

RE 68 FLEX

THE KIESER TRAINING MAGAZINE



STRONG LEG MUSCLES FOR RIDE TO SYLT

“In Oberstdorf, I simply push down on the pedals and from there it’s more or less downhill,” jokes Steffen Eisele. However, with 200 km per day, cycling the length of Germany is unlikely to be that relaxing.

MONIKA HERBST

In fact, it should have been a father and son trip: When Steffen Eisele first came up with the idea of cycling through Germany, his eldest son was eight or nine years old and was already a keen cyclist. However, time passed and the trip never got off the ground. The son is now 17 and interested in other things but the father did not give up on the idea.

Steffen Eisele has a well-trained physique and just one look at the 46-year-old shows that fitness is an important part of his life. He studied sports science and is now the joint owner of four Kieser Training centres in and around Stuttgart. Fitting, therefore, that his plan is equally ambitious: Taking just 7 days, he intends to cycle 1,400 kilometres from Germany’s southernmost point (Haldenwanger Eck, near Oberstdorf) to its northernmost tip (Ellenbogen on the island of Sylt). Riding primarily along river valleys and cycle paths, he expects to spend some 68 hours in the saddle.

Looking at his powerful leg muscles, it is easy to believe that he will succeed and yet those legs are not the result of a life on the sofa. He trains hard: Every week he does a short and a long ride. The word “short” is relative here, as it means 80 kilometres and three to four hours on the bike. Long is 150–200 km. When he first rode a full 200 km, he found it hard towards the end: Steffen lives with his family in the

Black Forest at a height of some 550 metres. “The last 50 kilometres were not fun,” he says with smile. It was uphill all the way.

“There are no weights with the new machine”

Once or twice a week, Steffen uses the Kieser Training machines to strengthen his leg, abdominal, lower back and neck muscles. As a sports scientist, he knows that his trunk and neck must be strong in order to maintain a balanced riding position over long distances and so avoid pain. Not forgetting, of course, that legs are crucial for endurance. At present, he trains on the B6 leg press but at a recent conference he had the opportunity to test the new i-B6 machine (see inside page). The “i” stands for infimetric. The new machine has no weight stack as it is the user who generates the resistance. The more you push with one leg, the more the other leg has to resist. In this way, the leg muscles are permanently under load and this increases the intensity of the training. As soon as the machine arrives, he will be using them.

Strength training is not just about the physical. It is also about developing the right mental attitude. “When you train, you often get to a point when you think: I really don’t want to continue,” says Eisele. Even if his muscles are burning, Steffen will do at least one and possibly two more repetitions until the muscles reach local fatigue. This helps him go beyond his personal limit – something that will certainly be necessary during his cycle trip.

Steffen is optimistic that he will achieve his aim. The only tricky thing could be his diet. He has been vegan for the last five years. He was not always so slim. He is 1.78 metres tall and the ideal weight for a man of his height is 75 kg. It was largely the change to a vegan diet that made this possible. Similarly, he cannot predict exactly how many kilometres he will manage each day and so he can only roughly plan his overnight stops. Nor can he be certain that the hotels and guesthouses will be able to provide a plant-based diet. One thing, however, is certain; he will need plenty of calories. During the day, that is not a problem as he will carry with him his own homemade bars. He is also planning to reward himself on arrival: two relaxing days on Sylt.

KIESER'S NEW I-B6

Meet our new infimetric B6 or i-B6 for short. Its speciality is to provide effective training without a weight stack. Its mission is to bring you face to face with your hardest training partner: yourself. Its purpose is to extract the absolute maximum from the front and rear thigh and buttock muscles. Our experts explain why the machine is so special.

HEAD OF MACHINE DEVELOPMENT MICHAEL KOLETNIK



What is the i-B6 machine?

