

REFLEX

THE KIESER TRAINING MAGAZINE

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HIGHWAY JUNKIE

RIDE ACROSS AMERICA

DIRK ROHRBACH IS A TRAVELLER, PHOTOGRAPHER, JOURNALIST AND A MEDICAL DOCTOR. AT KIESER TRAINING HE HAS WORKED IN VARIOUS STUDIOS WITH RESPONSIBILITY FOR MEDICAL STRENGTHENING THERAPY AND STAFF TRAINING. HOWEVER, HE IS REPEATEDLY ENTICED BACK TO THE NORTH AMERICAN WILDERNESS FOR MONTHS ON END: NOWHERE ELSE DOES HE FEEL SO AT HOME.

In the last 25 years, Rohrbach completed 40 trips to the United States, travelling some tens of thousands of miles:

on foot, in a canoe, on his bike and in his 1974 Ford truck Loretta. He is addicted to the endless expanses of US roads and fascinated by the people in "small-town America".

And so it was that in April 2013 Rohrbach once more set out on his travels – this time to cycle across the North American continent. On this occasion, he started his journey at his own front door, cycling from his home town of Hanau to Bremerhaven where he boarded a container ship bound for New York.

After two weeks at sea, he left New York on back roads and cycled into the heart of America. His route was determined by the chance encounters he experienced along the legendary highways. Through hidden valleys in the mystical Appalachian Mountains Rohrbach reached Crossville in Tennessee, which for more than a decade has been home to the world's largest tree house. A few days later, he rolled into Nashville, the musical heart of the US – and not just for fans of country music. Here he met one of the many

songwriters whose songs evoke the troubled soul of America. In Arkansas he pedalled through the Mississippi Delta, following in the tracks of Johnny Cash.

"In the Rocky Mountains I was literally gasping for breath," explains the 46-year old. "I jumped for joy when I crossed Wolf Creek, a 3,300-metre (10,857 feet) high pass on the Continental Divide and the highest point on the trip."

In Utah, Rohrbach stayed with an organic farmer who wrings delicious fruits, salads and vegetables out of an arid desert. In Nevada he immersed himself in America's loneliest road and in California he met the "King of Custom", a living legend in the car customizing scene.

Four months after leaving Hanau, Rohrbach reached Santa Monica Pier – having pedalled more than 7,600 km (4,722 miles) with more than 50,000 metres (164,042 ft.) of elevation gain. "The only puncture on the entire trip was from a nail whilst riding on the hard shoulder in Jonesboro, Arkansas," he explains. "Otherwise no problems, both my muscles and bike worked perfectly." ■

Santa Monica Pier: Final destination after 7,600 km (4,722 miles)

REDUCE STRESS!

If you are rushing through life always feeling stressed, it is likely that you have high levels of cortisol in your blood. Cortisol is the main stress hormone. Our muscles don't like too much of it because of its catabolic effect, i.e. it breaks down body protein and with it muscle protein. Although strength training does increase cortisol



levels in the short term – this is a perfectly normal reaction to the physical stresses of training –, it also helps to reduce mental stress in everyday life and can help us relax. As a result, it helps prevent stress-induced increases in cortisol levels – a fact confirmed by our "Kieser Training works" study, which showed that after training for six months, 58 % of the participants were coping better with stress and one in three were sleeping better. ■



GET FIT FOR CYCLING

MORE STRENGTH = BETTER FITNESS



Speed muscles:
quadriceps muscle
of thigh, gastrocnemius
muscle and gluteus
maximum muscle

STRONG MUSCLES CORRECT IMBALANCES, PREVENT PAIN AND IMPROVE PERFORMANCE.

“Strength training is a must for any ambitious cyclist,” says Frank Rothe from the Kiefer Training R & D Department. Why is this? When we cycle, our posture and pedalling action put an uneven load on the muscles. We primarily use the “back, neck, shoulder, arm and chest muscles. It is essential, therefore, to strengthen these areas. If we don’t, we will pay the price sooner or later,” says Rothe, who is a passionate cyclist and regularly takes his mountain bike into the Alps.

Eliminate imbalances

Kiefer Training remedies muscle imbalances. It builds up the strength of those muscles that miss out when you

cycle. In addition, even the legs need a little extra help when it comes to muscle strength, explains Rothe: “When you pedal, you extend or bend the leg – but not completely. On our machines, you train your flexors and extensors throughout their entire range of motion and so correct muscle imbalances. This protects you from injury, such as knee problems.”

