Injury Epidemiology of Unintentional Musculoskeletal Injuries in the United States Air Force Special Tactics Forces

Timothy C. Sell,* Mallory A. Sell,* John P. Abt,† Deirdre Rafferty,* Andrew Simonson,* Meleesa Wohleber,* Mita Lovalekar,* Scott M. Lephart,* FACSM†
*Department of Sports Medicine and Nutrition, School of Health and Rehabilitation Sciences, University of Pittsburgh, Pittsburgh, PA
†College of Health Sciences, University of Kentucky, Lexington, KY

ABSTRACT
A first step in the injury prevention process is determining the magnitude and scope of unintentional musculoskeletal injuries (MSIs) in the target population. US Air Force Special Tactics (ST) is a distinct group of Special Operations Forces Operators who maintain a high level of tactical readiness for their unique mission set. PURPOSE: To describe the injury epidemiology, including type, location, and activity when injury occurred, of ST utilizing a guided self-reported injury questionnaire. METHODS: A total of 95 ST Operators were enrolled (Age: 27.8 ± 5.4 years, Height: 177.3 ± 6.1 cm, Mass: 82.6 ± 8.6 kg) in the study. Self-reported injury history was collected by a certified athletic trainer for a one-year period. A MSI was defined as an injury to the musculoskeletal system that resulted in alteration of tactical activities, tactical training, or physical training for a minimum of one day, regardless if medical attention was sought. Injury data was categorized based on injury type, mechanism of injury across all and preventable injuries (Pis). PIs were defined as an unintentional injury that may be reduced through injury prevention programs. Incidence, frequency, anatomical location, and activity were described for all injuries and injuries classified as preventable. RESULTS: The frequency of total injuries (Tis) was 33.7 MSIs while PIs was 18.8 MSIs/100 Operators/year. The incidence of Tis was 24.2 MSIs while PIs was 12.6 injured Operators/100 Operators/year. The upper extremity was the most commonly injured anatomic location followed by the spine and lower extremity for all injuries. Physical training was the most reported activity at the time of injury for TIs and PIs with 76.5% of TIs reported during PT as preventable. CONCLUSION: The current epidemiology data demonstrates that 46.9% of MSIs are preventable. AFSOC has recently integrated a human performance team's effort to mitigate MSIs through injury prevention programs. Incidence, frequency, anatomical location, and activity were described for all injuries and preventable injuries.

INTRODUCTION
A first step in the injury prevention process is determining the magnitude and scope of unintentional musculoskeletal injuries (MSIs) in the target population. US Air Force Special Tactics (ST) is a distinct group of Special Operations Forces Operators. ST Operators maintain a high level of tactical readiness for their unique mission set.

SUBJECTS
All subjects were recruited as a part of a comprehensive biopsychosocial, musculoskeletal, physiological, and nutritional laboratory testing protocol for the United States Air Force Special Operations Forces Operators. Operators were enrolled in this study (Table 1).

METHODS
EXPERIMENTAL DESIGN AND PROCEDURES
Self-reported MSI data were collected by a certified athletic trainer for a one-year prior to the date of laboratory testing. All data were collected utilizing the UPITT Medical Epidemiology Database. MSI data was categorized based on injury type, activity, mechanism of injury across all injuries and PIs. Preventable injuries were defined as an injury to the musculoskeletal system that resulted in alteration of tactical activities, tactical training, or physical training for a minimum of one day, regardless if medical attention was sought. Preventable injury was defined as an unintentional MSI that may be reduced through injury prevention programs. Incidence, frequency, anatomical location, and activity were described for all injuries and preventable injuries.

RESULTS
Frequency and incidence of all injuries and preventable injuries are presented in Table 2. Preventable injuries comprised of 46.9% of total injuries. The anatomical location of injury is presented in Figure 1 and Figure 2. The upper extremity was the most commonly reported location followed by the spine and lower extremity for all injuries. Preventable injuries: 40% each for upper extremity and spine. Pain/Splint/Injury was the most common injury type for both all injuries and preventable injuries.

TABLE 1: Demographics - Mean ± Standard Deviation

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<thead>
<tr>
<th>Age (yrs)</th>
<th>Height (cm)</th>
<th>Mass (kg)</th>
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<td>27.8 ± 5.4</td>
<td>177.3 ± 6.1</td>
<td>82.6 ± 8.6</td>
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SUMMARY AND CONCLUSIONS
Preventable injury was defined as an unintentional MSI that may be reduced through injury prevention programs. Incidence, frequency, anatomical location, and activity were described for all injuries and preventable injuries.