



# Extremity War Injuries XV

January 20-22, 2020

Washington, DC

**EWI Oversight Chairs:** Andrew H. Schmidt, MD and LTC Jonathan F. Dickens, MD

**Symposium Co-Chairs:**

Trauma: LTC Daniel Stinner, MD and Joseph Hsu, MD

Readiness & Sports Medicine: Maj Andrew J. Shean, MD and CAPT Matthew T. Provencher, MD

Hand and Upper Extremity Trauma: CDR Scott M. Tintle, MD and Jaimie Shores, MD

**Scientific Director:** CDR Scott M. Tintle, MD

## SYMPOSIUM AGENDA

### Monday, January 20, 2020

9:00 – 5:00 PM	STaR Meeting	TBD
3:00 – 5:30 PM	EWI Symposium Check In	Grand Foyer
7:00 PM	EWI Faculty Dinner	Marina Room

### Tuesday, January 21, 2020

6:30 AM	EWI Symposium Check In	Grand Foyer
6:30 – 7:00 AM	Coffee	Grand Foyer
7:00 – 7:05 AM	<b>Symposium Welcome</b> Andrew H. Schmidt, MD <i>University of Minnesota</i>	Grand Ballroom A
7:05 – 7:15 AM	<b>Past, Present and Future of EWI</b> James R. Ficke, MD <i>Johns Hopkins University</i>	
7:15 – 7:25 AM	<b>Current Funding Status: How it Works and How to Succeed</b> Andrew N. Pollak, MD <i>University of Maryland</i>	
7:25 – 7:35 AM	<b>Discussion</b>	
7:35 – 8:05 AM	<b>BREAKFAST/INDUSTRY UPDATE - Zimmer</b> Fast Frame: Rationale and Design Robert V. O'Toole, MD <i>* CME Credit Not Available</i>	Grand Ballroom A
8:05 – 8:15 AM	<b>Gaps and Priorities in Clinical and Rehabilitative Medicine</b> MAJ Barbara K. Bujak, PT, DPT, PhD <i>US Army Medical Research and Development Command</i>	Grand Ballroom A
8:15 - 8:25 AM	<b>Gaps and Priorities in Combat Casualty Care</b> LTC David S. Johnston, MD <i>US Army Medical Research and Development Command</i>	

8:25 – 8:35 AM	<b>Gaps and Priorities in Military Operational Medicine</b> CDR Christopher T. Steele, MD <i>US Army Medical Research and Development Command</i>	
8:35 – 8:50 AM	<b>Priorities of the PRORP and PRMRP</b> Patricia C. Modrow, PhD & Akua Roach, PhD <i>US Army Medical Research and Development Command</i>	
8:50 – 9:00 AM	<b>Discussion</b>	
9:00 – 9:20 AM	<b>BREAK</b>	Grand Foyer
9:20–9:40 AM	<b>Invited Guest Speaker: Moving Towards A Ready Medical Force</b> Brad Wenstrup, DPM <i>US House of Representatives, Ohio 2<sup>nd</sup> District</i>	Grand Ballroom A
9:40 – 10:00 AM	<b>Invited Guest Speaker: Scientific Collaboration is the Source of Strength We Need for the Future of our National Security</b> Terry M. Rauch, PhD <i>Acting Deputy Assistant Secretary of Defense for Health Readiness Policy and Oversight</i>	
10:00 – 10:20 AM	<b>MHS And DHA Leadership Q&amp;A</b> Moderators: James R. Ficke, MD & Paul F. Pasquina, MD	
<b>General Session I: Unsolved Topics in Orthopaedic Trauma</b> Moderators: COL B. Kyle Potter, MD, FACS & Michael J. Bosse, MD		
10:20 – 10:30 AM	<b>A National Trauma Research Action Plan (NTRAP) and Implications for the Military</b> James R. Ficke, MD <i>Johns Hopkins University</i>	Grand Ballroom A
10:30 – 10:40 AM	<b>Readiness on the Home Front: How are Recent Events Impacting the Systems of Care and Medical Education?</b> David C. Teague, MD <i>University of Oklahoma</i>	
10:40 – 10:50 AM	<b>Topical Antibiotics to Prevent Infection</b> Robert V. O’Toole, MD <i>University of Maryland</i>	
10:50 – 11:00 AM	<b>Pain Management for the Future Fight</b> Joseph R. Hsu, MD <i>Carolinas Medical Center</i>	
11:00 – 11:15 AM	<b>Discussion</b>	
11:15 – 11:35 AM	<b>BREAK</b>	Grand Foyer
<b>General Session II</b> Moderators: Col Christopher T. Lebrun, MD & Maj Gerard Slobogean, MD, MPH		
11:35 – 11:45 AM	<b>Evidenced Based Strategies for Severe Leg and Foot Trauma</b> Michael J. Bosse, MD <i>Carolinas Medical Center</i>	Grand Ballroom A
11:45 – 11:55 AM	<b>Lower Extremity Amputation: Surgical Options Based on Current Evidence</b> COL B. Kyle Potter, MD, FACS <i>Walter Reed National Military Medical Center</i>	
11:55 – 12:05 PM	<b>Osteointegration: Current Outcomes and Complications</b> CAPT Jonathan A. Forsberg, MD, PhD <i>Walter Reed National Military Medical Center</i>	
12:05 – 12:20 PM	<b>Discussion</b>	

