

MISSION

mirrorusuhs.org/motion

To provide better value-based care by matching patients to interventions that are best suited for their specific needs and mitigate long-term consequences, ultimately resulting in reduced time away from duty, prolonged military careers, and improved health and quality of life following military service.

AT A GLANCE

- MOTION started in 2016 as a proof of concept for the reliable collection of patient-reported outcome measures (PROMs) in the US Military.
- In 2019, MOTION became an official Defense Health Agency (DHA) program of record. This is the first tri-service DoD-wide initiative leading the effort to address the treatment of musculoskeletal injuries, which are the largest source of disability, impaired readiness, and separation in the US Military.
- MOTION is now quickly expanding operations across dozens of U.S. and International Military Treatment Facilities (MTFs).
- This newsletter will serve to highlight MOTION enrollment, accomplishments, and publications, and offer routes of participation for collecting and utilizing MOTION data with the goal of improving overall clinical practice.



60,000+
Patients Enrolled

- Ortho = 15,000+
- Rehab = 45,000+



130+
Clinics

- Ortho = 15+
- Rehab = 115+



2,400,000+
Surveys Completed

- Ortho = 155,000+
- Rehab = 2,245,000+



5+
Specialties

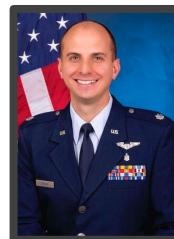
- Orthopaedics
- Physical Therapy
- Physical Medicine & Rehabilitation
- Athletic Training
- Family Medicine

MOTION Contacts



Matthew Bradley, MPH is a Program Manager for the Musculoskeletal Injury Rehabilitation Research for Operational Readiness (MIRROR) and Military Orthopaedics Tracking Injuries and Outcomes Network (MOTION) programs at the Walter Reed National Military Medical Center (WRNMMC).

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Dr. Andrew Sheean, Lt Col, USAF, MC, is an orthopaedic surgeon at Brooke Army Medical Center and the Director for MOTION.

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ENROLLMENT & SCOPE

MOTION enrolls active duty service members, retirees, and beneficiaries who receive various orthopaedic and rehabilitative treatment interventions on upper extremity, lower extremity, and spine injuries. Validated patient reported outcome measures are collected as part of patients' standard of care during the pre-operative/initial assessment visit and during follow-up intervals at 6-weeks, 6-months, and 1 / 2 / 5 / 10 / 15 / 20 years after treatment. This provides a longitudinal and comprehensive snapshot of all stages of a patient's recovery. Patient data are then linked with clinical provider assessments and other relevant clinical data to optimize patient outcomes and improve treatment.

MIRROR SUPPORT

[Musculoskeletal Injury Rehabilitation Research for Operational Readiness](#) (MIRROR) is the largest source of MSKI research with centralized infrastructure to achieve economies of scale. This multidisciplinary integration including orthopaedics, physical medicine, and rehabilitation optimizes resources across MTFs. MIRROR is currently headquartered at the Uniformed Services University (USU). The MOTION Program is supported and administered by the MIRROR infrastructure and leadership.

MIRROR optimizes data collection via:

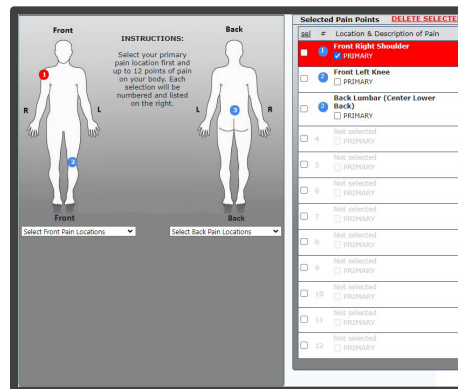


- iPads for survey completion
- Hotspots to improve connectivity
- Regulatory support
- Remote Research Assistants for administrative tasks

MOTION CASE COUNTS (Approximate)		
JOINT	ORTHO CASES CREATED	REHAB CASES CREATED
SHOULDER	6,500	7,100
KNEE	7,250	7,600
HIP	2,750	3,900
BACK / SPINE	700	10,100
OTHER UPPER EXTREMITY	1,000	3,000
OTHER LOWER EXTREMITY	500	9,200

CAREPOINT CAMP

MOTION's data capture system is CarePoint Clinical Assessment Management Portal (CAMP), which is a DHA owned and operated system. CAMP allows clinical providers to easily review patient responses, generate reports, and much more. (Photos right - click to enlarge)



Current Capabilities

- QR codes to administer assessments with any device, anywhere
- Customizations and automations
 - Clinic and timepoint specific emails
 - Automated email notifications and reminders
- Provider outcome reports
 - Track patient recovery over time
- Compare outcomes to other patients

New Capabilities

- Screener Survey
 - Automates case and survey creation and reduces the need for dedicated personnel support



HOW TO CONTRIBUTE

Activate A Clinic

To support the continued growth of MOTION data collection, more sites are needed for participation. The MOTION team can schedule a call to discuss options for data collection, customization, administrative support, and technical requirements. For inquiries, contact Matt Bradley (matthew.w.bradley4.ctr@health.mil).



Conduct MOTION Research

The MOTION team is eager for this powerful database to be utilized for additional protocol development. Please contact the MOTION team if you have ideas for a protocol that would utilize this data to improve patient-centric, value-oriented care.

