Grantor & Exhibitor Acknowledgements

Gold

DePuy Synthes - Grantor
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NUTEK Orthopaedics, Inc.
ZetrOZ "sam Systems"
Message from the Program Co-Chairs

Dear Colleagues:

We would like to welcome you to the Society of Military Orthopaedic Surgeons (SOMOS) / Orthopaedic Trauma Association (OTA) / American Orthopaedic Society for Sports Medicine (AOSSM) 2019 Research Symposium, Extremity War Injuries XIV: Evolving Combat Care and Readiness Research Symposium (EWI XIV).

For the fourteenth annual EWI event, the program is divided into six general sessions: Each session will have 4-5 didactic presentations, followed by questions and answers. There will be small group discussion breakout sessions at the end of each day. There will also be concurrent Trauma and Readiness tracks.

The SOMOS, OTA, and AOSSM have all given their support to EWI XIV to promote its dual aims of strengthening existing collaborations with the military and to also promote the most important new advances. We anticipate continuing on the strong tradition of previous EWI conferences that have been so important in improving the care of extremity trauma and influencing future research work. This year’s conference is notable for continued emphasis of readiness issues that are the focus of the sports medicine community.

We look forward to another EWI meeting that will lead to new collaborations, improve the care of military and civilian patients, and help drive the future work aimed at improving the care of our patients and of all participants. Thank you for your involvement.

Respectfully,

LTC Jonathan F. Dickens, MD
Robert V. O'Toole, MD
EWI Symposium Co-Chairs

How to Download the Meeting App

1. Click on the App Store
2. Search, “DTMS”
3. Download “DTMS Meeting Programs”
4. Click: Open
5. “DTMS” Would Like to Send you Notifications: Click: Allow
6. Once the app downloads, click “EWI XIV”
Keynote Speakers

**Vice Admiral Raquel C. Bono**
Commissioned in June 1979, Vice Admiral Bono obtained her baccalaureate degree from the University of Texas at Austin, and attended medical school at Texas Tech University. She completed a surgical internship and a General Surgery residency at Naval Medical Center Portsmouth, and a Trauma and Critical Care fellowship at the Eastern Samaritan Graduate School of Medicine.

Her senior officer assignments include: Executive Assistant to the 35th Navy Surgeon General and Chief, Bureau of Medicine and Surgery; Commanding Officer, Naval Hospital Jacksonville; Chief of Staff, Deputy Director, Tricare Management Activity; Deputy Director, Medical Resources, Plans and Policy, Chief of Naval Operations; Command Surgeon, U.S. Pacific Command; Director, National Capital Region Medical Directorate, Defense Health Agency and the 11th Chief, Navy Medical Corps.

Vice Admiral Bono is a Diplomat of the American Board of Surgery and has an Executive MBA from the Carson College of Business at Washington State University. Her personal decorations include the Defense Superior Service Medal (three), Legion of Merit Medal (four), Meritorious Service Medal (two), and the Navy and Marine Corps Commendation Medal (two).

**Rear Admiral Bruce L. Gillingham**
Rear Admiral Bruce L. Gillingham is a native of San Diego. He holds a Bachelor of Arts in Cultural Anthropology (with high honors) from the University of California, San Diego and a Doctor of Medicine from the Uniformed Services University of the Health Sciences. He is an inductee in the medical honor society of Alpha Omega Alpha.

Rear Admiral Gillingham completed a surgical internship and an orthopedic residency at Naval Medical Center San Diego. He also completed subspecialty training as a pediatric orthopedic surgeon at the Hospital for Sick Children in Toronto, Canada in 1995. Additionally, he is qualified as an undersea and diving medical officer.

He has served in various positions throughout Navy Medicine including Director of Pediatric Orthopedic and Scoliosis Surgery, Associate Orthopedic Residency Program Director, and Director of Surgical Services. While assigned to Naval Medical Center San Diego, he was instrumental in establishing the Comprehensive Combat and Complex Casualty Care Center (C5).

