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Injuries and Injury Risk Factors in the U.S. Army Band, U.S. Army Field Band, and Old Guard Fife and Drum Corps, October 2017–December 2018

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14. ABSTRACT. U.S. Army Band members have unique injury risks resulting from occupational tasks such as standing, marching, and maintaining nonneutral postures for extended periods during performances and rehearsals. **Purpose:** To investigate injuries, injury causes and activities, and injury risk factors among U.S. Army Band members from the three premier Military District of Washington(MDW)/National Capital Region (NCR) Army Band units. Respiratory conditions were also investigated upon request as well as audiology test data given the potential noise exposures in the population. **Methods:** Demographics, personal characteristics, fitness performance, occupational safety behaviors, health behaviors, and recent injuries were collected and combined from medical records, training records, and electronic survey responses from October-December 2018. Descriptive statistics were reported and independent factors associated with injuries were identified through multivariable logistic regression. **Results:** About half of the band members (n=221, 49%) completed the survey. Over three-quarters of all band members (77%) had a medical encounter for injury and/or a self-reported injury October 2017–December 2018. Most injury diagnoses were for cumulative micro-traumatic "overuse" injuries (76%). Frequently injured body regions were the lower extremities (35%), upper extremities (29%), and back (26%). Leading reported activities associated with injury were running (21%), repetitive movements while playing (11%), and standing while playing (11%). Factors associated with injury included female sex, older age, lower physical fitness, marching and/or standing during rehearsals and performances, and infrequent replacement of footwear worn while playing. **Conclusions:** Injury prevention initiatives for band members should focus on the reduction of injuries resulting from overuse and repetitive motions. Potential prevention strategies suggested in the literature include participation in balanced personal physical training, physical training instruction from certified fitness professionals, adhering to ergonomic recommendations, footwear changes, planned rehearsal breaks, and leadership support for injury prevention efforts.

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TABLE OF CONTENTS

Page

APPENDICES

Technical Report No. S.0063625-17
Injuries and Injury Risk Factors in the U.S. Army Band
U.S. Army Field Band, and Old Guard Fife and Drum Corps
October 2017–December 2018

1. SUMMARY

1.1 Purpose

The U.S. Army Band has unique injury risks resulting from repetitive occupational tasks such as extended standing, sitting, and marching, static and/or nonneutral postures, and a variety of repetitive and forceful motions while playing instruments. Injury investigations in previous U.S. Army Band members have suggested that back and upper extremity musculoskeletal injuries are common (Knapik et al., 2007; U.S. Army Center for Health Promotion and Preventive Medicine, 2006, 2009; U.S. Army Public Health Command, 2010; Grier et al., 2011) with statistically significant risk factors of low physical activity, higher body fat, longer practice durations (Knapik et al., 2007), and marching time (U.S. Army Public Health Command, 2010). Older age may also be an important risk factor for injury in this mature population (Jones and Hauschild, 2015).

Due to recent reports of musculoskeletal injuries, discomfort, and stress fracture injuries experienced among Army Band members, an updated evaluation of musculoskeletal injuries and risk factors was requested. Work-related musculoskeletal disorders and occupational exposures associated with instrument play and manual material handling performed by band members during loading, unloading, setup, and teardown of band equipment for performances have not been previously assessed.

The purpose of this project was to investigate injuries, injury types and causes, and injury risk factors among U.S. Army Band members. Specifically, it was requested that musculoskeletal injuries be assessed among three Band units in the Military District of Washington (MDW)/National Capital Region (NCR): the U.S. Army Band (TUSAB), also known as “Pershing’s Own;” the U.S. Army Field Band (TUSAFB); and the Old Guard Fife and Drum Corps (OGFDC). TUSAB and OGFDC members are assigned to Joint Base Myer-Henderson Hall (JBM-HH), while TUSAFB members are located at Fort George G. Meade. All band members included were employed in the 42S military occupational specialty, Special Band Member. This investigation was initiated by requests from Commanders of all three Band units.

1.2 Methods

The electronic survey was designed collaboratively with input from and review by Band Commanders, the MDW/NCR Health Promotion Project Officer, the U.S. Army Public Health Center (APHC) Ergonomics Branch, the APHC Army Hearing Program, the APHC Disease Epidemiology Program, and the APHC Army Wellness Center (AWC) Operations Program.

Demographics, personal characteristics, Army Physical Fitness Test (APFT) performance, occupational safety behaviors, health behaviors, and recent injuries were collected and

combined from medical records, training records, and electronic survey responses from October–December 2018. Descriptive statistics were reported and factors associated with injuries were investigated using univariate risk ratios and multivariable logistic regression. Review and approval for the project was obtained from the APHC Scientific Review Committee and APHC Public Health Review Board project number 18-679.

1.3 Results

Based on August 2018 unit rosters for the three MDW/NCR Army Band units, there were 465 band members, all of whom belonged to the Active Component. Seventy-six percent of the population were men, the average age was 39 years old, almost all Soldiers (97%) held upper enlisted ranks (E5–E9), and the most common instrument groups were brass (30%) and woodwinds (23%).

According to recent training records, 15% were identified as exempt from the push-up test, 12% were exempt from the sit-up test, and 30% participated in an alternate event instead of the 2-mile run event (15% did the 2.5-mile walk, 15% completed the 6.2-mile bike ride, and <1% did the 800-yard swim). Among those who completed the standard activities, performance was lower than the overall Army. Based on recorded height and weight data, 12% of men and 7% of women were obese, which reflects a lower proportion of obese Soldiers than the overall Army.

About half of the band members (n=221, 49%) completed the electronic survey. Over three-quarters of the band members (77%) had a medical encounter for injury and/or a self-reported injury from October 2017–December 2018. Most injury diagnoses were for cumulative micro-traumatic “overuse” injuries (76%). Frequently injured body regions were the lower extremities (35%), upper extremities (29%), and back (26%). Leading reported activities associated with injury were running (21%), repetitive movements while playing (11%), and standing while playing (11%). A majority (66%) of electronic medical profiles were for musculoskeletal (MSK) injuries.

Factors associated with injury included female sex, older age, lower physical fitness, marching and/or standing during rehearsals and performances, and infrequent replacement of footwear worn while playing.

1.4 Conclusions and Recommendations

Injury prevention initiatives for band members should focus on the reduction of injuries resulting from overuse and repetitive motions. Potential prevention strategies include participation in balanced personal physical training, physical training instruction from certified fitness professionals, adhering to ergonomic recommendations, footwear changes, planned rehearsal breaks, and leadership support for injury prevention efforts.

2. REFERENCES

See Appendix A for a list of references used within this report.

3. AUTHORITY

This project initiated by requests for assistance from the Commanders of the three U.S. Army Band units (TUSAB, TUSAFB, and OGFDC) (see Appendix B).

Department of the Army (DA) Regulation 40-5 Preventive Medicine (2007) directs USAPHC to conduct field investigations of regional and local preventive medicine programs and services in support of the U.S. Army Medical Command (MEDCOM) oversight responsibilities (paragraph 2-19).

DA Regulation 600-63 Army Health Promotion (2015) defines health promotion as “any combination of health education and related organizational, political, and economic interventions designed to facilitate behavioral and environmental changes conducive to health and well-being of the Army community.” Army health promotion involves evaluating the effectiveness of the programs as defined above (Chapter 1, paragraph 1-6a and b(4), pages 1–2).

DA Pamphlet 40-11 Preventive Medicine (2005) states that all entities who implement Public Health activities are responsible for conducting program evaluations to assess program execution and determine whether intended outcomes and overall impact were achieved (paragraph 2-2, page 3).

DA Pamphlet 40-21 Ergonomics Program (2018) provides guidance for establishing the ergonomics program component as an integral part of the Army Occupational Safety and Health Program at all facilities controlled by the DA.

DA Pamphlet 40-501 Army Hearing Program (2015) outlines requirements for Hearing Readiness, Occupational Hearing Services, Clinical Hearing Services, and Hearing Conservation, including protection standards for Soldiers and noise-exposed DA Civilians. It directs the use of musician’s earplugs for members of the Army band and Soldiers who need “to differentiate between small differences in sound.” Further, it directs the allocation of unit funds to purchase appropriate hearing protection devices (paragraph 7-16b). The document also directs the use of fit-testing hearing protection devices when a significant threshold shift is confirmed (paragraph 7-15).

4. BACKGROUND

U.S. Army Band members have unique injury risks resulting from occupational tasks such as standing, marching, and maintaining nonneutral postures for extended periods during performance and rehearsal; repetitive motions; and travel, set-up, and handling/lifting equipment and instruments for performances. Injury investigations in previous U.S. Army Band members have reported that 44–57% of band Soldiers had medical visits for injuries (Grier et al., 2011;

Knapik et al., 2007; U.S. Army Center for Health Promotion and Preventive Medicine, 2006, 2009; U.S. Army Public Health Command, 2010). These studies showed that back and upper extremity MSK injuries were common (Knapik et al., 2007), with risk factors of low physical activity, high body mass index (BMI), longer practice durations (Knapik et al., 2007), and marching time (U.S. Army Public Health Command, 2010). Literature indicates that MSK injuries are common among musicians (Stanhope et al., 2019; Kok et al., 2016) and musicians' injuries may be more frequent and severe than occupational injuries in the general population (Paarup et al., 2011; Viljamaa et al., 2017).

Due to recent MSK injuries experienced among current U.S. Army Band members, an updated evaluation of injuries and injury risk factors among the three premier MDW/NCR Army Band units was requested. In addition to risk factors previously investigated, additional information was desired for details associated with injuries that occur while band members participate in loading, unloading, setup, and teardown activities. Additional health outcomes of respiratory conditions and noise-induced hearing were also included; leadership expressed concern about mold in practice facilities, and noise exposure is a unique occupational exposure for the Band units. These occupational exposures have not been previously considered with respect to injury risks in U.S. Army Band members.

5. METHODS

5.1 Survey Design and Administration

The APHC Injury Prevention Program designed an electronic survey with feedback from Band Commanders, the MDW/NCR Command Surgeon and Health Promotion Project Officer, the APHC Ergonomics Branch, the APHC Disease Epidemiology Program, the APHC Army Hearing Program, and the APHC AWC Operations Program. Some survey questions were based on the validated Musculoskeletal Pain Questionnaire for Musicians (Lamontagne and Bélanger, 2012).

The APHC entered survey questions into the Verint® Systems Enterprise Edition survey software tool, which generated a link to the survey. Band Commanders, Senior Enlisted Advisors, and Readiness Action Officers distributed the survey link by email to Soldiers in TUSAB, TUSAFB, and the OGFDC on 15 October 2018. These three groups of Soldiers will be referred to as Band units throughout the report. The survey remained open for responses until 21 December 2018. Therefore, responses were collected for a total of 69 days. A full-text version of the survey is included in Appendix C. Because the electronic survey allowed for questions to go unseen if they were irrelevant based on previous responses (skip patterns), the completed survey was not as long for most survey respondents as it may appear to be in Appendix C.

5.2 Reviews for Scientific Rigor and Human Protections

Prior to the administration of the survey, the APHC Scientific Review Committee approved the study design and the APHC Public Health Review Board approved the project as public health practice (Project No. 18-679).

5.3 Data Collection and Analysis

5.3.1 Data Collection

The survey collected the following information:

- Demographics: sex, date of birth (to calculate age), band unit, rank, education level.
- Personal characteristics: primary and secondary instrument, time (years) playing instruments, time (years) in Army Bands, dominant hand, and height and weight (to calculate BMI and body fat percentage).
- Most recent APFT performance: push-up repetitions, sit-up repetitions, and 2-mile run time.
- Occupational demands: practice and rehearsal frequency, frequency of sitting/standing/marching for rehearsals or performances, participation in loading and setup/teardown procedures.
- Occupational safety behaviors: use of orthotics and footwear, hearing protection, handling equipment.
- Health behaviors: sleep, tobacco use, general wellness, self-efficacy.
- Recent injuries and MSK pain: types of injury, associated activities and mechanisms, number of limited duty days for survey respondents' most physically limiting injury, and most physically-limiting band-related injury in the previous 12 months.
- Other health outcomes: noise-induced hearing loss, respiratory conditions.

Injury was defined on the survey as acute injuries (sudden and unexpected, such as a fall) and cumulative overuse injuries (those that develop over time and might be chronic or recurrent, including discomfort and pain). Injuries were described as potentially occurring from mechanisms of sudden force, sudden awkward movements, gradual repetitive movements or activities, environmental exposures, burns, poisoning, and medical complications, in accordance with the published APHC injury definition (U.S. Army Public Health Center, 2017b; Hauschild et al., 2019). The APFT includes push-up, sit-up, and 2-mile run time events and is completed biannually in accordance with Field Manual 7-22, Army Physical Readiness Training (Department of the Army, 2012).

Medical encounter injury data for the same 12-month time period covered by survey responses were obtained from the Defense Medical Surveillance System (DMSS) via the Defense Health Agency-Armed Forces Health Surveillance Division (DHA-AFHSD). The medical record is a useful complementary data source when a Soldier did not complete a survey. Medical encounters that included an injury as the primary diagnosis were provided and included diagnoses, personal identifiers, clinic, and type of care (inpatient/outpatient). Upon request from the customer, because the Band population is dissimilar from other Army populations, injury encounter records for comparison populations (West Point band, a medical battalion, and the legal services battalion) were also requested. Diagnoses for noise-induced hearing injuries meeting the APHC injury definition were captured as part of the medical encounter pull from DMSS and were supplemented by historical hearing test data from the Defense Occupational and Environmental Health Readiness System – Hearing Conservation (DOEHRS-HC). Additionally, records for respiratory condition diagnoses were received for the Band units, using

the same asthma diagnoses defined in previous surveillance initiatives (U.S. Army Public Health Center, 2019b).

For the same populations and time period, the DHA-AFHSB-Army Satellite provided APFT performance and height/weight data entered into the Defense Training Management System (DTMS). Height and weight data were used to calculate BMI and estimate body fat percentage. APFT performance and body composition are known risk factors for injury among Soldiers, so official records are helpful in lieu of or to complement survey response data. Because DTMS relies on unit-level data input, data are not always complete, so self-reported APFT performance and height/weight data were used when DTMS data were not available. APFT and height/weight data for the comparison populations were also requested.

The Medical Readiness Assessment Tool (MRAT) synthesizes health and medical data from a variety of sources. MRAT data used for this analysis included MSK injury eProfile data on profiles and limited duty days from the Medical Operational Data System, projected hearing profiles captured by DOEHRS-HC, and tobacco use from dental records.

Roster population data for the three Band units was obtained from the MDW Health Promotion Project Officer (HPPO) in August 2018. The population data were used to quantify the total population of Soldiers in the battalions of interest and to provide unit-specific results.

5.3.2 Data Analysis

Survey data were exported from Verint and analyzed with the Statistical Program for Social Sciences (SPSS®), Version 21.0. Data were cleaned in SPSS, which involved removing entries that had been misclassified as injuries from the analysis and re-categorizing “Other” write-in responses into appropriate response groupings, as needed.

Descriptive statistics were calculated for all survey responses, physical fitness data, BMI and body fat percentage, hearing test data, and selected MRAT variables. Body fat was calculated using a conversion formula that accounts for height, weight, age, and sex (Gallagher et al., 2000). Medical encounters for injury were summarized by injury type and injured body region. Injury rates were calculated per 1,000 person-years using provided rosters to estimate person-time; rates were also age- and sex-adjusted against the Army population using previously established methods (U.S. Army Public Health Center, 2019b). DOEHRS-HC surveillance audiogram data from 2018 were used to calculate the proportion of band members with hearing loss. Asthma diagnoses were presented as the proportion of Soldiers with asthma diagnoses during the same time frame as the survey (October 2017–December 2018). If certain survey response variables only pertained to instrumentalists and/or conductors (e.g., not vocalists or administrative personnel), only responses for those relevant groups are reported.

In preparation for risk factor analysis, the occurrence of at least one injury during the 12 months prior to the survey (either in the medical record or self-reported on the survey) was coded as a binary variable to identify Soldiers with one or more injury. Potential risk factors for injuries included in the analysis were demographics (e.g., age, sex, and rank), personal characteristics (e.g., instrument, body fat percentage), physical fitness (e.g., APFT performance), occupational

safety behaviors (e.g., frequency of practices, frequency of standing/sitting/marching, footwear use), and health behaviors (e.g., sleep, tobacco use).

In order to capture risk factors for different perspectives, seven models were considered: 1) risk factors for any injury (MSK, non-MSK), including survey responses; 2) risk factors for all band-related injuries, including survey responses; 3) risk factors for all MSK injuries, including survey responses; 4) risk factors for any injury, only including administrative data; 5) risk factors for injuries in TUSAB, only including administrative data; 6) risk factors for injuries in TUSAFB, only including administrative data; and 7) risk factors for injuries in OGFDC, only including administrative data. Models 1–3 were limited to only those who completed the surveys because they included variables for survey responses. Models 4-7 included administrative data only; thus, these models included all band members as well as survey nonparticipants. Therefore, the survey response data that was limited to survey respondents only could not be incorporated into the models.

Univariate risk ratios and 95% confidence intervals (CI) are reported for each risk factor variable. Variables were entered into a backward-stepping multivariable logistic regression analysis if they were found to be marginally significant in univariate assessments of injury risk ($p \leq 0.10$). Odds ratios and 95% CI for variables remaining in the final multivariable models ($p \leq 0.05$) are reported. If variables were correlated and seemed to represent the same effect on injury risk (e.g., age and “time playing primary instrument”), only the most complete variable was included in multivariable analysis. If a survey variable was not considered a risk factor for new injuries (e.g., AWC use), the variable was not included in multivariable analyses. Multivariable results were not reported when small population cell sizes produced large odds ratios, indicating overestimated sample variance and therefore, questionable results (Peduzzi et al., 1996; Rothman et al., 2008).

Risk ratios comparing the proportion injured to a reference parameter, 95% CI, and the Mantel-Haenszel chi-square significance (two-tailed p-values) are reported for each potential categorical risk factor. For variables with multiple categories, the reference parameter was usually chosen as the category with the lowest injury rate, to identify whether there were any comparatively high injury proportions. However, if the category with the lowest injury rate had a small sample size, the category with the next highest injury percentage was chosen.

6. RESULTS

6.1 Demographics

6.1.1 Unit Rosters

As of August 2018, roster data indicated a total membership of 455 band members across the three units of interest. Ten additional Soldiers completed suveys, presumably people who joined the band units between August and December 2018, for a total of 465 band members. Seventy-six percent of the band members were men, 39±8 years old on average, upper enlisted ranks (E5–E9) (97%), and were in brass (30%) and woodwinds (23%) instrument groups (see Table

1). With the exception of instruments represented, these demographic distributions were similar across the three units.

Table 1. Demographics and Instrument Groups by Army Band Unit (n=465 Band Members)

Variable	Characteristic	TUSAB n=255 n (%)	TUSAFB n=142 n (%)	OGFDC n=68 n (%)	All Band Members n=465 n (%)
Sex	Women	54 (21.2)	37 (26.0)	22 (32.4)	113 (24.3)
	Men	201 (78.8)	105 (73.9)	46 (67.6)	352 (75.7)
Age (years)	18–24	3 (1.2)	4 (2.8)	5 (7.3)	12 (2.6)
	25–34	75 (29.4)	45 (31.7)	24 (35.3)	144 (31.0)
	35–44	103 (40.4)	61 (43.0)	28 (41.2)	192 (41.2)
	≥ 45	74 (29.0)	32 (22.5)	11 (16.2)	117 (25.2)
	Mean ± SD[a]	39.8 ± 8.1	38.3 ± 7.7	36.3 ± 7.5	38.9 ± 8.0
Rank	E1–E4	1 (0.4)	3 (2.1)	0 (-)	4 (0.9)
	E5–E9	248 (97.3)	134 (94.4)	67 (98.5)	449 (96.6)
	O1–O6	5 (2.0)	4 (2.8)	0 (-)	9 (1.9)
	W1–W5	1 (0.4)	1 (0.7)	1 (1.5)	3 (0.6)
Instrument group[b]	Brass	82 (32.2)	33 (23.2)	24 (35.3)	139 (29.9)
	Woodwinds[a]	48 (18.8)	33 (23.2)	26 (38.2)	107 (23.0)
	Strings	32 (12.5)	11 (7.7)	0 (-)	43 (9.2)
	Percussion[a]	16 (6.3)	8 (5.6)	17 (25.0)	41 (8.8)
	Vocalists	21 (8.2)	19 (13.4)	0 (-)	40 (8.6)
	Keys	5 (2.0)	3 (2.1)	0 (-)	8 (1.7)
	Conductor/bandmaster	9 (3.5)	2 (1.4)	1 (1.5)	12 (2.6)
	Other leadership	7 (2.7)	5 (3.5)	0 (-)	12 (2.6)
	Administrative support/ Music production	32 (12.5)	25 (17.6)	0 (-)	57 (12.3)
	Unknown	3 (1.2)	3 (2.1)	0 (-)	6 (1.3)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation
Notes:
[a] Indicates statistically significant difference between groups $p < 0.05$
[b] The brass instrument group includes trumpet, bugle, French horn, trombone, euphonium, and tuba. Woodwinds include clarinet, saxophone, flute, piccolo, fife, oboe, and bassoon. Strings instrument group captures violin, viola, cello, string bass, guitar, and bass guitar. Keys are piano, keyboard, and accordion.

6.1.2 Survey Responses

There were 221 Soldiers from TUSAB, TUSAFB, and OGFDC who completed the electronic survey (97 from TUSAB, 96 from TUSAFB, and 28 from OGFDC). Based on the roster populations, the response rates were 39% for TUSAB, 71% for TUSAFB, and 41% for OGFDC. The overall response rate for all Band units was 49%.

Table 2 shows demographic information for the survey respondents. Of the 221 survey respondents, a majority were men (71%), 35 years of age or older (64%), enlisted with a rank of E5–E9 (98%), and woodwind (36%) or brass (32%) players. These responses are consistent when compared to roster data. Additionally, most survey respondents (81%) reported having earned a Bachelor's or Master's degree as their highest level of education.

Table 2. Band Demographics (n=221 Survey Respondents)

Variable	Category	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
Sex	Women	27 (27.8)	29 (30.2)	9 (32.1)	65 (29.4)
	Men	70 (72.2)	67 (69.8)	19 (67.9)	156 (70.6)
Age (years)	18–24	3 (3.1)	1 (1.1)	2 (7.1)	6 (2.7)
	25–34	25 (25.8)	36 (37.9)	12 (42.9)	73 (33.2)
	35–44	40 (41.2)	40 (42.1)	9 (32.1)	89 (40.5)
	≥45	29 (29.9)	18 (18.9)	5 (17.9)	52 (23.6)
	Mean ± SD[a]	39.8 ± 8.4	36.9 ± 7.3	36.5 ± 8.2	38.1 ± 8.0
Rank	E1–E4	0 (-)	1 (1.0)	0 (-)	1 (0.5)
	E5–E9	95 (97.9)	93 (96.9)	28 (100)	216 (97.7)
	O1–O6	1 (1.0)	1 (1.0)	0 (-)	2 (0.9)
	W1–W5	1 (1.0)	1 (1.0)	0 (-)	2 (0.9)
Instrument group[b]	Brass	27 (30.0)	27 (29.7)	10 (45.5)	64 (31.5)
	Woodwinds	32 (35.6)	33 (36.2)	8 (36.4)	73 (36.0)
	Strings	12 (13.3)	5 (5.5)	0 (-)	17 (8.4)
	Percussion	2 (2.2)	5 (5.5)	4 (18.2)	11 (5.4)
	Vocalists	3 (3.3)	10 (11.0)	0 (-)	13 (6.4)
	Keys	2 (2.2)	3 (3.3)	0 (-)	5 (2.5)
	Conductor/bandmaster	2 (2.2)	1 (1.1)	0 (-)	3 (1.5)
	Music production	10 (11.1)	7 (7.7)	0 (-)	17 (8.4)
Education level	High school/GED	4 (4.1)	9 (9.4)	3 (10.7)	16 (7.2)
	Technical/trade school	1 (1.0)	1 (1.0)	0 (-)	2 (0.9)
	Associate's degree	2 (2.1)	2 (2.1)	0 (-)	4 (1.8)
	Bachelor's degree	19 (19.6)	20 (20.8)	9 (32.1)	48 (21.7)
	Master's degree	62 (63.9)	55 (57.3)	14 (50.0)	131 (59.3)
	Doctorate degree	9 (9.3)	8 (8.3)	2 (7.1)	19 (8.6)
	Other professional degree	0 (-)	1 (1.0)	0 (-)	1 (0.5)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band

OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation
Notes:
[a] Indicates statistically significant difference between groups $p < 0.05$
[b] The brass instrument group includes trumpet, bugle, French horn, trombone, euphonium, and tuba. Woodwinds include clarinet, saxophone, flute, piccolo, fife, oboe, and bassoon. Strings instrument group captures violin, viola, cello, string bass, guitar, and bass guitar. Keys are piano, keyboard, and accordion.

Approximately half (48%) of survey respondents reported playing a secondary instrument. Table 3 summarizes reported secondary instruments played by band members. Most secondary instruments reported were keys (43%) and strings (27%). There were no predominant primary and secondary instrument pairs, but some more frequent pairings included bugle and trumpet and saxophone and clarinet.

Table 3. Secondary Instruments by Unit (n=106 Survey Respondents with Secondary Instruments)

Instrument	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
Woodwinds	8 (9.0)	9 (10.1)	3 (3.4)	20 (22.5)
Brass	7 (7.9)	3 (3.4)	7 (7.9)	17 (7.7)
Strings	9 (10.1)	15 (16.9)	0 (-)	24 (27.0)
Percussion	2 (2.2)	5 (5.6)	0 (-)	7 (3.2)
Keys	18 (20.2)	20 (22.5)	0 (-)	38 (42.7)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

On average, band members reported having played their primary instrument for 26 years and their secondary instrument for 22 years (Table 4). TUSAB respondents indicated more years playing their primary instrument than survey respondents from TUSAFB and OGFDC. Soldiers in OGFDC indicated having played their secondary instruments the longest, with the average (31 years) being higher than for their current primary instruments (Table 5).

Table 4. Years Playing Primary Instrument by Unit (n=199 Survey Respondents)

Years Playing Primary Instrument (Tertiles)	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
≤ 21	24 (28.2)	32 (35.6)	13 (54.2)	69 (34.7)
22–30	28 (32.9)	38 (42.2)	8 (33.3)	74 (37.2)
≥ 31	33 (38.8)	20 (22.2)	3 (12.5)	56 (88.1)
Mean ± SD	27.0 ± 10.2	25.2 ± 8.0	20.0 ± 11.1	25.5 ± 9.6

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

Table 5. Years Playing Secondary Instrument by Unit (n=89 Survey Respondents with Secondary Instruments)

Years Playing Primary Instrument (Tertiles)	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
≤ 19	13 (35.1)	17 (41.5)	1 (9.1)	31 (34.8)
20–25	12 (32.4)	14 (34.1)	3 (27.3)	29 (32.6)
≥ 26	12 (32.4)	10 (24.4)	7 (63.6)	29 (32.6)
Mean ± SD	22.2 ± 10.4	19.7 ± 10.2	31.3 ± 10.2	22.2 ± 10.8

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

When asked how long Soldiers had spent in their current unit, the average response was 10 years (Table 6). The average time spent in any Army Band was 12 years (Table 7). TUSAFB members reported being in their current unit for less time than survey respondents from TUSAB and OGFDC, on average (9 years, compared to 11 and 10 years respectively). TUSAB respondents reported having been in any Army Band for more years than members of the other units, on average (13 years compared to 10 years for TUSAFB and 11 years for OGFDC).

Table 6. Time in Current Band Unit (n=221 Survey Respondents)

Time in Current Unit (Tertiles) (Fractional Years)	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (% total)
≤ 4.8	28 (28.9)	38 (39.6)	7 (25.0)	73 (33.0)
4.9–13.8	30 (30.9)	31 (32.3)	12 (42.9)	73 (33.0)
≥ 13.9	39 (40.0)	27 (28.1)	9 (32.1)	75 (33.9)
Mean ± SD	11.2 ± 8.2	8.9 ± 6.7	10.2 ± 6.5	10.1 ± 7.4

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

Table 7. Time in All Band Units Throughout Career (n=221 Survey Respondents)

Time in Current Unit (Tertiles) (Fractional Years)	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (% total)
≤ 6.5	27 (27.8)	35 (36.5)	12 (42.9)	74 (33.5)
6.6–15.3	28 (28.9)	35 (36.5)	8 (28.6)	71 (32.1)
≥ 15.4	42 (43.3)	26 (27.1)	8 (28.6)	76 (34.4)
Mean ± SD	13.0 ± 8.1	10.3 ± 7.0	10.5 ± 6.2	11.5 ± 7.5

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

6.2 Personal Characteristics

6.2.1 APFT Performance

Ninety-seven percent (n=450) of band members in the study population had a recent APFT training record in the DTMS. All but two Soldiers (99.6%) passed their most recently recorded test. Fifteen percent were identified as exempt from the push-up test, 12% were exempt from the sit-up test, and 30% participated in an alternate event instead of the 2-mile run (15% did the 2.5-mile walk, 15% completed the 6.2-mile bike ride, and <1% did the 800-yard swim). Of those who participated in the standard events, average 2-mile runtimes, average push-up repetitions, and average sit-up repetitions are shown in Table 8. Appendix D shows data by band unit and comparison data from comparable Army populations. Survey responses for APFT performance were very similar to training records and averaged responses are also provided in Appendix D.

Table 8. APFT Performance by Sex (n=450 Band Members with Training Records[a])

APFT Event	Men	Women
Push-ups (repetitions)	53 ± 14	31 ± 10
Sit-ups (repetitions)	59 ± 14	60 ± 13
2-mile run time (minutes and seconds)	15:37 ± 1:32	18:37 ± 1:44

Legend:
APFT = Army Physical Fitness Test
Note:
Source: DTMS, 2019
[a] Of the 450 band members with recent training records, some were not included in the averages if they were exempt from an event.

6.2.2 Additional Physical Activity Information

Ten percent (n=21) of survey respondents reported participation in alternate physical training (PT) programs; of these, 71% were for Profile PT as shown in Table 9.

Table 9. Percent of Soldiers on Profile Participating in Alternate PT Program Types (n=21 Survey Respondents in Alternative PT Programs)

Alternate PT	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
Profile PT	10 (83.3)	5 (62.5)	0 (-)	15 (71.4)
Weight Control PT	0 (-)	1 (12.5)	0 (-)	1 (4.8)
Other PT[a]	2 (16.7)	0 (-)	1 (100)	3 (14.3)
Multiple Alternative PT	0 (-)	2 (25.0)	0 (-)	2 (9.5)

Legend:
PT = physical training
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Note:
[a] Other PT included: CrossFit, kickboxing, personal trainer.

Survey respondents were asked how many minutes per week they usually spent participating in aerobic exercise (moderate-intensity cardiorespiratory activity that increases your heart rate and breathing, like running, walking, and swimming); strength training (use of free weights, body weight exercises, weight machines, and resistance bands to induce muscular contraction); and sports. Survey respondents reported an average of about 2.5 hours per week doing aerobic exercise, about 1.5 hours strength training, and slightly less than an hour playing sports (Table 10). Results were similar across units as shown in Appendix D.

Table 10. Average Duration of Physical Activity Participation by Unit (Past Year) (n=194 Survey Respondents)

Physical Activity	Band Members Mean ± SD
Aerobic exercise (minutes per week)	157.2 ± 90.0
Strength training (minutes per week)	95.2 ± 79.3
Sports (minutes per week)	51.9 ± 79.3

Legend:
SD = standard deviation

6.2.3 Body Composition

Table 11 shows average BMI and percent body fat percentages for men and women. Twelve percent of men and 7% of women were obese based on a BMI over 30, as defined by Army Regulation (AR) 600-9 (Department of the Army, 2012). Appendix D shows data by band unit and comparison data from comparable Army populations.

Table 11. Average BMI, Body Fat Percentage, and Percent Obese (n=463 Band Members with Height/Weight Data)

Body Composition	Men	Women
Average BMI ± SD (kg/m^2)	26.3 ± 3.1	24.3 ± 3.2
Percent Obese	12%	7%
Body Fat Percentage ± SD	22.1 ± 3.9	32.0 ± 4.5

Legend:
BMI = body mass index
SD = standard deviation
Note:
Source: If DTMS data were not available for band members, MRAT data were used. If neither were available, self-reported survey data were used.

Because only 64% of band members had height and weight data recorded in their recent training records from DTMS, MRAT data were used as a surrogate for Soldiers with missing DTMS data; if MRAT data were also not available, self-reported height and weight data were used. All but two band members (99.6%) had height and weight data available in at least one of these systems.

Appendix D shows data by unit and comparison data from comparable Army units. Overall combined rates for all Band members are shown in Table 12. Agreement was observed among the two electronic data sources (DTMS and MRAT), but variation was seen when compared to survey responses.

The distribution of BMI was also organized by accepted categories established by the Centers for Disease Control and Prevention (CDC) (Centers for Disease Control and Prevention, 2017) and AR 600-9 (Department of the Army, 2013) in Table 13. Forty-one percent had a BMI in the

"normal" range, while <1% were underweight and 11% were obese. Trends and averages were similar across band units (see Appendix D).

Table 12. Distribution of BMI by Category (n=463 Band Members with Height/Weight Data)

BMI (kg/m^2) Categories	Band Members n (% total)
< 18.5 (underweight)	1 (0.2)
18.5–24.9 (normal)	190 (41.0)
25.0–27.5 (low overweight)	161 (35.8)
27.6–29.9 (high overweight)	60 (13.0)
≥ 30 (obese)	51 (11.0)

Mean: 25.6 ± 3.3
Legend:
BMI = body mass index
kg/m^2 = kilograms per cubic meter
Note:
Source: If DTMS data were not available for band members, MRAT data were used. If neither were available, self-reported survey data were used.

6.3 Health Behaviors

6.3.1 Sleep

Among survey respondents, most (56%) reported getting at least 7 hours of sleep per night during the past month. The average reported number of hours of sleep per night was 6.6 hours (Table 13). Only one respondent reported fewer than 5 hours per night on average. Appendix E shows unit-level responses.

Table 13. Hours of Sleep Per Night (n=193 Survey Respondents, past month)

Hours of Sleep	Band Members n (% total)
0 hours	0 (-)
1 hour	0 (-)
2 hours	0 (-)
3 hours	1 (0.5)
4 hours	0 (-)
5 hours	16 (8.3)
6 hours	68 (35.2)
7 hours	80 (41.5)
8 hours	26 (13.5)
>8 hours	2 (1.0)

Mean: 6.6 ± 0.9

6.3.2 Tobacco Use

When asked about their tobacco use habits, only 2% (n=3) of survey respondents indicated that they were current cigarette smokers, none were current smokeless tobacco users, and 2% (n=4) were current e-cigarette or vaporizer users. Table 14 shows detailed responses, including past users who have quit. No significant differences were seen among units; unit-level responses are in Appendix E.

Table 14. Tobacco Use (n=193 Survey Respondents)

Tobacco Use		Band Members n (% total)
Cigarette smoking	Never	173 (89.6)
	Quit less than 6 months ago	2 (1.0)
	Quit more than 1 year ago	15 (7.8)
	Smoke fewer than 10 cigarettes per day	3 (1.6)
Smokeless tobacco use	Never	188 (97.4)
	Quit more than 1 year ago	5 (2.6)
E-cigarette use/vaping	Never	184 (95.3)
	Quit less than 6 months ago	3 (1.6)
	Quit 6 months to 1 year ago	1 (0.5)
	Quit more than 1 year ago	1 (0.5)
	Vape every day or almost every day	4 (2.1)

6.3.3 General Wellness

Survey respondents were asked whether they have received instruction on wellness (i.e., diet, exercise, rest). Table 15 shows responses for reported instruction during music school and while in the Army. Significantly more survey respondents indicated having received wellness instruction while in the Army (83%), compared to during music school (26%). Appendix E shows responses by unit.

Table 15. Wellness Instruction (n=193 Survey Respondents)

Wellness Instruction	Category	Band Members n (% total)
During music school	Yes	51 (26.4)
	No	125 (64.8)
	N/A, did not go to music school	17 (8.8)
While in the Army	Yes	160 (82.9)
	No	33 (17.1)

Legend:
N/A = not applicable

Band members were asked three questions to assess their awareness and utilization of the AWC. Table 16 shows results by unit. TUSAFB respondents had the highest awareness of the AWC (94.3%). However, when asked if they had ever visited an AWC, band members across all units reported low AWC utilization rates (8–24% utilization). Despite the lack of utilization, survey respondents expressed willingness to utilize the AWC services related to injury risk factors (physical fitness, body composition) if identified as high risk for injury.

