

ACTUALITÉS THÉRAPEUTIQUES DANS LA PRISE EN CHARGE DES TENDINOPATHIES

KAUX JF, Croisier JL, Forthomme B, Crielaard JM,

Sports Medicine and Traumatology Department
University Hospital of Liège (Belgium)



- Traitements «passifs» employé empiriquement
- Satisfaction incomplète et récurrence importante
- Intérêt des traitements «actifs» et modifiant la structure tendineuse

©Journal of Sports Science and Medicine (2011) 10, 238-253

<http://www.jssm.org>

JOURNAL OF SPORTS SCIENCE & MEDICINE

Review article

Current opinions on tendinopathy

Jean-François Kaux¹✉, **Bénédicte Forthomme**¹, **Caroline Le Goff**², **Jean-Michel Crielaard**¹ and **Jean-Louis Croisier**¹

¹ Physical Medicine Service and Department of Motility Sciences, and ² Department of Biomedical and Preclinical Sciences, University Hospital, University of Liege, Liège Belgium

Rééducation excentrique

- Contrecarrer l'insuffisance de résistance du tendon aux charges externes
- Résultats cliniques montrent souvent évolution favorable
- Processus modification structure tendon non encore totalement élucidé

Eccentric Training Improves Tendon Biomechanical Properties: A Rat Model

Jean-François Kaux,¹ Pierre Drion,² Vincent Libertiaux,³ Alain Colige,⁴ Audrey Hoffmann,⁴ Betty Nusgens,⁴ Benoît Besançon,¹ Bénédicte Forthomme,¹ Caroline Le Goff,⁵ Rachel Franzen,⁶ Jean-Olivier Defraigne,⁷ Serge Cescotto,³ Markus Rickert,⁸ Jean-Michel Crielaard,¹ Jean-Louis Croisier¹

¹Physical Medicine Service and Department of Motility Sciences, University Hospital of Liège, University of Liège, Avenue de l'Hôpital, B35, B-4000 Liège, Belgium, ²Animal Facility of University Hospital of Liège, ULg-GIGA-R, University of Liège, Belgium, ³Department Argenco, University of Liège, Belgium, ⁴Laboratory of Connective Tissues Biology, GIGA-R, University of Liège, Belgium, ⁵Department of Clinical Biology, University Hospital of Liège, University of Liège, Belgium, ⁶Department of Biomedical and Preclinic Sciences, GIGA-R, University of Liège, Belgium, ⁷CREDEC, Laboratory of Experimental Surgery, University of Liège, Belgium, ⁸Department of Orthopaedic Surgery, University of Heidelberg, Germany

Received 7 December 2011; accepted 9 July 2012

Published online 30 July 2012 in Wiley Online Library (wileyonlinelibrary.com). DOI 10.1002/jor.22202

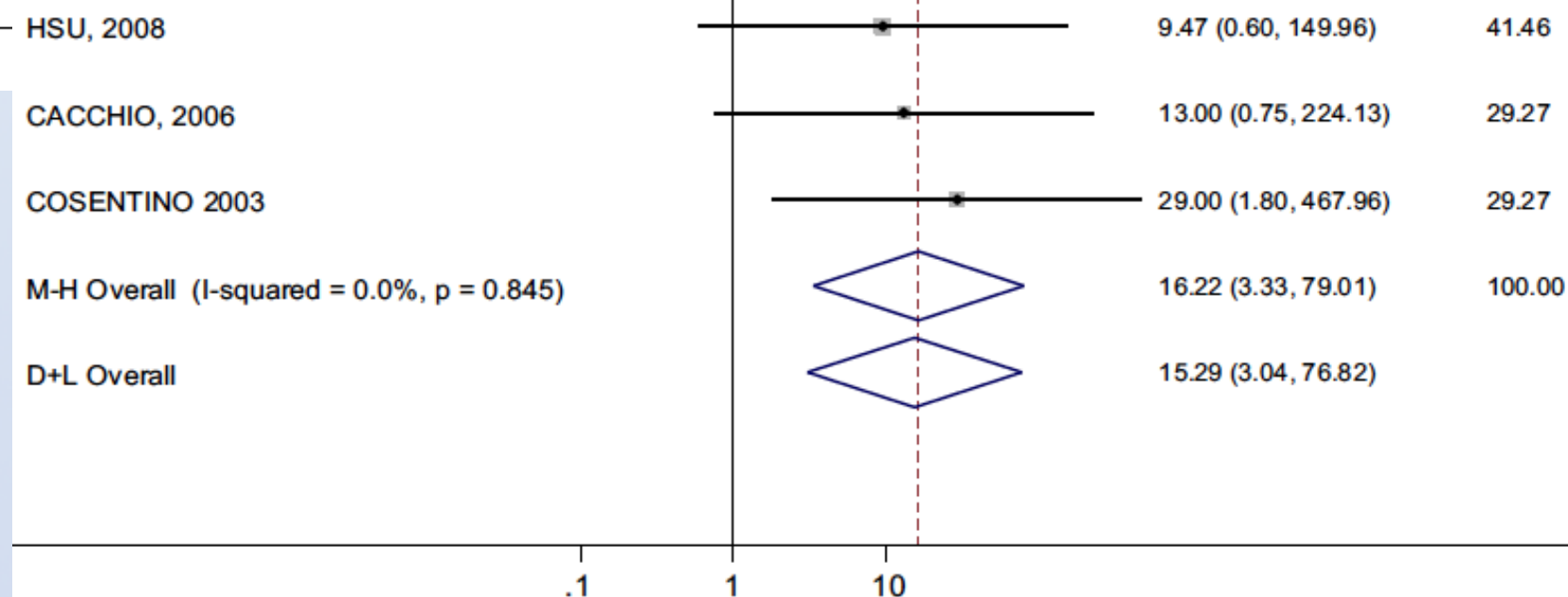
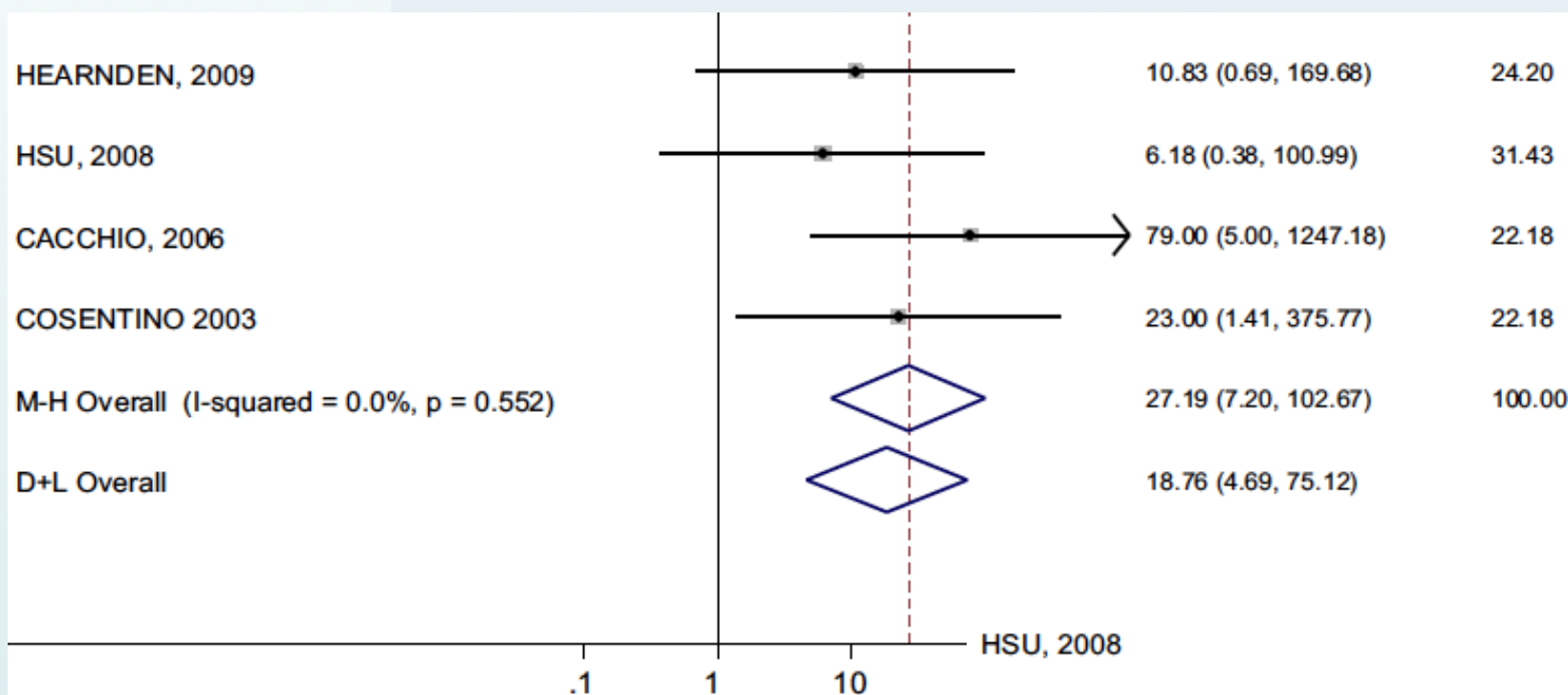
ABSTRACT: The treatment of choice for tendinopathies is eccentric reeducation. Although the clinical results appear favorable, the biomechanical changes to the tissue are not yet clear. Even if the mechanotransduction theory is commonly accepted, the physiology of tendons is not clearly understood. We aimed to better define the biomechanical and histological changes that affect healthy tendon after eccentric and concentric training. This study compared the effects of two methods of training (eccentric [E] training and concentric [C] training) with untrained (U) rats. The animals were trained over a period of 5 weeks. The tricipital, patellar, and Achilles tendons were removed, measured and a tensile test until failure was performed. A histological analysis (hematoxylin and eosin and Masson's trichrome stains) was also realized. There was a significant increase in the rupture force of the patellar and tricipital tendons between the U and E groups. The tricipital tendons in the control group presented a significantly smaller cross-sectional area than the E- and C-trained groups, but none was constated between E and C groups. No significant difference was observed for the mechanical stress between the three groups for all three tendons. Histological studies demonstrated the development of a greater number of blood vessels and a larger quantity of collagen in the E group. The mechanical properties of tendons in rats improve after specific training, especially following eccentric training. Our results partly explained how mechanical loading, especially in eccentric mode, could improve the healing of tendon. © 2012 Orthopaedic Research Society. Published by Wiley Periodicals, Inc. *J Orthop Res* 31:119–124, 2013

Ondes de choc

Clinical Improvement and Resorption of Calcifications in Calcific Tendinitis of the Shoulder After Shock Wave Therapy at 6 Months' Follow-Up: A Systematic Review and Meta-Analysis

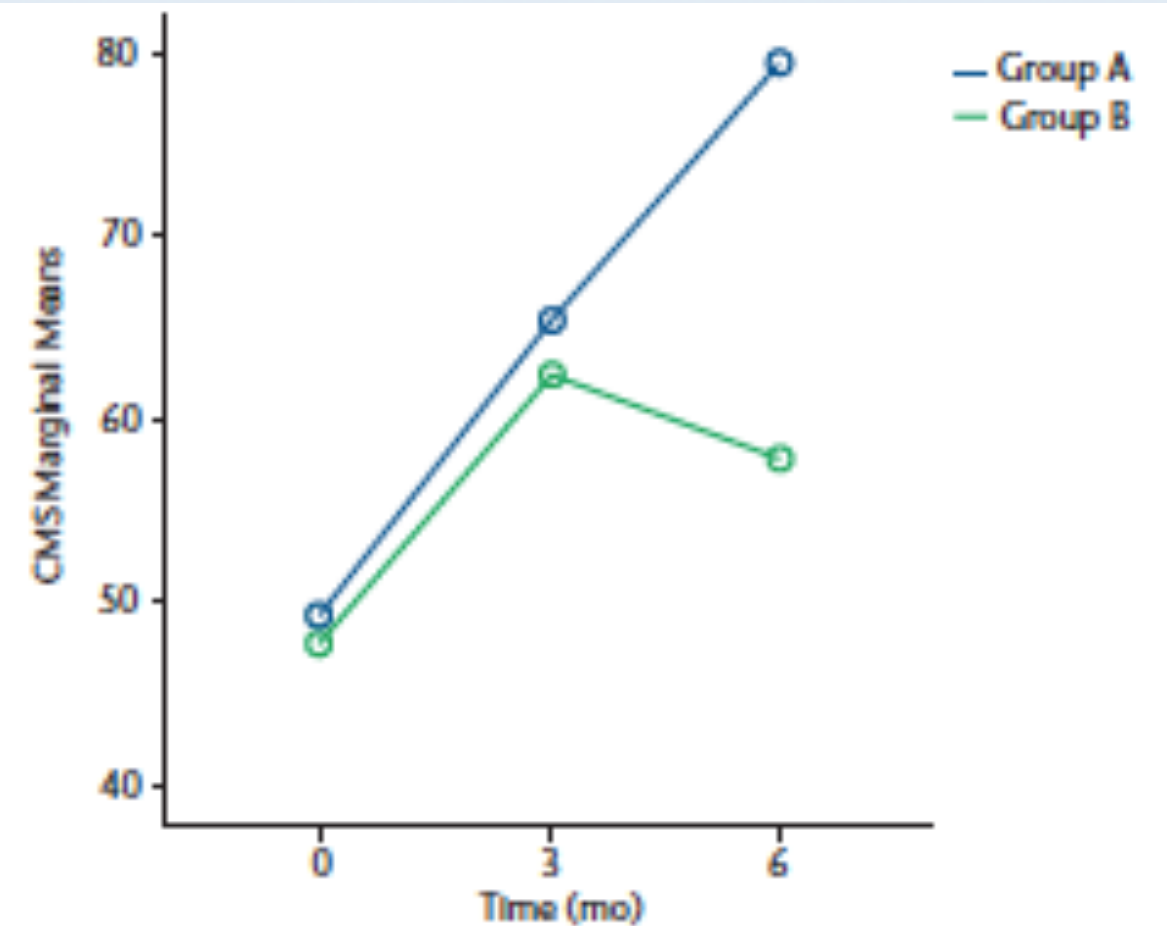
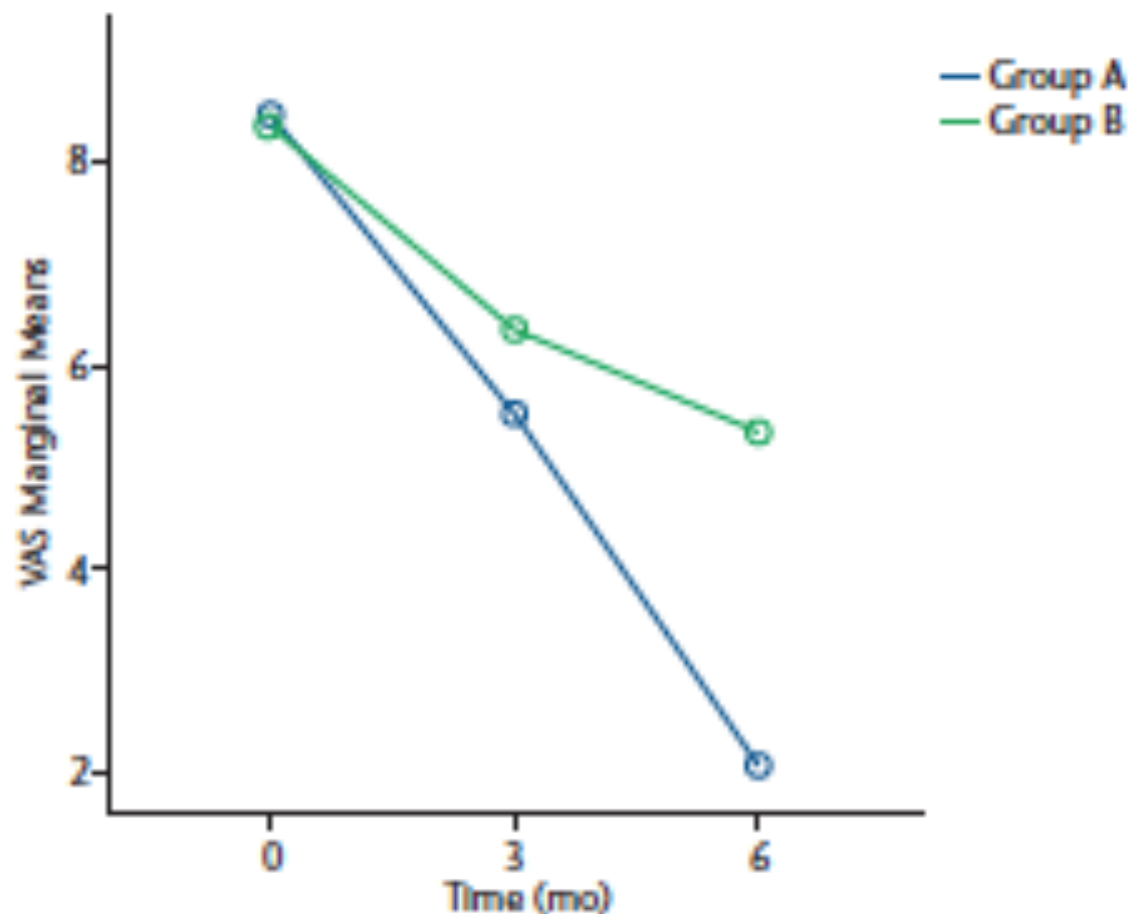
Archives of Physical Medicine and Rehabilitation 2013;94:1699-706

Francesco Ioppolo, PhD, MD,^a Maria Tattoli, PhD, MD,^a Luca Di Sante, PhD, Teresa Venditto, MD,^b Lucrezia Tognolo, MD,^b Mariachiara Delicata, MD,^b Rosaria Sabrina Rizzo, MD,^b Gianluca Di Tanna, PhD,^a Valter Santilli, MD^{a,b}



Ondes de choc

Extracorporeal Shock-Wave Therapy for Supraspinatus Calcifying Tendinitis: A Randomized Clinical Trial Comparing Two Different Energy Levels
 Francesco Ioppolo, Maria Tattoli, Luca Di Sante, Carmine Attanasi, Teresa Venditto, Marila Servidio, Angelo Cacchio and Valter Santilli
PHYS THER. 2012; 92:1376-1385.