Rear Admiral Gillingham currently serves as the Director of Medical Resources, Plans and Policy (N0931) at the Office of the Chief of Naval Operations. His personal awards include the Legion of Merit (seven), Meritorious Service Medal, Navy and Marine Corps Commendation Medal (two), and Navy and Marine Corps Achievement.

**Terry M. Rauch, PhD**
Dr. Terry M. Rauch is currently the acting Deputy Assistant Secretary of Defense for Health Readiness Policy and Oversight (HRP&O). In addition, he serves as the HRP&O Director of Medical Research and Development (R&D) for deployment medicine and force health protection.

Dr. Rauch also represents the DoD R&D community in international health agreements and domestic federal and non-government partnerships in an effort to better serve missions, and enhance medical readiness for 2.3 million servicemembers through cross-collaborations.

Dr. Rauch has more than 35 years of experience in many facets of the Military Health System and has held numerous senior-level positions in the Army and the Office of the Secretary of Defense. After retiring from the U.S. Army in October 2005 at the rank of Colonel, he joined the Science Applications International Corporation (SAIC) as a Senior Principal Life Scientist. At SAIC, he focused on comprehensive strategic planning and analysis for the Office of the Secretary of Defense on matters relating to defense biomedical research, development and acquisition investment strategies and their supporting infrastructure.

Dr. Rauch received a Bachelor of Science degree in psychology from the University of Cincinnati, where he also earned his PhD in biology and psychology.
Extremity War Injuries XIV
Emerging Combat and Readiness Research
Grand Ballroom A unless otherwise indicated

Symposium Co-Chairs: LTC Jonathan F. Dickens, MD and Robert V. O’Toole, MD
Scientific Director: CDR Scott M. Tintle, MD
EWI Oversight Chair: Andrew H. Schmidt, MD

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 14.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

January 21, 2019

9:00 am - 5:00 pm  STaR Meeting
3:00 pm - 5:30 pm  EWI Symposium Check In (Foyer)

January 22, 2019

6:30 am  EWI Symposium Check In (Foyer)
6:30 am - 7:00 am  Coffee (Grand Ballroom B)
7:00 am - 7:05 am  Symposium Welcome
Robert V. O’Toole, MD
University of Maryland School of Medicine

7:05 am - 7:15 am  EWI 2019: Why Are We Here and Meeting Goals
LTC Jonathan F. Dickens, MD
Walter Reed National Military Medical Center

7:15 am - 7:45 am  Breakfast/Industry Update
*CME Not Available
Zimmer Biomet (Grand Ballroom A)
Innovative Concepts in External Fixation
Jason Nascone, MD

7:45 am - 7:55 am  Past, Present and Future of EWI
James R. Ficke, MD
Johns Hopkins University

7:55 am - 8:05 am  Current Funding Status: How It Works and How to Succeed
Andrew N. Pollak, MD
University of Maryland

8:05 am - 8:20 am  Discussion

8:20 am - 8:45 am
KEYNOTE SPEAKER
Current Challenges and Opportunities for the DHA
VADM Raquel C. Bono, MD
Director, Defense Health Agency

9:00 am - 9:20 am  Discussion

9:20 am - 9:30 am  BREAK (Grand Ballroom B)

General Session I: Research Gaps and Funding Priorities
Moderators: Ellen MacKenzie, PhD and LTC (P) Benjamin Kyle Potter, MD

9:30 am - 9:40 am  Gaps and Priorities in Clinical and Rehabilitative Medicine
COL Ann Nayback-Beebe, FNP, PhD
US Army Medical Research and Materiel Command

9:40 am - 9:50 am  Gaps and Priorities in Combat Casualty Care
LTC David Johnston, PhD
US Army Medical Research and Materiel Command