Maximize performance potential

Strength training is also essential for maximising performance. Intensive training triggers the stimuli needed to improve the interplay between nerves and muscle fibres. As a result of these stimuli, unused fibres are mobilized and the cross-sectional area of individual muscle fibres is increased in size. This in turn increases strength. As Rothe explains, “training the entire

flexor and extensor muscle chains increases the power transmitted through the pedals, allowing you to ride at a faster pace, for example in a race.”

Strength for mounting biking

High levels of strength are also crucial for mountain biking. Rothe knows this from personal experience. Harsh terrain and rough mountain descents put a severe strain on the body. A strong muscle “corset” provides protection and – along with a good technique – aids bike control and helps you negotiate obstacles. “In addition, anyone who has ridden downhill for several hundred metres knows that the limiting factor is not just a lack of technique. You also have to deal with the burning sensation in the thighs, forearms and wrists. The vibration is enormous, so your muscles, bones, ligaments and tendons need to be well prepared.” ■

HELP FOR THE NECK

IF TENSE NECK MUSCLES SPOIL YOUR RIDE, IT’S TIME FOR THE CE.

Neck pain is a typical cyclist’s injury – it often occurs if you ride on the drops or crouch low over the handlebars. In this position, the deep neck extensors are doing the heavy, monotonous work of supporting the head – weight some four kilograms – and protecting you from the forces of gravity and vibration.

This heavy load can result in painful tension, particularly if you also sit at a desk for hours on end. Symptoms can include painful facet joint dysfunctions, reductions in range of motion, inflamed tendon attachments and headaches. Our tip if you want to avoid neck tension: Do 12 to 18 training sessions on our computer-aided Cervical Extension Therapy Machine (CE). The CE uses a system of shoulder-strap restraints, chest pad



and neck support to isolate the neck extensor muscles. This allows targeted training. If your symptoms are minor, G5 can be used as an alternative. Eliminate your symptoms in next to no time and enjoy your next ride to the full! ■

PROGRAMMES FOR CYCLISTS*



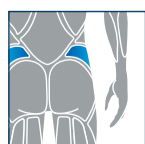
A1 HIPS

Strengthens the lower back and gluteal muscles and therefore the area of transition between the torso and legs.



A2 HIPS

Strong abdominal muscles aid torso stability. Certain abdominal muscles are also involved in breathing.



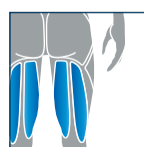
A3 BUTTOCKS

Stabilizes the hips and helps the pedalling action.



B1 FRONT THIGH

Important for the thrust and pressure phases of the pedal stroke.



B7 REAR THIGH

Important for the pull phase of the pedal stroke.



F1 OBLIQUE ABDOMINAL MUSCLES

Stabilizes the torso, particularly when riding out of the saddle.



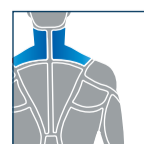
C7 BACK AND BICEPS

Important for pulling up on the handlebars when climbing.



D6 CHEST

Strong triceps and pectoral muscles improve the stability of the arms on the handlebars.



G5 NECK

Helps prevent neck tension, particularly when riding on the drops.

*Selection

STRENGTH MEANS ENERGY

WITH THE RIGHT AMOUNT OF TRAINING, RECOVERY AND PROTEIN

Muscles account for some 45 to 55 per cent of the body mass of a 25-year-old male and 35 to 45 per cent of a female. Our individual percentage depends upon the muscle mass we managed to develop by doing physical work or exercise when young. For evolutionary reasons, these sources of strength start to dry up once we reach 25 years of age. Inactivity acts like poison for muscles: it accelerates the process of decline.

Activity

However, regular training keeps you on the right track. Increasing muscle mass improves strength and energy; training strengthens bones and joints and dramatically improves your fat and sugar metabolisms. It also improves the cardiovascular system, boosts the immune system and tones up the figure and skin. In brief: in biological terms you remain young. However, one thing is crucial: a muscle only grows if it is exposed to the right stimulus. One way to achieve this is with our high intensity method – theoretically. It works in practice, too, if done correctly.