Low-Energy Extracorporeal Shock Wave Therapy as a Treatment for Greater Trochanteric Pain Syndrome

John P. Furia,^{*†} MD, Jan D. Rompe,[‡] MD, and Nicola Maffulli,[§] MD, MS, PhD, FRCS (Orth), FFSEM (UK)

From [†]SUN Orthopedics and Sports Medicine, Lewisburg, Pennsylvania, [‡]OrthoTrauma Evaluation Center, Mainz, Germany, [§]Centre for Sports and Exercise, Barts and the London School of Medicine and Dentistry, London, United Kingdom

The American Journal of Sports Medicine, Vol. 37, No. 9

Background: Greater trochanteric pain syndrome is often a manifestation of underlying gluteal tendinopathy. Extracorporeal shock wave therapy is effective in numerous types of tendinopathies.

Hypothesis: Shock wave therapy is an effective treatment for chronic greater trochanteric pain syndrome.

Study Design: Case control study; Level of evidence, 3.

Methods: Thirty-three patients with chronic greater trochanteric pain syndrome received low-energy shock wave therapy (2000 shocks; 4 bars of pressure, equal to 0.18 mJ/mm²; total energy flux density, 360 mJ/mm²). Thirty-three patients with chronic greater trochanteric pain syndrome were not treated with shock wave therapy but received additional forms of nonoperative therapy (control). All shock wave therapy procedures were performed without anesthesia. Evaluation was by change in visual analog score, Harris hip score, and Roles and Maudsley score.

Results: Mean pretreatment visual analog scores for the control and shock wave therapy groups were 8.5 and 8.5, respectively. One, 3, and 12 months after treatment, the mean visual analog score for the control and shock wave therapy groups were 7.6 and 5.1 ($P < .001$), 7 and 3.7 ($P < .001$), and 6.3 and 2.7 ($P < .001$), respectively. One, 3, and 12 months after treatment, mean Harris hip scores for the control and shock wave therapy groups were 54.4 and 69.8 ($P < .001$), 56.9 and 74.8 ($P < .001$), and 57.6 and 79.9 ($P < .001$), respectively. At final follow-up, the number of excellent, good, fair, and poor results for the shock wave therapy and control groups were 10 and 0 ($P < .001$), 16 and 12 ($P < .001$), 4 and 13 ($P < .001$), and 3 and 8 ($P < .001$), respectively. Chi-square analysis showed the percentage of patients with excellent (1) or good (2) Roles and Maudsley scores (ie, successful results) 12 months after treatment was statistically greater in the shock wave therapy than in the control group ($P < .001$).

Conclusion: Shock wave therapy is an effective treatment for greater trochanteric pain syndrome.

Keywords: extracorporeal shock wave therapy; hip; subgluteus bursa; bursitis

A single application of low-energy radial extracorporeal shock wave therapy is effective for the management of chronic patellar tendinopathy

John P. Furia • Jan D. Rompe • Angelo Cacchio •
Angelo Del Buono • Nicola Maffulli



Knee Surg Sports Traumatol Arthrosc (2013) 21:346–350

Abstract

Purpose Extracorporeal shock wave therapy (SWT) is effective for the management of chronic recalcitrant tendinopathy. The objective of the current study was to assess whether a standardized, single treatment SWT is effective for the management of chronic patellar tendinopathy

Methods Thirty-three patients with chronic patellar tendinopathy received low-energy SWT. Thirty-three patients with chronic patellar tendinopathy received other forms of non-operative therapy (control group). Evaluation was by change in Visual Analogue Scale (VAS), Victoria Institute of Sport Assessment score for patellar tendinopathy (VISA-P) score and by Roles and Maudsley Score.

Results Mean pre-treatment VAS scores for the control and SWT groups were 7.5 and 7.8, respectively. One month, 3 months, and 12 months after treatment, the mean VAS for the control and SWT groups were 6.7 and 4.3 ($p < 0.001$), 5.9 and 3.5 ($p < 0.001$), and 5.1 and 2.7 ($p < 0.001$), respectively. One month, 3 months, and 12 months after treatment, the mean VISA for the control and SWT groups were 50.7 and 65.5 ($p < 0.001$), 52.1 and 71 ($p < 0.001$), and 54.9 and 74.5 ($p < 0.001$), respectively. At final follow-up, the number of excellent, good, fair, and poor results for the SWT and control groups were 8 and 3 ($p < 0.001$), 17 and 10 ($p < 0.001$), 5 and 16 ($p < 0.001$), and 3 and 4 ($p < 0.001$), respectively. The percentage of patients with excellent (“1”) or good (“2”) Roles and Maudsley Scores (i.e. successful results) 12 months after treatment was statistically greater in the SWT group compared to the control group ($p < 0.001$).

Conclusion A single application of radial SWT is an effective treatment for chronic patellar tendinopathy.

J. P. Furia
SUN Orthopedics and Sports Medicine, 900 Buffalo Road,
Lewisburg, PA 17837, USA
e-mail: jfuria@ptd.net

Eccentric Loading Versus Eccentric Loading Plus Shock-Wave Treatment for Midportion Achilles Tendinopathy

A Randomized Controlled Trial

Jan D. Rompe,^{*†} MD, John Furia,[‡] MD, and Nicola Maffulli,[§] MD, PhD, FRCS(Orth)
From the [†]OrthoTrauma Evaluation Center, Mainz, Germany, [‡]Sun Orthopaedics Group, Lewisburg, Pennsylvania, and the [§]Department of Trauma and Orthopaedic Surgery, Keele University School of Medicine, Stoke-on-Trent, England



Background: Results of a previous randomized controlled trial have shown comparable effectiveness of a standardized eccentric loading training and of repetitive low-energy shock-wave treatment (SWT) in patients suffering from chronic midportion Achilles tendinopathy. No randomized controlled trials have tested whether a combined approach might lead to even better results.

Purpose: To compare the effectiveness of 2 management strategies—group 1: eccentric loading and group 2: eccentric loading plus repetitive low-energy shock-wave therapy.

Study Design: Randomized controlled trial; Level of evidence, 1.

Methods: Sixty-eight patients with a chronic recalcitrant (>6 months) noninsertional Achilles tendinopathy were enrolled in a randomized controlled study. All patients had received unsuccessful management for >3 months, including at least (1) peritendinous local injections, (2) nonsteroidal anti-inflammatory drugs, and (3) physiotherapy. A computerized random-number generator was used to draw up an allocation schedule. Analysis was on an intention-to-treat basis.

Results: At 4 months from baseline, the VISA-A score increased in both groups, from 50 to 73 points in group 1 (eccentric loading) and from 51 to 87 points in group 2 (eccentric loading plus shock-wave treatment). Pain rating decreased in both groups, from 7 to 4 points in group 1 and from 7 to 2 points in group 2. Nineteen of 34 patients in group 1 (56%) and 28 of 34 patients in group 2 (82%) reported a Likert scale of 1 or 2 points (“completely recovered” or “much improved”). For all outcome measures, groups 1 and 2 differed significantly in favor of the combined approach at the 4-month follow-up. At 1 year from baseline, there was no difference any longer, with 15 failed patients of group 1 opting for having the combined therapy as cross-over and with 6 failed patients of group 2 having undergone surgery.

Conclusion: At 4-month follow-up, eccentric loading alone was less effective when compared with a combination of eccentric loading and repetitive low-energy shock-wave treatment.

Keywords: Achilles pain; tendinopathy; eccentric loading; shock-wave treatment



The Effectiveness of Extracorporeal Shock Wave Therapy on Chronic Achilles Tendinopathy: A Systematic Review

Foot & Ankle International
34(1) 33–41
© The Author(s) 2013
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/1071100712464354
<http://fai.sagepub.com>

Hani Al-Abbad, PT, BSc, MMSPhty¹, and Joel Varghese Simon, PT, MMSPhty²

Abstract

Background: Achilles tendinopathy is a pathological state resulting from repetitive loading or stress on the tendon. Extracorporeal shock wave therapy (ESWT) is hypothesized to be an effective alternative intervention to surgery when other conservative therapies fail. This systematic review investigated the effectiveness of ESWT in the treatment of insertional and noninsertional Achilles tendinopathies.

Methods: Articles were electronically searched from the Cochrane Controlled Trials Register, MEDLINE, CINAHL, EMBASE, and SPORTDiscus using a comprehensive search strategy. Studies were included if they were prospective clinical trials examining the effectiveness of ESWT for insertional or noninsertional Achilles tendinopathies. Methodological quality of included studies was assessed using PEDro scale and Modified McMaster tool. The strength of the evidence was reported using the National Health and Medical Research Council body of evidence framework. A narrative summary of the findings was presented.

Results: Four of the included studies were randomized controlled trials, and 2 were pre-post study designs. Common methodological deficiencies included not blinding the clinician and participants. There was consistent evidence from 4 reviewed studies on the effectiveness of ESWT in the management of patients with chronic Achilles tendinopathies at a minimum 3 months' follow-up.

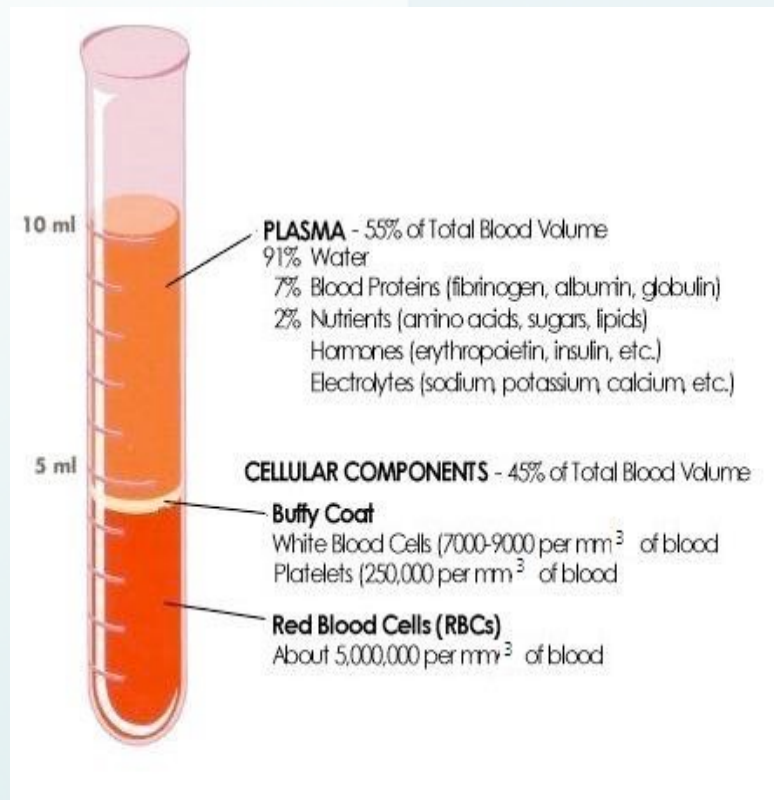
Conclusion: Overall, our review showed satisfactory evidence for the effectiveness of low-energy ESWT in the treatment of chronic insertional and noninsertional Achilles tendinopathies at a minimum 3 months' follow-up before considering surgery if other conservative management fails. However, combining ESWT with eccentric loading appears to show superior results.

Level of Evidence: Level I, systematic meta-analysis.



Plasma riche en plaquettes

Plasma riche en plaquettes



- PRP → libération de facteurs de croissance → prolifération cellulaire, synthèse de collagène, stimulation angiogénèse (Anitua et al, Cell Prolif 2009; Bosch et al, Scand J Med Sci Sports 2011; Kaux et al, Wound Repair Regen 2012)

- Application charge mécanique nécessaire pour «guider» cicatrisation tendineuse (Virchenko et al, Acta Orthop 2006; Kaux et al, J Orthop Res 2012)

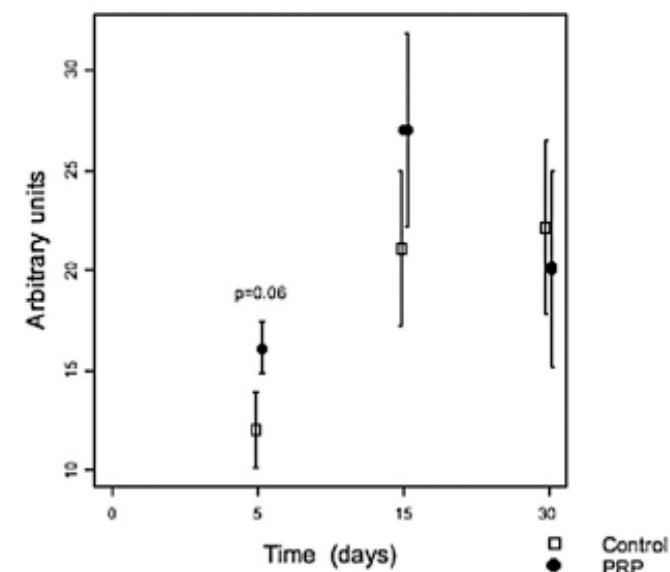
Effects of platelet-rich plasma (PRP) on the healing of Achilles tendons of rats

Jean-François Kaux, MD¹; Pierre V. Drion, DVM, PhD²; Alain Colige, PhD³; Frédéric Pascon, PhD⁴; Vincent, Libertiaux, PhD⁴; Audrey Hoffmann, BS³; Lauriane Janssen, MSc³; Antoine Heyers, MSc³; Betty V. Nussgens, PhD³; Caroline Le Goff, Pharm Clin Biol⁵; André Gothot, MD, PhD⁵; Serge Cescotto, PhD⁴; Jean-Olivier Defraigne, MD, PhD⁶; Markus Rickert, MD, PhD⁷; Jean-Michel Crielaard, MD, PhD¹

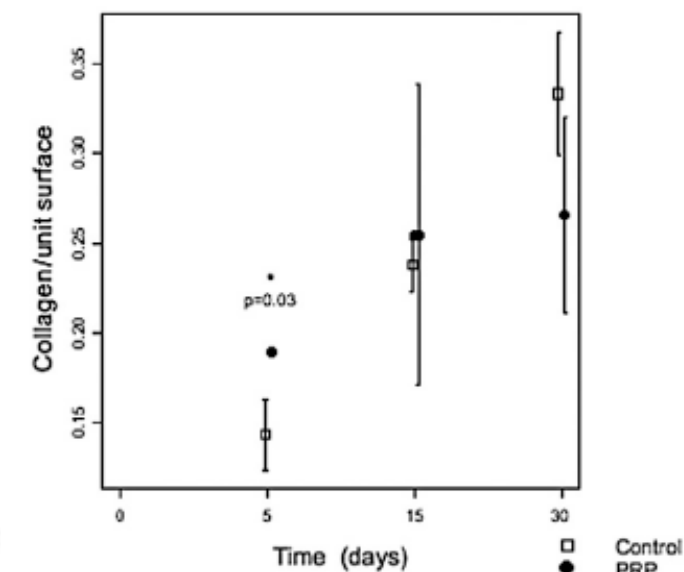
1. Physical Medicine Service, Department of Motility Sciences, University Hospital of Liège, University of Liège, Liège, Belgium,
2. Animal Facility of University Hospital of Liège, ULg-GIGA-R, University of Liège, Liège, Belgium,
3. Laboratory of Connective Tissues Biology, GIGA-R, University of Liège, Liège, Belgium,
4. Department Argenco, University of Liège, Liège, Belgium,
5. Department of Clinical Biology, University Hospital of Liège, University of Liège, Liège, Belgium,
6. CREDEC, Laboratory of Experimental Surgery, University of Liège, Liège, Belgium, and
7. Department of Orthopaedic Surgery, University of Heidelberg, Heidelberg, Germany

