



## Constance Chu, MD

Elsbach-Richards Professor of Surgery  
Orthopaedic Surgery

### CLINICAL OFFICE (PRIMARY)

- **Stanford Sports Medicine Clinic**

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### ACADEMIC CONTACT INFORMATION

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### Bio

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#### BIO

Dr. Constance R. Chu is Professor and Vice Chair Research, in the Department of Orthopedic Surgery at Stanford University. She is also Director of the Joint Preservation Center and Chief of Sports Medicine at the VA Palo Alto. Previously, she was the Albert Ferguson Endowed Chair and Professor of Orthopaedic Surgery at the University of Pittsburgh. She is a clinician-scientist who is both principal investigator of several projects funded by the National Institutes of Health and who has been recognized as a Castle-Connelly/US News and World Report "Top Doctor" in Orthopedic Surgery as well as on Becker's list of Top Knee Surgeons in the United States. Her clinical practice focuses on the knee: primarily restoration and reconstruction of the ACL, menisci and cartilage. She graduated from the U.S. Military Academy at West Point and earned her medical degree from Harvard Medical School.

As Director of the multi-disciplinary Joint Preservation Center structured to seamlessly integrate the latest advances in biologics, mechanics, and imaging with comprehensive patient centered musculoskeletal and orthopedic care, Dr. Chu aims to develop a new model for health care delivery, research and education with an emphasis on health promotion and prevention. Cornerstones of this program include teamwork and a focus on personalized medicine. A central goal is to transform the clinical approach to osteoarthritis from palliation to prevention. In addition to optimizing clinical operations, outstanding research is critical to developing more effective new treatments. Towards this end, Dr. Chu is leading innovative translational research from bench to bedside in three main areas: quantitative imaging and biomarker development for early diagnosis and staging of joint and cartilage injury and degeneration; cartilage tissue engineering and stem cell based cartilage repair; and molecular and biological therapies for joint restoration and joint rejuvenation. Her research efforts have led to more than 30 professional awards and honors to include a Kappa Delta Award, considered to be the highest research honor in Orthopedic Surgery.

Dr. Chu also regularly holds leadership and committee positions in major professional organizations such as the American Association of Orthopedic Surgeons (AAOS) and the American Orthopedic Association (AOA). In her subspecialty of Orthopedic Sports Medicine, she is a past President of the Forum Sports Focus Group, a member of the Herodicus Society of leaders in Sports Medicine, and immediate past Chair of the American Orthopedic Society for Sports Medicine (AOSSM) Research Council. She is alumnus of the AOA American, British, Canadian (ABC) and the AOSSM Traveling Fellowships.

## CLINICAL FOCUS

- Sports Medicine and Arthroscopy
- ACL, Cartilage and Meniscus Repair
- Orthopaedic Sports Medicine

## ACADEMIC APPOINTMENTS

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

## ADMINISTRATIVE APPOINTMENTS

- Director, Joint Preservation Center, VA Palo Alto, (2013- present)
- Chief, Sports Medicine, VA Palo Alto, (2013- present)
- Vice Chair Research, Stanford Orthopedic Surgery, (2013- present)

## PROFESSIONAL EDUCATION

- Fellowship: Brigham and Women's Hospital Orthopaedic Surgery Programs (1999) MA
- Residency: UCSD Orthopaedic Surgery (1998) CA
- Internship: UCSD Surgery Residency (1993) CA
- Board Certification: Orthopaedic Surgery, American Board of Orthopaedic Surgery (2002)
- Medical Education: Harvard Medical School (1992) MA
- Fellowship, Drexel University , Executive Leadership in Academic Medicine (2012)
- Certificate, University of Pittsburgh Katz Business School , Physician Leadership and Management (2011)
- Undergraduate, US Military Academy at West Point (1983)

## LINKS

- Get a Second Opinion: <https://stanfordhealthcare.org/second-opinion/overview.html>

## Research & Scholarship

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### CLINICAL TRIALS

- Gait Retraining to Reduce Joint Loading, Inflammation, and PTOA Risk, Recruiting
- The Effects of Tranexamic Acid on Joint Inflammation and Cartilage Health in Anterior Cruciate Ligament Injured Patients, Recruiting
- Gait Modifications and Cutaneous Stimulation, Not Recruiting
- Precision Assessment of Platelet Rich Plasma for Joint Preservation, Not Recruiting