12:20 – 1:05 PM	<b>LUNCH</b>		Grand Ballroom B
1:05 – 1:15 PM	<b>TRANSITION</b>		
<b>General Session III: Upper Extremity Reconstruction</b> <b>Moderators: L. Scott Levin, MD &amp; CDR Scott M. Tintle, MD</b>			
1:15 – 1:25 PM	<b>Targeted Muscle Reinnervation for Amputees</b> LCDR Jason M. Souza, MD <i>Walter Reed National Military Medical Center</i>		Grand Ballroom A
1:25 – 1:35 PM	<b>Psychosocial Outcomes in Upper Extremity Transplant</b> L. Scott Levin, MD <i>University of Pennsylvania</i>		
1:35 – 1:45 PM	<b>Functional Outcomes in Upper Extremity Transplantation</b> Jaimie T. Shores, MD <i>Johns Hopkins Medical Center</i>		
1:45 – 1:55 PM	<b>Advances in Peripheral Nerve Repair</b> Sami Tuffaha, MD <i>Johns Hopkins Medical Center</i>		
1:55 – 2:05 PM	<b>Advances in Prosthetic and Rehabilitation</b> Paul F. Pasquina, MD <i>Walter Reed National Military Medical Center</i>		
2:05 – 2:20 PM	<b>Discussion</b>		
2:20 – 2:25 PM	<b>TRANSITION</b>		
<b>Track A (Grand Ballroom A)</b> <b>Trauma Breakout</b> Moderators: William T. Obremsky, MD & LTC Daniel J. Stinner, MD		<b>Track B (Grand Ballroom C)</b> <b>Hand Breakout</b> Moderators: Jamie T. Shores, MD	
2:25 – 2:35 PM	<b>Physician Wellness for the Military Surgeon</b> Hassan R. Mir, MD, MBA <i>Florida Orthopaedic Institute</i>	2:25 – 2:35 PM	<b>Vascularized Cartilage Transfer: a Novel Technique for Reconstructing Injured Joint Surfaces</b> James P. Higgins, MD <i>Curtis National Hand Center</i>
2:35 – 2:45 PM	<b>REBOA: Does it Change How We Manage Junctional Hemorrhage?</b> Col Todd E. Rasmussen, MD <i>Uniformed Services University</i>	2:35 – 2:45 PM	<b>Measuring Functional Outcomes Across Modalities for Restoration of UE Loss</b> CDR Scott M. Tintle, MD <i>Walter Reed National Military Medical Center</i>
2:45 – 2:55 PM	<b>Pelvic Fracture and Associated Hemorrhage: Optimal Treatment Pathways in 2020</b> Joshua L. Gary, MD <i>McGovern Medical School at UT Health Houston</i>	2:45 – 2:55 PM	<b>Options for Alloplastic/Engineered Nerve Interfaces</b> COL Leon Nesti, MD <i>Walter Reed National Military Medical Center</i>
2:55 – 3:05 PM	<b>Discussion</b>	2:55 – 3:05 PM	<b>Discussion</b>
<b>Research Highlights</b>		<b>Research Highlights</b>	