Join A MOTION Sub-Committee

- Knee
- Hip
- Arthroplasty
- Lower Extremity
- Shoulder
- Spine
- Upper Extremity
- Non-Surgical Procedures

ACCOMPLISHMENTS & HIGHLIGHTS

- Dr. Andrew Sheean was awarded a **\$3 million Medical Technology Enterprise Consortium (MTEC)** grant in collaboration with the Multicenter Orthopedics Outcome Network (MOON) to develop predictive risk calculators for patients who undergo ACL reconstruction by leveraging MOTION's 5-year outcomes with MOON's 20-year outcomes.
- Matt Bradley and the MOTION team received approval for a **multi-site retrospective research protocol** that allows for the combining of MOTION data with other MHS databases, such as MDR, IMPAX, etc.
- Matt Bradley presented about the growth and major advances of the MOTION program at the January 2024 **Extremity War Injuries Symposium** in Washington, DC. (Photo Right)



LOOKING AHEAD

The MOTION Steering Committee is advocating for the incorporation of MOTION into either the annual physical/combat fitness tests (PFT/CFT) or the Periodic Health Assessment (PHA), which are the primary mechanisms for the US Military to assess medical readiness. They currently contain little-to-no subjective musculoskeletal health outcome measures. **The incorporation of MOTION into these annual assessments has the potential to provide 100% response rates annually and could provide both pre-injury and post-injury data.** Ultimately, this integration enhances strategic awareness for command leadership.

MOTION PUBLICATIONS

- Sheehan AJ, Tenan MS, DeFoor MT, Cognetti DJ, Bedi A, Lin A, Dekker TJ; MOTION Collaborative; Dickens JF. [Minimal Important Clinical Difference Values Are Not Uniformly Valid in the Active Duty Military Population Recovering from Shoulder Surgery](#). J Shoulder Elbow Surg. 2024 Apr 11:S1058-2746(24)00246-5. doi: 10.1016/j.jse.2024.02.044. Epub ahead of print. PMID: 38614369.
- Cognetti DJ, Tenan MS, Dickens JF, Patzkowski JC, Cote MP, Sansone M, Sheehan AJ. [The Glenoid Track Paradigm Does Not Reliably Affect Military Surgeons' Approach to Managing Shoulder Instability](#). Arthrosc Sports Med Rehabil. 2023 Feb 18;5(2):e403-e409. doi: 10.1016/j.asmr.2023.01.007. PMID: 37101867; PMCID: PMC10123446.
- Bedrin MD, Clark DM, Yow BG, Dickens JF, Kilcoyne KG. [Favorable short-term outcomes of micronized allogenic cartilage scaffold for glenoid cartilage defects associated with posterior glenohumeral instability](#). Arthrosc Sports Med Rehabil. 2023 Oct 15;5(6):100809. doi: 10.1016/j.asmr.2023.100809.
- Tenan MS, Dekker T, & Dickens JF. (2023). [An Exploratory Factor Analysis of the National Institutes of Health Patient-Reported Outcomes Measurement Information System and the Single Assessment Numeric Evaluation in Knee Surgery Patients](#). Military Medicine, 188(3-4):456-462.
- Mauntel TC, Tenan MS, Freedman BA, Potter BK, Provencher MT, Tokish JM, Lee IE, Rhon DI, MOTION Collaborative, & Dickens JF. (2022). [The Military Orthopaedics Tracking Injuries and Outcomes Network \(MOTION\): A Solution for Improving Musculoskeletal Care in the Military Health System](#). Military Medicine, 187(3-4), e282–e289.
- Boyer CW, Lee IE, & Tenan MS. (2022). [All MCIDs Are Wrong, But Some May be Useful](#). The Journal of Orthopaedic and Sports Physical Therapy, 52(6), 401–407.
- Anderson AB, Tenan MS, & Dickens JF. (2022). [Latent Factor Analysis of the PROMIS and Single Assessment Numeric Evaluation in Patients Undergoing Shoulder Surgery](#). Military Medicine, 187(7-8), e882–e888.
- Swan ER, Lynch TB, Sheehan AJ, Schmitz MR, Dickens JF, & Patzkowski JC. (2022). [High Incidence of Combined and Posterior Labral Tears in Military Patients With Operative Shoulder Instability](#). The American Journal of Sports Medicine, 50(6), 1529–1533.
- Sheehan AJ, Dickens JF, & Provencher MT. (2022). [Extremity War Injury Symposium XV: Sports and Readiness Symposium Summary](#). The Journal of the American Academy of Orthopaedic Surgeons, 30(5), 189–194.
- Tenan MS, Galvin JW, Mauntel TC, Tokish JM, MOTION Collaborative, & Dickens JF (2021). [Generating the American Shoulder and Elbow Surgeons Score Using Multivariable Predictive Models and Computer Adaptive Testing to Reduce Survey Burden](#). The American Journal of Sports Medicine, 49(3), 764–772.
- Tenan MS, Robins RJ, Sheehan AJ, Dekker TJ, MOTION Collaborative, & Dickens JF. (2021). [A High-Sensitivity International Knee Documentation Committee Survey Index From the PROMIS System: The Next-Generation Patient-Reported Outcome for a Knee Injury Population](#). The American Journal of Sports Medicine, 49(13), 3561–3568.

MOTION STEERING COMMITTEE

Active	Advisors
Andrew Sheehan, MD, Lt Col, USAF, MC	COL (Ret) Jon Dickens, MD
Matthew Bradley, MPH	Kurt Spindler, MD
Brian Barlow, MD, CDR, MC, USN	Maj (Ret) John Tokish, MD
Travis Dekker, MD, Maj, USAF, MC	
Shawn Gee, MD, MAJ, MC, USA	
Cory Janney, MD, CDR, MC, USN	
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