Wound Rep Reg (2012) 20 748–756 © 2012 by the Wound Healing Society

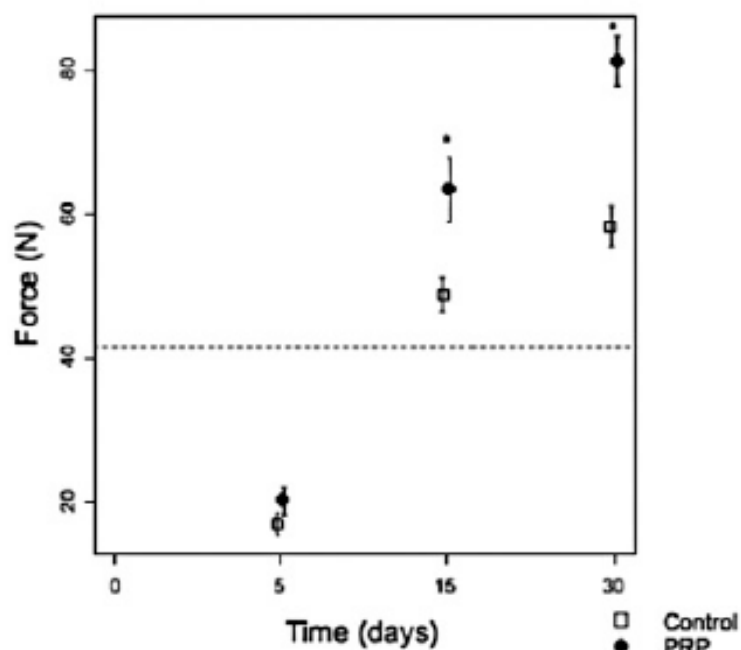
A Semiquantification of the LG staining



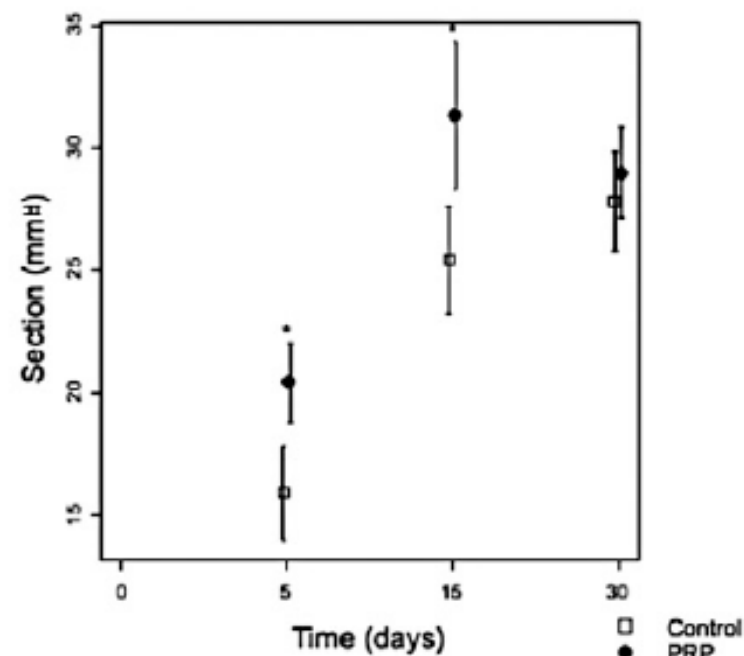
B Collagen concentration



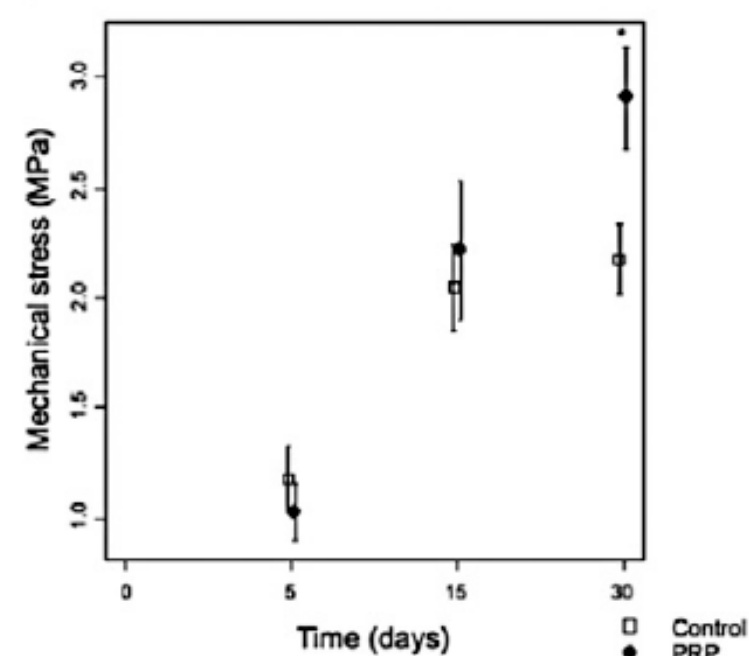
A UTS



B Cross-sectional area



C Mechanical stress



Plasma riche en plaquettes

Étude comparative de cinq techniques de préparation plaquettaire (platelet-rich plasma)

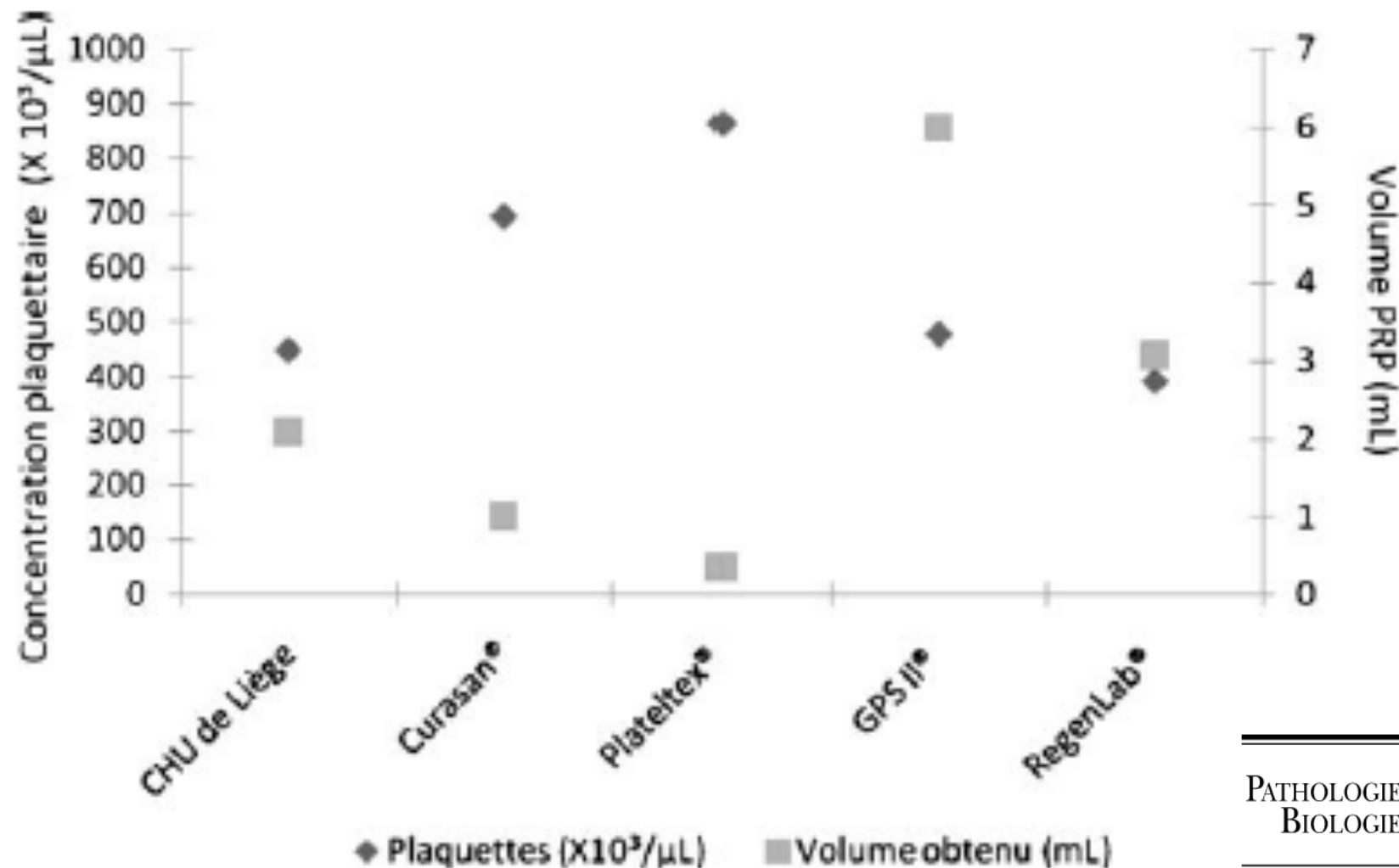
Comparative study of five techniques of preparation of platelet-rich plasma

J.-F. Kaux^{a,*}, C. Le Goff^b, L. Seidel^c, P. Péters^b, A. Gothot^b, A. Albert^c, J.-M. Crielaard^a

^a Médecine de l'appareil locomoteur et traumatologie du sport, université de Liège, CHU Sart-Tilman, avenue de l'Hôpital, B35, 4000 Liège, Belgique

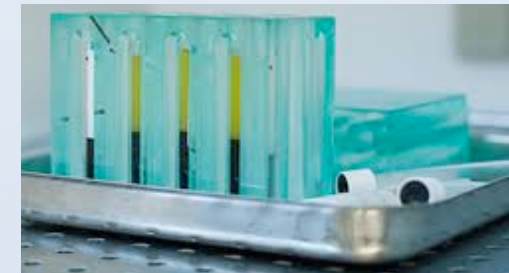
^b Département de biologie clinique, université de Liège, CHU Sart-Tilman, avenue de l'Hôpital, B35, Liège, Belgique

^c Service de biostatistique, département des sciences de la santé publique, université de Liège, avenue de l'Hôpital, B23, Liège, Belgique



PATHOLOGIE
BIOLOGIE

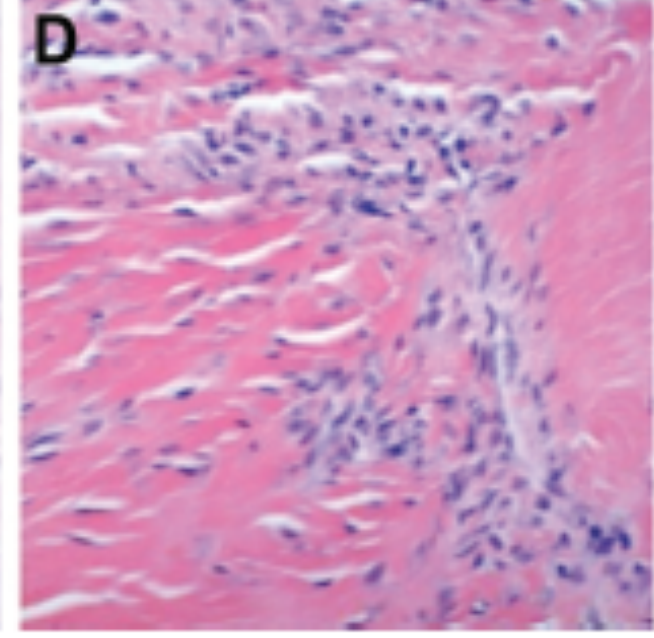
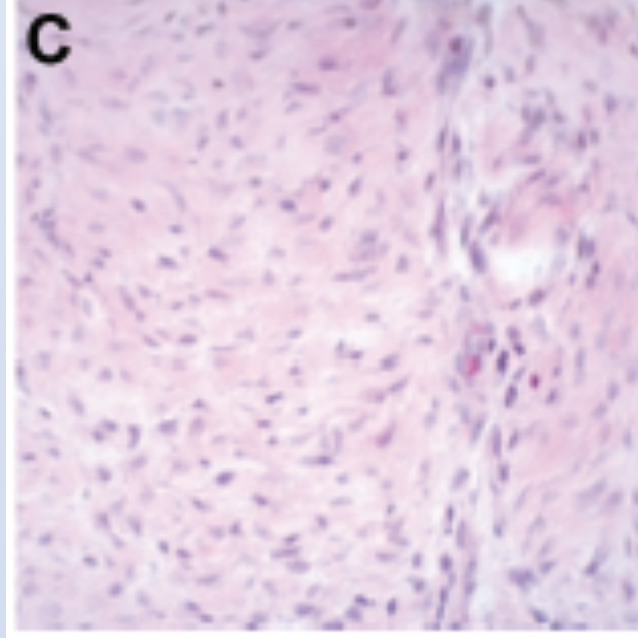
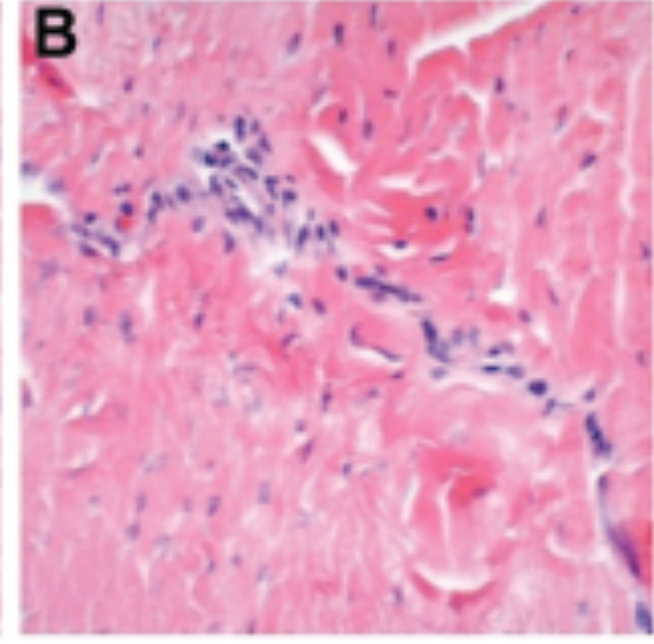
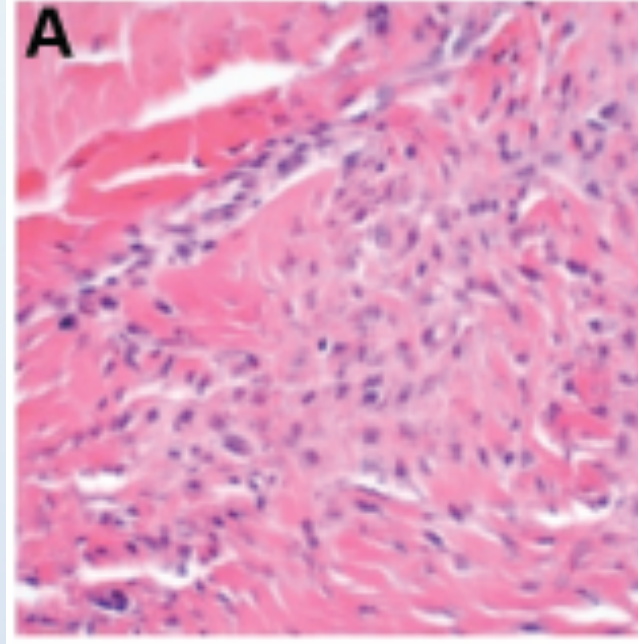
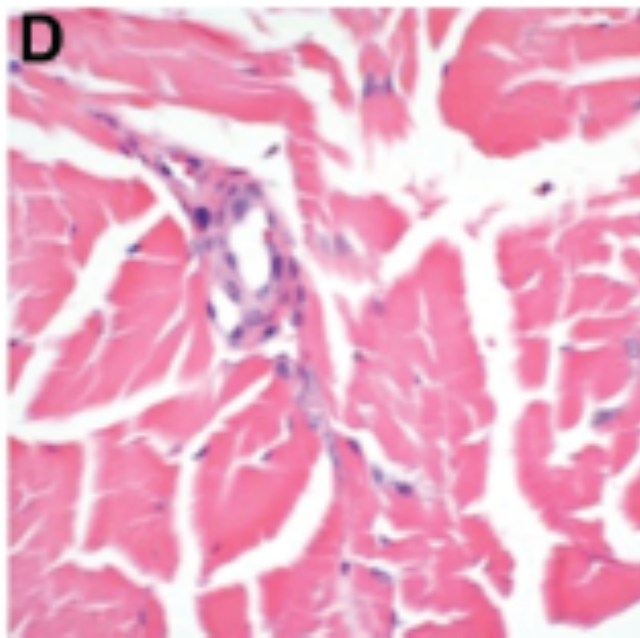
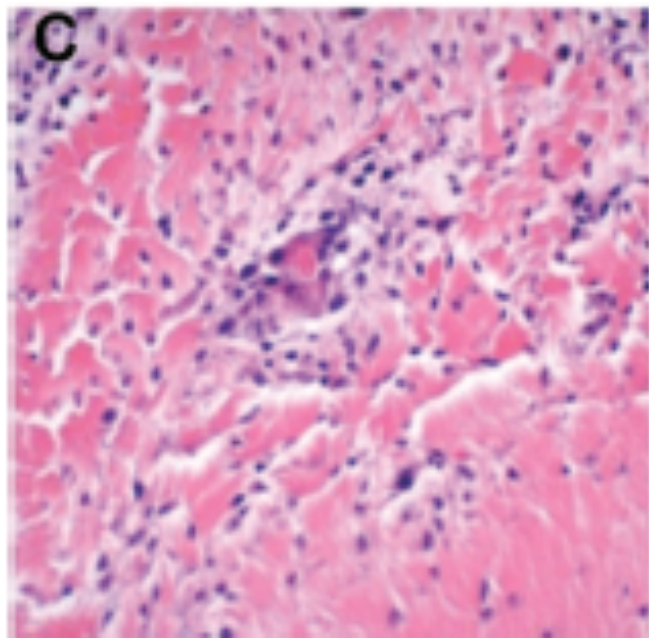
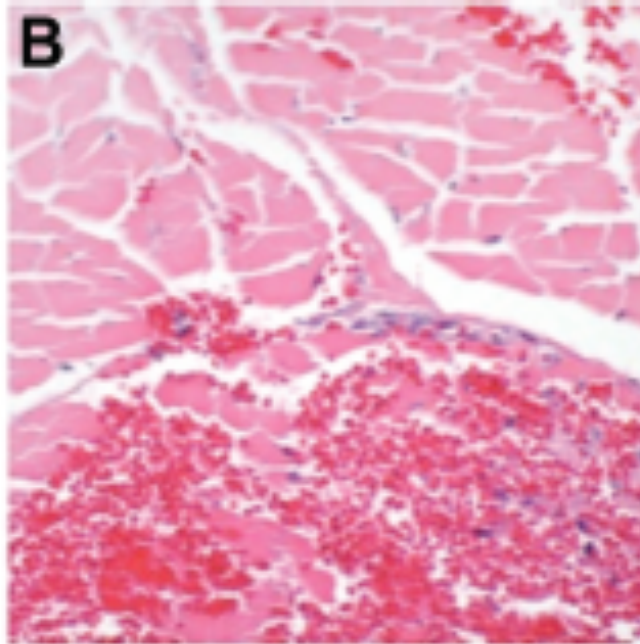
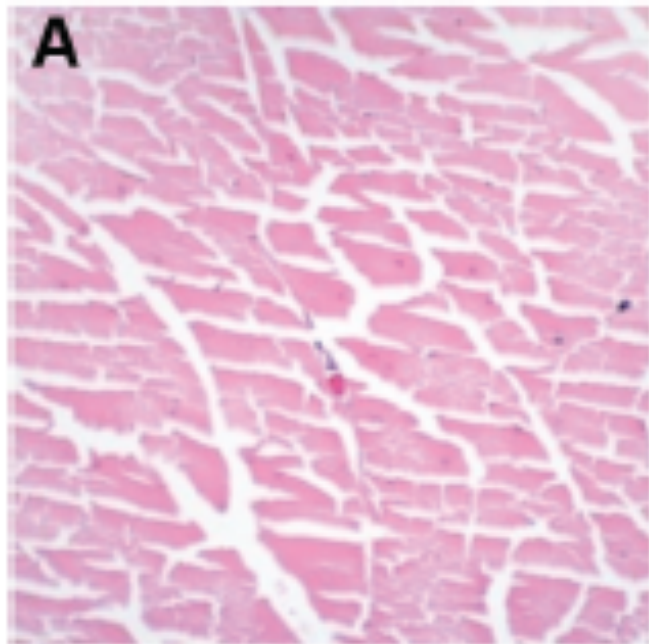
Pathologie Biologie 59 (2011) 157–160



