

**Orthopedic Evidence Annotation**  
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Argo D, Trenhaile S, Savoie F, Field L. Operative Treatment of Ulnar Collateral Ligament Insufficiency of the Elbow in Female Athletes. *Am J Sports Med.* 2006;34:431-437.

This article demonstrates the usefulness of surgical intervention for correcting ulnar collateral ligament (UCL) instability and its related symptoms after conservative treatment has failed. Specifically, the purpose of this study was to determine whether female athletes participating in various sports would improve in a number of factors associated with relative participation. The authors address the particular usefulness in obtaining information on treatment outcomes for UCL instability, as the literature in regards to the female population is lacking.

A retrospective design was established in this study, where 19 women were evaluated using the Andrews and Carson Elbow Outcome Score (ACEOS) between the years of 1994 and 2001. Of the 19 patients, 8 played softball, 4 were gymnasts, and 2 played tennis. Those remaining included a skier, calf roper, baton twirler, and a cheerleader. All patients complained of continual pain, inability to compete in their respective sport, or a combination of both. A standardized preoperative evaluation was performed on each athlete, including a thorough physical examination and imaging. Surgical intervention was discussed only if the following criteria were met: 1) systematic medial elbow instability that persisted after a minimum of 3 months of nonoperative treatment, 2) desire on the patient's part to return to sports or resume activities prohibited by elbow instability, and 3) history and clinical and radiographic evaluation consistent with UCL injury. The decision to repair or reconstruct the UCL was made intraoperatively based on the degree of instability and condition of the ligament. Patients were evaluated before and after the operation with ACEOS. Paired *t* tests were employed to determine the presence of significant differences between pre- and postoperative values of the ACEOS.

The findings during surgery indicated 7 ligaments tears and 8 attenuated ligaments. The overall postoperative outcome score according to the ACEOS was "excellent" in 16 patients and "good" in 3 patients. Postoperative means were statistically higher than preoperative means for all categories of the outcome score in all patients. When reviewed individually, overall postoperative means were significantly improved from preoperative means for UCL repairs, plications and with anchor suturing. There were no postoperative failures. A mean of 2.5 months was reported for return to activity among patients. Only one patient did not return to activity due to fear of re-injury.

An evidence level of 4 was determined for this study. It is helpful as an athletic training clinician to be aware that female athletes of various sports respond well to surgical intervention following UCL instability; however, this study does not thoroughly specify the course of conservative preoperative or postoperative treatment followed by these patients. A more thorough description of the conservative treatment performed may have been more beneficial for athletic training clinicians to offer insight to ideal non-surgical therapeutic techniques in patients with medial elbow instability.

## Evaluating and applying the results of studies of therapeutic intervention.

### I. Are the results of the study valid?

#### Primary Guides:

- **Was the assignment of patients to treatments randomized?**

No; nineteen women were retrospectively evaluated and included in the study if they underwent repair or reconstruction of the UCL for symptomatic instability that prevented participation in a respective sport, after conservative treatment. There was no randomization into treatment or non-treatment groups.

- **Were all patients who entered the trial properly accounted for and attributed at its conclusion?**

Yes; outcomes were “excellent” in 16 patients and “good” in 3 patients. Patients reported participating in their first sporting event a mean of 2.5 months postoperatively. It was reported that 17 of the 18 patients returned to their respective sports; the only patient to not return to previous activity was a snow skier who chose not to participate due to fear of re-injury.

- **Was follow-up complete?**

Yes; there was a 100% follow-up mean of more than three years.

- **Were patients analyzed in the groups to which they were randomized?**

No, since there was no randomization.

#### Secondary Guides:

- **Were patients, health workers, and study personnel "blind" to treatment?**

No blinding was reported regarding those who performed the physical evaluations or the surgeries.

- **Were the groups similar at the start of the trial?**

No; differences in patient characteristics included: elbow affected (dominant vs non-dominant), throwing athlete vs. non-throwing, competition level, and whether onset of symptoms was acute or gradual.

- **Aside from the experimental intervention, were the groups treated equally?**

No; depending on intraoperative findings, different procedures were performed in relation to the medial elbow in an attempt to correct any existing instability. In surgery, a muscle-splitting approach was used in 15 of 19 patients. In the remaining 2 patients, a significant tear of the flexor/pronator muscle group was found and the tear was completed to improve exposure of the UCL. In 9 of the patients, the ligament was not torn externally and was, therefore, incised longitudinally to evaluate for undersurface disruption. Six patients with centrally attenuated UCLs, underwent plication with specific sutures. Two patients with ligament attenuation and partial tears had repairs with plication and suture anchors. One patient underwent flexor/pronator mass augmentation. One patient underwent UCL reconstruction using a palmaris longus graft. One patient with a proximal avulsion had a repair with drill holes.

## **II. What were the results?**

- **How large was the treatment effect?**

Given the results of this study and the lack of randomization, there was no quantitative data to determine an experimental event rate or a control event rate.

- **How precise was the estimate of the treatment effect?**

N/A

## **III. Will the results help me in caring for my patients?**

The results of this study are not likely to be largely beneficial in aiding delivery of care to my patients.

- **Can the results be applied to my patient care?**

While athletic training clinicians do treat female athletes participating in softball, gymnastics, tennis, skiing, and perhaps occasionally calf-roping, cheerleading, and baton-twirling, the results of the study in determining that appropriate surgical intervention was effective in returning patients to their given activity does not largely benefit an athletic training clinician's practice. What would have been most helpful was if the study had provided explicit details as to what the pre- and post-operative management of the UCL injuries entailed. More specific details of range of motion, strengthening exercises, manual therapy, and modality administration may have been helpful in either supporting or negating particular non-operative treatment techniques an athletic trainer may choose to employ in relation to a patient with medial elbow instability. Similarly, more specific information regarding postoperative care might aid an athletic training clinician in extrapolating what course of postoperative treatment might be most effective in early return to play, which has important implications on overall functionality.

- **Were all clinically important outcomes considered?**

All clinically important outcomes were not necessarily considered; although it is stated that the patients returned to play, overall functionality in relations to previous ability (perhaps before onset of symptoms before surgery) was not discussed. A positive component of the study, however, was that the Andrews and Carson Elbow Outcome scale, both a subjective and an objective outcomes measure, was used before and after the study.

- **Are the likely treatment benefits worth the potential harms and costs?**

In regards to the intervention performed specific to each patient in this study, it seems reasonable that the potential costs (perhaps monetary if anything) associated with surgical repair are worthwhile, when weighed against lack of surgical intervention and the symptoms that may ensue with chronic instability. Considering the absence of failed postoperative procedures, lack of poor outcomes, and that 94.4% of patients returned to their given activities after the procedure, undergoing surgery for instability, pain and inability to function as desired, at the medial elbow is a worthwhile treatment option.