

Abstract

Einfluss osteopathischer Behandlung auf die Regeneration des vegetativen Nervensystems nach sportlicher Aktivität

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Durch eine immer engere Leistungsdichte im Hochleistungssport müssen Trainer und Athleten immer größere und intensivere Trainingsumfänge abarbeiten um ihre Ziele zu erreichen. Wichtig sind dabei der richtige Reiz zum richtigen Zeitpunkt und eine perfekte Abstimmung zwischen Belastung und Erholung (Harre 1986).

Laut Kindermann umfasst die Regeneration drei wichtige Bereiche: den Ausgleich von Veränderungen des inneren Milieus durch Zufuhr von Flüssigkeiten und Elektrolyten und die Normalisierung des Säure-Base-Haushaltes, den Ausgleich erschöpfter Energiereserven über die Ernährung und die Erholung des neuro-endokrinen Systems (Kindermann 1978). Dabei spielen neben passiven Wiederherstellungsvorgängen auch aktive Maßnahmen, wie Ernährung und aktives Regenerationstraining, eine Rolle.

Im Leistungssport wäre es von großer Bedeutung zu wissen wann die Regeneration abgeschlossen ist und wann der beste Zeitpunkt für den folgenden Trainingsreiz ist.

Es gibt nicht ein optimales Messverfahren, um die Belastung des Sportlers darstellen zu können, aber aus verschiedenen Messungen lässt sich ein gutes Gesamtbild erschließen. So können die Herzfrequenz (Achten 2003, Faria 2005), die Herzfrequenzvariabilität, verschiedene Hormonwerte aus Blut und Nachturin und Befindlichkeitsfragebögen wie der „Profile of Mood States“ (POMS) gute Ergebnisse erzielen. (Hooper 1995, Morgan 1987) Als Goldstandard wird aber nach wie vor die sportartspezifische Leistungsminderung angesehen. (Urhausen 2002).

Da die Entstehung eines Übertrainings mit einer chronischen Überlastung des sympathischen Nervensystems und des Stresshormonsystems in Zusammenhang gebracht wird (Kindermann 1986, Lehmann 1998) und teilweise verschiedene Symptome, wie beispielsweise Schlafstörungen, Unruhezustände, emotionale Instabilität, Antriebs- und Appetitlosigkeit sowie Verdauungsstörungen bei Überlastungen zu beobachten sind (Kindermann 1986) kann man davon ausgehen, dass ein Einfluss des vegetativen Nervensystems bei der Entstehung eines Übertrainings besteht.

Das VNS hat Einfluss auf die Regeneration und mit verschiedenen osteopathischen und manualtherapeutischen Techniken kann Einfluss auf das VNS genommen werden. Dies lässt den Schluss zu, dass osteopathische Techniken die Regeneration nach sportlicher Aktivität beeinflussen können.

Als Messverfahren und bewertbarer Parameter für die Reaktion des VNS eignet sich die HRV und der LF/HF-Quotient.

Um den Einfluss von osteopathischen Techniken auf die Regeneration nachzuweisen sollte eine möglichst homogene Probandengruppe unter konstanten Umweltbedingungen (Raumtemperatur, Ruhe, Helligkeit, Uhrzeit, Ernährung, Vorbelastung, Atmung,etc.) ausbelastet werden. Anschließend sollte ein standardisierter Testablauf von Liegen – Stehen – Liegen absolviert werden, während dessen verschiedene HRV-Parameter erfasst werden. Die Probanden sollten jeweils drei Testabläufe im Abstand von 4-7 Tagen durchlaufen. Sie sollten dabei an je

einem der Termine eine aktive Regeneration , eine aktive Regeneration mit Massage oder eine aktive Regeneration mit osteopathischer Behandlung erhalten.

Abstract

Influence of osteopathic treatment on the regeneration of the vegetative nervous system after sports activities

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Due to a more and more narrow power density in high performance sports, trainers and athletes have to complete a growing and intensified training load to achieve their goals. At this the right stimulus at the right time and a perfect coordination between challenge and recreation are of importance (Harre 1986).

According to Kindermann the regeneration covers three important areas: the compensation of changes of the inner ambience by intake of fluids and electrolytes, and the normalization of the acid-base-metabolism, the compensation of depleted energy reserves via the nutrition, and the recovery of the neuroendocrine system (Kindermann 1978). At this, next to passive recovery processes, also active measures such as diet and active regenerative training play a role.

In competitive sports it would be of great significance to know when the regeneration is completed and when the best time would be for the succeeding training stimulus.

There is no single optimal measuring method to depict the physical strain on the athlete, but from various measurements a good overall picture can be made accessible. Such the heart rate (Achten 2003, Faria 2005), the heart rate variability, various hormonal values from the blood and nocturnal urine, and mood questionnaires such as the "Profile of Mood Sates" (POMS) can achieve good results (Hooper 1995, Morgan 1987). Though, the sports-specific decrease in performance is still considered the gold standard (Urhausen 2002).

As the development of an overtraining is related to a chronic overload of the sympathetic nervous system and the stress hormone system (Kindermann 1986, Lehmann 1998), and partly different symptoms such as for example sleeping disorders, states of agitation, emotional instability, listlessness and loss of appetite as well as digestion disorders can be observed in overload (Kindermann 1986), it can be assumed that the vegetative nervous system has an influence on the development of an overtraining.

The VNS [vegetative nervous system] has an influence on the recovery, and the VNS can be influenced by various osteopathic and manual therapeutic techniques. This allows for the conclusion that osteopathic techniques can influence the regeneration after sports activity.

The HRV [heart rate variability] and the LR/HR ratio are a suitable measuring method and assessable parameter for the reaction of the VNS.

To prove the influence of osteopathic techniques on the recovery, a preferably homogenous group of test persons should be strained to full capacity under steady environmental conditions (room temperature, quietness, brightness, time of day,

diet, previous impacts, respiration, etc.). Following, a standardised test procedure of lying – standing – lying should be completed, while its different HRV-parameters are collected. The test persons should each go through three test procedures in an interval of 4 to 7 days. At each one of these appointments they should receive an active regeneration, an active regeneration with massage or an active regeneration with osteopathic treatment.

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