

# RE 66 FLEX

THE KIESER TRAINING MAGAZINE



## WIDE AWAKE AFTER A GOOD NIGHT'S SLEEP

For more than 30 years, Susanne Goebel has been prone to migraine attacks. Strength training and sleep helps keep them in check.

You automatically smile when you listen to Susanne Goebel (49). She is spontaneous, bright and brimming over with vitality and energy. Her week includes two sessions of Kieser Training, two sessions of competitive ballroom dancing and yoga four times a week. She also cycles and goes for long walks.

"If I don't do some physical activity during the day, I get restless and sleep badly," she says. "Kieser Training helps me channel my energy. I then feel good and sleep well." Both – restorative sleep and strength training – are very important because Susanne Goebel has suffered from migraines for more than 30 years.

Until a few years ago, severe migraine attacks would often incapacitate her for days. For example, during a visit to the Doge's Palace in Venice, she tilted her head right back in order to admire the roof paintings; the effort caused her muscles to cramp up completely. "That night I had a bad migraine attack that lasted for three days. It ruined the rest of our holiday." In order to avoid such attacks, Goebel has long tried to eat a healthy diet. She also needs to follow a regular routine, going to bed every day at 10.30 pm and getting up

by 6.30 am. Intensive sport also helps. What has really helped, however, is Kieser Training, which she does regularly during her lunch break.

Susanne Goebel works as an Accounts Manager and sits for eight to nine hours in front of two screens; this put a severe strain on her neck and back. "Previously, my neck muscles were almost non-existent and I also had a bad back; my spine was twisted and I had a scoliosis. I have to take countermeasures and keep on doing them."

*"For me, strength makes things effortless and provides stability."*

Today her back and neck muscles are really strong. This makes Goebel proud. She is also pleased that the number of migraine attacks continues to decline and if they do occur, they are less severe. At first,

she was somewhat sceptical when her instructor – at the start of training – recommended the G5 to strengthen the neck muscles. "Initially, I lacked the confidence to even try the exercise. I was worried that extending the neck would trigger a new attack. I would not have believed that the effect would be exactly the reverse." Today she knows that if she doesn't train regularly, she gets headaches and back pain.

Training also helps to alleviate stress: "Kieser Training allows me to switch off completely from work and so I get a genuine break. It clears my head and I sleep well at night." It also gives her the strength to do what she wants to do: It provides the upright, stable posture she needs not just for dancing but for almost every other situation in her life.

### New locations

**Australia**  
**March 2018**  
Collins Street  
Cnr Collins Street & King Street  
Melbourne, 3000

**May 2018**  
Heidelberg  
68 Cape Street  
Heidelberg VIC, 3084

**August 2018**  
Fitzroy North  
698 Brunswick Street  
Fitzroy North VIC 3068

**Germany**  
**April 2018**  
Bonn Bad-Godesberg  
Godesberger Allee 20–26  
53175 Bonn

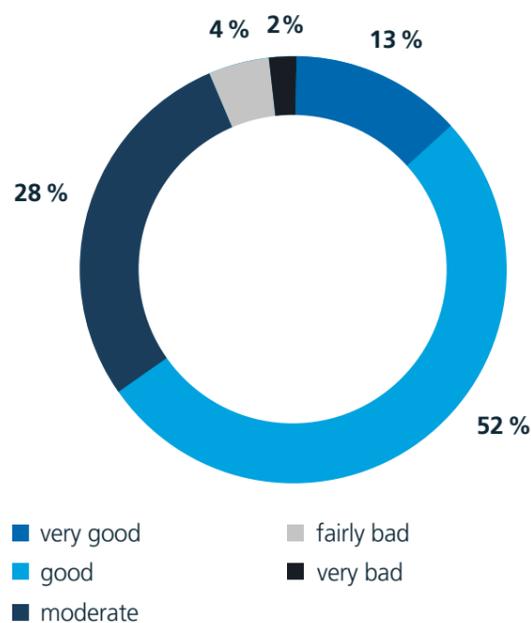
# ALWAYS TIRED IN THE MORNINGS?

