

# RADIAL SHOCKWAVE THERAPY® (RSWT) FOR THE TREATMENT OF "JUMPER'S KNEE" AND ACHILLES TENDONITIS



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## "Jumper's knee"

Lig. patellae overuse injury at the patellar tip, mainly induced by jumps demanding sports (Basketball, Volleyball)



Fat atrophy following corticosteroid injection



## Achilles tendonitis

Achilles tendon and paratenon overuse injury 2 - 5 cm proximal to calcaneal insertion especially in runners and jumpers



Swelling and tenderness confirm diagnosis



**Introduction:** Insertional tendonitis are the most frequent sport induced injuries. "Jumper's knee" and Achilles tendonitis count for 6.6 % and 5.2 % of the patients in a general sport orthopaedic practice respectively. No controlled and randomized evidence is available regarding any kind of conservative or surgical therapy. Treatment is based on empirical experience and is reported to be good and excellent in as much as 41 - 96 %, especially in long term follow up (Pavola et al., 2000, Panni et al., 2000). On the other hand, "Jumper's knee" and Achilles tendonitis are responsible for most short, medium and long term drawbacks from athletic careers, Basketball and Volleyball. So, for example 30 % (21/70) of the athletes in the German Olympic track & field team 2000 in Sydney suffered from Achilles tendonitis.

In the last decade extracorporeal shockwave therapy was introduced for effective treatment of insertional tendonitis like tennis elbow or plantar fasciitis (Lohrer et al., 2001). This fact leads to the assumption, that extracorporeal shockwaves could be applied also for the treatment of "Jumper's knee" and Achilles tendonitis.

**Objective:** The aim of this pilot study is to evaluate the effectiveness of Radial Shockwave Therapy® (RSWT) on Patella and Achilles tendonitis of recreational and professional athletes.

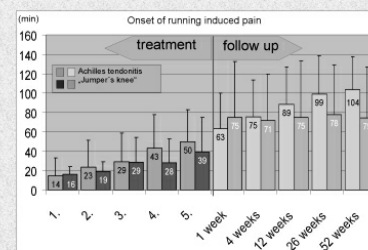
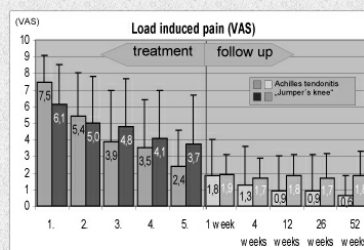
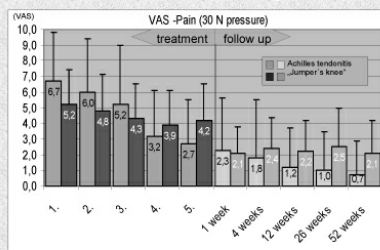
**Design:** Prospective study.

**Setting:** Referral-based outpatient sports medicine clinic.

**Patients:** 67 athletes with Patella or Achilles tendonitis. Only patients after failed conservative therapy during 3 months preceding RSWT, with at least 2 different treatment approaches, and an indication for surgery were included.

**Intervention:** 35 " Jumper's knees " and 32 Achilles tendonitis were treated in five sessions with 2,000 impulses each using the Swiss DolorClast® (EMS, Dallas, TX, www.ems-medicalamerica.com). The pain center was localized by biofeedback.

**Main outcome measures:** Follow up was done at 1, 4, 12, 26 and 52 weeks. A specially designed pressure measurement device (DolorMeter) and Visual Analogue Scales (VAS) were used to evaluate pain at rest and during activity.



**Main results:** During RSWT, athletes with "Jumper's knee", who had 5.2 cm VAS average pain at rest at the initial examination, improved to 2.1 and remained stable over one year ( $p < 0.05$ ). The respective values for Achilles tendonitis were 6.7 before treatment, 2.3 one week after RSWT ( $p < 0.05$ ) and 0.7 at one year follow up. Before RSWT, activity induced pain was 6.1 for "Jumper's knee" and 7.5 for Achilles tendonitis patients; these values decreased to 1.9 one week after RSWT and to 1.8 one year after RSWT for "Jumper's knee" and to 1.8 and 0.6 for Achilles tendonitis patients respectively (both  $p < 0.05$ ). Prior to RSWT, running induced pain was found after 16 min. in the "Jumper's knee" group and after 14 min. in the Achilles tendonitis group. One week after RSWT this pain occurred after 75 min. for "Jumper's knee" and after 63 min. for Achilles tendonitis patients respectively. At one year follow up "Jumper's knee" patients could run 75 min. in "Jumper's knee" group and 104 min. in Achilles tendonitis group without pain.

**Conclusion:** Radial Shockwave Therapy® seems to be an effective, non-invasive and cost-effective treatment method for "Jumper's knee" and Achilles tendonitis in athletes. It is a successful alternative to open surgery. Further randomized and controlled studies are necessary to underline the results of this investigation.





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“JUMPER’S KNEE” AND ACHILLES TENDON.**

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**Objective:** To evaluate the effectiveness of Radial Shockwave Therapy<sup>®</sup> (RSWT) on jumper’s knee and achilles tendonitis of recreational and professional athletes.

**Design:** Prospective study.

**Setting:** Referral-based outpatient sports medicine clinic.

**Patients:** 67 athletes with jumper’s knee (JK) or achilles tendonitis (AT). Only patients after failed conservative therapy during 3 months preceding RSWT, with at least 2 different treatment approaches, and an indication for surgery were included.

**Intervention:** 35 jumper’s knees and 32 achilles tendonitis were treated in three sessions with 2,000 impulses each using the Swiss DolorClast<sup>®</sup> (EMS Corp. USA, Dallas, TX, [www.ems-medicalamerica.com](http://www.ems-medicalamerica.com)). The pain center was localized by biofeedback.

**Main outcome measures:** Follow up was done at 1 and 52 weeks after the last treatment. A specially designed pressure measurement device (DolorMeter) and Visual Analogue Scale (VAS) were used to evaluate pain at rest and during activity.

**Main results:** Athletes with patella tendonitis, who had an average pain in rest of 5.2 prior to RSWT, showed a significant pain improvement ( $p < 0.05$ ) during RSWT; the average pain dropped to 2.1 and remained stable over one year. The respective values for achilles tendonitis were 6.7 before treatment, 2.3 one week after RSWT ( $p < 0.05$ ) and 0.7 at a one year follow up. Before RSWT, activity induced pain was 6.1 for JK and 7.5 for AT patients; these values decreased to 1.9 one week after RSWT and to 1.8 one year after RSWT for JK; respectively to 1.8 and 0.6 for AT patients (both  $p < 0.05$ ). Prior to RSWT, running induced pain was found after 16 min. in the JK group and after 14 min. in the AT group. This pain occurred after 75 min. for JK and 63 min. for AT patients one week after RSWT, respectively after 75 min. in JK and after 104 min. in AT group at a one year follow up.

**Conclusion:** Radial Shockwave Therapy is an effective, non-invasive and economical treatment method for jumper’s knee and achilles tendonitis in athletes. It is a successful alternative to open surgery. Further randomized and controlled studies are necessary to underline the results of this investigation.