state of your main muscle groups
- provide objective evidence on training gains and help steer and develop training programmes
- ensure customers retain a high level of strength

THE KNEE JOINT

THE KNEE IS A MASTERPIECE OF EVOLUTION: IT HAS AN EXTREMELY HIGH WORKLOAD AND STRENGTH TRAINING HELPS TO RETAIN FUNCTIONALITY FOR AS LONG AS POSSIBLE.

The knee connects the upper and lower leg. It allows us to extend or bend the leg and when bent, it facilitates a slight inward and outward rotation. It can do that because it is a three-part multiple joint: The knee is where the two semi-circular articular condyles of the femur converge on the broad surface of the tibial plateau. The third element, the wedge-shaped patella, moves up and down in the groove between the two articular condyles.



1) Quadriceps muscle of the thigh
2) Tensor fasciae latae muscle
3) Patella
4) Lateral meniscus
5) Patellar tendon
6) Posterior cruciate ligament
7) Anterior cruciate ligament
8) Medial meniscus

Thick layers of cartilage minimize friction on articular surfaces and provide shock absorption. The two crescent-shaped menisci increase the area of contact and distribute the load evenly. The joint is "lubricated" by synovial fluid produced by the synovial membrane. This fluid also nourishes the cartilage and menisci. Bursae reduce the friction between tendons, and muscles against the bone, ensuring pain-free and smooth movement.

The knee joint is stabilized partly by an articular capsule but mainly by four strong ligaments: the medial collateral ligament on the inner side of the knee and the lateral collateral ligament on the outer side of the knee limit the lateral movement of the knee. The anterior cruciate ligament limits the forward movement of the tibia and the posterior ligament limits the backward movement. When the leg is fully extended, capsule and ligaments ensure full joint stability.

The knee is our most heavily stressed joint. Strength training improves the strength of muscles, ligaments and tendons; it increases load capacity when running and helps keep the knee healthy and mobile.

The quadriceps muscle of the thigh, the biceps muscle of the thigh, the semitendinosus muscle and the sartorius muscle flex and extend the joint and working in tandem with other muscles provide additional support. They play an essential role as the knee, in addition to bearing the entire weight of the body, has to transfer the force created by the movement. When you jump, the force exerted on the patella-femoral joint may be as much as 24 times bodyweight, i.e. if you weigh 60 kg that is 1.5 tonnes.

Many knee problems are the result of undue strain on muscles, ligaments, tendons and cartilage or an imbalance or shortening of the muscles. Kieser Training strengthens these structures, reduces the load on the ligaments and corrects imbalances. A particular benefit, unlike strength exercises using free weights, is that the machines prevent evasive movements that put an undue strain on the joints. ■

Text: Dr Martin Weiß

RUNNERS AND KNEES

Runner's knee is a typical overuse injury that particularly affects long-distance runners. It occurs if the iliotibial band (ITB) is shortened. The ITB is a thick band of fascia (tissue) running from the outside of the hip, down the outside of the thigh and inserting into the side of the patella and tibia. For genetic reasons or because the ITB is subject to an incorrect load, it can lose elasticity. If this happens, the ITB rubs against the tissue of the lateral femoral epicondyle causing an irritation, inflammation of the outer layer of the bone (periostitis) or synovial bursae. The result is a stabbing pain on the outside of the knee either during or after running.

Muscle stability

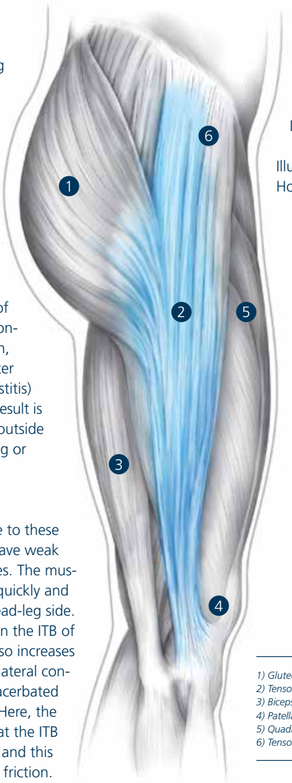
Runners are more prone to these painful injuries if they have weak back and gluteal muscles. The muscles then fatigue more quickly and the pelvis sags on the lead-leg side. This increases the pull on the ITB of the leg under load and so increases the friction against the lateral condyle. The problem is exacerbated if you are bow-legged. Here, the leg deformity means that the ITB is unduly pre-tensioned and this increases the damaging friction.

Runner's knee can also be caused by undue supination, i.e. an excessive rolling of the foot outwards. This pulls on the ITB. With natural pronation, the foot rolls slightly inwards with each heel strike. The ankle ligaments then cushion each strike and so reduce the load on the joints and the ITB. However, far too often the wrong type of running shoe will impede normal pronation. This increases the strain on joints and increases the tension in the ITB.