Table 16. AWC Awareness and Utilization by Unit (n=193 Survey Respondents)

AWC Questions	Category	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
Aware of AWC	Yes	57 (67.9)	82 (94.3)	13 (59.1)	152 (78.8)
	No	27 (32.1)	5 (5.7)	9 (40.9)	41 (21.2)
Visited AWC	Yes	7 (12.3)	20 (24.4)	1 (7.7)	28 (18.4)
	No	50 (87.7)	62 (75.6)	12 (92.3)	124 (81.6)
Willing to visit AWC if identified as high risk	Yes	52 (61.9)	52 (59.8)	18 (81.8)	122 (63.2)
	No	32 (38.1)	35 (40.2)	4 (18.2)	71 (36.8)

Legend:
AWC = Army Wellness Center
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

When asked about relaxation, most instrumentalist respondents reported feeling relaxed while they play (80%) and deliberately relaxing their muscles when they play (77%) (Table 17). Appendix E shows results by unit.

Table 17. Relaxation (n=168 Survey Respondents, Instrumentalists Only)

Relaxation Questions	Category	All Band Members n (% total)
Do you usually feel relaxed while playing?	Yes	134 (79.8)
	No	34 (20.2)
Do you deliberately relax muscles while playing?	Yes	130 (77.4)
	No	38 (22.6)

To assess self-efficacy, survey respondents were asked to rate their agreement with the following statement on a scale of 1 to 10: “I will be able to achieve most of the goals that I have set for myself.” Table 18 shows the distribution of responses; more than two-thirds of survey respondents (68%) indicated they agreed with a response of 8 or higher. Appendix E shows results by unit.

Table 18. Confidence in Achieving Goals (Scale of 1–10, n=192 Survey Respondents)

Confidence in Achieving Goals	All Band Members n (% total)
1 (strongly disagree)	0 (-)
2	0 (-)
3	2 (1.0)
4	4 (2.1)
5 (Neither agree nor disagree)	14 (7.3)
6	10 (5.2)
7	32 (16.7)
8	53 (27.6)
9	36 (18.8)
10 (strongly agree)	41 (21.4)
Mean ± SD	8.0 ± 1.6

Legend:
SD = standard deviation

Likewise, Soldiers were asked to rate their agreement with the following statement on a scale of 1 to 10: “When facing difficult tasks, I am certain I will accomplish them.” Table 19 shows the distribution of responses; more than two-thirds of survey respondents (72%) indicated they agreed with a response of 8 or higher. Appendix E shows results by unit.

Table 19. Confidence in Task Performance (Scale of 1–10, n=193 Survey Respondents)

Confidence in Task Performance	All Band Members n (% total)
1 (strongly disagree)	1 (0.5)
2	0 (-)
3	2 (1.0)
5 (Neither agree nor disagree)	13 (6.7)
6	10 (5.2)
7	28 (14.5)
8	58 (30.1)
9	41 (21.2)
10 (strongly agree)	40 (20.7)
Mean ± SD	8.1 ± 1.6

Legend:
SD = standard deviation

6.4 Occupational Demands

6.4.1 Playing Frequency

Soldiers were asked how many hours per day they typically spend playing their instrument for practice, rehearsals, and performances. The average respondent reported 20 hours of playing

per week, with TUSAFB respondents reporting the most hours of playing on average (Table 20). When applicable, responses for primary and secondary instruments were combined to present totals for both (all) instruments.

Table 20. Hours Spent Playing Per Week by Unit (n=196 Survey Respondents)

Hours Spent Playing per Week	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
0–15	32 (40.5)	25 (30.4)	11 (45.8)	68 (36.8)
15.1–24	26 (32.9)	27 (32.9)	9 (37.5)	62 (33.5)
≥24.1	21 (26.6)	30 (36.6)	4 (16.7)	55 (29.7)
Mean ± SD	18.6 ± 10.1	22.5 ± 12.9	19.0 ± 15.8	20.4 ± 12.3

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

6.4.2 Sitting, Standing, and Marching

Table 21 presents the average reported time spent sitting, standing, and marching per day while playing for practice, rehearsals, and performance. Survey respondents from TUSAFB reported less average time standing and more average time sitting, compared to survey respondents from TUSAB and OGFDC. Band members in OGFDC reported the most time marching (1.5 hours per day), compared to other bands.

Table 21. Average Hours Per Day Spent Standing, Marching, and Sitting While Playing by Unit (n=197 Survey Respondents)

Poisition While Playing	TUSAB Hours per Day Mean ± SD n=86	TUSAFB Hours per Day Mean ± SD n=89	OGFDC Hours per Day Mean ± SD n=22	All Band Members Hours per Day Mean ± SD n=197
Standing	2.3 ± 1.6	1.2 ± 1.3	2.3 ± 0.9	1.8 ± 1.5
Marching	1.0 ± 1.2	0.8 ± 1.3	1.5 ± 1.1	0.9 ± 1.3
Sitting	1.9 ± 1.6	2.6 ± 1.6	1.0 ± 1.4	2.1 ± 1.6

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

6.4.3 Performance Types

Soldiers were asked to recall the approximate number of performances they've participated in during the 12 months prior to survey administration. Table 22 presents the results. Responses varied greatly, even within units, so Soldiers may have inconsistently included/excluded certain performances and performance types in their estimations.

Table 22. Participation in Performances by Unit (n=200 Survey Respondents)

Participation in Performances	TUSAB n=88 Mean ± SD	TUSAFB n=90 Mean ± SD^	OGFDC n=22 Mean ± SD	All Band Members n=200 Mean ± SD
Scheduled performances per year (e.g., concerts)	40 ± 53	85 ± 34	64 ± 28	63 ± 47
Funeral performances per year	74 ± 99	0 ± 0	7 ± 9	33 ± 75
Retirement performances per year	5 ± 7	2 ± 4	12 ± 3	4 ± 6
Parade performances per year	3 ± 4	1 ± 2	12 ± 6	3 ± 5
Other performances[a] per year	27 ± 64	5 ± 8	29 ± 31	17 ± 45
All Performances	**150 ± 138**	**93 ± 38**	**123 ± 50**	**121 ± 100**

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation
Note:
[a] Commonly reported "other performances" included chamber concerts, change of command ceremonies, and Tomb of the Unknown Soldier wreath ceremonies

6.4.4 Loading, Unloading, Set-Up, and Tear Down Activities

When asked how many hours per week they spent loading and unloading instruments or equipment and/or setting up and tearing down for performances, on average within the previous year, band members reported about 4 hours per week (see Table 23). However, the average reported time spent doing these activies was much higher than among survey respondents in the other units.

Table 23. Hours Spent Loading, Unloading, Setting Up, and/or Tearing Down Per Week (n=175 Survey Respondents)

Activity	TUSAB	TUSAFB Hours per week Mean ± SD	OGFDC Hours per week Mean ± SD	All Band Members Hours per week Mean ± SD
Participation in loading, unloading, setting up, and/or tearing down activities	n=51/78 (68%)	n=68/75 (91%)	n=15/22 (68%)	n=134/175 (77%)
Hours spent participating in loading, unloading, setting up, and/or tearing down per week (Mean ± SD)	1.5 ± 1.8	5.7 ± 7.0	0.8 ± 1.1	3.6 ± 5.6

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

Band members were asked to rate how much perceived physical effort is required to complete their tasks associated with loading, unloading, setting up, and tearing down on a scale of 0 (easy to do/no physical effort) to 10 (extremely difficult/requires maximum effort). As seen in Table 24, the average response for TUSAFB was 6, while average responses from the other units were 2.

Table 24. Physical Effort Required for Loading, Unloading, Setting Up, and/or Tearing Down (Scale of 0–10, n=194 Survey Respondents)

Physical Effort	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
0-2	58 (68.2)	9 (10.3)	17 (77.3)	84 (43.3)
3-6	19 (22.4)	41 (47.1)	4 (18.2)	64 (33.0)
7-10	8 (9.4)	37 (42.5)	1 (4.5)	46 (23.7)
Mean ± SD	2 ± 2	6 ± 2	2 ± 2	4 ± 3

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = standard deviation

When asked how many times per week they lifted equipment at least 51 pounds, most survey respondents (72%) said 1–10 times (Table 25).

Table 25. Times per Week Moving Loads at least 51 Pounds (n=194 Survey Respondents)

Times per Week Moving Loads	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
1–10 times	72 (84.7)	46 (52.9)	22 (100)	140 (72.2)
11–20 times	7 (8.2)	18 (20.7)	0 (-)	25 (12.9)
21–30 times	0 (-)	11 (12.6)	0 (-)	11 (5.7)
31–40 times	2 (2.4)	5 (5.7)	0 (-)	7 (3.6)
41–50 times	1 (1.2)	3 (3.4)	0 (-)	4 (2.1)
≥ 51 times	3 (3.5)	4 (4.6)	0 (-)	7 (3.6)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

6.5 Occupational Safety Behaviors

6.5.1 Use of Supportive Footwear

Soldiers were asked about their use of footwear and orthotics to enhance comfort and support. Most survey respondents (76%) reported not using footwear to enhance comfort. When asked about how frequently they replace the shoes they wear for practices, rehearsals, and performances, most (70%) indicated that they replace shoes once per year or less often (Table 26). Appendix F provides additional details and unit-level data.

Table 26. Use of Supportive Footwear While Playing (n=194 Survey Respondents)

Supportive Footwear	Category	Band Members n (% total)
Wear footwear with added support	Yes	47 (24.2)
	No	147 (75.8)
Frequency of replacing shoes	1-6 months	24 (12.4)
	7-12 months	35 (18.0)
	1-1.5 years	49 (25.3)
	1.6-2 years	19 (9.8)
	2-3 years	41 (21.1)
	≥ 3 years	26 (13.4)

Similarly, most Soldiers (87%) reported not wearing supportive footwear while loading/unloading and setting up/tearing down for performances (see Appendix F for details).

6.5.2 Use of Handling Equipment when Loading/Unloading

Table 27 shows that 85% of survey respondents reported not using handling equipment when loading/unloading and setting up/tearing down for performances.

Table 27. Utilization of Lifting Equipment (n=194 Survey Respondents)

Lifting Equipment	Category	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
Utilize handling equipment to assist load/unload, set-up/tear down	Yes	12 (14.1)	16 (18.4)	2 (9.1)	30 (15.5)
	No	73 (85.9)	71 (81.6)	20 (90.9)	164 (84.5)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

6.5.3 Use of Hearing Protection

Most Soldiers (77%, 156 survey respondents) reported using hearing protection. Thirty percent reported that they knew how much hearing protection their device provides (predominantly 15 decibels (dB) or 25dB). Table 28 shows the activities during which protection was reportedly worn, and Table 29 shows the type of hearing protection (predominantly foam, 82%). Appendix F shows unit-level data.

Table 28. Frequency of Hearing Protection Use During Activities (n=156 Hearing Protection Users)

Hearing Protection Use		Band Members n (%)
When firing weapons	Always	82 (52.6)
	Sometimes	9 (5.8)
	Never	1 (0.6)
	Not applicable	64 (41.0)
When using loud machinery	Always	72 (46.2)
	Sometimes	34 (21.8)
	Never	12 (7.7)
	Not applicable	38 (24.4)
During recreational events	Always	7 (4.5)
	Sometimes	88 (56.4)
	Never	40 (25.6)
	Not applicable	21 (13.5)

Hearing Protection Use		Band Members n (%)
While practicing, rehearsing, or performing	Always	18 (11.5)
	Sometimes	119 (76.3)
	Never	17 (10.9)
	Not applicable	2 (1.3)
Other circumstances	Always	7 (4.5)
	Sometimes	81 (51.9)
	Never	15 (9.6)
	Not applicable	53 (34.0)

Table 29. Types of Hearing Protection Used (n=156 Survey Respondent Hearing Protection Users)

Types of Hearing Protection[a]	Band Members n (%)
Foam	128 (82.1)
Musician earplugs	90 (57.7)
Custom molded	63 (40.4)
Triple flange	55 (35.3)
Muffs	35 (22.4)
Electronic hearing protection	7 (4.5)
Combat Army earplugs	4 (2.6)
Quad flange	2 (1.3)
BattlePlugs	1 (0.6)
SureFire	1 (0.6)

Note:
[a] Survey respondents were asked to select all that applied.

Most current hearing protection users (89%) indicated that they would be willing to use a hearing protector that not only protected hearing but also enhanced their ability to hear others and monitor performance (see Appendix F for details).

6.6 Health Outcomes

6.6.1 Injuries

6.6.1.1 Medical Encounters

When looking at all injuries during the same time period captured by the survey responses (October 2017–December 2018), there were 766 total medical encounters for injuries occurring to more than half of the band members (60%). The resulting injury rate was 1,328 injuries per 1,000 band members (an average of 1.3 injuries per Soldier). Table 30 shows injury rates, proportion injured, and total number of medical encounters by unit. Among the three band units, TUSAB had the highest proportion experiencing an injury (65%) and the most total medical

encounters for injuries. When adjusting for age and sex against the 2015 Army population distribution, the OGFDC had the highest injury rate. Appendix G provides comparisons to other Army populations.

Table 30. Injury Encounter Rates, October 2017–December 2018 (n=465 Band Members)

Metric	TUSAB n=255	TUSAFB n=142	OGFDC n=68	All Band Members n=465
Crude rate of new dignosed injuries per 1,000 person-years	1,370	1,037	1,776	1,328
Age- and sex-adjusted rate of new diagnosed injuries per 1,000 person-years	969	1,037[a]	1,273	1,040
Percent with at least one medical encounter for injury	65.5	51.4	61.8	59.8
Total medical encounters for injuries (including follow-up visits and long-term effects of MSK injuries)	1,127	410	382	1,919

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
MSK = musculoskeletal
Note:
[a] Coincidentally, the crude and adjusted TUSAFB injury rates were the same.

Table 31 presents incident injury encounters (i.e., new injuries not including follow-up visits or long-term effects of MSK injuries) by causal energy mechanism. More than three-quarters (76%) of new injuries were cumulative or overuse in nature and 83% affected the MSK system. Injury trends by energy mechanism were similar among the three units (Tables G-3–G-5).

Table 31. Incident Injuries by Causal Energy Mechanism, October 2017–December 2018 (n=766 Injuries)

Injury/Energy Subcategory	Band Members n (%)
All Mechanical Energy Injuries	**753 (98.3)**
Cumulative (micro-traumatic)	*585 (76.4)*
- Cumulative non-MSK	38 (5.0)
- Cumulative MSK	547 (71.4)
Acute (traumatic)	*168 (21.9)*
- Acute non-MSK	81 (10.6)
- Acute MSK	87 (11.4)
All Cumulative and Acute MSK	*634 (82.8)*
All MSK + select neurological	*651 (85.0)*
All Poisons	**0 (0.0)**
All Environmental	**1 (0.1)**
Thermal/Radiant	1 (0.1)
All Nonenvironmenal	**5 (0.7)**
Thermal (burns)	5 (0.7)
All Other	**7 (0.9)**
Operative/Medical Complications	4 (0.5)
Unspecified/Multiple Injuries	2 (0.2)
Other reaction to external cause	1 (0.1)
All Injuries	**766 (100)**

Legend:
MSK = musculoskeletal

Tables 32 and 33 show the distributions of injury types and injured body regions for men and women, respectively. For both sexes, diagnoses were predominantly for MSK tissue damage (69% for men, 75% for women; top diagnoses included low back pain, shoulder pain, and knee pain). Commonly injured body regions were the lower extremities (knees, ankles, feet), back, and upper extremities (shoulders, wrists, hands). Unit-level data is provided in Tables G-6–G-11.

Table 32. Incident Injuries by Type and Body Region, October 2017–December 2018, Men (n=552 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	129	0	0	1	104	3	140	0	4	381 (69.0)
Tissue Damage, Other	6	18	0	0	0	0	4	0	0	0	0	0	28 (5.1)
Strain/Tear	4	0	2	0	2	0	6	6	7	0	1	0	28 (5.1)
Nerve	0	0	0	13	0	0	9	2	2	0	0	0	26 (4.7)
Sprain/Joint Damage	0	0	2	0	1	0	5	0	11	0	0	0	19 (3.4)
Fracture	0	0	0	0	0	0	13	0	6	0	0	0	19 (3.4)
Open Wound	3	0	0	0	0	0	13	0	3	0	0	0	19 (3.4)
Contusion/Superficial	4	0	0	0	2	0	5	0	7	0	0	0	18 (3.3)
Other	0	0	0	0	0	0	0	0	0	0	5	0	5 (0.9)
Burn	0	0	0	0	0	0	0	0	0	0	4	0	4 (0.7)
Internal Organ	2	0	0	0	0	0	0	0	0	0	0	0	2 (0.4)
Dislocation	0	0	0	0	0	0	2	0	0	0	0	0	2 (0.4)
Crush	0	0	0	0	0	0	1	0	0	0	0	0	1 (0.2)
Total n (%)	19 (3.4)	18 (3.3)	4 (0.7)	142 (25.7)	5 (0.9)	0 (0.0)	59 (10.7)	112 (20.3)	39 (7.1)	140 (25.4)	10 (1.8)	4 (0.7)	552 (100)

Legend:
A = acute
C = cumulative
MSK = musculoskeletal

Table 33. Incident Injuries by Type and Body Region, October 2017–December 2018, Women (n=214 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	49	0	0	0	36	0	71	0	5	161 (75.2)
Sprain/Joint Damage	0	0	0	0	1	0	3	0	8	0	0	0	12 (5.6)
Nerve	0	0	0	2	0	0	1	2	5	0	0	0	10 (4.7)
Tissue Damage, Other	2	1	2	0	0	0	0	0	0	0	0	0	5 (2.3)
Fracture	1	0	0	0	0	1	0	0	1	1	0	1	5 (2.3)
Open Wound	1	0	0	0	0	0	3	0	1	0	0	0	5 (2.3)
Strain/Tear	1	0	1	0	0	0	0	0	3	0	0	0	5 (2.3)
Contusion/Superficial	0	0	0	0	1	0	2	0	1	0	0	0	4 (1.9)
Other	0	0	0	0	0	0	0	0	0	0	3	0	3 (1.4)
Internal Organ	2	0	0	0	0	0	0	0	0	0	0	0	2 (0.9)
Burn	0	0	0	0	0	0	0	0	0	0	1	0	1 (0.5)
Crush	0	0	0	0	0	0	1	0	0	0	0	0	1 (0.5)
Total n (%)	7 (3.3)	1 (0.5)	3 (1.4)	51 (23.8)	2 (0.9)	1 (0.5)	10 (4.7)	38 (17.8)	19 (8.9)	72 (33.6)	4 (1.9)	6 (2.8)	214 (100)

Legend:
A = acute
C = cumulative
MSK = musculoskeletal

6.6.1.2 Medical Profiles

Table 34 shows the distribution of profiles for band members captured in the e-Profile system during October 2017–December 2018. Almost two-thirds of medical profiles (65%) were identified as MSK.

Table 34. eProfile System Conditions, October 2017–December 2018 (n=360 eProfile Records among 465 Band Members)

System Condition	Band Member Profiles n (%)
Musculoskeletal	233 (64.7)
Initial Military Training	46 (12.8)
General	11 (3.1)
Neurology	10 (2.8)
Dental	9 (2.5)
Podiatry	7 (1.9)
Behavioral Health	6 (1.7)
Cardiology	6 (1.7)
Endocrine/General	6 (1.7)
Pregnancy/Post-partum	6 (1.7)
Pulmonary	4 (1.1)
Dermatology/Skin	3 (0.8)
Gastroenterology	2 (0.6)
General Surgery	2 (0.6)
Gynecological	2 (0.6)
Shaving	2 (0.6)
Allergy	1 (0.3)
Hem-Onc/General	1 (0.3)
Neurosurgery	1 (0.3)
Sleep	1 (0.3)
Urology	1 (0.3)

Of 185 eProfile records that captured cause of injury data, running accounted for 41% of injuries and 38% of profile days. Parachuting (1 injury) and road marching (3 injuries) led to the longest average profiles. Table 35 shows this data, and Tables G-12–G-14 contain unit-level data.

Table 35. eProfile Causes Associated with Injury Profiles, October 2017–December 2018 (n=185 eProfile Records among 465 Band Members)

Cause of Injury	Band Member Profiles n (%)	Total profile days n (%)	Average profile days
Running	76 (41.1)	2,678 (37.7)	35
Fall / slip / trip	28 (15.1)	1,212 (17.1)	43
Work tasks[a]	20 (10.8)	874 (12.3)	44
Strength training	16 (8.6)	639 (9.0)	40
Sports, team or individual	15 (8.1)	723 (10.2)	48
Off duty activities, nonvehicular	10 (5.4)	213 (3.0)	21
Physical training[b]	7 (3.8)	230 (3.2)	33
Motor vehicle / motorcycle accident	5 (2.7)	92 (1.3)	18
Combatives / martial arts / fighting	3 (1.6)	111 (1.6)	37
Road marching / load carriage	3 (1.6)	210 (3.0)	70
Environment, heat	1 (0.5)	30 (0.4)	30
Fast rope, parachute	1 (0.5)	90 (1.3)	90
Total	**185 (100)**	**7,102 (100)**	**38**

Notes:
[a] Work tasks includes: lifting, mechanical/repair work, other
[b] Physical training does not include running or strength training

6.6.1.3 Survey Responses

6.6.1.3.1 Self-reported Profiles

Among the 221 survey respondents, 30% (n= 66) were on permanent profile and had been for an average of 2–3 years, and 4% (n=8) reported being on temporary profile at the time of the survey. Thirty-eight percent of those on profile (n=28) reported that their profile limits physical training or job duties. Those reporting a permanent profile were older than those not reporting one (average age of 29, compared to an average age of 25 among those not reporting a profile).

6.6.1.3.2 Most Physically Limiting Injuries

A large majority of survey respondents (81%, 178 survey respondents) reported having experienced at least one injury in the 12 months prior to survey administration.

6.6.1.3.2.1 Injury Types

Table 36 presents reported injury types for the most physically limiting injuries reported for the previous 12 months. MSK discomfort or pain was the most common injury type (37%), followed by MSK tissue damage (24%) and sudden muscule tissue damage (13%); these injury types

also resulted in the most temporary profiles. MSK tissue damage injuries had the highest number of associated limited duty days, followed by nerve damage and joint damage. Appendix tables G-15–G-17 present unit-level data.

Table 36. Self-reported Most Physically-Limiting Injuries, Profiles, and Limited Duty Days, by Injury Type (n=176 Injuries)

Injury Type	Total Injuries n (%)	Temporary Profiles n (% of injuries)	Average LDD ± SD
Other musculoskeletal discomfort or pain	65 (36.9)	12 (18.5)	41 ± 26
Musculoskeletal tissue damage from repeated use	43 (24.4)	12 (27.9)	119 ± 123
Sudden muscle tissue damage	23 (13.1)	7 (30.4)	40 ± 26
Joint damage (e.g., sprain, tear)	18 (10.2)	6 (33.3)	84 ± 87
Bone fracture	8 (4.5)	5 (62.5)	42 ± 13
Heat injury	5 (2.8)	0 (-)	N/A
Skin blister	4 (2.3)	0 (-)	N/A
Other skin surface damage	4 (2.3)	0 (-)	N/A
Poisoning	2 (1.1)	0 (-)	N/A
Head trauma	1 (0.6)	0 (-)	N/A
Hearing injury or loss	1 (0.6)	1 (100)	30 ± 0
Nerve damage	1 (0.6)	1 (100)	90 ± 0
Cold injury	1 (0.6)	0 (-)	N/A
Total	**176 (100)**	**44 (25.0)**	**69 ± 79**

Legend:
LDD = Limited duty days
SD = Standard deviation

6.6.1.3.2.2 Injured Body Areas

When asked to describe the injured body region associated with their most physically limiting injury, the lower back was the mostly frequently reported injured body area (26%), followed by the feet and toes (13%), and the knee (9%). Table 37 shows these results. Similarly, lower back, foot/toe, and shoulder injuries resulted in the most temporary profiles. Mid-back, foot/toe, and neck injuries led to the highest average number of limited duty days (LDD). Tables G-18–G-20 present band-level data.

Table 37. Self-reported Most Physically-limiting Injuries, Profiles, and LDD, by Injured Body Area (n=174 Injuries)

Injured Body Region	Total Injuries n (%)	Temporary Profiles n (% of Injuries)	Average LDD ± SD
Lower back	45 (25.9)	12 (26.7)	52 ± 32
Foot/toe	23 (13.2)	6 (26.1)	133 ± 141
Knee	15 (8.6)	3 (20.0)	35 ± 9
Shoulder	14 (8.0)	6 (42.9)	68 ± 60
Ankle	13 (7.5)	7 (53.8)	48 ± 30
Wrist	12 (6.9)	0 (-)	N/A
Lower leg	9 (5.2)	2 (22.2)	26 ± 6
Neck	7 (4.0)	1 (14.3)	90 ± 0
Lower arm	7 (4.0)	0 (-)	N/A
Hand/finger	7 (4.0)	1 (14.3)	60 ± 0
Upper back	4 (2.3)	0 (-)	N/A
Hip	4 (2.3)	3 (75.0)	45 ± 40
Middle back	3 (1.7)	1 (33.3)	365 ± 0
Face	2 (1.1)	0 (-)	N/A
Upper arm	2 (1.1)	0 (-)	N/A
Chest	1 (0.6)	1 (100)	30 ± 0
Elbow	1 (0.6)	0 (-)	N/A
Pelvis	1 (0.6)	0 (-)	N/A
Upper leg	1 (0.6)	0 (-)	N/A
All body (e.g., heat injury)	3 (1.7)	0 (-)	N/A
Total	**174 (100)**	**43 (24.7)**	**70 ± 80**

Legend:
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable

6.6.1.3.2.3 Activities Associated with Injuries

Table 28 lists activities associated with the most physically limiting injuries among survey respondents. Running for physical training was the most common activity associated with injuries (21%) followed by repetitive movements while playing (11%), and standing while practicing, rehearsing, or playing (11%). The most temporary profiles were also associated with running for physical training (41%) and repetitive movements from playing an instrument (9%).

Table 38. Self-reported Most Physically-limiting Injuries, Profiles, and Limited Duty Days, by Activity (n=175 Injuries)

Injury Activity	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary Profiles n (%) (All)	Average LDD ± SD (All)
Physical training – running	16 (20.3)	14 (19.4)	7 (29.2)	37 (21.1)	18 (40.9)	65 ± 80
Repetitive movements associated with playing	11 (13.9)	8 (11.1)	1 (4.2)	20 (11.4)	4 (9.1)	90 ± 65
Standing while practicing, rehearsing, or performing	14 (17.7)	0 (-)	5 (20.8)	19 (10.9)	2 (4.5)	20 ± 14
Other physical training/sports/recreation (not running or weight training)	5 (6.3)	10 (13.9)	0 (-)	15 (8.6)	3 (6.8)	37 ± 21
Lifting or moving heavy objects (nonband)	7 (8.9)	7 (9.7)	0 (-)	14 (8.0)	2 (4.5)	22 ± 11
Other nonband-related activity	6 (7.6)	4 (5.6)	4 (16.7)	14 (8.0)	4 (9.1)	51 ± 27
Lifting or moving instruments and equipment for band	0 (-)	11 (15.3)	1 (4.2)	12 (6.9)	1 (2.3)	249 ± 0
Marching while practicing, rehearsing, or performing	8 (10.1)	3 (4.2)	1 (4.2)	12 (6.9)	1 (2.3)	90 ± 0
Walking or hiking (not band-related)	1 (1.3)	5 (6.9)	1 (4.2)	7 (4.0)	2 (4.5)	198 ± 237
Physical training – weight training	3 (3.8)	1 (1.4)	2 (8.3)	6 (3.4)	2 (4.5)	45 ± 21
Sitting while practicing, rehearsing, or performing	2 (2.5)	2 (2.8)	1 (4.2)	5 (2.9)	2 (4.5)	75 ± 21
Other band-related activity	3 (3.8)	1 (1.4)	1 (4.2)	5 (2.9)	0 (-)	N/A
Unit road marching with load	1 (1.3)	3 (4.2)	0 (-)	4 (2.3)	1 (2.3)	30 ± 0
Combatives training	2 (2.5)	1 (1.4)	0 (-)	3 (1.7)	1 (2.3)	90 ± 0
Riding or driving in a motorized vehicle (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	1 (2.3)	14 ± 0
Stepping/climbing (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	0 (-)	N/A
Total	**79 (100)**	**72 (100)**	**24 (100)**	**175 (100)**	**44 (100)**	**69 ± 79**

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable

6.6.1.3.2.4 Injury Mechanisms

Table 39 shows the injury mechanisms reported for the most physically limiting injury reported in the past 12 months. Overuse/repetitive activity was reported as the mechanism resulting in the most injuries, temporary profiles, and associated LDDs (54% of all injuries, predominantly related to band activities). Band-related overuse or repetitive activities were also the injury mechanisms with the highest number of average reported LDDs in this population (besides a nonspecific “other” answer). Examples of “other” mechanisms responses included lifting band equipment and poor posture while playing the flute (i.e., activities rather than mechanisms). Appdendix G provides the distributions of injury mechanisms by unit.

6.6.1.3.3 Band-related Injuries

Many survey respondents (43%, n=94) reported that they had an injury related to band activities within 12 months prior to survey administration. MSK discomfort or pain was the most common band-related injury type (44%), and repetitive movements while playing were the most frequently-reported activities associated with injuries (29%). While the lower back was the mostly frequently reported injured body area (28%), a greater proportion of reported band-related injuries were to the upper extremities (38%), compared to all of the most physically limiting injuries (25%). Tables G-21 and G-22 provide more detailed unit-level data for band-related injuries.

6.6.1.3.4 Musculoskeletal Pain Injuries

There were 368 injuries reported to cause MSK pain within the previous 12 months, among 57% of survey respondents (n=127). Survey respondents could select all body parts in which they experienced MSK pain during the past year; 44% reported lower back pain, followed by 28% with shoulder pain and 27% with wrist pain. Survey respondents could also identify all potential associated activities; repetitive movements while playing was the most frequently reported activity associated with MSK pain (54%), followed by standing (45%), and marching (40%). Tables G-23 and G-24 provide more detailed unit-level data for MSK pain injuries.

Table 39. Self-reported Most Physically-limiting Injuries, Profiles, and LDD, by Injury Mechanism (n=174 Injuries)

Injury Mechanism	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (%) (All)	Average LDD ± SD (All)
Band-related overuse/repetitive activity, band	31 (39.2)	14 (19.4)	7 (29.2)	52 (29.7)	6 (13.6)	82 ± 59
Overuse/repetitive activity (not band-related)	18 (22.8)	21 (29.2)	5 (20.8)	44 (25.1)	12 (27.3)	73 ± 95
Overexertion/over-extension/twisting effort (not band-related)	11 (13.9)	12 (16.7)	4 (16.7)	27 (15.4)	10 (22.7)	39 ± 30
Falling onto object/surface/ground (not band-related)	7 (8.9)	5 (6.9)	1 (4.2)	13 (7.4)	6 (13.6)	53 ± 30
Other mechanism (not band-related)	3 (3.8)	5 (6.9)	2 (8.3)	10 (5.7)	5 (11.4)	106 ± 145
Overexertion/over-extension/twisting effort, band	1 (1.3)	4 (5.6)	1 (4.1)	6 (3.4)	1 (2.3)	60 ± 0
Other band-related mechanism	0 (-)	5 (6.9)	0 (-)	5 (2.9)	1 (2.3)	249 ± 0
Contact with an object/surface (not band-related)	0 (-)	2 (2.8)	2 (8.3)	4 (2.3)	1 (2.3)	30 ± 0
Band-related contact with an object/surface	1 (1.3)	2 (2.8)	0 (-)	3 (1.7)	0 (-)	N/A
Band-related falling onto object/surface/ground	3 (3.8)	0 (-)	0 (-)	3 (1.7)	2 (4.6)	45 ± 21
Band-related heat injury	2 (2.5)	0 (-)	1 (4.2)	3 (1.7)	0 (-)	N/A
Cut or puncture by sharp tool, object, or instrument (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	0 (-)	N/A
Burn (not band-related)	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
Heat injury (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	0 (-)	N/A
Insect bite (not band-related)	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
Band-related cold injury	0 (-)	0 (-)	1 (4.2)	1 (0.6)	0 (-)	N/A
Total	**79 (100)**	**72 (100)**	**24 (100)**	**175 (100)**	**44 (100)**	**69 ± 79**

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable

6.6.2 Noise-induced Hearing Injuries

6.6.2.1 Medical Encounters

When considering the subset of medical encounter diagnosis codes identified as hearing-related injuries by the APHC injury definition (U.S. Army Public Health Center, 2017b), 2.4% of band member injury diagnoses (n=19 of 766) were for a hearing-related injury during October 2017–December 2018. Almost all band members with a noise-induced hearing injury diagnosis were men (95%) and the most common diagnosis was for bilateral sensorineural hearing loss (68%).

6.6.2.2 Audiology Exams

Historical audiogram results for all current band members were analyzed from DOEHRS-HC system of record. Compared to all Active Component Army Soldiers in 2018, band members had a 3% higher rate of decreased hearing during their Army career (24.4% compared to 21.3%). However, band members enter the Army with a comparable hearing impairment rate (17.5%, compared to 17.9%), and have similar rates of clinically significant hearing loss (3.2%, compared to 3.6%) (U.S. Army Public Health Center, 2019c).

6.6.2.3 Survey Responses

Only two survey respondents reported hearing injuries or hearing loss on the survey when asked about physically limiting injuries. However, when specifically asked about hearing problems, 189 Soldiers (93%) reported being concerned about hearing loss (Table 40). Many reported experiencing common hearing problems like difficulty understanding speech in the presence of background noise (39%), hearing loss (22%), ringing in the ear/tinnitus (37%, Table 41), and muffled or dull hearing following noisy recreational activities (21%, Table 42) or rehearsals/performances (20%, Table 42). Tables G-25–G-29 provide unit-level data.

Table 40. Hearing Concerns and Self-reported Hearing Issues (n=204 Survey Respondents)

Hearing		Band Members n (%)
Concern about hearing loss	Extremely concerned	22 (10.8)
	Very concerned	46 (22.5)
	Somewhat concerned	83 (40.7)
	A little concerned	38 (18.6)
	Not concerned	15 (7.4)
Self-reported hearing issues	Yes, I have trouble understanding speech when background noise is present	80 (39.2)
	Yes, I have hearing loss	44 (21.62)
	Hearing loss affects ability to play	12 (27.3)

Table 41. Self-reported Ringing in the Ear/Tinnitus (n=204 Survey Respondents)

Variable category		Band Members n (%)
Any tinnitus	Daily	34 (16.7)
	Weekly	18 (8.8)
	Monthly	13 (6.4)
	Less often then monthly	11 (5.4)
	Did not report tinnitus	128 (62.7)
Tinnitus following rehearsals or performances	Daily	22 (10.8)
	Weekly	17 (8.3)
	Monthly	9 (4.4)
	Less often then monthly	6 (2.9)
	Did not report tinnitus at these times	22 (10.8)

Table 42. Self-reported Muffled Hearing (n=204 Survey Respondents)

		Band Members n (%)
Muffled hearing following noisy recreational activities	Daily	5 (2.5)
	Weekly	14 (6.9)
	Monthly	7 (3.4)
	Less often then monthly	16 (7.8)
	Did not report muffled hearing at these times	162 (79.4)
Muffled hearing following rehearsals or performances	Daily	7 (3.4)
	Weekly	11 (5.4)
	Monthly	16 (7.8)
	Less often then monthly	7 (3.4)
	Did not report muffled hearing at these times	163 (79.9)

6.6.3 Respiratory Conditions

6.6.3.1 Medical Encounters

Only a small proportion of band members (2.5%, n=12 survey respondents) had a medical encounter diagnosis for athma during the period of interest, October 2017–December 2018.

6.6.3.2 Survey Responses

Some survey respondents (15%, n=30 survey respondents) reported experiencing symptoms of respiratory conditions in the 12 months prior to survey administration. As shown in Table 43, the most common respiratory symptom was persistent cough. Seven percent of survey respondents reported having been prescribed an inhaler within the past year. Appendix G provides unit-level responses.

Table 43. Persistent Respiratory Conditions (n=204 Survey Respondents)[a]

Respiratory Symptom	Band Members n (%)
Coughing	23 (11.3)
Wheezing	8 (3.9)
Shortness of breath	7 (3.4)
Chest pressure	4 (2.0)
Total (Any or multiple symptoms)	30 (14.7)

Note:
[a] Survey respondents were asked to select all that applied.

