ACUTE-PHASE RSWT

Acute-Phase Radial Shock Wave Therapy – New Concepts and Possibilities for Professional Footballers

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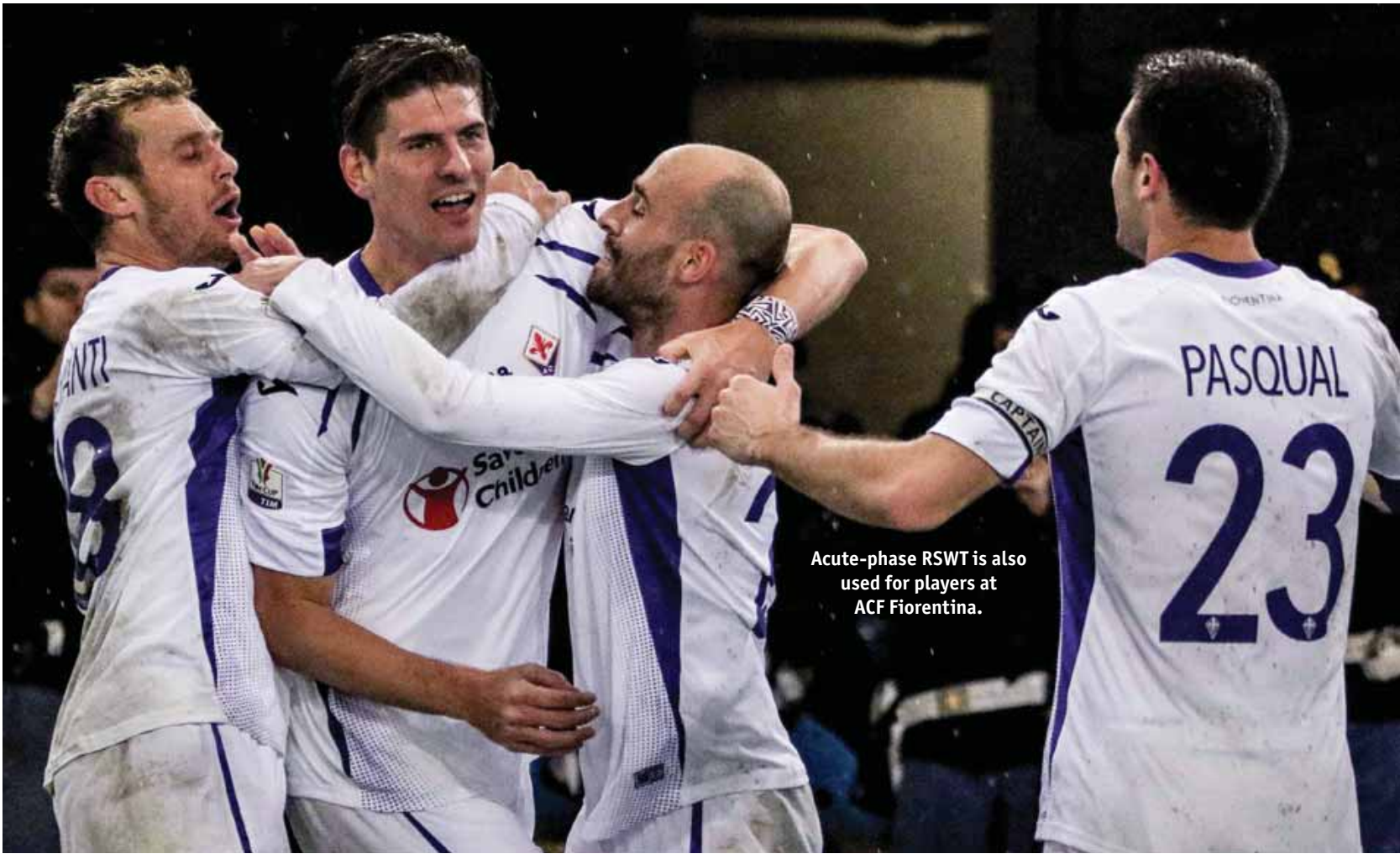

Acute-phase RSWT is also used for players at ACF Fiorentina.

