NAIL-PATELLA SYNDROME (NPS) is a rare genetic disorder that causes individuals to be born with skeletal deformities and other structural abnormalities. This condition is also referred to as hereditary osteo-onycho-dysplasia (HOOD), Fong disease, Turner-Kieser syndrome, or Osterreicher-Turner syndrome. One in 50,000 persons worldwide is estimated to have characteristics of the disease. Individuals born with NPS usually demonstrate structural deformities, such as absent or underdeveloped thumb nails and patellae, absent distal interphalangeal (DIP) creases, limited elbow motion, and limited upper arm and leg muscular development.

The purpose of this report is to introduce athletic trainers and therapists to NPS, its most common orthopedic characteristics, and injury prevention considerations for athletic participation. The information presented was derived from an athletic trainer’s experience in working with a 14-year old male, high school athlete diagnosed with NPS.

A High School Athlete With NPS

The first encounter with the athlete followed the occurrence of a hamstring strain that was sustained while playing on the freshmen soccer team. The athlete reported to the athletic training room complaining of pain in his hamstring muscles that developed after having felt a pop in his right knee during practice. The athlete displayed a noticeable limp, as well as an observable deformity of both knees. The athlete reported the existence of his NPS condition and identified his numerous orthopedic deformities, which included quarter-sized patellae that subluxed each time he flexed his knees. He reported experiencing multiple patellar subluxations on a daily basis (Figures 1-3). As soon as he contracted his quadriceps or actively extended his knee, the patella subluxation would spontaneously reduce. Other manifestations of NPS reported by the athlete included the absence of fingernails on his thumbs and index fingers, the absence of
distal interphalangeal joints in the fingers due to joint fusion, the inability to extend the elbows fully, and a radial head that protruded about one-half inch with recurrent subluxation from the capitellum (Figures 4-6). Individuals with NPS also have tight muscles in the upper and lower extremities, which may have contributed to this athlete’s hamstring strain.

The athlete’s family history included his mother and two uncles having NPS. Both uncles were very athletic, and one uncle had played professional soccer in Europe, despite his NPS condition. His mother was diagnosed with NPS at age 24, whereas the athlete was diagnosed at birth. He had a sister who did not have any NPS characteristics. Despite the NPS diagnosis, he was encouraged by physicians to participate in various physical activities.

The existence of NPS did not affect the athlete’s treatment for the hamstring strain injury, which resolved without complications within a normal recovery period; however, his predisposition for musculotendinous injuries in the upper and lower extremities presented an uncertain prognosis.

A second encounter with this athlete occurred after soccer season, when the athlete was participating as a member of the wrestling team. Having wrestled in junior high school, the athlete was familiar with the demands of this sport. His small stature placed him in the lightest weight class (under 103 lbs). All of his wrestling coaches were aware of the NPS condition and previously had discussions with the athlete about risks associated with his participation in the sport.

During the wrestling season, the athlete reported knee pain that was described as having had a gradual onset. This visit occurred late in the wrestling season and was thought to be due to excessive kneeling. He was treated for symptom relief and provided with additional knee padding. His participation in practice sessions was also limited, in order to ensure that he would be able to compete in an upcoming match.

A final encounter during the same academic year occurred during one of the athlete’s late-season wrestling matches, during which an opponent pulled his arm behind his back. Because his elbow extension was...