6.6.3.3 Associations with Injury

Band members who had a medical record diagnosis for asthma and/or self-reported respiratory condition(s) were more likely to also have a medical encounter for injury or a self-reported injury (see Table 44).

Table 44. Association of Respiratory Conditions with Injury (n=465 band members)

Respiratory condition	Total n	% with injury	Risk Ratio (95% CI)	p-value
Yes	**40**	**90**	**1.19 (1.06–1.33)**	**0.04**
No	425	76	1.00	-

6.7 Factors Associated with Injury

6.7.1 Factors Associated with Injury, Univariate Analyses

Univariate comparisons of injury incidence rates were compared across variable categories for the following seven models:

- Any injury (n=221 survey respondents):
  - Independent variable = self-reported or medical record injury diagnosis.
  - Includes self-reported health behaviors and occupational demands as potential risk factors.
- MSK injury (n=221 survey respondents):
  - Independent variable = self-reported MSK pain or medical record MSK tissue damage diagnosis.
  - Includes self-reported health behaviors and occupational demands as potential risk factors.

- Band-related injury (n=221 survey respondents):
  - Independent variable = self-reported injury that was related to a band-related activity.
  - Includes self-reported health behaviors and occupational demands as potential risk factors.
- Any injury (n=465 band members):
  - Independent variable = self-reported or medical record injury diagnosis.
  - Does NOT include self-reported health behaviors and occupational demands, only data from rosters and database records (e.g., DTMS, medical records) available for the entire population.
- Any injury in TUSAB (n=255 TUSAB Members):
  - Independent variable = self-reported or medical record injury diagnosis.
  - Does NOT include self-reported health behaviors and occupational demands, only data from rosters and database records available for the entire population.
- Any injury in TUSAFB (n=142 TUSAFB Members):
  - Independent variable = self-reported or medical record injury diagnosis.
  - Does NOT include self-reported health behaviors and occupational demands, only data from rosters and database records available for the entire population.
- Any injury in OGFDC (n=68 OGFDC Members):
  - Independent variable = self-reported or medical record injury diagnosis.
  - Does NOT include self-reported health behaviors and occupational demands, only data from rosters and database records available for the entire population.

Results showed that the following variables were associated with injuries in at least one of the univariate models ($p \leq 0.10$):

- *Modifiable fitness:* slower run time, fewer push-up repetitions, fewer sit-up repetitions, higher body fat percentage.
- *Modifiable performance-related:* marching for more than 1 hour per day, standing for more than 2.5 hours per day, replacing footwear less often than once per year, playing more than 1 hour of sports each week, not feeling relaxed while playing, participating in more performances during the past year, and playing a secondary instrument more than 6 hours per week.
- *Modifiable loading/unloading/setup:* not participating in loading/setup, self-assessed less effort to load, moving instruments without cases, moving equipment, and moving cases without wheels.
- *Nonmodifiable:* female sex, older age, primary or secondary instrument group, and not playing a secondary instrument.

Table 45 summarizes these significant and marginal associations with more detailed results in Tables 46 through 52. Appendix H contains the full results.

Table 45. Factors Associated with Injury in Univariate Analyses

Injury Risk Factors		Survey Respondents Only n=221			All Band Members[a] n=465	TUSAB[a] n=255	TUSAFB[a] n=142	OGFDC[a] n=68
		Risk factors for Any Injury	Risk factors for Band-related Injury	Risk factors for MSK Pain	Risk factors for Any Injury	Risk factors for Any Injury	Risk factors for Any Injury	Risk factors for Any Injury
Modifiable - Fitness	Fewer APFT sit-ups	✓		✓	✓	✓	*	
	Fewer APFT push-ups	✓		✓	✓	✓		✓
	Slower APFT 2-mile run time	✓		✓	✓	✓	✓	
	Higher body fat percentage	✓	✓	✓	✓	✓		*
Modifiable – Occupational Demands, Safety Behaviors	Marching for >1 hour per day while playing	✓	✓	✓				
	Standing for >2.5 hours per day while playing	✓	✓	✓				
	Replacing footwear worn while playing less often than once per year	*		*				
	Playing >~1 hour of sports per week	✓						
	45–112 minutes of strength training per week		✓					
	Not feeling relaxed while playing	✓	✓	*				
	>115 performances in the past year		✓					
	Playing a secondary instrument for more than 6 hours/week			✓				
Modifiable - Loading	Spending no time loading/unloading/setting up each week	✓		*				
	Self-assessed effort to load rated 0–2 on scale of 1–10			✓				
	Moving instruments without cases		✓					
	Moving equipment		*					
	Not cases without wheels			✓				
Non-modifiable	Female Sex	✓		✓	✓	✓	✓	
	Older age	✓	✓	✓	✓	✓		
	Primary instrument is woodwinds	*		✓		*		
	Primary instrument is percussion						*	
	Secondary function is administrative or woodwind			✓				
	Not playing a secondary instrument	*		✓				

Legend: TUSAB = The U.S. Army Band; TUSAFB = The U.S. Army Field Band; OGFDC = Old Guard Fife and Drum Corps; MSK = musculoskeletal; APFT = Army Physical Fitness Test

Notes: [a] selected variables only; ✓ significantly associated with injury ($p \leq 0.05$) in univariate risk ratios; * marginally associated with injury ($0.06 \leq p \leq 0.10$) in univariate risk ratios.

Table 46. Factors Associated with any Injury, Survey Respondents Only (n=221 Survey Respondents)

Variable Category		Total n	% with injury	Risk Ratio (95% CI)	Category p-values
Sex	Male	352	75	1.00	
	Female	**113**	**84**	**1.12 (1.01–1.24)**	**0.05**
Age	18–34	156	73	1.00	
	35–44	192	77	1.09 (0.87–1.37)	0.46
	≥45	**117**	**84**	**1.48 (0.99–2.22)**	**0.04**
Primary Instrument Group	Administrative/ music production	57	81	1.14 (0.97–1.34)	0.14
	Brass	139	72	1.00	
	Conductor	12	83	1.16 (0.88–1.52)	0.61
	Keys	8	75	1.04 (0.69–1.58)	0.85
	Other leadership	12	83	1.16 (0.88–1.52)	0.61
	Percussion	41	78	1.09 (0.89–1.32)	0.44
	Strings	43	77	1.07 (0.88–1.30)	0.54
	Vocalists	40	78	1.08 (0.89–1.31)	0.49
	Woodwinds	*107*	*82*	*1.14 (1.00–1.31)*	*0.06*
	Unknown	6	50	N/A	
Do you play a secondary instrument?	Yes	89	84	1.00	
	No	*112*	*92*	*1.09 (0.98–1.21)*	*0.09*
Body Fat Percentage (Tertiles)	≤21.48	154	70	1.00	
	21.49–26.06	**155**	**79**	**1.32 (0.98–1.77)**	**0.05**
	≥26.07	**154**	**84**	**1.57 (1.12–2.21)**	**<0.01**
	unknown	2	0	N/A	
APFT 2-mile Run Time (Tertiles)	≤15:25	103	64	1.00	
	15:26–16:55	107	72	1.12 (0.93–1.35)	0.22
	≥16:56	**107**	**82**	**1.28 (1.08–1.52)**	**<0.01**
APFT Push-up Repetitions (Tertiles)	**≤40**	**152**	**82**	**1.23 (1.07–1.42)**	**<0.01**
	41–54	109	73	1.08 (0.92–1.28)	0.36
	≥55	127	67	1.00	
APFT Sit-up Repetitions (Tertiles)	**≤51**	**146**	**85**	**1.29 (1.12–1.48)**	**<0.01**
	52–66	*125*	*75*	*1.14 (0.97–1.34)*	*0.10*
	≥67	132	66	1.00	
Sports Participation per Week (midpoint)	None	82	83	1.00	
	0.01–52.5 minutes	53	89	1.07 (0.93–1.23)	0.36
	≥52.51 minutes	**58**	**95**	**1.14 (1.02–1.28)**	**0.03**
	Not answered	28	75	N/A	

Variable Category		Total n	% with injury	Risk Ratio (95% CI)	Category p-values
Do you usually feel relaxed when you play? (instrumentalists, vocalists, conductors only)	Yes	134	84	1.00	
	No	**34**	**97**	**1.15 (1.05–1.26)**	**0.05**
Standing hours per day while playing (instrumentalists, vocalists, conductors only).	≤1 hour	69	78	1.00	
	1.01–2.50 hours	38	89	1.14 (0.97–1.35)	0.15
	≥2.51 hours	**46**	**93**	**1.19 (1.03–1.38)**	**0.03**
Marching hours per day while playing (midpoint; instrumentalists, vocalists, conductors only).	0	53	83	1.05 (0.86–1.28)	0.62
	0.1-1 hours	50	78	1.00	
	>1 hour	**48**	**96**	**1.23 (1.05–1.44)**	**<0.01**
How often do you replace footwear worn during rehearsals and performances? (instrumentalists, vocalists, and conductors only)	≤1 year	51	80	1.00	
	>1 year	*117*	*90*	*1.12 (0.96-1.30)*	*0.10*
How much time per week do you spend loading/unloading/setting up for performances?	**None**	**41**	**95**	**3.25 (0.88–12.06)**	**0.03**
	1–60 minutes	*70*	*90*	*1.58 (0.85–2.39)*	*0.10*
	>1 hour	64	83	1.00	

Legend:
CI = confidence intervals
N/A = not applicable
Note:
Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table 47. Factors Associated with Band-related Injury, Survey Respondents Only (n=221 Survey Respondents)

Variable Category		Total n	% With Band-Related Injury	Risk Ratio (95% CI)	Category p-values
Age	18–34	80	30	1.00	
	35–44	**91**	**47**	**1.58 (1.06–2.35)**	**0.02**
	≥45	**50**	**54**	**1.80 (1.18–2.74)**	**<0.01**
Body fat percentage (tertiles)	≤21.48	75	31	1.00	
	21.49–26.06	**73**	**49**	**1.61 (1.07–2.43)**	**0.02**
	≥26.07	**73**	**48**	**1.56 (1.03–2.37)**	**0.03**
APFT Sit-up repetitions (tertiles)	**≤51**	**67**	**51**	**1.82 (1.14–2.91)**	**<0.01**
	52–68	*70*	*43*	*1.54 (0.95–2.50)*	*0.08*
	≥69	61	28	1.00	
Participation in strength training per week (tertiles)	≤45 minutes	69	46	1.34 (0.86–2.09)	0.19
	45.01–112.50 minutes	**69**	**54**	**1.55 (1.02–2.37)**	**0.03**
	≥112.51 minutes	55	35	1.00	
Do you usually feel relaxed when you play? (instrumentalists, vocalists, conductors only)	Yes	134	42	1.00	
	No	**34**	**62**	**1.48 (1.06–2.06)**	**0.04**
Standing hours per day while playing (tertiles; instrumentalists, vocalists, conductors only)	≤1 hour	69	32	1.00	
	1.01–2.50 hours	*38*	*50*	*1.57 (0.98–2.51)*	*0.07*
	≥2.51 hours	**49**	**57**	**1.84 (1.21–2.81)**	**<0.01**
Marching hours per day while playing (midpoint; instrumentalists, vocalists, conductors only)	0	54	28	1.00	
	0.1–1 hours	50	40	1.51 (0.86-2.66)	0.14
	>1 hour	**52**	65	**2.37 (1.44–3.90)**	**<0.01**
Total number of self-reported performances in past year	0–84	67	36	1.00	
	85–115	67	40	1.13 (0.73–1.74)	0.59
	≥116	**66**	**61**	**1.69 (1.16–2.46)**	**<0.01**

Variable Category		Total n	% with Band-Related Injury	Risk Ratio (95% CI)	Category p-values
Self-reported physical effort required to load (scale of 1–10)	*Did not participate in loading*	*38*	*55*	*1.55 (0.99-2.43)*	*0.06*
	0–2	51	47	1.32 (0.84–2.07)	0.23
	3–6	59	36	1.00	
	7–10	46	48	1.34 (0.85–2.12)	0.21
Do you move instruments without cases?	**Yes**	**48**	**58**	**1.44 (1.06–1.96)**	**0.02**
	No	148	41	1.00	
Do you move equipment?	Yes	116	40	1.00	
	No	*80*	*53*	*1.32 (0.97–1.80)*	*0.08*

Legend:
CI = confidence intervals
APFT = Army Physical Fitness Test
Note: Band-related injuries were identified by survey responses
Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table 48. Factors Associated with MSK Pain Injury, Survey Respondents Only (n=221 Survey Respondents)

Variable Category		Total n	% With MSK Pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
Sex	Male	352	59	1.00	
	Female	**113**	**71**	**1.20 (1.03–1.39)**	**0.03**
Age	18–34	156	58	1.00	
	35–44	**192**	**68**	**1.23 (1.00–1.53)**	**0.04**
	≥45	**117**	**74**	**1.57 (1.13–2.19)**	**<0.01**
Primary Instrument group	Administrative/ music production	57	67	1.24 (0.89–1.74)	0.19
	Brass	139	55	1.02 (0.74–1.41)	0.91
	Conductor	12	67	1.40 (0.91–2.16)	0.19
	Keys	8	38	0.70 (0.27–1.79)	0.41
	Other leadership	12	67	1.24 (0.76–2.03)	0.43
	Percussion	41	54	1.00	
	Strings	43	70	1.30 (0.92–1.84)	0.13
	Vocalists	40	63	1.17 (0.80–1.69)	0.42
	Woodwinds	**107**	**71**	**1.32 (0.97–1.80)**	**0.05**
	Unknown	6	17	N/A	

Variable Category		Total n	% With MSK Pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
Do you play a secondary instrument?	Yes	89	66	1.00	
	No	**112**	**82**	**1.24 (1.04–1.47)**	**0.01**
Secondary instrument group	**Administrative/ music production**	**6**	**100**	**2.00 (1.34–2.98)**	**0.03**
	Brass	17	71	1.41 (0.85–2.34)	0.19
	Conductor	3	33	0.67 (0.13–3.47)	0.59
	Keys	38	68	1.37 (0.87–2.16)	0.15
	Percussion	7	57	1.14 (0.54–2.43)	0.74
	Strings	24	50	1.00	
	Vocalists	3	67	1.33 (0.55–3.26)	0.59
	Woodwinds	**20**	**80**	**1.60 (1.01–2.53)**	**0.04**
Body fat percentage (tertiles)	≤21.48	154	57	1.00	
	21.49–26.06	**155**	**68**	**1.28 (1.00–1.64)**	**0.04**
	≥26.07	**154**	**74**	**1.50 (1.14–1.97)**	**<0.01**
	unknown	2	0	N/A	
APFT 2-mile Run time (tertiles)	≤15:25	103	44	1.00	
	15:26–16:55	107	54	1.24 (0.94-1.64)	0.13
	≥16:56	**107**	**70**	**1.60 (1.25–2.06)**	**<0.01**
APFT Push-up repetitions (tertiles)	**≤40**	**152**	**67**	**1.31 (1.07–1.61)**	**<0.01**
	41–54	109	54	1.06 (0.83–1.35)	0.65
	≥55	127	51	1.00	
APFT Sit-up repetitions (tertiles)	**≤51**	**146**	**70**	**1.26 (1.05–1.52)**	**0.01**
	52–66	125	52	0.94 (0.75–1.18)	0.60
	≥67	132	55	1.00	
Do you usually feel relaxed when you play? (instrumentalists, vocalists, conductors only)	Yes	134	72	1.00	
	No	*34*	*88*	*1.22 (1.04-1.43)*	*0.06*
Hours per week playing secondary instrument (tertiles)	≤2	38	68	1.37 (0.87–2.16)	0.15
	2.01–5.99	24	50	1.00	
	≥6	**27**	**78**	**1.56 (0.99–2.44)**	**0.04**

Variable Category		Total n	% with MSK pain/MSK tissue damage	Risk Ratio (95% CI)	Category p-values
Standing hours per day while playing (tertiles; instrumentalists, vocalists, conductors only)	≤1 hour	69	64	1.00	
	1.01–2.50 hours	38	74	1.16 (0.89–1.50)	0.30
	≥2.51 hours	**49**	**90**	**1.40 (1.14–1.72)**	**<0.01**
Marching hours per day while playing (midpoint; instrumentalists, vocalists, conductors only)	0	54	67	1.01 (0.77–1.33)	0.94
	0.1–1 hours	50	66	1.00	
	>1 hour	**52**	**89**	**1.34 (1.07–1.67)**	**<0.01**
How often do you replace footwear worn during rehearsals and performances? (instrumentalists, vocalists, and conductors only)	≤1 year	51	67in	1.00	
	>1 year	*117*	*80*	*1.18 (0.95–1.46)*	*0.10*
How much time per week do you spend loading/unloading/ setting up for performances?	*None*	*41*	*85*	*1.24 (1.01–1.53)*	*0.06*
	1–60 minutes	70	77	1.24 (0.83–1.86)	0.28
	≥1 hour	64	69	1.00	
Self-reported physical effort required to load (scale of 0-10)	**Did not participate in loading**	**38**	**87**	**1.30 (1.01-1.67)**	**0.04**
	0–2	**48**	**81**	**1.24 (1.02–1.51)**	**0.02**
	3–6	51	63	1.00	
	7–10	35	71	1.07 (0.83–1.37)	0.61
Do you move cases with wheels?	Yes	60	67	1.00	
	No or Sometimes	**94**	**79**	**1.18 (0.96–1.45)**	**0.05**

Legend:
CI = confidence intervals
APFT = Army Physical Fitness Test
Note: Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table 49. Factors Associated with Injury, Administrative Data Only (n=465 Band Members)

Variable Category		Total n	% with injury	Risk Ratio (95% CI)	Category p-values
Sex	Male	201	74	1.00	
	Female	**54**	**91**	**1.22 (1.09–1.38)**	**<0.01**
Age	18–34	156	73	1.00	
	35–44	192	77	1.09 (0.87–1.37)	0.46
	≥45	**117**	**84**	**1.48 (0.99–2.22)**	**0.04**
Primary instrument group	Administrative/ music production	57	81	1.14 (0.97–1.34)	0.14
	Brass	139	72	1.00	
	Conductor	12	83	1.16 (0.88–1.52)	0.61
	Keys	8	75	1.04 (0.69–1.58)	0.85
	Other leadership	12	83	1.16 (0.88–1.52)	0.61
	Percussion	41	78	1.09 (0.89–1.32)	0.44
	Strings	43	77	1.07 (0.88–1.30)	0.54
	Vocalists	40	78	1.08 (0.89–1.31)	0.49
	Woodwinds	*107*	*82*	*1.14 (1.00–1.31)*	*0.06*
	Unknown	6	50	N/A	
Body fat percentage (tertiles)	≤21.48	154	70	1.00	
	21.49–26.06	**155**	**79**	**1.32 (0.98–1.77)**	**0.05**
	≥26.07	**154**	**84**	**1.57 (1.12–2.21)**	**<0.01**
	unknown	2	0	N/A	
APFT 2-mile Run time (tertiles)	≤15:25	103	64	1.00	
	15:26–16:55	107	72	1.12 (0.93–1.35)	0.22
	≥16:56	**107**	**82**	**1.28 (1.08–1.52)**	**<0.01**
APFT Push-up repetitions (tertiles)	**≤40**	**152**	**82**	**1.23 (1.07–1.42)**	**<0.01**
	41-54	109	73	1.08 (0.92–1.28)	0.36
	≥55	127	67	1.00	
APFT Sit-up repetitions (tertiles)	**≤51**	**146**	**85**	**1.29 (1.12–1.48)**	**<0.01**
	52–66	*125*	*75*	*1.14 (0.97–1.34)*	*0.10*
	≥67	132	66	1.00	

Legend:
CI = confidence intervals
N/A = not applicable
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included.
Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table 50. Factors Associated with Injuries in TUSAB, Administrative Data Only (n=255 TUSAB Members)

Variable Category		Total n	% with injury	Risk Ratio (95% CI)	Category p-values
Sex	Male	201	74	1.00	
	Female	**54**	**91**	**1.22 (1.09–1.38)**	**<0.01**
Age	18–34	78	69	1.00	
	35–44	103	78	1.12 (0.94–1.34)	0.20
	≥45	**74**	**87**	**1.25 (1.05–1.49)**	**0.01**
Primary Instrument Group	Administrative/ music production	32	81	1.17 (0.94–1.46)	0.21
	Brass	82	70	1.00	
	Conductor	9	89	1.28 (0.97–1.68)	0.23
	Keys	5	80	1.15 (0.73–1.83)	0.62
	Other leadership	7	86	1.23 (0.88–1.72)	0.37
	Percussion	16	75	1.08 (0.79–1.48)	0.66
	Strings	32	81	1.17 (0.94–1.46)	0.21
	Vocalists	21	81	1.17 (0.91–1.50)	0.30
	Woodwinds	*48*	*83*	*1.20 (0.99–1.45)*	*0.08*
	Unknown	3	67	N/A	
APFT 2-mile Run Time (Tertiles)	≤15:25	103	64	1.00	
	15:26–16:55	107	72	1.12 (0.93–1.35)	0.22
	≥16:56	**107**	**82**	**1.28 (1.08–1.52)**	**<0.01**
APFT Push-up Repetitions (Tertiles)	**≤40**	**152**	**82**	**1.23 (1.07–1.42)**	**<0.01**
	41–54	109	73	1.08 (0.92–1.28)	0.36
	≥55	127	67	1.00	
APFT Sit-up Repetitions (Tertiles)	**≤51**	**146**	**85**	**1.29 (1.12–1.48)**	**<0.01**
	52–66	*125*	*75*	*1.14 (0.97–1.34)*	*0.10*
	≥67	132	66	1.00	

Legend:
TUSAB = The U.S. Army Band
CI = confidence intervals
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included.
Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table 51. Factors Associated with Injuries in TUSAFB, Administrative Data Only (n=142 TUSAFB Members)

Variable Category		Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
Sex	Male	105	78	1.00	
	Female	**37**	**76**	**1.22 (1.09–1.38)**	**<0.01**
Primary Instrument Group	Administrative/ music production	25	80	1.26 (0.77–2.05)	0.30
	Brass	33	79	1.24 (0.77–2.00)	0.32
	Conductor	2	50	0.79 (0.18–3.37)	0.73
	Keys	3	67	1.05 (0.42–2.62)	0.93
	Other leadership	5	80	1.26 (0.67–2.35)	0.53
	Percussion	*8*	*100*	*1.57 (1.01–2.46)*	*0.06*
	Strings	11	64	1.00	
	Vocalists	19	74	1.16 (0.69–1.95)	0.57
	Woodwinds	33	82	1.29 (0.80–2.07)	0.22
	Unknown	3	67	N/A	
APFT 2-mile Run Time (Tertiles)	≤15:57	35	66	1.00	
	15:58–17:24	34	74	1.12 (0.82–1.53)	0.48
	≥17:25	**34**	**88**	**1.34 (1.03–1.76)**	**0.03**
APFT Sit-up Repetitions (Tertiles)	*≤54*	*39*	*87*	*1.24 (0.97–1.58)*	*0.07*
	55–69	42	74	1.05 (0.80–1.39)	0.73
	≥70	37	70	1.00	

Legend:
TUSAFB = The U.S. Army Field Band
CI = confidence intervals
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included.
Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

6.7.2 Factors Associated with Injury, Multivariable Analyses

Multivariable associations with injury were also investigated, entering all variables that were significant or marginal at the univariate level (p≤0.10) into backward-stepping and forward-stepping logistic regression models. The results for the model that included the most Band members, including only administrative data, are shown in Table 52.

Table 52. Multivariable Association of Risk Factors With Injury, Administrative Data Only[a] (n=465 Band Members)

Variable Category		Total n	% Injured	Odds Ratio (95% CI)	Category p-value	Overall p-value
APFT Situp Repetitions (Tertiles)	**≤51**	**146**	**85**	**2.72 (1.49–4.95)**	**<0.01**	<0.01
	52–66	125	75	1.55 (0.89–2.69)	0.12	
	≥67	132	66	1.00		
	Exempt, unknown	**62**	**87**	**3.03 (1.31–7.02)**	**0.01**	
Body Fat Percentage (Tertiles)	≤21.48	154	70	1.00		0.26
	21.49–26.06	155	79	1.41 (0.82–2.40)	0.21	
	≥26.07	**154**	**84**	**1.76 (1.00–3.12)**	**0.05**	
	Unknown	2	0	N/A		

Legend:
CI = confidence intervals
APFT = Army Physical Fitness Test
Notes:
Variables with p≤0.10 are shown. Significant categories (p≤0.05) are in bold.
[a]Variables entered: Sex, Age, APFT 2-mile run time, APFT Pushup repetitions, APFT Situp repetitions, Body fat percentage, and Primary instrument group When the same variables were entered into a forward model, no additional variables were found to be associated with injury.

Four additional multivariable models were considered to identify risk factors among Band sub-populations: any injury among survey respondents, band-related injury among survey respondents, MSK pain among survey respondents, and any injury among TUSAB only. Unfortunately, due to small sample sizes, these models were overparameterized; this resulted in 95% CIs for odds ratios that were overly wide, indicating overestimated sample variance and therefore, questionable results (Peduzzi et al., 1996; Rothman et al., 2008). Therefore, results of these multivariable analyses are not presented.

7 DISCUSSION

7.1 Physical Training, Injuries, Injury Types, and Activities Associated with Injury

In the current population of band members, 77% had either a diagnosed injury or a self-reported injury during the investigation time frame of October 2017-December 2018, which is a higher proportion than previous Army Band studies (U.S. Army Public Health Command, 2010; U.S. Army Center for Health Promotion and Preventive Medicine, 2009, 2006; Grier et al., 2011; Knapik et al., 2007). Likewise, the proportion with diagnosed injuries is slightly higher than the overall Army and similar Army comparison populations. However, both crude and age- and sex-adjusted injury diagnosis rates are lower than those for the overall Army. Therefore, while a high proportion of MDW/NCR band members sustained an injury during the 15-month investigation time frame, Army band members on average had fewer injury diagnoses per Soldier per year than the overall Army.

In previous studies of musicians, with varying injury definitions and time frames, a wide range of injury prevalence has been reported, affecting 26% to 84% of the populations (Silva et al., 2015). Most previous epidemiologic studies of medical problems among musicians have relied solely on self-reported information. Unfortunately, when asking survey respondents about their current and past injuries and pain, studies have not been consistent with their injury definitions (definitions include all injuries, MSK injuries, playing-related injuries, and pain), time frames for reported injuries (any lifetime occurrence, within the past year, within the past month), and populations (music students, professional orchestra musicians, marching band members, etc.) (Stanhope et al., 2019; Kok et al., 2016; Silva et al., 2015). These are important distinctions, and therefore make comparisons to past studies difficult.

As in the current population, prior studies of military members (Hauschild et al., 2019; Jones et al., 2018) and other physically active populations (Yang et al., 2012; Junge et al., 2009) have indicated that cumulative microtraumatic MSK overuse injuries are common and are often related to physical training (Hauret et al., 2010).

The most common injured body regions are also similar to those seen in prior Army Band studies (U.S. Army Public Health Command, 2010; Grier et al., 2011; Knapik et al., 2007). The high relative proportion of lower extremity injuries is consistent with past findings in Army populations (Hauschild et al., 2019). The proportion of upper extremity injuries is higher than is typically observed in Army surveillance (Hauschild et al., 2019), but is more consistent with studies of symphony instrumentalists (Berque et al., 2016; Sheibani-Rad et al., 2013). Marching musicians are more likely to have lower extremity injuries than orchestra musicians (Harmon, 1993; Bischof, 1994; Rhode, 2017; Mehler et al., 1996; Moffit et al., 2015).

7.2 Factors Associated with Injuries

The following sections summarize risk factors associated with injury risk in Army band populations: 1) physical fitness and body composition, 2) extended daily durations of standing and marching, 3) relaxation, 4) loading, unloading, setting up, and tearing down for performances, 5) playing sports, 6) sex, 7) age, 8) instrument, and 9) not playing a secondary instrument. Where applicable, recommended injury prevention strategies and a summary of related literature is provided.

7.2.1 Physical Fitness and Body Composition

The field of performing arts medicine has been frequently compared to sports medicine (Chan and Ackermann, 2014; Stanhope, 2016; Toledo et al., 2004; Paull and Harrison, 1997; Quarrier, 1993; Allen, 1996; Dick et al., 2013), drawing a parallel between professional musicians and professional noncontact athletes like runners, as both types of professionals spend long hours practicing repetitive physical movements (Dawson, 2008). Since the performance of musical pieces can require a similar cardiac output to moderate physical exercise (Parr, 1985; Cohn et al., 2001; Drinkwater and Klopper, 2010) with up to 300 arm movements per minute (Horvath, 2001), many researchers refer to professional musicians as “musical athletes.”

In this population, lower performance on all three APFT tests (slower 2-mile run time, fewer sit-up repetitions, and fewer push-up repetitions) and higher percentage of body fat were significant modifiable risk factors for injury. Among military populations, poor aerobic fitness and higher body fat have consistently been identified as risk factors for MSK injuries (Jones et al., 2018; Jones and Hauschild, 2015); relationships of musucular endurance (as measured by push-ups and sit-ups) has been less consistent, but present in selected populations (Jones and Hauschild, 2015). The negative effects of poor aerobic fitness and poor body composition on injury risk have also been observed among populations of professional and collegiate musicians (Stanhope et al., 2019), including the U.S Army Band (Knapik et al., 2007). In one study of 170 orchestra musicians, a self-reported lack of regular exercise was found to be a predictor of playing-related MSK conditions (Yeung et al., 1999); likewise, the odds of shoulder pain among 206 music conservatory students were lower among those who reported routine moderate or vigorous physical activity (Rodriguez-Romero et al., 2016).

Results show that band members overall exhibited lower BMI and body fat percentage compared to the overall Army, but high body fat percentage (above 27%) was also significantly associated with injuries. This is consistent with injury risk factor results in other Army populations (Jones et al., 2017; Jones and Hauschild, 2015), previous Army Band studies (Grier et al., 2011), and studies of professional musicians (Beckett et al., 2015; Stanhope et al., 2019).

7.2.1.1 Injury Prevention Strategy: Balanced Personal Physical Training

Literature suggests that engaging in balanced physical training that includes a variety of activities, especially exercise programs designed specifically for musicians, may improve biomechanical efficiency and reduce MSK injury risk.

Previous studies have shown that too much participation in any one activity increases risk of injury (e.g., running (Grier et al., 2017; Jones and Hauschild, 2015) or road marching (Schuh-Renner et al., 2017)), which can be addressed through a greater variety of physical training activities (Bullock et al., 2010). To avoid cumulative overload from a combination of exercise and band-related activities (Orr et al., 2016), aerobic exercises like swimming, cycling, and walking that are low-impact, low-resistance, and promote endurance have been recommended for musicians (Brandfonbrener, 1991; Parry, 2003; Wilke et al., 2011). In one study of symphony musicians, general fitness training significantly improved aerobic capacity (Andersen et al., 2017), and similar effects were seen among civilian office workers (Andersen et al., 2010). Musicians' participation in yoga has been observed to have the added benefits of decreasing performance anxiety (Khalsa and Cope, 2006) and improving mindfulness (Butzer et al., 2016).

Musician-specific exercise programs have been investigated in other populations of professional musicians to modify behaviors and improve risk factors associated with MSK injuries. Specifically, programs targeted to musicians have been shown to mitigate existing MSK injuries (Roos and Roy, 2018; Ioannou et al., 2018), increase awareness of physical tension (Lee et al., 2012), improve posture (Lee et al., 2019; Cerveró et al., 2018), improve aerobic endurance (Lee et al., 2019), increase blood flow and circulation (Hansford et al., 1986; Parr, 1985), reduce anxiety (Spahn et al., 2001), reduce perceived exertion (Ackermann et al., 2002), and improve perceived physical competency (de Greef et al., 2003). Exercises focused on improving

instrument-specific postures may be helpful, like exercises for strengthening the scapular stabilizers and rotator cuff in cellists (Rickert et al., 2012).

Poor biomechanical efficiency associated with asymmetric postures (e.g., elevated arm position) and repetitive motions required for instrumental musicians may contribute to imbalances or instabilities that lead to or exacerbate MSK pain and injuries (Bird, 1989; Ackermann et al., 2011; Nyman et al., 2007; Wilke et al., 2011; Kok et al., 2017). To counterbalance these effects and improve biomechanical efficiency, musicians should develop strength in postural balance muscles like the trunk (Shafer-Crane, 2006) and small-muscle endurance in active and passive playing muscles to provide support for repetitive movements (Hinkamp et al., 2017; Baadjou et al., 2011; Dawson, 2008). Exercise programs have been specifically designed for musicians to strengthen muscles needed for proper posture, ensure flexibility and endurance in playing muscles, encourage desired playing techniques, and lower physical exertion associated with playing. Many of these programs have been shown to reduce the occurrence of pain, injuries, and playing-related MSK disorders (Chan and Ackermann, 2014; Spahn et al., 2001; Cerveró et al., 2018; de Greef et al., 2003).

It should be noted that intensive individual practice and group rehearsals take up significant time during a musician's day, which makes scheduling physical activity difficult (Chan and Ackermann, 2014). Likewise, lack of time has been reported as a barrier to physical activity among employees at a military hospital (Hearn et al., 2018) and other workers (Mazzola et al., 2019). It is important for all Soldiers to recognize physical training as a priority for fitness and injury prevention.

7.2.1.2 Injury Prevention Strategy: Utilize AWC Services

AWCs are located at most Army Installations and provide health services to Soldiers and Army Civilians, including exercise testing, nutrition education, stress management counseling, wellness coaching, and tobacco-cessation education. Research has shown that AWC clients experience significant improvements in average body mass index, body fat percentage, muscle strength, flexibility, blood pressure, and perceived stress (Rivera et al., 2016). In addition, AWC outcome evaluations have shown that Soldiers who participate in AWC services experience improvements in aerobic fitness (e.g., increases in estimated maximal oxygen uptake (VO_2 max)) that may decrease their relative risk for future MSK injuries (Rivera et al., 2018).

Given this evidence, it is recommended that band members utilize AWC services to address injury risks associated with their occupational tasks. Individually tailored education and mentoring provided by the AWCs may help band members decrease their risk of injury by affecting factors like health behaviors, physical fitness, and body composition (Rivera et al., 2018). There is currently a permanent AWC facility at Fort Meade, but not at JBM-HH. The MDW/NCR Commanding General requested an expansion of AWC Services in the MDW/NCR, and Fort Meade will place a staff member at JBM-HH 1 day per week in the future. Current AWC locations and contact information is posted here: https://phc.amedd.army.mil/organization/hpw/Pages/ArmyWellnessCenters.aspx

7.2.1.3 Injury Prevention Strategy: Physical Training Support

Since physical fitness is not typically emphasized as a necessary component of success in a musician's career (Andersen et al., 2013), musicians may be less likely than athletes to have training advisors (e.g., athletic trainers, physical therapists, sports psychologists) or established protocols for exercising and conditioning with rest intervals (Pascarelli, 1999; Paull and Harrison, 1997). Previous studies have shown that providing professional musicians with routine training support from athletic trainers (Rhode, 2017), occupational therapists (Barton, 2008), and physical therapists (Chan and Ackermann, 2014) is an effective method for reducing and mitigating playing-related MSK pain and injuries. One professional orchestra group that has regular support from a "health team" of physical therapists before, during, and after international tours reported fewer injuries, and of lower severity, at the end of their tours (Ackermann, 2002).

7.2.2 Extended Daily Durations of Standing and Marching

Standing for longer than 2.5 hours per day and marching for more than 1 hour per day were both found to be risk factors for injury in the Army Band units. This has also observed to be a risk factor for injury in a previous U.S. Army Band population (Grier et al., 2011). It has been proposed that standing and marching alters playing technique and positioning, which puts more stresses on the body (Stanhope and Weinstein, 2019). Whenever possible, it would be desirable to reduce the amount of playing time per day spent in these positions to encourage injury reduction. However, as that may not be feasible in all situations, posture modifications and use of orthotics may help reduce injuries associated with longer periods of standing and marching.

7.2.2.1 Injury Prevention Strategy: Improve Standing Posture

Non-neutral postures and maladaptive playing techniques have been observed to be associated with injury incidence and severity in several studies of professional musicians (Stanhope et al., 2019; Sheibani-Rad et al., 2013; Fry, 1987; Wilke et al., 2011). Ideal standing position is achieved when the weight of the head is balanced over the neck, shoulders, lumbar spine, hips, knees, and ankles (Mok et al., 2007) and the distance between feet when standing should be the width of the pelvis and shoulders, flat feet with 80-degree angle opening forward, hips and knees extended and head straight (Tubiana et al., 2005). Unfortunately, instruments change the distribution of weight and asymmetries put new demands on the body (Ackermann, 2010), often leading to postural defects like forward tilted pelvis, dorsal misalignment, and misalignment of head and shoulders (Blanco-Pineiro et al., 2015). It is recommended that Army Band units develop exercise routines that include strengthening postural muscles (see section 7.2.1.1), and continue follow-up efforts with the APHC Ergonomics Branch to identify potential unit- and instrument-specific posture modifications.