Plasma riche en plaquettes

Comparison of the Acute Inflammatory Response of Two Commercial Platelet-Rich Plasma Systems in Healthy Rabbit Tendons

Jason L. Dragoo,^{*,†} MD, Hillary J. Braun,[†] BA, Jennah L. Durham,[†] BA, Bethany A. Ridley,[†] BA, Justin I. Odegaard,[‡] MD, Richard Luong,[§] BVSc, DACVP, and Steven P. Arnoczky,^{||} DVM
Investigation performed at Stanford University, Palo Alto, California



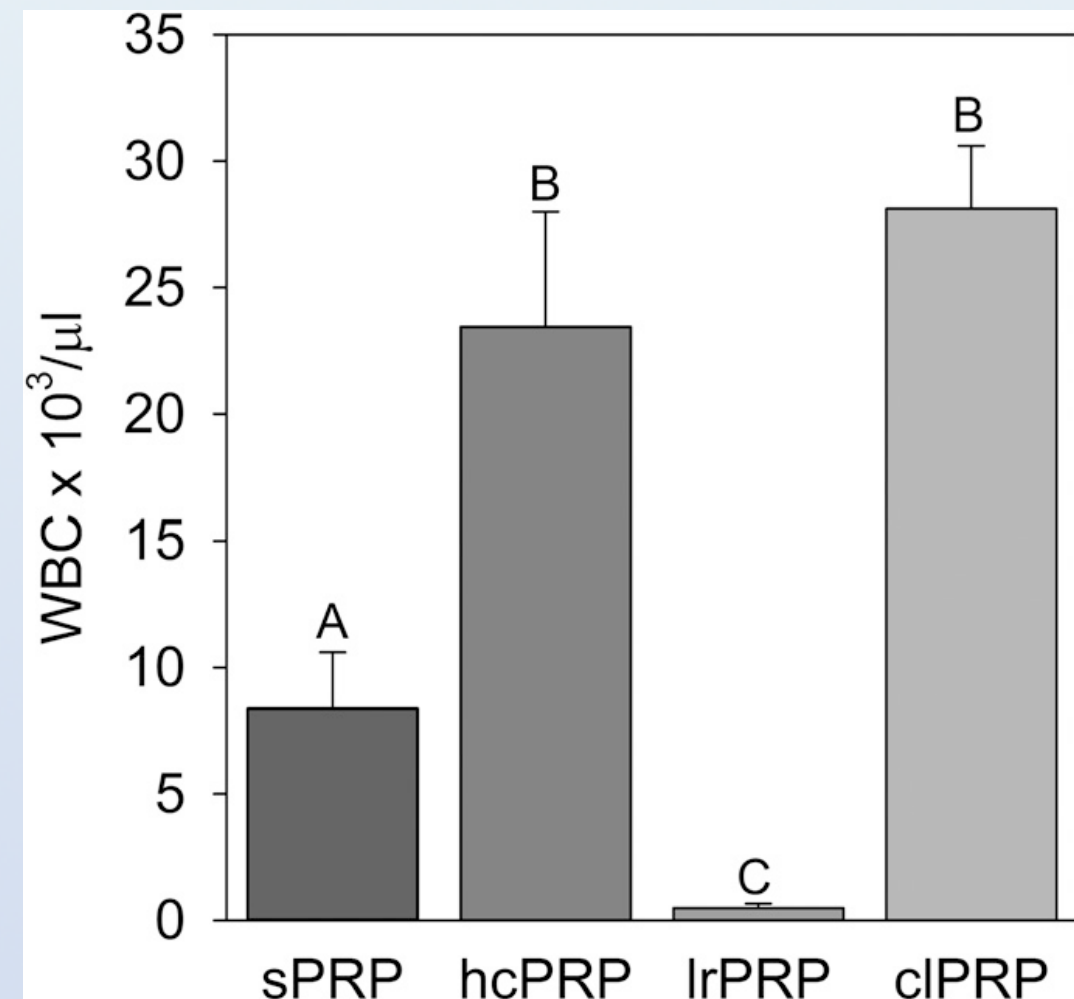
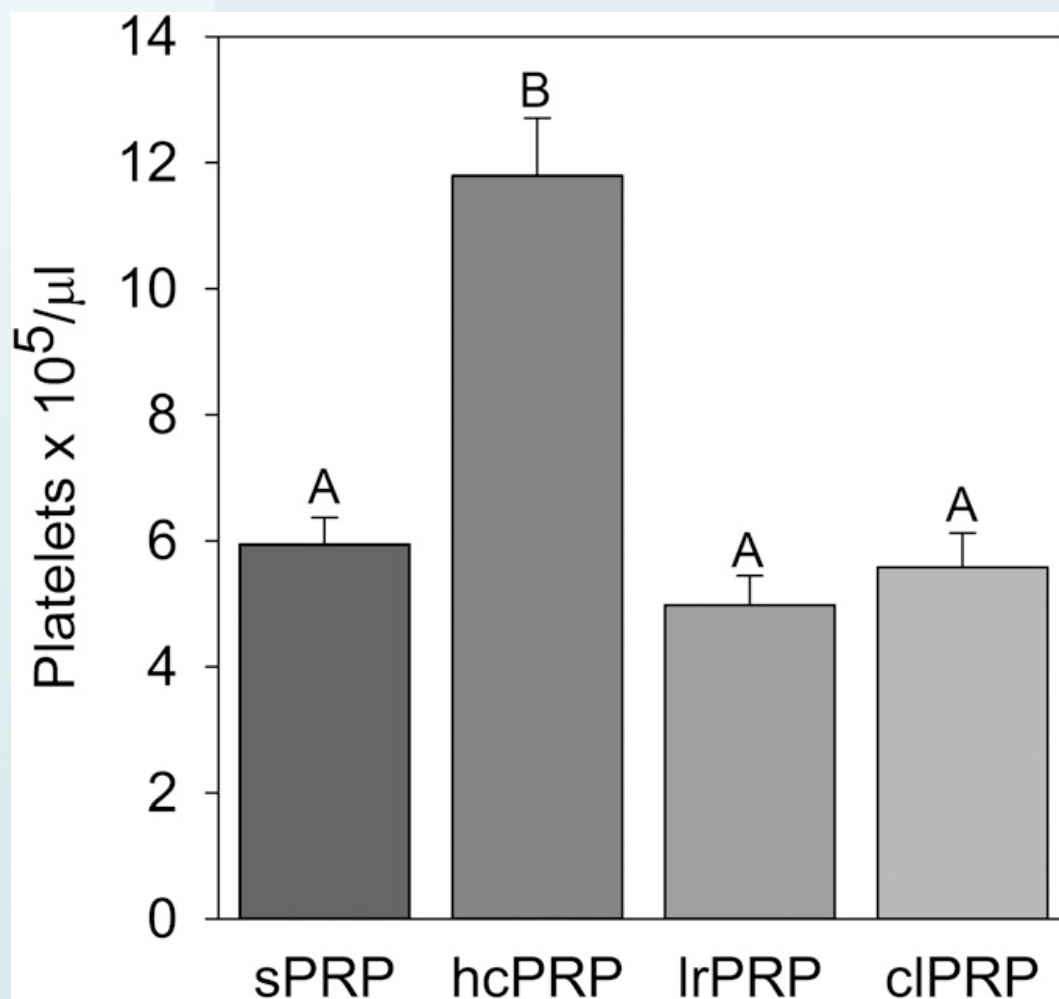
Plasma riche en plaquettes

Optimization of Leukocyte Concentration in Platelet-Rich Plasma for the Treatment of Tendinopathy

J Bone Joint Surg Am. 2012;94:e143(1-8)

J B J S The Journal of Bone & Joint Surgery

Taralyn M. McCarrel, DVM, Tom Minas, MD, MS, and Lisa A. Fortier, DVM, PhD



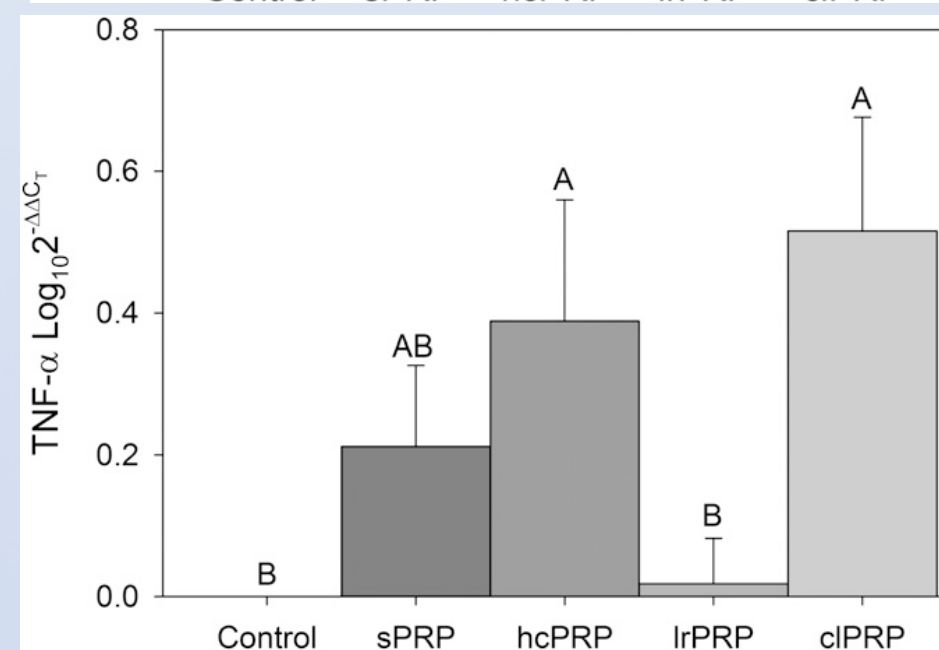
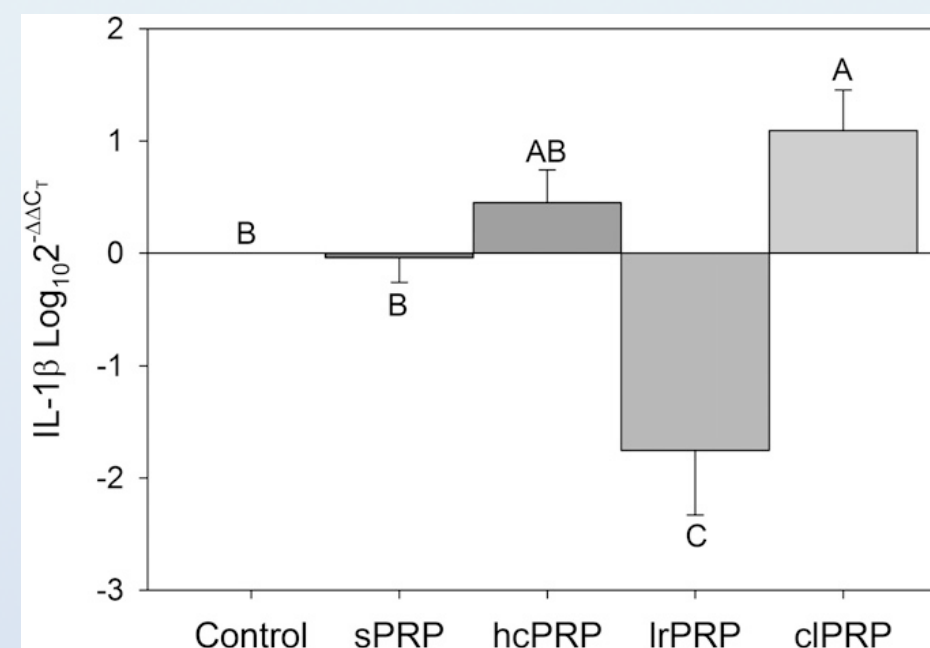
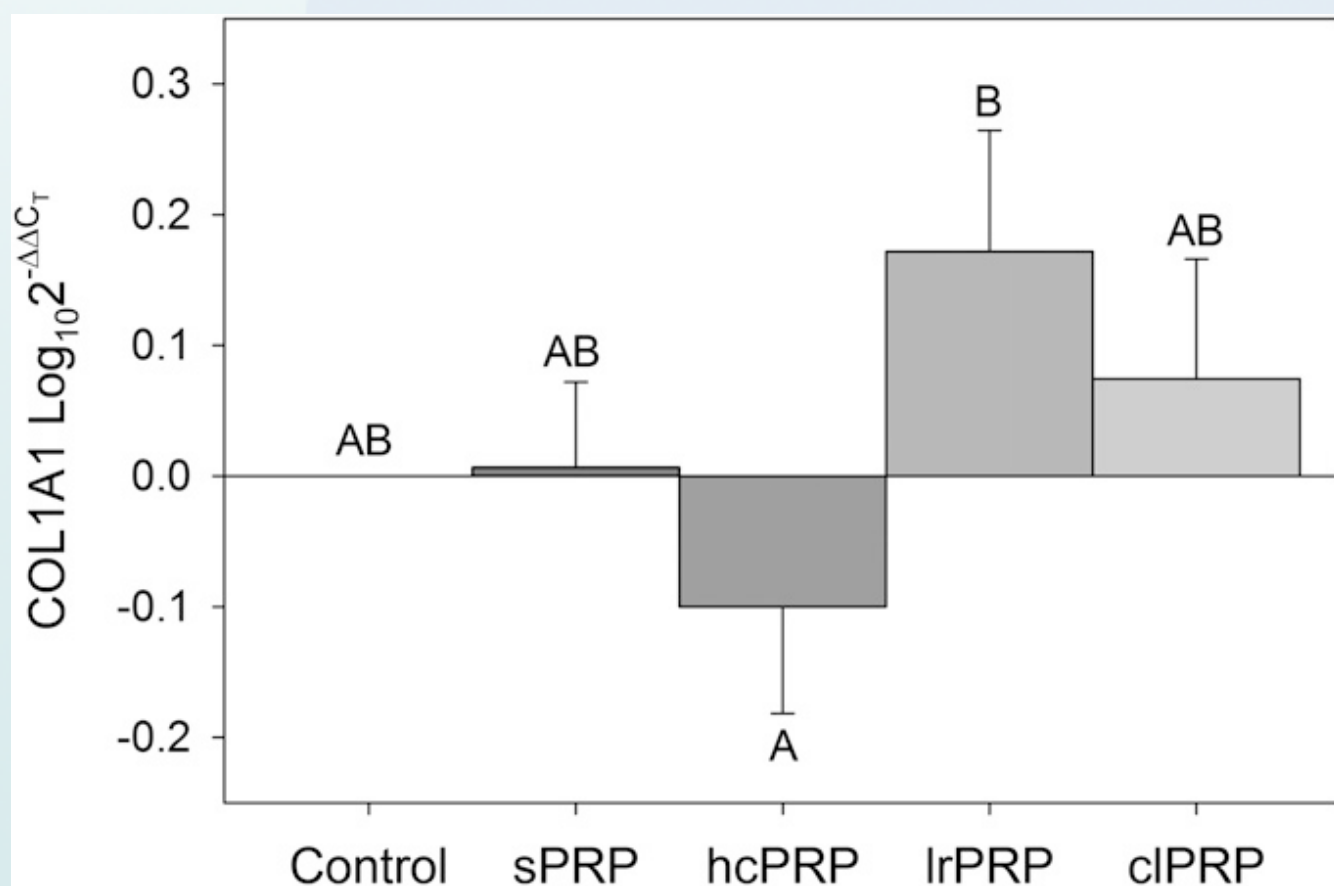
Plasma riche en plaquettes

Optimization of Leukocyte Concentration in Platelet-Rich Plasma for the Treatment of Tendinopathy

Taralyn M. McCarrel, DVM, Tom Minas, MD, MS, and Lisa A. Fortier, DVM, PhD

J Bone Joint Surg Am. 2012;94:e143(1-8)

J B J S The Journal of Bone & Joint Surgery

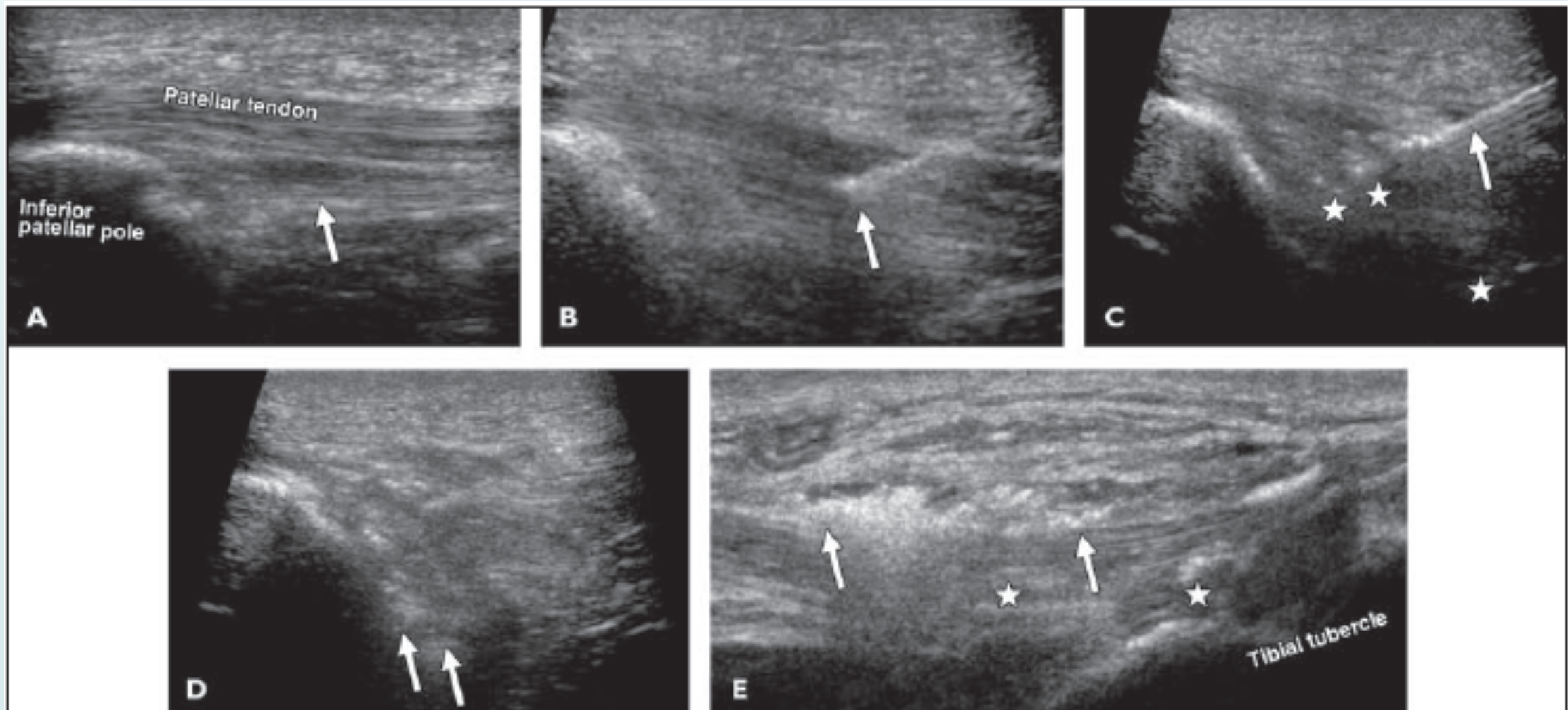


Plasma riche en plaquettes

Retrospective Analysis of Postinjection Ultrasound Imaging After Platelet-Rich Plasma or Autologous Blood: Observational Review of Anatomic Distribution of Injected Material