Key tips: Seek professional advice when buying running shoes and develop a good running technique backed up by appropriate strength training. This will stabilize the knee, pelvic and ankle joints as well as muscles of the spine. ■

Text: Dr Martin Weiß

Illustration: Holger Vanselow



1) Gluteus maximus muscle
2) Tensor fasciae latae muscle
3) Biceps muscle of the thigh
4) Patella
5) Quadriceps muscle of the thigh
6) Tensor fasciae latae muscle

DID YOU KNOW?

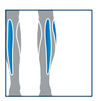
Few runners actually have runner's knee. More often, the pain is caused by poor muscle control during the movement of the patella. This triggers a pain or irritation in the patella or at the tendon-to-bone insertions. Strength training remedies this.

RUNNING PROGRAMME*

A3 BUTTOCKS
Stabilizes pelvis and prevents undue lateral movement

B1 FRONT THIGH
As you run, the front quadriceps muscles stabilize the knee and kneecap and in tandem with the rear thigh and buttock muscles facilitate forward propulsion.

B7 REAR THIGH
In runners, the rear thigh muscles are often weak and shortened. Strength training corrects any imbalances and improves the biomechanics of the knee.



B3/B4 FOOT
Training the deep muscles of the lower leg improves ankle stability, prevents injuries and avoids typical running problems.

B8 SHIN
Training the shin muscles allows them to give more support to the ankles and feet.

J1 CALF
Training primarily stretches the calf muscles and reduces the risk of Achilles tendon injuries.

F2 ABDOMEN
Training the abdominal muscles improves the stability of the torso and pelvis and so reduces the strain on lumbar discs.

F3 LOWER BACK
Training the autochthonous back muscles improves spinal stability and reduces the strain on facet joints and intervertebral discs during running.

D6 CHEST
The pectoral and triceps muscles do little work when you run. However, training these muscles improves the structural harmony of the body.

*Selection

STRENGTH TRAINING AND RESEARCH

STUDY SHOWS THAT HIGH INTENSITY STRENGTH TRAINING ALSO INCREASES ENDURANCE

A3, A4, B6, F2, F3 and then straight onto C3… By now, the face is rosy, breathing is faster and the heart's thumping. If you train at high intensity to muscular failure and move quickly from machine to machine, this also revs up the cardiovascular system.

Critics like to bemoan the lack of cardio equipment at Kieser Training. They're wrong and we now have clear evidence of this: U.S. and British scientists carried out a review of existing literature publishing the results in the Journal of Exercise Physiology-online. They found that resistance training to momentary muscular failure significantly improves cardiovascular fitness.

According to the authors, "the acute metabolic and molecular responses to resistance training to momentary muscular failure do not differ from that of traditional endurance training". They also observed chronic responses to intensive resistance training such as an increase in mitochondrial enzymes, the proliferation of mitochondria and the conversion of phenotype IIx to IIa muscle fibres together with vascular adaptations including capillarization. These are all factors that aid endurance and so could explain why strength training has this effect.

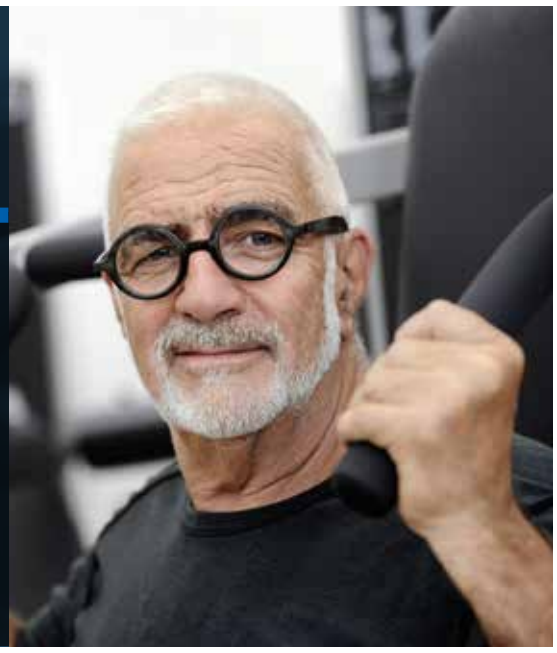
It would appear that the crucial factor in determining whether or not endurance or resistance training improves cardiovascular fitness is the intensity of training. It is wrong, therefore to designate certain sport activities per se as cardiovascular training and others as not.

In their conclusions, the authors cited the need to reconsider the value of strength training and undertake further research in this area, e.g. changes in the lactate threshold or oxygen consumption as a result of strength training. Let's be honest. Who would not be happy if they were able to kill two birds with one stone? We agree with the recommendation of the researchers: strength training to momentary muscular failure. ■

Source: Steele, J., Fisher, J., McGuff, D., Bruce-Low, S., Smith, D. (2012). Resistance Training to Momentary Muscular Failure Improves Cardiovascular Fitness in Humans: A Review of Acute Physiological Responses and Chronic Physiological Adaptations. Journal of Exercise Physiology-online15(3), 53-80.

KIESER'S CORNER

KIESER TRAINING – ENDURANCE INCLUDED



The wheels of science grind slowly but they do grind. When in 1975, the findings of research at the U.S. Military Academy West Point showed that strength training at high intensity produced significant cardiovascular training effects, the silence from experts was deafening.

