

Reflex 73

The Kieser Training magazine
November 2021

**Ways to
combat stress.**
How to recharge
your batteries with
Kieser Training.

**KIESER
TRAINING**

Strong figures

60

per cent of Germans feel stressed in their private and/or professional lives, according to a study. In first place among the stressed are the 30 to 39 year olds (82 per cent), closely followed by the 50 to 59 year olds (76 per cent). In this group, every third person is worried that he or she will not be able to keep up with the pace of work for much longer. (TK study "Entspann dich, Deutschland" ["Relax, Germany"], 2016)

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In Germany, school, studies and work are the **number one** causes of stress, followed by high expectations. In third place come too many appointments and obligations in one's free time. (TK study "Entspann dich, Deutschland" ["Relax, Germany"], 2016)

80

per cent of our customers see training as a good balance to everyday life. 60 per cent said they were able to cope with stress better and one in three reported improved sleep quality. (Kieser Training works study, 2009)

Contents

Imprint

Publisher/Copyright

Kieser Training AG
Hardstrasse 223
CH-8005 Zurich

Managing director authorized to represent the company

Michael Antonopoulos

Editor

Tania Schneider
reflex@kieser-training.com

Layout

Alexander Frischhut
frischhut-design.com

Translations

RWS Language Solutions
rws.com/de/languagesolutions

Proofreading

Dr. Philippa Söldenwagner-Koch
www.lektoratbilingual.de

Print

Mephisto Werbung
mephisto-chemnitz.de

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Dear readers,

We can now look back on almost two years of the pandemic. A time full of restrictions and challenges lies behind us. Perhaps you have been on short-time work or working constantly, experienced financial losses or even lost a loved one. To all of you we would like to say: we feel for you and wish you the very best!

In May, we lost our company founder Werner Kieser, who died of heart failure at the age of 80. In addition, we have lost other loved ones from our community to Covid-19.

But what we have not lost is our confidence. And the certainty that strength training strengthens our physical and mental health and helps us to cope with crises and stress in the best possible way.

We are pleased that you, dear readers, remain loyal to us and continue to train with us.

Stay healthy, stay strong!

Yours sincerely,
Heiko Krink
CSO

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Matthias Creutziger

is a multi-award-winning German concert and theatre photographer. In his photographs, he is concerned with "making music visible and capturing the intensity of the moment."



After Covid-19

The strength of Matthias Creutziger

Matthias Creutziger survived Covid-19. For five weeks, the photographer was in a coma, fighting for his life. Today, he has renewed strength and can train, photograph – and laugh – again.

Text: Tania Schneider

When Matthias Creutziger photographs music, he wants to make it visible and capture the intensity with which musicians perform. When he hears it, he forgets the world – and some of the difficult time that now lies behind him: a severe Covid-19 infection. Music has always been important to Matthias Creutziger. As a teenager he played the drums in various bands, and later wrote reviews of jazz concerts, because jazz is his great passion. When he realized that photographers were missing what he considered to be the decisive moment in performances, Creutziger took up the camera himself. Finally, after an apprenticeship as a bricklayer, a degree in structural engineering and ten years working as a civil engineer, he found a new professional home in photojournalism. In the 1980s, he answered the call of the Semper Opera in Dresden, for which he photographed musicians and operas for 14 years. “The photographic work at the opera was very demanding and often physically exhausting. The many performances, the tours across

the world, lugging the heavy equipment ... Often I didn't know in the evening what I had photographed in the morning.” The high physical strain led to a “damaged” cervical spine and severe headaches and brought Creutziger to Kieser Training 17 years ago. After some initial scepticism, the photographer was soon convinced by the rational concept. “I love the rigorous nature of it and the calm. It's a mental rest. And my pain was gone after six months.” And he's never been sick since. “At least until this crap came along.” By crap, Creutziger means his Covid-19 infection. At first, he says, he dismissed it as a flu-like infection. “But I quickly got a violent cough and a high fever. My wife called the ambulance, as I was already half delirious.” Creutziger immediately went into intensive care and was placed in an induced coma the next day. For five weeks, doctors fought for his life and against all the complications: pulmonary embolism, atrial fibrillation, kidney failure, thrombosis, diabetes, and more. Three times they tried to bring him back from the coma, but succeed-

