# Reflex 74

The Kieser Training Magazine

February 2022

## Strong shoulders
are always needed.

KIESER TRAINING

# Strong figures

**123**

**per cent** of our body weight acts on the shoulder on average when we put down a coffee pot weighing 1.5 kilograms with an outstretched arm. When lifting, it is 105 percent (Westerhoff et al. 2009).

**48**

**per cent** of women who have pain suffer from shoulder pain, according to a survey in Germany (Statista, 2017).

**39**

**per cent** of men who have pain suffer from shoulder pain, according to a survey in Germany (Statista, 2017).

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# Contents

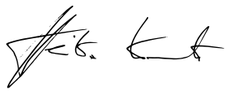
**Dear readers,**

I can still remember the pain and limitations I experienced as a result of a shoulder injury. In sport, in everyday life and in my job. It took months until my shoulder was ready for use to some extent again.

As a passionate tennis player, shoulder training is even more important to me today. With our shoulder exercises on pages 6 and 7, our instructors have a tool kit at hand to strengthen your shoulder area in the best possible way.

And with our E4/5 shoulder machine, our machine engineers have succeeded in designing a masterpiece which enables you to train comfortably and effectively even if you have complaints.

Being able to offer a strong shoulder to lean on is definitely worth it.



Warm regards,
**Heiko Krink**
CSO

# **Better not give your shoulders** the cold shoulder!

Our shoulders are involved in many movements and are especially stressed during overhead movements.

Lifting a child, blow-drying your hair, cleaning the windows. Painting, playing handball or doing yoga.

Strong shoulder muscles are not only eye-catching, they also offer a protective shield in terms of health.



All-rounder
**strength training**

**With our shoulder exercises you:**

- strengthen the muscles that stabilise the joint,
- strengthen the rotator cuff, which centres the head of the humerus in the socket,
- strengthen the muscle-tendon attachments,
- increase the strength in the shoulder,
- increase the load-bearing capacity,
- correct muscular imbalances,
- protect yourself in the best possible way from injuries, discomfort and pain,
- will soon have a shoulder to lean on.

# **Nine top exercises** for strong shoulders

Our shoulders have a complex structure.
With our shoulder strengthening exercises, you can achieve the best possible results.

**E1 | Neck press**
For healthy shoulders: In the neck press, you train the deltoid, triceps, as well as the serratus anterior. During the exercise, press the handles upwards without fully extending the elbows.

Repeat all exercises until local exhaustion according to the Kieser principle. Make sure that the target muscles are isolated.

**E2 | Lateral raise**
With this exercise, you will strengthen the deltoid muscle, which gives the shoulder its shape, as well as the supraspinatus muscle, which is an important part of the rotator cuff. During the exercise, keep your upper arm at a right angle to your forearm. Use your elbows to push the pads up sideways.

**E3 | Press**
Here, in addition to the deltoid, pectoral and triceps, you're also training the serratus anterior muscle, which helps stabilize your scapula.

**E4/5 | Shoulder rotation inwards and outwards**
Two exercises on one machine: You can use this machine to strengthen the rotator cuff. This is the subscapularis muscle, the supraspinatus muscle, the infraspinatus muscle and the teres minor muscle. Among other things, this group of muscles centres the large humeral head in the correct position over the small glenoid cavity. This determines the correct function of the shoulder joint. To perform the exercise, turn the arm downwards to the front or upwards to the rear.

**D7 | Seated tricep pushdown**
With the D7 you will strengthen your pectoral muscle, triceps and all the muscles that pull the shoulder girdle down. This is also important to create space in the joint. To perform the exercise, press the handles down and keep the elbows pointing outwards.

**C1 | Pullover**
This machine allows you to train the large back muscle in isolation. It straightens you up and creates enough space under the acromion (roof of the shoulder). When performing the exercise, first push forward with the upper arms, then down and finally as far back as possible.

**C7 | Seated row**
With the seated row, you train the trapezius muscle, the rhomboid muscle and the large back muscle. This corrects your posture and thus the position of the shoulder blades. To perform the exercise, pull the handles back and bring the elbows close to the body.