Michael L. Loftus¹
Yoshimi Endo²
Ronald S. Adler³

AJR *American Journal of Roentgenology*
Diagnostic Imaging and Related Sciences



Plasma riche en plaquettes

Mise au point

Platelet rich plasma : traitement des tendinopathies chroniques ?
Revue de la littérature

Platelet rich plasma: treatment of chronic tendinopathies?
Review of literature

J.-F. Kaux*, N. Degrave, J.-M. Crielaard

JOURNAL DE
TRAUMATOLOGIE
DU SPORT

Journal de Traumatologie du Sport 24 (2007) 99–102



Science & Sports (2012) 27, 141–153

Applications cliniques du plasma riche en plaquettes (PRP) dans les lésions tendineuses : revue de la littérature

Clinical applications of platelet-rich plasma (PRP) in tendon lesions: A literature review

F. Smets, J.-L. Croisier, B. Forthomme, J.-M. Crielaard, J.-F. Kaux*

Tendinopathies et plasma riche en plaquettes (PRP) : applications cliniques. Revue de la littérature

Tendinopathies and platelet-rich plasma: Clinical applications.
A review of the literature

J.-F. Kaux*, J.-M. Crielaard



Journal de Traumatologie du Sport (2012) 29, 174–178

Platelet-Rich Plasma Versus Focused Shock Waves in the Treatment of Jumper's Knee in Athletes

Mario Vetrano,^{*†} MD, Anna Castorina,[†] MD, Maria Chiara Vulpiani,[†] MD, Rossella Baldini,[‡] PhD, Antonio Pavan,[§] MD, and Andrea Ferretti,^{||} MD
Investigation performed at the Sant'Andrea Hospital, Sapienza University of Rome, Rome, Italy



Background: Tendinopathies represent a serious challenge for orthopaedic surgeons involved in treatment of athletes.

Purpose: To compare the effectiveness and safety of platelet-rich plasma (PRP) injections and focused extracorporeal shock wave therapy (ESWT) in athletes with jumper's knee.

Study Design: Randomized controlled trial; Level of evidence, 1.

Methods: Forty-six consecutive athletes with jumper's knee were selected for this study and randomized into 2 treatment groups: 2 autologous PRP injections over 2 weeks under ultrasound guidance (PRP group; $n = 23$), and 3 sessions of focused extracorporeal shock wave therapy (2400 impulses at 0.17-0.25 mJ/mm² per session) (ESWT group; $n = 23$). The outcome measures were Victorian Institute of Sports Assessment-Patella (VISA-P) questionnaire, pain visual analog scale (VAS), and modified Blazina scale. A reviewer who was blinded as to the group allocation of participants performed outcome assessments before treatment and at 2, 6, and 12 months after treatment. Nonparametric tests were used for within-group (Friedman/Wilcoxon test) and between-group (Kruskal-Wallis/Fisher test) testing, and the significance level was set at .05.

Results: The 2 groups were homogeneous in terms of age, sex, level of sports participation, and pretreatment clinical status. Patients in both groups showed statistically significant improvement of symptoms at all follow-up assessments. The VISA-P, VAS, and modified Blazina scale scores showed no significant differences between groups at 2-month follow-up ($P = .635$, .360, and .339, respectively). The PRP group showed significantly better improvement than the ESWT group in VISA-P, VAS scores at 6- and 12-month follow-up, and modified Blazina scale score at 12-month follow-up ($P < .05$ for all).

Conclusion: Therapeutic injections of PRP lead to better midterm clinical results compared with focused ESWT in the treatment of jumper's knee in athletes.

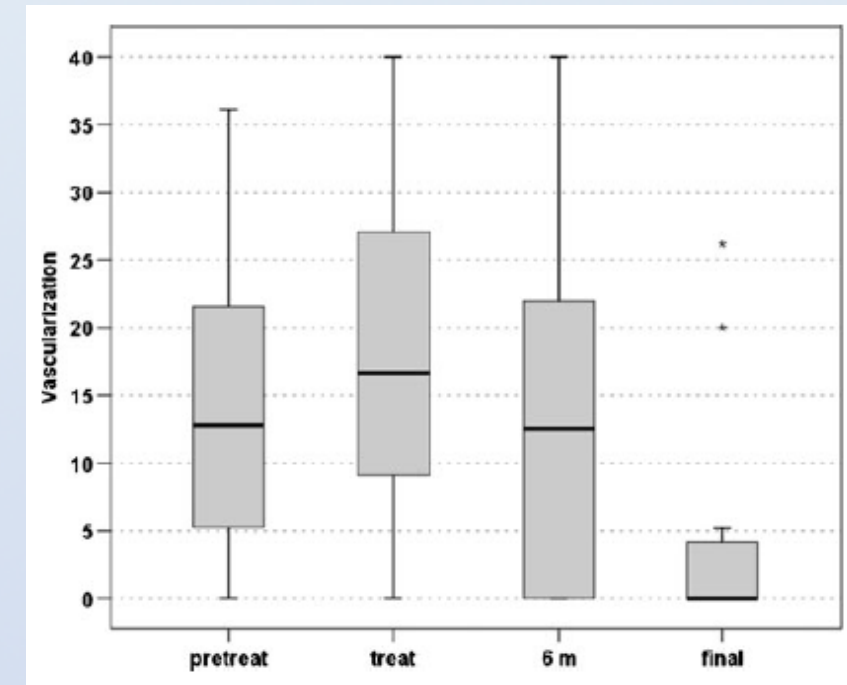
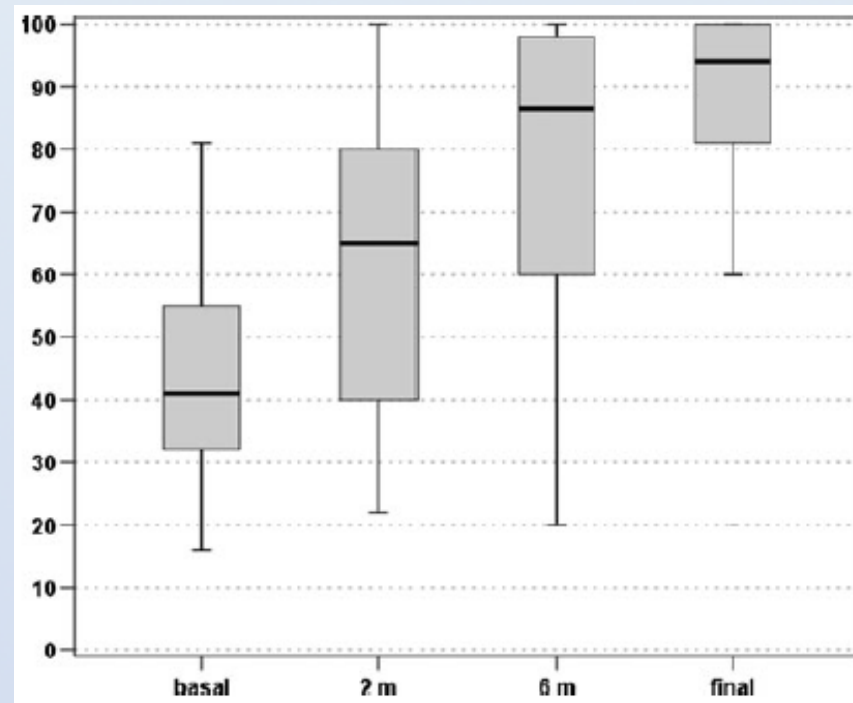
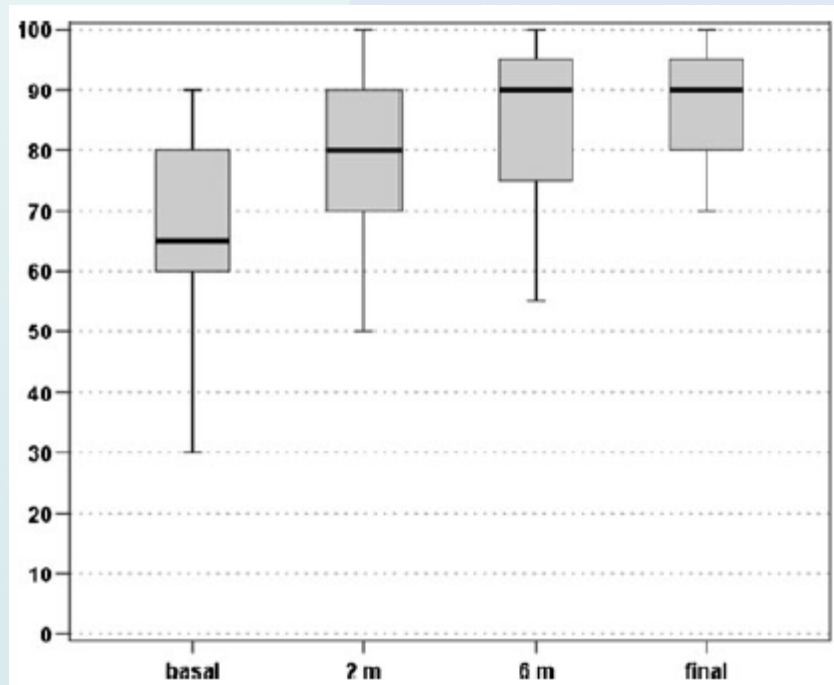
Keywords: jumper's knee; platelet-rich plasma; extracorporeal shock wave therapy; tendinopathy/therapy

Plasma riche en plaquettes

Platelet-rich plasma for the treatment of patellar tendinopathy: clinical and imaging findings at medium-term follow-up

Giuseppe Filardo • Elizaveta Kon • Berardo Di Matteo • Patrizia Pelotti •
Alessandro Di Martino • Maurilio Marcacci

International Orthopaedics (SICOT) (2013) 37:1583–1589



■ Ultrasound-guided injection of platelet-rich plasma in chronic Achilles and patellar tendinopathy[☆]

Journal of Ultrasound (2012) 15, 260–266

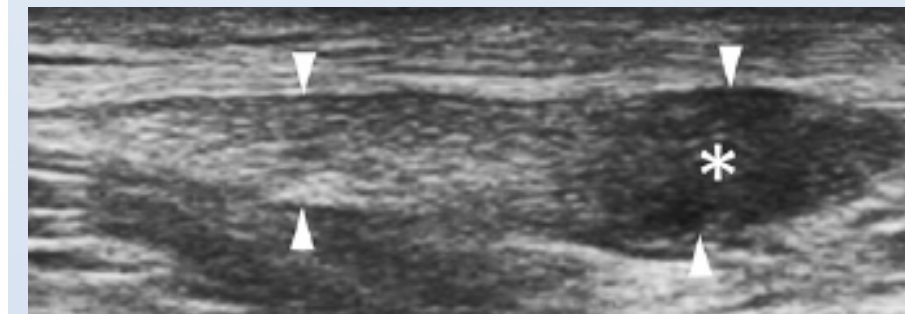
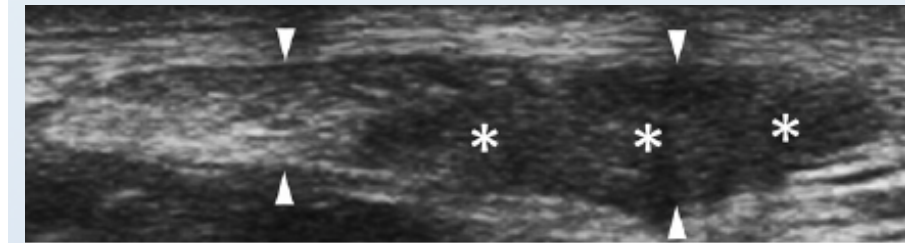
G. Ferrero^a, E. Fabbro^a, D. Orlandi^a, C. Martini^a, F. Lacelli^b, G. Serafini^b,
E. Silvestri^c, L.M. Sconfienza^{d,e,*}

Abstract *Purpose:* The efficacy of platelet-rich plasma (PRP) in the treatment and healing of chronic tendinopathy through stimulation of cell proliferation and total collagen production has been demonstrated by both in vitro and in vivo studies. The aim of this study is to evaluate the effectiveness of ultrasound (US)-guided autologous PRP injections in patellar and Achilles tendinopathy.

Materials and methods: Autologous PRP was injected under US-guidance into the Achilles and patellar tendons (30 Achilles tendons, 28 patellar tendons) in 48 prospectively selected patients (30 males, 18 females, mean age 38 ± 16 years, range 20–61 years). All patients were previously evaluated according to the Victoria Institute of Sport Assessment (VISA) scale, which assessed pain and activity level, and they all underwent US of the tendon before treatment and at follow-up after 20 days and 6 months. Statistical analysis was performed with Chi-square and Wilcoxon tests.

Results: 20 days after PRP injection the patients presented a non-significant improvement of clinical symptoms. At the 6-month follow-up VISA score increased from a mean value of 57–75.5 ($p < .01$). US evaluation revealed a reduction of hypoechoic areas in 26 tendons ($p < .01$) associated with a widespread improvement of fibrillar echotexture of the tendon and reduced hypervascularity at power Doppler.

Conclusion: PRP injection in patellar and Achilles tendinopathy results in a significant and lasting improvement of clinical symptoms and leads to recovery of the tendon matrix potentially helping to prevent degenerative lesions. US-guidance allows PRP injection into the tendon with great accuracy.



