BILATERAL COMPARTMENT SYNDROME WITH COMPLEX REGIONAL PAIN SYNDROME: A CASE STUDY
Wilson L, Perkins SA, Hart K, Sullivan, RJ: Marist College, Poughkeepsie, NY

Background: A 17-year-old female involved in dance, figure skating, and track and field first experienced sharp pain in the anterior compartment of the right lower leg at the age of 15. There was no known mechanism of injury or significant changes in running surfaces or footwear at the time of the pain. The athlete presented with palpable tightness and swelling in the lower leg, paresthesia over the L4 dermatome, and drop foot. The Certified Athletic Trainer (ATC) determined that the injury was an acute onset of anterior compartment syndrome of the right lower leg. The athlete was advised to avoid activity and referred to an orthopedist. Differential Diagnosis: Medial tibial stress syndrome, Tenopathy, Nerve entrapment, Stress fracture, Periostitis, Deep venous thrombosis, Tenosynovitis, Fasciitis, Fracture Treatment: The orthopedist ordered pre-exertion and post-exertion compartment pressure readings. Pre-exertion readings in both the anterior and lateral compartments bilaterally were less than 6mm Hg, but the post-exertion readings ranged from 40-56mmHg. Normal compartment pressure reading values are less than 15mm Hg pre-exertion and less than 30mm Hg post-exertion. Ten weeks after the initial onset, the athlete underwent a surgical fasciotomy for bilateral releases of the anterior and lateral compartments of the right lower leg. Nine days post-surgery, the surgical incisions showed no signs of infection and the athlete had good resistive ankle range of motion. Seven weeks after surgery, the athlete informed the physical therapist that she was having constant pain bilaterally in her lower legs, numbness, hypersensitivity, tenderness, and swelling distally around the surgical incisions. In addition, the athlete had decreased range of motion, shiny skin, and an antalgic gait. A Magnetic Resonance Imaging (MRI) and a Triple Bone Scan were ordered by the orthopedist which were normal, but upon evaluation the athlete was diagnosed with Complex Regional Pain Syndrome (CRPS) Type I. The orthopedist prescribed exercises and physical therapy to increase endurance and decrease edema. The athlete was also prescribed a series of lumbar sympathetic blocks, epidural infusions, and intravenous Ketamine treatments in order to manage her pain. The Ketamine treatments were the most successful and offered a 50% decrease in pain and hypersensitivity surrounding the scar sites. Upon completion of the treatment, the athlete was able to bear full weight on the affected legs without significant pain. Uniqueness: Anterior compartment syndrome affected the athlete’s lateral compartments in both legs which only occurs in 3 to 12% of cases. The athlete experienced the onset of CRPS at age 15 and although CRPS can affect adolescents, the age of most patients is between 36 and 42 years old. In this case, the athlete had sympathetically independent pain and derived only short term relief from sympathetic blocks and local injections. Ketamine is not typically used to treat CRPS, instead, it is reserved for severe cancer pain. It reaches its full effect within minutes and often replaces opioids in cancer treatments. As a blocker of NMDA (N-methyl d-aspartate) receptors, Ketamine has recently been used as a club drug for hallucinogen effects. Despite chronic pain during the two year course of treatments, the athlete remained very active in sports. Conclusion: The athlete hasn’t experienced any recurrent signs
or symptoms since surgery. The symptoms of CRPS are still present, but hypersensitivity to pain has decreased. The onset of CRPS may occur following surgery and the pathophysiological causes are still unknown. Although pain management treatments may offer relief, patient response will vary. **Key Words:** Compartment syndrome, surgical fasciotomy, CRPS, Ketamine.