ed only after five weeks. Creutziger remembers it clearly. “The doctors told me where I was, what I had, and that I was through the worst of it.” Creutziger goes quiet, struggling to keep his composure. “I lived in a

use. And so I started very slowly from the ground up with extremely light weights. Today my muscles are back to their pre-corona level,” he says with a laugh. Matthias Creutziger is 69 years old and technically retired. Tech-



Jazz musician Mats Gustafsson

parallel world for five weeks with intense visions. I'm glad I got out of it.” When he woke up, he weighed 20 kilos less. “I had no muscles left, I couldn't stand or walk. I had to relearn all that.” It was an uphill battle, he says. Creutziger is glad he was able to leave the hospital on two legs. “The doctors told me I had strength training to thank for getting back on my feet so quickly.” After being discharged, Creutziger quickly got back into training. “My orthopaedist told me which equipment I could

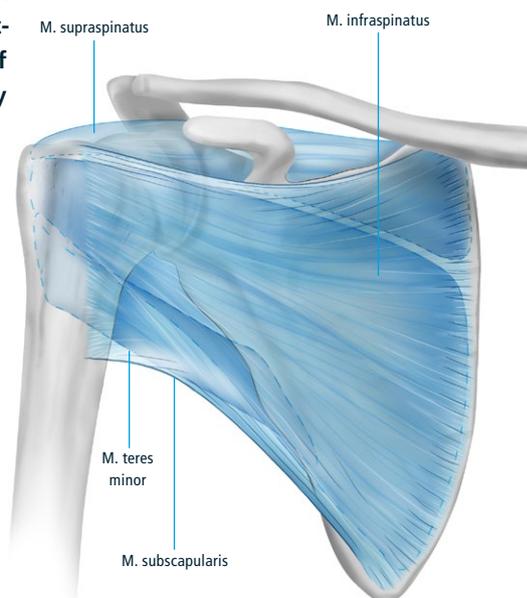
nically, because he still works freelance. “I enjoy photographing only what I want to photograph.” Music and photography have a therapeutic effect on him today. As for whether Covid-19 has changed his outlook on life, “Yes,” he says. “I'm quicker to speak my mind. For those who don't get vaccinated, I have no sympathy.”

The shoulder joint and the muscles of the rotator cuff

The shoulder joint is our most mobile joint. At the same time, it is very susceptible to injury and already exposed to high stresses in everyday life. Measurements have shown that when we lift a coffee pot weighing 1.5 kilograms with an outstretched arm, forces of 105 per cent of our body weight occur on average. But it is not only because of coffee that it is worth strengthening our rotator cuff muscles.

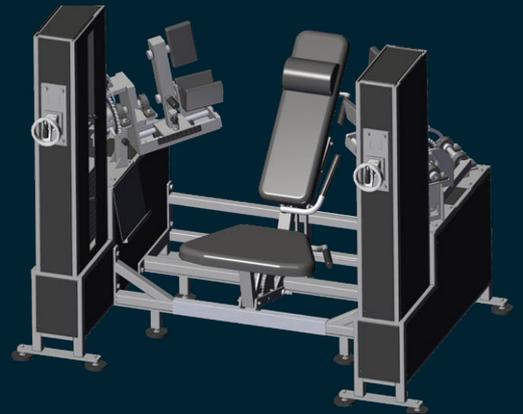
There are three bones – the shoulder blade, collarbone and humerus (upper arm) – and four joints that make up the shoulder complex. One of these is the actual shoulder joint, which connects our upper arm to the shoulder blade. On the one hand, the great mobility stems from the close interaction between these structures. On the other hand, a difference in size is also advantageous: the shoulder joint has a relatively large joint head and a smaller socket, which is why the bone guidance is reduced. This not only increases the range of motion, but also reduces stability in the joint. And this in turn is associated with an increased susceptibility to injury. The shoulder is stabilized prima-

