

The Symptoms of Tendinopathy of Achilles Tendon in Athletics

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Received: March 15, 2018; **Published:** May 02, 2018

Abstract

The “Tendinitis of Achilles tendon” symptom is a very delicate problem which needs to be solved as soon as the first symptoms appear. It is necessary to conduct a correct anamnesis of the problem, to determine the diagnosis and method of treatment, as well as the introduction of controlled exercises that can contribute to a faster recovery so that the sportsman, an athlete can bring their body to its form and continue training and competition. Athletes often develop inflammation of tendons called tendinitis. This disease can affect only the tendon or tendon wrap or both at the same time. In the case of isolated inflammation of the tendon wrap, what happens is swelling and thickening, which makes sliding (moving) of the tendon within its shell difficult, causing creaking or cracking (crepitation). The most common locus of inflammation of the tendon is on the back side of the lower half of the forearm and lower leg. Tendinopathy of Achilles tendon predominantly occurs in the jumpers (long jump, triple jump), javelin throwers, runners on tracks from 200 to 1500m and long-distance runners.

Keywords: *Tendinopathy; Athletic; Symptoms; Treatment*

Introduction

Athletics is a branch of sport (the queen of sports) which encompasses elementary (phylogenetic) forms of movement (walking, running, jumps and throws) which are conducted in sequences of more or less complex types (disciplines) and which, through evolution, reached today’s level of perfection. Each discipline, group of disciplines has its own characteristics and certain habits and values can be obtained by practicing them, in the form of mobility, psychophysical qualities and hygienic habits [1].

Athletics includes the biggest number of various disciplines of cyclic acyclic character which are manifested from moderate to maximum intensity (running, jumps, throws). Therefore, player injuries are very different and in some occasions they can be fatal and can permanently disable the player for further training and continuing their career. In some athletic disciplines, injury risk is especially worrying (racers from 60 - 400m, long jumpers, high jumpers, triple jumpers, long-distance runners), they need significant help of medical staff. Injuries of lower caudal extremities occur often even in throwing disciplines (shot put, discus throw, javelin throw, hammer throw) in which, by logic, hands are more subjective to injuries. Having that in mind, sports doctors very often have a chance to see a wide spectre of athletes’ problems, and most often those are bone breakage caused by elbow in throwing in shot put, javelin throw, Achilles tendon injury during running, low start, take-off, etc. Injuries and diseases represent big problem for athletes (at least the successful ones), since their personal income depends on their health status and results. It is natural that every athlete has a dream of winning gold medal on Olympic Games and reaching World record and therefore, they often push themselves to the limits in a physical and psychological sense [2].



Figure 1: Ivana Španovic (SRB), WR Indoor-6,96m WCh Birmingham, 2018.

Exactly because of their great motivation and desire for success, athletes are prone to neglect signs of over-training and so called insignificant injuries which demand serious intervention of a coach or medical staff [3]. Tendinopathy of Achilles tendon is going to be examined here, which is considered to be one of most often injuries in athletics.

Healthy tendon is resistant to the effect of the stretching force, and in order for it to break or to break away from the bone attachment, a high force is required. However, the tendon can break even under the influence of lesser, but sudden force. Degenerative and involute changes which occur due to insufficient movement, fatigue intermittent, inflammatory process or the influence of aging are named as reasons for reducing the tendon resistance as a cause [4]. In sudden, explosive movements when strong force is manifested, in most cases, a part of tendon attached to the bone is swollen, and in younger athletes what sometimes happens is that the bony protrusion in the part of bone attachment sometimes breaks. This causes damage to the tendon attachment called Enthesitis. Under the influence of strong repeated contractions of certain muscles (ultra physiological contractions) and micro traumas, the tendon attachment is over-inflated and subject to inflammatory changes that transform the tendon tissue, thereby changing its functional properties. Enthesitis is characterized by severe pain in the area of the attachment of the tendon during the contractions of the corresponding muscle, and with the development of enthesitis, pain occurs in a state of rest and even during sleep. As a result of the enthesitis phenomenon, there is a restriction of movement and a decrease in muscle strength, whose tendon attachment is infected by damage that easily transforms into a chronic form.

The chronic form of the enthesitis causes permanent problems and prevents sports activity. The most common localizations are inguinal pain in football players -an inguinal enthesitis (the groin pain of the football player), the enthesitis of Achilles tendon at its attachment on the heel (most commonly low start in the sprint, in sprint running), the tennis elbow, the javelin elbow, the boxing hand, etc.

Athletes often develop inflammation of tendons called tendinitis. This disease can affect only the tendon or tendon wrap or both at the same time. In the case of isolated inflammation of the tendon wrap, what happens is swelling and thickening, which makes sliding (moving) of the tendon within its shell difficult, causing creaking or cracking (crepitation). The most common locus of inflammation of the tendon is on the back side of the lower half of the forearm and lower leg.