It is an infimetric leg press machine. Like the B6, it strengthens the quadriceps and biceps of the thigh, the semitendinosus and semimembranosus muscles and the large gluteal muscle. However, unlike the B6, the new i-B6 works without weights and the movements are alternate. With it, Kieser Training is introducing both a new type of machine and a new method of training: infimetric training.

What does the word "infimetric" mean?

It means "infinite exercise", as the implementation options are virtually unlimited. Theoretically, it allows dynamic training – both fast and slow – as well as isometric training. With infimetric training, you generate the resistance yourself.

MECHANICAL ENGINEER PHIL SENCIL



Did Kieser Training develop the infimetric method?

No, it was a chance discovery by Arthur Jones in the 1970s. When designing a bicep curl machine, he discovered that a weight stack was not absolutely essential for high intensity training. At the time, Jones constructed several machines but did not pursue the project further.

And so Kieser Training took up the idea...

Precisely: It was after we conducted a study involving 44 people who had not previously trained. We wanted to find out whether the strength gains varied depending upon whether participants trained with or without weights. We found that there were no differences although Werner Kieser noticed that with infimetric training the severity of tremors decreased with each subsequent training session. After numerous discussions with specialists, there seemed a

When you push with one leg, you automatically have to brake with the other.

That means that the muscles are working against one another?

Exactly: Whereas the muscle group is working concentrically in the first part of the repetition, that same muscle group will be working eccentrically in the second part. This constant load reduces the "relaxation phase" in the eccentric part of the exercise. It is highly intensive training without weights.

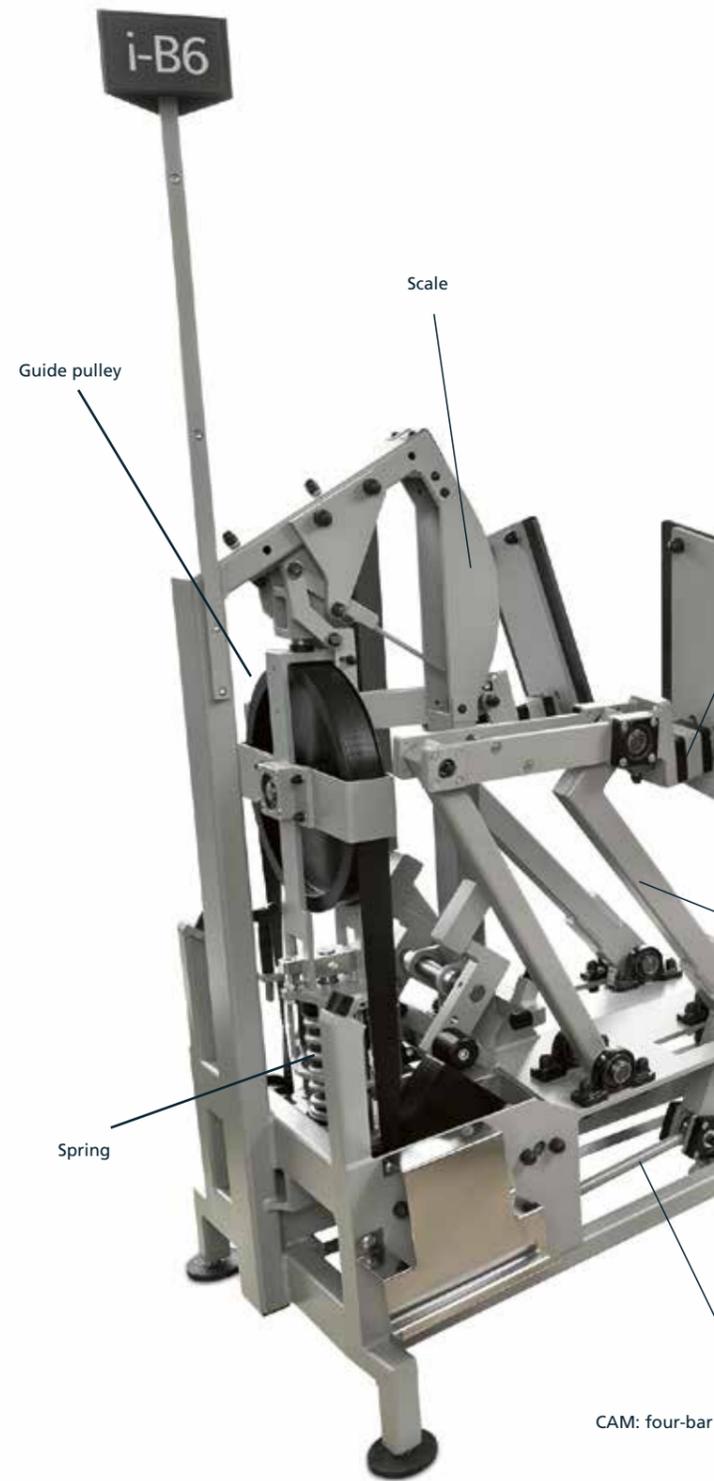
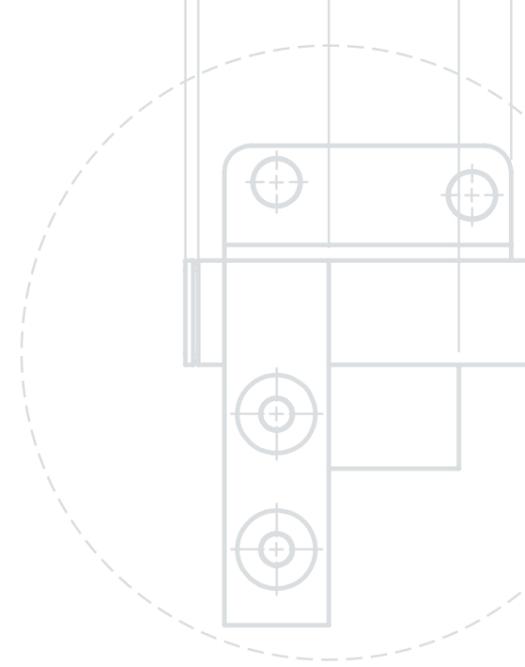
Why does Kieser Training develop its own machines? Are there not enough on the market already?