Admittedly, we sometimes stop short of giving the exercise our all and stop as soon as it feels too strenuous. However, unless muscles are subject to the correct load, strength will not increase, and at best we only maintain



existing levels. If the training stimulus is too low, muscle fibres are not used to the full and so our existing resources can cope with the load. But the

muscle is not fatigued and so the required adaptation response is absent. “Don’t stop the exercise before you can no longer manage a full repetition,” recommends Anika Stephen, sports scientist in the Kieser Training R&D Department. “It is only in those final seconds that the muscle mobilizes some of its spare fibres and sends out a signal that the muscle needs to lay down protein during the recovery phase and become thicker and stronger.” That is also why it is important to stick to the five per cent-rule and regularly increase the weight. There is one thing that muscles hate, and that is boredom.

Recovery

The recovery phase is an essential part of muscle build-up. Sounds good, doesn’t it? Whilst you relax on the sofa, it’s all hell let loose in your muscles. “During intensive training, microscopic tears develop in the muscles’ protein filaments, known as actin and myosin filaments,” explains

Stephan. They are the parts of the muscles responsible for contraction and thus for movement. “The body repairs these tears by laying down protein. The filaments become stronger, thicker and multiply,” explains our expert. Scientists call this process hypertrophy – muscle growth. It is a protective mechanism whereby the body arms itself for the next onslaught. The repair and build-up process in the muscle takes 48 to 72 hours, depending upon the intensity of the training.

Nutrition

To repair these tears, the body needs not just enough time but also enough protein. No protein means no muscle build-up: it’s as simple as that. The proteins in our body are made up of 20 different amino acids, nine of which are essential. As the body cannot produce them, they have to be supplied through food.

Nutritionist Dr Nicolai Worm recommends a diet high in protein and fat but low in carbohydrate. He says: “If we failed to absorb protein, we would gradually ‘devour’ ourselves in order to compensate for the deficit. First to go would be muscle tissue.” In future editions, Dr Worm will be writing about the amino acids particularly important for muscle strength (see page 4). ■

INTENSIFICATION TECHNIQUES

SEMI-NEGATIVE IS ACTUALLY VERY POSITIVE

Intensification techniques can work wonders when striving for peak strength. One such method is semi-negative training. This method is particularly effective on a machine such as B1 if you want to strengthen the quadriceps, a crucial cycling muscle.

Method

For semi-negative training, reduce your previous maximum weight by 25 per cent. Having set the machine, lift the weight for four seconds using both legs. While your legs are extended, remove one leg from the pad and let the other leg take the entire weight as you lower it for ten seconds. During this negative eccentric phase you can either use each leg in turn, i.e. changing from right to left alternately, or you can fatigue one leg and then the other consecutively.

