



Michael T. Freehill, MD, FAOA

Associate Professor of Orthopaedic Surgery

 Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

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ACADEMIC CONTACT INFORMATION

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Bio

BIO

Dr. Freehill is a board-certified, double fellowship-trained specialist in orthopaedic surgery with a sub-specialty certification in sports medicine and serves as Chief of Shoulder & Elbow Surgery. His concentration is in shoulder and sports elbow. Dr. Freehill serves as Head Team physician for the Athletics Major League Baseball organization. He is also a team physician for Stanford University athletics and Head Team physician for the Stanford University baseball.

Dr. Freehill's practice focuses on all shoulder conditions including rotator cuff tears, instability, arthritis, 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, to complex surgery.

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 while in residency. 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 and push baseball science forward. He conducts cutting edge research on the biomechanics of overhead throwers and has studied pitch counts in adolescent players funded by Major League Baseball and is currently studying post-ulnar collateral ligament surgery in professional baseball hitters funded by the American Orthopaedic Society for Sports Medicine. (AOSSM). He is a member of the MLB Team Physicians Association and its Research Committee. Additionally, he was the pioneering mind behind the Pitching Lab at Wake Forest.

Dr. Freehill has pioneered the use of some of the latest techniques and technology for leading-edge shoulder care. Among the advanced technologies he utilizes is a virtual reality (VR) planning software system that enables him to perform a simulated shoulder arthroplasty procedure prior to entering the operating room with a patient. He is also a member of the robotics team which will revolutionize the manner in which shoulder replacement is performed.

Dr. Freehill has over 100 peer-reviewed articles and his work has been featured in the American Journal of Sports Medicine, Orthopedic Journal of Sports Medicine, Journal of Shoulder and Elbow Surgery, Arthroscopy, and elsewhere. He has written numerous book chapters and made over 400 presentations at regional, national, and international conferences. Dr. Freehill's honors include the Orthopaedic Residency Research Award in residency 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 and was 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.

Currently, the Associate Editor for Shoulder & Elbow for the American Journal of Sports Medicine, he is also a committee member for the American Shoulder and Elbow Surgeons Society, American Orthopaedic Society for Sports Medicine, International Congress of Arthroscopy and Sports Traumatology, Arthroscopy Association of North America, and American Academy of Orthopaedic Surgeons, American Orthopaedic Association and has been elected into the Herodicus Society.

CLINICAL FOCUS

- Orthopaedic Sports Medicine
- Orthopaedic Shoulder & Elbow Surgery
- Orthopaedic Sports Shoulder & Elbow Medicine

ACADEMIC APPOINTMENTS

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

PROFESSIONAL EDUCATION

- Medical Education: Tulane University School of Medicine (2005) LA
- 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

Research & Scholarship

CLINICAL TRIALS

- Subscapularis Repair Augmentation for Total Shoulder Arthroplasty, Recruiting

Publications

PUBLICATIONS

- **Clinical Utility of the Moving Valgus Stress Test and Milking Maneuver for Medial Ulnar Collateral Ligament Injuries of the Elbow.** *The American journal of sports medicine*
Sciascia, A. D., Bowman, E. N., Camp, C., Chalmers, P., Smith, M. V., Wolf, B. R., Griffith, T., Erickson, B., Freehill, M. T., Safran, M., Hardaway, A., Azar, F. M., Brolin, et al

