Achilles tendon epidemic among elite Ethiopian athletes

B Wolde

Abstract
Introduction
The purpose of this study was to investigate the cause/s of Achilles tendon injury among elite Ethiopian middle and long distance athletes.

Materials and methods
The subjects of the study are 11(3 females and 8 males) athletes aged X=24.8, all reported to our centre complaining of Achilles tendon pain. Assessment was used to carefully register the subjective and the objective findings. Different therapeutic procedures, such as massage (manual and machine), paraffin wax, American plaster, etc were used.

Results
Most of them recovered from their pain and demonstrated full range of motion. The most probable cause is found to be training terrain and poor coaching.

Conclusion
It can be concluded that coaches should give due attention while training on rough and tough trainees (hilly, ups and downs).

Introduction
During my stay in the Ethiopian athletics federation (1997—2002) as a general secretary, I had a chance to learn more about athletes and athletics induced injuries. It was during this time that athletes were reporting injuries, and hence lost a number of training sessions frequently. Among the many injuries reported it was Achilles tendon most frequently reported. I had direct contact because of my profession-physiotherapy. I decided to carefully handle the case to find out the cause/s, to help the prevention process if possible, if not to minimize the prevalence. Degree of pain was registered in a five scale, 0=no pain, 4= severe pain, and the range of motion was evaluated subjectively as full, partially limited, limited, Range of Motion.

This study was conducted to help track coaches in minimizing the risk of sport specific injuries such as Achilles tendon injuries. It has good information about the nature of the injury, the mechanism of injury and methods of training to help Achilles tendon condition. I believe that this research, which has its bases on rehabilitation of the needy, can contribute its part to create timely awareness for coaches and athletes in Ethiopia and elsewhere.

Training programs, methods, fields, terrains, etc should consider the environment of the locality, to think/read globally and to act locally.

The finding of this research was presented to track coaches on a training program sponsored by the Ethiopian National Olympic Committee in April 2006.

Materials and methods
This work conforms to the values laid down in the Declaration of Helsinki (1964). The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study.

The procedure started in carefully registering the, personal data, subjective reports of athletes, including the duration of injury, the possible noticed cause, previous injury, and medication taken.

Objective findings are taken while the athlete tries to move the foot in a weight free position-sitting in a crossed leg position, the malleoli medialis and lateralis and its alignments observed, manual muscle testing results were registered (Table 1).

The method used in collecting the required data is subjective, in supporting this Lang, Lang, Volepe and Wessnick stated the nature of measurement in assessing as “even if we use high tech instrument measurements of the human body the segments are not without error”.

The degree of pain can be measured using different methods, to be mentioned are, the visual analogue scale (VAS) by Von Korff et al., the numerical pain scale (NPS), by Von Korff et al., pain questionnaire by Melzak et al., Static and dynamic functions are sufficient to evaluate the nature of disabilities on clinical bases.

Minkowsky and Minkowsky stated that, if the history and presenting signs or complaints point to the ankle joint, a brief clinical review of the patient’s active and passive movements, static and dynamic functions are sufficient to evaluate the case. As it is stated in several sport medicine and related fields, injuries in the ankle joint can lead to poor mechanics of the foot and as the result a total disturbance of the whole body mechanics. The range of motion of the ankle joint is dominant in the sagittal plane. Its angle and direction varies with position of the body, figures from 13 degrees-to-over 30 degrees externally have been cited.

Alaranta et al. showed that low tech tests are reliable and valid. This study registered pain condition at the beginning and during each rehabilitative procedure of every rehabilitation session as, very severe pain, severe pain, mild pain, moderate pain, or, no pain.

Testing position for Range of Motion (adapted from 2)

Grades 5, 4, 3—sitting the knee flexed over the table or prone position with the knee flexed 90 degrees. Resistant, when possible, was applied to the medial surface and ball of the foot in

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the direction of dorsiflexion and eversion. Grades 2, 1, 0, are registered in supine or half lying, with the knee slightly flexed, while the ankle is in a plantar flexed, and the forefoot inverted.

Results
- The ages of the subjects ranged from 18–32 (x = 24.8 years).
- 50% of the subjects reported Achilles tendon injuries for more than one time.
- The possible cause/s of the injury, as reported by the athletes and speculated by the observer, varies a lot. Some even cannot recall when or how they got injured. However mountainous, up and down hill running, seems the cause of the problem for 40% of the subjects.
- The results from visual observation showed there is discoloration at the site of the injury in most of the subjects.
- Manual muscle testing revealed deficiency in muscle strength, which may be the effect of the pain not necessarily from calf muscle weakness.
- Reduced range of motion is also observed.
- Subjective evaluation of pain is severe in most of the subjects.

Discussion
This study has no intention to demonstrate the efficacy of a treatment modality, because it seems impossible to control other interventions for rehabilitation for these top world class athletes. The study was designed to help/teach the subjects and their coaches about the possible cause/s of the injury and in the meantime help them in the rehabilitation process. The results from observation and question and answer show that all athletes are training in hilly terrain and use the ball of the foot for weight bearing. The timing of running on hilly areas was found to be pre-season, which for many can be conditioning time and weight training (up-hill running is by default weight training) is not the proper training for the beginning of the season.

Conclusion
- Based on the reviewed literatures and the findings of the study the following recommendations are forwarded:
  - Coaches should give due attention to the training field.
  - Principles of training, especially in the present case, up-heal training needs close attention (this is part of weight training)
  - Minor injury should not be ignored.
  - Ensure full recovery from injury.

References

Table 1: Demographic distribution of the subjects.

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Age in yrs</th>
<th>Sex</th>
<th>Findings</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>22</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>Re-occurred 3 times</td>
</tr>
<tr>
<td>B</td>
<td>32</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>Re-occurred 2 times</td>
</tr>
<tr>
<td>C</td>
<td>32</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
<tr>
<td>D</td>
<td>30</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
<tr>
<td>E</td>
<td>26</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>Re-occurred many times</td>
</tr>
<tr>
<td>F</td>
<td>24</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
<tr>
<td>G</td>
<td>22</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
<tr>
<td>H</td>
<td>21</td>
<td>female</td>
<td>Achilles tendon pain</td>
<td>Re-occurred 2 times</td>
</tr>
<tr>
<td>I</td>
<td>20</td>
<td>female</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
<tr>
<td>J</td>
<td>19</td>
<td>female</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
<tr>
<td>K</td>
<td>22</td>
<td>male</td>
<td>Achilles tendon pain</td>
<td>For the first time</td>
</tr>
</tbody>
</table>

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