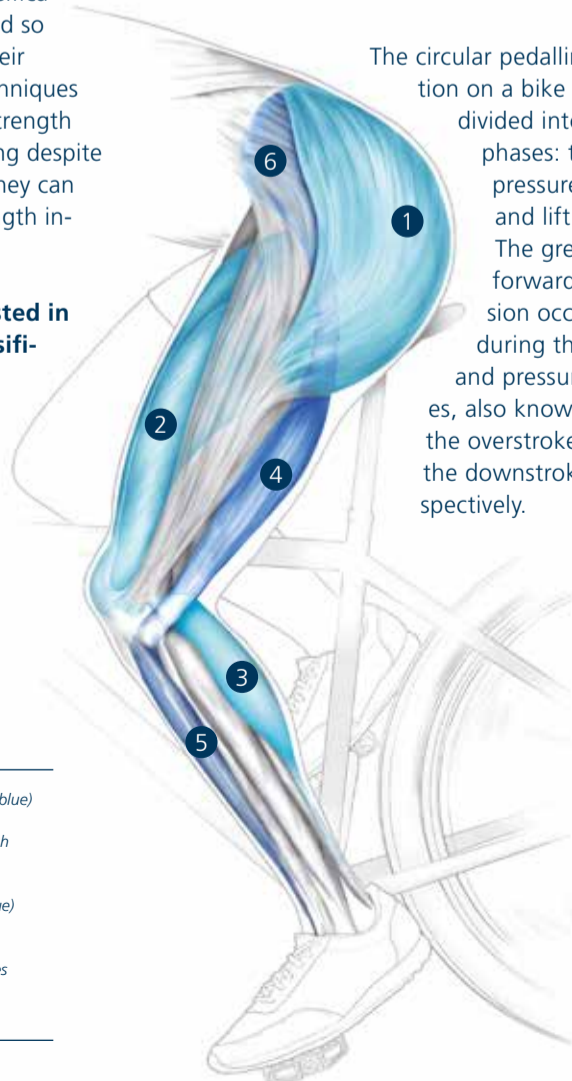
Achievement

“In the eccentric phase, a muscle may be up to 40 per cent stronger than in the concentric phase,” explains Roy Scherer. Roy is a sports scientist and is responsible for staff training at Kieser Training. “The semi-negative method produces a higher tension and in the phase in which the muscle is strongest it triggers an even greater stimulus than with our traditional method,” explains Scherer, who in 2008 crossed the Alps on his bike.

Even racing cyclists with trained thigh muscles can develop a specific load profile using intensification techniques and so further improve their strength. Such techniques are also useful if strength levels are stagnating despite regular training. They can kick-start the strength increase.

If you are interested in one of our intensification methods, please speak to one of our instructors. ■

STRONG FLEXOR AND EXTENSOR MUSCLES FOR EFFICIENT PEDALLING ACTION



Extensor muscle chain (light blue)
1) Gluteus maximus muscle
2) Quadriceps muscle of thigh
3) Gastrocnemius muscle

Flexor muscle chain (dark blue)
4) Biceps muscle of thigh, Semitendinosus and semimembranosus muscles
5) Tibial muscle
6) Iliopsoas muscle

The circular pedalling action on a bike can be divided into four phases: thrust, pressure, pull and lift phases. The greatest forward propulsion occurs during the thrust and pressure phases, also known as the overstroke and the downstroke respectively.

The pull and lift phases, also known as the backstroke and upstroke, also serve as recovery. Forward propulsion is less during these phases.

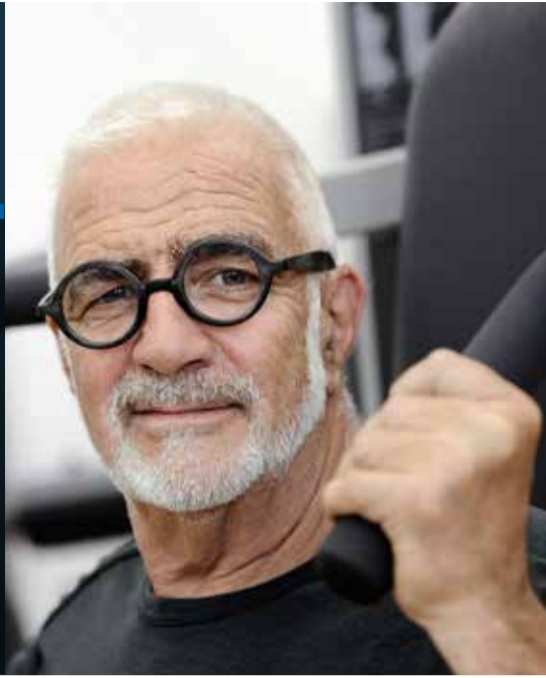
Imagine that the pedal stroke is a clock: the gluteus maximus muscle works primarily between 12 and 4 o’clock, the quadriceps muscle of the thigh between 11 and 4 o’clock and the calf muscles between 1 and 8 o’clock. These muscles make up the extensor chain.

The ischio-crural muscles, i.e. the biceps muscles of the thigh, the semitendinosus muscle and the semimembranosus muscle are active for about half a crank revolution: from 1 to 7 o’clock. The ischio-crural muscles together with the tibialis muscle make up the flexor chain. The latter works between 10 and 12 o’clock. The iliopsoas muscle is mainly active during the lift phase (upstroke) from 8 to 12.

For an efficient pedalling action, you need to train all these muscles. ■

KIESER'S CORNER

STRESS = ANXIETY?



If you google the term "stress", you will find a large number of biological and psychological definitions. The biological definition of stress, i.e. "pressure to adapt", is relatively easy to understand. A biological system must adapt to changes in environmental conditions and demands. Strength training is an example: the body adapts and becomes stronger.