7.2.2.2 Injury Prevention Strategy: Footwear Changes

Soldiers who reported replacing the shoes they wear for rehearsals and performances infrequently (less often than once a year) were found to be at a marginally increased risk for

band-related injury and MSK pain injury. This could indicate that making changes to footwear could improve injury risk.

One potential footwear change that has been investigated in the literature is the use of orthotics. Orthotics are shoe inserts used to redistribute foot pressure and correct the way one stands and walks through enhanced arch support and foot cushioning. Only 8% of survey respondents in the current population reported using orthotics, and their injury rate was higher than those who did not. Likewise, in a previous study of 112 U.S. Army Band members, wearing orthotics was associated with a higher injury rate (U.S. Army Public Health Command, 2010). These results indicate that orthotics are likely being worn after pain and injury occur, as a reaction to pain and injury rather than as a preventative measure. When only lower extremity injuries were considered, the use of viscoelastic insoles reduced the occurrence of MSK pain and foot injuries (Grier et al., 2011).

While the effects of orthotics for injury reduction among musicians have not been widely investigated, the use of orthotics has been shown to reduce lower extremity overuse injuries among people who stand and walk for long periods, especially for occupational tasks (Bonanno et al., 2017). Multiple studies of military members have shown that wearing orthotics can reduce sole pain, injury intensity, and pain-induced inability in military recruits (Hesarikia et al., 2014) and result in a lower prevalence of lower extremity injuries during training (Finestone et al., 1999; Bonanno et al., 2017; Bonanno et al., 2018). In a recent study of civilian workers with occupational requirements to stand for long periods, feelings of pain, discomfort, and heavy legs were all significantly reduced after wearing orthotics designed for better balance and shifted pressure (Tarrade et al., 2019). It is suggested that if Army Band members use orthotics, they use a brand similar to Bauerfiend™ Viscoped S Insoles that were shown to be effective in previous studies when worn at least 50% of the time (U.S. Army Public Health Command, 2010).

Soldiers who reported replacing the shoes they wear for rehearsals and performances infrequently (less often than once every 2 years) were found to be at significantly increased risk for band-related injury and MSK pain injury. However, in another study of 112 U.S. Army Band members, using a different shoe did not significantly reduce injuries (Grier et al., 2011). Likewise, the use of shock-absorbing insoles (which do not necessarily redistribute foot pressure the way orthotics do) has not been shown to be effective for preventing injuries (Bonanno et al., 2017) including in military populations (Gardner et al., 1988). Therefore, due to these conflicting results, there is not enough evidence to recommend a timeline for shoe replacement.

7.2.3 Relaxation

Self-reported lack of feeling relaxed while playing was associated with injury in the current population. Though it was not a focus of the current study, many previous studies have often found behavioral health factors like work and life stress (Stanhope et al., 2019; Jacukowicz and Wezyk, 2018; Middlestadt and Fishbein, 1988), depression (Leaver et al., 2011; Wristen and Fountain, 2013), lower emotional stability (Levy and Lounsbury, 2011), and stage fright (Steinmetz et al., 2015) to be associated with playing-related MSK injuries among musicians.

Common stressors among musicians include performance anxiety around upcoming solos, instrument problems, professional and interpersonal relationships with conductors and colleagues, and medical concerns (Rickert et al., 2013; Rodriguez-Romero et al., 2016; James, 2000). An association between MSK injuries and stress been seen among other military populations, as well (Bedno et al., 2014). Stress can lead to unnecessary muscle tension and eventually contribute to MSK injuries (Dawson, 2006).

7.2.3.1 Injury Prevention Strategy: Relaxation Techniques

Postural awareness and relaxation techniques for musicians, like the Alexander, Feldenkrais, and Mensendieck Methods, are often recommended in music education for body awareness (Baadjou et al., 2011). Two recent studies have investigated the effects of the Alexander Technique on MSK injuries. One found that it improved measures of pain, posture, instrumental technique and reduced stress and performance anxiety (Davies, 2019); however, the other study suggested that the Alexander Method was no more effective at reducing upper extremity injuries than physical activity (Baadjou et al., 2018).

7.2.3.2 Injury Prevention Strategy: Breaks During Rehearsal and Practice

Not taking enough breaks during rehearsals and practices has been identified as a risk factor for injury in previous studies of professional musicians (Stanhope et al., 2019). It has been recommended that musicians take breaks at regular intervals, approximately 5 minutes every half hour (Zaza, 1994; Dawson, 2008), though no specific break frequency has been explicitly associated with a reduced risk of pain or injury. While some investigations have found that musicians who take more frequent breaks have more playing-related MSK problems (Allsop and Ackland, 2010; Manchester and Park, 1996), this may be because the MSK problems were pre-existing and the musicians were taking breaks in response to their injuries rather than to prevent them.

7.2.4 Loading, Unloading, Setting Up, and Tearing Down for Performances

Unlike traditional symphony or orchestra musicians, Army Band members are often required to participate in loading, unloading, setting up, and tearing down before and after performances, which may include lifting, pushing, pulling, and carrying heavy and awkward instruments, audio visual equipment, chairs, music stands, etc. Associated injury risks have not been previously investigated (Stanhope and Weinstein, 2019).

However, Soldiers who reported participation in these activities were at significantly reduced risk of band-injury compared to those who did not participate. This may indicate that those who conduct these tasks are more physically fit and/or are already employing safe handling strategies.

That said, lifting heavy objects is a common risk factor for injuries like low back pain (Roffey et al., 2010), including among musicians (Watson, 2009) and musician leadership (Fjellman-Wiklund et al., 2003). It is recommended that handling equipment be used as often as possible to lessen the physical burden on Soldiers during these tasks.

7.2.5 Playing Sports

Those who reported playing at least 1 hour of sports per week were found to be at greater risk of any injury, compared to those who played less or did not report playing sports. Sports are often a leading activity associated with injury among military members (Hauret et al., 2015), even during deployment (Patel et al., 2017). There were no patterns of common sports played in this population, so sport-specific recommendations are not possible, but it is recommended that band members use protective equipment and balance participation in team sports with other aerobic and resistance training.

7.2.6 Sex

In the current study, female sex was associated with significantly increased risk of injury. These results are consistent with many studies of injury risks among military members (Rappole et al., 2018; Jones and Hauschild, 2015; Anderson et al., 2017). Most prior studies of MSK disorders among professional musicians have also found an association between injury risk and female sex (Bragge et al., 2006; Heinan, 2008; Silva et al., 2015; Kok et al., 2016; Stanhope et al., 2019). It has been suggested that female musicians may be more susceptible to MSK injuries due to physiologic factors like lower muscle mass, smaller hand size, lower pressure pain thresholds, and hormonal differences (Shoup, 1995; Kaufman-Cohen and Ratzon, 2011; Kok et al., 2017). While sex is not a modifiable risk factor, this can be useful information when targeting prevention strategies to highest risk subpopulations.

7.2.7 Age

Among band members, older age was a significant risk factor for injuries. Older age and more years playing an instrument have previously been identified as a risk factors for MSK injuries in professional musicians (Abréu-Ramos and Micheo, 2007; Stanhope et al., 2019; Bragge et al., 2006; Allsop and Ackland, 2010; Berque et al., 2016). In one large survey, professional musicians identified the age range of 40–50 years as the time when their greatest decline in performance occurred, in part due to physical problems (Gembris and Heye, 2014). While general pain is likely prevalent among musicians of all ages (Warrington et al., 2002), degenerative conditions like rheumatoid arthritis, osteoporosis, and age-related lower back pain are more likely to impair dexterous skills in older musicians (Warrington et al., 2002; Dawson, 1999; Kenny and Ackermann, 2016). Older age is also commonly observed to be a risk factor for injury and associated with lower physical fitness in other military and physically active populations (Jones and Hauschild, 2015).

While it was not found to be a risk factor in the current population, it should be noted that some previous studies of musicians have also observed that younger age or fewer years of experience may be a risk factor for certain overuse injuries like trigger finger and rotator cuff strains, potentially because musicians with less experience may not be accustomed to rigorous practice and rehearsal demands (Davies, 2002; Dawson, 1999; Abréu-Ramos and Micheo, 2007).

Again, if interventions cannot be implemented for the entire population, it is recommended that they be targeted more specifically toward older (and potentially younger) members who are at greatest injury risk.

7.2.8 Instrument

Specific primary and secondary instrument groups were associated with injuries in this population. However, reviews have noted that previous studies have found extremely varied results for injury prevalence by instrument and instrument group (Kok et al., 2016). This is likely because potential injury types and injured body regions vary by instrument (Markison, 1990; Ioannou and Altenmuller, 2015; Newmark and Hochberg, 1987; Leaver et al., 2011; Roach et al., 1994) and music genre/style (Arnason et al., 2014; Stanhope and Weinstein, 2019). Furthermore, different studies include varying populations which potentially constitute different demographic and instrument mixes (Kok et al., 2016). The size and weight of the instrument may be related to maladaptive postures and repetitive strains (Blum and Ahlers, 1994; Kaufman-Cohen and Ratzon, 2011), especially when not proportional to the player's body size/weight (Amadio, 2003).

However, some studies have reported woodwind players to have higher injury rates than other instrument groups (Brandfonbrener, 2009; Hatheway and Chesky, 2013), and that is also consistent with the current results. Maintaining an elevated arm position, like violin and viola players do, has been noted to be a risk factor for some injuries like neck pain (Nyman et al., 2007). Adhering to instrument-specific ergonomic recommendations like posture and instrument positioning may help address these risks.

7.2.9 Not Playing a Secondary Instrument

Army Band members may be asked to play more than one instrument, to cover parts on uncommon instruments or to fill in for colleagues who may be performing with another ensemble, sick, or otherwise absent. In the current population, those who did not report playing a secondary instrument were at significantly increased risk for injuries.This is possibly a surrogate measure for sitting or standing in the same posture frequently, for extended periods of time; those who actively play a secondary instrument might have an inherent need to take breaks and switch postures more frequently than single-instrument musicians. Consistent repetitive movements have frequently been cited as a risk factor for injury in other occupations with repetitive movement tasks (Chengalur et al., 2004).

This concept has been mentioned in some musician injury literature (Markison, 1990; Zaza, 1994), and two studies have investigated the effect of multiple instruments on MSK injury risk in specific populations, with conflicting results: playing multiple instruments was associated with lower MSK injury risk in a population of children (Ranelli et al., 2011a; Ranelli et al., 2011b); however, there was no difference in injury risk seen among professional bassoonists who played a second instrument, compared to those who did not (Woldendorp et al., 2016). While further investigation is needed (Stanhope and Weinstein, 2019), it is recommended that especially single-instrument musicians focus on recommended interventions like ensuring proper posture, taking breaks during rehearsal, and participating in regular exercise.

7.2.10 Injury Prevention Strategy: Leadership Support for Injury Prevention

It has frequently been shown in organizational management literature that leadership support for safety and injury prevention initiatives (sometimes referred to as positive safety culture) is effective for improving employee awareness of risks, encouraging participation in behaviors that lead to lower risk, and ultimately influencing population health outcomes like injuries (Burke et al., 2011; U.S. Army Public Health Center, 2019a; Martínez-Córcoles and Stephanou, 2017).

Likewise, several studies have considered the effects of providing educational materials to musicians that include information about common injuries and other medical problems, tips for good posture, injury prevention strategies, and treatment options. These efforts have been shown to be effective at increasing health awareness (Barton, 2008; Matei et al., 2018), changing health behaviors (Zander et al., 2010; Barton, 2008), and decreasing the frequency of pain and injuries (López and Martínez, 2013; Spahn et al., 2001).

However, several studies have noted that while musicians desire injury prevention information (Rickert et al., 2015; Ioannou and Altenmuller, 2015; Guptill, 2011; Raymond et al., 2012), some conductors and leaders may not feel comfortable giving medical and prevention advice (Redmond and Tiernan, 2001). Because some musicians may seek advice from their conductor before seeing a medical professional (Stanek et al., 2017; Dawson, 2008), it is important to educate leadership as well.

It is recommended that leaders collaborate with preventive medicine specialists (Redmond and Tiernan, 2001) and ergonomists (Paull and Harrison, 1997; Norris, 1993) to provide guidance and educational materials for injury prevention. The most commonly evaluated method of dissemination has been undergraduate-level musician-specific health promotion courses (Manchester, 2007; López and Martínez, 2013; Spahn et al., 2001; Zander et al., 2010; Barton, 2008). Common curriculum topics include musician health issues, MSK injury risk factors, exercise/conditioning training programs, and prevention recommendations (Manchester, 2007). APHC Ergonomics will prepare information papers and posters with band- and instrument-group-specific considerations like recommendations for chairs, footgear, assistive devices, loading practices, and proper posture.

7.2.11 Other Factors Potentially Associated with Injury

Previous studies have either suggested or observed other factors that may be associated with injury among musicians and should be considered in future evaluations (Stanhope et al., 2019; Heinan, 2008):

- Weather, for outdoor performances (Stanhope and Weinstein, 2019).
- Prior injury (Knapik et al., 2007; Zaza and Farewell, 1997; Baadjou et al., 2016)
- Scoliosis of the spine (Bird, 2013)
- Hand dominance (Yoshimura, 2008; Mehrparvar et al., 2012)
- Hand size/span (Kaufman-Cohen et al., 2018)
- Joint laxity (Brandfonbrener, 2002) or hypermobility (Bird, 2013)

- Intensity of rehearsals and practices (Fry, 1987; Sheibani-Rad et al., 2013; Kaufman-Cohen et al., 2018; Ackermann et al., 2012)
- Instrument weight (Kaufman-Cohen and Ratzon, 2011; Blum and Ahlers, 1994)
- Sleeping disorders (Kaneko et al., 2005; Yoshimura, 2008)
- Tobacco use (Kaufman-Cohen and Ratzon, 2011; Leaver et al., 2011)
- Race (Grier et al., 2011; Yoshimura, 2008).

These factors were either not investigated or investigated but not observed to be risk factors in the current population.

7.3 Other Health Outcomes

7.3.1 Noise-induced Hearing Injuries

In the current population, 2.4% of diagnosed injuries among band members were for noise-induced hearing injuries between October 2017–December 2018. This is comparable to 2.3% of noise-induced hearing injuries in the total Army AC population, based on internal subanalysis of 2017 Army medical records (U.S. Army Public Health Center, 2017a).

While not observed to a significant extent in the current population, literature has noted that musicians have increased risk for hearing injuries like noise-induced hearing loss and tinnitus, compared to other populations (Di Stadio et al., 2018; Schink et al., 2014; Størmer et al., 2015), and this risk increases with age and/or the total amount of time they have been a musician (Luders et al., 2016; Emmerich et al., 2008). One study concluded that musicians in a professional orchestra were exposed to levels of noise which occasionally exceeded discomfort thresholds and occupational exposure limits (McBride et al., 1992). Another investigation concluded that U.S. military musicians likely exceed the occupational noise exposure limit of 85 A-weighted dB time-weighted average adopted by the Department of Defense in Department of Defense Instruction 6055.12 (Smith et al., 2015; Department of Defense, 2019). In a study with professional musicians, noise exposure was observed to be greater during private practice (average of 60–107dB) (Ackermann et al., 2014) and less routine use of hearing protection is often reported in that setting (Matei et al., 2018; Ackermann et al., 2014).

Given the level of hearing loss concern among band members (93% of survey respondents indicated at least a little concern about hearing loss), it is recommended that band members continue use of hearing protection during all practices, rehearsals, and performances and report for required hearing tests and command hearing program initiatives.

7.3.2 Respiratory Conditions

The observed proportion of 2.5% of band members with an asthma diagnosis October 2017–December 2018 is comparable to the proportion of all Army AC Soldiers with asthma diagnoses (2.6% in 2017) (U.S. Army Public Health Center, 2019b). Therefore, medical diagnoses did not suggest an increased risk of asthma in the current population. Fifteen percent of survey

respondents reported symptoms potentially consistent with respiratory conditions (predominantly coughing).

Respiratory health is important for wind instrumentalists and vocalists, as well-controlled pulmonary function is necessary to sustain high-quality tones and controlled breathing (Sataloff et al., 1990; Sataloff et al., 2010; Sataloff and Hawkshaw, 2010). Respiratory dysfunction can be diagnosed with pulmonary function testing (Sataloff et al., 2010) and regular aerobic training can improve respiratory support in musicians with pulmonary conditions (Sataloff et al., 1990).

A higher proportion of Soldiers with either diagnosed and/or self-reported respiratory conditions also had a medical encounter for injury and/or a self-reported injury. The association of MSK injuries and respiratory conditions has also been shown in other populations; treatment of respiratory conditions with corticosteroids can cause bone fragility and sleep disturbances, which in turn can be associated with increased injury risk (Kanis et al., 2004; Liang and Chikritzhs, 2012). Due to the cross-sectional nature of the data collected for the current study, causality could not be determined so respiratory conditions were not considered as a risk factor for injuries. However, the data suggests that future studies should investigate the potential comorbidity of these conditions if possible.

7.4 Limitations

Limitations of this study included the self-reported and cross-sectional nature of the survey data. Because both potential risk factors and injuries were assessed at the same time, it cannot be determined which occurred first; therefore, causal relationships between potential risk factors and injuries cannot be asserted. Furthermore, survey responses may have been subject to recall bias. However, the survey allowed for the collection of detailed information specific to band member interests and needs, much of which are not readily available from existing data sources.

Another limitation was the small starting population size (n=465), and the smaller population of survey respondents (n=221). Statistically significant risk factors were difficult to identify, especially for unit-level analyses (n's=255, 142, and 68). Small population sizes also led to overestimated odds ratios in multivariable analyses. Greater statistical confidence and prevention recommendations may be possible with a larger study population (e.g., U.S. military bands from all Services).

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

Seventy-seven percent of band members had either a medical record of injury or a self-reported injury (or both) during the 15-month investigation time frame. Overuse injuries to the lower and upper extremities were consistent with injuries reported in other military populations and other studies of professional musicians.

8.2 Recommendations

Injury prevention initiatives for band members should focus on the reduction of injuries resulting from overuse and repetitive motions. Potential prevention strategies include participation in balanced personal physical training, physical training instruction from certified fitness professionals, adhering to ergonomic recommendations, footwear changes, planned rehearsal breaks, and leadership support for injury prevention efforts.

9 POINT OF CONTACT

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Appendix A

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Appendix B

Memorandums of Request from MDW/NCR Band Units

DEPARTMENT OF THE ARMY
THE UNITED STATES ARMY BAND "PERSHING'S OWN"
400 McNAIR ROAD
FORT MYER, VIRGINIA 22211-1306

ANAB

2 October 2018

MEMORANDUM FOR Director, Army Public Health Center, ATTN: Mr. John Resta, Director, 5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403

SUBJECT: The U.S. Army Band (TUSAB) Commander Requests Assistance with: 1) Environmental Health of the Force study, 2) Service member Injury case studies, and 3) MSK Injury Prevention consultation

1. References: 22 May 2018 and 28 August 2018 MDW Commanding General's Health Promotion Council / Commander's Ready and Resilient Council slides and minutes, and APHC Injury incidence and risk factor studies (2006-present).

2. Situation: COL Esch, TUSAB Commander, concurs with Ready and Resilient concerns elevated during MG Howard's 22 May and 28 August Council which include: presence of black mold in TUSAB's facility (and HVAC system) and incidents of Musculoskeletal injuries in Band Members.

3. Request for Assistance: Army Public Health Center subject matter expertise visits to assess and evaluate the below topics (in coordination with MDW Surgeon and J/G-1).

a) Environmental Health of the Force survey reference TUSAB's facility, Joint Base Myer-Henderson Hall, Washington DC

b) Medical data query in support of evaluating TUSAB Service member's medical record linkages to pulmonary problems (attributed to HVAC issues, and presence of black mold)

c) Injury prevention consultation / ergonomic evaluation of TUSAB processes and recommendations (processes in direct support of travel performance operations)

4. The U.S. Army Band Point of Contact is: Daniel R. Smith, Command Sergeant Major, daniel.r.smith24.mil@mail.mil, (703) 696-6044.

ANDREW J. ESCH
COL, AG
Commanding

DEPARTMENT OF THE ARMY
THE UNITED STATES ARMY FIELD BAND
4214 FIELD BAND DRIVE STE 5330
FORT GEORGE G MEADE MD 20755-7055

REPLY TO
ATTENTION OF:

SAPA-AFB

26 June 2018

MEMORANDUM FOR Mr. John Resta, Director, Army Public Health Center, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403

SUBJECT: Request for Assistance from Commander, The U.S. Army Field Band (TUSAFB)

1. References: MDW Commanding General's Health Promotion Council held 22 May 2018; Commander's Ready and Resilient Council slides and minutes; APHC injury incidence and risk factor studies (2006-present).

2. Situation: COL Jim Keene, TUSAFB Commander, elevated two Ready and Resilient concerns during Health Promotion Council to include: black mold in facility including HVAC system, and incidents of musculoskeletal injuries in unit members.

3. Request subject matter experts from Army Public Health Center to visit facility to assess and evaluate the topics below, in coordination with MDW Command Surgeon and J/G-1.

a. Environmental facility scans at 4214 Field Band Drive, Fort Meade, Maryland 20755.

b. Medical data query to evaluate linkages between TUSAFB service member's medical records and respiratory or pulmonary problems attributed to the presence of black mold.

c. MSK injury case studies of two female service members who experienced pelvic stress fractures at TRADOC Fort Sill Basic Training Course.

d. Injury prevention consultation and ergonomic evaluation of TUSAFB processes, and provide recommendations in direct support of travel operations.

4. The point of contact for this memorandum is the undersigned at (301) 677-2210, matthew.r.kanowith.mil@mail.mil.

MATTHEW KANOWITH
CSM, USA

DEPARTMENT OF THE ARMY
THE OLD GUARD FIFE AND DRUM CORPS
4th BATTALION, 3d U.S. INFANTRY REGIMENT (THE OLD GUARD)
201 JACKSON AVENUE
JBM-HH, VA 22211-5020

REPLY TO
ATTENTION OF:

ANOG-FD

01 October 2018

MEMORANDUM FOR Director, Army Public Health Center

ATTN: Mr. John Resta, Director, 5158 Blackhawk Road, Aberdeen Proving Ground, Maryland 21010-5403

SUBJECT: Fife and Drum Corps Commander Requests Assistance with: 1) Environmental Health of the Force study, 2) Service member Injury case studies, and 3) MSK Injury Prevention consultation

1. References: 22 May 2018 and 28 August 2018 MDW Commanding General's Health Promotion Council / Commander's Ready and Resilient Council slides and minutes, and APHC Injury incidence and risk factor studies (2006-present).

2. Situation: CW4 Jeremiah Keillor, The Old Guard Fife and Drum Corps Commander, concurs with Ready and Resilient concerns elevated during MG Howard's 22 May and 28 August Council which include: presence of black mold in Fife and Drum Corps facility (and HVAC system) and incidents of Musculoskeletal injuries in Band Members.

3. Request for Assistance: Army Public Health Center subject matter expertise visits to assess and evaluate the below topics (in coordination with MDW Surgeon and J/G-1).

- 1) Environmental Health of the Force survey reference Fife and Drum Corps's facility, Joint Base Myer-Henderson Hall, Washington DC
- 2) Medical data query in support of evaluating Fife and Drum Corps Service member's medical record linkages to pulmonary problems (attributed to HVAC issues, and presence of black mold)
- 3) Injury prevention consultation / ergonomic evaluation of Corps processes and recommendations (processes in direct support of travel performance operations)

4. The Fife and Drum Corps Point of Contact is the undersigned at (703) 696-8525, jeremiah.m.keillor.mil@mail.mil.

JEREMIAH M. KEILLOR
CW4, AG
Commanding

Appendix C

Example Survey Questions

Note: Survey was administered electronically; length does not represent actual page length of survey and question numbers represent internal numbering system of Verint software. Skip patterns are indicated.

Invitation

The U.S. Army Public Health Center (APHC) invites you to participate in the MDW/NCR 42S Questionnaire. Our goal is to help inform future injury prevention policy decisions by Army leaders interested in improving the performance of and reducing injuries of the U.S. Army Band. Your participation is requested to help us achieve this goal.

If you agree to participate, we will: 1) collect some basic background/administrative information about you in this survey; 2) obtain your DOD ID number in order to link your survey information with other data; and 3) pull your Army Physical Fitness Test (APFT) scores and injury related medical records from 12 months prior to survey completion. We need this information to compare responses and identify trends in injury data as it relates to the U.S. Army Band.

To protect your identity: 1) we remove DOD ID numbers and name after data are linked; 2) all electronic data will be password protected; 3) all data transferred by an encrypted e-mail; 4) all data are stored on a secured network; and 5) only group (aggregate) responses will be reported. Your individual responses will never be reported. We are not assessing or reporting the health and fitness of any single individual.

The survey will take approximately 15–20 minutes and must be completed in one sitting. Please reserve sufficient time to complete the survey. Your participation in this survey is voluntary, and you may withdraw your consent to link your survey data and medical records at any time, without consequences. If you have any questions about the survey, use of your data, or wish to opt out at any time in the future, please e-mail the Injury Prevention Program, APHC at usarmy.apg.medcom-phc.mbx.injuryprevention@mail.mil. You may also contact the APHC Human Protection Administrator at (410) 417-2611.

Privacy Act Statement - Health Care Records, Fitness Test Scores, and Questionnaire

This form provides you the advice required by the Privacy Act of 1974.

1. AUTHORITY FOR COLLECTION OF INFORMATION INCLUDING SOCIAL SECURITY NUMBER

Public Law 104-91, Section 1178; Executive Order 9397; Section 8103, Title 5, United States Code; DoD 6025.18, DoD Health Information Privacy Regulation, December 2, 2009; DoD

6025.18R, Privacy of Individually Identifiable Health Information, January 24, 2003; AR 40-5, Preventive Medicine, 26 May 2007

2. PRINCIPLE PURPOSES FOR WHICH INFORMATION IS INTENDED TO BE USED

The primary use of this information is to monitor injuries in the U.S. Army Band. We hope to describe injuries associated with the U.S. Army Band. This survey requests information on current physical fitness activities, sleep, tobacco use, and previous or current injuries.

We will need to obtain your DOD ID number in order to link your questionnaire information with other data such as Army Physical Fitness Test (APFT) scores and injuries from medical records. The information obtained from your medical records will only be diagnoses for injuries and respiratory conditions occurring 12 months back from the survey date. No other medical information other than this will be obtained. Using your DOD ID number is the only way we can do this.

To protect your identity, we will strictly limited access to your information, including your DOD ID number, by having all computer files password protected and removing DOD ID numbers and name after data are linked.

3. ROUTINE USES

The data obtained from the questionnaire will be included in a database that contains the same information for all Soldiers participating in this project. You will not be personally identified in any report or any output of any type since the interest is in the health and fitness of the Unit and not the health and fitness of any single individual.

The database that is established will identify current levels of fitness, injury rates, injury trends, and factors that lower Soldiers' risk of injury and enhance fitness. The database will be used to make recommendations to decision makers regarding programs and policies that could improve fitness and reduce the incidence of injury.

4. WHETHER DISCLOSURE IS MANDATORY OR VOLUNTARY AND EFFECT ON INDIVIDUAL OF NOT PROVIDING INFORMATION

Your participation in this survey is voluntary, and you may withdraw your consent to link you survey data and medical records at any time, without consequences.

If you have questions about the survey, use of your data, or wish to opt out at any time in the future, please e-mail the Injury Prevention Division, APHC team at usarmy.apg.medcom-phc.mbx.injuryprevention@mail.mil). You may also contact the APHC Human Protection Administrator at (410) 417-2611.

By volunteering to participate in this questionnaire, the APHC Injury Prevention Division team will be able to further improve the health and fitness of Soldiers by evaluating injury occurrence and injury reduction strategies.

91. If you agree to participate, please enter your name and the date below.
SIGNATURE OF PARTICIPANT _____

92. Date of Signature
_____

Questionnaire for MDW/NCR 42S

In this questionnaire you will be asked about playing your instrument, your health, and your lifestyle. Please answer each question as accurately as possible.

Personal Information

1. Name
First _____
Last _____

97. DoD ID (located on the back of your CAC)
_____

3. Are you
□ male
□ female
□ other _____

4. Date of birth
_____

5. What is your component?
□ Active Component Army
□ Army Reserve
□ National Guard

6. What is your current unit?
□ U.S. Army Band ("Pershing's Own")
□ U.S. Army Field Band
□ Fife and Drum Corps
□ Other *(please specify)* _____

7. How long have you been with your current unit? *Please enter 0 where appropriate.*
Years _____
Months _____

8. Did you previously belong to any other U.S. Army Band unit(s)?
□ Yes
□ No

This Question is Conditionally Shown if: (8 = Yes)
93. To which other U.S. Army Band unit(s) did you belong?
- □ U.S. Army Band ("Pershing's Own")
- □ U.S. Army Field Band
- □ Fife and Drum Corps
- □ Other *(please specify)* _____

This Question is Conditionally Shown if: (8 = Yes)
9. Please specify length of time with other band unit(s). *Please enter 0 where appropriate.*
Years _____
Months _____

10. What is your rank?
- □ E1
- □ E2
- □ E3
- □ E4
- □ E5
- □ E6
- □ E7
- □ E8
- □ E9
- □ O1
- □ O2
- □ O3
- □ O4
- □ O5
- □ O6
- □ W1
- □ W2
- □ W3
- □ W4
- □ W5

11. What is your highest level of education?
- □ Less than high school
- □ High school/GED
- □ Technical/trade school
- □ Associate's degree
- □ Bachelor's degree
- □ Master's degree
- □ Doctorate degree
- □ Other professional degree

This Question is Conditionally Shown if: (11 ≥ Technical/trade school)

123. What field is your degree in?

- □ Music
- □ Music and other field(s)
- □ Other field(s) _____

122. What is your dominant hand?

- □ Left
- □ Right

204. What is your height? *Please enter 0 where appropriate.*

Feet _____
Inches _____

205. What is your weight (in pounds)?

_____

164. How many push-up repetitions did you perform on your most recent APFT? *Please enter 0 if not applicable.*

_____

165. How many sit-up repetitions did you perform on your most recent APFT? *Please enter 0 if not applicable.*

_____

203. What was your 2-mile run time on your most recent APFT? *Please enter 0 where appropriate*

Minutes _____
Seconds _____

124. Are you on profile?

- □ Yes, permanent profile
- □ Yes, temporary profile
- □ No

This Page is Conditionally Shown if: (124 ≠ No)

125. Does your profile limit your physical training or job duties?

- □ No
- □ Yes

126. Do you participate in any Army alternative PT programs?

- □ No
- □ Yes

This Question is Conditionally Shown if: (126 = Yes)
127. Which Army alternative PT program(s) do you participate in? *Select all that apply.*
- ☐ Profile PT
- ☐ Weight control PT
- ☐ Pregnancy PT
- ☐ Other _____

Injuries

Injuries include both acute injuries (those that are sudden and unexpected, such as a slip and fall) as well as cumulative overuse injuries (those that develop over time and might be chronic or recurrent, including discomfort or pain).

189. *Enter the **number of unique injuries** you've experienced from each of the following categories **in the past year**, regardless of whether medical attention was sought (**enter 0 if none**).*

Body damage from sudden force of contact with an object, surface, animal, or human **(e.g., vehicle crash, fall, puncture, gunshot, amputation)** _____

Body damage from a single sudden awkward or overly forceful physical movement **(e.g., twisted ankle while running, strained back while lifting)** _____

Gradual body damage from a repetitive physical activity or movement **(e.g., knee pain from running, foot blister from marching, wrist pain from repeated typing)** _____

Damage to body caused by a natural environmental exposure **(e.g., heat stroke, sunburn, heat exhaustion, frostbite)** _____

Burns or other body damage caused by fires, electricity, or radiation _____

Poisoning **(e.g., from medicine, drugs, chemicals, toxic substances including poisonous plants, snake, or insect bite)** _____

Unintended body damage from medical procedures _____

This Question is Conditionally Shown if: (189 (Body damage from sudden force of contact with an object, surface, animal, or human (e.g., vehicle crash, fall, puncture, gunshot, amputation)) ≥ "1")
70. Which injury type(s) resulted from **sudden force**?
- ☐ Head trauma *(e.g., concussion, loss of consciousness, traumatic brain injury)*
- ☐ Hearing injury or hearing loss
- ☐ Bone fracture *(includes stress fracture that results from repeated body damage)*
- ☐ Joint damage *(e.g., sudden dislocation, sprain, or tear in the ankle, knee, shoulder, or finger)*
- ☐ Muscle tissue damage *(e.g., sudden strain or tear to muscle in the back, chest, arm, or leg)*
- ☐ Other musculoskeletal discomfort or pain *(e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)*
- ☐ Amputation
- ☐ Nerve damage
- ☐ Open wound, bleeding *(including organ or blood vessel damage)*
- ☐ Other skin surface damage *(e.g., bruise, contusion, swelling, cut, or abrasion)*

□ Other _____

This Question is Conditionally Shown if: (189 (Body damage from a single sudden awkward or overly forceful physical movement (e.g., twisted ankle while running, strained back while lifting)) ≥ "1")

215. Which injury type(s) resulted from **sudden awkward movements**?

□ Head trauma *(e.g., concussion, loss of consciousness, traumatic brain injury)*
□ Bone fracture *(includes stress fracture that results from repeated body damage)*
□ Joint damage *(e.g., sudden dislocation, sprain, or tear in the ankle, knee, shoulder, or finger)*
□ Muscle tissue damage *(e.g., sudden strain or tear to muscle in the back, chest, arm, or leg)*
□ Other musculoskeletal discomfort or pain *(e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)*
□ Other skin surface damage *(e.g., bruise, contusion, swelling, cut, or abrasion)*
□ Other _____

This Question is Conditionally Shown if: (189 (Gradual body damage from a repetitive physical activity or movement (e.g., knee pain from running, foot blister from marching, wrist pain from repeated typing)) ≥ "1")

216. Which injury type(s) resulted from **gradual repetitive movements or activities**?

□ Hearing injury or hearing loss
□ Bone fracture *(includes stress fracture that results from repeated body damage)*
□ Musculoskeletal tissue damage from repeated use *(e.g., tendinitis or bursitis)*
□ Other musculoskeletal discomfort or pain *(e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)*
□ Skin blister
□ Other skin surface damage *(e.g., bruise, contusion, swelling, cut, or abrasion)*
□ Other _____

This Question is Conditionally Shown if: (189 (Damage to body caused by a natural environmental exposure (e.g., heat stroke, sunburn, heat exhaustion, frostbite)) ≥ "1")

217. Which injury type(s) resulted from **environmental exposures**?

□ Heat injury *(e.g., heat stroke, heat exhaustion, sunburn)*
□ Cold injury *(e.g., hypothermia, frostbite)*
□ Other _____

This Question is Conditionally Shown if: (189 (Burns or other body damage caused by fires, electricity, or radiation) ≥ "1")

220. Which injury type(s) resulted from **burns**?

□ Burn or corrosion
□ Other _____

This Question is Conditionally Shown if: (189 (Poisoning (e.g., from medicine, drugs, chemicals, toxic substances including poisonous plants, snake, or insect bite)) ≥ "1")
218. Which injury type(s) resulted from **poisoning**?
 Poisoning
 Other _____

This Question is Conditionally Shown if: (189 (Unintended body damage from medical procedures) ≥ "1")
219. Which injury type(s) resulted from **medical complications**?
 Accidental damage from a medical procedure *(e.g., surgical accident or reaction)*
 Other _____

This Page is Conditionally Shown if: (189 (Body damage from sudden force of contact with an object, surface, animal, or human (e.g., vehicle crash, fall, puncture, gunshot, amputation)) > "0" OR189 (Body damage from a single sudden awkward or overly forceful physical movement (e.g., twisted ankle while running, strained back while lifting)) > "0" OR189 (Gradual body damage from a repetitive physical activity or movement (e.g., knee pain from running, foot blister from marching, wrist pain from repeated typing)) > "0" OR189 (Damage to body caused by a natural environmental exposure (e.g., heat stroke, sunburn, heat exhaustion, frostbite)) > "0" OR189 (Burns or other body damage caused by fires, electricity, or radiation) > "0" OR189 (Poisoning (e.g., from medicine, drugs, chemicals, toxic substances including poisonous plants, snake, or insect bite)) > "0" OR189 (Unintended body damage from medical procedures) > "0")

Please answer the following questions while considering your most physically limiting injury within the past year.