"A good laugh and a long sleep are the best cures in the doctor's book." There is a lot of truth in this Irish saying: Sufficient good-quality sleep is required for the process of regeneration. We then start the new day refreshed and able to perform well.

"Good sleep is neither a luxury nor a waste of time. Quite the reverse; it is absolutely essential for health and well-being. It allows us to function properly," says sleep researcher Professor Jürgen Zülley. "Without sleep, we become irritable, depressed or ill."

It would appear, however, that many people can only dream of a good night's sleep. A sleep study completed in 2017 by the German health insurer "Techniker Krankenkasse" (TK) revealed that only two-thirds of participants slept well or very well whereas one-third slept moderately, badly or even very badly. In addition, most people were getting by with a maximum of six hours' sleep.

## How do you rate your sleep quality?



Source: Schlaf gut, Germany TK Sleep Study 2017  
Rounding differences possible

## Why we need sleep

"Very few people ask why we need to be awake," says Zülley with amazement. "Yet, many ask why we sleep and whether we really need to spend one-third of our life "inactive". His answer is loud and clear: Yes, we do. Zülley also stresses that sleeping is a highly active process. This is clear from the fact that our body only uses 50 fewer kilocalories asleep than it does awake. Some parts of our brain even burn more energy when we are sleeping. Even though our antennae to the outside world shut down and many body functions slow down, all hell is let loose in other regions.

"During the night, a complete orchestra of hormones is busy making us fit for the next day", says Zülley. Guided by our biological clock and as a reaction to the dark, the pineal gland in the brain secretes the hormone melatonin. This dilates the peripheral blood vessels and sends out a signal telling the body to go to sleep; we then feel sleepy. This is why the hormone is also known as the sleep hormone. It could, however, also be called the "ruminating hormone" because it lowers our mood – the reason why problems quickly become intractable at night. The production of melatonin in the pineal gland is suppressed as soon as morning light reaches the retina and so we wake up.

The reason why sleep is so important for the process of regeneration is that during the first half of the night, the pituitary gland produces a growth hormone that is essen-



tial for cell development. Zülley explains: "It allows our skin, hair, bones and muscles to grow; it regulates the fat metabolism and for example helps wounds to heal."

Zülley explains that from about 3 o'clock in the morning the stress hormone cortisol enters the fray: It prepares the body for waking up and this happens even if we only went to sleep at 2 o'clock. Cortisol suppresses the release of the growth hormone, increases blood sugar levels, activates the metabolism and inhibits the immune system. "If we are already stressed, the body releases more cortisol even during the first half of the night," explains Zülley. "This keeps us awake and we can say goodbye to restorative sleep."

*"In particular, give the brain the sleep it requires for reflection because sleep is to man what winding up is to the clock."*

Arthur Schopenhauer

Sleep has other important functions, e.g. it ensures food is digested thoroughly. In addition, it allows the brain to go through what has been experienced and learned during the day. "Sleep cements this new information as during sleep the brain is busy storing it," says Zülley. In addition, important recovery and repair processes take place whilst we sleep.

## Sleep and health

There is a close correlation between insufficient, non-restorative sleep and our health. "If we fail to sleep long enough, we become ill. A lack of sleep is not only a danger to our own health but to others as well, as it increases the

risk of accidents and errors at work," according to the publisher of the TK study. Insufficient sleep also increases the risk of cardiovascular and stomach problems, depression and obesity. In addition, it weakens the immune system, reduces our ability to concentrate and makes us less alert.

Vice versa, the study showed that if we are healthy, we are more likely to sleep well and if we are often or permanently ill, we are likely to sleep less well. For example, 54 % of "poor sleepers" suffer from muscle tension and back pain whereas the equivalent figure for "good sleepers" is only 35 %.

## What stops us sleeping?

So what actually stops us from sleeping? Noise, light, temperature, toxins and contaminants, health problems and pain, stress at work or in our private life, medicines, fatty foods or eating too late, alcohol or physical inactivity. There are a whole host of things that stop us from sleeping. Provided we adopt the right "sleep hygiene" measures, we can exert a major influence on the quality of sleep and even minor changes in lifestyle can achieve a great deal. This includes physical activity and strength training.



