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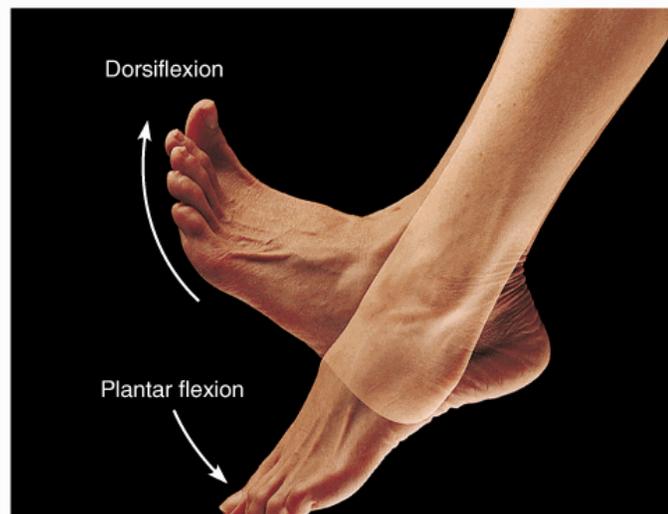
Recurring Ankle Injuries in Dancers

In the dance community, there has been a prevalent issue of recurring ankle injuries. Dancers are experiencing repeated injuries that are affecting their dance career. There needs to be a better understanding as to why these ankle injuries are continuing to happen even with treatment or surgery. Ankle injuries make up 50% of all injuries in dancers (Conti 43). Dancers and specialty care professionals (orthopedics, physical therapists, and rehabilitative medicine) need to have better communication about the injury because causes, diagnosing, and treatment are the main contributors to recurring ankle injuries. Gathering more knowledge and understanding regarding injury causes, diagnosing, and treatment can lead to more prevention of recurring measures. Ankle injuries can become less of a worry in the dance community with this knowledge and awareness. Identifying the main causes of recurring ankle injuries in dancers is a topic that needs to be investigated more in order to reduce the rate of incidences.

The ankle joint is a critical and important part of the dancer's anatomy, as it connects the leg and the foot together. Its function is crucial to his or her performance. In dance, there is a great deal of stress put on the ankle, which is one reason the ankle is the most commonly injured part of the body for dancers (Russell 75). The range of motion in the ankle can only go in two directions, plantarflexion and

dorsiflexion. For a dancer this means moving the ankle into maximum dorsiflexion and plantar flexion.

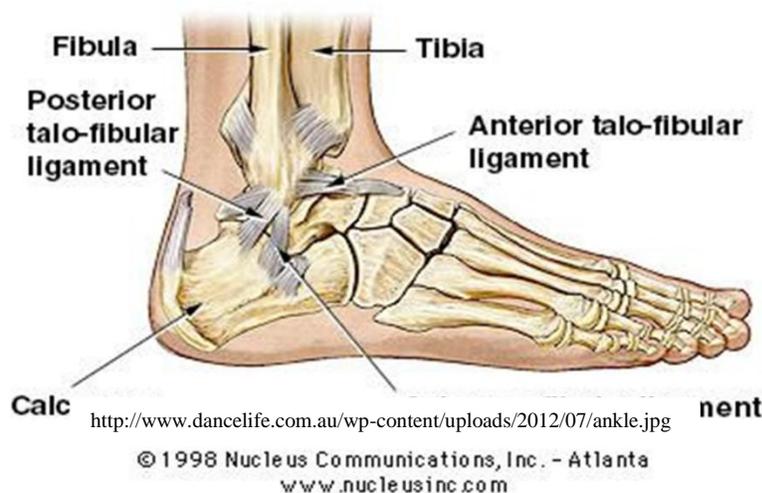
Dorsiflexion is flexing the ankle or decreasing the angle between the foot and the shin, and plantar flexion is



<https://breddydotorg.files.wordpress.com/2012/09/dorsiflexion.jpeg>

pointing the foot or increasing the angle between the foot and the shin. The common dance movements these types of flexion are present in include plie, creating dorsiflexion, and standing in a pointe position, creating plantar flexion (Russell 2008). These two dance movements are utilized extensively in the dance technique, especially in dynamic dance movements including jumps, pirouettes (turns), and leaps. These movements incorporate extreme joint motion, and dancers typically have a greater range of motion to appeal to the aesthetic look of dance and the functional components of the dance technique. Knowing the limitations dorsiflexion and plantar flexion present can be an important factor in having effective preventative and rehabilitative processes (Dickson 2012).

In addition to understanding the range of motion in the ankle, it is important for dancers and doctors to know the parts of the ankle including the ligaments, bones, and muscles. This becomes crucial in proper diagnosis of ankle injuries. Improper diagnosing can result in unsuccessful rehabilitation and recurring injuries (Liederbach 2000). There are three bones that make up the ankle, including the tibia, the fibula, and the talus. Each of these bones are covered in cartilage that allows for smooth movement in either direction. There are also two sets of ligaments that hold the ankle joint together. The ligament that is located on the medial side of the ankle is the three-part deltoid ligament that is the stronger and the more stable ligament of the



two, and the lateral side is connected by three individual ligaments that are very prone to injury. The three ligaments are the anterior talofibular ligament, the calcaneofibular ligament, and the

posterior talofibular ligament. The anterior talofibular ligament is the most frequently torn or stretched ligament of the three (Wright 137, 139). This is caused by the amount of stress that is applied to the ankle every day in dance. It is beneficial for specialty care professionals to have this knowledge about the ankle to ensure the best type of recovery process a dancer has to go through to get back to their pre-injury status (Liederbach 2000).