## Teaching

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### COURSES

#### 2025-26

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

#### 2024-25

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

#### 2023-24

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

#### 2022-23

- Orthopaedic Tissue Engineering: ORTHO 270 (Win)

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- PM& R Sports Medicine (Fellowship Program)
- Sports Medicine (Fellowship Program)

## Publications

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### PUBLICATIONS

- **Handheld Ultrasound for Personalized All-Soft-Tissue Quadriceps Tendon Anterior Cruciate Ligament Reconstruction.** *Video journal of sports medicine*  
Chu, C. R., Song, L., He, J., Roh, E.  
2026; 6 (3): 26350254251408068
- **BMI and Varus Malalignment Compound to Define a High-Risk Phenotype for Compartment-Specific Knee Osteoarthritis Progression.** *medRxiv : the preprint server for health sciences*  
White, M. S., Kogan, F., Delp, S. L., Chu, C. R., Sherman, S. L., S, A. P., Gold, G. E., Chaudhari, A. S., Gatti, A. A.  
2026
- **What's New in Biologics.** *The Journal of bone and joint surgery. American volume*  
Chu, C. R., Guilak, F., Huard, J., Grande, D.  
2026; 108 (8): 535-540
- **NEURAL SHAPE MODEL-BASED SCORE OUTPERFORMS CONVENTIONAL MEASURES IN QUANTIFYING EARLY AND PROGRESSIVE JOINT REMODELING IN ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTED KNEES**  
Pai, S., White, M. S., Black, M. S., Young, K., Sherman, S., Chu, C., Williams, A., Gold, G., Kogan, F., Hargreaves, B., Chaudhari, A., Gatti, A.  
ELSEVIER SCI LTD.2026: S271-S272
- **Preventing osteoarthritis after anterior cruciate ligament injury: the case for targeting pre-osteoarthritis illness.** *Osteoarthritis and cartilage*  
Harkey, M. S., Hart, H. F., Kuenze, C., Lo, G., Kraus, V. B., Chu, C. R., Driban, J. B.  
2025
- **3D Hybrid Bioprinting for Complex Multi-Tissue Engineering.** *bioRxiv : the preprint server for biology*  
Alizadeh, H. V., Flores Pérez, A. S., Uno, T., Muniz, R. S., Kwon, S. H., Balachandar, A., Riley, N., Le, C. A., Li, J., Zhao, P., Lui, E., Kim, C., Moeinzadeh, et al  
2025
- **Daily Step Count 2 Years After Anterior Cruciate Ligament Reconstruction and Associations With Cartilage Health and Knee Symptoms and Function.** *Sports health*  
Øiestad, B. E., Williams, A. A., Titchenal, M. R., Lutz, A. M., Chu, C. R.  
2025: 19417381251384327
- **Failure to Achieve the Patient Acceptable Symptom State 2 Years After Anterior Cruciate Ligament Reconstruction Reflects Poor Knee Loading Patterns.** *The American journal of sports medicine*  
He, J., Williams, A. A., Erhart-Hledik, J. C., Chu, C. R.  
2025: 3635465251349105
- **PATIENT-SPECIFIC CARTILAGE PRESSURES ARE RELATED TO OSTEOARTHRITIS PROGRESSION AND DISEASE SEVERITY**  
Gatti, A. A., Marusich, K. R., Ong, C., Chu, C. R., Esrafilian, A., Delp, S., Gold, G. E., Kogan, F., Chaudhari, A.  
ELSEVIER SCI LTD.2025
- **USING OPENCAP TO ASSESS SINGLE-LEG SQUATS IN A COMBINED COHORT WITH ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION RECIPIENTS AND HEALTHY CONTROLS**  
He, J., Zhang, I., Petrucci, M., Hicks, J., Chu, C. R.