3:05 – 3:10 PM	Characterization of Civilian Blast Injury Patients in US Trauma Centers LT Carl A. Nunziato, MD <i>Dell Seton Medical Center</i>	3:05 – 3:10 PM	Erythropoietin Improves Functional Recovery in War Injury Relevant Severe Nerve Crush Injury John Elfar, MD, FACS <i>Penn State CORTS</i>
3:10 – 3:15 PM	Combat-Related Orthopaedic Surgical Case Volume in the Military Health System Col Patrick M. Osborn, MD <i>Brooke Army Medical Center</i>	3:10 – 3:15 PM	Multidisciplinary Approach to Major Upper Extremity Limb Salvage/Replantation Capt Sarah N. Pierrie, MD <i>San Antonio Military Medical Center</i>
3:15 – 3:20 PM	Efficacy of Current Antibiotics Strategies Employed at Closure of Open Fractures Michael J. Bosse, MD <i>Carolinas Medical Center, Atrium Healthcare System</i>	3:15 – 3:20 PM	Long-Term Outcomes of Combat-Related Extremity Injuries Treated with Flap-Based Limb Salvage LCDR Sean M. Wade, MD <i>Walter Reed National Military Medical Center</i>
3:20 – 3:30 PM	<b>Discussion</b>	3:20 – 3:30 PM	<b>Discussion</b>
3:30 – 3:50 PM	<b>BREAK</b>		Grand Foyer
<b>Breakout Sessions</b>			
3:50 – 4:50 PM	<b>Breakout Group 1 - Infection in Trauma</b> Moderators: Robert V. O'Toole, MD, Jarrod E. Dumpe, MD & Joshua L. Gary, MD		Portrait Room
	<b>Breakout Group 2 – Upper Extremity Amputation</b> Moderators: CDR Scott M. Tintle, MD and Jaimie T. Shores, MD		Freer Room
	<b>Breakout Group 3 - Strategies to Prevent and Treat PTOA</b> Moderators: Kenneth L. Cameron, PhD, MPH, ATC, Maj Andrew J. Sheean, MD & LTC Daniel J. Stinner, MD		Sackler Room
	<b>Breakout Group 4 - Military and Civilian Collaboration to Advance the Warfighter</b> Moderators: COL B. Kyle Potter, MD, FACS, CAPT George P. Nanos, MD, & Col Joseph J. Stuart, MD		Hirshorn Room
4:50 – 5:10 PM	<b>Breakout Group Reports</b>		
5:10 – 5:25 PM	<b>Questions and Answers</b>		
5:30 – 7:00 PM	<b>Reception/Scientific Poster Session</b> Congressman Dutch Ruppersberger		Grand Ballroom B

### Wednesday, January 22, 2020

6:30 AM	<b>EWI Symposium Check In</b>	Grand Foyer
6:30 – 7:00 AM	<b>Coffee</b>	Grand Foyer
7:00 – 7:05 AM	<b>Welcome / Review of Day Two</b>	Grand Ballroom A

**General Session IV: Regenerative Medicine Implications in the Military**  
Moderators: Leon J. Nesti, MD, PhD & Johnny Huard, PhD

