



## Michael T. Freehill, MD, FAOA

Associate Professor of Orthopaedic Surgery

 Curriculum Vitae available Online

### CLINICAL OFFICE (PRIMARY)

- **Stanford University Dept of Orthopaedic Surgery**

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### ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

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### Bio

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#### BIO

Dr. Freehill is a board-certified, double fellowship-trained specialist in orthopaedic surgery with a sub-specialty certification in sports medicine. His concentration is in shoulder and elbow. Dr. Freehill is a team physician for the Stanford University athletics program and head physician for the Stanford University baseball team. Dr. Freehill also teaches in the Department of Orthopaedic Surgery at Stanford University School of Medicine.

Dr. Freehill's practice focuses on all shoulder conditions. He treats rotator cuff tears, shoulder instability, shoulder arthritis, sports shoulder, arthropathy, complex shoulder pathology, and sports related shoulder injury. In addition, he is also passionate about sports-related elbow injuries, with an emphasis on thrower's elbow.

Professional and amateur athletes, as well as non-athletes, come to Dr. Freehill for expert care. His sports medicine training and specialization in shoulder replacement procedures enable him to treat patients across the lifespan. Depending on factors including the patient's condition and occupation, he may recommend treatment ranging from non-operative solutions (such as physical therapy) to cutting-edge biologics procedures or complex surgery.

In addition to his positions within the Stanford University athletics program, Dr. Freehill serves as assistant team physician for the Oakland A's. Previously, he was a team physician for the Detroit Tigers and the Winston-Salem Dash (affiliated with the Chicago White Sox); he assisted with the Baltimore Orioles. He has also served as Director of Sports Medicine for Wake Forest University Athletics.

As executive director of the Stanford Baseball Science CORE, Dr. Freehill draws on his previous experience as a professional baseball player to help athletes of all skill levels. In the lab, he conducts cutting edge research on the biomechanics of overhead throwers in order to support advances in throwing performance. He has conducted a study on pitch counts in adolescent players funded by Major League Baseball. Dr. Freehill was also awarded a research grant from the National Institutes of Health to investigate stromal vascular fractionated mesenchymal cells and their potential for healing rotator cuff tendon tears.

Dr. Freehill has pioneered the use of some of the latest techniques and technology for leading-edge care. Among the advanced technologies he utilizes is a virtual reality (VR) system that enables him to perform a simulated shoulder arthroplasty procedure prior to entering the operating room with a patient. The system also enables him to predict and order customized implants if needed, which is believed to enable a more positive outcome for patients.

Peer-reviewed articles authored by Dr. Freehill explore rotator cuff injuries, shoulder arthroplasty, baseball-related injuries and performance interests, and more. His work has been featured in the American Journal of Sports Medicine, the Orthopedic Journal of Sports Medicine, Journal of Shoulder and Elbow Surgery, Arthroscopy, and elsewhere. He has written numerous book chapters and made over 200 presentations at conferences around the world.

Dr. Freehill's honors include an Orthopaedic Residency Research Award while at Johns Hopkins University. He is also a Neer Award winner, denoting the highest research award selected annually by the American Shoulder and Elbow Society.

Currently, he serves on the Medical Publishing Board of Trustees for the American Orthopaedic Society for Sports Medicine. He is a member of the American Orthopaedic Association, and the Major League Baseball Team Physician Association. He is a committee member for the American Shoulder and Elbow Surgeons Society, International Congress of Arthroscopy and Sports Traumatology, the Arthroscopy Association of North America, and the American Academy of Orthopaedic Surgeons.

## CLINICAL FOCUS

- Orthopaedic Sports Medicine

## ACADEMIC APPOINTMENTS

- Associate Professor - University Medical Line, Orthopaedic Surgery
- Member, Wu Tsai Human Performance Alliance

## PROFESSIONAL EDUCATION

- Board Certification: Orthopaedic Sports Medicine, American Board of Orthopaedic Surgery (2017)
- Residency: Johns Hopkins University Hospital Dept of Orthopaedic Surgery (2010) MD
- Board Certification: Orthopaedic Surgery, American Board of Orthopaedic Surgery (2014)
- Fellowship: Massachusetts General Hospital Dept of Orthopaedic Surgery (2012) MA
- Fellowship: Stanford University Orthopaedic Sports Medicine Fellowship (2011) CA
- Medical Education: Tulane University School of Medicine Registrar (2005) LA