The medical and physiotherapeutic care of professional footballers during the season is an enormous challenge for all involved. Most players want to be fit and well enough to play as soon as possible after an injury because they want to keep their place in the squad. But it is also important to return players to full fitness as quickly as possible even during a match, e.g. in the half-time break. Treatment with Radial Shock Wave Therapy (acute-phase RSWT) is an attractive and innovative method to help achieve this goal. This article is an introduction to this new concept.

Being a "trained" (i.e. habilitated) anatomist and a licensed medical doctor, I had been interested in extracorporeal shock waves as my scientific hobby for many years. It became my day job when I worked as International Business Development Manager Orthopaedics at EMS from 2008 to 2009. While at EMS, I worked with clinicians and physiotherapists at professional football clubs on developing new approaches to using Radial Shock Wave Therapy (RSWT) for the treatment of players during the season, which differ significantly from the "normal" RSWT treatment concepts published in the orthopaedic literature, e.g. for heel pain or tennis elbow. Key elements of this "acute-phase RSWT" are daily treatment with RSWT, a primary focus on (legal) enhancement of the player's performance and freedom from pain without aiming for a speedy recovery, as well as the use of RSWT within days, or even hours, following an injury. These new concepts are being used with great success by top-level clubs in the United States, Brazil, Ecuador, England, Italy and Norway, and most recently the German Bundesliga.

N.B. The aim of this concept is not a speedy recovery but to keep the player in action, ideally without any downtime at all. For this reason, acute-phase RSWT is applied during the match, at half-time and immediately after the match as well as during daily training sessions.

The following does not describe any specific treatment, but rather the important aspects of creating the right conditions for using acute-phase RSWT with professional footballers.

1. Build Trust

The first step is always a personal discussion to overcome a lot of justified doubt and mistrust. The usual questions are: "Does this really work?", "Isn't this doping in disguise?", "Does the treatment pose any unintended risk to the player?", "How do I explain to the player that some RSWT treatments need to be uncomfortable in order to be effective?", "What kind of therapies could be usefully combined with the treatment?" and "Where are its limits?". The answers to all these questions are based mostly on our current knowledge of the molecular and cellular mechanisms of action of shock waves on the musculoskeletal system (see below).

2. Establish Infrastructure

When we started using acute-phase RSWT at the Italian Series A team ACF Fiorentina about a year ago, the question of the necessity for medical imaging was raised. My experiences at the Olympic Games in Athens 2004, Beijing 2008 (see also Henne M, Schmitz C. Stoßwellentherapie – Mythos oder Evidenz? medical-sportsnetwork, Volume 05.11) and particularly London 2012 taught me just how important a clear diagnosis is, especially for elite athletes, and that the greatest caution must be taken with partial ruptures of tendons and ligaments in particular. Almost every application of RSWT in the treatment room at ACF Fiorentina is therefore preceded by an ultrasound scan. Of course, this does not replace the use of magnetic resonance imaging (MRI), other imaging techniques or further diagnostic procedures when indicated.

3. Gain Experience

Once confidence in the possibilities of acute-phase RSWT has been established, the most important aspects explained and a diagnostic ultrasound unit and shock wave therapy device installed, the team physicians and physiotherapists need to gradually gain experience and build up their expertise. During this time, I am always available via email, phone, SMS or WhatsApp to answer any questions immediately, for instance during the half-time. This is probably the most important phase when implementing acute-phase RSWT and it is impossible to make any generalisations about it. Each club has developed its own medical/physiotherapeutic infrastructure, each clinician and physiotherapist has his/her own background, experience and preferences. Accordingly, any club that uses acute-phase RSWT will have created its very own, highly individual approach.