Dancers not only put high, demanding stresses on their body, they also have an artistic component to uphold within their work. This entails doing movements such as landing a jump in a full extension position that “decrease any opportunities of a more gradual dissipation of energy” (Conti 43). Lower extremities are where a majority of injuries occur in dancers: “In particular, the foot and ankle are subjected to greatest risk and account for up to 50% of all injuries sustained in dance” (Conti 43). In a review article, “Foot and Ankle Injuries in the Dancer,” the Conti and Wong state there are four main causes for injuries in dancers that consist of physique, technique, overuse, and accidents (43). Physique relates to a dancer’s physical characteristics and the aesthetic look of the ideal dancer. In other words, there is a correlation between body type and risk of injury. Not all body types are the same in the dance world and “a body type not suited to the demands of dance technique are likely to be injured” but also occasionally, “the aesthetic standard may actually increase risk of certain injuries” (Conti 43). The risk of injuries in a dancer with the aesthetic standard qualities can be due to extreme range of motion or flexibility and not having the muscle strength to support the ankles. The improper practice of technique can also cause injury if not corrected. The instructor and dancer are responsible for being able to recognize the fault before an injury would occur.

Overuse is another very common reason for ankle injuries in dancers. An overuse injury is “described as tissue damage that results from repetitive demand over the course of time”

(Laker 2015). Other factors to consider with overuse injuries are “the hard and non-resilient surfaces, or inadequate nutrition leading to osteoporosis and stress fractures” (Conti 44). Also, a common trait of a dancer is to ignore early signs of overuse injuries. There are high demands from “teachers, competition, and self-imposed drive that make it difficult for dancers to decrease activity or realize and accept that they need to seek medical attention” (Conti 44). Finally, the last cause of injuries is accidents. Accidents are less common than the other reasons listed because dance movements generally are closed activities. In other words, dance movements are rehearsed and performed the same physiologically each time. There is not a great deal of unexpected stresses put on the body in this situation (Conti 44). All these factors stated above result in the ankle and foot being the most common site of injuries in dancers.

Recognizing that the ankle is the most common site of injuries in dancers, it is important to know why this exists. Studies and research have been done on the risk factors for lower extremities and overuse injuries in dancers. According to a study done by Erin Bowerman, M.Sp.&Ex., Chris Whatman, Ph.D., Nigel Harris, Ph.D., and Elizabeth Bradshaw, Ph.D., “several potential risk factors for overuse injuries in the adolescent population have been

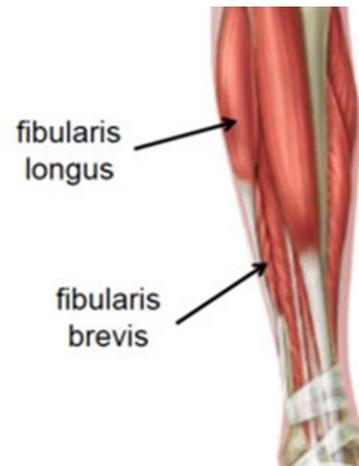


identified, including growth and maturation, the onset of menarche, and lower extremity alignment” (51). More specifically in the ankle and foot, injuries are linked to lower extremity alignment. This is more common in “dancers with biomechanical abnormalities or technical faults, such as poor turnout, pronation of the feet, or improper jumping technique, have been reported as having an increased risk of developing injury” (Bowerman 54). There is also an increased risk of injury for dancers who have a limited range of

motion. These dancers will compensate for lack of range of motion to achieve the aesthetic look of the foot in dance, only to put themselves at greater risk of injury (Bowerman 51-54).

There has also been extensive research done to better understand when these ankle injuries are occurring and what movements lead to more frequent injuries. Key moments when an ankle injury is likely to occur include when a dancer is landing from a jump with the foot in a plantar-flexed position. While coming down from a jump, “the talus is less stable within the ankle mortise and with inversion stress the primary static resistant to forced inversion is the anterior talofibular ligament” (Sammarco 156).

Additional reasons for ankle injuries can be attributed to fatigued peroneal muscles. Peroneal muscles are a group of two muscles located in the lower leg and include the fibularis longus muscle and



<http://www.knowyourbody.net/wpcontent/uploads/2014/03/Peroneus-longus-Pictures.jpg>

the fibularis brevis muscle. These two muscles move the ankle joint. They are active when the ankle is in plantar flexion and pronation (eversion). When these muscles are fatigued, they may be less capable of providing dynamic stability to the ankle joint (Sammarco 156 and 157).