Case Study

Description

Tendinopathy of Achilles tendon predominantly occurs in the jumpers (long jump, triple jump), javelin throwers, runners on tracks from 200 to 1500m and long-distance runners. This tendon acts as a spiral spring that allows and helps shock absorption while running,

as well as an energy accumulator in jumping and throwing. Very often, when performing these athletic activities, Achilles tendon is injured (tendinitis). Tendinitis of Achilles tendon is often the result of a sudden increase in the training load (in the preparation phase or direct competition). Cause may also be training on unadjusted terrain and unfavorable field configurations that are not adequate for the given sport. Initially, the first symptoms occur after training and then during sports activity. One of the first signs of injury is the so-called morning stiffness [4]. This pathological process is the subject of numerous debates, but it can still not be established with certainty that the cause of the Achilles tendon pain is an inflammatory process, although many patients respond well to the treatment of ice, non-steroidal remedies and local infiltration of corticosteroids. The possible causes of this injury are also obstruction of the blood vessels, mucinous degenerative process and tendon edema. Tendinitis of Achilles tendon is an injury that is caused by overtraining, and in order to prevent it, it is necessary to apply the appropriate rehabilitation procedure [2,5]. Also, to relieve Achilles tendon it is essential to strengthen m. gastrocnemius and m. soleus (Figure 2). If the rehabilitation process does not give any results, it is most likely to turn to a surgical procedure as the only possible solution. However, despite the fact that the surgery is performed by top surgeons, the surgical intervention that the athlete is submitted to is actually only one in the series, so that only 45-50% of athletes manage to regain the previous level of results.



Figure 2: Musculature and Achilles tendon.

Diagnosis

The examination determines the localized swelling and the sensitivity is usually 4 cm from the attachment of the tendon to the heel bone, specifically in the part that is sensitive due to poor blood flow. In some cases, only soft tissue around the tendon is affected, and this phenomenon is called paratendinitis. It is manifested differently and the examination determines a greater swelling of the tissue. Diagnostic ultrasound is a very useful and non-invasive method of recording the tendon, where, on the basis of the recording, the experienced doctor will see the difference between tendinitis and other causes of pain in the Achilles tendon. If the radiologist specialist for the musculoskeletal system is not available to perform ultrasound imaging, magnetic resonance imaging has to be used, which is a time-consuming and financially more demanding diagnostic method.

Treatment

Enthesitis requires treatment from the moment of its occurrence, because it is curable only at this stage. Acute inflammation of the Achilles tendon is treated with initial rest (about 3 weeks), local treatment, and the use of non-steroidal anti-inflammatory drugs where the increase in load on that structure takes place by gradual introduction of exercise. Eccentric exercises, which represent a significant part of the rehabilitation program, are introduced only when it is established that the patient no longer has symptoms. The main goal of the exercise is to increase the strength of the Achilles tendon and to allow for advancement with specific activities for the given sport [6,7].

There is a certain match between acute tendinitis, partial tearing and chronic Achilles tendon tendinosis. Let's make it clear!

A chronic inflammation of the Achilles tendon is caused by a gradual infiltration of the mucoidal substance which replaces the healthy matrix, by reducing the elasticity and its strength. In a more unfavorable version of the injury, a complete breakdown of the tendon occurs. The cause of the pain in these cases is unclear. According to some hypotheses, the causative agents are chemical mediators, while, according to other theories the influence of the increased inner-tendon pressure is emphasized. Based on previous studies, it can be concluded that the only reliable method in the rehabilitation process of the affected tendon is the application of eccentric load, followed by an acceptable degree of discomfort and pain. In order to reduce morning stiffness, night splints are used, and sometimes if biomechanics is disturbed, orthotic correction is applied. Injections of sclerosing agents are used to prevent the creation of new blood vessels (neurovascularization), which is an accompanying symptom of the condition [8,9]. In an attempt to stop the pathological process, a surgical procedure which cleanses the parts of the tissues affected by tendinosis is performed. Often, the tying of paratendinous tissue is applied, which eliminates the adhesions and probably de-nerves the painful soft tissue around the Achilles tendon. Tearing of the Achilles tendon is a possible consequence of a pathological phenomenon, as an athlete usually regrets the feeling that someone "kicked them in the lower leg". The surgical procedure is performed to make the tendon ends closer as well as to remove the possible hematoma, which speeds up the rehabilitation process and improves the treatment results.



Figure 3: Localization of the injured Achilles tendon.

Conclusion

The "Tendinitis of Achilles tendon" symptom is a very delicate problem which needs to be solved as soon as the first symptoms appear. It is necessary to conduct a correct anamnesis of the problem, to determine the diagnosis and method of treatment, as well as the introduction of controlled exercises that can contribute to a faster recovery so that the athletes can bring their body to its form and continue training and competition. It is also necessary to use pharmacological agents for the purpose of faster and efficient treatment.

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Volume 9 Issue 5 May 2018

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