9:50 am - 10:00 am  Discussion
Session I Speakers
# Extremity War Injuries XIV

**Emerging Combat and Readiness Research**  
Grand Ballroom A unless otherwise indicated  

**January 22, 2019**

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<thead>
<tr>
<th>Time</th>
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| 10:00 am - 10:25 am | **KEYNOTE SPEAKER**  
DoD Research Priorities  
Terry M. Rauch, PhD  
Acting Deputy Assistant Secretary of Defense for Health Readiness Policy and Oversight | 12:10 pm - 12:40 pm | **Lunch/Industry Update**  
*CME Credit Not Available*  
Sparta Science (Grand Ballroom A)  
Enabling Military Readiness with Machine Learning  
Phil Wagner, MD & General Spider Marks |
| 10:25 am - 10:35 am | **Discussion**                                                                                   | 12:40 pm - 1:10 pm | **Dessert in Exhibit Hall**  
(Grand Ballroom B) |
| 10:35 am - 10:55 am | **BREAK** (Grand Ballroom B)                                                                     |                   |                                                                                                 |
| **General Session II: Collaborative Stakeholders in Combat and Readiness Research**  
Moderators: Robert V. O'Toole, MD and LTC Daniel J. Stinner, MD |                   | **General Session III: Regenerative Medicine**  
Moderators: John M. Tokish, MD and LTC Leon Nesti, MD, PhD |)
| 10:55 am - 11:05 am | **METRC: Where We’ve Been, What’s on the Horizon**  
Michael J. Bosse, MD  
Carolina Medical Center | 1:10 pm - 1:20 pm | **Shaping the Delivery of Regenerative Medicine Products for Military Applications**  
LTC Leon Nesti, MD, PhD  
Walter Reed National Military Medical Center |
| 11:05 am - 11:15 am | **Extremity Amputation Center of Excellence**  
John C. Shero, MHA, FACHE  
Extremity Amputation Center of Excellence | 1:20 pm - 1:30 pm | **4 Dimensional Bioprinting: The Future is Now**  
Vincent Ho, MD  
Walter Reed National Military Medical Center |
| 11:15 am - 11:25 am | **Institute of Surgical Research: Translational Readiness for the Wounded Warrior**  
Joseph C. Wenke, PhD  
San Antonio Military Medical Center  
Institute of Surgical Research | 1:30 pm - 1:40 pm | **What Is On The Horizon With Orthobiologics?**  
John M. Tokish, MD  
Mayo Clinic |
| 11:25 am - 11:35 am | **National Trauma Research Action Plan (NTRAP) What Is It?**  
Eileen Bulger, DMed  
Harborview Medical Center | 1:40 pm - 1:50 pm | **Can We Predict PTOA: Imaging and Biomarker Applications**  
Constance Chu, MD  
Stanford University |
| 11:35 am - 11:45 am | **Optimizing Performance in the Military: Lessons Learned from the Consortium for Health and Military Performance**  
Patricia Deuster, PhD  
Uniformed Services University of the Health Science | 1:50 pm - 2:00 pm | **Biologic Options to Mitigate Post Traumatic Osteoarthritis**  
Johnny Huard, PhD  
The University of Texas Health Science Center at Houston Steadman Phillipon Research Institute |
| 11:45 am - 11:55 am | **Knowledge Skills Abilities**  
CAPT Eric Elster, MD  
USU-Walter Reed National Military Medical Center | 2:00 pm - 2:10 pm | **Discussion** |
| 11:55 am - 12:10 pm | **Questions and Answers**  
Session II Speakers | 2:10 pm - 2:15 pm | **Overview of EWI Tracks and Small Group Breakouts**  
CDR Scott M. Tintle, MD  
Walter Reed National Military Medical Center |
|                   |                                                                                                 | 2:15 pm - 2:20 pm | **Transition** |

**Extremity War Injuries XIV**  
Emerging Combat and Readiness Research  
Grand Ballroom A unless otherwise indicated  

January 22, 2019
## Extremity War Injuries XIV
### Emerging Combat and Readiness Research
Grand Ballroom A unless otherwise indicated

