

Innovations in Orthopedics

Rady Children's

Hospital
San Diego

Rady Children's - A comprehensive system focused solely on children and adolescents.



INNOVATIONS

San Diego Pitching Project reports findings



Despite the implementation of Little League pitching guidelines, throwing injuries are still common among youth baseball athletes and frequently seen by physicians in the [360 Sports Medicine Program at Rady Children's](#). To better understand the incidence, pathomechanics and risk factors of throwing injuries, with an ultimate goal of establishing better injury prevention guidelines and programs, sports medicine physician [Andrew Pennock, M.D.](#), launched the San Diego Pitching Project early last year, as reported in the April 2015 issue of this newsletter.

The project consisted of three studies: an MRI study looking at the baseline changes in Little League players' elbows, with a particular focus on risk factors for elbow pathology; a study examining the progression of elbow damage that occurs over the course of a Little League season relative to throwing guideline compliance, games played, positions played, pitch counts and several other variables; and a study using ultrasound to assess changes in both the shoulder and elbow growth plates as a function of the position played and the presence of arm pain.

Preliminary data analysis reveals that 42 percent of youth baseball players had MRI abnormalities of their throwing elbows at the completion of the Little League season. The majority of these abnormalities involved the medial epicondyle, with edema, widening and fragmentation being the most common findings. Abnormalities of the ulnar collateral ligament and its attachment on the ulna at the sublime tubercle were also observed.

The primary pre-season risk factors for an abnormal MRI and/or arm pain included year-round play and the use of a private coach. During the baseball season, a progressive loss of shoulder internal rotation was observed across all players and positions, correlating with the MRI abnormalities. All pitchers were compliant with the Little League throwing guidelines regardless of pitch counts and were no more likely to experience arm pain or have an abnormal MRI compared to other positions.

Recommendations for reducing throwing injuries



Dr. Pennock

Further analysis and studies are underway, but year-round play and excessive throwing (not necessarily pitching) appear to be the driving factors behind the epidemic of throwing injuries. Currently, there are no formal guidelines or rules that prohibit play for more than nine months a year, though several organizations have recommended three months of rest. Based on the data from the San Diego Pitching Project and other research, Dr. Pennock is recommending that all 10- to 13-year-old players take three months off each year from throwing.

He adds that additional attention should be paid to posterior shoulder tightness, since this also appears to be closely related to elbow pain and pathology. "Implementation of posterior shoulder stretching exercises such as the 'sleeper stretch,' as well as shoulder strengthening programs such as 'Thrower's Ten,' will hopefully be helpful in mitigating these chronic throwing injuries," Dr. Pennock says.

[Watch news coverage of the study.](#)



Division members to present at POSNA annual meeting

Ten abstracts co-authored by members of the Division of Orthopedics & Scoliosis have currently been accepted for presentation at the [2016 annual meeting of the Pediatric Orthopaedic Society of North America](#).

The abstracts are:

- "Five-Year Reoperation Risk and Causes for Revision After Idiopathic Scoliosis Surgery" (coauthored by [Peter Newton, M.D.](#), [Burt Yaszay, M.D.](#), and Tracey Bastrom)
- "Risk-adjusted Comparative Infection Rates in Adolescent Idiopathic Scoliosis" (coauthored by [Peter Newton, M.D.](#), [Burt Yaszay, M.D.](#), and Tracey Bastrom)
- "Peri-operative and Delayed Major Complications Following Surgical Correction of AIS in 3,530 Patients" (coauthored by [Peter Newton, M.D.](#), [Burt Yaszay, M.D.](#), and Tracey Bastrom)
- "Predictors of Distal Adding-On in Thoracic Major Curves in AIS" (coauthored by [Peter Newton, M.D.](#), [Burt Yaszay, M.D.](#), [V. Salil Upasani, M.D.](#), and Tracey Bastrom)
- "10-Year Outcomes in a Prospective Cohort of Surgically Treated AIS Patients" (coauthored by [Peter Newton, M.D.](#), [Burt Yaszay, M.D.](#), and Tracey Bastrom)
- "Pre- and Post-Season Elbow MRI Studies in Little League Players: A Longitudinal Study" (coauthored by [Andrew Pennock, M.D.](#), and Tracey Bastrom)
- "Life-long Learning or Just Assessing Clinical Documentation? Efficacy of the Supracondylar Fracture Performance Improvement Module" (coauthored by [Eric Edmonds, M.D.](#), and Tracey Bastrom)
- "Evaluation of Brace Treatment for Dislocated Infantile Developmental Dysplasia of the Hip in a Prospective Cohort: Defining the Success Rate and Variables Associated with Failure" (coauthored by [V. Salil Upasani, M.D.](#), [Scott Mubarak, M.D.](#), and JD Bomar)



2016 POSNA Annual Meeting:
Indianapolis



innovation
belongs in every moment



RECOGNITION

Dr. Dennis Wenger delivers Harrington Lecture

[Dennis Wenger, M.D.](#), director of the orthopedic training program and co-director of the International Center for Pediatric and Adolescent Hip Disorders at Rady Children's Hospital-San Diego, delivered the prestigious Harrington Lecture at the 50th anniversary meeting of the Scoliosis Research Society. The lecture honors Paul Harrington, M.D., of Houston, the founder of modern spinal instrumentation to correct scoliosis.

Approximately 1,500 orthopedic surgeons and neurosurgeons attended the meeting, where they heard presentations of research studies and attended symposiums regarding the latest methods for correcting spinal deformities.



Dr. Wenger

Dr. Wenger began his lecture, "Correcting Scoliosis: The Genealogy of Ideas and Their Surgical Application," with a description of Dr. Harrington's character and temperament. The pioneer's "positive, inventive personality," Dr. Wenger said, enabled him to defy the prevailing wisdom of his time and develop the first spinal instrumentation system (Harrington instrumentation). He then discussed the post-Harrington era, which saw the development of the Cotrel-Dubousset instrumentation, first implanted at then Children's Hospital in San Diego in 1985.

- "Analysis of Spinal Alignment and Pelvic Parameters on Upright Radiographs: Implications for Radiographic Assessment of Hip Pathology" (coauthored by [Andrew Pennock, M.D.](#), [Dennis Wenger, M.D.](#), [V. Salil Upasani, M.D.](#), and JD Bomar)
- "Patient-specific 3D Printed Anatomical Models Improve Deformity Correction after Proximal Femoral Osteotomy for Slipped Capital Femoral Epiphysis" (coauthored by [V. Salil Upasani, M.D.](#))



Learn more at RCHSD.org

Later, under the guidance of [Peter Newton, M.D.](#), Rady Children's developed an advanced scoliosis biomechanics laboratory and conducted research that led to the creation of several advanced scoliosis corrective systems; these include the new spinal tethering procedure, which corrects scoliosis without a fusion.

Dr. Wenger closed his lecture with a discussion of "the fellowship era," which occurred after Dr. Harrington had done his main work. He noted that the fellowship developed at the Hospital for Sick Children, Toronto, by Dr. John Hall, and later Boston Children's Hospital, resulted in hundreds of fellows being trained in the "John Hall Method." All of Rady Children's current scoliosis surgeons were trained by protégés of John Hall, which has helped make the Hospital world-renowned for scoliosis training.

[Learn about Rady Children's Spine Center.](#)