7:05 – 7:25 AM	<b>Orthobiologics in My Clinical Practice</b> James P. Bradley, MD President, AOSSM <i>University of Pittsburgh</i>	Grand Ballroom A
7:25 – 7:35 AM	<b>Discussion</b>	
7:35 – 7:55 AM	<b>What Lies Ahead in Biomedical Engineering</b> Jeffrey M. Karp, PhD <i>Clearwater, FL</i>	
7:55 – 8:10 AM	<b>Discussion</b>	Grand Ballroom A
8:10 – 8:40 AM	<b>BREAKFAST/INDUSTRY UPDATE - Johnson &amp; Johnson Medical Devices Companies</b> My Turn? Colonel (Ret) Matt Putnam, MD * <i>CME Credit Not Available</i>	
<b>General Session V: The Future of the Military Health System: Advancing the Integrated System of Readiness and Health</b>		
<b>Moderators: RADM (Ret) Bruce Doll, CAPT George P. Nanos, MD &amp; COL Jennifer Meno</b>		
8:40 – 9:00 AM	<b>Bringing the MHS Into the Future Through Advanced Analytics</b> COL Jennifer Meno <i>Deputy Director at Defense Health Agency</i>	Grand Ballroom A
9:00 – 9:20 AM	<b>Warfighter Readiness: Current Obstacles and Priorities</b> RADM Bruce L. Gillingham, MD <i>The Surgeon General of the US Navy</i>	
9:20 – 9:40 AM	<b>MHS And DHA Leadership Q&amp;A</b> Moderators: RADM (Ret) Bruce Doll & CAPT George P. Nanos, MD	
9:40 – 10:00 AM	<b>BREAK</b>	Grand Foyer
<b>General Session VI: Post Traumatic and Post-Surgical Sequelae from the Battlefield to the PT Formation</b>		
<b>Moderators: James P. Bradley, MD &amp; CAPT Matthew T. Provencher, MD</b>		
10:00 – 10:10 AM	<b>Update from the Bench Top: Current Capabilities and Future Directions in Orthobiologics for the Military</b> Johnny Huard, PhD <i>The University of Texas Health Science Center at Houston Steadman Phillipon Research Institute</i>	Grand Ballroom A
10:10 – 10:20 AM	<b>Autologous Conditioned Serum for the Treatment of Post-Traumatic Osteoarthritis</b> Gustavo Zanotto, PhD <i>Colorado State University</i>	
10:20 – 10:30 AM	<b>Adipose Derived Stem Cells</b> Claude T. Moorman III, MD <i>Carolinas Medical Center</i>	
10:30 – 10:40 AM	<b>Joint Preservation Strategies for PTOA</b> Seth L. Sherman, MD <i>Stanford University</i>	
10:40 – 10:55 AM	<b>Discussion</b>	
10:55 – 11:15 AM	<b>BREAK</b>	Grand Foyer
<b>General Session VII: Hitting the Target—Ensuring Optimal Human Performance Health &amp; Readiness Throughout Military Service</b>		
<b>Moderators: CDR Christopher T. Steele &amp; James J. Irrgang, PhD, PT, ATC</b>		
11:15 – 11:25 AM	<b>Musculoskeletal Injury Rates Across the Military: Who and What is at Risk</b>	Grand Ballroom A

	Kenneth L. Cameron, PhD, MPH, ATC <i>United States Military Academy</i>		
11:25 – 11:35 AM	<b>Blood Flow Restriction: State of the Art in 2020</b> Johnny Owens, PT <i>Owens Recovery Science</i>		
11:35 – 11:45 AM	<b>Next Generation Biomotion Testing to Optimize Return to Duty for Our Warrior Athletes</b> Scott Tashman, PhD <i>The University of Texas Health Science Center at Houston, Steadman Phillipon Research Institute</i>		
11:45 – 12:00 PM	<b>Discussion</b>		
12:00 – 12:30 PM	<b>LUNCH/INDUSTRY UPDATE – Arthrex, Inc.</b> NanoScope™: “The Future of Arthroscopy” CAPT Matthew T. Provencher, MD Knotless Tensionable Solutions for Shoulder Instability CAPT Matthew T. Provencher, MD The Evolution of All-Inside Meniscus Repair Seth L. Sherman, MD <i>* CME Credit Not Available</i>		Grand Ballroom B
12:30 – 12:55 PM	<b>TRANSITION</b>		
<b>Breakout Sessions: Trauma/Readiness</b>			
<b>Track A (Grand Ballroom A)</b> <b>Trauma Breakout</b> Moderator: David Teague, MD & Col Christopher T. Lebrun, MD		<b>Track B (Grand Ballroom C)</b> <b>Measure What Matters</b> Moderators: CAPT Matthew T. Provencher, MD & CDR Lance E. LeClere, MD	
12:55 – 1:05 PM	<b>Where are We in 2020 on Making the Clinical Diagnosis of Compartment Syndrome?</b> Anna Miller, MD <i>Washington University in St. Louis</i>	12:55 – 1:05 PM	<b>Clinical Outcomes and Big Data: Implications for the DoD</b> James J. Irrgang, PhD, PT, ATC <i>University of Pittsburg</i>
1:05 – 1:15 PM	<b>What’s on the Horizon to Aid in Diagnosis and/or Treatment of Compartment Syndrome?</b> Col Patrick M. Osborn, MD <i>San Antonio Military Medical Center</i>	1:05 – 1:15 PM	<b>Predicting RTD: How MOTION Changes the Paradigm of Care</b> MAJ Daniel I. Rhon, PT, DPT, DSc, OCS <i>Baylor University</i>
1:15 – 1:25 PM	<b>It Didn’t Heal. Now What? An Approach for the Treatment of Nonunions</b> Joseph R. Hsu, MD <i>Carolinas Medical Center</i>	1:15 – 1:25 PM	<b>Critical Issues in the Foot/Ankle for the Tactical Athlete</b> Annunziato Amendola, MD <i>Duke University</i>
1:25 – 1:35 PM	<b>Ready Medical Force: What’s Relevant from the Front Line</b> LTC Daniel J. Stinner, MD <i>Vanderbilt University</i>	1:25 – 1:35 PM	<b>Improving Return to Sport (Duty) After ACL Reconstruction</b> Kurt Spindler, MD <i>The Cleveland Clinic</i>