### January 22, 2019

#### Track A: Trauma
Grand Ballroom A
Moderators: Ellen Mackenzie, PhD and Lt Col Christopher T. LeBrun, MD

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<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
<th>Institution</th>
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<tbody>
<tr>
<td>2:20 - 2:30 pm</td>
<td>Maintaining Readiness on the Homefront</td>
<td>David C. Teague, MD</td>
<td>University of Oklahoma College of Medicine</td>
</tr>
<tr>
<td>2:30 pm - 2:40 pm</td>
<td>Osseointegration</td>
<td>Jonathan A. Forsberg, MD, PhD</td>
<td>Walter Reed National Military Medical Center</td>
</tr>
<tr>
<td>2:40 pm - 2:50 pm</td>
<td>Acute Compartment Syndrome: Lessons Learned from PACS</td>
<td>Andrew H. Schmidt, MD</td>
<td>Hennepin Healthcare</td>
</tr>
<tr>
<td>2:50 pm - 3:00 pm</td>
<td>Discussion</td>
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### RESEARCH HIGHLIGHTS

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>3:00 pm - 3:05 pm</td>
<td>Poor Specificity of Perfusion Pressure Thresholds For Diagnosing Acute Compartment Syndrome</td>
<td>Andrew H. Schmidt, MD</td>
<td>Hennepin Healthcare</td>
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<tr>
<td>3:05 pm - 3:10 pm</td>
<td>Knee Disarticulation versus Transfemoral Amputations: Functional Outcomes</td>
<td>LT Benjamin W. Hoyt, MD</td>
<td>Walter Reed National Military Medical Center</td>
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<tr>
<td>3:10 pm - 3:20 pm</td>
<td>Discussion</td>
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#### Track B: Readiness and Return to Duty
Grand Ballroom C
Moderators: Constance Chu, MD and Asheesh Bedi, MD

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<th>Time</th>
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<th>Institution</th>
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<tbody>
<tr>
<td>2:20 pm - 2:30 pm</td>
<td>ACL Tears and OA: More than Instability</td>
<td>Robert H. Brophy, MD</td>
<td>Washington University in St. Louis</td>
</tr>
<tr>
<td>2:30 pm - 2:40 pm</td>
<td>Early Intervention after Trauma: The Role of Biologics</td>
<td>Alan Getgood, MD</td>
<td>Western University</td>
</tr>
<tr>
<td>2:40 pm - 2:50 pm</td>
<td>Preventing and Treating PTOA in the Wounded Warrior and Athlete</td>
<td>Kenneth L. Cameron, PhD</td>
<td>United States Military Academy</td>
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<tr>
<td>2:50 pm - 3:00 pm</td>
<td>Discussion</td>
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<tbody>
<tr>
<td>3:00 pm - 3:05 pm</td>
<td>Anterior Cruciate Ligament Reconstruction Reinitiates an Inflammatory Cascade Associated with Biomarkers of Cartilage Breakdown and Worse Sports Function and Knee Mechanics</td>
<td>Cale Jacobs, PhD</td>
<td>University of Kentucky</td>
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<tr>
<td>3:05 pm - 3:10 pm</td>
<td>Use of Simvastatin Hydroxy Acid in Meniscal Tear Repair: A Pilot Study</td>
<td>Brian Grawe, MD</td>
<td>University of Cincinnati College of Medicine</td>
</tr>
<tr>
<td>3:10 pm - 3:15 pm</td>
<td>Biologically Regulated Marrow Stimulation by Blocking TGF-β1 With Losartan Oral Administration Results in Less Fibrotic Cartilage Healing: A Rabbit Osteochondral Defect Model</td>
<td>Hajime Utsunomiya, MD, PhD</td>
<td>Steadman Philippon Research Institute (SPRI)</td>
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<tr>
<td>3:15 pm - 3:20 pm</td>
<td>Discussion</td>
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</table>
### Extremity War Injuries XIV
**Emerging Combat and Readiness Research**
Grand Ballroom A unless otherwise indicated