Professor Dr Dr Jürgen Zülley

is an engineer and a psychologist, Professor of Biological Psychology at the University of Regensburg, somnologist (DGSM, the German Sleep Society) and published author. For 45 years he worked in the fields of sleep research, chronobiology and clinical psychology. Between 1993 and his retirement in 2010, he was Head of the Centre for Sleep Medicine at the University Clinic in Regensburg and Lead Psychologist.

# SLEEP WELL!

Many dream that one day they will get a good night's sleep. Find out how strength training can help improve your sleep quality.

In recent decades, physical activity has been recommended as an important factor if we wish to improve our health. It has been identified as a practical way to develop muscle mass, reduce fat mass, prevent disease and improve sleep quality. There is a need to stress the importance of enough sleep, as a lack of it represents a risk to health, e.g. for obesity, Type 2 diabetes, cardiovascular disease, depression and accidents. There is systematic evidence that 7–8 hours' sleep lowers the risk of morbidity and mortality.

## Back pain and muscle tension

Back problems and tension prevent many of us from sleeping. Strengthening the deep extensors in the back and neck can improve 80 % of all chronic problems. Perfect if we want to sleep through the night instead of tossing and turning plagued by pain. Strength training can work a veritable miracle and contribute to a restorative night's sleep.

## Stress

If we toss and turn at night, it may be that we are taking stress – work or personal – home with us. Strength training can offset stress and reduce it. This was shown in a study involving 500 participants who trained at Kieser Training twice a week for six months. 83 % of the participants found that the training was a good antidote to the trials and tribulations of everyday life and 50 % said that they coped better with stress.

## Depression

Most people with mental problems sleep badly – and vice versa; people who sleep badly often develop mental problems. It is known that a low mood or depression is associated with poor sleep. High intensity strength training is an effective anti-depressant; this was one of the findings of a study of patients with depression aged 60 plus. In 61 % of cases, the severity of the depression was reduced by half. In contrast, vitality and quality of life increased and the sleep quality of participants improved significantly.



## Anxiety

Anxiety also stops people from sleeping. Studies suggest that this does not have to be the case. For example, it has been shown that mood can be improved and tension reduced. Strength training can, therefore, also reduce anxiety.

## Sleep quality

Reductions in the quality and duration of sleep are associated with illness and mortality. Studies suggest that strength training is an effective way to improve all aspects of sleep,

whereby the greatest improvement is on sleep quality. This was confirmed in a study by our own Kieser Training Research Department. Monitored by five external, independent scientists, the study showed that 30 % of participants slept better following high intensity strength training. More research is needed, however, in order to understand the mechanisms involved.



## DR SC. ETH DAVID AGUAYO KIESER TRAINING RESEARCH DEPARTMENT

You may have read or heard that muscles have "autonomous reserves"? It is argued that we have a strength reserve that we can tap into if things get really dire, e.g. if we are at risk of death – and which under normal circumstances is protected by our nervous system.

This hypothesis assumes that we have dormant motor units that are only "woken up" under extreme conditions in order to

# DO MUSCLES HIBERNATE?

produce extra strength. A quick reminder: motor units are made up of a motor neuron (nerve cell) and the muscle fibres innervated by this cell (see Reflex 62). If that hypothesis were true, it would imply that certain muscle fibres are rarely or never used. Does that reserve actually exist? Can we wake it up or is it just a myth?

In this case, it's right to be sceptical; not least because we need to ask what would prevent muscle atrophy (muscle wasting) if the fibres in these muscles were not being used.