ELSEVIER SCI LTD.2025

- **Ergonomics in the Operating Room: Recommendations for Orthopaedic Surgeons.** *The Journal of the American Academy of Orthopaedic Surgeons*  
Valtanen, R. S., van Niekerk, M., Chu, C. R.  
2025
- **Transformative approaches for effective clinical trials to reduce the disease burden of osteoarthritis.** *Seminars in arthritis and rheumatism*  
Chu, C. R., Hochberg, M., White, D., Rodeo, S., Huard, J., Shapiro, S., Lattermann, C., Guilak, F.  
2025; 71: 152652
- **When is Anterolateral Complex Augmentation Indicated? Perspectives from the 2024 Freddie Fu Panther Sports Medicine Symposium.** *Journal of ISAKOS : joint disorders & orthopaedic sports medicine*  
Giusto, J. D., Konstantinou, E., Rabuck, S. J., Lesniak, B. P., Hughes, J. D., Irrgang, J. J., Musahl, V., Panther ACL Treatment Group, Adachi, N., Alaia, M. J., Ayeni, O. R., Becker, R., Bennett, C., et al  
2025: 100393
- **Reproducibility of Quantitative Double-Echo Steady-State T2 Mapping of Knee Cartilage.** *Journal of magnetic resonance imaging : JMRI*  
Williams, A. A., Asay, J. L., Asare, D., Desai, A. D., Gold, G. E., Hargreaves, B. A., Chaudhari, A. S., Chu, C. R.  
2024
- **Strengthening the Pipeline: Promoting Diversity into Orthopedic Surgery.** *Clinics in sports medicine*  
van Niekerk, M., O'Mara, A., Kha, S., Zhou, J., McAdams, T. A., Ladd, A., Shea, K., Frick, S., Maloney, W. J., Chu, C. R.  
2024; 43 (2): 253-270
- **A MORE DYNAMIC LOADING PATTERN IS ASSOCIATED WITH IMPROVED CLINICAL OUTCOMES 6 MONTHS AFTER PLATELET-RICH PLASMA TREATMENT**  
He, J., Erhart-Hledik, J., Williams, A. A., Asare, D., Torres, H., Chu, C. R.  
ELSEVIER SCI LTD.2024: S147
- **PLATELET RICH PLASMA EFFECTS ON KNEE CARTILAGE AND OSTEOARTHRITIS SYMPTOMS**  
Williams, A. A., Asare, D., Torres, H., Chu, C. R.  
ELSEVIER SCI LTD.2024: S186
- **KNEE CARTILAGE COMPOSITION ASSOCIATES WITH FOOT AND ANKLE POSTURE**  
Williams, A. A., He, J., Chu, C. R.  
ELSEVIER SCI LTD.2024: S143-S144
- **Equality, Diversity, and Inclusion in Sports Medicine.** *Clinics in sports medicine*  
Chu, C. R., Taylor, E., Boyd, J.  
2024; 43 (2): xiii-xv
- **Dysregulated fibrinolysis and plasmin activation promote the pathogenesis of osteoarthritis.** *JCI insight*  
Wang, Q., Shao, G., Zhao, X., Wong, H. H., Chin, K., Zhao, M., Bai, A., Bloom, M. S., Love, Z. Z., Chu, C. R., Cheng, Z., Robinson, W. H.  
2024
- **Optimizing Tissue Engineering for Clinical Relevance in Rotator Cuff Repair.** *Tissue engineering. Part B, Reviews*  
Durtschi, M., Kim, S., Li, J., Kim, C., Chu, C., Cheung, E., Safran, M., Abrams, G., Yang, Y. P.  
2024
- **AOA Critical Issues: How Research Improves Clinical Care: The Case for Orthopaedic Surgeon Research Leadership and Collaboration: AOA Critical Issues Symposium.** *The Journal of bone and joint surgery. American volume*  
Chu, C. R., Murray, M. M., Maloney, W. J., Hogan, M. V.  
2023
- **Using 3D MRI Bone Shape to Predict Pre-Osteoarthritis of the Knee 2 Years After Anterior Cruciate Ligament Reconstruction.** *The American journal of sports medicine*  
Williams, A. A., Koltsov, J. C., Brett, A., He, J., Chu, C. R.  
2023: 3635465231207615
- **A pilot study to determine the optimal dose of scAAVIL-1ra in a large animal model of post-traumatic osteoarthritis.** *Gene therapy*