#### January 22, 2019

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<th>Time</th>
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<tbody>
<tr>
<td>3:20 pm - 3:40 pm</td>
<td>BREAK (Grand Ballroom B)</td>
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<tr>
<td>3:40 pm - 4:55 pm</td>
<td><strong>BREAKOUT SESSIONS</strong>&lt;br&gt;Breakout Group 1: Acute Compartment Syndrome and Open Fractures in the Prolonged Field Care Environment&lt;br&gt;Portrait Room&lt;br&gt;Moders: LTC Jean Claude D'Alleyrand, MD / Robert V. O'Toole, MD</td>
</tr>
<tr>
<td>4:55 pm - 5:10 pm</td>
<td>Breakout Group 2: Biologics and Post Traumatic Osteoarthritis: Early Interventions to Mitigate Long Term Sequelae&lt;br&gt;Hillwood Room&lt;br&gt;Moders: John M. Tokish, MD / Connie Chu, MD / LTC Jonathan F. Dickens, MD</td>
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<tr>
<td>5:10 pm - 5:25 pm</td>
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<td>5:30 pm - 7:00 pm</td>
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<td>7:00 pm</td>
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### Extremity War Injuries XIV
**Emerging Combat and Readiness Research**
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#### January 23, 2019

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<tbody>
<tr>
<td>6:30 am</td>
<td>EWI Symposium Check In (Foyer)</td>
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<tr>
<td>6:30 am - 7:00 am</td>
<td>Coffee (Grand Ballroom B)</td>
</tr>
<tr>
<td>7:00 am - 7:05 am</td>
<td>Welcome / Review of Day Two&lt;br&gt;CDF Scott M. Tintle, MD&lt;br&gt;Walter Reed National Military Medical Center</td>
</tr>
<tr>
<td>7:05 am - 7:20 am</td>
<td>Prolonged Field Care: What Is It?&lt;br&gt;Col Todd Rasmussen, MD&lt;br&gt;Uniformed Services University</td>
</tr>
<tr>
<td>7:20 am - 7:35 am</td>
<td>Defining Readiness in the Military&lt;br&gt;Paul Pasquina, MD&lt;br&gt;Walter Reed National Military Medical Center</td>
</tr>
<tr>
<td>7:35 am - 7:45 am</td>
<td>Discussion</td>
</tr>
<tr>
<td>7:45 am - 8:15 am</td>
<td>Breakfast/Industry Update&lt;br&gt;*CME Credit Not Available&lt;br&gt;Arthrex Inc. (Grand Ballroom A)&lt;br&gt;Innovations in Sports Medicine for Our Most Elite Athletes&lt;br&gt;Knotless Repair for Labral Instability&lt;br&gt;John M. Tokish, MD&lt;br&gt;IntermaBrace™ for Ultimate Knee Ligament Fixation&lt;br&gt;Asheesh Bedi, MD</td>
</tr>
<tr>
<td>8:15 am - 8:20 am</td>
<td>Transition Time</td>
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</table>
## Extremity War Injuries XIV

### Emerging Combat and Readiness Research

**Grand Ballroom A unless otherwise indicated**

### January 23, 2019

<table>
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<tr>
<th>Track A: Trauma Management</th>
<th>Track B: Readiness and Return to Duty</th>
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<tbody>
<tr>
<td><strong>Grand Ballroom A</strong></td>
<td><strong>Grand Ballroom C</strong></td>
</tr>
<tr>
<td>Moderators: Jean Claude D’Alleyrand, MD and Robert V. O'Toole, MD</td>
<td>Moderators: John M. Tokish, MD and Brett Freedman, MD</td>
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</tbody>
</table>

#### Major Trauma

- **8:20 am - 8:30 am**
  - Critical Issues Managing Orthopaedic Trauma Infection
  - Robert V. O'Toole, MD
  - University of Maryland School of Medicine

- **8:30 am - 8:40 am**
  - Lower Extremity Amputation: Where Are We in 2019?
  - LTC (P) Benjamin Kyle Potter, MD
  - Walter Reed National Military Medical Center

- **8:40 am - 8:50 am**
  - Update on Upper Extremity Transplant
  - Jaimie T. Shores, MD, FACS
  - Johns Hopkins University

