



## Measures to Prevent Overuse Injuries in Triathlon Athletes

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### Abstract

Injuries are so common in triathlon athletes. Since athletes are participating in a lot of sports events, sometimes they do not have time to take rest and recover. Thus, it can lead to chronic injuries. Other times, these athletes overtrain themselves, which can lead to overuse injuries. So, it is so important that measures are taken to prevent these injuries in athletes. It will help in prolonging the sports career of the athletes.

**Keywords:** Triathlon athletes; Injuries; Overuse; Prevention; Physical therapy

### Introduction of Overuse Injuries

Endurance athletes increase their performance by alternating between periods of intensive physical training with periods of rest for recovery. But, if there is an increase in intensive training without giving adequate recovery time, it causes breakdown in tissue reparative mechanisms, resulting in overuse injuries [1]. Triathlon is a competitive sport consisting of three sports: swimming, bicycling, and running. Iron-distance athletes have prevalence of 56% of overuse injuries. The common sites of injuries are knee, lower leg, lower back, and shoulder [2]. The majority of the injuries occur during running (50%), which is followed by cycling (43%), and swimming (7%) [3]. The common running injuries seen in triathletes are iliotibial band syndrome, femoral neck stress fracture, greater trochanter pain syndrome, snapping hip syndrome, patellofemoral pain syndrome, medial tibial stress syndrome (shin splints), achilles tendinopathy, tarsal navicular stress fractures of the foot, and plantar fasciitis [4]. With the cycling part of triathlon, common injuries are anterior knee pain, patellar tendinitis, quadriceps tendinitis, iliotibial band friction syndrome, back pain, neck pain, achilles tendinitis, wrist, and elbow pain [5]. Swimming has least injury rate than the other two sports in a triathlon. The injuries seen are shoulder impingement, biceps tendinitis, glenohumeral instability, and acromioclavicular osteoarthritis [6]. So, it is important to know the measures for preventing overuse injuries in triathletes.

Bales et al. [6] reviewed how to balance triathlon training for preventing overuse injuries. The benefit of triathlon is the triathlete's ability to rebalance the intensity of training over three different sports. If triathlete suffers from overuse injury in one sport, he still can maintain his cardiovascular fitness by focusing on other two sports. As part of triathlon training, triathletes often have to perform all three sports in a single day. So, fitness should be maintained across all three sports. The intensity of training of triathletes is higher than single-

sport athletes. This accumulation of stress results in higher risks of recurrence of overuse injuries and longer time to recover. The incidence of injuries is associated with a history of high running mileage, former injuries, and improper warm up and cool down periods. There is lesser injury rate associated with swimming and cycling per 1000 training hours as compared to running. The overuse injuries are also associated with training hours, with 2.5 per 1000 and 4.6 per 1000 training hours before and during competition respectively.

### Symptoms and Prevention Controls

The symptoms of overtraining can be fatigue, irritation, depression, insomnia, elevated resting heart rate, frequent illness, and decrease in performance. It is suggested to avoid increase in intensity by >10% per week as it can cause greater amount of physical stress. The foremost step in preventing and treating overtraining is the ability to recognize its symptoms. After that, the volume and intensity of training should be decreased. There should be increase in sleep time, adequate intake of fluids for hydration, and eating proper diet for tissue repair and recovery. There is recommendation of "Rule of Sevens". It means at the start of an overuse injury, triathletes should be complete off for 7 days from any intensive activity, and cross training should be done in the other major muscle groups. If, after 7 days, there is no pain, then step into the 7-day second phase period which consists of 7 days of slow and easy training. The triathlete performs the injury causing activity in this phase. If he is still pain free after 7 days, then the third phase can start. It consists of increase in intensity and duration over 7 days gradually. After the period of 21 days, the athlete should have recovered well and can start training at full speed and intensity. If he feels pain, in any of the phase, he can go back to the previous phase and extend it as required. The other alternative treatment option can be stopping all activities for 3 to 4 weeks. The balance between each sport of triathlon can help in preventing many overuse injuries [7].

The symptoms of overtraining are such as generalized fatigue, recurrent headaches, diarrhea, weight loss, appetite loss, inability to sleep properly, and worsening allergies. Overtraining can be monitored using noninvasive methods such as heart rate monitor, measuring heart rate, and Orthostatic test. When there is functional overreaching for long duration, athlete reaches nonfunctional overreaching or sympathetic overtraining state. At this point, the body needs to do a lot of repair which results in high sympathetic nervous system activity. There is persistent high heart rate every morning. Chronic overstimulation of the sympathetic nervous system for extended period results in adrenal insufficiency which is called as sympathetic 'fatigue' or parasympathetic overtraining. There is low resting heart rate and delayed recovery of heart from training.

### Critical Discussion

The athletes are trained intensely for their triathlon sports. There is not much emphasis on the need of adequate recovery between the training sessions. But, after learning about the various overuse injuries, it is equally important to educate athletes about the importance of adequate rest time between their training sessions. Also, if they get injured, then how they should train gradually so they do not aggravate their injury. Since, there is limited awareness about prevention of overuse injuries; it makes triathletes more prone to injuries. Then, they come for treatment in physical therapy clinic and are away from their sports during the rehabilitation phase. But, as a physical therapist, after

understanding the causes, symptoms, and preventive measures of overtraining, I would educate the athletes about it, along with training their muscles for their endurance sports. Thus, it will enhance their performance and prevent injuries.

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