Our requirements are quite different and so since 2003 we have developed and produced our own machines. We are not interested in trends but seek to offer customers the maximum possible benefit, something that applies equally to our latest machine: the i-B6. It represents a further improvement in the way we respond to the specific needs of customers.

realistic possibility that this might help people suffering from Parkinson's disease. We therefore pursued the idea and developed the i-B6. We also wanted to solve another problem: the uneven distribution of pressure on the knee joint when doing leg presses or leg curls.

What are the special features of the i-B6?

Exclusive to us and new in the industry is the outward rotation (patent applied for) of the foot plates: In the final 10 degrees of the knee extension, the footplate rotates outwards. As a result, the tibia rotates outwards by 5 degrees. The purpose is to increase the contact area between the lower and upper leg as this distributes the load more evenly on the knee joint; the outward rotation also reduces the screw-like twisting of the cruciate ligaments, which in turn lessens the strain. Overall, the load on the knee is biomechanically correct and more gentle. A further advantage is that the movements are alternate and so the range of motion is greater than on a traditional leg press machine. This, combined with a better strength curve means that the full potential of the muscle is exploited.





CHIEF TECHNOLOGY OFFICER MARC BREITINGER

The i-B6 has no weights. Is that effective?

Results show that load intensity is more important than actual mechanical output. It is the perceived exertion or rather the quality of the exercise to the point of temporary muscle fatigue that determines – irrespective of the applied resistance – whether or not the adaptation processes are triggered.

Is Kieser Training not intensive enough?

It is important that we use the term intensity because it is the level of effort that decides whether or not training is successful. Many people shy away from intensive training and do not push themselves to their limit. Infimetric training is extremely beneficial in this respect as the machine directly requires this level of intensity.