**G1 | Shoulder raise**
This exercise strengthens the trapezius muscle. It helps to pull the head of the upper arm down and create space under the acromion. Straighten the shoulder girdle as much as possible. Now raise the shoulders. When lowering, you will experience a stretch due to the training load. This also opens up the space under the acromion.

# **Training with an impingement?** This is how to do it!

**Text:** Dr Martin Weiß, general practitioner, chirotherapist and author of the book "Muscle strength is strong medicine"

In Germany, one in two women and one in three men who have pain suffer from shoulder complaints. Impingement syndrome is particularly widespread. But what is it and how does it occur?

The space between the acromion and the humeral head is very narrow per se. If we lift the arm above the horizontal, the soft tissues running there come under pressure – e.g. the tendons of the rotator cuff, especially the tendon of the supraspinatus muscle and the bursa. This is not bad in the short term. But if this happens constantly, the soft tissues become permanently irritated, inflamed and damaged. This can be triggered by frequent, prolonged overhead activities, as occurs with overhead athletes or painters. In advanced stages, the rotator cuff can no longer properly centre the humeral head over the socket. In rare cases, the supraspinatus muscle tears, causing the humeral head to slip directly under the acromion, painfully inhibiting any movement.

All this must be prevented. Starting strength training early on is essential for this. If you have shoulder problems, contact us and make an appointment for our medical training consultation. With targeted exercises, we can support you in the best possible way to prevent compression under the acromion, create space and increase the load-bearing capacity of your shoulder. In many cases, this can alleviate discomfort and prevent surgery. Of course, it is even better to prevent possible problems by doing our shoulder exercises.

**1**

**Preventing compression**

To prevent further damage from an impingement, you should avoid all overhead movements and positions (for example, while sleeping) with the affected arm. This is because they compress the already narrow space between the humeral head and the acromion and irritate the damaged, often inflamed, soft tissues. For this reason, we are skipping exercises C2, C3, E1 and E3 for the time being.

**2**

**Creating space**

With exercises C1 and D7 we work on pulling the head of the humerus muscularly downwards. This has a decompressing effect and creates space and relief under the acromion. Important: in the case of impingement, you do not train C1 overhead but only with a limited range of motion. You bring your arms upwards at most until your wrists are at forehead level.

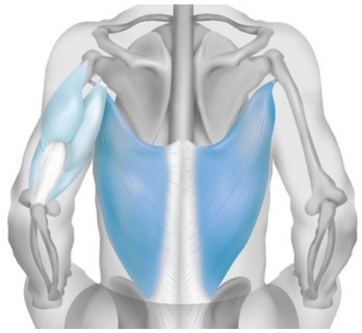
**3**

**Increasing load-bearing capacity**

To stabilize the shoulder and make it more resilient, it is important to bring the head of the humerus back into the correct position and centre it over the socket. This can be achieved by strengthening the rotator cuff on the E4/5.
In addition, we strengthen your deltoid muscle on the E2 as well as all the other muscles of your shoulder girdle. This can be achieved with exercises D6, D7, C5 and C7, for example.



# Why you should train your back **for strong shoulders**



The muscles of the shoulder and shoulder girdle include the rotator cuff and the deltoid muscle as well as many other muscles. But did you know that the latissimus dorsi is also one of them? Strengthening the large back muscle is especially important in the case of impingement.

In terms of surface area, the latissimus is our largest muscle. Incidentally, it is also known as the "apron tying muscle" in German. It owes its nickname to the fact that it is responsible for internal rotation and elevation of the arm, and thus for all the movements we use to tie a kitchen apron at the back.

But what does this muscle have to do with our shoulders? Quite simply, the latissimus pulls from the pelvis through the ribs to the humerus, where it attaches just below the humeral head. If it is strong enough, it pulls the humeral head down. And that's exactly what creates space in the shoulder joint and relieves already irritated, inflamed structures.