Another factor to consider for ankle injuries is the dance surface. Abnormally hard stages can result in insecure footing and increase the chances of misstep and injury. In addition, choreography plays an important role in injuries. Choreography that has “rapid, repeated jumps, and/or angular footwork can contribute to ankle injuries” (Sammarco 157).

It is common that dancers are hesitant to rest and take time off from their practice. Dancers have been conditioned to uphold their self-worth and values of perfectionism; therefore, dancers stray away from seeking help and continue to work through the pain. However, it is

essential for dancers' healing processes and longevity in their careers to seek help and report pain immediately. It is also part of the physician's role to educate the patient on possible risks associated with inadequate rest. Dancers need to know that they cannot dance to get back into to shape; instead they need to understand they need to get back into shape in order to dance. Sometimes the dancer thinks he or she can take on more than they can handle. This would be known as overloading him or herself. Overloading can be very prevalent in dance and detrimental to the progress of recovery. Researcher Liederbach states, "Successful rehabilitation is always modified to an individual's diagnosis, severity of injury, and functional expectations" (60). Therefore, the types of exercise and format of recovery is based on each case and each patient's pre-injury status.

The diagnosing of a sprained ankle is broken up into three categories based on pain levels: Grade I, II, and III. In the article, "Lateral Ankle Instability in Ballet Dancers," Sammarco

explains "Grade I, which is the most common is a mild stretching of the lateral ligament complex with no instability.

Grade II is a moderate sprain resulting in a tear of the anterior

talofibular ligament (ATFL) while the calcaneofibular ligament (CFL) remains intact, resulting in a positive anterior drawer sign" (157). When the ATFL is torn, it results in a single ligament sprain, but when the CFL is also torn, it is a two-ligament sprain. This can be determined through location of swelling and tenderness (Sammarco 157). The last type of sprain is Grade III where the "injury is a complete tear of the AFTL and CFL resulting in gross instability and fortunately,



<http://www.moveforwardpt.com/image.axd?id=d76efbf0-9130-4e27-a68ae379de0be066&t=634613589568700000>

grade III is not a common injury among professional dancers” (Sammarco 157). Precision of diagnosis can lead to a proper treatment plan.

The diagnosis determines the treatment which is crucial in ankle injuries because improper treatment can result in repeated injury or longer recovery time. The factor that is the most important for a successful treatment is making sure the diagnosis is correct. So, there needs to be a complete history and physical examination to produce the correct diagnosis. It has been discovered that ankle sprains are often inadequately treated regardless of the severity of the sprain. Yet, ankle injuries require “early diagnosis, aggressive treatment and rehabilitation regimen” (Sammarco 158). No matter how severe the injury is, successful treatment of ankle sprains need aggressive management. Aggressive treatment can provide a better recovery rate, help the dancer return to dance earlier, and decrease the chance of repeated injury (Sammarco 157). As dancers and healthcare professionals, “An understanding of the etiology, diagnostic, treatment, and rehabilitation process will result in the successful outcome of these potentially chronic injuries and aid dancers in a quick recovery and return to dance at their pre-injury level of performance” (Sammarco 158). This can be established through communication between the dancer and specialty care professional.

To assist in successful rehabilitation there also needs to be an interaction between the patient and specialty care professional. The professional needs to respond to how a dancer can comprehend movement. If the professional can relate more to the dancer by explaining therapy in a visual way, the dancer can increase their “attention vigilance and actively participate in the reintegration process of their injury recovery by enhancing their sensory-motor awareness” (Liederbach 62). This informs the dancers of how their injury can be affecting their movement. An effective rehabilitation also requires the professional to prepare a treatment plan that is

tailored to their patient. That includes having full knowledge of the patient's past history and work environment as well as the dancer's wishes regarding where they want to be functionally after recovery.

It is also important for the professional to be knowledgeable about how a dancer manages pain in order to have an effective rehabilitation. There needs to be specific communication between the dancer and the professionals. The professional also needs to know the dancer's functional ability prior to injury, and be knowledgeable of the movement form the dancer would like to return to after therapy. Additionally it is important to know the dancer's work environment to gain full recovery of movement and have the dancer feel ready to confidently return to work. The professional also needs to create a dance-specific rehabilitation plan. The plan will promote full recovery of function and help the dancer return safely back to pre-injury level of work. Rehabilitation needs to begin immediately after the injury has occurred and must continue until the dancer can perform at the same level prior to the injury with no limitations (Liederbach 2000).

Ankle injuries in dancers are a continuous problem and the most common injury. There are various reasons as to why they exist including physical aspects, overuse, technique, stability, treatment, proper rehabilitation, and the dancer's understanding of the injury and when to seek help. Dancers and specialty care professionals should be mindful of the body and how to recognize symptoms of ankle injuries. With proper care and treatment plan, these injuries can be cured, but it takes commitment and aggressive rehabilitation to reach those goals. If diagnosing and treatment are not undertaken immediately, it can result in recurring injuries or a longer recovery period, ultimately ending a dancing career earlier than anticipated. Injuries can be challenging, but should not be a reason to stop pursuing a dancing career.

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