- Thampi, P., Seabaugh, K. A., Pezzanite, L. M., Chu, C. R., Phillips, J. N., Grieger, J. C., McIlwraith, C. W., Samulski, R. J., Goodrich, L. R.  
2023
- **Experts Achieve Consensus on a Majority of Statements Regarding Platelet-Rich Plasma Treatments for Treatment of Musculoskeletal Pathology.** *Arthroscopy : the journal of arthroscopic & related surgery : official publication of the Arthroscopy Association of North America and the International Arthroscopy Association*  
Hurley, E. T., Sherman, S. L., Stokes, D. J., Rodeo, S. A., Shapiro, S. A., Mautner, K., Buford, D. A., Dragoo, J. L., Mandelbaum, B. R., Zaslav, K. R., Cole, B. J., Frank, R. M.  
2023
  - **POSTERIOR MEDIAL MENISCUS COMPOSITION ASSOCIATES WITH PATIENT REPORTED OUTCOMES 2 YEARS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**  
Williams, A. A., Chu, C. R.  
ELSEVIER SCI LTD.2023: S309-S310
  - **HIGHER KNEE LOADING CORRELATES TO GREATER CARTILAGE DEGENERATION 2 YEARS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**  
Williams, A. A., He, J., Bansal, S., Wadsworth, A. L., Hargreaves, B. A., Chu, C. R.  
ELSEVIER SCI LTD.2023: S128-S129
  - **INCREASED JOINT LOADING 1 MONTH AFTER PLATELET-RICH PLASMA TREATMENT OF KNEE OA IS ASSOCIATED WITH IMPROVED CLINICAL OUTCOMES 2 YEARS LATER**  
He, J., Erhart-Hledik, J. C., Chu, C. R.  
ELSEVIER SCI LTD.2023: S233-S234
  - **PATELLOREMORAL CARTILAGE MRI UTE-T2\*CHANGES OVER THE FIRST 2 YEARS FOLLOWING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION SHOW ASSOCIATIONS WITH PATIENT REPORTED OUTCOMES 9 YEARS LATER**  
Williams, A. A., Drain, N. P., Qian, Y., Chu, C. R.  
ELSEVIER SCI LTD.2023: S273-S274
  - **INCREASED JOINT LOADING 1 MONTH AFTER PLATELET-RICH PLASMA TREATMENT OF KNEE OA IS ASSOCIATED WITH IMPROVED CLINICAL OUTCOMES 2 YEARS LATER**  
He, J., Erhart-Hledik, J. C., Chu, C. R.  
ELSEVIER SCI LTD.2023: S7-S8
  - **Author Reply to "Regarding 'No Difference in Complication Rates or Patient-Reported Outcomes Between Bone-Patellar Tendon-Bone and Quadriceps Tendon Autograft for Anterior Cruciate Ligament Reconstruction'".** *Arthroscopy : the journal of arthroscopic & related surgery : official publication of the Arthroscopy Association of North America and the International Arthroscopy Association*  
Hogan, D. W., Burch, M. B., Rund, J. M., Geeslin, D. W., Ma, R., Gray, A. F., Chu, C. R., Ray, T. E., Pullen, W. M., Sherman, S. L.  
2022; 38 (6): 1761-1763
  - **Articular Cartilage: Injury, Restoration, and Preservation** *OPERATIVE TECHNIQUES IN ORTHOPAEDICS*  
Chu, C. R.  
2022; 32 (2)
  - **No Difference in Complication Rates or Patient-Reported Outcomes Between Bone-Patella Tendon-Bone and Quadriceps Tendon Autograft for Anterior Cruciate Ligament Reconstruction.** *Arthroscopy, sports medicine, and rehabilitation*  
Hogan, D. W., Burch, M. B., Rund, J. M., Geeslin, D. W., Ma, R., Gray, A. F., Chu, C. R., Ray, T. E., Pullen, W. M., Sherman, S. L.  
2022; 4 (2): e417-e424
  - **IS REMOTE ACTIVE FEEDBACK GAIT RETRAINING COMPARABLE TO IN-PERSON RETRAINING 2 YEARS POST ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION?**  
He, J., Mahtani, G. B., Chu, C. R.  
ELSEVIER SCI LTD.2022: S153
  - **NOVEL 'APP' AND WEARABLE INSOLE BASED REMOTE GAIT RETRAINING SHOW POTENTIAL TO ALTER GAIT MECHANICS TWO YEARS AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION**  
Mahtani, G. B., He, J., Chu, C. R.  
ELSEVIER SCI LTD.2022: S155
  - **Cartilage Matrix Degeneration Occurs within the First Year after ACLR and Is Associated with Impaired Clinical Outcome.** *Cartilage*  
Williams, A. A., Deadwiler, B. C., Dragoo, J. L., Chu, C. R.