2X30 MINUTES
HIT is all you need to strengthen your body and to improve your overall well-being

At that time, the sole focus of preventive medicine was on endurance training, i.e. jogging, cycling, long-distance running, etc. Many regarded strength training as the preserve of the vain or crazy. The fact that you can't even start to jog unless you have muscle strength was obviously something that had escaped them. Eventually, manned space flights showed that declines in strength were caused not by a lack of movement but by a lack of resistance. Without the effects of gravity, astronauts were not exposed to any resistance and this was causing a massive loss of muscle and bone density. Even training on exercise machines could not protect them from the loss.

Some 37 years later, British and U.S. scientists have dared to put their heads above the parapet and challenge the established dogma. They reviewed the existing literature and found that resistance training significantly improves cardiovascular fitness – if done to local muscular failure.

Even the literature published by the American College of Sports Medicine now recommends strength training for improving not just muscle mass, strength and performance but also endurance. These recommendations are often the subject of severe criticism and the College is accused of misinterpreting the results, a lack of evidence or author bias.

The authors of the latest review are now calling for the creation of logical, evidence-based guidelines. They are also recommending – based on existing knowledge – strength training for the main muscle groups once or twice a week with 8-12 repetitions of each exercise and continuing until momentary muscular failure. In addition, the duration of each repetition must also allow even muscle tension throughout the entire range of motion.

These results indicate that 30 minutes high intensity training (HIT) twice a week is all you need for health and improved quality of life: strong muscles and a robust cardiovascular system.

Werner Kieser

SALMON TARTARE

Your recipe for more Omega-3s
1 cucumber, 1 tsp. herb salt, 250 g young spinach, 1 tsp. mustard, Freshly ground pepper, 2 tbsp. rapeseed oil, 1 handful of fresh herbs, 200 g fresh salmon fillet, 2 spring onions, 2 tbsp. crème fraîche, 2-3 tbsp. lemon juice, 1/4 tsp. sea salt – Serves 2

Wash cucumber, slice thinly and sprinkle with herb salt and set aside for 10 minutes. Wash spinach, dry well and tear into bite-sized pieces. Place an equal amount on each of the two plates. Drain the cucumber well in a sieve preserving the liquid from the cucumber. Place the cucumber slices on the salad. Mix the cucumber liquid, mustard and pepper and then add the oil. Drizzle the dressing over the salad.

Wash the herbs and pat dry. Put several of the more decorative leaves to one side. Puree the salmon, spring onions, herbs and crème fraîche to a medium-fine consistency. Season to taste with lemon juice and salt. Using two tablespoons form mixture into small balls and place in the middle of each salad plate. Garnish with the herb leaves.

One portion contains about 354 kcal. 28% protein, 61% fat and 11% carbohydrate.

Dr Nicolai Worm: Glücklich und schlank, systemed Verlag, Lünen 2010.

IMPRINT

Reflex is published quarterly.

ONLINE
www.kieser-training.com

PUBLISHER / COPYRIGHT
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WHAT TO EAT FOR MUSCLE BUILD-UP

MORE OMEGA-3S FOR MUSCLES

PROTEIN IS IMPORTANT FOR MUSCLE BUILD-UP. HOWEVER, IT'S NOT ENOUGH FOR MUSCLES TO GROW. THEY ALSO NEED TO WORK PROPERLY. FOR THAT THE BODY NEEDS FAT – IN PARTICULAR OMEGA-3.

Fat is made up of glycerol and essential fatty acids. The body can produce most of its fat requirement itself but not all. It cannot make the highly unsaturated fats Omega-3 and Omega-6. In the Omega-3 family, the main fatty acids are the eicosapentaenoic acids (EPA) and docosahexaenoic acids (DHA) and in the Omega-6, it is arachidonic acid.

Both Omega families are equally important but we need them in the right proportion. The ideal ratio between Omega-6 and Omega-3 is 1:1 or 2:1 but as a rule, we consume much more in the way of Omega-6 fatty acids – they are plentiful in animal fats and oils and products made from cereals, corn and sunflowers.

In contrast, good Omega-3 sources are rare: deep-water fish such as mackerel, salmon, herrings and sardines plus meat from free-roaming (wild) animals. Our body can only make limited use of the Omega-3 extracted from linseed, hemp, oilseed rape or walnut oil. These oils only contain a precursor acid called alpha linolenic acid, which has to go through a complex metabolic process in order to be converted into highly unsaturated EPA. Even then, it does not work properly. Most people fall a long way short of the required ratio between Omega-3 and Omega-6. As the two are antagonists, this imbalance has consequences. A lack of Omega-3 causes disorders of the immune system such as a susceptibility to inflammations and thromboses. At the same time, it slows down the consumption of fat. Last and not least, it impedes the ability of the body to exploit protein for muscle build-up and the neural control of muscles.

If eating deep-water fatty fish is not for you, there are alternatives such as the Omega-3 products from fish oil or krill. Research at the University of Paraná in Brazil has shown that a daily intake of 2 g of fish oil – comprising 54% EPA and DHA – can appreciably increase muscle strength and function. ■

Text: Dr Nicolai Worm