rily by the muscles. For the actual shoulder joint, the muscles of the rotator cuff are some of the most important. These are four muscles that surround it like a cuff to stabilize it. This muscle group should



therefore be sufficiently strong. Our E4/5 shoulder machine is a great help here. Training to strengthen the rotator cuff is worthwhile: it can help maintain the mobility and stability of your shoulder joint, shoulder loads better and prevent problems. Rotator cuff strengthening is also an important component in the rehabilitation of shoulder complaints. Just contact us if you would like to include this machine in your programme!

Machine of the month E4/5



Strong performer!

Our new shoulder machine

Who should get the credit for this? Our employees from machine development and research: Because they have completely redesigned our shoulder machine. With our new E4/5 you can train your rotator cuffs even more easily in the future.

The advantages:

- The machine can be adjusted even more individually.
- You can train both sides at once and save time.
- The arms can be placed in the starting position without any training load.
- You can set the start and end positions separately and thus train perfectly, even with limited mobility.
- The axes of the shoulder joint and the machine match so that there are no unwanted lever arms.

Curious now? The machine is gradually being introduced at our centres.

Unwind. Switch off.

Combat stress.

Text: Tania Schneider

We can't get rid of it. Nor should we, because stress is a vital mechanism. Negative stress can be better managed through physical activity.

"Sorry, I can't, I'm totally stressed out," my neighbour said recently. She is a single parent with twins aged two and a half and is self-employed. It was 8pm, the kids were in bed and she wanted to use the "free" time to meet an important deadline the next day.

What is stress?

Colloquially, by stress we usually mean a negative, burdensome feeling. We feel somehow lacking in energy, hectic, irritable or nervous. In fact, the definition is not so simple. The term "stress" refers to a physical quantity and means pressure, strain or tension. In the medical and scientific context, the physician and biochemist Hans Selye (1907–1982) coined the term stress. Selye is considered one of the first stress researchers. Over time, stress research has become increasingly interdisciplinary. The complex occurrence of stress is viewed from

different perspectives with the help of theoretical models, which makes a uniform definition difficult. Stress researcher Professor Markus Gerber from the Department of Sport and Mental Health at the University of Basel explains stress like this: "In the broadest sense, stress can be understood as a concept of equilibrium whose status quo (homeostasis) is disturbed by internal and external stimuli and can be balanced by adaptation processes."

What is a stressor?

In stress research, a distinction is made between a stressor and a stress response. "A stressor is the trigger of stress. In fact, any external or internal stimulus can become a stressor if it disturbs a balance in our organism's system," says Gerber. Examples of physiological stressors include heat, cold or noise. Annoyances and conflicts at work, a bad mood or bullying are examples of psychosocial stressor. Loss of control, excessive or insufficient demands and deadline pressure are among the psychological stressors.



What is a stress response?

The stress response is the organism's response to the stressor and results from the interaction with them. "Our organism tries to adapt in order to restore the disturbed balance," says Gerber. Reactions are divided into physical, mental, emotional and behavioural stress responses. Mental reactions include, for example, negative thoughts, thought blocks or concentration problems. Emotional reactions include nervousness, increased irritability or anxiety. Avoidance strategies such as watching television, drinking alcohol, or abusing medications are among the behavioural stress responses. As a physical response,

our body releases a cocktail of hormones including the stress hormones cortisol, adrenaline and noradrenaline. As a result, blood sugar, heart rate, and pulse rate rise. Blood flow to the heart and skeletal muscles increases, while activity in other organs slows down. Our breathing rate increases and we begin to sweat. In short, our body is ready for fight or flight or peak physical and mental performance. So per se, stress is not a negative thing, but a vital mechanism that allows us to respond to our environment, adapt, evolve and survive.