Platelet-rich Plasma as an Effective Treatment for Proximal Hamstring Injuries

ROBERT J. WETZEL, MD; RONAK M. PATEL, MD; MICHAEL A. TERRY, MD

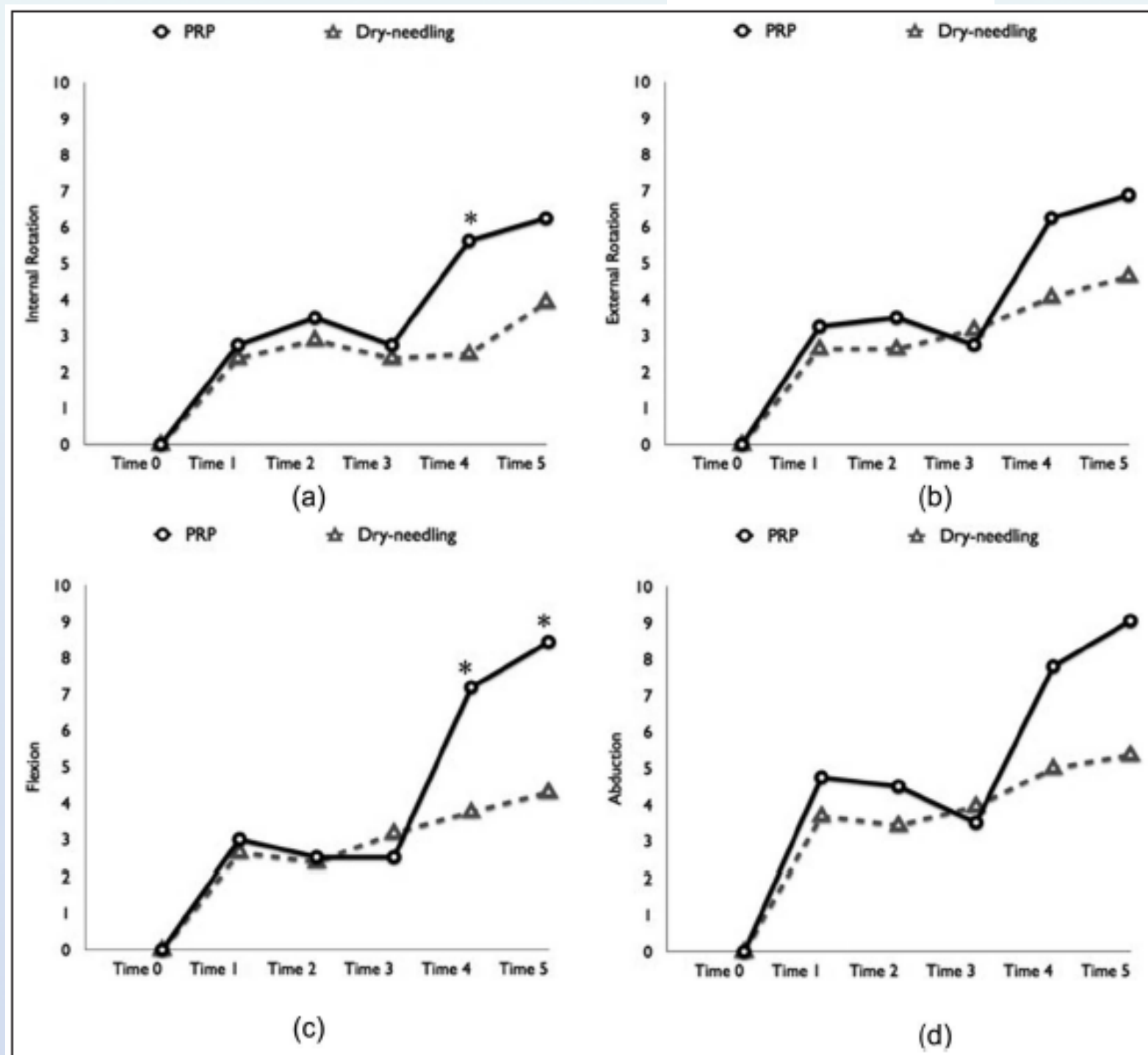
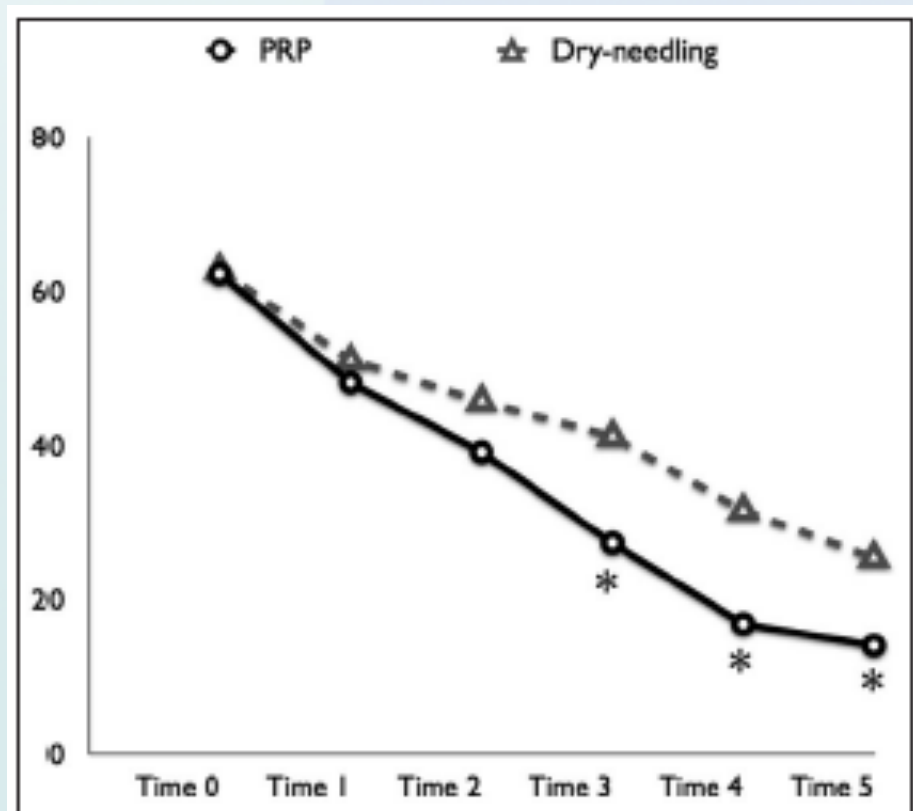
Proximal hamstring injuries can be disabling, and several traditional conservative treatments, including physiotherapy and nonsteroidal anti-inflammatory drugs, have been inconsistent. Corticosteroid injections have demonstrated success but can adversely affect local tissues. Platelet-rich plasma (PRP) has emerged as a safe, effective treatment for several orthopedic pathologies. The authors propose a PRP injection at the muscle origin as a novel treatment for proximal hamstring injuries.

A retrospective review yielded 15 patients with 17 proximal hamstring injuries. Twelve injuries failed traditional conservative treatment and were ultimately treated with a PRP injection at the hamstrings muscle origin. Five patients were treated with traditional conservative treatment alone. Analysis included pre- and posttreatment visual analog scale scores, Nirschl Phase Rating Scale scores, and return to sport. No significant difference existed between the groups' pretreatment visual analog scale scores ($P=.28$) and Nirschl Phase Rating Scale scores ($P=.15$) and their posttreatment visual analog scale scores ($P=.38$) and Nirschl Phase Rating Scale scores ($P=.22$). The PRP group demonstrated a reduction in visual analog scale scores ($P<.01$) and Nirschl Phase Rating Scale scores ($P<.01$), but the traditional conservative treatment group did not demonstrate the same reduction ($P=.06$ and $.06$, respectively). All athletes returned to their desired activity level with no major complications.



Comparison of the therapeutic effects of ultrasound-guided platelet-rich plasma injection and dry needling in rotator cuff disease: a randomized controlled trial

Dong-wook Rha¹, Gi-Young Park², Yong-Kyun Kim³, Min Tae Kim³ and Sang Chul Lee³

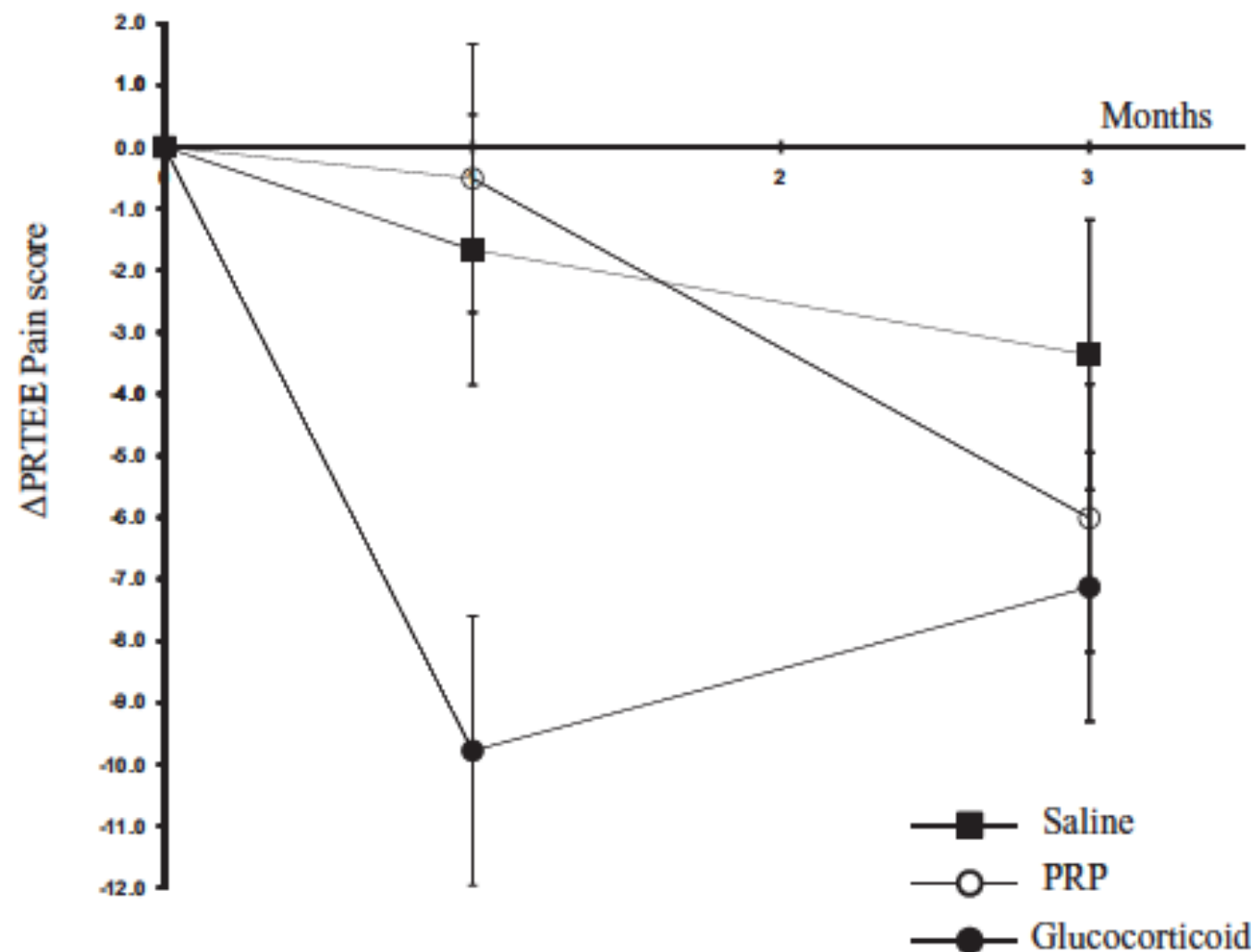


Plasma riche en plaquettes

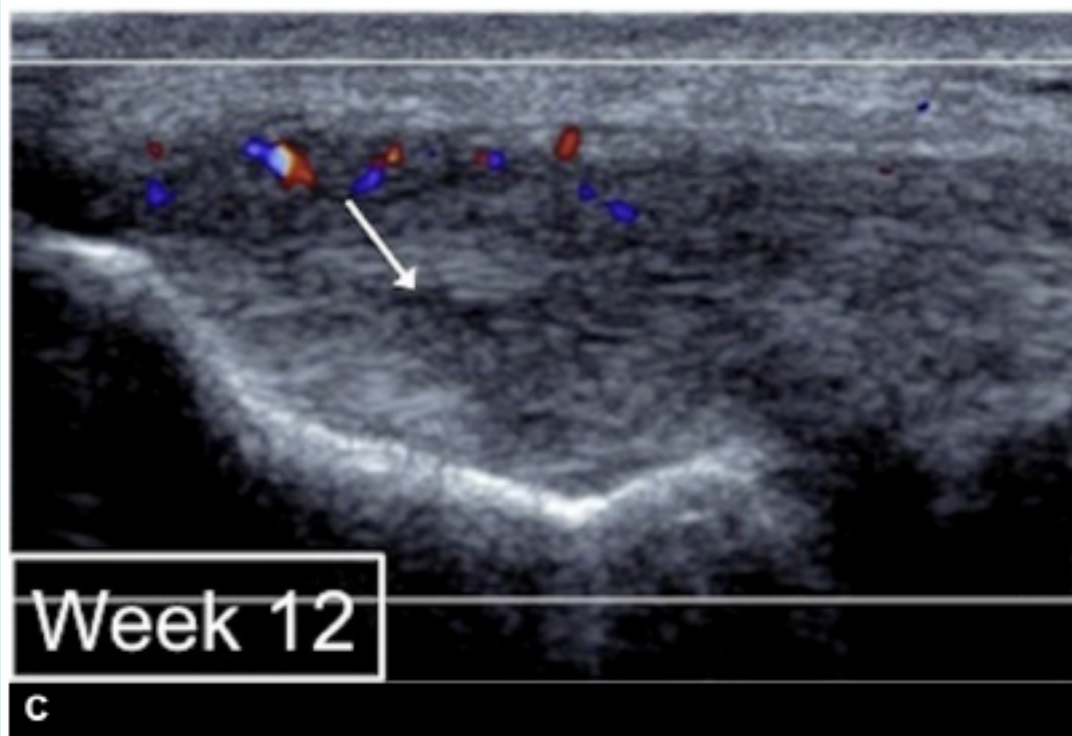
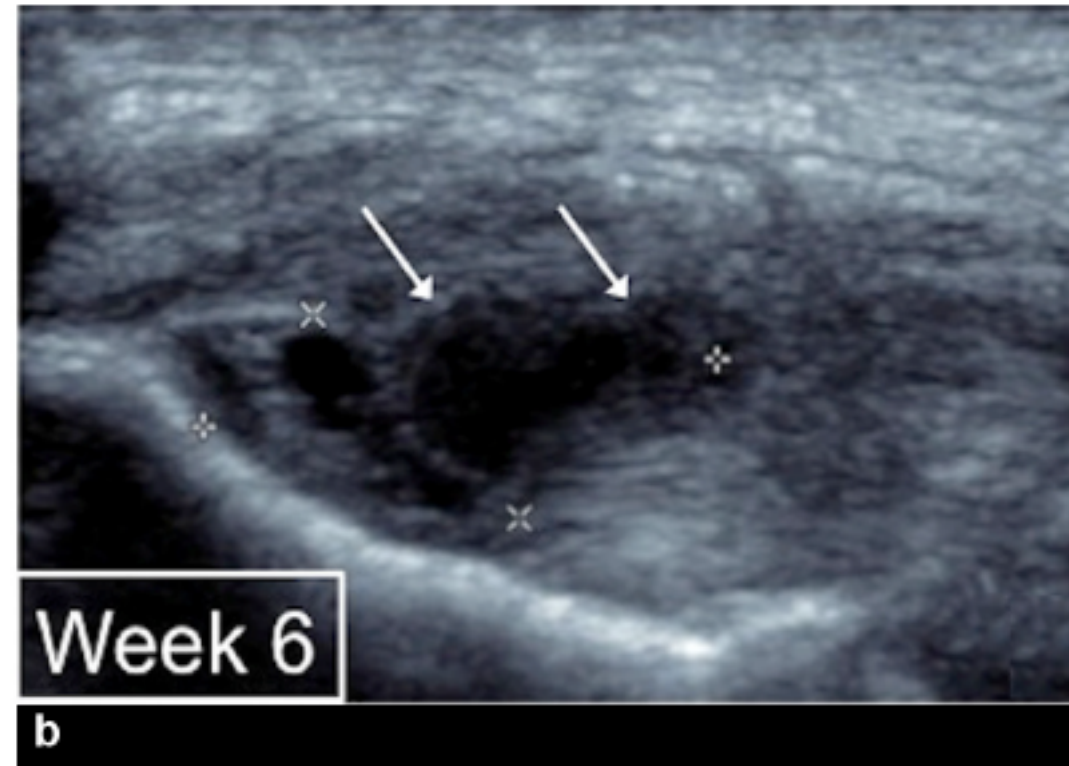
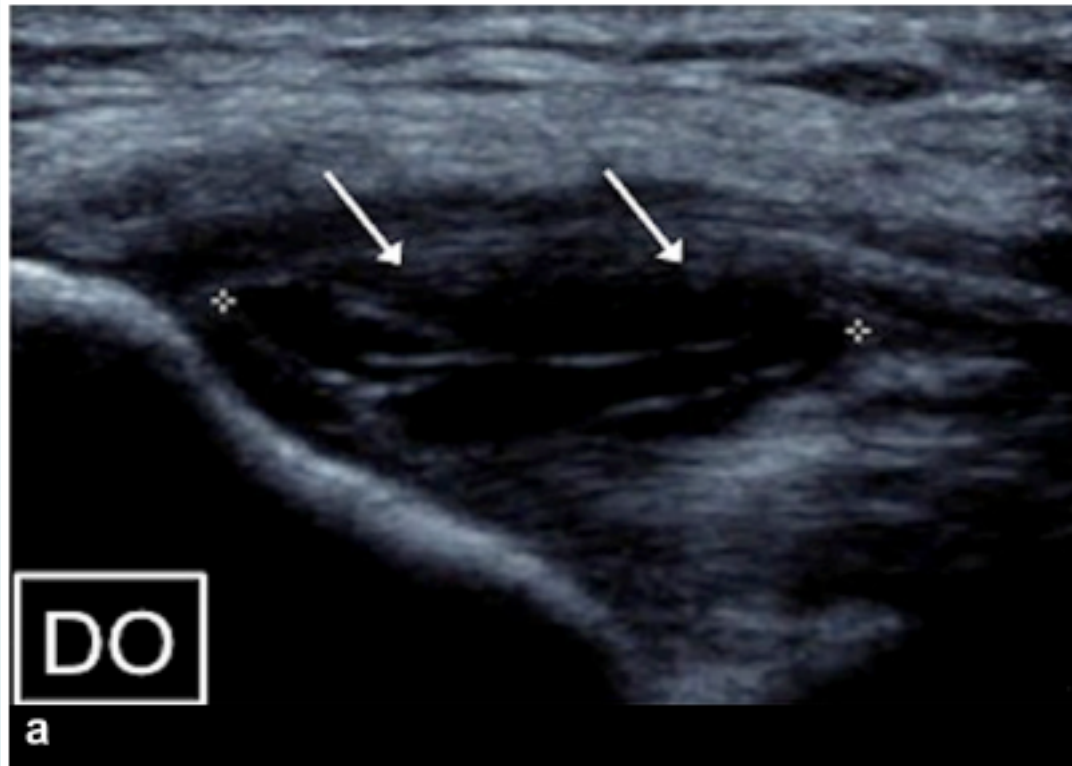
Treatment of Lateral Epicondylitis With Platelet-Rich Plasma, Glucocorticoid, or Saline

A Randomized, Double-Blind, Placebo-Controlled Trial

Thøger Persson Krogh,^{*} MD, Ulrich Fredberg,^{*} MD, PhD, Kristian Stengaard-Pedersen,[†] MD, DMSc, Robin Christensen,^{‡§} MSc, PhD, Pia Jensen,^{*} RN, and Torkell Ellingsen,^{||} MD, PhD
Investigation performed at the Diagnostic Centre, Region Hospital Silkeborg, Silkeborg, Denmark



Plasma riche en plaquettes



Efficacy of second intra-tendinous platelet-rich-plasma injection in case of incomplete response of the first injection: Three-year follow up experience