## Publications

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### PUBLICATIONS

- **High Accuracy of Intra-articular Needle Position during Anterior Landmark Guided Glenohumeral Injections.** *Journal of ISAKOS : joint disorders & orthopaedic sports medicine*  
Bartels, D., Pullen, W. M., Curtis, D., Sherman, S. L., Abrams, G. D., Cheung, E. V., Freehill, M. T., Wang, T.  
2024
- **Interval Throwing Programs for Baseball Players: Methodological Assessment of the Quality and Construct of Publicly Available Programs.** *Sports health*  
Boos, A. M., Sambare, N., Smith, M. V., Freehill, M. T., Bowman, E. N., Erickson, B. J., Chalmers, P. N., Sciascia, A., Camp, C. L.  
2024: 19417381241237011
- **Early single sport specialization does not improve pitching velocity, motion, strength, or utilization in high school baseball pitchers.** *JSES reviews, reports, and techniques*  
Camp, C. L., Erickson, B. J., Bowman, E. N., Freehill, M. T., Smith, M. V., Christoffer, D., Clinker, C., Ishikawa, H., Thomas, L., Chalmers, P. N.  
2023; 3 (4): 506-510

- **Validation of Mixed Reality Surgical Navigation for Glenoid Axis Pin Placement in Shoulder Arthroplasty Using a Cadaveric Model.** *Journal of shoulder and elbow surgery*  
Sanchez-Sotelo, J., Berhouet, J., Chaoui, J., Freehill, M. T., Collin, P., Warner, J., Walch, G., Athwal, G.  
2023
- **Elbow UCL repair with suture augmentation is biomechanically equivalent to reconstruction and clinically demonstrates excellent outcomes: a systematic review.** *Arthroscopy : the journal of arthroscopic & related surgery : official publication of the Arthroscopy Association of North America and the International Arthroscopy Association*  
Spears, T. M., Parikh, B., Chalmers, P. N., Smith, M. V., Freehill, M. T., Bowman, E. N.  
2023
- **Evaluation of Mid-term Outcomes Following Shoulder Hemiarthroplasty for Avascular Necrosis of the Humeral Head in Patients 40 Years and Younger.** *Journal of surgical orthopaedic advances*  
Hrin, M. L., Beck, E. C., Miller, E. M., Weimer, A. S., Robbins, C. M., Matthews, H., Freehill, M. T., Tuohy, C. J., Wiesler, E. R., Graves, B. R., Waterman, B. R.  
2023; 32 (2): 118-121
- **Characteristics Associated With Noncompliance of Current Pitch Smart Guidelines in High School Baseball Pitchers Throughout the United States.** *Orthopaedic journal of sports medicine*  
Erickson, B. J., Bowman, E. N., Camp, C., Freehill, M. T., Smith, M. V., Serio, N., Ishikawa, H., Smith, K., Chalmers, P. N.  
2023; 11 (9): 23259671231199085
- **Reliability of Ulnar Collateral Ligament Findings on Magnetic Resonance Imaging.** *Journal of shoulder and elbow surgery*  
Bowman, E. N., Sciascia, A., Freehill, M. T., Smith, M. V., Da Silva, A., Chalmers, P. N.  
2023
- **Is it Safe to Throw a Breaking Ball? An Editorial** *SPORTS HEALTH-A MULTIDISCIPLINARY APPROACH*  
Freehill, M. T.  
2023; 15 (4): 476-477
- **No significant difference in risk of prolonged opioid use following outpatient versus inpatient total shoulder arthroplasty: A propensity matched analysis.** *Shoulder & elbow*  
Xiao, M., Curtis, D. M., Cheung, E. V., Freehill, M. T., Abrams, G. D.  
2023; 15 (3): 292-299
- **Most high school baseball pitchers are using weighted ball throwing programs to increase ball velocity: crosssectional analysis of US high school pitchers.** *JSES reviews, reports, and techniques*  
Bowman, E. N., Camp, C. L., Erickson, B. J., Freehill, M. T., Smith, M. V., Madia, E., Matthews, M., Simister, S., Wheelwright, C., Ishikawa, H., Chalmers, P. N.  
2023; 3 (2): 137-141
- **Game-Day Pitch and Throw Count Feasibility Using a Single Sensor to Quantify Workload in Youth Baseball Players.** *Orthopaedic journal of sports medicine*  
Freehill, M. T., Rose, M. J., McCollum, K. A., Agresta, C., Cain, S. M.  
2023; 11 (3): 23259671231151450
- **Shoulder Surgery Postoperative Immobilization: An International Survey of Shoulder Surgeons.** *Biology*  
Freehill, M. T., Murray, I. R., Calvo, E., Lädermann, A., Srikumaran, U.  
2023; 12 (2)
- **What are the Indications for Medial Ulnar Collateral Ligament Surgery in Baseball Players? An MRI Case-based Study.** *Journal of shoulder and elbow surgery*  
Bowman, E. N., Smith, M. V., Freehill, M. T., Camp, C. L., Erickson, B. J., Sciascia, A., Da Silva, A., Chalmers, P. N.  
2023
- **First-Time Traumatic Anterior Shoulder Dislocation: Current Concepts.** *Journal of ISAKOS : joint disorders & orthopaedic sports medicine*  
Nazzal, E. M., Herman, Z. J., Engler, I. D., Dalton, J. F., Freehill, M. T., Lin, A.  
2023
- **Upper extremity injuries have the poorest return to play and most time lost in professional baseball: a Systematic Review of injuries in major league baseball.** *Arthroscopy : the journal of arthroscopic & related surgery : official publication of the Arthroscopy Association of North America and the International Arthroscopy Association*  
Tramer, J. S., Castle, J. P., Gaudiani, M. A., Lizzio, V. A., Mcgee, A., Freehill, M. T., Lynch, T. S.