139. Which of these injuries was your most physically limiting injury?
 Head trauma *(e.g., concussion, loss of consciousness, traumatic brain injury)*
 Hearing injury or hearing loss
 Bone fracture *(includes stress fracture that results from repeated body damage)*
 Joint damage *(e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger)*
 Sudden muscle tissue damage *(e.g., sudden strain or tear to muscle in back, chest, arm, or leg)*
 Musculoskeletal tissue damage from repeated use *(e.g., tendinitis or bursitis)*
 Other musculoskeletal discomfort or pain *(e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)*
 Amputation
 Nerve damage
 Burn or corrosion
 Open wound, bleeding *(including organ or blood vessel damage)*
 Skin blister
 Other skin surface damage *(e.g., bruise, contusion, swelling, cut, or abrasion)*
 Heat injury *(e.g., heat stroke, heat exhaustion, sunburn)*
 Cold injury *(e.g., hypothermia, frostbite)*
 Poisoning
 Accidental damage from a medical procedure *(e.g., surgical accident or reaction)*

□ Other _____

This Page is Conditionally Shown if: (189 (Body damage from sudden force of contact with an object, surface, animal, or human (e.g., vehicle crash, fall, puncture, gunshot, amputation)) > "0" OR189 (Body damage from a single sudden awkward or overly forceful physical movement (e.g., twisted ankle while running, strained back while lifting)) > "0" OR189 (Gradual body damage from a repetitive physical activity or movement (e.g., knee pain from running, foot blister from marching, wrist pain from repeated typing)) > "0" OR189 (Damage to body caused by a natural environmental exposure (e.g., heat stroke, sunburn, heat exhaustion, frostbite)) > "0" OR189 (Burns or other body damage caused by fires, electricity, or radiation) > "0" OR189 (Poisoning (e.g., from medicine, drugs, chemicals, toxic substances including poisonous plants, snake, or insect bite)) > "0" OR189 (Unintended body damage from medical procedures) > "0") November-December 2018 is Conditionally Shown if: (92 ≥ 11/1/2018)

69. In what month did your most physically limiting injury in the past year occur?
- □ November-December 2018
- □ October 2018
- □ September 2018
- □ August 2018
- □ July 2018
- □ June 2018
- □ May 2018
- □ April 2018
- □ March 2018
- □ February 2018
- □ January 2018
- □ December 2017
- □ November 2017
- □ October 2017

This Question is Conditionally Hidden if: (139 = Head trauma (e.g., concussion, loss of consciousness, traumatic brain injury) OR139 = Hearing injury or hearing loss)
Eye is Conditionally Hidden if: (139 = Bone fracture (includes stress fracture that results from repeated body damage) OR139 = Joint damage (e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger) OR139 = Sudden muscle tissue damage (e.g., sudden strain or tear to muscle in back, chest, arm, or leg) OR139 = Musculoskeletal tissue damage from repeated use (e.g., tendinitis or bursitis) OR139 = Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body) OR139 = Hearing injury or hearing loss)
Ear is Conditionally Hidden if: (139 = Bone fracture (includes stress fracture that results from repeated body damage) OR139 = Joint damage (e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger) OR139 = Sudden muscle tissue damage (e.g., sudden strain or tear to muscle in back, chest, arm, or leg) OR139 = Musculoskeletal tissue damage from repeated use (e.g., tendinitis or bursitis) OR139 = Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body))
All body (e.g., a heat/cold injury, poisoning, internal bleeding or medical complication affecting

the entire body) is Conditionally Shown if: (139 = Burn or corrosion OR139 = Open wound, bleeding (including organ or blood vessel damage) OR139 = Heat injury (e.g., heat stroke, heat exhaustion, sunburn) OR139 = Cold injury (e.g., hypothermia, frostbite) OR139 = Poisoning OR139 = Accidental damage from a medical procedure (e.g., surgical accident or reaction) OR139 = Other)

74. What body area was injured as a result of your most physically limiting injury?
- □ Head
- □ Face
- □ Eye
- □ Ear
- □ Teeth/jaw
- □ Neck
- □ Upper back
- □ Middle back
- □ Lower back
- □ Chest
- □ Abdomen
- □ Pelvis
- □ Shoulder
- □ Upper arm (e.g., bicep)
- □ Elbow
- □ Lower arm (e.g., forearm)
- □ Wrist
- □ Hand/finger
- □ Hip
- □ Upper leg (e.g., thigh)
- □ Knee
- □ Lower leg (e.g., calf)
- □ Ankle
- □ Foot/toe
- □ All body (e.g., a heat/cold injury, poisoning, internal bleeding or medical complication affecting the entire body) _____
- □ Other _____

This Question is Conditionally Shown if: (74 = Shoulder OR74 = Upper arm (e.g., bicep) OR74 = Elbow OR74 = Lower arm (e.g., forearm) OR74 = Wrist OR74 = Hand/finger)

140. On which side of the body did your most physically limiting injury occur?
- □ Left
- □ Right

142. Was your most physically-limiting injury **caused by** band-related activities?
- □ No
- □ Yes

141. Was your most physically-limiting injury **exacerbated (made worse) by** band-related activities?
- □ No
- □ Yes

This Question is Conditionally Shown if: (142 = Yes OR141 = Yes)
167. Which Band activities contributed to this injury? *Select all that apply.*
- □ Standing while practicing, rehearsing, or performing
- □ Marching
- □ Sitting for extended periods
- □ Repetitive movements while playing instrument(s)
- □ Loading/unloading/setting up/tearing down for performances
- □ Other _____

This Page is Conditionally Shown if: (142 = No)
71. What activity was associated with your most physically limiting injury?
- □ Lifting or moving heavy objects (not related to performances or rehearsals or moving instruments)
- □ Physical training - running
- □ Physical training - weight training
- □ Other physical training/sports/recreation
- □ Riding or driving in a motorized vehicle
- □ Rough-housing or fighting
- □ Combatives training
- □ Stepping/climbing
- □ Walking or hiking
- □ Unit road marching with load
- □ Unit road marching with no load
- □ Gunshot, missile, or blast
- □ Other _____

This Question is Conditionally Shown if: (71 = Other physical training/sports/recreation)
72. Which sport, recreational activity, or other physical training was associated with your most physically limiting injury?
- □ Football (touch or tackle)
- □ Basketball
- □ Soccer
- □ Baseball/Softball
- □ Volleyball
- □ Snowboarding/Skiing
- □ Hiking
- □ Swimming
- □ Gym fitness class
- □ Exercise videos
- □ Other _____

76. What was the cause of your most physically limiting injury?
- □ Falling onto an object/surface/the ground
- □ Contact (hit by/against) an object/surface (please specify object) _____
- □ Cut or puncture by a sharp tool, object, or instrument
- □ Direct contact by a person
- □ Impact from a blast
- □ Overuse/repetitive activity
- □ Overexertion/over-extension/twisting effort
- □ Burn (by fire, hot substance or object, or steam)
- □ Heat injury
- □ Cold injury
- □ Animal bite
- □ Insect bite
- □ Medical complication
- □ Other _____

This Question is Conditionally Shown if: (71 = Riding or driving in a motorized vehicle)
73. Were you...
- □ Riding in a military vehicle
- □ Driving a military vehicle
- □ Riding in a civilian vehicle
- □ Driving a civilian vehicle

This Question is Conditionally Shown if: (76 = Falling onto an object/surface/the ground)
77. Was your most physically limiting injury caused by a fall from a...
- □ Motor vehicle
- □ Aircraft
- □ Raised surface or platform 6 feet or higher (not motor vehicle or aircraft)
- □ Raise surface or platform less than 6 feet high (not motor vehicle or aircraft)
- □ Level surface such as the floor or the ground (e.g., slipped or tripped)
- □ Other _____

This Page is Conditionally Shown if: (142 = Yes)
147. What activity was associated with your band-related injury?
- □ Lifting or moving instruments and equipment for performances or rehearsals
- □ Marching while practicing, rehearsing, or performing
- □ Standing while practicing, rehearsing, or performing
- □ Sitting while practicing, rehearsing, or performing
- □ Repetitive movements associated with playing your instrument
- □ Riding in a motorized vehicle to a performance or rehearsal
- □ Other _____

148. What was the cause of your band-related injury?
- □ Falling onto an object/surface/the ground
- □ Contact (hit by/against) an object/surface (please specify object) _____
- □ Cut or puncture by a sharp tool, object, or instrument

- □ Direct contact by a person
- □ Overuse/repetitive activity
- □ Overexertion/over-extension/twisting effort
- □ Burn (by fire, hot substance or object, or steam)
- □ Heat injury
- □ Cold injury
- □ Animal bite
- □ Insect bite
- □ Other _____

This Question is Conditionally Shown if: (148 = Falling onto an object/surface/the ground)

149. Was your most physically limiting injury caused by a fall from a...

- □ Motor vehicle
- □ Aircraft
- □ Raised surface or platform 6 feet or higher (not motor vehicle or aircraft)
- □ Raise surface or platform less than 6 feet high (not motor vehicle or aircraft)
- □ Level surface such as the floor or the ground (e.g., slipped or tripped)
- □ Other _____

This Page is Conditionally Shown if: (189 (Body damage from sudden force of contact with an object, surface, animal, or human (e.g., vehicle crash, fall, puncture, gunshot, amputation)) > "0" OR189 (Body damage from a single sudden awkward or overly forceful physical movement (e.g., twisted ankle while running, strained back while lifting)) > "0" OR189 (Gradual body damage from a repetitive physical activity or movement (e.g., knee pain from running, foot blister from marching, wrist pain from repeated typing)) > "0" OR189 (Damage to body caused by a natural environmental exposure (e.g., heat stroke, sunburn, heat exhaustion, frostbite)) > "0" OR189 (Burns or other body damage caused by fires, electricity, or radiation) > "0" OR189 (Poisoning (e.g., from medicine, drugs, chemicals, toxic substances including poisonous plants, snake, or insect bite)) > "0" OR189 (Unintended body damage from medical procedures) > "0")

78. Were you seen by a medical professional for your most physically limiting injury?

- □ No
- □ Yes

This Question is Conditionally Shown if: (78 = Yes)

79. What type of medical professional did you see for your most physically limiting injury? *Select all that apply.*

- □ Medic
- □ Physician's Assistant (PA)
- □ Nurse
- □ Physician/Doctor
- □ Physical Therapist
- □ Other _____

This Question is Conditionally Shown if: (78 = Yes)
80. Were you placed on temporary profile for your most physically limiting injury?
 No
 Yes

This Question is Conditionally Shown if: (80 = Yes)
81. How many days were you placed on temporary profile for your most physically limiting injury?

_____

82. What impact does your most physically limiting injury currently have on your job duties and physical activity?

	No impact	Little impact	Some impact	Significant impact	Unable to perform duties as assigned
Impact on job					
Impact on physical activity					

This Page is Conditionally Shown if: (142 = No)
143. Were any of your other injuries in the past 12 months related to band activities?
 No
 Yes

This Page is Conditionally Shown if: (143 = Yes)
Head trauma *(e.g., concussion, loss of consciousness, traumatic brain injury)* is Conditionally Shown if: (70 (Head trauma (e.g., concussion, loss of consciousness, traumatic brain injury)) = Selected OR215 (Head trauma (e.g., concussion, loss of consciousness, traumatic brain injury)) = Selected)
Hearing injury or hearing loss is Conditionally Shown if: (70 (Hearing injury or hearing loss) = Selected OR216 (Hearing injury or hearing loss) = Selected)
Bone fracture *(includes stress fracture that results from repeated body damage)* is Conditionally Shown if: (70 (Bone fracture (includes stress fracture that results from repeated body damage)) = Selected OR215 (Bone fracture (includes stress fracture that results from repeated body damage)) = Selected OR216 (Bone fracture (includes stress fracture that results from repeated body damage)) = Selected)
Joint damage *(e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger)* is Conditionally Shown if: (70 (Joint damage (e.g., sudden dislocation, sprain, or tear in the ankle, knee, shoulder, or finger)) = Selected OR215 (Joint damage (e.g., sudden dislocation, sprain, or tear in the ankle, knee, shoulder, or finger)) = Selected)
Sudden muscle tissue damage *(e.g., sudden strain or tear to muscle in back, chest, arm, or leg)*

is Conditionally Shown if: (70 (Muscle tissue damage (e.g., sudden strain or tear to muscle in the back, chest, arm, or leg)) = Selected OR215 (Muscle tissue damage (e.g., sudden strain or tear to muscle in the back, chest, arm, or leg)) = Selected)
Musculoskeletal tissue damage from repeated use *(e.g., tendinitis or bursitis)* is Conditionally Shown if: (216 (Musculoskeletal tissue damage from repeated use (e.g., tendinitis or bursitis)) = Selected)
Other musculoskeletal discomfort or pain *(e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)* is Conditionally Shown if: (70 (Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)) = Selected OR215 (Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)) = Selected OR216 (Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)) = Selected)
Amputation is Conditionally Shown if: (70 (Amputation) = Selected)
Nerve damage is Conditionally Shown if: (70 (Nerve damage) = Selected)
Burn or corrosion is Conditionally Shown if: (220 (Burn or corrosion) = Selected)
Open wound, bleeding *(including organ or blood vessel damage)* is Conditionally Shown if: (70 (Open wound, bleeding (including organ or blood vessel damage)) = Selected)
Skin blister is Conditionally Shown if: (216 (Skin blister) = Selected)
Other skin surface damage *(e.g., bruise, contusion, swelling, cut, or abrasion)* is Conditionally Shown if: (70 (Other skin surface damage (e.g., bruise, contusion, swelling, cut, or abrasion)) = Selected OR215 (Other skin surface damage (e.g., bruise, contusion, swelling, cut, or abrasion)) = Selected OR216 (Other skin surface damage (e.g., bruise, contusion, swelling, cut, or abrasion)) = Selected)
Heat injury *(e.g. heat stroke, heat exhaustion, sunburn)* is Conditionally Shown if: (217 (Heat injury (e.g., heat stroke, heat exhaustion, sunburn)) = Selected)
Cold injury *(e.g., hypothermia, frostbite)* is Conditionally Shown if: (217 (Cold injury (e.g., hypothermia, frostbite)) = Selected)
Poisoning is Conditionally Shown if: (218 (Poisoning) = Selected)
Accidental damage from a medical procedure *(e.g., surgical accident or reaction)* is Conditionally Shown if: (219 (Accidental damage from a medical procedure (e.g., surgical accident or reaction)) = Selected)
Other is Conditionally Shown if: (219 (Other) = Selected OR217 (Other) = Selected OR218 (Other) = Selected OR215 (Other) = Selected OR70 (Other) = Selected OR216 (Other) = Selected)

221. Which of these injuries was your most physically limiting band-related injury?
 Head trauma *(e.g., concussion, loss of consciousness, traumatic brain injury)*
 Hearing injury or hearing loss
 Bone fracture *(includes stress fracture that results from repeated body damage)*
 Joint damage *(e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger)*
 Sudden muscle tissue damage *(e.g., sudden strain or tear to muscle in back, chest, arm, or leg)*
 Musculoskeletal tissue damage from repeated use *(e.g., tendinitis or bursitis)*
 Other musculoskeletal discomfort or pain *(e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)*

- □ Amputation
- □ Nerve damage
- □ Burn or corrosion
- □ Open wound, bleeding *(including organ or blood vessel damage)*
- □ Skin blister
- □ Other skin surface damage *(e.g., bruise, contusion, swelling, cut, or abrasion)*
- □ Heat injury *(e.g., heat stroke, heat exhaustion, sunburn)*
- □ Cold injury *(e.g., hypothermia, frostbite)*
- □ Poisoning
- □ Accidental damage from a medical procedure *(e.g., surgical accident or reaction)*
- □ Other _____

This Page is Conditionally Shown if: (143 = Yes)
November-December 2018 is Conditionally Shown if: (92 ≥ 11/1/2018)
206. In what month did your most physically limiting band-related injury occur?

- □ November-December 2018
- □ October 2018
- □ September 2018
- □ August 2018
- □ July 2018
- □ June 2018
- □ May 2018
- □ April 2018
- □ March 2018
- □ February 2018
- □ January 2018
- □ December 2017
- □ November 2017
- □ October 2017

This Question is Conditionally Shown if: (221 = Head trauma (e.g., concussion, loss of consciousness, traumatic brain injury) OR221 = Hearing injury or hearing loss)
154. What body area was injured for your most physically limiting band-related injury?

- □ Head
- □ Face
- □ Eye
- □ Ear
- □ Neck
- □ Upper back
- □ Middle back
- □ Lower back
- □ Chest
- □ Abdomen
- □ Pelvis
- □ Shoulder
- □ Upper arm (e.g., bicep)

□ Elbow
□ Lower arm (e.g., forearm)
□ Wrist
□ Hand/finger
□ Hip
□ Upper leg (e.g., thigh)
□ Knee
□ Lower leg (e.g., calf)
□ Ankle
□ Foot/toe
□ All body (e.g., a heat/cold injury, poisoning, internal bleeding or medical complication affecting the entire body) _____
□ Other _____

This Question is Conditionally Hidden if: (221 = Head trauma (e.g., concussion, loss of consciousness, traumatic brain injury) OR221 = Head trauma (e.g., concussion, loss of consciousness, traumatic brain injury))
Eye is Conditionally Hidden if: (221 = Bone fracture (includes stress fracture that results from repeated body damage) OR221 = Joint damage (e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger) OR221 = Sudden muscle tissue damage (e.g., sudden strain or tear to muscle in back, chest, arm, or leg) OR221 = Musculoskeletal tissue damage from repeated use (e.g., tendinitis or bursitis) OR221 = Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body) OR221 = Hearing injury or hearing loss)
Ear is Conditionally Hidden if: (221 = Bone fracture (includes stress fracture that results from repeated body damage) OR221 = Joint damage (e.g., sudden dislocation, sprain, or tear in ankle, knee, shoulder, or finger) OR221 = Sudden muscle tissue damage (e.g., sudden strain or tear to muscle in back, chest, arm, or leg) OR221 = Musculoskeletal tissue damage from repeated use (e.g., tendinitis or bursitis) OR221 = Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body))
All body (e.g., a heat/cold injury, poisoning, internal bleeding or medical complication affecting the entire body) is Conditionally Shown if: (221 = Burn or corrosion OR221 = Open wound, bleeding (including organ or blood vessel damage) OR221 = Heat injury (e.g., heat stroke, heat exhaustion, sunburn) OR221 = Cold injury (e.g., hypothermia, frostbite) OR221 = Poisoning OR221 = Accidental damage from a medical procedure (e.g., surgical accident or reaction) OR221 = Other)

222. What body area was injured as a result of your most physically limiting band-related injury?
□ Head
□ Face
□ Eye
□ Ear
□ Teeth/jaw
□ Neck
□ Upper back
□ Middle back

□ Lower back
□ Chest
□ Abdomen
□ Pelvis
□ Shoulder
□ Upper arm (e.g., bicep)
□ Elbow
□ Lower arm (e.g., forearm)
□ Wrist
□ Hand/finger
□ Hip
□ Upper leg (e.g., thigh)
□ Knee
□ Lower leg (e.g., calf)
□ Ankle
□ Foot/toe
□ All body (e.g., a heat/cold injury, poisoning, internal bleeding or medical complication affecting the entire body) _____
□ Other _____

This Question is Conditionally Shown if: (154 = Shoulder OR154 = Upper arm (e.g., bicep) OR154 = Elbow OR154 = Lower arm (e.g., forearm) OR154 = Wrist OR154 = Hand/finger)
155. Which side of the body did the injury occur?
□ Left
□ Right

144. What activity was associated with your most physically limiting band-related injury?
□ Lifting or moving instruments and equipment for performances or rehearsals
□ Marching while practicing, rehearsing, or performing
□ Standing while practicing, rehearsing, or performing
□ Lifting or moving heavy objects (not related to performances or rehearsals or moving instruments)
□ Sitting while practicing, rehearsing, or performing
□ Repetitive movements associated with playing your instrument
□ Riding in a motorized vehicle to a performance or rehearsal
□ Other _____

145. What was the cause of your most physically limiting band-related injury?
□ Falling onto an object/surface/the ground
□ Contact (hit by/against) an object/surface (please specify object) _____
□ Cut or puncture by a sharp tool, object, or instrument
□ Direct contact by a person
□ Overuse/repetitive activity
□ Overexertion/over-extension/twisting effort
□ Burn (by fire, hot substance or object, or steam)
□ Heat injury

- ☐ Cold injury
- ☐ Animal bite
- ☐ Insect bite
- ☐ Other _____

This Question is Conditionally Shown if: (145 = Falling onto an object/surface/the ground)

146. Was your most physically limiting band-related injury caused by a fall from a...

- ☐ Motor vehicle
- ☐ Aircraft
- ☐ Raised surface or platform 6 feet or higher (not motor vehicle or aircraft)
- ☐ Raise surface or platform less than 6 feet high (not motor vehicle or aircraft)
- ☐ Level surface such as the floor or the ground (e.g., slipped or tripped)
- ☐ Other _____

176. Were you seen by a medical professional for your most physically limiting band injury?

- ☐ No
- ☐ Yes

This Question is Conditionally Shown if: (176 = Yes)

177. What type of medical professional did you see for your most physically limiting band-related injury? *Select all the apply.*

- ☐ Medic
- ☐ Physician's Assistant (PA)
- ☐ Nurse
- ☐ Physician/Doctor
- ☐ Physical Therapist
- ☐ Other _____

This Question is Conditionally Shown if: (176 = Yes)

178. Were you placed on temporary profile for your most physically limiting band-related injury?

- ☐ No
- ☐ Yes

This Question is Conditionally Shown if: (178 = Yes)

179. How many days were you placed on temporary profile for your most physically limiting band-related injury?

_____

180. What impact does your most physically limiting band-related injury currently have on your job duties and physical activity?

	No impact	Little impact	Some impact	Significant impact	Unable to perform duties as assigned
Impact on job	□	□	□	□	□
Impact on physical activity	□	□	□	□	□

This Page is Conditionally Shown if: (70 (Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)) = Selected OR215 (Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)) = Selected OR216 (Other musculoskeletal discomfort or pain (e.g., discomfort, weakness, numbness, or tingling in back, hand/wrist, upper or lower body)) = Selected)

58. You indicated that you've experienced musculoskeletal discomfort or pain (weakness, numbness, or tingling). In what part(s) of your body did you experience musculoskeletal discomfort or pain **in the past year**? *Select all that apply.*

□ Head
□ Teeth/jaw
□ Neck
□ Upper back
□ Middle back
□ Lower back
□ Chest
□ Abdomen
□ Pelvis
□ Shoulder
□ Upper arm (e.g., bicep)
□ Elbow
□ Lower arm (e.g., forearm)
□ Wrist
□ Hand/finger
□ Hip
□ Upper leg (e.g., thigh)
□ Knee
□ Lower leg (e.g., calf)
□ Ankle
□ Foot/toe
□ Other _____

This Question is Conditionally Shown if: (58 (Shoulder) = Selected OR58 (Upper arm (e.g., bicep)) = Selected OR58 (Elbow) = Selected OR58 (Lower arm (e.g., forearm)) = Selected OR58 (Wrist) = Selected OR58 (Hand/finger) = Selected)

196. On which side of the body did your upper extremity musculoskeletal pain occur?

- □ Left
- □ Right
- □ Both

59. Do you feel that your musculoskeletal discomfort or pain was **caused by** your participation in band activities?

- □ No
- □ Yes

156. Do you feel that your musculoskeletal discomfort or pain was **exacerbated (made worse) by** your participation in band activities?

- □ No
- □ Yes

This Question is Conditionally Shown if: (59 = Yes OR156 = Yes)

60. Which Band activities contributed to this musculoskeletal discomfort or pain ? *Select all that apply.*

- □ Standing while practicing, rehearsing, or performing
- □ Marching
- □ Sitting for extended periods
- □ Repetitive movements while playing instrument(s)
- □ Loading/unloading/setting up/tearing down for performances
- □ Other _____

157. Have you taken ibuprofen or other over-the-counter pain medication related to your musculoskeletal discomfort?

- □ No
- □ Yes

61. How frequently did you experience musculoskeletal discomfort or pain during rehearsals or performances in the last year?

- □ During a few rehearsals/performances
- □ During most rehearsals/performances
- □ During every rehearsals/performance

62. How long did your musculoskeletal discomfort or pain last, **on average**, each time you felt pain?

- □ A few minutes
- □ A few hours
- □ A few days
- □ Almost always

63. On a scale of 0 (no pain) to 10 (pain as bad as you can imagine), how intense was your pain...

	0	1	2	3	4	5	6	7	8	9	10
On average	□	□	□	□	□	□	□	□	□	□	□
At its worst	□	□	□	□	□	□	□	□	□	□	□
At its least	□	□	□	□	□	□	□	□	□	□	□

66. Did your musculoskeletal discomfort or pain cause you difficulty in doing any of the following:

	No difficulty	Mild difficulty	Moderate difficulty	Severe difficulty
Using your usual technique for playing your instrument	□	□	□	□
Holding your musical instrument as well as you would like	□	□	□	□
Playing your instrument as well as you would like	□	□	□	□
Spending your usual amount of time playing your instrument	□	□	□	□

67. On a scale of 0 (does not interfere) to 10 (completely interferes), how much does your pain affect...

	0	1	2	3	4	5	6	7	8	9	10
Your mood	□	□	□	□	□	□	□	□	□	□	□
Your enjoyment of life	□	□	□	□	□	□	□	□	□	□	□

184. Were you seen by a medical professional for your musculoskeletal discomfort or pain?
- □ No
- □ Yes

This Question is Conditionally Shown if: (184 = Yes)
185. What type of medical professional did you see for your musculoskeletal discomfort or pain? *Select all that apply.*
- □ Medic
- □ Physician's Assistant (PA)
- □ Nurse
- □ Physician/Doctor
- □ Physical Therapist
- □ Other _____

This Question is Conditionally Shown if: (184 = Yes)
186. Were you placed on temporary profile for your musculoskeletal discomfort or pain?
- □ No
- □ Yes

This Question is Conditionally Shown if: (186 = Yes)
187. How many days were you placed on temporary profile for your musculoskeletal discomfort or pain?

_____

188. What impact does your musculoskeletal discomfort or pain currently have on your job duties and physical activity?

	No impact	Little impact	Some impact	Significant impact	Unable to perform duties as assigned
Impact on job	□	□	□	□	□
Impact on physical activity	□	□	□	□	□

83. Where do you usually get your medical care?
- □ Rader Health Clinic (Ft. Myer)
- □ Walter Reed Army Medical Center
- □ DeWitt Army Community Hospital (Ft. Belvoir)
- □ Kimbrough Army Health Center
- □ 3rd Infantry Regimental Aid Station/Troop Clinic
- □ Other military medical facility _____
- □ Civilian medical facility _____

84. How satisfied are you with the quality of the medical care you have received at the medical facility?

	Completely satisfied	Reasonably satisfied	Borderline	Moderately dissatisfied	Extremely dissatisfied
Satisfaction with medical care quality	□	□	□	□	□

85. To reduce the possibility of injury, what two aspects of your job would you change (if any)?
Primary change _____
Secondary change _____

Respiratory Conditions

55. In the past year, have you experienced any persistent respiratory conditions? These might include coughing, shortness of breath, wheezing, or chest pressure.
□ No
□ Yes

This Question is Conditionally Shown if: (55 = Yes)
56. What are your respiratory issues? *Select all that apply.*
□ Coughing
□ Shortness of breath
□ Wheezing
□ Chest pressure
□ Other _____

197. In the past year, have you been prescribed an inhaler?
□ No
□ Yes

Hearing

86. To what degree are you concerned about hearing loss from what you do in the U.S. Army Band?

	Extremely concerned	Very concerned	Somewhat concerned	A little concerned	Not concerned
Concern about hearing loss	□	□	□	□	□

87. Do you take more than one aspirin a day on a regular basis?
- □ No
- □ Yes

111. Do you experience ringing in the ears (tinnitus)?
- □ No
- □ Yes

This Question is Conditionally Shown if: (111 = Yes)
112. How often do you experience ringing in the ears (tinnitus)?
- □ Daily
- □ Weekly
- □ Monthly
- □ Less often than monthly

This Question is Conditionally Shown if: (111 = Yes)
113. Do you experience ringing in the ears (tinnitus) following rehearsals or performances?
- □ No
- □ Yes

This Question is Conditionally Shown if: (113 = Yes)
114. How often do you experience ringing in the ears (tinnitus) following rehearsals or performances?
- □ Daily
- □ Weekly
- □ Monthly
- □ Less often than monthly

115. Do you experience muffled or dull hearing following noisy recreational activities?
- □ No
- □ Yes

This Question is Conditionally Shown if: (115 = Yes)
116. How often do you experience muffled or dull hearing following noisy recreational activities?
- □ Daily
- □ Weekly
- □ Monthly
- □ Less often than monthly

117. Do you experience muffled or dull hearing following rehearsals or performances?
- □ No
- □ Yes

This Question is Conditionally Shown if: (117 = Yes)
118. How often do you experience muffled or dull hearing following rehearsals or performances?
- □ Daily
- □ Weekly
- □ Monthly
- □ Less often than monthly

210. Do you have trouble understanding speech when background noise is present?
- □ No
- □ Yes

211. Do you have hearing loss?
- □ No
- □ Yes

This Question is Conditionally Shown if: (211 = Yes)
212. Does your hearing loss have a negative impact on your ability to perform?
- □ No
- □ Yes

119. Do you use hearing protection?
- □ No
- □ Yes

This Question is Conditionally Shown if: (119 = Yes)
209. Do you know how much hearing protection your hearing protector provides? (Noise Reduction Rating (NRR) or Personal Attenuation Rating (PAR))
- □ No
- □ Yes _____

This Question is Conditionally Shown if: (119 = Yes)
88. During what circumstances do you use hearing protection?

	Always	Sometimes	Never	Not Applicable
Firing weapons	□	□	□	□
Using loud machinery (e.g., lawnmowers, drills, saws)	□	□	□	□
At recreational events	□	□	□	□
While practicing, rehearsing, or performing	□	□	□	□
Other circumstances	□	□	□	□

This Question is Conditionally Shown if: (88 (A) [Other circumstances] = Always OR88 (A) [Other circumstances] = Sometimes)
120. During what other circumstance do you use hearing protection?
_____

This Question is Conditionally Hidden if: (119 = No)
121. What type of hearing protection do you use? *Select all that apply.*
□ Foam
□ Triple flange
□ Quad flange
□ Custom molded
□ Combat Arms Earplugs (CAE)
□ BattlePlugs
□ SureFire
□ Musician Earplugs
□ Muffs
□ Electronic Hearing Protection (plugs or muffs)
□ Other _____

89. Would you use a hearing protector that not only protected your hearing, but also enhanced your ability to hear others and monitor your performance?
□ No
□ Yes

Rehearsing, Practicing, and Performing with your Instrument

13. Your primary musical instrument is the one you use for most U.S. Army Band functions. What is your **primary** musical instrument?

- □ Flute/piccolo
- □ Oboe
- □ Clarinet
- □ Saxophone
- □ Bassoon
- □ Trombone
- □ Tuba
- □ Vocalist
- □ French horn
- □ Trumpet
- □ Euphonium
- □ Percussion
- □ Guitar
- □ Bass guitar
- □ Piano/keyboard
- □ Violin
- □ Viola
- □ Cello
- □ String Bass
- □ Accordion
- □ Fife
- □ Bugle
- □ Conductor
- □ Music production

14. How many years have you been playing your **primary** musical instrument?

Years _____

15. How many days per week did you rehearse, practice, and/or perform with your **primary** musical instrument in the last year, **on average** (including U.S. Army Band activities and elsewhere)?

Days _____

16. On days when you rehearsed, practiced, and/or performed with your **primary** musical instrument in the last year, how long did you play per day, **on average**?

Hours _____
Minutes _____

213. When playing your **primary** musical instrument, what percentage of effort is required from each hand? *Percentages should add to 100%.*

Left _____
Right _____

17. Do you play other musical instruments besides your primary instrument?
- □ No
- □ Yes

This Page is Conditionally Shown if: (17 = Yes)
128. Did you play/practice with this instrument instead of or in addition to your primary instrument?
- □ Instead of primary instrument
- □ In addition to primary instrument

18. What are the other instrument(s)? *Select all that apply.*
- □ Flute/piccolo
- □ Oboe
- □ Clarinet
- □ Saxophone
- □ Bassoon
- □ Trombone
- □ Tuba
- □ Vocalist
- □ French horn
- □ Trumpet
- □ Euphonium
- □ Percussion
- □ Guitar
- □ Bass guitar
- □ Piano/keyboard
- □ Violin
- □ Viola
- □ Cello
- □ String Bass
- □ Accordion
- □ Fife
- □ Bugle
- □ Conductor
- □ Music production

129. How many years have you been playing your **other** musical instrument?
Years _____

19. How many days per week did you rehearse, practice, and/or perform with your **other** musical instrument(s) in the last year, **on average** (including U.S. Army Band activities and elsewhere)?
Days _____

20. On days when you rehearsed, practiced, and/or performed with your **other** musical instrument(s) in the last year, how long did you play per day, **on average**?
Hours _____
Minutes _____

214. When playing your **other** musical instrument(s), what percentage of effort is required from each hand? *Percentages should add to 100%.*
Left _____
Right _____

200. In the past year, how many of each type of Army Band performance have you participated in? *Please enter 0 where appropriate.*
Scheduled performances _____
Funerals _____
Retirement ceremonies _____
Parades _____
Other events _____

This Question is Conditionally Shown if: (200 (Other events) > "0")
199. What other types of Band performances have you participated in?
_____

This Page is Conditionally Shown if: (91 (SIGNATURE OF PARTICIPANT) ≠)
21. How much time per day did you spend **standing** when you rehearsed, practiced, or performed, **on average, within the last year**?
Hours _____
Minutes _____

22. What percentage of the time did you spend **standing** when you rehearsed, practiced, or performed, **on average, within the last year**?
% _____

23. How much time per day did you spend **marching** when you rehearsed, practiced, or performed, **on average, within the last year**?
Hours _____
Minutes _____

24. What percentage of the time did you spend **marching** when you rehearsed, practiced, or performed, **on average, within the last year**?
% _____

130. How much time per day did you spend **sitting** when you rehearsed, practiced, or performed, **on average, within the last year**?
Hours _____
Minutes _____

131. What percentage of the time did you spend **sitting** when you rehearsed, practiced, or performed, **on average, within the last year**?

% _____

31. How much time per week did you spend loading and unloading instruments or equipment and/or setting up and tearing down for performances, **on average**, within the last year?

Hours _____

Minutes _____

This Question is Conditionally Shown if: (Q31 ≠ "1")

132. What do you typically move while loading, unloading, setting up, or tearing down? *Select all that apply.*

- □ Instrument(s) in case
- □ Instrument(s) without case
- □ Equipment _____

This Question is Conditionally Shown if: (132 (Instrument(s) in case) = Selected)

133. Which instrument(s) in cases? *Select all that apply.*

- □ Flute/piccolo
- □ Oboe
- □ Clarinet
- □ Saxophone
- □ Bassoon
- □ Trombone
- □ Tuba
- □ French horn
- □ Trumpet
- □ Euphonium
- □ Percussion
- □ Guitar
- □ Bass guitar
- □ Piano/keyboard
- □ Violin
- □ Viola
- □ Cello
- □ String Bass
- □ Accordion
- □ Fife
- □ Bugle

This Question is Conditionally Shown if: (132 (Instrument(s) in case) = Selected)

134. Do any of the instrument cases have wheels?

- □ No
- □ Yes
- □ Sometimes

This Question is Conditionally Shown if: (132 (Instrument(s) in case) = Selected)
135. Do the instrument cases have handles?
- □ No
- □ Yes
- □ Sometimes

This Question is Conditionally Shown if: (132 (Instrument(s) without case) = Selected)
136. Which instrument(s) without cases? *Select all that apply.*
- □ Flute/piccolo
- □ Oboe
- □ Clarinet
- □ Saxophone
- □ Bassoon
- □ Trombone
- □ Tuba
- □ Vocalist
- □ French horn
- □ Trumpet
- □ Euphonium
- □ Percussion
- □ Guitar
- □ Bass guitar
- □ Piano/keyboard
- □ Violin
- □ Viola
- □ Cello
- □ String Bass
- □ Accordion
- □ Fife
- □ Bugle

This Question is Conditionally Shown if: (Q31 ≠ "1")
137. On a scale of 0 (easy to do/no physical exertion) to 10 (extremely difficult/requires maximum physical effort), how much effort is required to load, unload, set up, and tear down instruments and equipment **on average**?