1800: 19476035211063856

- **Biologic Augmentation for the Operative Treatment of Osteochondral Defects of the Knee: A Systematic Review** *ORTHOPAEDIC JOURNAL OF SPORTS MEDICINE*  
Chona, D., Kha, S. T., Minetos, P. D., LaPrade, C. M., Chu, C. R., Abrams, G. D., Safran, M. R., Sherman, S. L.  
2021; 9 (11)
- **Biologic Augmentation for the Operative Treatment of Osteochondral Defects of the Knee: A Systematic Review.** *Orthopaedic journal of sports medicine*  
Chona, D. V., Kha, S. T., Minetos, P. D., LaPrade, C. M., Chu, C. R., Abrams, G. D., Safran, M. R., Sherman, S. L.  
2021; 9 (11): 23259671211049756
- **Can We Afford to Ignore the Biology of Joint Healing and Graft Incorporation After ACL Reconstruction?** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*  
Chu, C. R.  
2021
- **Cartilage Oligomeric Matrix Protein Responses to a Mechanical Stimulus Associate with Ambulatory Loading in Individuals with Anterior Cruciate Ligament Reconstruction.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*  
Erhart-Hledik, J. C., Titchenal, M. R., Migliore, E., Asay, J. L., Andriacchi, T. P., Chu, C. R.  
2021
- **Biologic Association Annual Summit: 2020 Report.** *Orthopaedic journal of sports medicine*  
Frank, R. M., Sherman, S. L., Chahla, J., Dragoo, J. L., Mandelbaum, B., Members of the Biologic Association, Anz, A. W., Bradley, J. P., Chu, C. R., Cole, B. J., Farr, J., Flanigan, D. C., Gomoll, A. H., et al  
2021; 9 (6): 23259671211015667
- **Visualizing PreOsteoarthritis: Integrating MRI UTE-T2\* with Mechanics and Biology to Combat Osteoarthritis The 2019 Elizabeth Winston Lanier Kappa Delta Award.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*  
Chu, C. R., Williams, A. A., Erhart-Hledik, J. C., Titchenal, M. R., Qian, Y., Andriacchi, T. P.  
2021
- **Vertical Ground Reaction Force 2 Years After Anterior Cruciate Ligament Reconstruction Predicts 10-Year Patient-Reported Outcomes.** *Journal of orthopaedic research : official publication of the Orthopaedic Research Society*  
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Mahtani, G. B., Andriacchi, T. P.  
2021
- **Longitudinal changes in tibial and femoral cartilage thickness are associated with baseline ambulatory kinetics and cartilage oligomeric matrix protein (COMP) measures in an asymptomatic aging population.** *Osteoarthritis and cartilage*  
Erhart-Hledik, J. C., Chehab, E. F., Asay, J. L., Favre, J., Chu, C. R., Andriacchi, T. P.  
2021
- **Patient-Reported Outcomes and Knee Mechanics Correlate With Patellofemoral Deep Cartilage UTE-T2\* 2 Years After Anterior Cruciate Ligament Reconstruction.** *The American journal of sports medicine*  
Williams, A. A., Erhart-Hledik, J. C., Asay, J. L., Mahtani, G. B., Titchenal, M. R., Lutz, A. M., Andriacchi, T. P., Chu, C. R.  
2021: 363546520982608
- **Platelet-Rich Plasma Augmentation for Isolated Arthroscopic Meniscal Repairs Leads to Significantly Lower Failure Rates: A Systematic Review of Comparative Studies.** *Orthopaedic journal of sports medicine*  
Sochacki, K. R., Safran, M. R., Abrams, G. D., Donahue, J., Chu, C., Sherman, S. L.  
2020; 8 (11): 2325967120964534
- **Comparison of Autologous Chondrocyte Implantation and Osteochondral Allograft Transplantation of the Knee in a Large Insurance Database: Reoperation Rate, Complications, and Cost Analysis.** *Cartilage*  
Sochacki, K. R., Varshneya, K., Calcei, J. G., Safran, M. R., Abrams, G. D., Donahue, J., Chu, C., Sherman, S. L.  
2020: 1947603520967065
- **Utilizing the somatosensory system via vibratory stimulation to mitigate knee pain during walking: Randomized clinical trial.** *Gait & posture*  
Fischer, A. G., Erhart-Hledik, J. C., Asay, J. L., Chu, C. R., Andriacchi, T. P.  
2020; 80: 37–43