Yet, how can we explain the fact that we have more strength under extreme conditions? One possible physiological reason is the so-called firing rate of motor units: Mo-

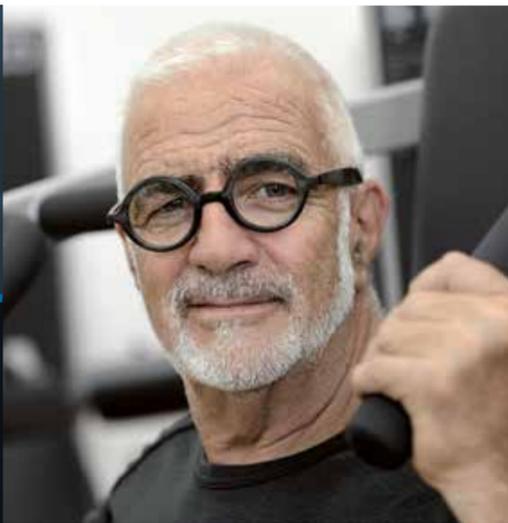
tor units are recruited by electrical impulses – in an ascending pattern. When we do a physical activity, the small motor units work first and only a few Type 1 muscle fibres are activated. These are the slow-twitch fibres that generate low levels of strength at a slow speed but are highly resistant to fatigue. It is only with increasing fatigue that we call upon an increasing number of larger motor units. The cell bodies associated with these motor neurons are larger and thicker and generally speaking many more Type 2 muscle fibres are activated. These are the fast-twitch fibres that generate high levels of strength quickly but soon fatigue. During this recruitment process, the rate at which each individual motor unit fires decreases. This means that the larger motor units are

activated at a lower firing rate than the smaller units. However, studies using electro-stimulation have shown that the larger motor units can in fact be recruited at a faster rate and so activated earlier. In other words, our motor neurons are able to vary the firing rate and so can exploit a specific strength reserve in full.

In other words, there are no muscles that are quasi dormant and could be woken up. All we need to do is to simply exercise our muscles regularly to their maximum limit. This will ensure that they are always ready for action. We may not be able to change the safety mechanism at will but our additional muscle mass will ensure that we are ideally equipped for extreme and critical situations as well.

## WERNER KIESER'S CORNER

TRAINING PRINCIPLES ARE ESSENTIAL



### Training Principle 2: "Train lower body muscles first."

The larger the muscle group used in an exercise, the more oxygen you need and the more your pulse rate increases. The largest

muscles are in the lower body, i.e. legs, buttocks and hips. By working the large muscles until total fatigue, i.e. at high intensity you not only develop the muscles being worked but also affect the cardiovascular system. This is because high intensity train-

ing rapidly increases the pulse rate to an effective level. Once it reaches that level, the subsequent less strenuous exercises are sufficient to maintain that rate until you complete the final exercise. That is also why you should move quickly from one machine to the next.

Many athletes and trainers also report an additional effect, albeit one not yet verified by scientific research: the so-called "spreading effect". This is based on the hypothesis that increases in muscle strength are a process that not only affects the muscle being exercised but also the entire body; in addition, the effect is spread more widely if you exercise more muscle mass simultaneously. Arthur Jones used the metaphor of a stone thrown into water: the larger the stone the further the spread of the resultant ripples. To my knowledge, there has been no research into whether the process of muscle build-up is actually reinforced in this way.

However, studies have confirmed that high intensity training of the large muscle groups does have an effect on the cardiovascular system. That alone is reason enough to observe the principle of exercising the "larger muscles first and then the smaller ones". Although there are practical reasons for keeping to this order, it is not absolutely essential. If there are specific objectives, e.g. during rehabilitation, it may be appropriate to adopt a different order.

Werner Kieser

## READER SURVEY

The Reflex magazine is now in its 15<sup>th</sup> year. During that entire period, we have always tried to publish articles on a wide range of issues relating to strength training and muscle build-up.

For example, we have provided background information on muscles and explained a wide range of disease symptoms. We have explained how strength training can be the basis for sports such as walking, yoga or skiing. Our instructors have written about their favourite machines. We have asked experts and published impressive success stories. We have also kept readers up-to-date with the latest news from the company. However, what other topics interest you? What else would you like to know?

Click on the following link and let us have your suggestions, questions and wishes:

[https://de.surveymonkey.com/r/Reflex\\_2018\\_E](https://de.surveymonkey.com/r/Reflex_2018_E)



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