How will I notice this?

You will notice it immediately if you train on this machine. The stronger the counter pressure exerted with one leg, the more intensive the training.

And so more intensive means more effective?

Yes, provided that you can already train to the point of



muscle fatigue. In other words, if you regularly train to your personal limit, you can use infimetric training to challenge your muscles in a new and different way. What we are actually doing is modifying the training format and in particular introducing a new form of resistance exercises.

Outward rotation (patent applied for)



coupling

MEDICAL DOCTOR GABRIELA KIESER

As a doctor, what do you think of the new machine?

The i-B6 represents a milestone in the development of training machines. The movement is more correct in physiological terms and also protects the knee joint. The range of motion is greater than on the B6 and the intensity is higher. In addition, the resistance can be more finely adjusted and so is better adapted to individual needs. A further benefit is the fact that the i-B6 forces you to do the exercise correctly. You cannot cheat by using your momentum. In short, the i-B6 allows you to train in a healthy and highly effective way and yet is gentle on the knee.

For whom is infimetric training suitable?

For ambitious clients, who have already laid the initial foundations and want to progress further. It is also suitable for those with leg problems. For the ambitious client, it is an exciting way to train as it is the client who generates the resistance and so is competing against himself/herself, so to speak. That is a challenge, both mentally and in sensorimotor terms.

What if I have knee problems or arthritis?

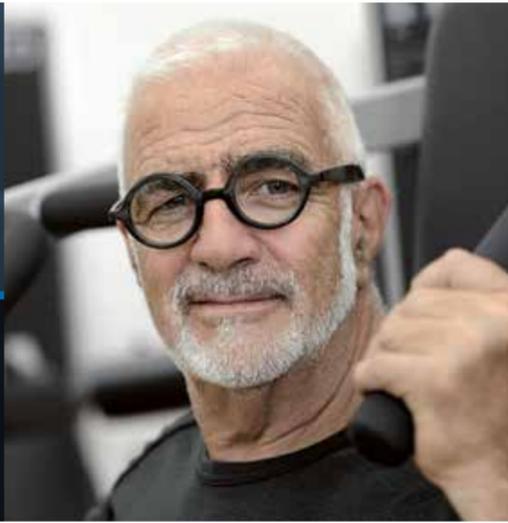
With no weights to lift, the kinetic energy on the i-B6 is minimal. And you cannot use momentum, which is crucial for safe training. It is you who determine the resistance, allowing you to produce an adequate training stimulus in the



pain-free range at any stage of the exercise. In conjunction with the outward rotation, the machine allows you to train in a way that is kinder to the joint. As a result, the i-B6 can be used by those with knee problems, arthritis or even a rupture of the anterior cruciate ligament – provided that the injury is not in the acute stage, there is no acute pain and that there are no significant inflammatory symptoms. If you strengthen the muscles close to the joint, this stabilizes the joint and takes the pressure off it. As a result, symptoms usually decline and load-bearing capacity increases. We surmise that infimetric training is suitable for people with Parkinson's disease as it trains the feedback mechanisms between the brain and the muscles that execute the movement. That can have a positive effect on tremors. However, clinical studies are required to prove this.

WERNER KIESER'S CORNER

TRAINING PRINCIPLES ARE ESSENTIAL



Training Principle 4: "Avoid sudden or explosive movements at all costs. They are dangerous and unproductive."

I was watching a somewhat energetic customer training on the B6 leg press. He was using a relatively light weight and doing each repetition quickly. I asked him why he was doing that. "I am improving my speed strength as I need this for football." There is a widespread belief that rapid move-

ments against a resistance improve the speed at which you can move. At best, the training effect is zero and at worst, it can result in injuries. "Speed strength" is an academic construct divorced from reality. There is only one strength.