- **TRUNK MOVEMENT PATTERNS ARE ASSOCIATED WITH KNEE FLEXION MOMENT CHANGES WHILE UTILIZING THE SOMATOSENSORY SYSTEM DURING STAIR CLIMBING: CLINICAL TRIAL CROSSOVER STUDY**  
Fischer, A. G., Erhart-Hledik, J. C., Asay, J. L., Chu, C. R., Andriacchi, T. P.  
ELSEVIER SCI LTD.2020: S234–S235
- **VARIABLE RESPONSES IN PAIN AND FUNCTION 1 MONTH AFTER PLATELET-RICH PLASMA INJECTION ARE RELATED TO CHANGES IN JOINT LOADING DURING GAIT**  
Erhart-Hledik, J., Mahtani, G., Asay, J., Burt, H., Nguyen, M., Do, B., Andriacchi, T., Chu, C.  
ELSEVIER SCI LTD.2020: S246–S247
- **VARIABLE RESPONSES IN PAIN AND FUNCTION 1 MONTH AFTER PLATELET-RICH PLASMA INJECTION ARE RELATED TO CHANGES IN JOINT LOADING DURING GAIT**  
Erhart-Hledik, J., Mahtani, G., Asay, J., Burt, H., Nguyen, M., Do, B., Andriacchi, T., Chu, C.  
ELSEVIER SCI LTD.2020: S246–S247
- **Bridging Disciplines as a pathway to Finding New Solutions for Osteoarthritis a collaborative program presented at the 2019 Orthopaedic Research Society and the Osteoarthritis Research Society International. *Osteoarthritis and cartilage open***  
Andriacchi, T. P., Griffin, T. M., Loeser, R. F., Chu, C. R., Roos, E. M., Hawker, G. A., Erhart-Hledik, J. C., Fischer, A. G.  
2020; 2 (1): 100026
- **Single-cell mass cytometry reveals cross-talk between inflammation-dampening and inflammation-amplifying cells in osteoarthritic cartilage *Science Advances***  
Grandi, F., Baskar, R., Smeriglio, P., Murkherjee, S., Indelli, P., F. Amanatullah, D., Goodman, S., Chu, C., Bendall, S., Bhutani, N.  
2020; 6 (11)
- **Changes in Knee Adduction Moment Wearing a Variable-Stiffness Shoe Correlate with Changes in Pain and Mechanically-Stimulated Cartilage Oligomeric Matrix Levels. *Journal of orthopaedic research : official publication of the Orthopaedic Research Society***  
Erhart-Hledik, J. C., Mahtani, G. B., Asay, J. L., Migliore, E. n., Nguyen, M. M., Andriacchi, T. P., Chu, C. R.  
2020
- **Platelet-Rich Plasma (PRP) From Older Males With Knee Osteoarthritis Depresses Chondrocyte Metabolism and Upregulates Inflammation *JOURNAL OF ORTHOPAEDIC RESEARCH***  
O'Donnell, C., Migliore, E., Grandi, F., Koltsov, J., Lingampalli, N., Cisar, C., Indelli, P. F., Sebastiano, V., Robinson, W. H., Bhutani, N., Chu, C. R.  
2019; 37 (8): 1760–70
- **Classification systems for platelet-rich plasma. *The bone & joint journal***  
Rossi, L. A., Murray, I. R., Chu, C. R., Muschler, G. F., Rodeo, S. A., Piuze, N. S.  
2019; 101-B (8): 891–96
- **Longitudinal Changes in the Total Knee Joint Moment After Anterior Cruciate Ligament Reconstruction Correlate With Cartilage Thickness Changes *JOURNAL OF ORTHOPAEDIC RESEARCH***  
Erhart-Hledik, J., Chu, C., Asay, J., Favre, J., Andriacchi, T.  
2019; 37 (7): 1546–54
- **Adaptive Sports and the Warrior Athlete *SPORTS MEDICINE AND ARTHROSCOPY REVIEW***  
Chu, C. R., Diaz, R., Syrop, I. P.  
2019; 27 (2): 41
- **Platelet-Rich Plasma (PRP) from Older Males with Knee Osteoarthritis Depresses Chondrocyte Metabolism and Upregulates Inflammation. *Journal of orthopaedic research : official publication of the Orthopaedic Research Society***  
O'Donnell, C., Migliore, E., Grandi, F. C., Koltsov, J., Lingampalli, N., Cisar, C., Indelli, P. F., Sebastiano, V., Robinson, W. H., Bhutani, N., Chu, C. R.  
2019
- **Longitudinal changes in the total knee joint moment after anterior cruciate ligament reconstruction correlate with cartilage thickness changes. *Journal of orthopaedic research : official publication of the Orthopaedic Research Society***  
Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Favre, J., Andriacchi, T. P.  
2019
- **ACTIVATING THE SOMATOSENSORY SYSTEM ENHANCES KNEE FLEXION AND QUADRICEPS ACTIVITY DURING GAIT AND STAIR CLIMBING**  
Fischer, A. G., Erhart-Hledik, J. C., Asay, J. L., Chu, C. R., Andriacchi, T. P.