	0	1	2	3	4	5	6	7	8	9	10
Physical effort	□	□	□	□	□	□	□	□	□	□	□

This Question is Conditionally Shown if: (Q31 ≠ "1")
138. How many times per week do you lift, lower, push, or pull equipment that weighs greater than 51 pounds?
- □ 0-10 times
- □ 11-20 times
- □ 21-30 times
- □ 31-40 times
- □ 41-50 times
- □ More than 50 times

This Question is Conditionally Shown if: (Q31 ≠ "1")
98. When loading, unloading, setting up, or tearing down, do you currently use any footwear designed to enhance comfort or reduce pain?
- □ No
- □ Yes

This Question is Conditionally Shown if: (98 = Yes)
32. When loading, unloading, setting up, or tearing down, what footwear do you currently wear that is designed to enhance comfort or reduce pain? *Select all that apply.*
- □ Shoes with added support
- □ Socks with added support
- □ Insoles/orthotic inserts
- □ Other _____

This Question is Conditionally Shown if: (Q31 ≠ "1")
30. Do you utilize any handling equipment to assist with loading, unloading, or carrying heavy instruments and equipment?
- □ No
- □ Yes

This Question is Conditionally Shown if: (30 = Yes)
33. What kind of equipment? *Select all that apply.*
- □ Hydraulic ramp on truck
- □ Dolly
- □ Carts
- □ Power equipment mover
- □ Other _____

25. Did you have any problems with the uniforms or shoes you wore for performances in the last year?
- □ No
- □ Yes

This Question is Conditionally Shown if: (25 = Yes)
26. What were the problems with the uniforms or shoes? *Select all that apply.*
- □ Ill-fitting shoes
- □ Uncomfortable shoes
- □ Ill-fitting uniforms
- □ Uncomfortable uniforms
- □ Other _____

94. When rehearsing, practicing, or performing, do you currently use any footwear designed to enhance comfort or reduce pain?
- □ No
- □ Yes

This Question is Conditionally Shown if: (94 = Yes)
28. What footwear do you currently use to enhance comfort or reduce pain? *Select all that apply.*
- □ Shoes with added support
- □ Socks with added support
- □ Insoles/orthotic inserts
- □ Other _____

29. On average, how often do you replace the shoes that you use for practices, rehearsals, or performances?
- □ 1-6 months
- □ 7-12 months
- □ 1-1.5 years
- □ 1.6-2 years
- □ 2-3 years
- □ More than 3 years

Exercise and Sports

Aerobic exercise is defined as moderate-intensity cardiorespiratory activity that increases your heart rate and breathing. Examples include running, walking, swimming, and team sports.

35. How many days per week did you perform **aerobic exercise** in the last year, **on average**?
- □ None
- □ Less than 1 day/week
- □ 1 day/week
- □ 2 days/week
- □ 3 days/week
- □ 4 days/week
- □ 5 days/week
- □ 6 days/week
- □ 7 days/week

This Question is Conditionally Hidden if: (35 = None)
34. On days when you performed **aerobic exercise** in the last year, how long did you exercise, **on average**?
- □ None
- □ Less than 15 minutes
- □ 15-30 minutes
- □ 31-45 minutes
- □ 46-60 minutes
- □ More than 60 minutes

Strength training includes use of free weights, body weight exercises, weight machines, and resistance bands to induce muscular contraction.

36. How many days per week did you perform **strength training** exercises in the last year, **on average**?
- □ None
- □ Less than 1 day/week
- □ 1 day/week
- □ 2 days/week
- □ 3 days/week
- □ 4 days/week
- □ 5 days/week
- □ 6 days/week
- □ 7 days/week

This Question is Conditionally Hidden if: (36 = None)
37. On days when you performed **strength training** exercises in the last year, how long did you exercise, **on average**?
- □ None
- □ Less than 15 minutes
- □ 15-30 minutes
- □ 31-45 minutes
- □ 46-60 minutes
- □ More than 60 minutes

38. How many days per week did you participate in **sports** or recreation activities in the last year, **on average**?
- □ None
- □ Less than 1 day/week
- □ 1 day/week
- □ 2 days/week
- □ 3 days/week
- □ 4 days/week
- □ 5 days/week
- □ 6 days/week
- □ 7 days/week

This Question is Conditionally Hidden if: (38 = None)
223. On days when you participated in **sports or recreational activities** in the last year, how long did you exercise, **on average**?
- □ None
- □ Less than 15 minutes
- □ 15-30 minutes
- □ 31-45 minutes
- □ 46-60 minutes
- □ More than 60 minutes

This Question is Conditionally Hidden if: (38 = None)
39. Which sport(s) did you play or which recreational activity did you do? *Select all that apply.*
- □ Football (touch or tackle)
- □ Basketball
- □ Soccer
- □ Baseball/Softball
- □ Volleyball
- □ Snowboarding/Skiing
- □ Hiking
- □ Running
- □ Weight lifting
- □ Swimming
- □ Gym fitness classes
- □ Exercise videos
- □ Other _____

Other physical activity can include: gardening, home repair, hunting, fishing, wood cutting, etc.

40. How many days per week did you perform **other physical activity** in the last year, **on average**?
- □ None
- □ Less than 1 day/week
- □ 1 day/week
- □ 2 days/week
- □ 3 days/week
- □ 4 days/week
- □ 5 days/week
- □ 6 days/week
- □ 7 days/week

This Question is Conditionally Shown if: (40 ≠ None)
41. Please describe other physical activity.

_____
_____
_____

This Question is Conditionally Shown if: (40 ≠ None)

42. On days that you performed **other physical activity** in the last year, how long did you participate, **on average**?

- □ Less than 15 minutes
- □ 15-30 minutes
- □ 31-45 minutes
- □ 46-60 minutes
- □ 61-120 minutes (1-2 hours)
- □ 121-180 minutes (2-3 hours)
- □ 181-240 minutes (3-4 hours)
- □ 241-300 minutes (4-5 hours)
- □ More than 300 minutes (more than 5 hours)

43. Overall, how would you rate yourself as to the amount of physical activity you perform, compared to others of your age and sex?

	Much more active	Somewhat more active	About the same	Somewhat less active	Much less active
Overall physical activity	□	□	□	□	□

Sleep

54. <u>In the past month</u>, how many hours of actual sleep did you get at night **on average**? (This may be different than the number of hours you spent in bed.)

	1	2	3	4	5	6	7	8	9	10	11	12
Hours of sleep on average	□	□	□	□	□	□	□	□	□	□	□	□

Tobacco Use

51. Which statement best describes your cigarette smoking habits?

- □ I have never been a smoker
- □ I quit less than 6 months ago
- □ I quit 6 months to 1 year ago
- □ I quit more than 1 year ago
- □ I smoke fewer than 10 cigarettes per day
- □ I smoke 11-20 cigarettes per day
- □ I smoke more than 20 cigarettes per day

52. Which statement best describes your use of smokeless tobacco (e.g., chewing, dipping, or pinching)?

- □ I have never used smokeless tobacco
- □ I quit less than 6 months ago
- □ I quit 6 months to 1 year ago
- □ I quit more than 1 year ago
- □ I use smokeless tobacco one time per day or less
- □ I use smokeless tobacco 2-4 times per day
- □ I use smokeless tobacco 5-10 times per day
- □ I use smokeless tobacco more than 10 times per day

53. Which statement best describes your use of e-cigarettes/vaping?

- □ I have never used e-cigarettes
- □ I quit less than 6 months ago
- □ I quit 6 months to 1 year ago
- □ I quit more than 1 year ago
- □ Less than once per week
- □ Once per week
- □ 2-5 times per week
- □ Every day or almost every day

This Question is Conditionally Shown if: (53 = Less than once per week OR53 = Once per week OR53 = 2-5 times per week OR53 = Every day or almost every day)

99. What cigarette/vaping method do you use? *Select all that apply.*

- □ Disposable electronic cigarettes
- □ Vaping device (reusable)
- □ Other _____

This Page is Conditionally Shown if: (99 (Disposable electronic cigarettes) = Selected OR99 (Vaping device (reusable)) = Selected OR99 (Other) = Selected)

This Question is Conditionally Shown if: (99 (Disposable electronic cigarettes) = Selected)

100. How many brands of disposable electronic cigarettes do you typically use?

- □ 1
- □ 2
- □ 3
- □ More than 3

This Question is Conditionally Shown if: (100 = 1)
101. What is your brand preference for disposable electronic cigarettes? *Enter "I do not know" if applicable.*

Brand name
Brand 1 *(preferred brand)* _____

Nicotine concentration
Brand 1 *(preferred brand)* _____

Flavor
Brand 1 *(preferred brand)* _____

This Question is Conditionally Shown if: (100 = 2)
158. What are your brand preferences for disposable electronic cigarettes? *Enter "I do not know" if applicable.*

Brand name
Brand 1 *(preferred brand)* _____

Brand 2 _____

Nicotine concentration
Brand 1 *(preferred brand)* _____

Brand 2 _____

Flavor
Brand 1 *(preferred brand)* _____

Brand 2 _____

This Question is Conditionally Shown if: (100 ≥ 3)
159. What are your brand preferences for disposable electronic cigarettes? *Enter "I do not know" if applicable.*

Brand name
Brand 1 *(preferred brand)* _____

Brand 2 _____

Brand 3 _____

Nicotine concentration
Brand 1 *(preferred brand)* _____

Brand 2 _____

Brand 3 _____

Flavor
Brand 1 *(preferred brand)* _____

Brand 2 _____

Brand 3 _____

This Question is Conditionally Shown if: (99 (Disposable electronic cigarettes) = Selected)
102. On days when you use disposable electronic cigarettes, how many times per day do you use disposable electronic cigarettes?
- □ Once per day
- □ 2-3 times per day
- □ 4 or more times per day

This Question is Conditionally Shown if: (99 (Vaping device (reusable)) = Selected)
103. How many brands of nicotine "juice" do you typically use with your reusable vaping device?
- □ 1
- □ 2
- □ 3
- □ More than 3

This Question is Conditionally Shown if: (103 = 1)
104. What is your brand preference for nicotine "juice" with your reusable vaping device? *Enter "I do not know" if applicable.*

Brand name
Brand 1 *(preferred brand)* _____

Nicotine concentration
Brand 1 *(preferred brand)* _____

Flavor
Brand 1 *(preferred brand)* _____

This Question is Conditionally Shown if: (103 = 2)
160. What are your brand preferences for nicotine "juice" with your reusable vaping device? *Enter "I do not know" if applicable.*

Brand name
Brand 1 *(preferred brand)* _____

Brand 2 _____

Nicotine concentration
Brand 1 *(preferred brand)* _____

Brand 2 _____

Flavor
Brand 1 *(preferred brand)* _____

Brand 2 _____

This Question is Conditionally Shown if: (103 ≥ 3)
161. What are your brand preferences for nicotine "juice" with your reusable vaping device? *Enter "I do not know" if applicable.*

Brand name
Brand 1 *(preferred brand)* _____
Brand 2 _____
Brand 3 _____

Nicotine concentration
Brand 1 *(preferred brand)* _____
Brand 2 _____
Brand 3 _____

Flavor
Brand 1 *(preferred brand)* _____
Brand 2 _____
Brand 3 _____

This Question is Conditionally Shown if: (99 (Vaping device (reusable)) = Selected)
105. How many brands of vaping devices do you typically use?
□ 1
□ 2
□ 3
□ More than 3

This Question is Conditionally Shown if: (105 = 1)
106. What is your brand preference for vaping device? *Enter "I do not know" if applicable.*
Brand 1 *(preferred brand)* _____

This Question is Conditionally Shown if: (105 = 2)
162. What are your brand preferences for vaping device? *Enter "I do not know" if applicable.*
Brand 1 *(preferred brand)* _____
Brand 2 _____

This Question is Conditionally Shown if: (105 ≥ 3)
163. What are your brand preferences for vaping device? *Enter "I do not know" if applicable.*
Brand 1 *(preferred brand)* _____
Brand 2 _____
Brand 3 _____

This Question is Conditionally Shown if: (99 (Vaping device (reusable)) = Selected)
107. On days when you use a reusable vaping device, how many times per day do you use a reusable vaping device?
□ Once per day
□ 2–3 times per day
□ 4 or more times per day

This Question is Conditionally Shown if: (99 (Vaping device (reusable)) = Selected)
108. When you use a reusable vaping device, do you use different nicotine concentrations each time?
□ Yes
□ No
□ I do not know

This Question is Conditionally Shown if: (99 (Vaping device (reusable)) = Selected)
109. What bottle size (millileters) of nicotine "juice" do you normally buy?
□ Enter millileters _____
□ I do not know

This Question is Conditionally Shown if: (99 (Vaping device (reusable)) = Selected)
110. On average, how long does the bottle last you?
□ 1 day
□ 3–5 days
□ 1 week
□ 1–2 weeks
□ 2 weeks or more

This Question is Conditionally Shown if: (99 (Other) = Selected)
191. How many brands of other electronic cigarettes/vaping devices do you typically use?
□ 1
□ 2
□ 3
□ More than 3

This Question is Conditionally Shown if: (191 = 1)
192. What is your brand preference for other electronic cigarette/vaping device? *Enter "I do not know" if applicable.*
Brand 1 *(preferred brand)* _____

This Question is Conditionally Shown if: (191 = 2)
193. What are your brand preferences for other electronic cigarettes/vaping devices? *Enter "I do not know" if applicable.*
Brand 1 *(preferred brand)* _____
Brand 2 _____

This Question is Conditionally Shown if: (191 ≥ 3)
194. What are your brand preferences for other electronic cigarettes/vaping devices? *Enter "I do not know" if applicable.*
Brand 1 *(preferred brand)* _____
Brand 2 _____
Brand 3 _____

This Question is Conditionally Shown if: (99 (Other) = Selected)
195. On days when you use other electronic cigarettes/vaping devices, how many times per day do you use other electronic cigarettes/vaping devices?
□ Once per day
□ 2-3 times per day
□ 4 or more times per day

Wellness

Wellness involves care of the body through diet, exercise, and rest.
44. While in music school, did you receive instruction on wellness?
□ No
□ Yes
□ N/A, did not attend music school

45. While in the Army, have you received instruction on wellness?
□ No
□ Yes

46. Are you aware of the Army Wellness Center?
□ No
□ Yes

This Question is Conditionally Shown if: (46 = Yes)
47. Have you visited an Army Wellness Center?
□ No
□ Yes

48. If you are identified as being at a greater risk of injury based on your physical fitness and/or body composition, would you be interested in visiting the Army Wellness Center for education about improving your risk?
- □ No
- □ Yes

49. Do you usually feel relaxed while you play?
- □ No
- □ Yes

50. When playing, do you deliberately work on relaxing your muscles?
- □ No
- □ Yes

201. Since joining the Army, has your overall health...
- □ Remained the same
- □ Improved
- □ Declined

202. Since joining your current unit, has your overall health...
- □ Remained the same
- □ Improved
- □ Declined

207. On a scale of 0-10, please rate how much you agree or disagree with the following statement:

I will be able to achieve most of the goals that I have set for myself.
- □ 0 (strongly disagree)
- □ 1
- □ 2
- □ 3
- □ 4
- □ 5 (neither agree or disagree)
- □ 6
- □ 7
- □ 8
- □ 9
- □ 10 (strongly agree)

208. On a scale of 0-10, please rate how much you agree or disagree with the following statement:
When facing difficult tasks, I am certain I will accomplish them.
- □ 0 (strongly disagree)
- □ 1
- □ 2

□ 3
□ 4
□ 5 (neither agree or disagree)
□ 6
□ 7
□ 8
□ 9
□ 10 (strongly agree)

Additional Comments

90. Please provide any additional comments or thoughts, then click "Next" in order to submit the survey.

_____
_____
_____

Thank you for completing this survey. Please click "Next" in order to submit the survey.

Appendix D

Personal Characteristics, Additional Data and Comparison to Similar Units

Table D-1. APFT Performance by Sex and Unit, Band Members[a] and Comparison Unit[b]

APFT Event	TUSAB Mean ± SD	TUSAFB Mean ± SD	OGFDC Mean ± SD	Medical Battalion Mean ± SD	All Band Members Mean ± SD
Push-ups (repetitions)					
Men	52 ± 15	51 ± 12	58 ± 13	61 ± 15	53 ± 14
Women	32 ± 12	30 ± 9	31 ± 9	37 ± 9	31 ± 10
Sit-ups (repetitions)					
Men	56 ± 15	61 ± 13	65 ± 12	66 ± 12	59 ± 14
Women	57 ± 13	61 ± 14	63 ± 9	67 ± 12	60 ± 13
2-mile run time (minutes and seconds)					
Men	16:03 ± 1:20	15:38 ± 1:35	14:54 ± 1:27	15.30 ± 1.38	15:37 ± 1:32
Women	18:59 ± 1:39	18:50 ± 1:36	17:28 ± 1:48	17.20 ± 0.49	18:37 ± 1:44

Legend:
APFT = Army Physical Fitness Test
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard Deviation
Notes:
Source: DTMS, 2019
[a] 445 band members had recent training records, but some were not included in the averages if they were exempt from an event.
[b] Comparison unit was WBHKAA Medical Battalion, n=101; some were not included in the averages if they were exempt from an event.

Table D-2. Self-reported APFT Performance by Sex and Unit (n=221 Survey Respondents)

APFT Event	TUSAB Mean ± SD	TUSAFB Mean ± SD	OGFDC Mean ± SD	All Band Members Mean ± SD
Push-ups (Repetitions)				
Men	47 ± 23	49 ± 18	54 ± 17	49 ± 20
Women	22 ± 18	30 ± 12	28 ± 14	27 ± 16
Sit-ups (Repetitions)				
Men	55 ± 19	56 ± 24	51 ± 29	55 ± 22
Women	53 ± 20	53 ± 25	59 ± 23	54 ± 22
2-mile Run Time (Minutes And Seconds)				
Men	15:46 ± 1:32	15:47 ± 1:22	14:47 ± 1:14	15:40 ± 1:26
Women	19:04 ± 1:38	18:42 ± 1:42	17:40 ± 2:26	18:43 ± 1:46

Legend:
APFT = Army Physical Fitness Test
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard Deviation

Table D-3. Average Duration of Physical Activity Participation by Unit (Minutes per Week, Past Year) (n=194 Survey Respondents)

Variable	TUSAB Mean ± SD	TUSAFB Mean ± SD	OGFDC Mean ± SD	All Band Members Mean ± SD
Aerobic Exercise	147.4 ± 93.4	154.9 ± 87.1	164.3 ± 90.9	157.2 ± 90.0
Strength Training	85.4 ± 74.6	107.9 ± 88.3	82.5 ± 48.9	95.2 ± 79.3
Sports	60.8 ± 95.0	41.8 ± 56.3	57.4 ± 90.3	51.9 ± 79.3

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard Deviation

Table D-4. Average BMI, Percent Obese, and Body Fat Percentage, Band Members and Comparison Units[a] (Men)[b]

Body Composition	TUSAB n=199	TUSAFB n=105	OGFDC n=46	West Point Band n=70	Medical Battalion n=69	All Army AC n=458k	All Band Members n=350
Average BMI ± SD (kg/m^2)	26.6 ± 3.4	26.3 ± 2.6	25.6 ± 2.5	24.9 ± 2.5	27.2 ± 3.6	27	26.3 ± 3.1
Percent Obese	15%	10%	4%	3%	22%	17%	12%
Body Fat Percentage ± SD	22.3 ± 4.3	22.0 ± 3.7	21.0 ± 3.3	*	*	*	22.1 ± 3.9

Legend:
BMI = body mass index
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard Deviation
* = Data not available
Notes:
[a] Comparison units were WCTRAA West Point Band, WBHKAA Medical Battalion, All Army (U.S. Army Public Health Center, 2019b)
[b] For band members: If DTMS data were not available for MDW/NCR 42S, MRAT data were used. If neither were available, self-reported survey data were used. For comparison units, DTMS data were used.

Table D-5. Average BMI, Body Fat Percentage, and Percent Obese, Band Members and Comparison Units[§] (Women)*

Body Composition	TUSAB n=54	TUSAFB n=37	OGFDC n=22	West Point Band n=9	Medical Battalion n=18	All Army AC n=72k	All Band Members n=113
Average BMI ± SD (kg/m^2)	24.1 ± 3.3	25.0 ± 3.8	23.7 ± 1.6	24.5 ± 2.2	24.1 ± 2.7	24.6	24.3 ± 3.2
Percent Obese	7%	11%	0%	0%	0%	9%	7%
Body Fat Percentage ± SD	31.8 ± 4.5	32.6 ± 5.3	31.3 ± 2.6	*	*	*	32.0 ± 4.5

Legend:
BMI = body mass index
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard Deviation
* = Data not available
Notes:
[a] Comparison units were WCTRAA West Point Band and WBHKAA Medical Battalion, All Army (U.S. Army Public Health Center, 2019b)
[b] For band members: If DTMS data were not available for MDW/NCR 42S, MRAT data were used. If neither were available, self-reported survey data were used. For comparison units, DTMS data were used.

Table D-6. Distribution of BMI by Category (n=463 Band Members with Height/Weight Data)

Category		TUSAB n=255 n (%)	TUSAFB n=142 n (%)	OGFDC n=68 n (%)	All Band Members n=463 n (%)
BMI (kg/m^2) categories	< 18.5 (underweight)	0 (-)	1 (0.7)	0 (-)	1 (0.2)
	18.5-24.9 (normal)	107 (41.9)	48 (33.8)	35 (51.4)	190 (41.0)
	25.0-27.5 (low overweight)	77 (30.2)	61 (43.0)	23 (33.8)	161 (35.8)
	27.6-29.9 (high overweight)	34 (13.3)	18 (12.7)	8 (11.8)	60 (13.0)
	≥ 30 (obese)	35 (13.7)	14 (9.9)	2 (2.9)	51 (11.0)
	Mean ± SD	26.0 ± 3.5	25.9 ± 3.0	25.0 ± 2.4	25.6 ± 3.3

Legend:
BMI = body mass index
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
kg/m^2 = kilograms per square meter
SD = Standard deviation
Note:
Source: if DTMS data were not available for MDW/NCR 42S, MRAT data were used. If neither were available, self-reported survey data were used.

Table D-7. Body Composition by Sex

	Training Records (N=299)		Medical Readiness Data (N=457)		Survey Responses (N=219)	
Body Composition	**Men n=225**	**Women n=74**	**Men n=340**	**Women n=107**	**Men n=156**	**Women n=63**
Average BMI ± SD (kg/m^2)	26.2 ± 2.8	24.2 ± 2.9	26.4 ± 3.5	24.5 ± 3.3	25.8 ± 2.7	23.8 ± 3.0
Percent Obese	8%	9%	13%	8%	6%	6%
Body Fat Percentage ± SD	21.8 ± 2.3	31.1 ± 4.0	22.1 ± 3.9	32.1 ± 4.4	21.4 ± 3.7	31.3 ± 4.4

Legend:
BMI = body mass index
SD = Standard deviation
kg/m^2 = kilograms per square meter
Note:
Sources: DTMS, 2019; MRAT, 2019; APHC Survey, 2018

Appendix E

Health Behaviors, Additional Data

Table E-1. Hours of Sleep per Night by Unit (n=193 Survey Respondents)

Hours of sleep	TUSAB	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
0 hours	0 (-)	0 (-)	0 (-)	0 (-)
1 hour	0 (-)	0 (-)	0 (-)	0 (-)
2 hours	0 (-)	0 (-)	0 (-)	0 (-)
3 hours	0 (-)	1 (1.1)	0 (-)	1 (0.5)
4 hours	0 (-)	0 (-)	0 (-)	0 (-)
5 hours	7 (8.3)	8 (9.2)	1 (4.5)	16 (8.3)
6 hours	30 (35.7)	28 (32.2)	10 (45.5)	68 (35.2)
7 hours	36 (42.9)	33 (37.9)	11 (50.0)	80 (41.5)
8 hours	10 (11.9)	16 (18.4)	0 (-)	26 (13.5)
>8 hours	1 (1.2)	1 (1.1)	0 (-)	2 (1.0)
Mean ± SD	6.6 ± 0.8	6.7 ± 1.0	6.5 ± 0.6	6.6 ± 0.9

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard deviation

Table E-2. Tobacco Use by Unit (n=193 Survey Respondents)

	Variable	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Cigarette Smoking	Never	74 (88.1)	77 (88.5)	22 (100)	173 (89.6)
	Quit less than 6 months ago	1 (1.2)	1 (1.1)	0 (-)	2 (1.0)
	Quit more than 1 year ago	8 (9.5)	7 (8.0)	0 (-)	15 (7.8)
	Smoke fewer than 10 cigarettes per day	1 (1.2)	2 (2.3)	0 (-)	3 (1.6)
Smokeless tobacco use	Never	82 (97.6)	84 (96.6)	22 (100)	188 (97.4)
	Quit more than 1 year ago	2 (2.4)	3 (3.4)	0 (-)	5 (2.6)
E-cigarette use/vaping	Never	80 (95.2)	82 (94.3)	22 (100)	184 (95.3)
	Quit less than 6 months ago	2 (2.4)	1 (1.1)	0 (-)	3 (1.6)
	Quit 6 months to 1 year ago	1 (1.2)	0 (-)	0 (-)	1 (0.5)
	Quit more than 1 year ago	0 (-)	1 (1.1)	0 (-)	1 (0.5)
	Vape every day/almost every day	1 (1.2)	3 (3.4)	0 (-)	4 (2.1)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table E-3. Wellness Instruction by Unit (n=193 Survey Respondents)

Variable	Category	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
During music school	Yes	17 (20.7)	27 (31.0)	7 (29.2)	51 (26.4)
	No	61 (74.4)	51 (58.6)	13 (40.9)	125 (64.8)
	N/A, did not go to music school	4 (4.9)	9 (10.3)	4 (16.7)	17 (8.8)
While in the Army	Yes	56 (68.3)	83 (95.4)	21 (87.5)	160 (82.9)
	No	26 (31.7)	4 (4.6)	3 (12.5)	33 (17.1)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
N/A = not applicable

Table E-4. Relaxation by Unit (n=168 Survey Respondents, Instrumentalists Only)

Variable	Category	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Feel relaxed while playing	Yes	53 (77.8)	59 (78.7)	22 (91.7)	134 (79.8)
	No	16 (22.2)	16 (21.3)	2 (8.3)	34 (20.2)
Do you deliberately relax muscles while playing	Yes	57 (82.6)	57 (76.0)	16 (66.7)	130 (77.4)
	No	12 (17.4)	18 (24.0)	8 (33.3)	38 (22.6)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table E-5. Confidence in Goals by Unit (Scale of 0–10, n=193 Survey Respondents)

Variable	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
0				0(-)
1				0(-)
2				0(-)
3	0 (-)	1 (1.1)	1 (4.5)	2 (1.0)
4	3 (3.60	1 (1.1)	0 (-)	4 (2.1)
5 (Neither agree nor disagree)	8 (9.6)	5 (5.7)	1 (4.5)	14 (7.3)
6	4 (4.8)	5 (5.7)	1 (4.5)	10 (5.2)
7	10 (12.0)	17 (19.5)	5 (22.7)	32 (16.7)
8	30 (36.1)	19 (21.8)	4 (18.2)	53 (27.6)
9	12 (14.5)	18 (20.7)	6 (27.3)	36 (18.8)
10 (strongly agree)	16 (19.3)	21 (24.1)	4 (18.2)	41 (21.4)
Mean ± SD	7.9 ± 1.6	8.1 ± 1.6	8.0 ± 1.8	8.0 ± 1.6

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard deviation

Table E-6. Confidence in Task Performance (Scale of 1–10, n=193 Survey Respondents)

Variable	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
1 (strongly disagree)	0 (-)	0 (-)	1 (4.5)	1 (0.5)
2	0 (-)	0 (-)	0 (-)	0 (-)
3	1 (1.2)	1 (1.1)	0 (-)	2 (1.0)
4	0 (-)	0 (-)	0 (-)	0 (-)
5 (Neither agree nor disagree)	4 (4.8)	7 (8.0)	2 (9.1)	13 (6.7)
6	6 (7.1)	4 (4.6)	0 (-)	10 (5.2)
7	10 (11.9)	14 (16.1)	4 (18.2)	28 (14.5)
8	28 (33.3)	24 (27.6)	6 (27.3)	58 (30.1)
9	14 (16.7)	20 (23.0)	7 (31.8)	41 (21.2)
10 (strongly agree)	21 (25.0)	17 (19.5)	2 (9.1)	40 (20.7)
Mean ± SD	8.2 ± 1.5	8.1 ± 1.5	7.7 ± 2.0	8.1 ± 1.6

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
SD = Standard deviation

Appendix F
Occupational Safety Behaviors, Additional Data

Table F-1. Use of Supportive Footwear, While Playing, by Unit (n=194 Survey Respondents)

Variable	Category	TUSAB n (%)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (%)
Wear supportive footwear	Yes	26 (30.6)	10 (11.5)	11 (50.0)	47 (24.2)
	No	59 (69.4)	77 (88.5)	11 (50.0)	147 (75.8)
Frequency of replacing shoes	1–6 months	20 (23.5)	4 (4.6)	0 (-)	24 (12.4)
	7–12 months	17 (20.0)	16 (18.4)	2 (9.1)	35 (18.0)
	1.1–1.5 years	17 (20.0)	31 (35.6)	1 (4.5)	49 (25.3)
	1.6–2 years	5 (5.9)	11 (12.6)	3 (13.6)	19 (9.8)
	2–3 years	14 (16.5)	19 (21.8)	8 (36.4)	41 (21.1)
	≥ 3 years	12 (14.1)	6 (6.9)	8 936.4)	26 (13.4)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table F-2. Supportive Footwear Types, While Playing, By Unit (n=47 Survey Respondents Who Reported Special Footwear Use)

Variable	Category	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Shoes with added support	Yes	6 (23.1)	4 (40.0)	1 (9.1)	11 (23.4)
	No	20 (76.9)	6 (60.0)	10 (90.9)	36 (76.6)
Socks with added support	Yes	5 (19.2)	0 (-)	2 (18.2)	7 (14.9)
	No	21 (80.8)	10 (100)	9 (81.8)	40 (85.1)
Insoles or orthotics	Yes	22 (84.6)	8 (80.0)	11 (100)	41 (87.2)
	No	4 (15.4)	2 (20.0)	0 (-)	6 (12.8)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table F-3. Use of Supportive Footwear, While Loading/Unloading, by Unit (n=194 Survey Respondents)

Variable	Category	TUSAB n (% total)	TUSAFB n (% total)	OGFDC n (% total)	All Band Members n (% total)
Wear footwear with additional support	Yes	12 (14.1)	10 (11.5)	4 (18.2)	26 (13.4)
	No	73 (85.9)	77 (88.5)	18 (81.8)	168 (86.6)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table F-4. Supportive Footwear Types, While Loading/Unloading, by Unit (n=26 Survey Respondents Who Reported Special Footwear Use)

Variable	Category	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Shoes with added support while load/unload, set-up/tear down	Yes	7 (58.3)	7 (70.0)	1 (925.0)	15 (57.7)
	No	5 (41.7)	3 (30.0)	3 (75.0)	11 (42.3)
Socks with added support while load/unload, set-up/tear down	Yes	4 (33.3)	0 (-)	0 (-)	4 (15.4)
	No	8 (66.7)	10 (100)	4 (100)	22 (84.6)
Orthotics/insoles while load/unload, set-up/tear down	Yes	7 (58.3)	5 (50.0)	4 (100)	16 (61.5)
	No	5 (41.7)	5 (50.0)	0 (-)	10 (38.5)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table F-5. Utilization of Lifting Equipment by Unit (n=194 Survey Respondents)

Variable	Category	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Utilize handling equipment to assist load/unload, set-up/tear down	Yes	12 (14.1)	16 (18.4)	2 (9.1)	30 (15.5)
	No	73 (85.9)	71 (81.6)	20 (90.9)	164 (84.5)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table F-6. Types of Lifting Equipment by Unit (n=30 Survey Respondents Who Indicated Use of Handling Equipment)

Variable	Category	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Utilize hydraulic ramp on truck to assist load/unload, set-up/tear down	Yes	4 (33.3)	12 (75.0)	1 (50.0)	17 (56.7)
	No	8 (66.7)	4 (25.0)	1 (50.0)	13 (43.3)
Utilize dolly to assist load/unload, set-up/tear down	Yes	7 (58.3)	6 (37.5)	1 (50.0)	14 (46.7)
	No	5 (41.7)	10 (62.5)	1 (50.00	16 (53.3)
Utilize cart to assist load/unload, set-up/tear down	Yes	10 (83.3)	8 (50.0)	0 (-)	18 (60.0)
	No	2 (16.7)	8 (50.0)	2 (100)	12 (40.0)
Utilize power equipment mover to assist load/unload, set-up/tear down	Yes	2 (16.7)	0 (-)	0 (-)	2 (6.7)
	No	10 (83.3)	16 (100)	2 (100)	28 (93.3)
Utilize other equipment[a] to assist load/unload, set-up/tear down	Yes	2 (16.7)	5 (31.3)	0 (-)	7 (23.3)
	No	10 (83.3)	11 (68.8)	2 (100)	23 (76.7)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Note:
[a] Other equipment includes: forklift, grip gloves, pallet jack, and ramps.