Especially with an impingement, it is important to train the latissimus but at the same time prevent overhead movements. The C1 exercise allows you to train the latissimus almost in isolation and thus extremely effectively. In the case of shoulder tightness, an individually restricted range of motion prevents further compression of the soft tissues.

Our experience shows: isolated training of the latissimus on the C1 often helps to alleviate discomfort and increase resilience. And the best side effect: a beautiful back can also be delight.

# **Machine of the month:** C1


The C1 (pullover) was originally developed in the early 1970s by American Arthur Jones. In fact, Jones' machine was the first to allow direct, isolated training of the large back muscle: with variable resistance and from maximum possible stretch to full contraction. The machine has been further developed and perfected by us.

**The advantages at a glance:**

- You can train the latissimus muscle almost in isolation and therefore extremely effectively.
- You can train in an anatomically correct manner and avoid incorrect stresses.
- The resistance is variable and can be finely adjusted.
- The machine can be adjusted to meet individual requirements.
- In the case of an impingement, the range of motion can be restricted in such a way that compression of the soft tissues in the shoulder joint is prevented.

# Masterpiece
## of machine design

**Marc Breitinger,**
**CTO Kieser Training AG**

« *Kieser is a muscle factory where muscles are trained with precision.* **Our new E4/5 provides millimetre precision for the muscles.** *Particularly in the case of shoulder problems, it's important to be able to adjust the machine precisely and individually. The crank enables you to adjust the range of motion continuously and with a buffer so that you train in the pain-free range. For me, it is a masterpiece of machine design. Ingenious!*

**Phil Sencil,**
**Mechanical Engineer**
**Kieser Training AG**

« **The great advantage of the new E4/5 is its efficiency.** *You can now train both arms at the same time. And better still: we have developed a double eccentric disc. Thanks to this technology, you can switch effortlessly from internal to external rotation in just a few steps. Both save time!*

**Michael Koletnik,**
**Head of Machine Development**
**Kieser Training AG**

**One advantage of the machine are the even more individual training possibilities.** *This is made possible by the fine-tuning adjustment options. The seat, backrest and arm position can be perfectly adapted to your physique. The training load can also be finely adjusted in minimal increments. All this makes training even more comfortable – even if you have shoulder, back or wrist problems.* »

**Dr Martin Weiß,**
**general practitioner, chirotherapist**
**and provider of ideas for the new E4/5**

**A plus point of the new E4/5 is its compatibility with shoulder complaints.** *This is made possible by the shoulder-friendly positioning of the arms. This allows us to achieve the best possible centring of the humeral head over the glenoid cavity. This stabilizes the joint and increases the load-bearing capacity. Pain may subside. Perfect for prevention and rehabilitation of shoulder complaints!* »

**Janika Knochel**

is the manager of the Hannover-Südstadt centre. And she is an ambitious kickboxer. She trains at Kieser once or twice a week, mainly to increase her shoulder strength. In addition, she has two to four kickboxing training sessions and regular running training.

# **Back competing with strong shoulders:** Janika Knochel

When she's kickboxing, our business manager in the Hannover-Südstadt centre forgets everything around her. Thanks to Kieser, she is in top form despite her damaged shoulder. So she can give her all on the mat and keep her guard up.

**Text:** Tania Schneider

"Kickboxing is my sport," says Janika Knochel, with a broad smile across her face. She already knew that at 15. At the time she read in the magazine *Bravo* that Sarah Connor was a kickboxer. That made her curious. She gave it a go and discovered her passion. "I love this sport because it's a great way to switch off. It challenges me on every level: it's about strength and stamina, concentration and brains, strategy and speed."

She has been an active competitor in light contact kickboxing since 2011. With success: at the World Championships in Ireland in 2017, she won the silver medal in the discipline Kicklight and bronze in Light Contact. In 2018, the title of "International German Champion" followed in Kicklight and two bronze medals at the World Championships in Greece. And all this despite being restricted by her left shoulder. A bicycle crash in icy conditions had almost cost her her competitive career. The bitter consequence: an overstretched supraspinatus tendon, a damaged acromioclavicular joint and an irritated supraspinatus muscle. Fatal for kickboxing.

