


**FIBA**

We Are Basketball

# RADIAL SHOCK WAVES FOR THE TREATMENT TO THE LOWER LIMBS



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In the early 1990s, medical machines originally used in the field of urology for breaking up kidney stones (lithotripsy) were increasingly used to treat pseudarthrosis and break up intra-tendinous calcifications.

The radial shock wave device used by us, the "Swiss Dolorclast" (Electronic Radial System-EMS) produces so-called "radial" shock waves (Radial Shock Wave Therapy - RSWT). The device is very similar to the one currently used in non-surgical treatment of kidney and gall-bladder stones. It generates strong shock waves at the treatment site.

These shock waves, which are pneumatic in origin (air



compressor), are administered through contact with the skin and penetrate the tissue to a depth of 3 to 4 cms. It's possible to treat superficial lesions to the soft tissues with RSWT. It is typically used for treating heels, elbows, and knees.

The treatment eases inflammation in afflicted area and relieves chronic pain.

#### HOW THE TREATMENT WORKS

Shock waves probably work in two ways: mechanically and chemically. Shock-wave therapy sends pulses of rapid-fire sound waves to the site of the injury.

This triggers the body's own mechanism for healing by sti-

mulating an increased blood flow to the area.

The tissue is broken up, creating little tunnels through which new blood vessels can grow. The increased blood supply allows the tissue to heal and become more flexible. The chemical action can partly be explained by the anaesthetic effect during the session. Following a certain number of shock waves, it is likely that endorphins are released locally and it's probable that "gate control phenomena" enter into the explanation for healing.

The effectiveness of the treatment should be assessed after the final shock wave session and then again following a period of 45 days.

The following is a draft of a study we recently completed using RSWT to treat injured athletes.

#### **RADIAL SHOCK WAVES FOR PATHOLOGIES TO THE LOWER LIMBS IN 91 INDOOR SPORTS ATHLETES**

In a study carried out over a period of six months, we used a radial shock device (Swiss Dolorclast) in the treatment of pathologies specific to the lower limbs of athletes participating in indoor sports (basketball, handball, and volleyball).

91 athletes taking part in competitions and aged from 18 to 40 were involved in this study.

Tolerance of the treatment was noted at each session.

A functional evaluation was carried out at the last session and six weeks later, enabling the effectiveness of the treatment to be assessed by selecting one of the five following options:

very satisfactory (VS), satisfactory (S), insufficient (I), no improvement (N), and aggravated (A).

#### **CONTRAINDICATIONS**

There are few contraindications: pregnancy, neurological or vascular pathologies, local infections, coagulation problems or ongoing treatment with anticoagulants. Children were excluded from our study.

Results (see tables)

#### **COMMENTS**

This study, carried out on a sample of 91 highly-trained athletes, enabled us to analyse the effectiveness of treatment using radial shock waves.

No medical condition was aggravated by the RSWT.

Very satisfactory results were obtained with a limited number of sessions and a short duration of treatment (15 days). We believe the sooner treatment with shock waves is started, the more effective the treatment will be.

In the case of patellar and Achilles tendinitis, the shock waves made it possible to intensify physiotherapeutic

	VS+S	I+N	A	Observations		VS+S	I+N	A	Observations
Patellar tendinitis	100%			5 high-level athletes	Periostitis	100%			15 high-level athletes
n = 7	7				n = 22	22			
no. of sessions: 3				5 very good results	no. of sessions: 3.1				15 very good results
Achilles tendinitis	89%	11%		17 high-level athletes	After-effects of muscular tears	100%			4 high-level athletes
n = 37	33	4			n = 4	4			
no. of sessions: 3				17 very good results	no. of sessions: 1				4 very good results
Plantar fasciitis	90%	10%		14 high-level athletes	Stress fracture pseudarthrosis	100%			1 high-level athlete
n = 20	18	2			n = 1	1			
No. of sessions: 3				17 very good results	no. of sessions: 4				1 very good result

#### **PROTOCOLS**

The treatment was of short duration: a maximum of 4 to 5 sessions, twice a week for high-level athletes involved in competition. We used 2000 to 3000 pulses on each athlete, on average. The frequency varied between 9 Hz and 14 Hz according to the injury and the region to be treated. The pressure exerted by the compressor remained between 1.8 and 2.5 bars.

The shock waves were, for the most part, used in combination with other medical treatments typically used in treating the ailment. Progress was assessed by clinical examination and with the aid of a questionnaire which evaluated the quality of everyday and athletic activities.

treatment (eccentric massage, stretching) and thereby preventing the risk of recurrence.

Other physical agents (ultrasound, physiotherapy) may be enhanced following treatment with shock waves.

Shock wave therapy coupled with other treatments enabled all the high-level athletes to continue training and competing in their sport without interruption.

#### **CONCLUSION**

The success rates we obtained with treatment of such a short duration seems to us to be worthy of interest as an effective, non-invasive treatment method with very few side effects.