- **8:50 am - 9:00 am**
  - Amputee Nerve Management
  - Jason M. Souza, MD
  - Walter Reed National Military Medical Center

- **9:00 am - 9:10 am**
  - Opportunities in Military and Civilian Trauma Collaboration
  - LTC Daniel J. Stinner, MD
  - Fort Campbell, KY

- **9:10 am - 9:20 am**
  - Questions and Answers

- **9:20 am - 9:45 am**
  - BREAK (Grand Ballroom B)

#### RESEARCH HIGHLIGHTS

- **9:45 am - 9:50 am**
  - A Multicenter Randomized Trial Evaluating Intrawound Vancomycin Powder for Reducing Surgical Site Infection After Fracture Surgery
  - Robert O’Toole, MD
  - University of Maryland School of Medicine

- **9:50 am - 9:55 am**
  - Early Outcomes of Osseointegrated Implants in Transhumeral and Transfemoral Amputations
  - 2LT Colin Harrington, BA

### Readiness Injuries to the Tactical Athlete

- **8:20 am - 8:30 am**
  - Transforming Care for the Soldier Athlete: What is Possible?
  - John M. Tokish, MD
  - Mayo Clinic

- **8:30 am - 8:40 am**
  - Special Forces Operator with Anterior Shoulder Instability: What Do We Need to Successfully RTD
  - Brett D. Owens, MD
  - Brown Alpert School of Medicine

- **8:40 am - 8:50 am**
  - Critical Issues in the Foot/Ankle for the Tactical Athlete
  - Annunziato Amendola, MD
  - Duke University

- **8:50 am - 9:00 am**
  - 25-Year-Old 11-Bravo with Low Back Pain; What’s Missing to Return to Rucking
  - Brett Freedman, MD
  - Mayo Clinic

- **9:00 am - 9:10 am**
  - Femoral Acetabular Impingement: Barriers to Return to Sport & Duty
  - Asheesh Bedi, MD
  - University of Michigan

- **9:10 am - 9:20 am**
  - Questions and Answers

- **9:20 am - 9:45 am**
  - BREAK (Grand Ballroom B)

#### RESEARCH HIGHLIGHTS

- **9:45 am - 9:50 am**
  - Estimating the Likelihood of Prolonged Opioid Use After Anterior Cruciate Ligament Reconstruction
  - LT Ashley Anderson, MD
  - Walter Reed National Military Medical Center

- **9:50 am - 9:55 am**
  - A Novel Fiber-Reinforced Total Meniscus Replacement Device Restores Load Distribution in Human Cadaveric Knees
  - Charles J. Gatt Jr., MD
# Extremity War Injuries XIV

Emerging Combat and Readiness Research  
Grand Ballroom A unless otherwise indicated  

January 23, 2019

## Track A: Trauma Management  
Grand Ballroom A  
Moderators: David C. Ring, MD and Gerard Slobogean, MD

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<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 9:55 am - 10:00 am | Clinical Evaluation of the Revolutionizing Prosthetics Modular Prosthetic Limb (MPL) System for Upper Extremity Amputees: Phases I and II  
Emilia-Marie Jaskot, BS  
Henry M. Jackson Foundation for the Advancement of Military Medicine |
| 10:00 am - 10:05 am | Sustained Local Delivery of Nerve Growth Factor Improves Fracture Healing by Accelerating Endochondral Ossification  
Chelsea S. Bahney, PhD  
Steadman Philippon Research Institute |
| 10:05 am - 10:10 am | Questions and Answers |
| 10:10 am - 10:30 am | BREAK (Grand Ballroom B) |

