

# SportsMedUpdate

Martin Schwellnus, Editor

## EFFECT OF Hylan G-F 20 IN ACHILLES TENDONITIS: AN EXPERIMENTAL STUDY IN RATS

Tatari H, Skiak E, Destan H, et al. *Arch Phys Med Rehabil* 2004;85:1470-4

### Background:

Hylan G-F 20 may increase healing in the Achilles tendon because it has been shown to have positive effects in the healing of cutaneous wounds and in tendon adhesion formation.

### Research question/s:

Does local infiltration of Hylan G-F 20 reduce pathology scores in corticosteroid induced experimental Achilles' tendonitis in rats?

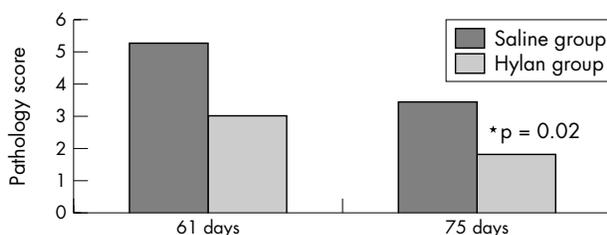
### Methodology:

**Animals:** 18 male Wistar white rats (322-375g BW) with Achilles' degeneration induced by local corticosteroid injections.

**Experimental procedure:** Rats were divided into four groups according to saline (left AT) or Hylan injections (right AT) and timing of analysis (61 days vs 75 days). Achilles tendon injections took place at 5-day intervals. The tendons and paratenons were excised at the end of 60 or 75 days and evaluated histopathologically.

**Measures of outcome:** Histopathological changes (score) (staining affinity, nuclear appearance, fibrillar appearance for tendon and thickness, occurrence of fibrosis and oedema, capillary changes, and inflammation for paratenon).

### Main finding/s:



Hylan injected tendons and paratenons had significantly lower pathology scores after 75 days.

### Conclusion/s:

In an animal study, Hylan G-F 20 (Synvisc) injections (every 5 days for 30 days) reduced the pathology score following experimentally induced Achilles tendonitis in rats - this may be a promising future treatment of this condition. This finding must be supported by biomechanical and biochemical studies.

**Evidence based rating:** 7.5/10 **Clinical interest rating:** 8/10

**Type of study:** Animal study (randomised, controlled, clinical trial)

**Methodological considerations:** Not a mechanical model for Achilles tendinopathy, no measures of biomechanical or biochemical changes

**Keywords:** Achilles' tendon, rehabilitation, tendonitis, healing, Hylan G-F 20

## PASSIVE VERSUS ACTIVE STRETCHING OF HIP FLEXOR MUSCLES IN SUBJECTS WITH LIMITED HIP EXTENSION: A RANDOMISED CLINICAL TRIAL

Winters MV, Blake CG, Trost JS, et al. *Phys Ther* 2004;84:800-7

### Background:

Passive stretching is commonly used but active stretching is purported to stretch the shortened muscle and simultaneously strengthen the antagonist muscle.

### Research question/s:

Does active and passive stretching improve hip extension range of motion in patients with hip flexor muscle tightness?

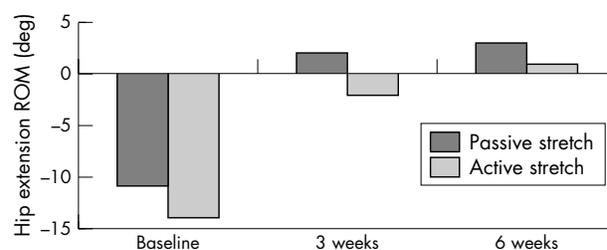
### Methodology:

**Subjects:** 33 patients with low back pain and lower extremity injuries (mean age 23.6 years) who showed decreased range of motion, presumably due to hip flexor muscle tightness.

**Experimental procedure:** Subjects were randomly assigned to either an active home stretching group or a passive home stretching group (stretches were 10 x 30 second holds daily) for 6 weeks stretching. Hip range of motion (extension) was measured (modified Thomas test position) at baseline and at 3 and 6 weeks.

**Measures of outcome:** Hip extension range of motion (deg).

### Main finding/s:



Hip extension ROM improved over time in both groups with no differences between groups.

### Conclusion/s:

Active and passive stretching (10 stretches of 30 seconds duration, once daily) both increase the flexibility of tight hip flexor muscles in patients with musculoskeletal impairments.

**Evidence based rating:** 7.5/10 **Clinical interest rating:** 8/10

**Type of study:** Randomised clinical trial

**Methodological considerations:** Well conducted study, drop out rate of the stretching groups (18-35%), no monitoring of adherence

**Keywords:** Active stretching, passive stretching, hip flexor muscle, randomised trial

## PHYSICAL ACTIVITY AND STROKE. A META-ANALYSIS OF OBSERVATIONAL DATA

Wendel-Vos GCW, Schuit AJ, Feskens EJM, et al. *Int J Epidemiol* 2004;33:787-98

### Background:

A possible protective effect of physical activity on the risk of developing stroke remains controversial.