Speed is the result of two factors; the first is the sheer strength of the muscles. The stronger they are, the more they can accel-

erate. For the complex movements required for football, you need a degree of coordination, i.e. you must be able to control how you deploy your strength. You need to practice those movement skills by repeating them over and over again – similar to what you do when you learn how to play an instrument. If this training is mixed with strength training, defective kinaesthetic memory patterns are created in the brain. In addition, coordination patterns are not transferrable. In other words, you learn football by playing football and the piano by playing the piano.

With strength or muscle development, it is different. What counts here are two reciprocal parameters: the level and duration of the muscle tension. If the duration is too long, the load is inevitably too low. If the tension, i.e. the weight or the resistance, is too high the duration of that tension is too low to trigger the required biochemical development processes.

Rapid, jerky movements done against a resistance generate very high loads that in extreme cases can exceed the load capaci-

ty of tendons and ligaments. With such movements, the period under load is too short and the load is only applied to one small section of the joint. The optimum period under load until total muscle fatigue and assuming a load of 50%–75% of the maximum possible (in a single movement) is 90–120 seconds. Unlike learned coordination, which can only be applied to a particular activity, the strength acquired in this way can be used anywhere. The new infimetric leg press (i-B6) forces the user to do the exercise slowly and correctly and so creates better conditions for the required muscle and strength development.

Werner Kieser

THE NEW I-B6 FOR INFIMETRIC TRAINING NO WEIGHTS AND MORE EFFECTIVE

For training to be effective, you must first conquer yourself; this is because success is dependent upon training intensity. Our new infimetric training machine automatically demands such intensity: The machine has no weight stack as it is you who create the resistance. The benefits are as follows:



NEW TYPE OF INTENSITY

With the i-B6, you produce the resistance yourself and so you decide the precise level of resistance. In addition, the machine allows even those with medical problems to do intensive training. As muscle fibres are under load during both the positive and negative phase of the exercise, the training is both intensive and effective.



ROTATION MECHANISM (PATENT APPLIED FOR)

In the final 10 degrees of the knee extension, the foot plates and shinbones rotate outwards. The aim is to increase the contact area between the upper and lower leg, to reduce the load on the anterior cruciate ligament and protect the knee.



INCREASED RANGE OF MOTION

The alternate movement of the legs further increases the range of motion: It is some 10 degrees greater than on the B6. That helps to increase mobility and output.



SENSORIMOTOR COUPLING

The level of resistance is displayed on a scale. During training, the aim is to keep the pointer on the scale at the same level throughout.



IMPROVED STRENGTH CURVE

Compared with the B6, the i-B6 produces about 150% more resistance at the end point of the strength curve. In this way, you can fully exploit the potential of the quadriceps and gluteus muscles, the biceps muscle of the thigh, the semitendinosus muscle and the semimembranosus muscles.



INDIVIDUAL ADJUSTMENTS

The backrest, shoulder pad and seat position can be individually adjusted; this ensures that the position is anatomically correct and safe.

IMPRINT

Reflex is published four times a year, including online. Stay informed!
To subscribe to Reflex visit kieser-training.com

PUBLISHER / COPYRIGHT

Kieser Training AG
Hardstrasse 223
CH-8005 Zürich

CEO

Michael Antonopoulos

EDITOR

Claudia Pfülb, reflex@kieser-training.com

EDITORIAL OFFICE

Tania Schneider

TRANSLATIONS

Sue Coles

PROOFREADING

Dr. Philippa Söldenwagner-Koch
lektoratbilingual.de



[facebook.com/
KieserTrainingGlobal](https://facebook.com/KieserTrainingGlobal)

PRINT

Mephisto Werbung
mephisto-chemnitz.de

PICTURE CREDITS

P. 1, photo: Hoai Nguyen
P. 2, 3, 4, photos: Verena Meier Fotografie
P. 3, illustration: Kieser Training AG

KIESER TRAINING