

## **Kinetic Chain Rehabilitation in a Juvenile Idiopathic Arthritis Patient**

MELISSA D. LONG<sup>1</sup> and ERIN D. DORREL<sup>2</sup>

<sup>1</sup>Teague Athletic Training Facility; Department of Kinesiology and Nutrition; Abilene, TX; <sup>2</sup> Hendrick Bone and Joint Clinic; Abilene, TX

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*Category: Practicing Clinician*

### ABSTRACT

**CASE HISTORY:** The patient's chief complaint was decreasing ROM and pain noticed after conservative orthopedic treatment in the dominant (left) elbow. After extensive evaluation, the patient was diagnosed with juvenile idiopathic arthritis (JIA) at 9 years old. **PHYSICAL EXAM:** Upon physical therapist examination, it was determined that she had deficits throughout the entire left upper extremity and quadrant. Findings include signs and symptoms of Upper Cross Syndrome including pectoralis muscle group tightness, weakness of deep neck flexors with overuse of sternocleidomastoid and scalenes group, weakness of posterior shoulder and upper back including lower trap, middle trap, and all scapular stabilizing musculature including significant overuse of the upper trapezius and levator scapula complex. This presented as poor scapulothoracic rhythm and scapular dyskinesis with significant scapular winging, forward head and rounded shoulders causing inefficient mechanical function during functional movement patterns. Other specific objective findings included pectoralis minor length difference of right to left of one inch, MMT grade of teres minor and latissimus 3<sup>+</sup>/5, serratus anterior 3<sup>+</sup>/5, other rotator cuff reveals 4/5, with subscapularis 4/5. The initial AROM of the elbow revealed a 40° extension lag, excessive supination of 105° with limited pronation of 70°. **DIFFERENTIAL DIAGNOSES:** Medial epicondylitis, avulsion fracture, rheumatoid arthritis, ankylosing spondylitis. **TESTS & RESULTS:** X-rays and MRIs were obtained in order to make the JIA diagnosis. Imaging obtained by the patient's rheumatologist nine months ago showed a slowing of the disease processes, confirmation of the cessation was confirmed on MRI obtained 3 months ago. After failing occupational therapy for ROM and joint sparing techniques, she was referred to physical therapy (PT) to address kinetic chain dysfunction to avoid other joint involvement. **FINAL DIAGNOSIS:** The final diagnosis was JIA with multiple joint involvement. For the purpose of this case study, Upper Cross Syndrome with associated scapular dyskinesis was addressed in rehabilitation. **DISCUSSION:** Treatment of JIA is often targeted at the involved joints. It is important for the medical professional to evaluate and address joints that are not currently involved in the disease process. In this case, the patient's parents advocated for physical therapy. Many cases will go untreated which could affect the long-term functioning of the kinetic chain. Additionally, early intervention can improve functioning of other joints and increase strength of muscles that, when functioning at full capacity, could affect the involved joint. **OUTCOME OF THE CASE:** After 2 months of PT, objective findings revealed great improvements in pectoralis minor flexibility as demonstrated through measurement of just ½ inch which is symmetrical to the right side; increased postural awareness of downward scapular retraction; appropriate chin tuck posture due to increased deep neck flexor strength; decreased compensation of scalenes and upper trap and levator complex; improved rotator cuff strength and AROM pronation 82°. Most important, she is demonstrating improved awareness of correct downward retracted scapular position with little winging and good head alignment utilizing a chin tuck position. All AROM of the elbow remained the same. **RETURN TO ACTIVITY AND FURTHER FOLLOW-UP:** The patient is navigating all activities of daily living for her age group with a lack in ROM of her elbow. She competes on a shotgun team and plays sports at recess. She will continue with PT once per week for the next 3 months. After reevaluation, she may be released with a maintenance program.