



Baseball *Research*

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Subtle MCL Tears Explain why Bone Spurs Develop in the Elbow of Baseball Players

Competitive baseball players often develop painful bone spurs in the elbow. The spurs compromise ability to throw and is often treated with arthroscopic surgery to remove them. Most players experience an encouraging initial recovery with return to high level throwing. However, a large percentage of players will go on to develop symptomatic tears of their medial collateral ligament (MCL) and require Tommy John Surgery to continue throwing at a high level. Questions to sports medicine

specialists have persisted: 1) why do bone spurs form in the elbow in the first place, and 2) why do players injure their MCL after having the spurs removed. Dr. Christopher Ahmad hypothesized that players who develop bone spurs have a weakened MCL where the weak ligament causes increased stress to the back of the elbow which then results in spur formation. Therefore, when the spur is removed and the player goes back to throwing, the already compromised ligament

goes on to tear and become painful.

The hypothesis was tested at Columbia Orthopedics Biomechanics Laboratory with seven elbow cadaveric specimens. Medial collateral ligament compromise was simulated by surgically releasing the medial collateral ligament to cause injury typical of throwers. Pressure-sensitive film was placed in the back of the elbow for each testing condition. Forces were placed on the elbow



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Dr. Christopher Ahmad studied mechanical engineering at Columbia University setting a foundation to become a national expert in ligament injuries. He trained with Dr. Frank W. Jobe, the inventor of Tommy John Surgery, and now practices sports medicine at Columbia University. He is the Chief of the Sports Medicine Service and the Head Team Physician for the New York Yankees. He has been researching and performing elbow surgery in baseball players for over twenty years and has published over 100 articles related to Tommy John Surgery

Applying Research to Improve Patient Outcomes

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similar to throwing. The results demonstrated that contact area decreased and the pressure increased in the exact location where bone spurs form. This research confirmed that athletes who develop bone spurs may *have compromise to their*

ligament. On the basis of this ground breaking research, any patient who has bone spurs requires a careful examination and MRI scan to assess the medial collateral ligament. If the ligament is compromised the patient should be counseled and in some situations Tommy John Surgery should be

Ahmad CS, Park M, ElAttrache NS: Elbow Ulnar Collateral Ligament Insufficiency Alters Posteromedial Olecranon Contact. American Journal of Sports Medicine, 32:1607-1612, 2004



Figure 1: X-ray showing bone spur in back of elbow.

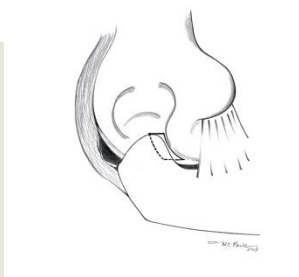


Figure 2: Pressure sensitive film in back of elbow.

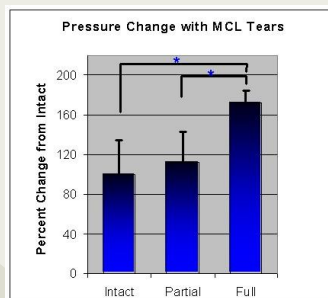
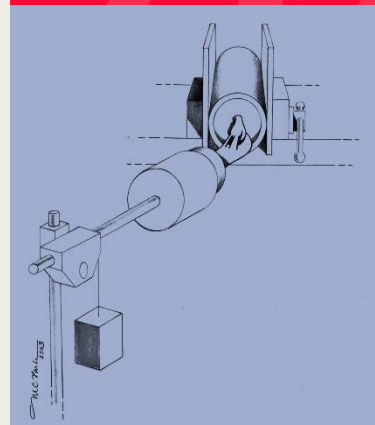


Figure 3: Pressure in back of elbow increases when the MCL is compromised.

BIO-MECHANICAL TESTING



Biomechanical testing used in the research was performed with a custom device that allowed simulation of throwing force on the elbow. Pressure film was used to measure increased force in back of elbow.

To see more research or watch a video of Tommy John Surgery being performed by Dr. Christopher Ahmad, please go to www.ChrisAhmadMD.com

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