ELSEVIER SCI LTD.2019: S63–S64

- **CARTILAGE THICKNESS LOSS CORRELATES TO UTE-T2\*EARLY AFTER ACL RECONSTRUCTION**  
Williams, A., Eckstein, F., Wirth, W., Chu, C. R.  
ELSEVIER SCI LTD.2019: S328–S329
- **CHANGES IN KNEE ADDUCTION MOMENT WITH A VARIABLE-STIFFNESS SHOE ARE RELATED TO CHANGES IN PAIN AND FUNCTION**  
Erhart-Hledik, J., Mahtani, G., Asay, J., Andriacchi, T., Chu, C.  
ELSEVIER SCI LTD.2019: S111–S112
- **Changes in stair ascent biomechanics two to eight years after ACL reconstruction are associated with patient-reported outcomes** *GAIT & POSTURE*  
Fischer, A. G., Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.  
2019; 69: 91–95
- **MRI UTE-T2\*shows high incidence of cartilage subsurface matrix changes 2 years after ACL reconstruction** *JOURNAL OF ORTHOPAEDIC RESEARCH*  
Williams, A. A., Titchenal, M. R., Do, B. H., Guha, A., Chu, C. R.  
2019; 37 (2): 370–77
- **Changes in stair ascent biomechanics two to eight years after ACL reconstruction are associated with patient-reported outcomes.** *Gait & posture*  
Fischer, A. G., Erhart-Hledik, J. C., Chu, C. R., Asay, J. L., Andriacchi, T. P.  
2019; 69: 91–95
- **Optimizing Clinical Use of Biologics in Orthopaedic Surgery: Consensus Recommendations From the 2018 AAOS/NIH U-13 Conference** *JOURNAL OF THE AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS*  
Chu, C. R., Rodeo, S., Bhutani, N., Goodrich, L. R., Huard, J., Irrgang, J., LaPrade, R. F., Lattermann, C., Lu, Y., Mandelbaum, B., Mao, J., McIntyre, L., Mishra, et al  
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