This makes regular training with Kieser all the more important for the athlete: "The power from the shoulder is transferred directly to the arm. That's the only way I can strike quickly and also pull the arm back again quickly and take cover." And that is crucial for competition. Janika Knochel smiles and says mischievously: "My body shows me immediately if I don't train regularly."

*„Strength to me is being able to give my opponent a strong shoulder in competition."*

*Janika Knochel*

To strengthen the rotator cuff and stabilize her shoulder, she trains regularly on the E5, among other machines. She is thrilled with the new machine: "I can now feel the targeted muscles even better. And the fine adjustment options help me a lot because my left shoulder has limited mobility." In terms of body awareness, the simultaneous training and thus the direct side comparison helps her.

The kickboxer is optimistic for the 2022 competition season. Recently, she had taken a break from competing. "Not just because of the coronavirus. I took over the management of the centre in Hannover-Mitte (now Südstadt) in 2019. I wanted to fully concentrate on that initially." But now the energetic 34-year-old is back on the mat – ready to give her next opponent a strong shoulder. In November, she won two silver medals at the World Cup in Austria.

She is currently training to qualify for the next World Championships: strength training once or twice a week, plus kickboxing two to four times a week and additional running training. She finds it easy to juggle it all. "This is my life. I just enjoy it!"

# Training through the entire range of motion?
## The facts speak for themselves!

**Text:** Kieser Training AG Research Department

**We generally recommend training through the entire range of motion for all exercises – unless we deliberately restrict this due to pain or discomfort, for instance. But why is this actually? Because the scientific data supports doing it.**

In general, the literature shows that strength training over the full range of motion is superior to partial strength training when it comes to muscle growth. This has been studied for upper and lower body muscles during a variety of strengthening exercises. For example, one research group showed that strength training of the elbow flexors over a full range of motion resulted in a greater increase in muscle thickness compared to a partial range of motion. Another research group confirmed that muscle growth for the anterior thigh muscles was greater with a full range of motion.

However, there are also a few studies in which participants performed knee extensions on an isokinetic dynamometer, for example, that showed similar anterior thigh muscle growth in comparison. However, these results should be viewed with caution, as they involve a specific type of resistance. And in the one study to date that included only participants with strength training experience, researchers reported greater muscle growth for the elbow extension exercise when using a partial range of motion. No studies currently exist on the potential benefits of combining a full and partial range of motion.

However, there is evidence that training at longer muscle lengths, i.e., when the muscle is in an extended position at its full range of motion, promotes greater hypertrophic adaptations than at shorter muscle lengths. When comparing knee extensions at shortened and lengthened muscle lengths, the anterior thigh muscle gained more cross-sectional area when exercising at a long muscle length. The combination of the results shows that a long muscle length is optimal for promoting muscle growth. So from a practical point of view, the strategy is clear: to gain muscle mass and strength, always aim for a full range of motion for all repetitions.

**And this is how it works in Kieser Training**

In Kieser Training, each repetition contains all forms of contraction. That is, a concentric, isometric and eccentric contraction. In your next workout, make sure to use the full range of motion. It is important for strength and muscle growth that you also produce and maintain a high force at the beginning and end of the exercise. This can be accomplished with concentration and conscious, maximum tension. From the starting position, it is important to maintain the load and move into the next repetition without momentum. If you need to limit the range of motion on an exercise, pay even more attention to force production with a long muscle length.



# Protein-packed recipe:
## quick green pea soup

This quick pea soup is a little protein bomb.
Perfect for a quick protein boost after a workout.


## Tip

- ✓ Consume 1.5 to 2.2 grams of protein per kilogram of body mass daily.
- ✓ Spread the total daily requirement over several servings.
- ✓ Consume one portion of approx. 20 to 30 grams every three to five hours.
- ✓ For older people, it may be a little more: approx. 30 to 40 grams of protein each time.
- ✓ It is best to consume one portion immediately after strength training.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