Table F-7. Frequency of Hearing Protection Use During Activities by Unit (n=156 Hearing Protection Users)

Circumstance for Hearing Protection Use	Frequency	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
When firing weapons	Always	42 (53.8)	31 (50.8)	9 (52.9)	82 (52.6)
	Sometimes	6 (7.7)	3 (4.9)	0 (-)	9 (5.8)
	Never	0 (-)	1 (1.6)	0 (-)	1 (0.6)
	Not applicable	30 (38.5)	26 (42.6)	8 (47.1)	64 (41.0)
When using loud machinery	Always	37 (47.4)	26 (42.6)	9 (52.9)	72 (46.2)
	Sometimes	15 (19.2)	16 (26.2)	3 (17.6)	34 (21.8)
	Never	5 (6.4)	6 (9.8)	1 (5.9)	12 (7.7)
	Not applicable	21 (26.9)	13 (21.3)	4 (23.5)	38 (24.4)
During recreational events	Always	4 (5.1)	3 (4.9)	0 (-)	7 (4.5)
	Sometimes	48 (61.5)	31 (50.8)	9 (52.9)	88 (56.4)
	Never	16 (20.5)	18 (29.5)	6 (35.3)	40 (25.6)
	Not applicable	10 (12.8)	9 (14.8)	2 (11.8)	21 (13.5)
While practicing, rehearsing, or performing	Always	10 (12.8)	4 (6.6)	4 (23.5)	18 (11.5)
	Sometimes	57 (73.1)	49 (80.3)	13 (76.5)	119 (76.3)
	Never	9 (11.5)	8 (13.1)	0 (-)	17 (10.9)
	Not applicable	2 (2.6)	0 (-)	0 (-)	2 (1.3)
Other circumstances	Always	4 (5.1)	1 (1.6)	2 (11.8)	7 (4.5)
	Sometimes	34 (43.6)	39 (63.9)	8 (47.1)	81 (51.9)
	Never	9 (11.5)	5 (8.2)	1 (5.9)	15 (9.6)
	Not applicable	31 (39.7)	16 (26.2)	6 (35.3)	53 (34.0)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Table F-8. Types of Hearing Protection Used by Unit* (n=156 Survey Respondent Hearing Protection Users)

Hearing Protection Type	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Foam	72 (46.2)	40 (25.6)	16 (10.3)	128 (82.1)
Musician earplugs	31 (19.9)	48 (30.8)	11 (7.1)	90 (57.7)
Custom molded	22 (14.1)	31 (19.9)	10 (6.4)	63 (40.4)
Triple flange	29 (18.6)	21 (13.5)	5 (3.2)	55 (35.3)
Muffs	17 (10.9)	16 (10.3)	2 (1.3)	35 (22.4)
Electronic hearing protection	6 (3.8)	0 (-)	1 (0.6)	7 (4.5)
Combat Army earplugs	1 (0.6)	3 (1.9)	0 (-)	4 (2.6)
Quad flange	0 (-)	2 (1.3)	0 (-)	2 (1.3)
BattlePlugs	1 (1.1)	0 (-)	0 (-)	1 (0.6)
SureFire	0 (-)	1 (0.6)	0 (-)	1 (0.6)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
*Survey respondents were asked to select all that applied

Table F-9. Future Use of Hearing Protection by Unit (n=204 Hearing Protection Users)

Future Hearing Protection	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)
Yes, would use a hearing protector that not only protected hearing but also enhanced ability to hear others and monitor performance	78 (86.7)	80 (87.9)	22 (100)	180 (88.7)
No, would not use	12 (13.3)	11 (12.1)	0 (-)	23 (11.3)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Appendix G

Health Outcomes, Additional Data

Table G-1. Injury Encounter Metrics, with Comparisons to Similar Populations[a]

Metric	TUSAB n=255	TUSAFB n=142	OGFDC n=68	West Point Band[b] n=91	Medical and Legal Professionals[b] n=88	All Army[b] n=465k	All Band Members n=465
Crude rate of new medical record injuries per 1,000 person-years	1,370	1,037	1,776	824	1,450	1,821	1,328
Percent with at least one medical encounter for injury	65.5	51.4	62.8	41.8	57.9	56.0	59.8
Total medical encounters for injuries (including follow-up visits and long-term effects of MSK injuries)	1,127	410	382	204	563	2.2 million	1,919

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Notes:
[a] Comparison units were WCTRAA West Point Band, WBHKAA Medical Battalion, W46FAA Defense Legal Services, and All Army (U.S. Army Public Health Center, 2019b),
[b] Data for comparison units are based on January-December 2017 data
Data source: Defense Medical Surveillance System

Table G-2. Adjusted Injury Encounter Rates, with Comparison to Army, October 2017-December 2018 (n=465 Band Members)

Metric	TUSAB n=255	TUSAFB n=142	OGFDC n=68	All Army[a] n=465k	All Band Members n=465
Age- and sex-adjusted rate of new medical record injuries per 1,000 person-years	1,052	1,900	1,104	1,821	1,216

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Note:
[a] Data for All Army are based on 2017 data
Data source: Defense Medical Surveillance System

Table G-3. TUSAB Incident Injuries by Causal Energy Type, October 2017–December 2018 (n=431 Injuries)

Injury/Energy Subcategory	Total n (% total)
All Mechanical Energy Injuries	**424 (98.4)**
Cumulative (micro-traumatic)	*323 (74.9)*
- Cumulative non-MSK	24 (5.6)
- Cumulative MSK	299 (69.4)
Acute (traumatic)	*101 (23.4)*
- Acute non-MSK	51 (11.8)
- Acute MSK	50 (11.6)
All Cumulative and Acute MSK	*349 (81.0)*
All MSK +select neurological	*361 (83.8)*
All Poisons	**0 (-)**
All Environmental	**0 (-)**
All Nonenvironmenal	**2 (0.5)**
Thermal (burns)	2 (0.5)
All Other	**5 (1.2)**
Operative/Medical Complications	4 (0.9)
Unspecified/Multiple Injuries	1 (0.2)
All Injuries	**431 (100)**

Legend:
TUSAB = The U.S. Army Band; MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-4. TUSAFB Incident Injuries by Causal Energy Type, October 2017–December 2018 (n=184 Injuries)

Injury/Energy Subcategory	Total n (%total)
All Mechanical Energy Injuries	**179 (97.3)**
Cumulative (micro-traumatic)	*146 (79.3)*
- Cumulative non-MSK	6 (3.3)
- Cumulative MSK	140 (76.1)
Acute (traumatic)	*33 (17.9)*
- Acute non-MSK	16 (8.7)
- Acute MSK	17 (9.2)
All Cumulative and Acute MSK	*157 (85.3)*
All MSK +select neurological	*157 (85.3)*
All Poisons	**0 (-)**
All Environmental	**0 (-)**
All Nonenvironmenal	**3 (1.6)**
Thermal (burns)	3 (1.6)
All Other	**2 (1.1)**
Operative/Medical Complications	1 (0.5)
Unspecified/Multiple Injuries	1 (0.5)
All Injuries	**184 (100)**

Legend:
TUSAFB = The U.S. Army Field Band; MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-5. OGFDC Incident Injuries by Causal Energy Type, October 2017–December 2018 (n=151 Injuries)

Injury/Energy Subcategory	Total n (% total)
All Mechanical Energy Injuries	**150 (99.3)**
Cumulative (micro-traumatic)	*116 (76.8)*
- Cumulative non-MSK	8 (5.3)
- Cumulative MSK	108 (71.5)
Acute (traumatic)	*34 (22.5)*
- Acute non-MSK	14 (9.3)
- Acute MSK	20 (13.2)
All Cumulative and Acute MSK	*128 (84.8)*
All MSK +select neurological	*133 (88.1)*
All Poisons	**0 (-)**
All Environmental	**1 (0.7)**
Thermal/radiant	1 (0.7)
All Nonenvironmenal	**0 (-)**
All Other	**0 (-)**
All Injuries	**151 (100)**

Legend:
OGFDC = Old Guard Fife and Drum Corps
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-6. TUSAB Incident Injuries by Type and Body Region, October 2017–December 2018, Men (n=316 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	67	0	0	0	61	1	81	0	1	211 (66.8)
Tissue Damage, Other	4	13	0	0	0	0	2	0	0	0	0	0	19 (6.0)
Fracture	0	0	0	0	0	0	10	0	5	0	0	0	15 (4.7)
Open Wound	3	0	0	0	0	0	11	0	1	0	0	0	15 (4.7)
Nerve	0	0	0	7	0	0	6	0	2	0	0	0	15 (4.7)
Sprain/Joint Damage	0	0	1	0	0	0	4	0	7	0	0	0	12 (3.8)
Strain/Tear	0	0	2	0	1	0	4	3	0	0	1	0	11 (3.5)
Contusion/Superficial	2	0	0	0	1	0	3	0	4	0	0	0	10 (3.2)
Other	0	0	0	0	0	0	0	0	0	0	4	0	4 (1.3)
Dislocation	0	0	0	0	0	0	2	0	0	0	0	0	2 (0.6)
Internal Organ	1	0	0	0	0	0	0	0	0	0	0	0	1 (0.3)
Burn	0	0	0	0	0	0	2	0	0	0	1	0	1 (0.3)
Total n (%)	10 (3.2)	13 (4.1)	3 (0.1)	74 (23.4)	2 (0.3)	0 (-)	44 (13.9)	64 (20.3)	20 (6.3)	81 (25.6)	6 (1.9)	1 (0.3)	316 (100)

Legend:
TUSAB = The U.S. Army Band
A = acute
C = cumulative
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-7. TUSAB Incident Injuries by Type and Body Region, October 2017–December 2018, Women (n=115 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	24	0	0	0	26	0	33	0	3	86 (74.8)
Sprain/Joint Damage	0	0	0	0	0	0	3	0	5	0	0	0	8 (7.0)
Nerve	0	0	0	2	0	0	1	2	3	0	0	0	8 (7.0)
Fracture	1	0	0	0	0	0	0	0	1	0	0	0	2 (1.7)
Open Wound	1	0	0	0	0	0	0	0	1	0	0	0	2 (1.7)
Contusion/Superficial	0	0	0	0	0	0	1	0	1	0	0	0	2 (1.7)
Tissue Damage, Other	2	0	0	0	0	0	0	0	0	0	0	0	2 (1.7)
Strain/Tear	0	0	0	0	0	0	0	0	1	0	0	0	1 (0.8)
Crush	0	0	0	0	0	0	1	0	0	0	0	0	1 (0.8)
Internal Organ	1	0	0	0	0	0	0	0	0	0	0	0	1 (0.8)
Burn	0	0	0	0	0	0	0	0	0	0	1	0	1 (0.8)
Other	0	0	0	0	0	0	2	0	0	0	1	0	1 (0.8)
Total n (%)	5 (4.3)	0 (-)	0 (-)	26 (22.6)	0 (-)	0 (-)	8 (7.0)	28 (24.3)	12 (10.4)	33 (28.7)	2 (1.7)	3 (2.6)	115 (100)

Legend:
TUSAB = The U.S. Army Band
A = acute
C = cumulative
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-8. TUSAFB Incident Injuries by Type and Body Region, October 2017–December 2018, Men (n=142 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	31	0	0	1	33	2	39	0	3	109 (76.8)
Strain/Tear	2	0	0	0	0	0	2	3	5	0	0	0	12 (8.5)
Tissue Damage, Other	1	3	0	0	0	0	1	0	0	0	0	0	5 (3.5)
Contusion/Superficial	2	0	0	0	0	0	0	0	2	0	0	0	4 (2.8)
Open Wound	0	0	0	0	0	0	1	0	2	0	0	0	2 (1.4)
Burn	0	0	0	0	0	0	0	0	0	0	3	0	2 (1.4)
Sprain/Joint Damage	0	0	1	0	0	0	0	0	1	0	0	0	2 (1.4)
Nerve	0	0	0	2	0	0	0	0	0	0	0	0	1 (0.7)
Internal Organ	1	0	0	0	0	0	0	0	0	0	0	0	1 (0.7)
Other	0	0	0	0	0	0	0	0	0	0	0	0	1 (0.7)
Total n (%)	6 (4.2)	3 (2.1)	1 (0.7)	26 (23.2)	0 (-)	0 (-)	5 (3.5)	28 (24.3)	12 (8.5)	39 (27.4)	3 (2.1)	3 (2.1)	142 (100)

Legend:
TUSAFB = The U.S. Army Field Band
A = acute
C = cumulative
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-9. TUSAFB Incident Injuries by Type and Body Region, October 2017–December 2018, Women (n=42 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	4	0	0	0	4	0	20	0	0	28 (66.7)
Fracture	0	0	0	0	0	1	0	0	0	1	0	1	3 (7.1)
Open Wound	0	0	0	0	0	0	3	0	0	0	0	0	3 (7.1)
Strain/Tear	0	0	1	0	0	0	0	0	1	0	0	0	2 (4.8)
Tissue Damage, Other	0	1	1	0	0	0	0	0	0	0	0	0	2 (4.8)
Sprain/Joint Damage	0	0	0	0	1	0	0	0	0	0	0	0	1 (2.3)
Internal Organ	1	0	0	0	0	0	0	0	0	0	0	0	1 (2.3)
Contusion/Superficial	0	0	0	0	0	0	1	0	0	0	0	0	1 (2.3)
Other	0	0	0	0	0	0	0	0	0	0	1	0	1 (2.3)
Total n (%)	1 (2.3)	1 (2.3)	2 (4.8)	4 (9.5)	1 (2.3)	1 (2.3)	4 (9.5)	4 (9.5)	1 (2.3)	21 (50.0)	1 (2.3)	1 (2.3)	42 (100)

Legend:
TUSAFB = The U.S. Army Field Band
A = acute
C = cumulative
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-10. OGFDC Incident Injuries by Type and Body Region, October 2017–December 2018, Men (n=94 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	31	0	0	0	10	0	20	0	0	61 (64.9)
Nerve	0	0	0	4	0	0	3	2	0	0	0	0	9 (9.6)
Sprain/Joint Damage	0	0	0	0	1	0	1	0	3	0	0	0	5 (5.3)
Strain/Tear	2	0	0	0	1	0	0	0	2	0	0	0	5 (5.3)
Fracture	0	0	0	0	0	0	3	0	1	0	0	0	4 (4.3)
Contusion/Superficial	0	0	0	0	1	0	2	0	1	0	0	0	4 (4.3)
Tissue Damage, Other	1	2	0	0	0	0	1	0	0	0	0	0	4 (4.3)
Crush	0	0	0	0	0	0	1	0	0	0	0	0	1 (2.3)
Open Wound	0	0	0	0	0	0	1	0	0	0	0	0	1 (2.3)
Total n (%)	3 (3.2)	2 (2.2)	0 (-)	35 (37.2)	3 (3.2)	0 (-)	12 (12.8)	12 (12.8)	7 (7.4)	20 (47.6)	0 (-)	0 (-)	94 (100)

Legend:
OGFDC = Old Guard Fife and Drum Corps
A = acute
C = cumulative
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-11. OGFDC Incident Injuries by Type and Body Region, October 2017–December 2018, Women (n=57 Injuries)

	Head and Neck		Spine and Back		Torso		Upper Extremity		Lower Extremity		Other/ Unspecified		
	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	A n (%)	C n (%)	Total n (%)
MSK Tissue Damage	0	0	0	21	0	0	0	6	0	18	0	2	47 (82.4)
Sprain/Joint Damage	0	0	0	0	0	0	0	0	3	0	0	0	3 (5.3)
Strain/Tear	1	0	0	0	0	0	0	0	1	0	0	0	2 (3.5)
Nerve	0	0	0	0	0	0	0	0	2	0	0	0	2 (3.5)
Contusion/Superficial	0	0	0	0	1	0	0	0	0	0	0	0	1 (1.8)
Tissue Damage, Other	0	0	1	0	0	0	0	0	0	0	0	0	1 (1.8)
Other	0	0	0	0	0	0	0	0	0	0	1	0	1 (1.8)
Total n (%)	1 (1.8)	0 (-)	1 (1.8)	21 (36.8)	1 (1.8)	0 (-)	0 (-)	6 (10.5)	6 (10.5)	18 (31.6)	1 (1.8)	2 (3.5)	57 (100)

Legend:
OGFDC = Old Guard Fife and Drum Corps
A = acute
C = cumulative
MSK = musculoskeletal
Data source: Defense Medical Surveillance System

Table G-12. TUSAB eProfile Causes of Injury, October 2017–December 2018 (n=104 eProfile Records)

Cause of Injury	Profiles n (%)	Total profile days n (%)	Average profile days
Running	46 (44.2)	1,664 (40.7)	36
Fall / slip / trip	15 (14.4)	645 (15.8)	43
Work tasks[a]	12 (11.5)	535 (13.1)	45
Sports, team or individual	10 (9.6)	477 (11.7)	48
Off duty activities, nonvehicular	8 (7.7)	151 (3.8)	19
Physical training[b]	4 (3.8)	157 (3.7)	39
Combatives / martial arts / fighting	3 (2.9)	111 (2.7)	37
Strength training	3 (2.9)	203 (5.0)	68
Road marching / load carriage	2 (1.9)	120 (2.9)	60
Environment, heat	1 (1.0)	30 (0.7)	30
Total	***104 (100)***	***4,093 (100)***	***39***

Legend:
TUSAB = The U.S. Army Band
Notes:
Data source: eProfile via MRAT point of contact, 2019.
[a] Work tasks includes: lifting, mechanical/repair work, other.
[b] Physical training does not include running or strength training.

Table G-13. TUSAFB eProfile Causes of Injury, October 2017–December 2018 (n=55 eProfile Records)

Cause of Injury	Profiles n (%)	Total profile days n (%)	Average profile days
Running	25 (45.5)	885 (43.0)	35
Strength training	11 (20.0)	316 (15.4)	29
Fall / slip / trip	6 (10.9)	325 (15.8)	54
Sports, team or individual	5 (9.1)	246 (12.0)	49
Physical training[a]	3 (5.5)	73 (3.5)	24
Off duty activities, nonvehicular	2 (3.6)	62 (3.0)	31
Fast rope, parachute	1 (1.8)	90 (4.4)	90
Motor vehicle / motorcycle accident	1 (1.8)	30 (1.5)	30
Work tasks[b]	1 (1.8)	30 (1.5)	30
Total	***55 (100)***	***2,057 (100)***	***37***

Legend:
TUSAFB = The U.S. Army Field Band
Notes:
Data source: eProfile via MRAT POC, 2019.
[a] Physical training does not include running or strength training.
[b] Work tasks includes: lifting, mechanical/repair work, other.

Table G-14. OGFDC eProfile Causes of Injury, October 2017–December 2018 (n=26 eProfile Records)

Cause of Injury	Profiles n (%)	Total profile days n (%)	Average profile days
Work tasks[a]	7 (26.9)	309 (32.5)	44
Fall / slip / trip	7 (26.9)	242 (25.4)	35
Running	5 (19.2)	129 (13.6)	26
Motor vehicle / motorcycle accident	4 (15.4)	62 (6.5)	16
Strength training	2 (7.7)	120 (12.6)	60
Road marching / load carriage	1 (3.8)	90 (9.5)	90
Total	***26 (100)***	***952 (100)***	***37***

Legend:
OGFDC: Old Guard Fife and Drum Corps
Notes:
Data source: eProfile via MRAT POC, 2019
[a] Work tasks includes: lifting, mechanical/repair work, other

Table G-15. Self-reported Most Physically Limiting Injuries, Profiles, and Limited Duty Days, by Injury Type, by Unit (n=176 Injuries)

Injury Type	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Other musculoskeletal discomfort or pain	32 (40.5)	23 (31.5)	10 (41.7)	65 (36.9)	12 (18.5)	41 ± 26
Musculoskeletal tissue damage from repeated use	19 (24.1)	20 (27.4)	4 (16.7)	43 (24.4)	12 (27.9)	119 ± 123
Sudden muscle tissue damage	8 (10.1)	11 (15.1)	4 (16.7)	23 (13.1)	7 (30.4)	40 ± 26
Joint damage (e.g., sprain, tear)	7 (8.9)	9 (12.3)	2 (8.3)	18 (10.2)	6 (33.3)	84 ± 87
Bone fracture	5 (6.3)	3 (4.1)	0 (-)	8 (4.5)	5 (62.5)	42 ± 13
Heat injury	3 (3.8)	1 (1.4)	1 (4.2)	5 (2.8)	0 (-)	N/A
Skin blister	1 (1.3)	3 (4.1)	0 (-)	4 (2.3)	0 (-)	N/A
Other skin surface damage	1 (1.3)	2 (2.7)	1 (4.2)	4 (2.3)	0 (-)	N/A
Poisoning	1 (1.3)	0 (-)	1 (4.2)	2 (1.1)	0 (-)	N/A
Head trauma	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
Hearing injury or loss	0 (-)	1 (1.4)	0 (-)	1 (0.6)	1 (100)	30 ± 0
Nerve damage	1 (1.3)	0 (-)	0 (-)	1 (0.6)	1 (100)	90 ± 0
Cold injury	0 (-)	0 (-)	1 (4.2)	1 (0.6)	0 (-)	N/A
Total	***78 (100)***	***73 (100)***	***24 (100)***	***176 (100)***	***44 (25.0)***	***69 ± 79***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses

Table G-16. Self-reported most Physically Limiting Injuries, Profiles, and Limited Duty Days, by Injured Body Region, by Unit (n=174 Injuries)

Injured Body Region	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Lower back	20 (25.6)	16 (22.5)	9 (36.0)	45 (25.9)	12 (26.7)	52 ± 32
Foot/toe	11 (14.1)	10 (14.1)	2 (8.0)	23 (13.2)	6 (26.1)	133 ± 141
Knee	6 (7.7)	7 (9.9)	2 (8.0)	15 (8.6)	3 (20.0)	35 ± 9
Shoulder	7 (9.0)	7 (9.9)	0 (-)	14 (8.0)	6 (42.9)	68 ± 60
Ankle	5 (6.4)	6 (8.5)	2 (8.0)	13 (7.5)	7 (53.8)	48 ± 30
Wrist	4 (5.1)	6 (8.5)	2 (8.0)	12 (6.9)	0 (-)	N/A
Lower leg	5 (6.4)	1 (1.4)	3 (12.0)	9 (5.2)	2 (22.2)	26 ± 6
Neck	5 (6.4)	1 (1.4)	1 (4.0)	7 (4.0)	1 (14.3)	90 ± 0
Lower arm	4 (5.1)	2 (2.8)	1 (4.0)	7 (4.0)	0 (-)	N/A
Hand/finger	2 (2.6)	5 (7.0)	0 (-)	7 (4.0)	1 (14.3)	60 ± 0
Upper back	3 (3.8)	1 (1.4)	0 (-)	4 (2.3)	0 (-)	N/A
Hip	1 (1.3)	3 (4.2)	0 (-)	4 (2.3)	3 (75)	45 ± 40
Middle back	1 (1.3)	1 (1.4)	1 (4.0)	3 (1.7)	1 (33)	365 ± 0
Face	1 (1.3)	0 (-)	1 (4.0)	2 (1.1)	0 (-)	N/A
Upper arm	0 (-)	2 (2.8)	0 (-)	2 (1.1)	0 (-)	N/A
Chest	0 (-)	1 (1.4)	0 (-)	1 (0.6)	1 (100)	30 ± 0
Elbow	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
Pelvis	0 (-)	1 (1.4)	0 (-)	1 (0.6)	0 (-)	N/A
Upper leg	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
All body (e.g., heat injury)	1 (1.3)	1 (1.4)	1 (4.0)	3 (1.7)	0 (-)	N/A
Total	***78 (100)***	***71 (100)***	***25 (100)***	***174 (100)***	***43 (24.7)***	***70 ± 80***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses

Table G-17. Self-reported Injuries, Profiles, and Limited Duty Days, by Activity, by Unit (n=175 Injuries)

Injury Activity	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Physical training - running	16 (20.3)	14 (19.4)	7 (29.2)	37 (21.1)	18 (40.9)	65 ± 80
Repetitive movements associated with playing	11 (13.9)	8 (11.1)	1 (4.2)	20 (11.4)	4 (20.0)	90 ± 65
Standing while practicing, rehearsing, or performing	14 (17.7)	0 (-)	5 (20.8)	19 (10.9)	2 (10.5)	20 ± 14
Other physical training/sports/recreation (not running or weight training)	5 (6.3)	10 (13.9)	0 (-)	15 (8.6)	3 (20.0)	37 ± 21
Lifting or moving heavy objects (nonband)	7 (8.9)	7 (9.7)	0 (-)	14 (8.0)	2 (14.3)	22 ± 11
Other nonband-related activity	6 (7.6)	4 (5.6)	4 (16.7)	14 (8.0)	4 (28.6)	51 ± 27
Lifting or moving instruments and equipment for band	0 (-)	11 (15.3)	1 (4.2)	12 (6.9)	1 (8.3)	249 ± 0
Marching while practicing, rehearsing, or performing	8 (10.1)	3 (4.2)	1 (4.2)	12 (6.9)	1 (8.3)	90 ± 0
Walking or hiking (not band-related)	1 (1.3)	5 (6.9)	1 (4.2)	7 (4.0)	2 (28.6)	198 ± 237
Physical training - weight training	3 (3.8)	1 (1.4)	2 (8.3)	6 (3.4)	2 (33.3)	45 ± 21
Sitting while practicing, rehearsing, or performing	2 (2.5)	2 (2.8)	1 (4.2)	5 (2.9)	2 (40.0)	75 ± 21
Other band-related activity	3 (3.8)	1 (1.4)	1 (4.2)	5 (2.9)	0 (-)	N/A
Unit road marching with load	1 (1.3)	3 (4.2)	0 (-)	4 (2.3)	1 (25.0)	30 ± 0
Combatives training	2 (2.5)	1 (1.4)	0 (-)	3 (1.7)	1 (33.3)	90 ± 0
Riding or driving in a motorized vehicle (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	1 (100)	14 ± 0
Stepping/climbing (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	0 (-)	N/A
Total	***79 (100)***	***72 (100)***	***24 (100)***	***175 (100)***	***44 (25.1)***	***69 ± 79***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses

Table G-18. Self-reported Most Physically Limiting Injuries, Profiles, and Limited Duty Days, by Injury Mechanism, by Unit (n=175 Injuries)

Injury Mechanism	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Band-related overuse/repetitive activity, band	31 (39.2)	14 (19.4)	7 (29.2)	52 (29.7)	6 (11.5)	82 ± 59
Overuse/repetitive activity (not band-related)	18 (22.8)	21 (29.2)	5 (20.8)	44 (25.1)	12 (27.3)	73 ± 95
Overexertion/over-extension/twisting effort (not band-related)	11 (13.9)	12 (16.7)	4 (16.7)	27 (15.4)	10 (37.0)	39 ± 30
Falling onto object/surface/ground (not band-related)	7 (8.9)	5 (6.9)	1 (4.2)	13 (7.4)	6 (46.2)	53 ± 30
Other mechanism (not band-related)	3 (3.8)	5 (6.9)	2 (8.3)	10 (5.7)	5 (50.0)	106 ± 145
Overexertion/over-extension/twisting effort, band	1 (1.3)	4 (5.6)	1 (4.1)	6 (3.4)	1 (16.7)	60 ± 0
Other band-related mechanism	0 (-)	5 (6.9)	0 (-)	5 (2.9)	1 (20.0)	249 ± 0
Contact with an object/surface (not band-related)	0 (-)	2 (2.8)	2 (8.3)	4 (2.3)	1 (25.0)	30 ± 0
Band-related contact with an object/surface	1 (1.3)	2 (2.8)	0 (-)	3 (1.7)	0 (-)	N/A
Band-related falling onto object/surface/ground	3 (3.8)	0 (-)	0 (-)	3 (1.7)	2 (66.7)	45 ± 21
Band-related heat injury	2 (2.5)	0 (-)	1 (4.2)	3 (1.7)	0 (-)	N/A
Cut or puncture by sharp tool, object, or instrument (not band-related)	0 (-)	1 (1.4)	0 (-)	1 (0.6)	0 (-)	N/A
Burn (not band-related)	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
Heat injury (not band-related)	0 (-)	1 (1.3)	0 (-)	1 (0.6)	0 (-)	N/A
Insect bite (not band-related)	1 (1.3)	0 (-)	0 (-)	1 (0.6)	0 (-)	N/A
Band-related cold injury	0 (-)	0 (-)	1 (4.2)	1 (0.6)	0 (-)	N/A
Total	***79 (100)***	***72 (100)***	***24 (100)***	***175 (100)***	***44 (25.1)***	***69 ± 79***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable

Data source: survey responses

Table G-19. Self-reported Band-related Injuries, Profiles, and Limited Duty Days, by Injury Type, by Unit (n=94 Injuries)

Injury Type	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Other musculoskeletal discomfort or pain	23 (46.9)	11 (35.5)	7 (50.0)	41 (43.6)	4 (9.8)	63 ± 38
Musculoskeletal tissue damage from repeated use	14 (28.6)	10 (32.3)	2 (14.3)	26 (27.7)	5 (19.2)	78 ± 62
Sudden muscle tissue damage	3 (6.1)	5 (16.1)	1 (7.1)	9 (9.6)	0 (-)	N/A
Heat injury	3 (6.1)	0 (-)	2 (14.3)	5 (5.3)	0 (-)	N/A
Joint damage (e.g., sprain, tear)	1 (2.0)	3 (9.7)	0 (-)	4 (4.3)	2 (50.0)	140 ± 155
Skin blister	2 (4.1)	0 (-)	1 (7.1)	3 (3.2)	0 (-)	N/A
Head trauma	1 (2.0)	0 (-)	0 (-)	1 (1.1)	0 (-)	N/A
Hearing injury or loss	1 (2.0)	0 (-)	0 (-)	1 (1.1)	0 (-)	N/A
Nerve damage	1 (2.0)	0 (-)	0 (-)	1 (1.1)	1 (100)	90 ± 0
Burn corrosion	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
Other skin surface damage	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
Cold injury	0 (-)	0 (-)	1 (7.1)	1 (1.1)	0 (-)	N/A
Total	***49 (100)***	***31 (100)***	***14 (100)***	***94 (100)***	***12 (12.8)***	***84 ± 69***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses
Note: Band-related injuries were identified by survey responses

Table G-20. Self-reported Band-related Injuries, Profiles, and Limited Duty Days, by Injured Body Part, by Unit (n=94 Injuries)

Injured Body Part	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Lower back	11 (22.9)	7 (22.6)	8 (57.1)	26 (28.0)	4 (15.4)	63 ± 38
Foot/toe	11 (22.9)	3 (9.7)	1 (7.1)	15 (16.1)	2 (13.3)	170 ± 112
Shoulder	5 (10.4)	5 (16.1)	0 (-)	10 (10.8)	5 (50.0)	66 ± 65
Lower arm	4 (8.3)	4 (12.9)	2 (14.3)	10 (10.8)	0 (-)	N/A
Wrist	6 (12.5)	2 (6.5)	1 (7.1)	9 (9.7)	0 (-)	N/A
Hand/finger	3 (6.9)	3 (9.7)	0 (-)	6 (6.5)	0 (-)	N/A
Neck	2 (4.2)	1 (3.2)	1 (7.1)	4 (4.3)	1 (25.0)	90 ± 0
Face	1 (2.1)	0 (-)	1 (7.1)	2 (2.2)	0 (-)	N/A
Upper back	2 (4.2)	0 (-)	0 (-)	2 (2.2)	0 (-)	N/A
Ankle	0 (-)	2 (6.5)	0 (-)	2 (2.2)	0 (-)	N/A
Ear	1 (2.1)	0 (-)	0 (-)	1 (1.1)	0 (-)	N/A
Teeth/jaw	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
Middle back	1 (2.1)	0 (-)	0 (-)	1 (1.1)	0 (-)	N/A
Upper arm	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
Knee	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
Lower leg	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
All body (e.g., heat injury)	1 (2.1)	0 (-)	0 (-)	1 (1.1)	0 (-)	N/A
Unspecified	1 (2.1)	0 (-)	0 (-)	1 (1.1)	0 (-)	N/A
Total	***49 (100)***	***31 (100)***	***14 (100)***	***94 (100)***	***12 (12.9)***	***84 ± 69***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses
Note: Band-related injuries were identified by survey responses

Table G-21. Self-reported Band-related Injuries, Profiles, and Limited Duty Days, by Activity, by Unit (n=94 Injuries)

Injury Activity	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD ± SD (All)
Repetitive movements associated with playing your instrument	13 (26.5)	12 (38.7)	2 (14.3)	27 (28.7)	4 (14.8)	90 ± 65
Standing while practicing, rehearsing, or performing	14 (28.6)	0 (-)	7 (50.0)	21 (22.3)	2 (9.5)	20 ± 14
Marching while practicing, rehearsing, or performing	11 (22.4)	3 (9.7)	2 (14.3)	16 (17.0)	2 (12.5)	90 ± 0
Lifting or moving instruments and equipment for performances or rehearsals	1 (2.0)	11 (35.5)	1 (7.1)	13 (13.8)	1 (7.7)	249 ± 0
Sitting while practicing, rehearing, or performing	6 (12.2)	2 (6.5)	1 (7.1)	9 (9.6)	2 (22.2)	75 ± 21
Other	4 (8.2)	3 (9.7)	1 (7.1)	8 (8.5)	1 (12.5)	30 ± 0
Total	***49 (100)***	***31 (100)***	***14 (100)***	***94 (100)***	***12 (12.8)***	***84 ± 69***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
Data source: survey responses
Note: Band-related injuries were identified by survey responses

Table G-22. Self-reported Band-related Injuries, Profiles, and Limited Duty Days, by Mechanism, by Unit (n=94 Injuries)

Injury Cause	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (% of injuries) (All)	Average LDD± SD (All)
Overuse/repetitive activity	40 (81.6)	18 (58.1)	10 (71.4)	68 (72.3)	7 (10.3)	83 ± 54
Overexertion/over-extension/twisting effort	2 (4.1)	4 (12.9)	1 (7.1)	7 (7.4)	2 (28.6)	45 ± 21
Contact an object/surface	2 (4.1)	2 (6.5)	0 (-)	4 (4.3)	0 (-)	N/A
Heat injury	2 (4.1)	0 (-)	2 (14.3)	4 (4.3)	0 (-)	N/A
Falling onto an object/surface/ground	3 (6.1)	0 (-)	0 (-)	3 (3.2)	2 (66.7)	45 ± 21
Burn	0 (-)	1 (3.2)	0 (-)	1 (1.1)	0 (-)	N/A
Cold injury	0 (-)	0 (-)	1 (7.1)	1 (1.1)	0 (-)	N/A
Other	0 (-)	6 (19.4)	0 (-)	6 (6.4)	1 (16.7)	249 ± 0
Total	***49 (100)***	***31 (100)***	***14 (100)***	***94 (100)***	***12 (12.8)***	***84 ± 69***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses
Note: Band-related injuries were identified by survey responses

Table G-23. Self-reported MSK Pain Injuries, Profiles, and Limited Duty Days, by Injured Body Region, by Unit (n= 368 Injuries among 127 Soldiers)

Injured Body Region	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (%) (All)	Average LDD± SD (All)
Lower back	27 (45.0)	19 (38.0)	10 (59.0)	56 (44.0)	7 (12.5)	61 ± 36
Shoulder	17 (28.3)	13 (26.0)	5 (29.4)	35 (27.6)	5 (14.3)	57 ± 69
Wrist	16 (26.7)	15 (30.0)	3 (17.6)	34 (26.8)	2 (5.9)	60 ± 42
Foot	19 (31.7)	9 (18.0)	5 (29.4)	33 (26.0)	4 (12.1)	70 ± 40
Neck	15 (25.0)	10 (20.0)	3 (17.6)	28 (22.0)	3 (10.7)	100 ± 75
Hand	8 (13.3)	15 (30.0)	5 (29.4)	28 (22.0)	4 (14.3)	40 ± 35
Upper back	12 (20.0)	8 (16.0)	5 (29.4)	25 (19.7)	2 (8.0)	228 ± 194
Knee	11 (18.3)	10 (20.0)	3 (17.6)	24 (18.9)	6 (25.0)	49 ± 34
Lower arm	10 (16.7)	7 (14.0)	1 (5.9)	18 (14.2)	2 (11.1)	135 ± 64
Middle back	6 (10.0)	7 (14.0)	4 (23.5)	17 (13.4)	1 (5.9)	365 ± 0
Ankle	6 (10.0)	5 (10.0)	2 (11.8)	13 (10.2)	2 (15.4)	60 ± 42
Elbow	4 (6.7)	5 (10.0)	2 (11.8)	11 (8.7)	1 (9.1)	180 ± 0
Hip	5 (8.3)	2 (4.0)	2 (11.8)	9 (7.1)	3 (33.3)	50 ± 35
Teeth	4 (6.7)	3 (6.0)	1 (5.9)	8 (6.3)	0 (-)	N/A
Lower leg	3 (5.0)	3 (6.0)	2 (11.8)	8 (6.3)	3 (37.5)	50 ± 35
Upper arm	1 (1.7)	5 (10.0)	1 (5.9)	7 (5.5)	2 (28.6)	135 ± 64
Pelvis	2 (3.3)	1 (2.0)	2 (11.8)	5 (3.9)	2 (40.0)	60 ± 42
Upper leg	0 (-)	2 (4.0)	3 (17.6)	5 (3.9)	4 (80.0)	56 ± 40
Head	1 (1.7)	0 (-)	1 (5.9)	2 (1.6)	1 (50.0)	30 ± 0
Chest	0 (-)	1 (2.0)	0 (-)	1 (0.8)	0 (-)	N/A
Abdomen	0 (-)	1 (2.0)	0 (-)	1 (0.8)	0 (-)	N/A
Total	***167 (45.4)***	***141 (38.3)***	***60 (16.3)***	***368 (100)***	***54 (14.7)***	***78***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
LDD = Limited duty days
SD = Standard deviation
N/A = not applicable
Data source: survey responses
Note: MSK Pain injuries were identified by survey responses

Table G-24. Self-reported MSK Pain Injuries, Profiles, and Limited Duty Days, by Activity, by Unit (n=181 Injuries among 97 Soldiers)

Injury Activity	TUSAB n (%)	TUSAFB n (%)	OGFDC n (%)	All Band Members n (%)	Temporary profiles n (%) (All)	Average LDD ± SD (All)
Repetitive movements while playing instrument(s)	26 (56.5)	20 (57.1)	6 (37.5)	52 (53.6)	9 (17.3)	93 ± 115
Standing while practicing, rehearsing, or performing	24 (52.2)	9 (25.7)	11 (68.8)	44 (45.4)	8 (18.2)	76 ± 54
Marching	27 (58.7)	5 (14.3)	7 (43.8)	39 (40.2)	8 (20.5)	65 ± 36
Loading/unloading/setting up/tearing down for performances	3 (6.5)	16 (45.7)	3 (18.8)	22 (22.7)	3 (13.6)	212 ± 140
Sitting for extended periods	10 (21.7)	5 (14.3)	2 (12.5)	17 (17.5)	3 (17.6)	100 ± 75
Other	1 (2.2)	4 (11.4)	2 (12.5)	7 (7.2)	1 (14.3)	90 ± 0
Total	***91 (50.3)***	***58 (32.6)***	***31 (17.1)***	***181 (100)***	***32 (17.7)***	***94***

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife And Drum Corps
LDD = Limited Duty Days
SD = Standard Deviation
Data source: survey responses
Note: MSK Pain injuries were identified by survey responses

Table G-25. Concern about Hearing Loss, by Unit (n=204 Survey Respondents)

	TUSAB n=90 n (%)	TUSAFB n=92 n (%)	OGFDC n=22 n (%)	All Band Members n=204 n (%)
Extremely concerned	9 (10.0)	11 (12.0)	2 (9.1)	22 (10.8)
Very concerned	26 (28.9)	12 (13.0)	8 (36.4)	46 (22.5)
Somewhat concerned	37 (41.1)	43 (46.7)	3 (13.6)	83 (40.7)
A little concerned	10 (11.1)	19 (20.7)	9 (40.9)	38 (18.6)
Not concerned	8 (8.9)	7 (7.6)	0 (-)	15 (7.4)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife And Drum Corps
Data source: survey responses

Table G-26. Self-reported Hearing Issues, by Unit (n=204 Survey Respondents)

	TUSAB n=90 n (%)	TUSAFB n=92 n (%)	OGFDC n=22 n (%)	All Band Members n=204 n (%)
Yes, I have trouble understanding speech when background noise is present	34 (37.8)	39 (42.4)	7 (31.8)	80 (39.2)
Yes, I have hearing loss	26 (28.9)	14 (15.2)	4 (18.2)	44 (21.6)
Hearing loss affects ability to play	9 (10.0)	3 (3.3)	0 (-)	12 (27.3)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Data source: survey responses

Table G-27. Self-reported Ringing in the Ear/Tinnitus, by Unit (n=204 Survey Respondents)

Variable Category		TUSAB n=90 n (%)	TUSAFB n=92 n (%)	OGFDC n=22 n (%)	All Band Members n=204 n (%)
Any tinnitus	Daily	17 (18.9)	12 (13.0)	5 (22.7)	34 (16.7)
	Weekly	13 (14.4)	4 (4.3)	1 (4.5)	18 (8.8)
	Monthly	10 (11.1)	1 (1.1)	2 (9.1)	13 (6.4)
	Less often then monthly	1 (1.1)	9 (9.9)	1 (4.5)	11 (5.4)
	Did not report tinnitus	*49 (54.4)*	*66 (71.7)*	*13 (59.0)*	*128 (62.7)*
Tinnitus following rehearsals or performances	Daily	13 (14.4)	6 (6.5)	3 (13.6)	22 (10.8)
	Weekly	9 (10.0)	5 (5.4)	3 (13.6)	17 (8.3)
	Monthly	6 (6.7)	2 (2.2)	1 (4.5)	9 (4.4)
	Less often then monthly	2 (2.2)	3 (3.3)	1 (4.5)	6 (2.9)
	Did not report tinnitus at these times	*11 (12.2)*	*10 (10.9)*	*1 (4.5)*	*22 (10.8)*

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Data source: survey responses

Table G-28. Self-reported Muffled Hearing, by Unit (n=204 Survey Respondents)

		TUSAB n=90 n (%)	TUSAFB n=92 n (%)	OGFDC n=22 n (%)	All Band Members n=204 n (%)
Muffled hearing following noisy recreational activities	Daily	4 (4.4)	1 (1.1)	0 (-)	5 (2.5)
	Weekly	5 (5.6)	7 (7.6)	2 (9.1)	14 (6.9)
	Monthly	2 (2.2)	4 (4.3)	1 (4.5)	7 (3.4)
	Less often then monthly	7 (7.8)	5 (5.4)	4 (18.2)	16 (7.8)
	Did not report muffled hearing at these times	72 (80.0)	75 (81.5)	15 (68.2)	162 (79.4)
Muffled hearing following rehearsals or performances	Daily	5 (5.6)	2 (2.2)	0 (-)	7 (3.4)
	Weekly	3 (3.3)	7 (7.6)	1 (4.5)	11 (5.4)
	Monthly	8 (8.9)	6 (6.5)	2 (9.1)	16 (7.8)
	Less often then monthly	4 (4.4)	3 (3.3)	0 (-)	7 (3.4)
	Did not report muffled hearing at these times	70 (77.8)	74 (80.4)	19 (86.4)	163 (79.9)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps

Data source: survey responses

Table G-29. Self-reported Persistent Respiratory Conditions, by Unit (n=204 Survey Respondents)[a]

Respiratory Symptom	TUSAB n=90 n (%)	TUSAFB n=92 n (%)	OGFDC n (%)	All Band Members n=204 n (%)
Coughing	10 (11.1)	11 (10.9)	2 (9.1)	23 (11.3)
Wheezing	5 (5.6)	3 (3.3)	0 (-)	8 (3.9)
Shortness of breath	2 (2.2)	4 (4.3)	1 (4.5)	7 (3.4)
Chest pressure	1 (1.1)	3 (3.3)	0 (-)	4 (2.0)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Data source: survey responses
Note:
[a] Survey respondents were asked to select all that applied.