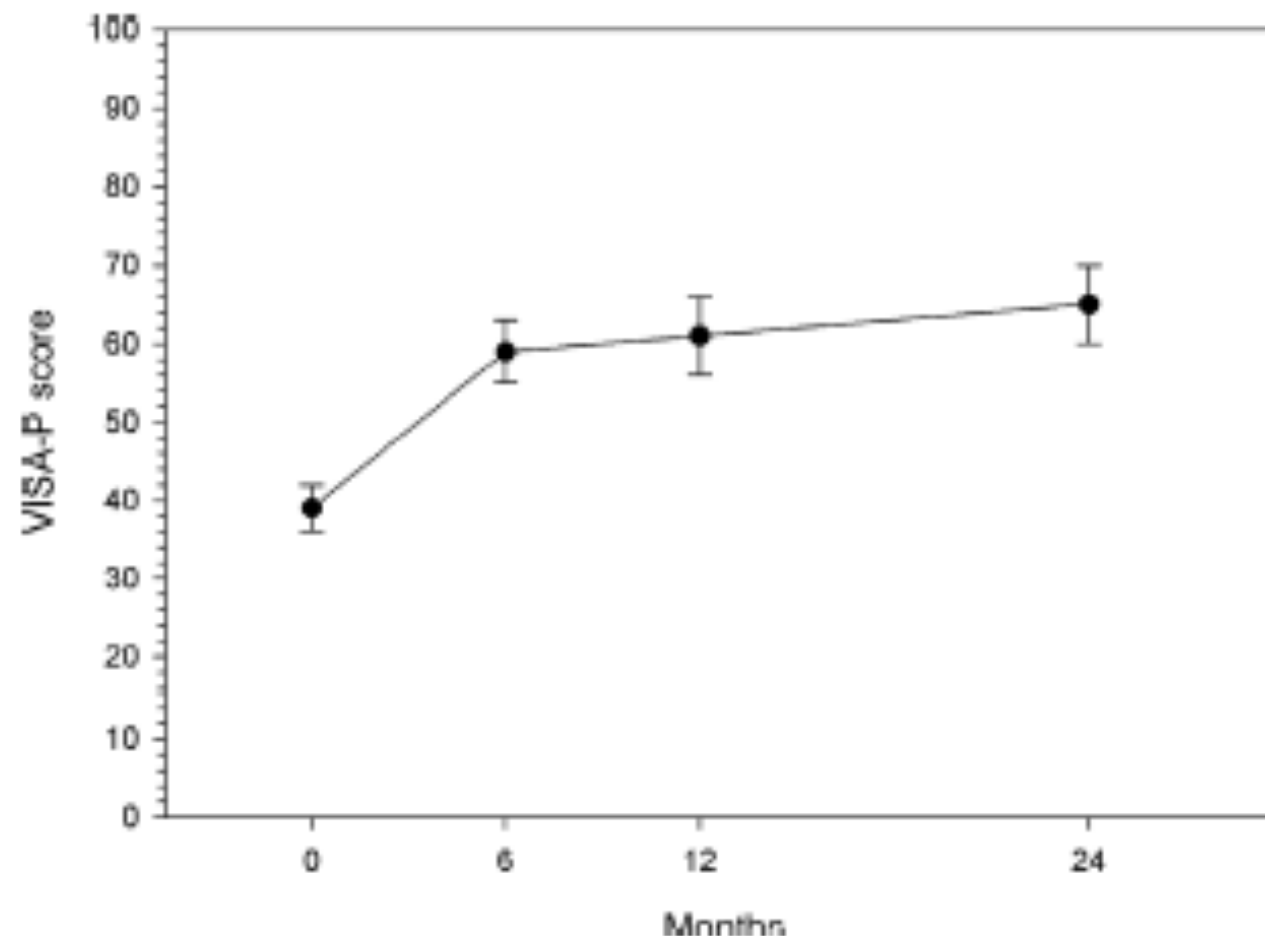
B. Dallaudière^{a,b,c,*}, P. Meyer^d, V. Hummel^a,
A. Perozziello^e, A. Peuchant^d,
M.-H. Moreau-Durieux^d, A. Silvestre^d, E. Pelé^d,
N. Wakim^d, P. Loriaut^f, P. Boyer^f,
E. Schouman-Claeys^{a,b}, J.-M. Serfaty^{a,c}, L. Pesquer^d

Autres traitements

Ultrasound-Guided Sclerosis of Neovessels in Patellar Tendinopathy

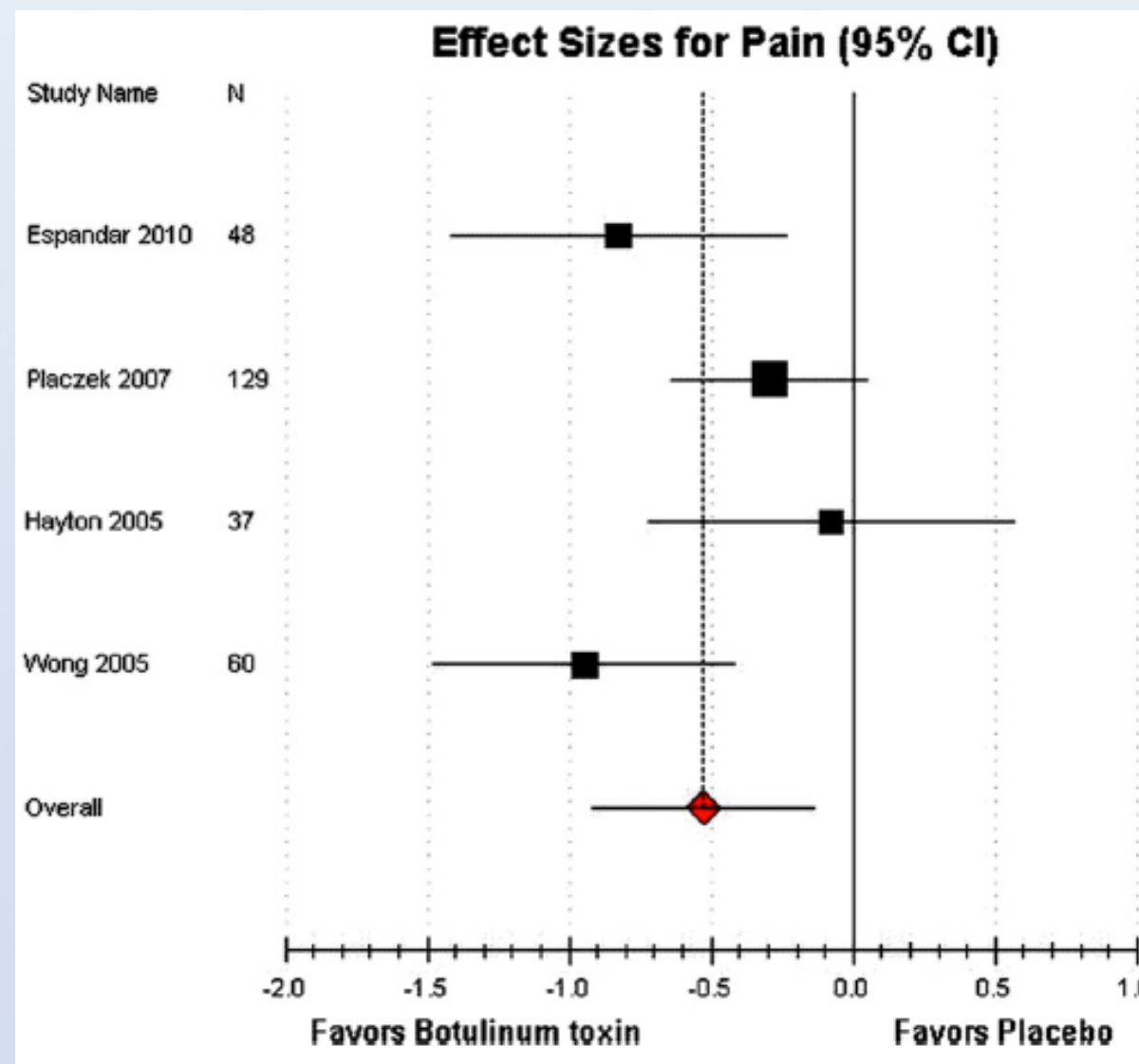
A Prospective Study of 101 Patients

Aasne Hoksrud,^{*†} MD, Thomas Torgalsen,[‡] MD, Herlof Harstad,[§] MD, Simen Haugen,[§] MD, Thor Einar Andersen,^{*} MD, PhD, May Ama Risberg,^{‡||} PT, PhD, and Roald Bahr,^{*} MD, PhD
Investigation performed at Hjelp24 NIMI, Oslo, Norway and Sykehuset Vestfold, Stavern, Norway



Injection of Botulinum Toxin for Treatment of Chronic Lateral Epicondylitis: Systematic Review and Meta-Analysis

Leonid Kalichman, PT, PhD,* Raveendhara R. Bannuru, MD,[†]
Marianne Severin, BA, MSc, MD,[‡] and William Harvey, MD, MSc^{†,§}



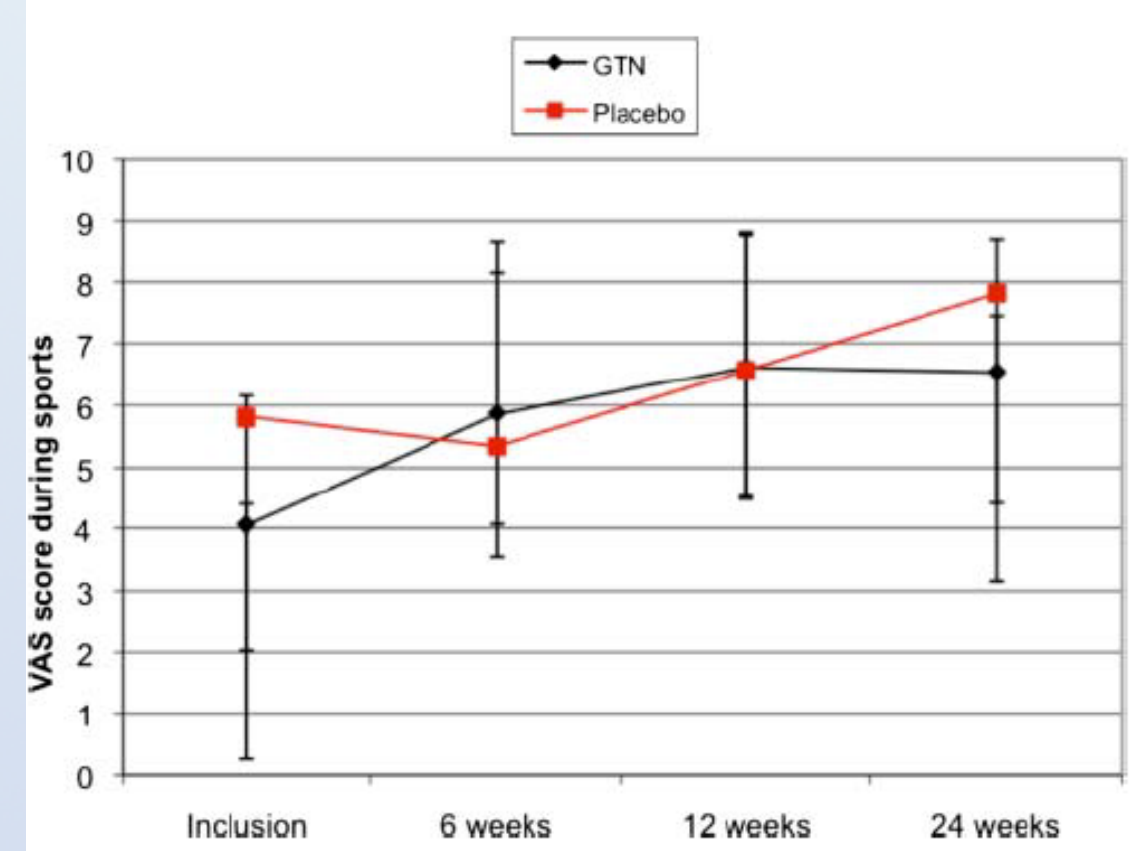
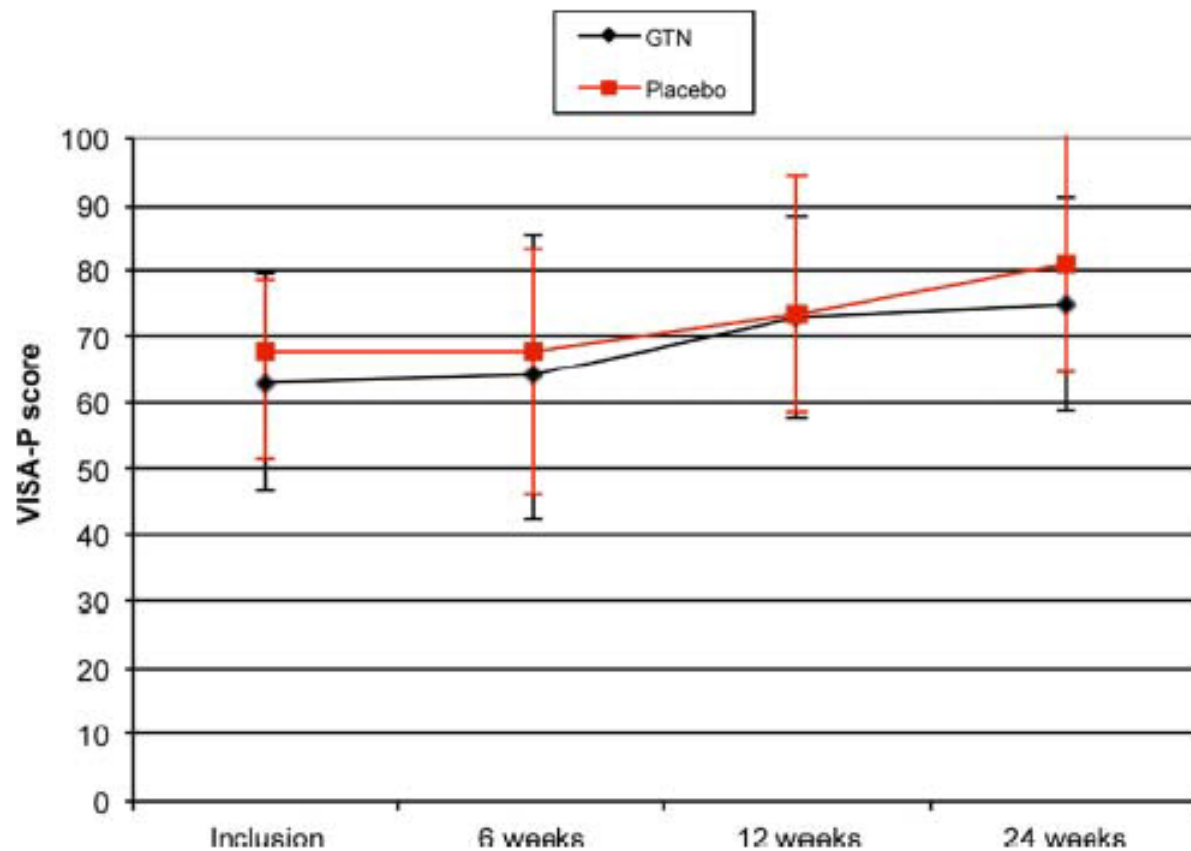
Patches de dérivés nitrés

Topical glyceryl trinitrate treatment of chronic patellar tendinopathy: a randomised, double-blind, placebo-controlled clinical trial

Mirjam Steunebrink,¹ Johannes Zwerver,² Ruben Brandsema,² Petra Groenenboom,³ Inge van den Akker-Scheek,² Adam Weir³



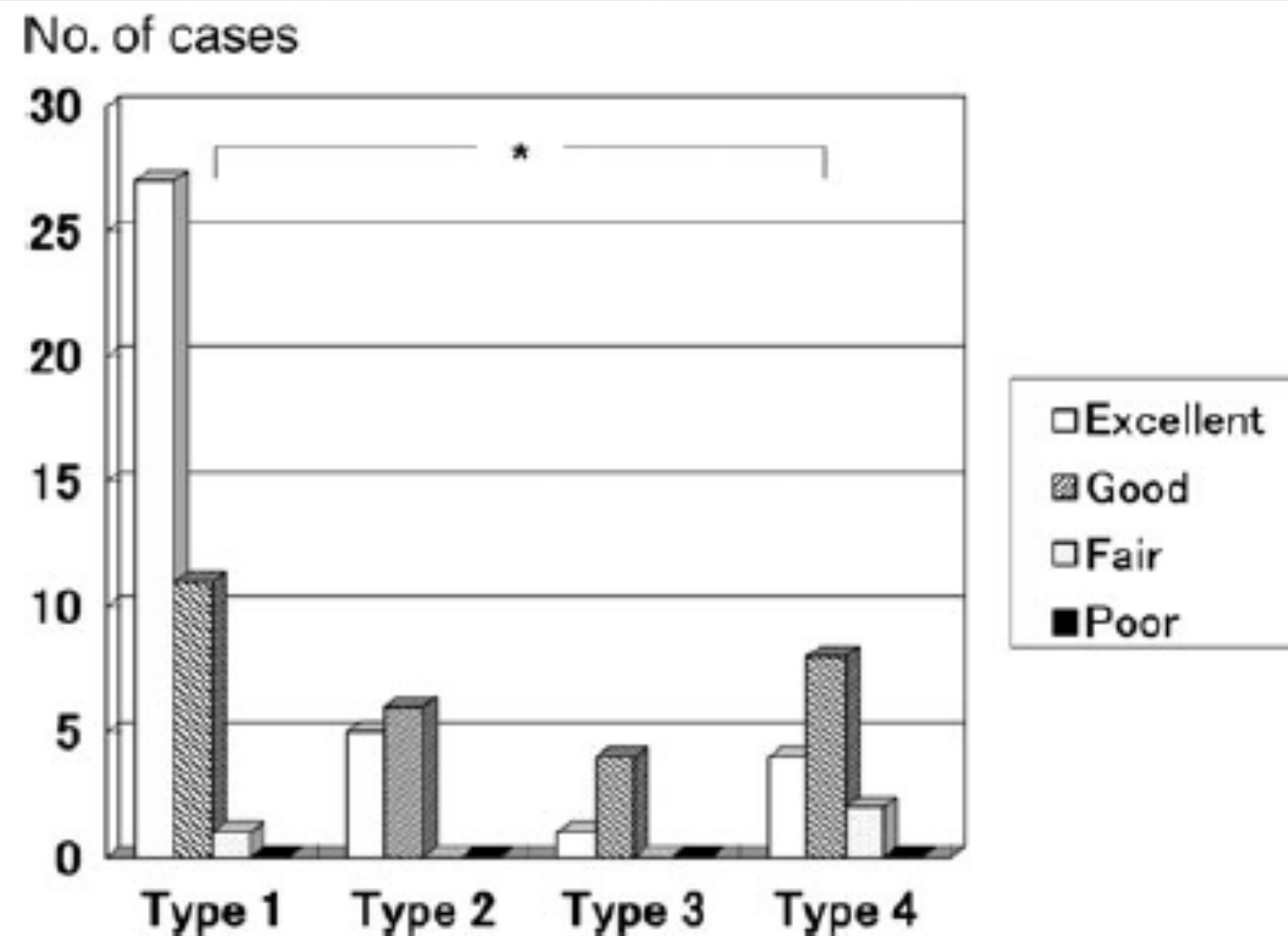
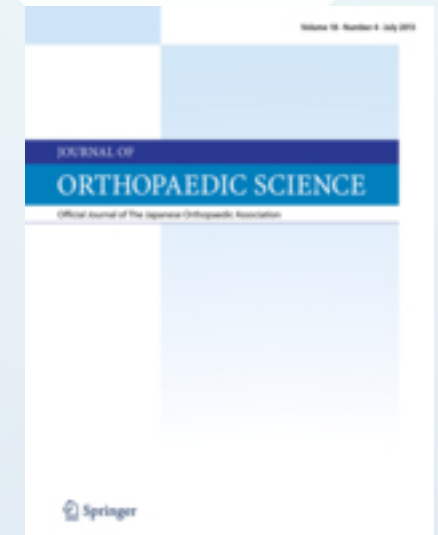
Br J Sports Med 2013;**47**:34–39. doi:10.1136/bjsports-2012-091115