## Track B: Readiness and Return to Duty  
Grand Ballroom C  
Moderators: Kurt Spindler, MD and CDR Lance E. LeClere, MD

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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| 9:55 am - 10:00 am | Mid to Long-Term Follow-Up of MRI Proven Acetabular Labral Pathology in Previously Asymptomatic Patients  
Lt Col Matthew R. Schmitz, MD  
San Antonio Military Medical Center |
| 10:00 am - 10:05 am | Timing of Surgery and Staged Procedures Show No Difference in Return to Duty Rates for US Military Service Members with Multi-ligament Knee Injury  
LT John Richards, MD  
Walter Reed National Military Medical Center |
| 10:05 am - 10:10 am | Questions and Answers |
| 10:10 am - 10:30 am | BREAK (Grand Ballroom B) |

### Pain Management

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 10:30 am - 10:40 am | Current Evidence for Reducing Opioid Use in Orthopaedics  
Thomas F. Higgins, MD  
University of Utah |
| 10:40 am - 10:50 am | Pain Management and Opioid Use in the DoD  
MAJ Michael Patzkowski, MD  
San Antonio Medical Center |
| 10:50 am - 11:00 am | Strategies to Identify and Prevent Poor Outcomes in Orthopaedic Trauma  
Steve Wegner, PhD  
Johns Hopkins University |
| 11:00 am - 11:10 am | Cognitive and Emotional Aspects of Trauma Rehabilitation  
David C. Ring, MD  
University of Texas at Austin |
| 11:10 am - 11:20 am | Questions and Answers |

### Accelerating RTD

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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</table>
| 10:30 am - 10:40 am | STaR Trial and Lessons Learned in Multi-Ligamentous Knee Injuries  
James J. Irrgang, PhD  
University of Pittsburg |
| 10:40 am - 10:50 am | Deployed Medics s/p IED Blast with TBI: Implications for Future MSK Injury  
Steven Svoboda, MD  
Medstar Sports Medicine |
| 10:50 am - 11:00 am | ACL Reconstruction and Return to Sport: Where Are We in 2019?  
Volker Mushal, MD  
University of Pittsburg |
| 11:00 am - 11:10 am | Predicting RTD: How Outcomes are Changing the Military Paradigm of Care  
Dan Rhon, PhD  
Uniformed Services University of the Health Sciences |
<p>| 11:10 am - 11:20 am | Questions and Answers |</p>
<table>
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<tr>
<th>Time</th>
<th>Session Description</th>
<th>Speaker(s)</th>
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</table>
| 11:20 am - 11:50 am | Lunch/Industry Update *CME Credit Not Available  
Stryker (Grand Ballroom A)  
Indications & Design Principles for Reverse Shoulder Arthroplasty  
Stephen Dunstan | | 1:35 pm - 1:45 pm | Patient Centered Rehabilitation and Barriers to Optimal Outcomes: The Military Experience  
Joseph R. Hsu, MD  
Carolinias Medical Center |
| 11:50 am - 12:20 pm | Dessert in the Exhibit Hall (Grand Ballroom B) | | 1:45 pm - 1:55 pm | Gaps in Post-traumatic Rehabilitation in the Military  
Jason M. Wilken, PhD, PT  
University of Iowa |
| 12:20 pm - 12:30 pm | General Session V: Outcomes  
Moderators: RADM Bruce Gillingham, MD and David C. Ring, MD | | 1:55 pm - 2:10 pm | Questions and Answers |
| 12:30 pm - 12:40 pm | The Future of Outcomes and Implications in the DoD  
Kurt Spindler, MD  
The Cleveland Clinic | | 2:10 pm - 2:30 pm | BREAK (Grand Ballroom B) |
| 12:30 pm - 12:40 pm | Patient Centered Outcomes Research for the Wounded Warrior  
Gerard Slobogean, MD  
University of Maryland School of Medicine  
R Adams Cowley Shock Trauma Center | | 2:30 pm - 3:30 pm | Breakout Sessions |
| 12:40 pm - 12:50 pm | MOTION - Addressing Readiness through Outcomes  
LTC Jonathan F. Dickens, MD  
Walter Reed National Military Medicine | | 2:30 pm - 3:30 pm | Breakout Group 5: Amputation, Nerve Injury, and Replantation  
Portrait Room  
Moderators: CDR Scott M. Tintle, MD and Jaimie T. Shores MD, FACS |
| 12:50 pm - 1:00 pm | The Resiliency Factor  
BG (Ret) Rhonda Cornum, MD  
The Cornum Group | | 3:00 pm - 3:30 pm | Breakout Group 6: Leveraging Big Data and Outcomes  
Freer Room  
Moderators: Kurt Spindler, MD / Brett Freedman, MD / Timothy C. Mauntel, ATC, PhD |
| 1:00 pm - 1:10 pm | Patient Reported Outcomes in a Large Civilian Medical System  
MaCalus V. Hogan, MD, MBA  
University of Pittsburgh | | 3:30 pm - 3:45 pm | Breakout Group Reports |
| 1:10 pm - 1:25 pm | Questions and Answers | | 3:45 pm - 4:00 pm | Questions and Answers |
| 1:25 pm - 1:35 pm | General Session VI: Rehabilitation and RTD  
Moderators: Gerard Slobogean, MD and MAJ Jeanne C. Patzkowski, MD | | 4:00 pm - 4:15 pm | Next Steps |
| 1:25 pm - 1:35 pm | Blood Flow Restrictive Therapy: Where Are We in 2019?  
Johnny Owens  
Owens Recovery Science | | 4:15 pm | ADJOURN |