2022

- **Sensor Location Matters When Estimating Player Workload for Baseball Pitching.** *Sensors (Basel, Switzerland)*  
Agresta, C., Freehill, M. T., Zendler, J., Giblin, G., Cain, S.  
2022; 22 (22)
- **Using Sensors for Player Development: Assessing Biomechanical Factors Related to Pitch Command and Velocity.** *Sensors (Basel, Switzerland)*  
Agresta, C., Freehill, M. T., Nakamura, B., Guadagnino, S., Cain, S. M.  
2022; 22 (21)
- **Biomechanical Comparison of a Novel Multiplanar, Perpendicular Whipstitch With the Krackow Stitch and Standard Commercial Whipstitch.** *Orthopaedic journal of sports medicine*  
Muscattelli, S., Walley, K. C., Daly-Seiler, C. S., Greenstein, J. A., Sciascia, A., Patterson, D. P., Freehill, M. T.  
2022; 10 (8): 23259671221107034
- **Using Advanced Data to Analyze the Impact of Injury on Performance of Major League Baseball Pitchers: A Narrative Review.** *Orthopaedic journal of sports medicine*  
LaPrade, C. M., Cinque, M. E., Safran, M. R., Freehill, M. T., Wulf, C. A., LaPrade, R. F.  
2022; 10 (7): 23259671221111169
- **Limited Biomechanical Evidence Behind Single Row Versus Double Row Repair of Subscapularis Tears: A Systematic Review.** *Arthroscopy, sports medicine, and rehabilitation*  
Xiao, M., Cohen, S. A., Cheung, E. V., Sherman, S. L., Abrams, G. D., Freehill, M. T.  
2022; 4 (3): e1193-e1201
- **Ulnar Collateral Ligament Reconstruction Does Not Decrease Spin Rate or Performance in Major League Pitchers.** *The American journal of sports medicine*  
Cinque, M. E., LaPrade, C. M., Abrams, G. D., Sherman, S. L., Safran, M. R., Freehill, M. T.  
2022; 3635465221097421
- **Revision Ulnar Collateral Ligament Reconstruction in Major League Baseball Pitchers: Effects of Fastball Velocity and Usage.** *Journal of shoulder and elbow surgery*  
LaPrade, C. M., Cinque, M. E., Chona, D. V., Sciascia, A. D., Abrams, G. D., Sherman, S. L., Safran, M. R., Freehill, M. T.  
2022
- **Anatomic Total Shoulder Arthroplasty: Component Size Prediction with 3-Dimensional Pre-Operative Digital Planning.** *Journal of shoulder and elbow arthroplasty*  
Freehill, M. T., Weick, J. W., Ponce, B. A., Bedi, A., Haas, D., Ruffino, B., Robbins, C., Prete, A. M., Costouros, J. G., Warner, J. J.  
2022; 6: 24715492221098818
- **Postoperative Infection: Prevention, Diagnosis, and Treatment Guidelines for the Sports Surgeon.** *Sports medicine and arthroscopy review*  
Pullen, W. M., Money, A. J., Ray, T. E., Freehill, M. T., Sherman, S. L.  
2022; 30 (1): 17-23
- **Return-to-play and performance after operative treatment of Achilles tendon rupture in elite male athletes: a scoping review.** *British journal of sports medicine*  
LaPrade, C. M., Chona, D. V., Cinque, M. E., Freehill, M. T., McAdams, T. R., Abrams, G. D., Sherman, S. L., Safran, M. R.  
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- **Arthroscopic Single and Double Row Repair of Isolated and Combined Subscapularis Tears Result in Similar Improvements in Outcomes: A Systematic Review.** *Arthroscopy : the journal of arthroscopic & related surgery : official publication of the Arthroscopy Association of North America and the International Arthroscopy Association*  
Xiao, M., Cohen, S. A., Cheung, E. V., Abrams, G. D., Freehill, M. T.  
2021
- **The Science and Biomechanics of Long-Toss.** *Current reviews in musculoskeletal medicine*  
Calcei, J. G., Freehill, M. T.  
2021
- **Reported Technical Aspects of Type II SLAP Lesion Repairs in Athletes.** *Arthroscopy, sports medicine, and rehabilitation*  
Weick, J. W., Workman, W. B., Bush, C. J., McCollum, K. A., Sugaya, H., Freehill, M. T.