1:35 – 1:45 PM	<b>Pushing the Rehabilitation Envelope: Translation into Civilian Practice?</b> Danielle Melton, MD, <i>McGovern Medical School at UT Health Houston</i>	1:35 – 1:45 PM	<b>Shoulder Instability in the Military: What We Know and Don't Know</b> CAPT Matthew T. Provencher, MD <i>The Steadman Phillipon Clinic</i>
1:45 – 1:55 PM	<b>Discussion</b>	1:45 – 1:55 PM	<b>Discussion</b>
<b>Research Highlights</b>		<b>Research Highlights</b>	
1:55 – 2:00 PM	Institutional Trends in Limb Restoration Efforts Following Blast-Related Trauma CPT Colin Harrington, MD <i>Walter Reed National Military Medical Center</i> <i>*Presented by LT Jordan Tropp, MD</i>	1:55 – 2:00 PM	Establishing the Musculoskeletal Injury Rehabilitation Research for Operational Readiness (MIRROR) Nelson Hager, MD, MS <i>The Geneva Foundation / Musculoskeletal Injury Rehabilitation Research for Operational</i>
2:00 – 2:05 PM	Femoral Neck CT Correlation with Mineral Density After Extremity Amputation Benjamin W. Hoyt, MD <i>Walter Reed National Military Medical Center</i>	2:00 – 2:05 PM	Psychological Impact of Reoperation in the Year After Primary ACL Reconstruction Cale Jacobs, PhD <i>University of Kentucky</i>
2:05 – 2:10 PM	Reliability of the Walter Reed Classification for Heterotopic Ossification Severity Benjamin W. Hoyt, MD <i>Walter Reed National Military Medical Center</i>	2:05 – 2:10 PM	Optimization Of Return-to-Duty Protocols After Anterior Cruciate Ligament Injury Scott Tashman, PhD <i>Steadman Philippon Research Institute</i>
2:10 – 2:20 PM	<b>Discussion</b>	2:10 – 2:20 PM	<b>Discussion</b>
2:20 – 2:25 PM	<b>TRANSITION</b>		
<b>Breakout Sessions</b>			
2:25 – 3:25 PM	<b>Breakout Group 5: Compartment Syndrome</b> Moderators: Andrew H. Schmidt, MD & Col Patrick M. Osborne, MD		Portrait Room
	<b>Breakout Group 6: Functional Return to Duty Decision Making and Optimization Post Injury</b> Moderators: CDR Christopher T. Steele, MD, Jason Jadgechew & Col Mark A. Slabaugh, MD		Freer Room
	<b>Breakout Group 7: Orthobiologics for Traumatic and Overuse Injuries</b> Moderators: Nelson Hager, MD & Seth L. Sherman, MD		Sackler Room
	<b>Breakout Group 8: Clinical Outcomes and Big Data</b> Moderators: MAJ Daniel I. Rhon, PT, DPT, DSc, OCS, Maj Andrew J. Sheean, MD, & James J. Irrgang, PhD, PT, ATC		Hirshorn Room
3:25 – 3:40 PM	<b>Small Group Summary</b>		
3:40 – 3:45 PM	<b>TRANSITION</b>		
<b>Track A (Grand Ballroom A)</b> <b>Trauma Breakout</b> Moderator: LTC Daniel J. Stinner, MD		<b>Track B (Grand Ballroom C)</b> <b>Readiness and Return to Duty</b> Moderators: Kurt Spindler, MD & Maj Andrew J. Sheean, MD	

