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Extracorporeal shockwave therapy in competitive sports

FRANKFURT – After years of development, powerful extracorporeal shock wave therapy devices are now available. Because they are handy and easy to transport, they are well suited for use at competitive events. The Institute for Sports Medicine Frankfurt Main was founded in 1984 and has become one of the leading national sports medicine centres in Germany. As the main sports medicine information centre in the state of Hesse and the medical care centre of the Olympic services facility Frankfurt Rhein-Main, the Institute handles the scientific aspects of sports medicine. It also ensures the preventive, therapeutic and rehabilitative aspects of internal-medical, performance-diagnostic and sport-orthopaedic care of some 7000 athletes of all ages and skill levels (from weekend warriors to top athletes) annually. The first extracorporeal shock wave device (nationally and internationally) used to treat athletes (the Minilith SL1, Storz Medical AG) was installed at the Institute for Sports Medicine Frankfurt Main in 1995.

Extracorporeal shock wave therapy for injured athletes

This made it possible to test the effects of extracorporeal shock waves on injured athletes as well under controlled conditions. At that time we were already restricting treatments to the low-energy range to take advantage of the regeneration potential induced by shock waves while avoiding necrosis in the treated tissues. In one of the first observations of this application, the anticipated positive effects were clear, especially in chronic insertional tendinopathies in the musculoskeletal system (Lohrer, et al., 1998). By 1996, the technology had already proved so valuable that we put the Minilith SL1 into use as part of the Olympic team's care in Atlanta (USA). At this time the size and weight of the ESWT unit was a substantial disadvantage in the procedure. To guarantee the mobility necessary in sports, it was clear from the start that a more compact device and lighter shock transmitter were necessary. During further testing the original focused shock wave proved to be capable of successfully treating small, local lesions, while tendinopathies, which comprised greater tendon volume, could not be effectively treated with the focused shock wave. This was particularly so for achillodynia, which occurs frequently in sports, and for patellar tendinopathy. Further technical development of ESWT led not only to more manageable and therefore transportable devices but, with the radial propagation of shock waves in the

body, also to a basically new technology that was to prove especially valuable in sports. In addition to increased flexibility, this development heralded the ability to successfully treat achillodynia and patellar tendinopathy (Lohrer, et al., 2002). We first used a device of this type internationally during the 2000 Olympic Games in Sydney, Australia. The earlier Minilith SD1 as a purely focusing shock wave system was thus replaced by its successor, the DUOLITH SD1, a focused/radial shock wave therapy system (Storz Medical AG).

Handy and easy to transport

Among the purely radial ESWT systems, in addition to Masterpuls MP 100/200 (both stationary devices), the Masterpuls MP50 (Storz Medical AG) with its compact design and integrated compressed air supply with a max. weight of 9 kg has proven itself as a mobile ESWT unit. At 34 x 34 x 15.6 cm, the dimensions of this powerful ESWT system are minimal, making this unit the most manageable and most easily transported shock wave machine on the market. The user-friendly operation allows variably adjustable impulse frequencies from 1 to 11 Hz. The working pressure of 1 to 3 bars (11 MPa) covers the requirements for a powerful radial shock wave machine quite well. The

day-to-day costs of the machine are negligible.

Radial shock wave therapy system

This device has become part of the basic sports medicine equipment in providing treatment at national and international competitions (German, European and International championships) and training sessions. In addition to standard indications (insertional tendinopathies and tendinopathies) treatment extends to myogenic trigger points, myogelosis, periosteal irritation and, in the scope of reflex therapy, to acupuncture shock wave therapy. We have successfully used the Masterpuls MP50, with its radial shock wave therapy system, not only in the scope of general sport-orthopaedic therapy at the Institute for Sports Medicine Frankfurt Main, but also as part of the treatment of the national table tennis team, the national trampolining team and the national rowing team. Competitive athletes appreciate this treatment above all because it is well tolerated, safe and free of side effects. Specifically, there are no worries about conflicts with current doping regulations.

Literature • Lohrer, H., Schöll, J., Alt, W., Hirschmann, M.: Die extrakorporale Stoßwellentherapie. Erste Ergebnisse beim Einsatz in der Sportorthopädie. [Extracorporeal shock wave therapy. Initial results during use in sports orthopaedics.] Leistungssport 28: 42-44, 1998 • Lohrer H., Schöll J., Arentz S.: Achillodynie und Patellaspitzensyndrom - Ergebnisse der Behandlung austherapierter, chronischer Fälle mit radialen Stoßwellen. [Achillodynia and patellar tendinopathy – results of radial shock wave therapy in chronic, treatment-resistant cases.] Sportverl Sportschad 16: 108-114, 2002

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