Stress is subjective

How strong the reaction to a stressor is depends, for example, on its frequency,

Continued on page 8

variety, duration and intensity. But modern stress research also attaches great importance to subjective evaluation. If we have the feeling that we can handle a situation with our existing abilities, stress can have a positive effect (eustress) and push us to peak performance. Conversely, we experience the stress situation as negative (distress) if we have the feeling that we cannot solve a problem in important situations.

Permanent stress is dangerous to health

If we fail to recover, our body is permanently in a state of alarm. And that can lead to illness. "Stress causes people to become compromised in their well-being and, in the long run, to develop chronic mental and physical disorders or illnesses and, in the worst cases, to die from their stress levels," Gerber points out. The effects include headaches or stomach aches, sleep disorders or fatigue. Long-term stress weakens our immune system, which is why we have to deal with more colds.

Stress can also encourage unhealthy behaviours such as excessive consumption of nicotine, alcohol and medicines. According to Gerber, there is another factor:

"Stress is the number 1 exercise killer. In a study with students, we were able to show that healthy behaviour deteriorated in all areas during periods of stress. Individuals slept less, ate less healthily, and they were less physically active." So it's no surprise that stress is often linked to visceral obesity, which in turn increases the risk of cardiovascular disease.

Stress and the muscles

Our muscles also respond to stress. In addition to positive adaptive effects, such as increased blood flow, stress – if sustained – can lead to permanent muscle tension and even cramp-like conditions. Migraines, tension headaches or musculoskeletal disorders can be the result. In addition, some stress hormones cause the breakdown of muscle proteins, while others cause oxidative damage. This reduces muscle strength and impairs its quality and function. As a result, the risk of musculoskeletal injuries,

for example, increases even with normal exertion. So what can be done?

Improving stress management

It is possible to learn how to deal with stress, e.g. in stress management training courses aimed at developing stress competence skills. Informative material or courses are offered,



Reducing stressors with physical activity

Physical activity can help prevent stressors from occurring in the first place or at least mitigate them. "The greatest effect of physical activity is probably on chronic diseases, which themselves act as significant stressor." One example is chronic back pain. Strength training, for example, can help prevent, alleviate or eliminate them. "In this context, we talk about instrumental

Physical activity is freeing and stimulating.

for example, by health insurance companies and specially trained instructors. But we can also combat stress through physical activity. Gerber explains, "Physical activity is an effective measure for preventing and coping with everyday stress." The stress researcher distinguishes between four different modes of action: "Physical activity can help reduce stressors, strengthen our personal resources, soften stress reactions and improve health."

coping or problem-focused stress management. In other words, you can actively do something about it to prevent the stress-triggering circumstances from occurring in the first place," says Gerber.

Strengthening resources through physical activity

However, physical activity also has a stress-buffering effect when it strengthens personal resources and makes us more resilient in the face of stressors and in terms of stress response. One of the resources that can potentially be strengthened through physical activity is self-efficacy. On the one hand, this means motor skills and the ability to plan and stick with it despite barriers. But it also means

the conviction that one can overcome challenges on one's own. Strength training can support the feeling of self-efficacy and also contribute to improved self-esteem. This, along with a positive outlook, can lead to less severe stress reactions.

Reducing stress reactions

There is another stress-buffering effect. Gerber explains, "Physical activity can reduce our physiological and psychological stress responses and buffer their adverse

health effects." For example, the severity of the hormonal response (e.g. cortisol release) and the cardiovascular response (e.g. heart rate) can be lessened and reduced in duration.

