An introduction to

ACHILLES TENDINITIS

prevention & treatment

SPORTS INJURY BULLETIN
PREVENTION • TREATMENT • REHABILITATION

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FROM THE PUBLISHER

Many athletes may not know precisely what the Achilles tendon is, apart from being a stretchy bit of tissue between the ankle and the heel, but they will certainly be aware of the agonies of Achilles tendinitis. It is a condition that can wreck your training and utterly destroy your performance results. The purpose of this special report is to explain what the Achilles actually does, describe how it works and how it can be injured, and prescribe exercises and treatments that can prevent it being hurt and quickly bring it back to normal.

The report has been prepared by the Peak Performance team of experts, physiologists, fitness specialists and sports doctors, and is designed to tell you everything you need to know about the care and feeding of the Achilles tendon. It contains, among its abundance of practical advice, a number of strange and unexpected facts such as, for instance, that the length of your Achilles tendons may be a crucial factor and by stretching them you may actually improve your performance!

Strong ankles are one of the key factors in preventing Achilles tendinitis, and this special report has a definitive article on how to strengthen them and also prevent that bane of an athlete's life, ankle sprains. Finally, the report has an extra bonus: a guide to recovering from knee injuries.

I hope you enjoy this special report and find it useful.

Jonathan A Pye
Publisher

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ACHILLES TENDINITIS PREVENTION & TREATMENT

A SPECIAL REPORT FROM SPORTS INJURY BULLETIN – ARTICLE ONE

PREVENTION PROGRAMME

- To look at the prevention of achilles injuries we must first understand that there is a symbiotic relationship that the achilles tendon has with both the calf muscles (gastrocnemius and soleus).
- EMG data shows that the calf muscles are most active just before and just after foot strike and then their key function is to control dorsiflexion and pronation. It is in turn these two actions (performed to a lesser or greater degree depending on varying factors in the athletes physiology) due to the force and stretching that cause damage to the achilles tendon.
- As well as looking at dorsiflexion and pronation we must also look at the kinetic chain, and if the imbalance is coming from the foot up or the pelvic girdle down.
- The four key exercises below (designed by Walt Reynolds a strength and conditioning specialist) mimic the kinetic chain of events within the calf muscles and achilles when you run. (Something that interestingly, some experts believe that calf raises do not)

    - Exercise 1. Eccentric Knee Squat
    - Exercise 2. Balance and Eccentric Reach with Toes
    - Exercise 3. Balance and Eccentric Reach with Knee
    - Exercise 4. Dynamic Achilles Stretch

- The exercises should always be progressive. To make sure they are start with exercises performed in a sagittal direction and progressing onto exercises performed in a transverse direction (right to left that are more dynamic).

STRENGTHENING PROGRAMME

- Other factors that must be taken into consideration are incorrect running shoes, hard or uneven running surfaces and unrealistic increases of mileage/training intensity (work on a guideline of 5-10% increase in mileage per week).
- The achilles injuries can also be caused by lack of flexibility and strength in the calf muscles, this will become most apparent when running up hill.
- It is important to create a training program to increase the eccentric strength of the calf (when a muscle lengthens as it contracts) using progressively faster speeds of movement to increase the forces that the calf can handle.
- The rehabilitation exercises should take place after 1 to 2 weeks of rest once pain and inflammation have gone down.

The program below should be performed everyday:

- **1. Warm-Up** – 5-10 minutes of CV – non weight bearing e.g cycling etc.
- **2. Stretching** – For both gastrocnemius and soleus, perform 3 x 30secs stretches on both sides.
- **3. Eccentric Programme** –
    - **Level 1** – Perform a straight legged heel raise with uninjured leg, then place the ball of the injured leg down and lower slowly with both legs until the heels reach the floor. Progress as follows: Drop time: 4secs 3x10 reps. with 30 seconds rest. Drop time: 2seconds 3 x10 reps. with 30 seconds rest. Drop time: 1secs 3 x10 reps. with 30 seconds rest. Repeat from the beginning (as above) performing a bent-legged heel raise – knee should be bent 20-30degrees.
    - **Level 2** – Perform heel raises with both legs for lowering and raising phases. 3X10reps with 30 seconds rest. Progress as in level 1.
    - **Level 3** – Perform heel raises with the uninjured leg on the raise phase and with the injured leg on the lower phase. 3X10reps with 30 seconds rest. Progress as in level 1.
    - **Level 4** – Perform heel raises with both legs during the raising phase with only injured leg during the lowing phase. 3X10reps with 30 seconds rest. Progress as in level
    - **Level 5** – Perform heel raise lowering and raising with only the injured side. 3X10reps with 30 seconds rest. Progress as in level 1.
- **4. Stretching** – Follow point 2.