However, the term is also used to describe psychological states and their physiological consequences. When using the term "SOS" ("Stress as Offence to Self"), stress is defined as a threat to self-

esteem in the event of failure. Failure maybe, but at what? Failure to complete on time the work you promised to do or were asked to do? Failure to obtain that hoped-for promotion? Failure to achieve the budgeted sales figures? Every failure has its cause, it is not always down to a lack of personal ability. The barriers may have been set too high. Resources, including time, are limited.

Underlying that feeling of stress is often a fear that you will go down in esteem. "What will others think of me if ...?" This attitude is based on

KIESER TRAINING

helps to reduce stress and to sleep well

two misconceptions: firstly an overestimation of your importance to the relevant environment and secondly an inability to estimate your own abilities as well as the time and other reserves available.

The philosopher Karl Popper put a higher value on failure than on success. Failure creates certainty as to why something failed to work or why a particular "hypothesis" was wrong. It provides an element of consolation, and then you can try again. However, with success, you never know why you succeeded.

There are three "remedies" that can help to combat stress. Firstly, establish some distance between you and the problem: will the world really come to an end if you don't manage it? Very unlikely. Secondly, does your current mental state match your ideal of a good life? If not, then try and change it. Thirdly, take yourself off to Kieser Training! Is this just the commercial break? Possibly, but it does not change the fact that you will leave Kieser Training in a different mental state than when you arrived. The emerging research on myokines* will probably reveal in the not too distant future why this is the case.

Werner Kieser

*Myokines are hormone-like messengers released by muscles when they contract. One of their roles is to influence brain function.

QUICK PEPPER AND TOMATO SALSA WITH PRAWNS

For 1 person

125 g red pepper, 125 g green pepper, ½ red chilli pepper, 1 spring onion, 1 garlic clove, 4 basil leaves, 1 tablespoon of olive oil, 1 tin of peeled tomatoes (150 g), a few drops of Tabasco, 10 g ajvar relish, 1 teaspoon of lemon juice, ½ tablespoon of rapeseed oil, 180 g prawns (fresh or frozen), 2 slices of baguette, salt to taste

Wash peppers, remove cores and chop into slices of about 1 cm. Wash chilli pepper, halve, scrape out seeds and cut into thin rings. Wash spring onion and similarly cut into thin rings. Peel garlic and crush. Wash basil, pat dry and chop.

Heat olive oil in a pan. Lightly sauté the garlic, chilli and spring onion. Add peppers and fry gently for 6 to 7 minutes. Add tomatoes, tabasco, ajvar, basil and lemon juice. Add salt to taste and simmer for 10 minutes.

Rinse prawns in cold water, pat dry and add salt to taste. Heat rapeseed oil in a pan. Fry gently for 4 to 5 minutes and serve with the tomato salsa and baguette.

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THE RIGHT DIET FOR MUSCLE BUILD-UP LEUCINE – AN ESSENTIAL AMINO ACID

When doing strength training, you need a daily protein intake of 1.4 to 1.8 grams per kilogram of body fat – even if your aim is not to build up muscles but rather an athletic or well-toned figure. However, it is not just the quantity of protein that is important. Quality is also crucial. For quality, you should absorb sufficient amounts of leucine. Leucine is an amino acid, and together with valine and isoleucine it comprises the branched-chain amino acids (BCCAs).

Leucine is more than just one of the many building blocks needed for the build-up of new protein. There is undisputed evidence that it is the most effective stimulus for the formation

of muscle protein after training. Milk protein, also called whey protein, is rich in leucine. Apart from milk and milk products, other foods rich in leucine are meat, fish and other marine animals. To maximize the training-induced muscle build-up, it is sufficient to take in 2.5 grams of leucine immediately after training. Leucine also helps to repair the micro-tears in your muscles caused

by intensive training and promotes the regeneration process. In addition, recent research has shown that leucine can be metabolized in the muscle resulting in the formation of metabolic products that also promote muscle build-up. And last but not least, the amino acid leucine reduces the release of the stress hormone cortisol that is counter-productive for muscle build-up. Therefore, Leucine can indirectly be regarded as ideal muscle fodder. ■

Text: Dr oec. troph. Nicolai Worm

Recipe: Albers T, Worm N, Segler A.

Der LOGI-Muskelcoach.

systemed Verlag, Lünen 2013.



Meals rich in leucine

support the build-up of muscles if eaten after a training session