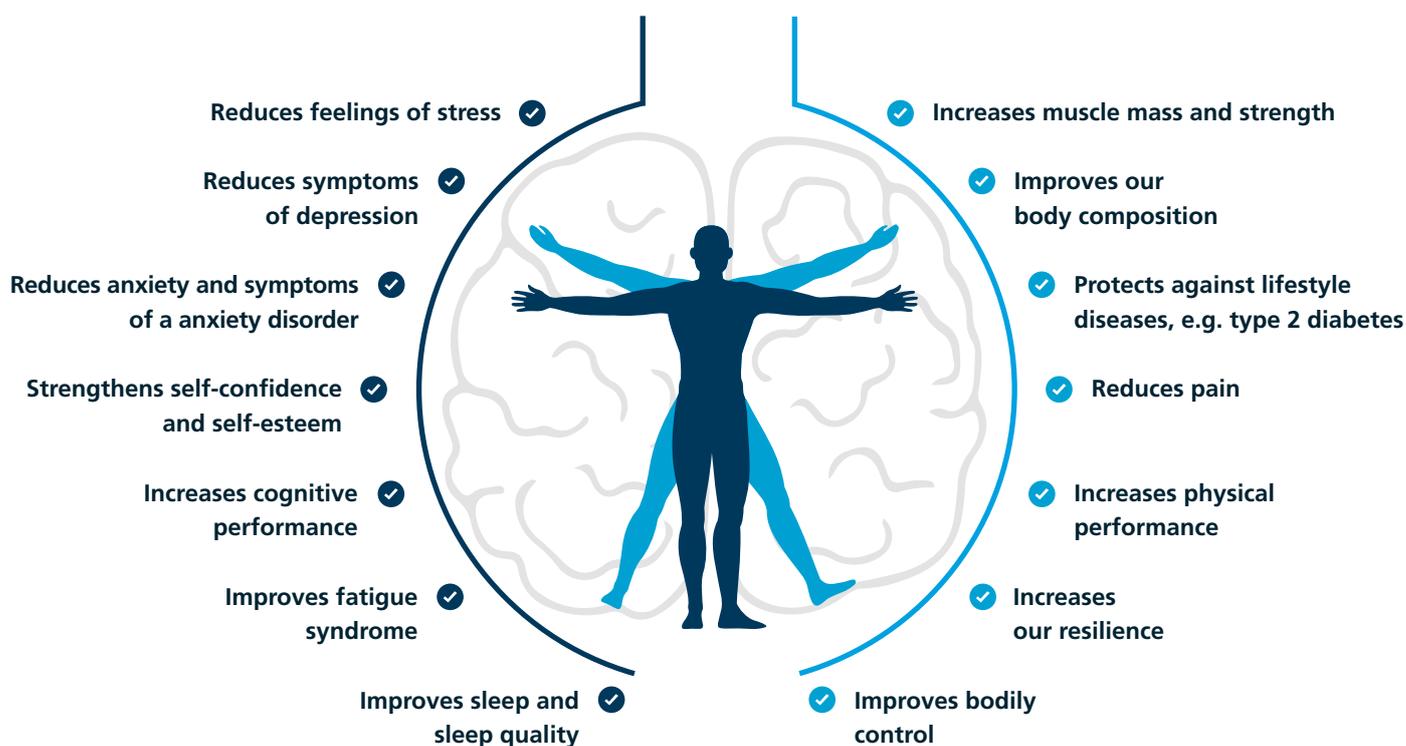
Strengthening health through physical activity

In addition, physical activity strengthens our health and therefore our resistance to stress. "It effectively acts on the same health risk factors as stress – but as a compensatory counterbalance."

Incidentally, it is believed that people who have good health through regular physical activity can remain under high stress for longer periods of time – without physical or psychological consequences. Thus physical activity helps build our resilience and stay calm and healthy when dealing with stress. So keep at it, keep exercising and stay calm – even when things aren't going well.

Psychological effects

Physical effects



Training with an infection?