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Extremity War Injuries XIV
Emerging Combat and Readiness Research
Poster Presentations
Grand Ballroom Foyer

READINESS

Poster 1: Blood Flow Restriction for Strengthening of the Rotator Cuff and Injury Prevention
Bradley Lambert, PhD, Houston Methodist Hospital

Poster 2: Return to Sport Testing at 6 Months After Arthroscopic Shoulder Stabilization Demonstrates Residual Functional Deficits
Kevin Wilson, MD, University of Pittsburgh Medical Center

Poster 3: A Comprehensive Assessment of the Effect of Tibial Slope on Cruciate Ligament Reconstruction Grafts: Tibial Slope Matters
LCDR Andrew S. Bernhardson, MD, The Steadman Clinic

Poster 4: Posterior Tibial Slope and Risk of Posterior Cruciate Ligament Injury
LCDR Andrew S. Bernhardson, MD, The Steadman Clinic

Poster 5: Orthopaedic Surgeon Decision-Making Processes for Post-Surgical Opioid Prescribing
LT Jason Kopp, MD, Walter Reed National Military Medical Center

Poster 6: Rates and Risk Factors for Prolonged Opioid Use Following Multiligament Knee Surgery
Volker Musahl, MD, University of Pittsburgh Medical Center

TRAUMA

Poster 7: Characterization of Blast Injuries Sustained at a Civilian Level-1 Trauma Center
O3 Carl Anthony Nunziato Jr., MD, University of Texas at Austin

Poster 8: A Novel BMP-2 Delivery Device Induces Superior Bone Formation Compared to InFuse® In A Rat Critical Defect Model
Yi D. Arnold, PhD, Theradaptive

Poster 9: Biocompatible Ex Vivo-Induced Designer Fracture Hematoma for the Healing of Segmental Bone Defects
Vaida Glatt, PhD, University of Texas Health Science Center San Antonio

Poster 10: Comparison of 3 Devices to Measure Compartment Syndrome
Edward Harvey, MD, MSc, McGill University

Poster 11: Evaluation of a Low Cost “Tool-less” External Fixator for Far Forward DCO: Ease of Application
Robert M. Harris, MD, Hughston Clinic

Poster 12: Novel Biomarker for Fracture Healing: Circulating Collagen X Degradation Product Correlates with Mouse and Human Fracture Healing Progression
Chelsea S. Bahney, PhD, Steadman Philippon Research Institute

Poster 13: Osseointegrated Implants for Transtibial Amputees: A Prospective Proof-Of-Concept Study
Munjed Al Muderis, FRACS, FRCS (Ortho), MBChB, The Osseointegration Group of Australia

Poster 14: Outcomes After Heel Pad Degloving Injuries
Michael J. Bosse, MD, Carolinas Medical Center