Translation of press release by Thomas Bontenackels and Christoph Lörcks

Training in the miracle tube

How intermittent negative pressure promotes regeneration: A new special device helps to improve blood circulation and to remove metabolic waste. Silver bullet for cyclists?

Text Thomas Bontenackels and Christoph Lörcks

The regeneration after training is the most important mechanism for increasing performance in leisure and competitive sports. Without the regeneration phase, the stress of the training sessions would not lead to an adaptation and improvement of the physiological systems in the human body. If there is now a way to improve regeneration, this creates completely new possibilities for training in everyday training. Those who regenerate better can train longer and harder and still be fit again faster. Therefore, all methods that promote regeneration are also extremely interesting for training control. This is exactly where the "VACUSPORT" system comes into play.

Two hearts

With the technology of the "second external heart" from medical technology, VACUSPORT promises a significantly increased blood flow in the lower extremities. To do this, the athlete lies down in the device with his lower body up to about navel height (see picture); the tube is sealed airtight with the so-called iris ring. Think of it like a kayak's spray deck, only flat extremely airtight to allow for the quite high negative pressures.

By pushing a button a pump is now generating an intermittent negative pressure of up to 80 mbar (vacuum devices known from fitness studios exercise at max 20 mbar negative pressure), which leads to more blood to flow in the lower limbs. Intramuscular pressure

decreases. This leads to a significant capillary dilatation (widening of the capillaries) and capillarization (sprouting/expansion of the capillary network) as well as a strong stimulation of blood circulation in the muscles.

As a result, metabolic residues can be drained off more quickly. In addition, there are clear effects on the lymphatic system (similar to lymphatic drainage). A study (Dr. Dietmar F. Alf et al.) showed a significantly higher training motivation, significantly improved muscle feeling and the athletes´ feeling of a significantly improved general regeneration, which could also be proven with a look at decisive blood parameters in the study.

Topfit 2010

Help with injuries

In addition to the regenerative effects after training, the VACUSPORT also achieves the best results in the treatment of injuries such as muscle strains, muscle fiber tears, tendon ruptures, edema and other post-traumatic injuries. In clinical trials, it was possible to achieve significantly reduced healing times, including through the faster reduction of swelling and water retention. This means that injured athletes can train again much faster and are ready for action again sooner. Another very positive effect in the case of injuries is that the capillarization of the leg muscles can be maintained at a higher level over a longer period of time, even without training. Otherwise, if there is no training stimulus, this will recede very quickly.

Vacuum – practice

The VACUSPORT is currently only available at a few training centers, including the Olympic base Rhein-Ruhr and XP Sport in Aachen. XP Sport has been using the device for several months in the regeneration and performance optimization of cyclists and triathletes. The device is not only available to professionals, but also to amateurs and recreational athletes, who can book it like a classic massage (and at similar prices).

In practice, athletes with a high level of training and a tight competition program showed a significant increase in performance within just a few weeks, which is mainly due to the significantly improved regeneration. The athletes describe the effect very clearly: Before the application, the leg muscles (pain, "heavy, fat legs", "legs tightening") were the limiting factor during high loads in competitions, but after the application it was primarily the heart - circulatory system as a limiting factor in the foreground. The athletes say that "the legs are no longer the limit", but that the limit is primarily set by breathing. This shows that the drivers are now able to push their muscular, physical performance limits significantly further. This is particularly noticeable in athletes with a high level of training and competition, since their muscles are almost never in a recovered condition.
Parts of the treatment effect can be demonstrated very well optically. Many athletes have slightly swollen legs after exertion. This tissue overloaded with cell fluid is due to the smallest inflammation in the area of the strained muscles. The intermittent negative pressure/normal pressure treatment with the VACUSPORT has the effect of a lymphatic drainage, so to speak - the cell fluid from the tissue (also from the skin and subcutaneous area) is transported away into the lymphatic system. The intermittent negative pressure treatment accelerates this effect of natural evacuation by a factor of about six (see info box on the lymphatic system). The effect is not visible immediately after the treatment, but the following morning many athletes notice that their legs are no longer bloated, but rather look "dry" and "sinewy trained". Here the effect of the transported cell fluid from the subcutaneous tissue has become clearly visible. This effect can be observed above all in well-trained athletes with very little subcutaneous fat tissue on the legs.

With a price of more than € 60.000,00, the VACUSPORT is certainly not a home device for hobby athletes, but it will soon be a very popular device for improving regeneration in the professional sector. It could also be used in a bus or van during a tour. In any case, the vacuum technology is a very interesting addition to the classic massage, for which the VACUSPORT is not intended to be a substitute. Applications in fitness centres, massage practices and training centers will be available for amateur athletes.

The authors

Christoph Lörcks (two-time 24-hour MTB world champion/ 24-hour MTB European champion) is the managing director of XP Sport GmbH. The expert in the field of training control and analysis of performance data in cycling works as a lecturer for the German Cyclists' Association and the Sports Academy in Innsbruck. With his team of specialists from the fields of medicine, sports science, physiotherapy and orthopedic technology, he has developed a new overall concept for optimizing movement in cyclists over the past two years. Since 2009, Christoph Lörcks has also been the official advisor to the national team of the BDR.

Thomas Bontenackels is the specialist for wheel measurement and seat position optimization in the XP Sport – Training Systems team. Thanks to his practical experience as a professional cyclist and his scientific training in the field of movement science, he ideally combines practice and theory in this area.