- Both research and clinical experience by a number of experts in the field (Raphael Brandon & Harvey Wallmann) support the merits of following the above eccentric program.

ACHILLES TENDINITIS RECENT RESEARCH

A SPECIAL REPORT FROM SPORTS INJURY BULLETIN – ARTICLE TWO

SWEDISH MEDICAL RESEARCH STUDY

- Research shows that about 25% of athletes that suffer from chronic tendinitis resort to surgery; demonstrating that the traditional treatments are not very effective.
- The Sports Medicine Unit of the University Hospital of Northern Sweden in Umea, Sweden is one of the first medical research studies to investigate the well known correlation between the strength of calf muscles and achilles problems undoubtedly interlinked.
- The investigation began with 30 athletes that had chronic achilles tendinitis being divided into 2 groups; Group One received the traditional Achilles tendinitis therapy (non-steroid anti-inflammatory medications, rest, orthotics, shoe change, cortisone injections and physical therapy). Whereas Group Two engaged in 'heavy load eccentric calf muscle training,' (when a muscle lengthens as it contracts). Please refer to the full report for details of heavy-load eccentric calf training.

- The heavy-load eccentric exercises were performed seven days a week for a total of twelve weeks. As the patients got stronger over the weeks they were able to add light weights into the program building up to a greater load as their strength increased. As strength began to build weight machines were introduced to provide additional resistance.
- Prior the this twelve weeks the athletes injured achilles leg had considerable weaker calf than the healthy leg. What is interesting to note is that after the twelve weeks of eccentric training there was no difference, either eccentrically or concentrically. This is particularly interesting due to the fact that no concentric exercises were performed (contractions where a muscles shortens while they are contracting).
- After this twelve weeks of heavy-load eccentric exercises the athletes reporting that while running pain was reduced to a near zero pain threshold (prior to the twelve weeks this pain while running had averaged at a pain threshold of 81 on a scale of 1-100).
- The athletes in Group Two were back their normal training regime and were injury/pain free. They continued to carry out the heavy-load eccentric exercises approximately twice a week.
- The athletes in Group One (who did not complete the heavy-load eccentric program) all under went surgery. Post surgery (even after 24 weeks) these patients were not able to rebuild the calf muscles in the afflicted leg leading to a higher likely hood of future achilles problems.
- To understand why eccentric exercises are most effective for the calf we can look at its function in running. The calf's most important role is to control dorsiflexion of the ankle during the stance phase of running. This activity is eccentric.
- If this isn't maintained excessive dorsiflexion and pronation can occur and can not only ruin your running economy but also put huge stress on the achilles tendon.
- The research above is very valuable but has only worked the calf in the sagittal plane (forward and back). For the achilles to be truly strong it needs to be worked in three planes, sagittal, frontal and transverse. The Walt Reynolds program carried out (documented in the first article) is therefore a more complete program.
- Research shows that eccentric exercises are incredibly valuable when treating an injured achilles. However these programs must be followed correctly and progression is the key.

ACHILLES TENDINITIS ABOVE THE ACHILLES & WHAT THE PAPERS SAY

A SPECIAL REPORT FROM SPORTS INJURY BULLETIN – ARTICLE THREE

SHIN SPLINTS – ANOTHER LOWER LEG PROBLEM

Shin Splints is known in the medical profession as medial tibial stress syndrome (MTSS). Athletes that are involved in jumping and running sports are susceptible to this injury however it is known to affect endurance runners the most.

MTSS occurs because the ankle dorsiflexors are not functioning as well as they should. Another factor is the immense force that is put through the shin with every step taken when running.

A sign of a runner with weak dorsiflexors is the fact that while running his feet will make a fairly loud slapping noise on the pavement.

Whereas in contrast listen to Kenyan elite runners, and due to their incredible dorsiflexor strength they run efficiently and quietly especially noted in the stance phase of the gait cycle.