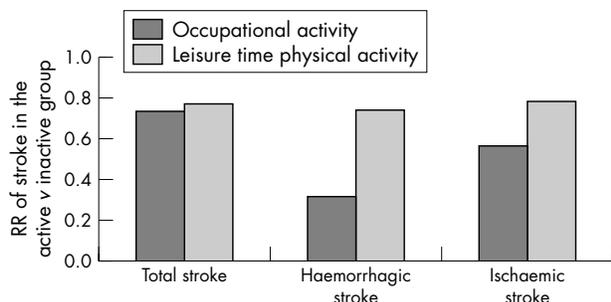
### Research question/s:

Does increased physical activity reduce the risk of stroke?

### Methodology:

**Experimental procedure:** 31 relevant publications were included in a meta-analysis of observational studies. Data obtained was used to quantify the relationship between physical activity and stroke. Risk estimates and study characteristics were extracted from the original studies and were then converted to a standard format.

**Measures of outcome:** RR of stroke (total, ischaemic, hemorrhagic) for occupational and leisure time physical activity.

**Main finding/s:**

- Intense physical activity has a protective effect on total stroke for both occupational (RR=0.64, 95% CI: 0.48–0.87) and leisure time physical activity (RR=0.85, 95% CI: 0.78–0.93)
- Occupational physical activity: high level occupational physical activity protects against ischaemic stroke compared with both moderate (RR=0.77, 95% CI: 0.60–0.98) and inactive occupational levels (RR=0.57, 95% CI: 0.43–0.77)
- Leisure time physical activity: high level compared with low level activity protects against total stroke (RR=0.78, 95% CI: 0.71–0.85), haemorrhagic stroke (RR=0.74, 95% CI: 0.57–0.96) and ischaemic stroke (RR=0.79, 95% CI: 0.69–0.91)

**Conclusion/s:**

Lack of physical activity (occupational and leisure time) is a modifiable risk factor for both total stroke and stroke subtypes (haemorrhagic and ischaemic) – moderately intense physical activity is sufficient to reduce the risk.

**Evidence based rating:** 9/10 **Clinical interest rating:** 8/10

**Type of study:** Meta-analysis

**Methodological considerations:** Well conducted study

**Keywords:** Exercise, physical activity, stroke, ischaemic, haemorrhagic

### EFFECTS OF CIRCUMFERENTIAL ANKLE PRESSURE ON ANKLE PROPRIOCEPTION, STIFFNESS, AND POSTURAL STABILITY: A PRELIMINARY INVESTIGATION

You SH, Granata KP, Vunker LK. *J Orthop Sports Phys Ther* 2004;**34**:449–60

**Background:**

It has been suggested that circumferential ankle pressure (CAP) intervention can improve ankle stability by increasing proprioceptive acuity and stiffness in the ankle.

**Research question/s:**

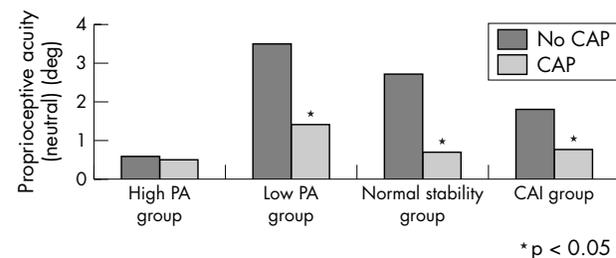
Does circumferential ankle pressure intervention improve proprioceptive acuity, ankle stiffness, and postural stability?

**Methodology:**

**Subjects:** 10 subjects were recruited and categorised according to: (1) proprioceptive acuity (H-high, L-low); and (2) ankle stability (N-normal, CAI-chronic ankle instability). Four groups were identified.

**Experimental procedure:** Proprioceptive acuity was determined (blind-folded, reproducing a self-selected target ankle position) before and after the application of CAP in five different ankle joint position sense tests: neutral, inversion, eversion, plantar flexion, and dorsiflexion.

**Measures of outcome:** Proprioceptive acuity, passive ankle stiffness (ratio of applied static moment versus angular displacement), active ankle stiffness (biomechanical analyses of ankle motion following a medio-lateral perturbation), postural stability (centre of pressure displacement in the mediolateral and the anteroposterior directions in unipedal stance).

**Main finding/s:**

- Proprioceptive acuity and postural sway were significantly enhanced by CAP, particularly in the low proprioceptive acuity group
- Passive ankle stiffness was not increased by an application of CAP, and active ankle stiffness was significantly different between the high and low proprioceptive acuity groups, but was not affected by CAP

**Conclusion/s:**

The application of circumferential ankle pressure to the ankle improved proprioceptive acuity particularly in individuals with low proprioceptive acuity – there was a trend toward increased active stiffness in the ankle, hence improved postural stability.

**Evidence based rating:** 7/10 **Clinical interest rating:** 8/10

**Type of study:** Randomised controlled clinical trial

**Methodological considerations:** Well conducted study, small sample sizes in groups

**Keywords:** Ankle, proprioception, ankle braces, continuous ankle pressure, postural sway, ankle stability