Interview: Tania Schneider with Dr Martin Weiß

People who are chronically stressed are more susceptible to infections. And when the weather is grim, they can catch you out even more quickly. But when is it time to take a break from training and when can you start again? Dr Martin Weiß provides answers to the most important questions.

Can I train when I have an infection?

It is not easy to distinguish between an ordinary infection and a coronavirus infection. In concrete terms, this means you should stop training: if you feel signs of an infection coming on, stay at home, contact your doctor and agree with him or her on how to proceed. This will ensure that you do not put yourself or others at risk. The most reliable way to find out if you have the coronavirus is to do a double PCR test. I absolutely recommend getting vaccinated. Basically, the question of "to train or not to train" demands a high degree of responsibility from all of us.

What happens in my body if I train despite having an infection?

The fact is that we only increase our resistance to infections on healthy days through regular training. If we are sick, we need to take a break. An infection is a stressor for the body and even with an ordinary cold our body needs all its strength for the immune defence. If strength training is added as a stressor, this further weakens the body and has a counter-productive effect. In fact, I very frequently see people who, when they are in the early stages of an infection, embark on a strenuous mountain hike. They often feel better the next day. This can be explained as follows: when we activate ourselves physically at a high level, we fire up the myokine system. The muscles release messenger substances with hormone-like effects. One of these substances is interleukin-6, which we know helps to overcome an infection. Nevertheless, physical activity during an infection is a risky business. In rare cases, this can lead to myocarditis, i.e. inflammation of the heart muscle.



What physical symptoms are an indication that I should stop training?

When you have an increased body temperature or fever. What many people don't know is that even at a temperature of 37.5 °C the body requires rest and recuperation. However, we don't all have the same base temperature. That is why you should listen to your own body. If you already feel exhausted and tired at 37.3 °C, it is better to refrain from any kind of physical activity. If you exercise anyway, you run the risk of myocarditis. And this is potentially life-threatening. This can be easily avoided by taking a break from training.

Speaking of taking a break from training: when can I start again?

If you have been diagnosed with myocarditis, you must not exercise or be physically active for six months. If you have an infection, the fever should have subsided for at least three days and you should be in good general health again. Something that is very important for starting back up after an illness or break is to make sure to reduce the training weights. A guideline is 10 to 20 per cent, although this depends on the type of illness and the length of the training break. It is best to consult with one of our instructors.



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Was Popeye right after all?

Text: Research Department

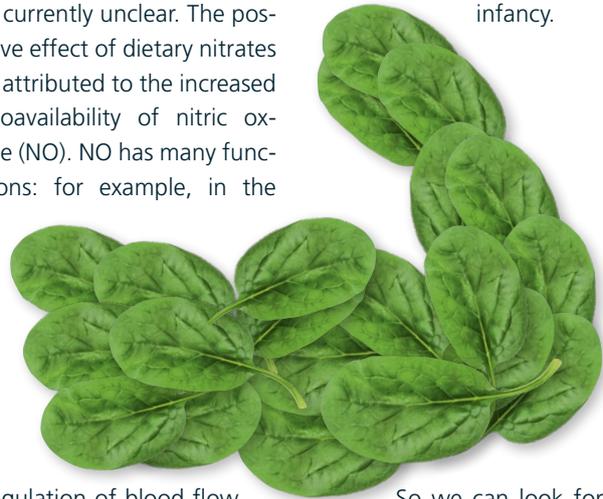
Most people know who Popeye is and that he gains extraordinary muscle strength from eating spinach. But exactly how spinach supposedly does this is less common knowledge.