Steffen Tröster, physiotherapist at the German Bundesliga club FSV Mainz 05, treating players with acute-phase RSWT.

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- 2011, Diploma in Sports Science (Training & Performance, German Sport University, Cologne)
- 2014, Osteopath BAO – Institute for Applied Osteopathy
- 2011-2012, Medical Department, Junior Squad FC Bayern Munich
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4. Think Mechanisms of Action

Usually many questions arise during the "gaining experience" phase with regard to treatment modus and duration. There are rarely straight answers to these questions, due to the practical impossibility of a scientific validation of acute-phase RSWT in accordance with the criteria of evidence-based medicine (see information box). But many hypotheses can be based on our current knowledge of the molecular and cellular mechanisms of action of shock waves on the musculoskeletal system and I like to refer to that. Courses run by the *Swiss DolorClast Academy* (www.swissdolorclastacademy.com) are a reliable source of current thinking and knowledge and are open to all interested parties. All trainers at the Academy have received extensive training themselves.

5. Establish and Develop Concepts

Certain conditions and injuries that are particularly common in footballers can be treated quickly and effectively with acute-phase RSWT, and even prevented altogether in many cases. It is fascinating to see players for whom the season should have been over due to chronic achillodynia or patellar tendinopathy continue playing until the end of the season, thanks to acute-phase RSWT. The initial investment in acute-phase RSWT pays off many times over for the clubs, even if they can reduce their squad by just one player, simply because of faster rehabilitation after and better prevention of injuries.

Conclusion

Acute-phase RSWT opens up entirely new perspectives for the treatment of professional footballers, both for rehabilitation after and prevention of injuries, benefiting all stakeholders, i.e. players, managers and clubs. The therapeutic approach of acute-phase RSWT differs quite considerably from the "normal" treatment concepts of RSWT, which are primarily concerned with a speedy recovery, whereas the primary focus of acute-phase RSWT is enhancing players' performance and keeping them free from pain.

published in medicalsportsnetwork 02.15 p.26-29

The "normal" treatment concepts of RSWT for the musculoskeletal system have been documented in a variety of scientific publications. If you would like to pick a selection of the best and most meaningful clinical studies by a truly independent body (comparable to a consumer advice organisation) from this plethora of publications, it is worth having a look at the PEDro database of the Centre for Evidence Based Physiotherapy of the George Institute for Global Health at the University of Sydney, Australia (www.pedro.org.au). By the time this article went to print, the PEDro database contained a total of 20 publications about RSWT. Fifteen of these studies were conducted with the Swiss DolorClast device by Electro Medical Systems, Nyon, Switzerland. (A compilation of the PEDro content is available from the author.) Many of these 15 publications come courtesy of the colleagues Dr Jan-Dirk Rompe (now Alzey/Germany), Dr Ludger Gerdesmeyer (now Kiel/Germany) and Dr Markus Maier (now Starnberg/Germany). The author was involved with two of these 15 studies. The publications have the following underlying treatment concepts in common: (i) a randomized controlled approach, i.e. comparison to an alternative therapy or placebo treatment, (ii) the use of RSWT only after a waiting period of several weeks or months of unsuccessful classic conservative therapy, (iii) dispensing with a systematic use of imaging techniques such as ultrasound and MRI before treatment with RSWT, (iv) applying RSWT three times at weekly intervals, (v) dispensing for the most part with any other types of treatment in addition to RSWT and (vi) resting the patient during the treatment period.

In practice, such a treatment concept is out of the question for professional footballers during an ongoing season. Numerous discussions with clinicians and physiotherapists at professional football clubs have shown that conducting randomized controlled studies for new treatment approaches are virtually impossible in the professional game. This is also the reason why these new concepts do unfortunately find it difficult ever to be added to excellence databases such as PEDro. Moreover, rarely is only one single type of therapy used when treating injuries in football professionals.