EXERCISES THAT PREVENT MTSS

For full details of these exercises please refer to the complete PP Achilles Tendinitis report.

- Wall Shin Raises (both legs) – 12- 15 reps working up to 3 sets
- Wall Shin Raises (single leg) – Resting opposing leg gently on the wall behind – 12- 15 reps working up to 3 sets
- Heel Step Downs – (Very effective for runners) 15reps on each leg – progressing to 3 sets
- Heel Step Down – Longer Steps – 15reps on each leg – progressing to 3 sets
- Heel Step Down From High Step – 15reps on each leg – progressing to 3 sets
- Heel Hops – 15reps on each leg – progressing to 3 sets
- Heel Hops – Increase length of hop – 15reps on each leg – progressing to 3 sets
- Heel Hops - Increase speed of hops – 15reps on each leg – progressing to 3 sets
- Heel Running – Start with 10 metres and build up to 20 x 3 metres (with a short break in between)

WARM UPS

- walk on toes – 20 metres
- walk on toes – 20 metres toes pointed out
- walk on toes – 20 metres toes pointed in
- Repeat

- Walk on heels
- walk on heel – 20 metres toes pointed out
- walk on heel – 20 metres toes pointed in
- Repeat

- Skip – 20 metres
- Skip – 20 metres toes pointed out
- Skip – 20 metres toes pointed in
- Repeat

- Skip on toes for 20 metres – toes straight, out and then in
- Light skipping on toes 20 metres toes straight, out and then in
- Rhythm bounding – short springy steps 20 metres broken up with 20 metres of running. At least 3 sets on soft ground.

The final two warm up exercises require the athlete to dorsiflex as they jump or bounce up and plantar flex as they go down.

- Dorsiflexion Bounces and Rhythm Bouncing – for both these exercises you can start with 10 reps and work up to 30reps.

In addition to these exercises the athlete must also stretch his ankles at both end ranges.

It is important to note that sometimes tibial stress fractures can be confused with shin splints. These can be difficult to detect without a bone scan so if an athlete or trainer is in doubt then it is of paramount importance that you seek medical advice before resuming training.

WHAT THE PAPERS SAY:

THE ACHILLES TENDON LENGTH

Researchers at the Lab for Functional Anatomy and Biomechanics at the University of Copenhagen in Denmark have found that the shorter and thicker the achilles tendon the less efficient and more injury prone it is.

It is also noted that the Kenyan long distance runners have long thin achilles tendons making them incredibly efficient and light on their feet.

Although these factors are partly physiological it is also down to the athlete and trainer to encourage strength and length within the achilles to offer efficiency and maximum protection.

ACHILLES TENDINITIS – PREVENTION AND TREATMENT – 33% DISCOUNT FOR READERS OF 'AN INTRODUCTION TO ACHILLES TENDINITIS'

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PAINFUL ANKLE?

Read this new guide for the prevention and treatment of achilles tendinitis – as recommended by The Daily Telegraph

ACHILLES TENDINITIS: PREVENTION AND TREATMENT – FREE DELIVERY WORLDWIDE

"After injurying my Achilles playing soccer I purchased Achilles Tendinitis – Prevention and Treatment. I was amazed at how much information was presented. It has helped my recovery from my injury and has given me great tips on prevention" – **Mike Arias, Keen Sports Participant, USA.**

Don't suffer another minute of ankle pain. Visit www.sportsinjurybulletin.com/achilles and save 33% on the usual price

Achilles tendinitis is a painful and debilitating injury with sometimes serious consequences. It can become so severe that many athletes undertake surgery to correct the condition.

There are, however, some common misconceptions about the condition.

A new book, Achilles Tendinitis – Prevention and Treatment explains the causes of the injury, how to avoid it and gives exercises to get an injured ankle fully functional once more. The recommended retail price of this invaluable guide is $59.99, but we are making it available to you for only $39.99!

Printed on heavy high-quality paper in handy A5 format (approximate size 8 inches by 6 inches), and covered with a long-lasting laminate, it's just right for slipping into sports bag or briefcase or as a present for a friend. The price is just $39.99 with FREE post and packing – a 33% discount off the official price of $59.99. You can order it instantly by filling in the form below:

"As someone recovering from Achilles Tendinitis the stretches were extremely helpful. I gave the book to my personal trainer who found it very useful too."

Joanne Thatcher, Keen Sports Participant, USA.

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