Popeye was created around the time that spinach was considered to be particularly rich in iron. Iron is an important mineral that is involved in various physiological processes that positively influence physical performance and resistance to fatigue. It was therefore assumed that spinach could increase strength. However, spinach contains less iron than previously thought. The 35 milligrams of iron per 100 grams measured in dried spinach were wrongly attributed to fresh spinach. But fresh spinach consists of about 90 per cent water, so it contains only

about 3.5 milligrams of iron per 100 grams. So Popeye's increase in strength is not due to iron. Popeye himself attributed the positive effect of spinach to its high vitamin A content. In fact, spinach does contain a lot of vitamin A. While this is important for health, it has little effect on muscle strength. Recent studies show that Popeye may have been right after all and that spinach does strengthen muscles. There are two possible ingredients that could be behind this: ecdysterone and nitrate. Ecdysterone is produced by some plants to protect them from predators. In animal and in vitro studies, it has been shown to have a performance-enhancing, anabolic effect. However, in the few human studies conducted to date, ecdysterone has been administered as a concentrate. To achieve the same amounts with fresh spinach, it would take be-

tween 120 and 2000 grams of spinach per day with an ecdysterone content of 0.01 per cent, depending on the study. Whether, how and when ecdysterone works in humans and how much ecdysterone our bodies could actually absorb from spinach is currently unclear. The positive effect of dietary nitrates is attributed to the increased bioavailability of nitric oxide (NO). NO has many functions: for example, in the

blood pressure-lowering effect. This means that for the same amount of time and energy, more muscle work can be done. However, it is not known under which exact conditions this effect can be achieved. Research in this area is still in its infancy.



regulation of blood flow, muscle contractility, muscle cell development, and sugar and calcium homeostasis. Studies show that an increased intake of nitrates or nitrate-rich foods may have the potential to increase the efficiency of skeletal muscle contraction, in addition to a

So we can look forward to seeing how the facts surrounding Popeye and his spinach develop. Until then: enjoy your spinach, but don't expect too much from it.

Strength training to combat stress

Interview by Tania Schneider with Professor Markus Gerber, University of Basel, Department of Sport, Exercise and Health, Division of Sport and Mental Health

Professor Gerber, you assume that physical activity can help combat stress. Can you give an example?

If you don't sleep well, you're often stressed the next day. And when you're stressed, it's often harder to sleep well the following night. We have been able to prove in many studies that very short exercise programmes can have very positive effects on the subjectively experienced quality of sleep and on objective sleep parameters. If you are physically active on a regular basis, you spend longer in the deep sleep phase. All of this can have a positive effect on stress levels.

Can I strengthen my personal resources in stress management with strength training?

When you train on a machine to the point of local exhaustion, you have to overcome your desire to give up, grit your teeth and fight on. This supports your self-efficacy. In the process you learn: "I can do this!" And this mechanism can help when you're faced with a stress response in the psychosocial realm, for example.

"You're not only exercising for your physical health, but also for your mental and psychological health."

They say that physical activity in the process of coping with stress helps to reduce my reaction to it.

Yes, we are working from the so-called cross-stressor adaptation hypothesis. In short, it says that if you regularly expose your body to a sufficiently intense stress stimulus, this will lead to adaptation effects in the longer term, even with psychosocial stress stimuli. Such a crossover effect can manifest itself both in the sense of habituation and an attenuated reaction and in the sense of sensitization and an intensified reaction. Both have a stress-buffering effect and help your body cope better with stress.



What about health-related effects?

Physical activity clearly has protective effects on health. These effects are not only present in physical illnesses, but also in stress-related illnesses, such as depressive disorders. Many people think that mainly endurance training helps here. However, we have been able to prove that strength and endurance training have a comparable effect – or strength training even has a slight advantage. The same applies to a large extent to anxiety disorders, post-traumatic stress disorders, etc.

Can physical activity also be counterproductive?

This is a frequently held assumption. For example, we hear that in cases of burnout it would be better to allow people who are burned out to rest so as not to siphon off their residual energy through physical training. However, we have been able to prove that training has very positive effects after only three months. Physical activity can have very positive protective effects, especially on people in a high state of stress.

How long does this protective effect last?