2021; 3 (2): e289-e296

- **Introduction OPERATIVE TECHNIQUES IN SPORTS MEDICINE**  
Freehill, M. T., Garrigues, G. E.  
2021; 29 (1)
- **The Effect of Straight-Line Long-Toss Versus Ultra-Long-Toss Throwing on Passive Glenohumeral Range of Motion Recovery After Pitching SPORTS HEALTH-A MULTIDISCIPLINARY APPROACH**  
Luo, T., Sciascia, A. D., Stone, A. V., Gwam, C. U., Grimes, C. A., Strahm, J. G., Mannava, S., Naugher, G., Waterman, B. R., Freehill, M. T.  
2021: 1941738120980016
- **Comparison of mechanical properties between Nice knot, Modified Nice knot, and surgeon's knot. Clinical biomechanics (Bristol, Avon)**  
Friedman, L. G., Quigley, R., Shewman, E., Kirsch, J., Freehill, M. T., Garrigues, G. E.  
2021; 90: 105486
- **Pitch Break and Performance Metrics Remain Unchanged in Those who Returned to the Same Level of Play after Ulnar Collateral Ligament Reconstruction in Major League Baseball Pitchers. Journal of shoulder and elbow surgery**  
Platt, B. N., Zacharias, A. J., Uhl, T. n., Freehill, M. T., Conley, C. E., Stone, A. V.  
2021
- **Outcomes After Resection Arthroplasty Versus Permanent Antibiotic Spacer for Salvage Treatment of Shoulder Periprosthetic Joint Infections: A Systematic Review and Meta-Analysis. Journal of shoulder and elbow surgery**  
Xiao, M., Money, A., Pullen, W. M., Cheung, E. V., Abrams, G. D., Freehill, M. T.  
2021
- **Pain Management in Shoulder Arthroplasty: A Systematic Review and Network Meta-Analysis of Randomized Controlled Trials. Journal of shoulder and elbow surgery**  
Xiao, M., Cohen, S. A., Cheung, E. V., Freehill, M. T., Abrams, G. D.  
2021
- **Superior Capsular Reconstruction: A Systematic Review of Surgical Techniques and Clinical Outcomes. Arthroscopy : the journal of arthroscopic & related surgery : official publication of the Arthroscopy Association of North America and the International Arthroscopy Association**  
Gao, I., Sochacki, K. R., Freehill, M. T., Sherman, S. L., Abrams, G. D.  
2020
- **Quantifying Throw Counts and Intensities Throughout a Season in Youth Baseball Players: A Pilot Study. Journal of biomechanical engineering**  
Rose, M., McCollum, K. A., Freehill, M. T., Cain, S.  
2020
- **Optimizing the Double-Row Construct: An Untied Medial Row Demonstrates Equivalent Mean Contact Pressures in a Rotator Cuff Model ORTHOPAEDIC JOURNAL OF SPORTS MEDICINE**  
Stone, A., Luo, T., Sharma, A., Danelson, K. A., De Gregorio, M., Freehill, M. T.  
2020; 8 (4): 2325967120914932
- **Thrower's Exostosis of the Shoulder: A Systematic Review With a Novel Classification. Orthopaedic journal of sports medicine**  
Freehill, M. T., Mannava, S. n., Higgins, L. D., Lädermann, A. n., Stone, A. V.  
2020; 8 (7): 2325967120932101
- **Osseous Healing With Nonrigid Suture Fixation in the Arthroscopic Latarjet Procedure. Orthopaedic journal of sports medicine**  
Weick, J. W., Kalia, V. n., Pacheco, E. n., Jacobson, J. A., Freehill, M. T.  
2020; 8 (11): 2325967120964489
- **Outcomes Evaluation of the Athletic Elbow SPORTS MEDICINE AND ARTHROSCOPY REVIEW**  
Freehill, M. T., Mannava, S., Safran, M. R.  
2014; 22 (3): E25-E32
- **Biomechanical evaluation of a coracoclavicular and acromioclavicular ligament reconstruction technique utilizing a single continuous intramedullary free tendon graft. Journal of shoulder and elbow surgery**  
Abrams, G. D., McGarry, M. H., Jain, N. S., Freehill, M. T., Shin, S., Cheung, E. V., Lee, T. Q., Safran, M. R.  
2013; 22 (7): 979-985

- **Diagnosis and Management of Ulnar Collateral Ligament Injuries in Throwers** *CURRENT SPORTS MEDICINE REPORTS*

Freehill, M. T., Safran, M. R.

2011; 10 (5): 271-278

- **The Labrum of the Hip: Diagnosis and Rationale for Surgical Correction** *CLINICS IN SPORTS MEDICINE*

Freehill, M. T., Safran, M. R.

2011; 30 (2): 293-?