3:45 – 3:55 PM	<b>What's New in Infection Prevention</b> William T. Obremsky, MD <i>Vanderbilt Orthopaedics</i>	3:45 – 3:55 PM	<b>How Can We Improve Outcomes with Biologics and other Novel Delivery Devices</b> Chelsea S. Bahney, PhD <i>Steadman Phillipon Research Institute</i>
3:55 – 4:05 PM	<b>What Tricks Do We Have Up Our Sleeves for Osteomyelitis?</b> Jarrod E. Dumpe, MD <i>Medical Center Navicent Health</i>	3:55 – 4:05 PM	<b>Optimizing Outcomes with Low Back Pain</b> Brett A. Freedman, MD <i>Mayo Clinic</i>
4:05 – 4:15 PM	<b>Soft Tissue Coverage of the Lower Extremity: Do We Need to Rely on Others for Coverage?</b> John D. Adams, MD <i>University of South Carolina School of Medicine</i>	4:05 – 4:15 PM	<b>Discussion</b>
4:15 – 4:25 PM	<b>What to Do When Coverage is Delayed? An Evidence-Based Update and What's on the Horizon</b> Joseph C. Wenke, PhD <i>US Army Institute of Surgical Research</i>	4:15 – 4:25 PM	<b>Lessons Learned from Instituting a Human Performance Program at SOCOM</b> Jason Jadgechew <i>Naval Special Warfare Command</i>
4:25 – 4:35 PM	<b>Junctional Injuries: Where are We in 2020?</b> CAPT(Ret) Dana C. Covey, MD <i>UC San Diego</i>	4:25 – 4:35 PM	<b>Multi-Ligamentous Knee Injuries in the Military</b> Brian R. Waterman, MD <i>Wake Forest University</i>
4:35 – 4:45 PM	<b>Discussion</b>	4:35 – 4:45 PM	<b>Discussion</b>
<b>Research Highlights</b>		<b>Research Highlights</b>	
4:45 – 4:50 PM	Readiness Relevance of SOMOS Annual Meeting Topics: A 10-Year Review COL Kenneth J. Nelson, MD <i>Womack Army Medical Center</i>	4:45 – 4:50 PM	Loading Characteristics of Service Members with Transtibial Amputations during a Drop-Landing Timothy C. Mauntel, PhD, ATC <i>Walter Reed National Military Medical Center</i>
4:50 – 4:55 PM	Custom Energy-Storing Orthosis Effects on Extremity Function and Preservation Benjamin W. Hoyt, MD <i>Walter Reed National Military Medical Center</i>	4:50 – 4:55 PM	Exercise Improves Exosome Production and Regenerative Capacity in Myogenic Precursors Chelsea S. Bahney, PhD <i>Steadman Phillipon Research Institute</i>
4:55 – 5:00 PM	Multicenter Retrospective Review of Emergent Pelvic Injury Management: Improvement Needed? Joshua L. Gary, MD	4:55 – 5:00 PM	Enhancing the Damage Control Skills of Far Forward Providers using Augmented Reality COL Kenneth J. Nelson, MD <i>Womack Army Medical Center</i>



	<i>McGovern Medical School at UT Health Houston</i>		
<b>5:00 – 5:10 PM</b>	<b>Discussion</b>	<b>5:00 – 5:10 PM</b>	<b>Discussion</b>
<b>5:10 – 5:15 PM</b>	<b>TRANSITION</b>		
<b>5:15 – 5:30 PM</b>	<b>Closing Remarks</b>		Grand Ballroom A

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American Academy of Orthopaedic Surgeons and the Society of Military Orthopaedic Surgeons. The American Academy of Orthopaedic Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

The American Academy of Orthopaedic Surgeons designates this live activity for a maximum of 17 **AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.