We know that there is a so-called "post-exercise window". After exercising, you are more relaxed for four hours and your body reacts with a lower cortisol release, for example. This knowledge gives you the opportunity to time your workout wisely. If your stress levels are highest in the morning, a morning workout makes sense. By the way, a 30-minute training session has a positive effect on your executive functions, i.e. you can deal with stress stimuli more constructively and develop solutions more easily. In addition to this acute effect, we have also been able to demonstrate longer-term effects on executive functions. And the best thing about it is that you benefit from the very first training session – at least in terms of mental well-being and mental performance.

Strength boost: spinach smoothie

Provide your muscles with a variety of nutrients after a workout with this simple and delicious spinach smoothie. Low-fat curd cheese, milk and almonds provide protein – essential for muscle building. Really delicious!

Ingredients

75 g of low-fat curd cheese ½ orange
 100 ml of milk (1.5% fat) 50 g cucumber
 25 g almonds, ground Approx. 40 g crushed ice
 60 g spinach (optional) mint
 ½ lime

Let's get started

Wash the spinach and cucumber. Cut the cucumber into slices. Squeeze the lime and orange. Put all the ingredients into a high-power blender and puree to a smoothie. If you like, mix in a little mint.

Tip: The smoothie is great to take with you.

1 portion (415 g): 304.5 kcal, 20.2 g of protein,
 15.2 g of fat, 19.4 g of carbohydrates



Tip

Proteins are essential for muscle building.

Our recommendation:

- ✓ Consume 1.5 to 2.2 grams of protein per kilogram of body mass daily.
- ✓ Spread the total daily requirement over several portions.
- ✓ You should consume one portion of approx. 20 to 30 grams every 3 to 5 hours.
- ✓ In elderly people, that amount should be increased slightly to approx. 30 to 40 grams of protein per meal.
- ✓ The best thing is to consume one portion immediately after each session of strength training.

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Kieser Northcote

Level 1, 3 Separation Street
Northcote VIC 3070
Phone: +61 (0)3 9977 5995



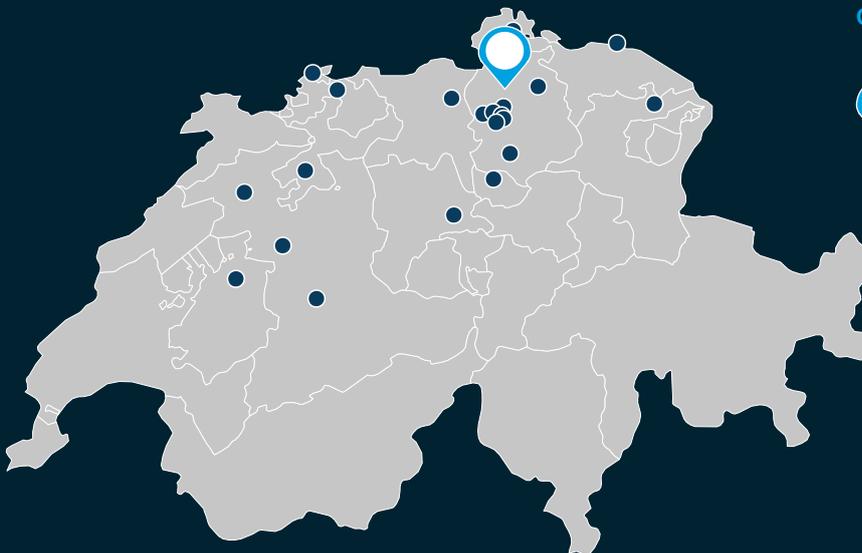
Kieser Werribee

Level 1, 285 Heaths Road
Werribee VIC 3030
Phone: +61 (0)3 8764 3344



Kieser Hobart

110 Argyle Street
Hobart TAS 7000
Phone: +61 (0)3 6142 3880



Opening Switzerland



Kieser Circle

The Circle 69 – Airport CH
8058 Zurich
Phone: +41 (0)44 446 80 98
zuerich8@kieser-training.com



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