

STRONG CHILDREN'S RESEARCH CENTER

Summer 2017 Research Scholar

Name: Brody J. Lipsett, MBS

School: Lake Erie College of Osteopathic Medicine

Mentor: Katherine H. Rizzone, MD, MPH

ABSTRACT

Title: *A Systematic Review of the Prevalence of Patellar Tendonitis in Children to Young Adults*

Background: 60 million children and adolescents participate in organized sports annually. It is estimated that 2.6 million emergency department visits a year are due to sports-related injuries in athletes younger than 19. Recent increases in participation in organized sports programs and sport specialization have been proposed to predispose young athletes to acute and overuse injuries. While patellar tendon disease (patellar tendinitis, Osgood-Schlatter disease and Sinding-Larsen-Johannson) is a common sports-related injury, little is understood about its etiology and the management options are known to have low efficacy. Yet, little epidemiological data exists on the prevalence of these injuries in these athletes. The public health implications are large since it impacts a large proportion of young, active individuals.

Objective: To conduct a systematic review of the literature to assess the prevalence of patellar tendinitis in young athletes.

Data Sources: A clinical librarian guided searches of PubMed, Web of Science, Embase and The Cochrane Library. Reference lists were also searched.

Study Selection/Eligibility Criteria: The following search terms were used: (patellar tendinitis OR patellar tendonitis OR patellar tendinopathy OR osgood-schlatter disease OR sinding-larsen-johannson disease OR jumper's knee OR osteochondrosis) AND (prevalence OR epidemiology) AND (child OR children OR adolescent OR adolescents OR adolescence OR young adult). Two reviewers independently identified studies for inclusion. All genders were included, mean/median age of the participants needed to be less than 30 years. Non-English studies were excluded.

Data Extraction and Synthesis: Two reviewers independently extracted study data, including demographics, study methodology and outcomes. The risk of bias for each study was assessed by using the Newcastle-Ottawa Scale.

Main Outcomes and Measures: Prevalence of patellar tendinitis, Osgood-Schlatter disease, Sinding-Larsen-Johannson

Results: Seventy-five studies, involving 47,421 participants, 57% of them male, met full inclusion criteria. Prevalence ranged from almost 1% up to greater than 68%. Mean/median age ranged from 8.6-30 years. Twenty (27%) of the studies exclusively examined all male populations, while nine studies (11%) were solely focused on female cohorts. Forty-seven (63%) studies, reported the prevalence of patellar tendinitis, 21 (28%) reported the prevalence of Osgood-Schlatter and 5% reported the prevalence of Sinding-Larsen-Johannson. The combined reported prevalence of patellar tendinitis was 5.30%, Osgood-Schlatter disease 2.15%, and Sinding-Larsen-Johannson syndrome was 0.09%. Forty-four (59%) studies reported patellar tendinitis prevalence by gender: 4.13% males and 1.53% females, almost a three-fold disparity. Thirty-five (37%) studies reported Osgood-Schlatter disease prevalence by gender: 2.85% males and 1.39% females. Fifteen (20%) studies reported Sinding-Larsen-Johannson syndrome prevalence by gender: 1.20% males and 0.14% females. Methodologically, a history and physical examination was one of the most utilized means of diagnosis that was used in combination with other methods to determine a diagnosis of patellar tendonitis or related variants (38/[51%] studies), followed by self-reported surveys (17/[23%] studies), and ultrasound imaging (14/[19%] studies). The three most common sport cohorts that were under investigation were volleyball (19/[25%] studies), basketball (14/[19%] studies), and soccer (12/[16%] studies). Geographically, 43% of the studies were in European populations, followed by North America (24%), Asia (12%), Australia (11%), South America (7%), and Africa (3%).

Conclusion: Based on prevalence findings of these studies in light of the participation numbers of young athletes, millions of children are impacted by patellar pathology, with males have higher rates than females. Our review highlights the importance of further elucidation of the etiology and appropriate management of these diseases in order to better diagnosis and treat these athletes.

Clinical Relevance: Many youth athletes are injured every year participating in their sport, at a cost both in participation and financially. A more thorough understanding of patellar overuse injuries will improve healthcare in the pediatric-adolescent population involved in athletics through focusing attention on improving diagnosis and management of the injury.