2026: 3635465261439107

- **The Tommy John Saga Continues: Is the Flexor-Pronator Playing the Co-starring Role?** *AMERICAN JOURNAL OF SPORTS MEDICINE*
Freehill, M. T.
2026; 54 (3): 507-508
- **Effect of Ulnar Collateral Ligament Reconstruction on Off-Speed Pitch Performance in Major League Baseball Pitchers.** *Orthopaedic journal of sports medicine*
Loughran, G. J., Cinque, M. E., Sciascia, A., Schulman, B., Workman, W., Freehill, M. T.
2026; 14 (2): 23259671251407339
- **Effect of long-toss throwing on elbow injuries in high school baseball pitchers** *ASIA-PACIFIC JOURNAL OF SPORTS MEDICINE ARTHROSCOPY REHABILITATION AND TECHNOLOGY*
Minami, M., Kida, Y., Onishi, O., Hoshika, S., Sugaya, H., Takahashi, K., Freehill, M. T.
2025; 42: 90-95
- **Effect of long-toss throwing on elbow injuries in high school baseball pitchers.** *Asia-Pacific journal of sports medicine, arthroscopy, rehabilitation and technology*
Minami, M., Kida, Y., Onishi, O., Hoshika, S., Sugaya, H., Takahashi, K., Freehill, M. T.
2025; 42: 90-95
- **Acromioclavicular Joint Injuries: Multi-center Expert Consensus Study using the Delphi Method.** *Journal of shoulder and elbow surgery*
Barnes, L., Shi, L. L., Walters, T., Abrams, G., ASES AC Joint Study Group, Abrams, G., Barnes, L., Budge, M., Cohen, S., Creighton, A., Freehill, M., Lobao Goncalves, M. H., Gregory, J., et al
2025
- **Sternoclavicular Joint Reconstruction Using the Sternal Docking Technique.** *Video journal of sports medicine*
Raji, Y., Loughran, G. J., Bugarinovic, G., Freehill, M. T.
2025; 5 (1): 26350254241282335
- **Minimally invasive needle tenotomy vs. platelet rich plasma injection in the treatment of chronic elbow epicondylitis.** *JSES international*
Nguyen, C. T., Lee, M. H., Kaufman, M. W., Meng, Y., Koduri, J. A., Abrams, G., Cheung, E. V., Freehill, M. T., Roh, E. Y.
2025; 9 (1): 231-236
- **Hand size association with ulnar collateral ligament reconstruction in professional baseball players.** *JSES international*
Freehill, M. T., Walsh, M., Richards, N., Morasso, J., Ackron, T. A., Lau, E., Chen, C. R., Tremble, C. S., Ryu, R. K., Lemos, S. E.
2025; 9 (1): 237-243
- **Arthroscopic Debridement and Resection of a Bennett Lesion in a Collegiate Baseball Pitcher.** *Video journal of sports medicine*
Loughran, G. J., Hollyer, I., Helenius, K., Heffner, M., Freehill, M. T.
2024; 4 (5): 26350254241266288
- **Subpectoral Biceps Tenodesis Using an All-Suture Anchor.** *Video journal of sports medicine*
Raji, Y., Bugarinovic, G., Helenius, K. N., Freehill, M. T.
2024; 4 (5): 26350254241249766
- **Glenoid Structural Bone Grafting in Reverse Total Shoulder Arthroplasty: Clinical and Radiographic Outcomes.** *Journal of shoulder and elbow surgery*
Sholtis, C., Kha, S. T., Ramakrishnan, A., Abrams, G. D., Freehill, M. T., Cheung, E. V.
2024
- **Youth Pitcher Fatigue: Medial Elbow Laxity, Ultrasonographic Assessment of Flexor-Pronator Mass Energy Depletion, and Association With Pitch Count.** *Orthopaedic journal of sports medicine*
Schubert, M. F., Awan, T. M., Sciascia, A. D., Figueroa, E. G., DeMink, J. M., Selak, D. M., Snyder, C. M., Gagnier, J. J., Freehill, M. T.
2024; 12 (6): 23259671241256294
- **High variability among surgeons in evaluation, treatment, and rehabilitation of medial ulnar collateral ligament injuries.** *JSES reviews, reports, and techniques*
Sambare, N. D., Chalmers, P. N., Camp, C. L., Bowman, E. N., Erickson, B. J., Sciascia, A., Freehill, M. T., Smith, M. V.
2024; 4 (2): 182-188

- **Augmented Ulnar Collateral Ligament Repair With Structural Bioinductive Scaffold: A Biomechanical Study.** *The American journal of sports medicine*
Lin, K. M., Brinson, K., Atzmon, R., Chan, C. K., Sherman, S. L., Safran, M. R., Freehill, M. T.
2024: 3635465241236465
- **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: cross-sectional 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., Lädemann, 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*
Nazzari, 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., Zender, 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)
- **Rotator Cuff Repair With a Bioinductive Patch.** *Video journal of sports medicine*
Forsythe, B., Knapik, D. M., Patel, H. H., Berlinberg, E. J., Chahla, J., Freehill, M. T., Riboh, J.
2022; 2 (4): 26350254221093083
- **Biomechanical Comparison of a Novel Multiplanar, Perpendicular Whipstitch With the Krackow Stitch and Standard Commercial Whipstitch.** *Orthopaedic journal of sports medicine*
Muscatelli, 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.
2022
- **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
- **The Evolution and Role of the Bursal Acromial Reconstruction.** *Video journal of sports medicine*
Curtis, D. M., Pullen, W. M., Helenius, K., Freehill, M. T.
2021; 1 (2): 26350254211001367
- **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
- **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
- **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-?