Hyaluronan injection therapy for athletic patients with patellar tendinopathy

Takeshi Muneta • Hideyuki Koga • Young-Jin Ju •
Tomoyuki Mochizuki • Ichiro Sekiya

J Orthop Sci (2012) 17:425–431



Short- and long-term results of clinical effectiveness of sodium hyaluronate injection in supraspinatus tendinitis

Merih Özgen · Sibel Fırat · Ayşe Sarsan ·
Oya Topuz · Füsun Ardiç · Canan Baydemir

Rheumatol Int (2012) 32:137–144

Abstract The objective of the study is to evaluate the short- and long-term effect of intraarticular sodium hyaluronate (SH) application in patients diagnosed with supraspinatus tendinitis (ST) that have shoulder pain on the clinical symptoms of the patients through comparison with conventional physiotherapy methods. A total of 24 patients were included in the study and were randomized into two groups. SH injection and physical therapy modalities (PTM) were administered to Group I and Group II, respectively. Home exercise programs were recommended to all of the patients in both groups. The patients were evaluated using the pain severity [Visual Analog Scale (VAS)], range of motion and functional evaluation (FE) parameters pertaining to pre-treatment, 3rd week, 3rd month and 4th year post-treatment. Patient's global effectiveness (PGE) evaluation was performed in the 3rd month and 4th year of the treatment. There were no statistically significant differences for Group I's resting VAS value between pre-treatment controls and controls in the 3rd week and 3rd month, no statistically significant differences were detected for Group II in passive flexion between pre-treatment and the 4th year, also

in passive external rotation between pre-treatment and 3rd week ($P > 0.05$). A statistically significant recovery was detected in both groups in all the other evaluation parameters ($P < 0.05$). When evaluation was performed among groups, active abduction in the control in the 3rd month, VAS by movement and a statistically significant difference in favor of Group I in FE were determined ($P < 0.05$). No statistically significant differences were found among groups in PGE ($P > 0.05$). It was concluded that physical therapy modalities and SH application supplemented by home exercise programs were similar effects in short- and long term for ST which causes pain in shoulder and SH application may be a better alternative with regard to effectiveness and side effects for other treatment methods applied intraarticular.

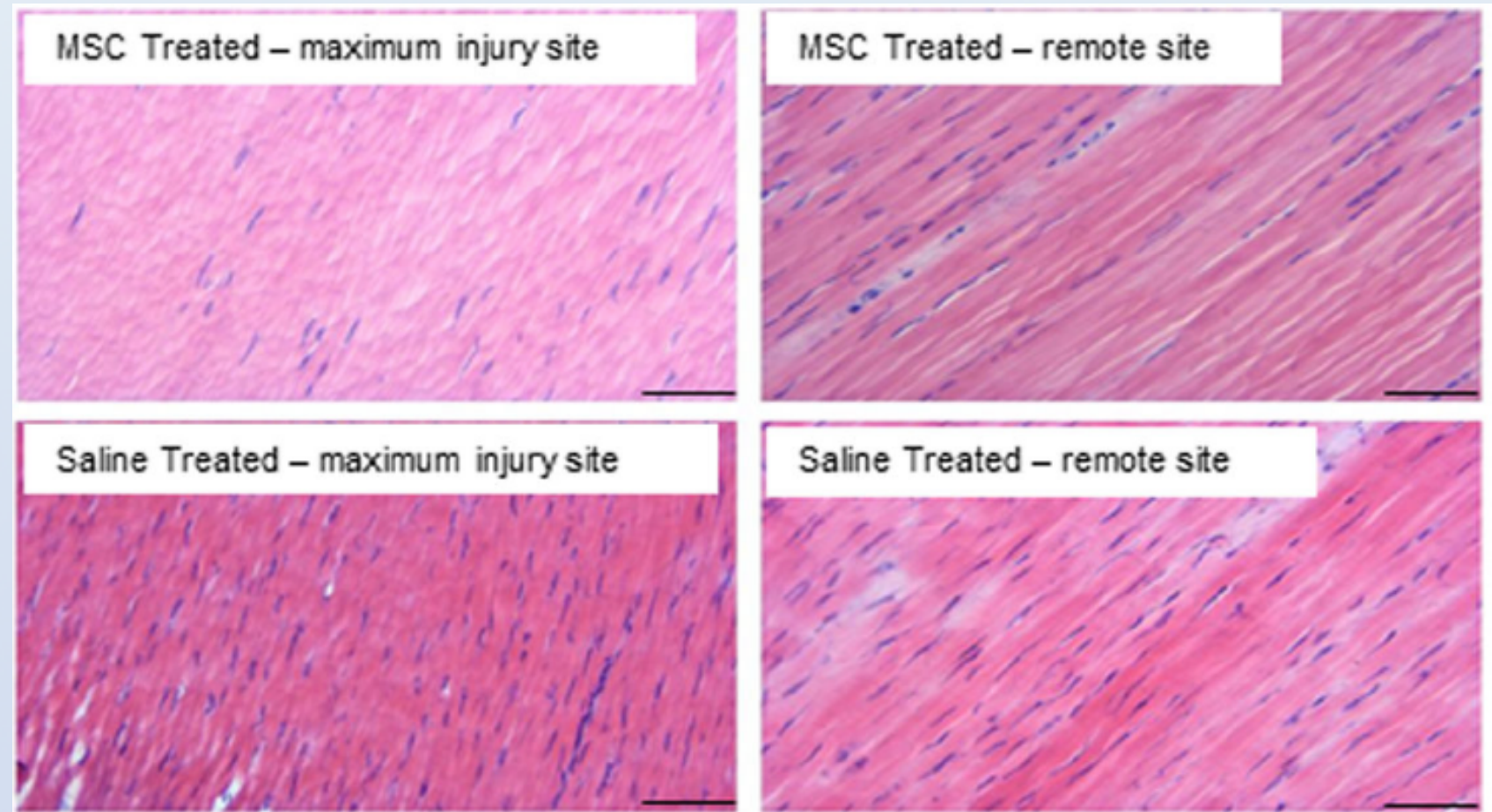
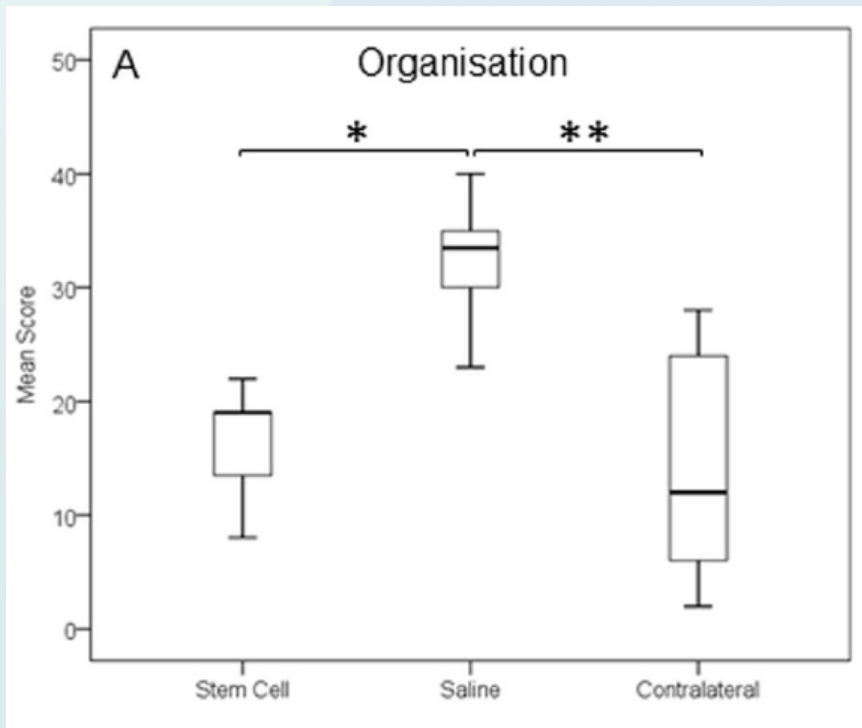
Keywords Supraspinatus tendinitis · Shoulder pain · Sodium hyaluronate · Physiotherapy



Beneficial Effects of Autologous Bone Marrow-Derived Mesenchymal Stem Cells in Naturally Occurring Tendinopathy



Roger Kenneth Whealands Smith¹, Natalie Jayne Werling², Stephanie Georgina Dakin¹, Rafiqul Alam¹, Allen E. Goodship³, Jayesh Dudhia^{1*}

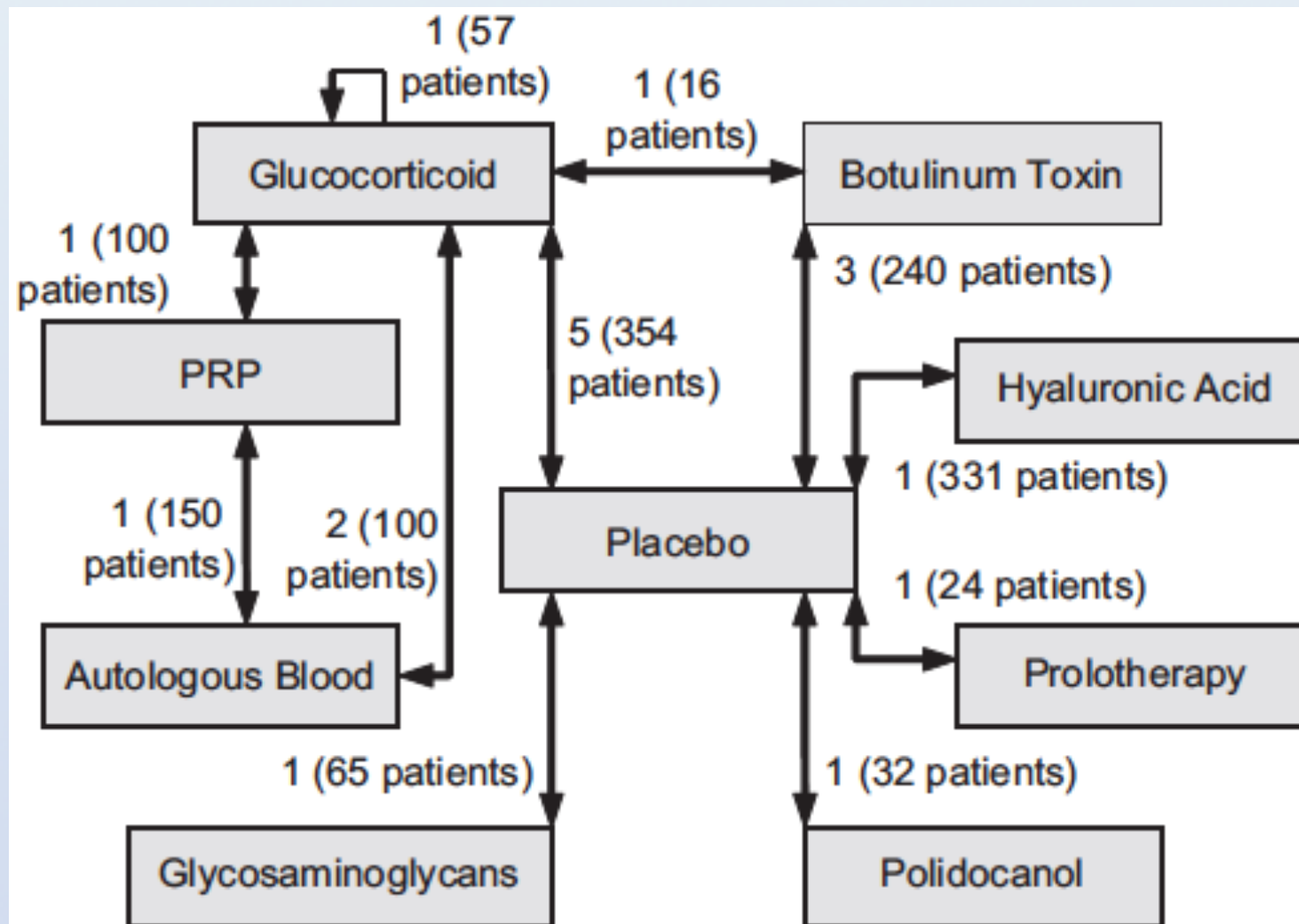


Conclusion

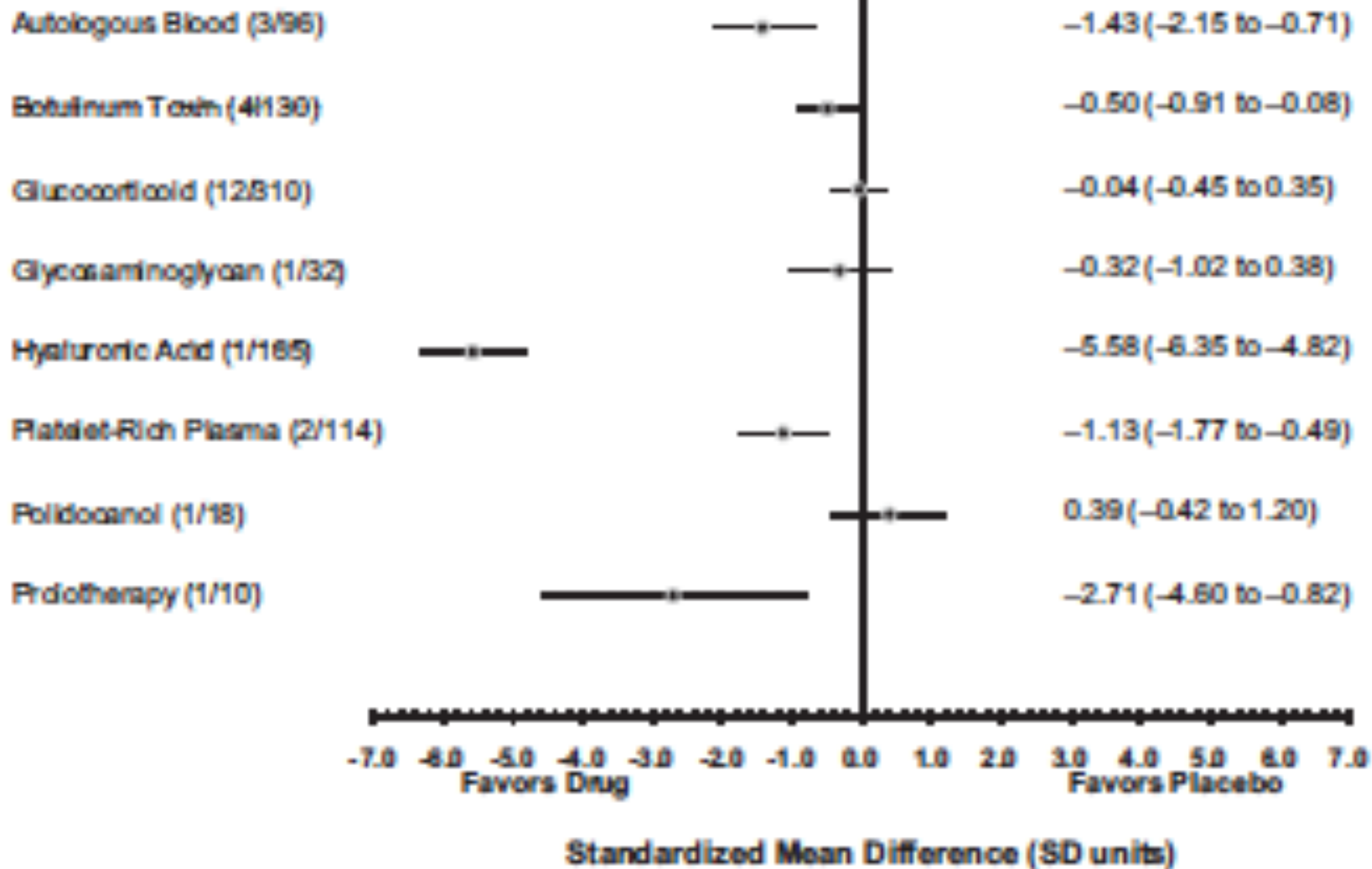
Comparative Effectiveness of Injection Therapies in Lateral Epicondylitis

A Systematic Review and Network Meta-analysis of Randomized Controlled Trials

Thøger Persson Krogh,^{*} MD, Else Marie Bartels,[†] MSc, DSc, Torkell Ellingsen,^{*} MD, PhD, Kristian Stengaard-Pedersen,[‡] MD, DMSc, Rachelle Buchbinder,^{§||} MD, PhD, Ulrich Fredberg,^{*} MD, PhD, Henning Bliddal,[†] MD, DMSc, and Robin Christensen,^{*†¶#} MSc, PhD
Investigation performed at Diagnostic Centre, Silkeborg Regional Hospital, Silkeborg, Denmark, and The Parker Institute, Musculoskeletal Statistics Unit, Copenhagen University Hospital, Frederiksberg, Denmark



Drug vs Placebo





Merci de votre attention !



Link ORBI: <http://hdl.handle.net/2268/157072>