Table G-30. Self-reported Inhaler Prescription within the Past Year, By Unit (n=204 Survey Respondents)

Prescribed Inhaler in Past 12 Months	TUSAB n=90 n (%)	TUSAFB n=92 n (%)	OGFDC n=22 n (%)	All Band Members n=204 n (%)
Yes	7 (7.8)	5 (5.4)	2 (9.1)	14 (6.9)
No	83 (92.2)	86 (94.6)	20 (90.9)	190 (93.1)

Legend:
TUSAB = The U.S. Army Band
TUSAFB = The U.S. Army Field Band
OGFDC = Old Guard Fife and Drum Corps
Data source: survey responses

Appendix H
Univariate Comparisons of Injury Risk from Survey Data

Table H-1. Univariate Comparisons of Risk for Any Injury, Survey Respondents Only

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
Demographics	Sex	Male	352	75	1.00	
		Female	**113**	**84**	**1.12 (1.01–1.24)**	**0.05**
	Age	18–34	156	73	1.00	
		35–44	192	77	1.09 (0.87–1.37)	0.46
		≥45	**117**	**84**	**1.48 (0.99–2.22)**	**0.04**
	Primary instrument group	Administrative/ music production	57	81	1.14 (0.97–1.34)	0.14
		Brass	139	72	1.00	
		Conductor	12	83	1.16 (0.88–1.52)	0.61
		Keys	8	75	1.04 (0.69–1.58)	0.85
		Other leadership	12	83	1.16 (0.88–1.52)	0.61
		Percussion	41	78	1.09 (0.89–1.32)	0.44
		Strings	43	77	1.07 (0.88–1.30)	0.54
		Vocalists	40	78	1.08 (0.89–1.31)	0.49
		Woodwinds	*107*	*82*	*1.14 (1.00–1.31)*	*0.06*
		Unknown	6	50	0.70 (0.31–1.56)	0.25
	Do you play a secondary instrument?	Yes	89	84	1.00	
		No	*112*	*92*	*1.09 (0.98–1.21)*	*0.09*
	Secondary instrument group	Administrative/ music production	6	100	1.42 (1.04–1.93)	0.14
		Brass	17	82	1.00	
		Conductor	3	100	1.42 (1.04–1.93)	0.29
		Keys	38	79	0.96 (0.73–1.26)	0.77
		Percussion	7	100	1.21 (0.97–1.51)	0.25
		Strings	24	79	0.96 (0.71–1.30)	0.80
		Vocalists	3	100	1.42 (1.04–1.93)	0.29
		Woodwinds	20	85	1.03 (0.77–1.38)	0.83
	Primary and secondary instrument same instrument group?	Yes	38	82	1.00	
		No	183	87	1.07 (0.91–1.26)	0.34
	Education – Degree field	Music	170	86	1.00	
		Music and other field	26	92	1.08 (0.95–1.22)	0.37

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
		Other field	9	89	1.04 (0.82–1.31)	0.80
Body fat	Body fat percentage (tertiles)	≤21.48	154	70	1.00	
		21.49–26.06	**155**	**79**	**1.32 (0.98–1.77)**	**0.05**
		≥26.07	**154**	**84**	**1.57 (1.12–2.21)**	**<0.01**
		unknown	2	0	N/A	
APFT performance	Run time (tertiles)	≤15:25	103	64	1.00	
		15:26–16:55	107	72	1.12 (0.93–1.35)	0.22
		≥16:56	**107**	**82**	**1.28 (1.08–1.52)**	**<0.01**
	Push-up repetitions (tertiles)	**≤40**	**152**	**82**	**1.23 (1.07–1.42)**	**<0.01**
		41–54	109	73	1.08 (0.92–1.28)	0.36
		≥55	127	67	1.00	
	Sit-up repetitions (tertiles)	**≤51**	**146**	**85**	**1.29 (1.12–1.48)**	**<0.01**
		52–66	*125*	*75*	*1.14 (0.97–1.34)*	*0.10*
		≥67	132	66	1.00	
Exercise	Aerobic minutes per week	≤112.5	97	89	1.08 (0.93–1.26)	0.30
		112.51–187.5	45	82	1.00	
		≥187.5	52	92	1.12 (0.96–1.31)	0.13
	Strength training minutes per week	≤45	69	91	1.12 (0.97–1.29)	0.12
		45.01–112.50	69	90	1.10 (0.95–1.27)	0.20
		≥112.51	55	82	1.00	
	Sports minutes per week	None	82	83	1.00	
		0.01–52.5	53	89	1.07 (0.93–1.23)	0.36
		≥52.51	**58**	**95**	**1.14 (1.02–1.28)**	**0.03**
Health behaviors	Average hours of sleep per night	≤ 6 hours	85	92	1.08 (0.97–1.19)	0.16
		≥ 7 hours	108	85	1.00	
	Any tobacco use	Yes	24	75	0.96 (0.76–1.22)	0.74
		No	438	78	1.00	
Wellness	Aware of AWC	Yes	152	87	1.00	
		No	41	93	1.07 (0.96–1.19)	0.31
	Visited AWC	*Yes*	*28*	*96*	*1.14 (1.03–1.26)*	*0.10*
		No	124	85	1.00	
	Willing to visit AWC if identified as at risk	Yes	122	89	1.04 (0.93–1.16)	0.48
		No	71	86	1.00	
	Do you usually feel relaxed when you play? (instrumentalists,	Yes	134	84	1.00	
		No	**34**	**97**	**1.15 (1.05–1.26)**	**0.05**

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
	vocalists, conductors only)					
	When playing, do you deliberately work on relaxing your muscles? (instrumentalists, vocalists, conductors only)	Yes	130	86	1.00	
		No	38	89	1.04 (0.91–1.18)	0.59
	I will be able to achieve most of the goals I have set for myself (rate agreement 0-10)	0–5	20	95	1.09 (0.97–1.22)	0.31
		6–10	172	87	1.00	
	When facing difficult tasks, I am certain I will accomplish them (rate agreement 0-10)	0–5	16	94	1.07 (0.93–1.23)	0.47
		6–10	177	88	1.00	
	Respiratory conditions?	**Yes**	**40**	**90**	**1.19 (1.06–1.33)**	**0.04**
		No	425	76	1.00	
Occupational Demands and Occupational Safety Behaviors	Days per week playing primary instrument (instrumentalists, vocalists, conductors only)	0–5 days	66	86	1.01 (0.88–1.17)	0.86
		6 days	47	92	1.07 (0.94–1.23)	0.33
		7 days	61	85	1.00	
	Hours per day playing primary instrument (instrumentalists, vocalists, conductors only)	≤2.5 hours	59	92	1.08 (0.94–1.24)	0.28
		2.6–3 hours	53	85	1.00	
		≥3.1 hours	62	86	1.01 (0.86–1.17)	0.93
	Hours per week playing primary instrument (instrumentalists, vocalists, conductors only)	≤15 hours	75	89	1.05 (0.92–1.21)	0.46
		16–21 hours	53	85	1.00	
		≥22 hours	46	87	1.02 (0.87–1.20)	0.77
		0–2 days	40	88	1.08 (0.88–1.32)	0.47
		3–5 days	32	81	1.00	

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
	Days per week playing secondary instrument	6–7 days	17	82	1.01 (0.77–1.34)	0.93
	Hours per day playing secondary instrument	0–1 hours	55	82	1.00	
		1.1–2 hours	21	86	1.05 (0.85–1.30)	0.69
		≥2.1 hours	13	92	1.13 (0.92–1.38)	0.36
	Hours per week playing secondary instrument	≤2	38	87	1.16 (0.89–1.51)	0.24
		2.01–5.99	24	75	1.00	
		≥6	27	89	1.19 (0.92–1.55)	0.20
	Total hours per week playing any instrument (instrumentalists, vocalists, conductors only)	1–15 hours	68	90	1.07 (0.93–1.23)	0.33
		15.1–24 hours	62	84	1.00	
		≥24.1 hours	55	89	1.06 (0.92–1.23)	0.41
	Standing hours per day while playing (instrumentalists, vocalists, conductors only)	≤1 hour	69	78	1.00	
		1.01–2.50 hours	38	89	1.14 (0.97–1.35)	0.15
		≥2.51 hours	**46**	**93**	**1.19 (1.03–1.38)**	**0.03**
	Marching hours per day while playing (instrumentalists, vocalists, conductors only)	0	53	83	1.05 (0.86–1.28)	0.62
		0.1–1 hours	50	78	1.00	
		>1 hour	**48**	**96**	**1.23 (1.05–1.44)**	**<0.01**
	Total number of performances in past year	0–84	67	90	1.03 (0.91–1.17)	0.60
		85–115	67	87	1.00	
		≥116	66	88	1.00 (0.89–1.13)	0.98
	Do you use orthotics while rehearsing? (instrumentalists, vocalists, and conductors only)	**Yes**	**42**	**98**	**1.17 (1.07–1.28)**	**0.02**
		No	127	83	1.00	
	How often do you replace footwear worn during rehearsals and performances?	<1 year	51	80	1.00	
		>1 year	*117*	*90*	*1.12 (0.96-1.30)*	*0.10*

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
	(instrumentalists, vocalists, and conductors only)					
	Do you use hearing protection?	Yes	156	88	1.00	
		No	48	90	1.01 (0.91–1.13)	0.83
	Hand usage (instrument players and conductors only)	Uses dominant hand most while playing	49	90	1.16 (0.92–1.44)	0.16
		Uses nondominant hand most while playing	27	78	1.00	
		Uses hands equally while playing	88	89	1.14 (0.92–1.41)	0.16
	Time spent per week loading/ unloading/ setting up/ tearing down for performances	**None**	**41**	**95**	**3.25 (0.88–12.06)**	**0.03**
		1–60 minutes	*70*	*90*	*1.58 (0.85–2.39)*	*0.10*
		>1 hour	64	83	1.00	
	Do you use orthotics while loading, etc.?	Yes	26	85	1.00	
		No	168	89	1.05 (0.88–1.25)	0.55
	Do you utilize handling equipment while loading/unloading, etc.	Yes	30	83	1.00	
		No	164	89	1.07 (0.90–1.27	0.38
	Physical effort required to load (scale of 0-10)	0–2	84	92	1.09 (0.986–1.23)	0.17
		3–6	64	84	1.00	
		7–10	46	87	1.03 (0.88–1.20)	0.71
	How many times per week do you lift more than 51 lbs?	1–10	140	89	1.00	
		11–20	25	92	1.03 (0.91–1.17)	0.68
		≥21	29	79	0.89 (0.73–1.08)	0.14
	Do you move instruments in cases?	Yes	155	88	1.00	
		No	41	88	1.00 (0.88–1.14)	0.99
	Do you move instruments without cases?	Yes	48	90	1.02 (0.91–1.14)	0.74
		No	148	88	1.00	

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
	Do you move equipment?	Yes	116	86	1.00	
		No	80	91	1.06 (0.96–1.17)	0.28
	Do you move cases with wheels?	Yes	60	83	1.00	
		No or Sometimes	94	91	1.10 (0.96–1.25)	0.13
	Do you move cases with handles?	Yes	134	88	1.00	
		No or sometimes	21	90	1.03 (0.88–1.20)	0.75

Legend:
CI = confidence intervals
APFT = Army Physical Fitness Test
AWC = Army Wellness Center
Note:
Significant categories ($p \leq 0.05$) are in bold; marginally significant categories ($0.06 \leq p \leq 0.10$) are in italics.

Table H-2. Univariate Comparisons of Risk for Band-related Injury, Survey Respondents Only

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
Characteristics	Sex	Male	158	41	1.00	
		Female	63	46	1.12 (0.81–1.55)	0.51
	Age	18–34	80	30	1.00	
		35–44	**91**	**47**	**1.58 (1.06–2.35)**	**0.02**
		≥45	**50**	**54**	**1.80 (1.18–2.74)**	**<0.01**
	Primary instrument group	Administrative/ music production	24	47	1.23 (0.68–2.23)	0.52
		Brass	60	38	1.00	
		Conductor	5	40	1.04 (0.34–3.20)	0.94
		Keys	4	50	1.30 (0.47–3.66)	0.65
		Other leadership	7	57	1.49 (0.73–3.05)	0.34
		Percussion	18	56	1.45 (0.86–2.45)	0.20
		Strings	17	53	1.38 (0.80–2.40)	0.29
		Vocalists	13	15	0.40 (0.11–1.49)	0.12
		Woodwinds	72	47	1.23 (0.82–1.84)	0.31
		Unknown	1	0	N/A	N/A
	Do you play a secondary instrument?	Yes	89	43	1.00	
		No	112	49		
	Secondary instrument group	Administrative/ music production	6	67	1.69 (0.85–3.37)	0.22
		Brass	17	41	1.04 (0.52–2.08)	0.91
		Conductor	3	33	0.84 (0.16–4.39)	0.84
		Keys	38	40	1.00	
		Percussion	7	57	1.45 (0.68–3.07)	0.39
		Strings	24	42	1.06 (0.57–1.95)	0.87
		Vocalists	3	33	0.84 (0.16–4.39)	0.84
		Woodwinds	20	50	1.27 (0.70–2.28)	0.45
		Other	12	50	1.27 (0.64–2.52)	0.52
	Primary and secondary instrument same instrument group?	Yes	38	47	1.14 (0.78–1.66)	0.51
		No	183	42	1.00	

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
	Degree field	Music	170	45	2.01 (0.59–6.91)	0.19
		Music and other field	26	50	2.25 (0.62–8.10)	0.15
		Other field	9	22	1.00	
Body Fat	Body fat percentage (tertiles)					
		21.49–26.06	**73**	**49**	**1.47 (1.17–2.02)**	**0.02**
		≥26.07	**73**	**48**	**1.43 (1.04–1.97)**	**0.03**
APFT performance	Run time (tertiles)	≤15:37	53	34	1.00	
		15:38–17:07	54	43	1.25 (0.77–2.04)	0.36
		≥17:08	53	47	1.39 (0.87–2.23)	0.17
	Push-up repetitions (tertiles)	≤40	74	47	1.33 (0.88–2.01)	0.16
		41–52	56	37	1.06 (0.66–1.70)	0.82
		≥53	62	36	1.00	
	Sit-up repetitions (tertiles)	**≤51**	**67**	**51**	**1.82 (1.14–2.91)**	**<0.01**
		52–68	*70*	*43*	*1.54 (0.95–2.50)*	*0.08*
		≥69	61	28	1.00	
Exercise	Aerobic minutes per week	≤112.5	97	46	1.15 (0.78–1.70)	0.48
		112.51–187.5	45	49	1.21 (0.78–1.89)	0.40
		≥187.5	52	40	1.00	
	Strength minutes per week	≤45	69	46	1.34 (0.86–2.09)	0.19
		45.01–112.50	**69**	**54**	**1.55 (1.02–2.37)**	**0.03**
		≥112.51	55	35	1.00	
	Sports minutes per week	None	82	46	1.17 (0.78–1.76)	0.44
		0.01–52.5	53	40	1.00	
		≥52.51	58	50	1.26 (0.83–1.92)	0.28
Health behaviors	Average hours of sleep per night	≤ 6 hours	85	51	1.21 (0.89–1.65)	0.22
		≥ 7 hours	108	42	1.00	
	Any tobacco use	Yes	14	36	0.83 (0.40–1.71)	0.59
		No	207	43	1.00	
Wellness	Aware of AWC	Yes	152	45	1.00	
		No	41	49	1.09 (0.76–1.56)	0.65
	Visited AWC	Yes	28	43	1.00	

		No	165	46	1.08 (0.68–1.70)	0.75

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
	Willing to visit AWC if identified as at risk	Yes	122	49	1.25 (0.89–1.79)	0.19
		No	71	39	1.00	
	Do you usually feel relaxed when you play? (instrumentalists, vocalists, conductors only)	Yes	134	42	1.00	
		No	**34**	**62**	**1.48 (1.06–2.06)**	**0.04**
	When playing, do you deliberately work on relaxing your muscles? (instrumentalists, vocalists, conductors only)	Yes	130	48	1.00	
		No	38	40	0.83 (0.54–1.28)	0.37
	I will be able to achieve most of the goals I have set for myself (rate agreement 0-10)	0–5	20	60	1.38 (0.93–2.05)	0.16
		6–10	172	44	1.00	
	When facing difficult tasks, I am certain I will accomplish them (rate agreement 0-10)	0–5	16	44	0.96 (0.54–1.70)	0.88
		6–10	177	46	1.00	
Occupational Demands and Occupational Safety Behaviors	Days per week playing primary instrument (instrumentalists, vocalists, conductors only)	0–5 days	66	49	1.23 (0.83–1.84)	0.30
		6 days	47	51	1.30 (0.85–1.97)	0.23
		7 days	61	39	1.00	
		≤2.5 hours	59	48	1.13 (0.76–1.68)	0.54

	Hours per day playing primary instrument (instrumentalists, vocalists, conductors only)	2.6–3 hours	53	49	1.17 (0.78–1.75)	0.45
		≥3.1 hours	62	42	1.00	

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
	Hours per week playing primary instrument (instrumentalists, vocalists, conductors only)	≤15 hours	75	49	1.14 (0.77–1.67)	0.51
		16–21 hours	53	43	1.00	
		≥22 hours	46	44	1.00 (0.64–1.57)	>0.99
	Years playing secondary instrument	1–19 years	31	32	1.00	
		20-25 years	29	35	1.07 (0.52–2.19)	0.86
		≥26 years	**29**	**62**	**1.92 (1.07-3.45)**	**0.02**
	Days per week playing secondary instrument	0–2 days	40	43	1.13 (0.64–2.01)	0.67
		3–5 days	32	38	1.00	
		6–7 days	17	53	1.41 (0.75–2.66)	0.31
	Hours per day playing secondary instrument	0–1 hours	55	38	1.00	
		1.1–2 hours	21	48	1.24 (0.71–2.19)	0.46
		≥2.1 hours	13	54	1.41 (0.77-2.58)	0.31
	Hours per week playing secondary instrument	≤2	38	42	1.01 (0.55–1.85)	0.97
		2.01–5.99	24	42	1.00	
		≥6	27	44	1.07 (0.57–2.01)	0.84
	Total hours per week playing any instrument (instrumentalists, vocalists, conductors only)	1–15 hours	68	49	1.16 (0.78–1.73)	0.
		15.1–24 hours	62	45	1.08 (0.71–1.64)	0.72
		≥24.1 hours	55	42	1.00	
	Standing hours per day while playing (instrumentalists, vocalists, conductors only)	≤1 hour	69	32	1.00	
		1.01–2.50 hours	*38*	*50*	*1.57 (0.98–2.51)*	*0.07*
		≥2.51 hours	**49**	**57**	**1.84 (1.21–2.81)**	**<0.01**

	Marching hours per day while playing (instrumentalists, vocalists, conductors only)	0	54	28	1.00	
		0.1–1 hours	50	40	1.51 (0.86–2.66)	0.14
		>1 hour	**52**	65	**2.37 (1.44–3.90)**	**<0.01**

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
	Total number of performances in past year	0–84	67	36	1.00	
		85–115	67	40	1.13 (0.73–1.74)	0.59
		≥116	**66**	**61**	**1.69 (1.16–2.46)**	**<0.01**
	Do you use orthotics while rehearsing? (instrumentalists, vocalists, and conductors only)	**Yes**	**42**	**64**	**1.63 (1.20–2.23)**	**<0.01**
		No	127	39	1.00	
	How often do you replace footwear worn during rehearsals and performances? (instrumentalists, vocalists, and conductors only)	≤1 year	51	53	1.00	
		>1 year	117	42	0.79 (0.57–1.11)	0.19
	Do you use hearing protection?	Yes	156	47	1.00	
		No	48	40	0.85 (0.57–1.25)	0.38
	Hand usage (instrument players and conductors only)	Uses dominant hand most while playing	48	48	1.00 (0.70–1.45)	0.98
		Uses nondominant hand most while playing	27	48	1.01 (0.64–1.58)	0.97
		Uses hands equally while playing	88	48	1.00	
	Time spent per week loading/ unloading/ setting up/ tearing	None	41	54	1.38 (0.85–2.22)	0.19
		1–60 minutes	70	46	1.10 (0.80–1.52)	0.55
		>1 hour	64	41	1.00	

	down for performances					
	Do you use orthotics while loading, etc.?	Yes	26	42	1.00	
		No	168	46	1.08 (0.67–1.75)	0.74
	Do you utilize handling equipment while loading/unloading, etc.	Yes	30	47	1.00	
		No	164	45	0.97 (0.64–1.47)	0.88

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
	Physical effort required to load (scale of 0-10)	**0–2**	**84**	**52**	**1.52 (1.03–2.26)**	**0.03**
		3–6	64	34	1.00	
		7–10	46	48	1.39 (0.88–2.19)	0.16
	How many times per week do you lift more than 51 lbs?	1–10	140	48	1.33 (0.77–2.31)	0.28
		11–20	25	36	1.00	
		≥21	29	41	1.15 (0.58–2.27)	0.34
	Do you move instruments in cases?	Yes	155	47	1.00	
		No	41	39	0.84 (0.55–1.28)	0.20
	Do you move instruments without cases?	**Yes**	**48**	**58**	**1.44 (1.06–1.96)**	**0.02**
		No	148	41	1.00	
	Do you move equipment?	Yes	116	40	1.00	
		No	*80*	*53*	*1.32 (0.97–1.80)*	*0.08*
	Do you move cases with wheels?	Yes	60	42	1.00	
		No or Sometimes	94	50	1.20 (0.84–1.72)	0.16
	Do you move cases with handles?	Yes	134	47	1.00	
		No or sometimes	21	43	0.91 (0.54–1.54)	0.36

Legend:
CI = confidence intervals
N/A = not applicable
APFT = Army Physical Fitness Test
AWC = Army Wellness Center
Note:
Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.
Note: Band-related injuries were identified by survey responses

Table H-3. Univariate Comparisons of Risk for MSK Pain Injury, Survey Respondents Only

Variable Category			Total n	% With MSK pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
Characteristics	Sex	Male	352	59	1.00	
		Female	**113**	**71**	**1.20 (1.03–1.39)**	**0.03**
	Age	18–34	156	58	1.00	
		35–44	**192**	**68**	**1.23 (1.00–1.53)**	**0.04**
		≥45	**117**	**74**	**1.57 (1.13–2.19)**	**<0.01**
	Primary Instrument group	Administrative/ music production	57	67	1.24 (0.89–1.74)	0.19
		Brass	139	55	1.02 (0.74–1.41)	0.91
		Conductor	12	67	1.40 (0.91–2.16)	0.19
		Keys	8	38	0.70 (0.27–1.79)	0.41
		Other leadership	12	67	1.24 (0.76–2.03)	0.43
		Percussion	41	54	1.00	
		Strings	43	70	1.30 (0.92–1.84)	0.13
		Vocalists	40	63	1.17 (0.80–1.69)	0.42
		Woodwinds	**107**	**71**	**1.32 (0.97–1.80)**	**0.05**
		Unknown	6	17	N/A	N/A
	Do you play a secondary instrument?	Yes	89	66	1.00	
		No	**112**	**82**	**1.24 (1.04–1.47)**	**0.01**
	Secondary instrument group	**Administrative/ music production**	**6**	**100**	**2.00 (1.34–2.98)**	**0.03**
		Brass	17	71	1.41 (0.85–2.34)	0.19
		Conductor	3	33	0.67 (0.13–3.47)	0.59
		Keys	38	68	1.37 (0.87–2.16)	0.15
		Percussion	7	57	1.14 (0.54–2.43)	0.74
		Strings	24	50	1.00	
		Vocalists	3	67	1.33 (0.55–3.26)	0.59
		Woodwinds	**20**	**80**	**1.60 (1.01–2.53)**	**0.04**
	Primary and secondary instrument same instrument group?	Yes	38	74	1.01 (0.82–1.24)	0.95
		No	183	73	1.00	

Variable Category			Total n	% With MSK pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
	Education – Degree field	Music	170	72	1.00	
		Music and other field	26	81	1.13 (0.91–1.39)	0.34
		Other field	9	89	1.24 (0.97–1.59)	0.26
Body Fat	Body fat percentage (tertiles)	≤21.48	154	57	1.00	
		21.49–26.06	**155**	**68**	**1.28 (1.00–1.64)**	**0.04**
		≥26.07	**154**	**74**	**1.50 (1.14–1.97)**	**<0.01**
		unknown	2	0	N/A	
APFT performance	Run time (tertiles)	≤15:25	103	44	1.00	
		15:26–16:55	107	54	1.24 (0.94–1.64)	0.13
		≥16:56	**107**	**70**	**1.60 (1.25–2.06)**	**<0.01**
	Push-up repetitions (tertiles)	**≤40**	**152**	**67**	**1.31 (1.07–1.61)**	**<0.01**
		41–54	109	54	1.06 (0.83–1.35)	0.65
		≥55	127	51	1.00	
	Sit-up repetitions (tertiles)	**≤51**	**146**	**70**	**1.26 (1.05–1.52)**	**0.01**
		52–66	125	52	0.94 (0.75–1.18)	0.60
		≥67	132	55	1.00	
Exercise	Aerobic minutes per week	≤112.5	97	77	1.12 (0.90–1.40)	0.29
		112.51–187.5	45	69	1.00	
		≥187.5	52	77	1.12 (0.87–1.43)	0.38
	Strength minutes per week	≤45	69	78	1.08 (0.89–1.31)	0.43
		45.01–112.50	69	73	1.00	
		≥112.51	55	76	1.05 (0.86–1.30)	0.62
	Sports minutes per week	None	82	74	1.00	
		0.01-52.5	53	76	1.02 (0.83–1.24)	0.89
		≥52.51	58	78	1.04 (0.86–1.26)	0.67
Health Behaviors	Average hours of sleep per night	≤ 6 hours	85	79	1.08 (0.92–1.26)	0.36
		≥ 7 hours	108	73	1.00	
	Any tobacco use	Yes	24	71	1.15 (0.88–1.50)	0.38
		No	438	62	1.00	
Wellness	Aware of AWC	Yes	152	74	1.00	
		No	41	83	1.13 (0.95–1.33)	0.22
	Visited AWC	Yes	28	74	1.04 (0.80–1.34)	0.76

Variable Category			Total n	% With MSK pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
		No	165	71	1.00	
	Willing to visit AWC if identified as at risk	Yes	122	77	1.05 (0.89–1.25)	0.28
		No	71	73	1.00	
	Do you usually feel relaxed when you play? (instrumentalists, vocalists, conductors only)	Yes	134	72	1.00	
		No	*34*	*88*	*1.22 (1.04–1.43)*	*0.06*
	When playing, do you deliberately work on relaxing your muscles? (instrumentalists, vocalists, conductors only)	Yes	130	74	1.00	
		No	38	82	1.11 (0.92–1.33)	0.33
	I will be able to achieve most of the goals I have set for myself (rate agreement 0-10)	0–5	20	80	1.07 (0.84–1.35)	0.62
		6–10	172	75	1.00	
	When facing difficult tasks, I am certain I will accomplish them (rate agreement 0-10)	0–5	16	88	1.17 (0.96–1.44)	0.25
		6–10	177	75	1.00	
Occupational Demands and Occupational Safety Behaviors	Days per week playing primary instrument (instrumentalists, vocalists, conductors only)	0–5 days	66	76	1.10 (0.89–1.37)	0.39
		6 days	47	81	1.17 (0.94–1.46)	0.16
		7 days	61	68	1.00	
	Hours per day playing primary instrument (instrumentalists, vocalists, conductors only)	*≤2.5 hours*	*59*	*81*	*1.23 (0.99–1.53)*	*0.06*
		2.6–3 hours	53	77	1.17 (0.93–1.47)	0.19
		≥3.1 hours	62	66	1.00	

Variable Category			Total n	% With MSK pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
	Hours per week playing primary instrument (instrumentalists, vocalists, conductors only)	*≤15 hours*	*75*	*80*	*1.23 (0.97–1.56)*	*0.07*
		16–21 hours	53	76	1.16 (0.89–1.50)	0.27
		≥22 hours	46	65	1.00	
	Years playing secondary instrument	1–19 years	31	58	1.00	
		20–25 years	29	59	1.01 (0.66–1.55)	0.97
		≥26 years	**29**	**83**	**1.43 (1.01–2.01)**	**0.04**
	Days per week playing secondary instrument	0–2 days	40	65	1.00	
		3–5 days	32	69	1.06 (0.76–1.47)	0.74
		6–7 days	17	65	1.00 (0.66–1.51)	0.98
	Hours per day playing secondary instrument	0–1 hours	55	60	1.00	
		1.1–2 hours	21	76	1.27 (0.92–1.75)	0.19
		≥2.1 hours	13	77	1.28 (0.89–1.85)	0.26
	Hours per week playing secondary instrument	≤2	38	68	1.37 (0.87–2.16)	0.15
		2.01–5.99	24	50	1.00	
		≥6	**27**	**78**	**1.56 (0.99–2.44)**	**0.04**
	Total hours per week playing any instrument (instrumentalists, vocalists, conductors only)	1–15 hours	68	75		
		15.1–24 hours	62	73	1.00 (0.80–1.25)	0.99
		≥24.1 hours	55	73	1.00	
	Standing hours per day while playing (instrumentalists, vocalists, conductors only)	≤1 hour	69	64	1.00	
		1.01–2.50 hours	38	74	1.16 (0.89–1.50)	0.30
		≥2.51 hours	**49**	**90**	**1.40 (1.14–1.72)**	**<0.01**
	Marching hours per day while playing (instrumentalists, vocalists, conductors only)	0	54	67	1.01 (0.77–1.33)	0.94
		0.1–1 hours	50	66	1.00	
		>1 hour	**52**	**89**	**1.34 (1.07–1.67)**	**<0.01**

Variable Category			Total n	% With MSK pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
	Total number of performances in past year	0–84	67	75	1.02 (0.83–1.25)	0.84
		85-115	67	73	1.00	
		≥116	66	77	1.06 (0.87–1.29)	0.58
	Do you use orthotics while rehearsing? (instrumentalists, vocalists, and conductors only)	**Yes**	**42**	**91**	**1.29 (1.11–1.50)**	**<0.01**
		No	127	70	1.00	
	How often do you replace footwear worn during rehearsals and performances? (instrumentalists, vocalists, and conductors only)	≤1 year	51	67	1.00	
		>1 year	*117*	*80*	*1.18 (0.95–1.46)*	*0.10*
	Do you use hearing protection?	Yes	156	76	1.00	
		No	48	73	0.96 (0.79–1.17)	0.70
	Hand usage (instrument players and conductors only)	Uses dominant hand most while playing	48	77	1.16 (0.85–1.57)	0.33
		Uses nondominant hand most while playing	27	67	1.00	
		Uses hands equally while playing	88	76	1.14 (0.85–1.53)	0.33
	Time spent per week loading/ unloading/ setting up/ tearing down for performances	*None*	*58*	*85*	*1.92 (0.91–4.04)*	*0.06*
		1–60 minutes	70	77	1.24 (0.83–1.86)	0.28
		≥1 hour	64	69	1.00	
	Do you use orthotics while loading, etc.?	Yes	26	77	1.00	
		No	168	75	0.98 (0.78–1.23)	0.83
	Do you utilize handling equipment while loading/unloading, etc.	Yes	30	77	1.00	
		No	164	75	0.98 (0.79–1.21)	0.85

Variable Category			Total n	% With MSK pain/MSK Tissue Damage	Risk Ratio (95% CI)	Category p-values
	Physical effort required to load (rate 0-10)	**0–2**	**84**	**83**	**1.24 (1.02–1.51)**	**0.02**
		3–6	64	67	1.00	
		7–10	46	72	1.07 (0.83–1.37)	0.61
	How many times per week do you lift more than 51 lbs?	1–10	140	76	1.10 (0.85–1.43)	0.22
		11–20	25	80	1.16 (0.85–1.59)	0.18
		≥21	29	69	1.00	
	Do you move instruments in cases?	Yes	155	74	0.95 (0.79–1.15)	0.31
		No	41	78	1.00	
	Do you move instruments without cases?	Yes	48	77	1.04 (0.87–1.24)	0.35
		No	148	74	1.00	
	Do you move equipment?	*Yes*	*116*	*72*	*0.89 (0.76–1.05)*	*0.09*
		No	80	80	1.00	
	Do you move cases with wheels?	Yes	60	67	1.00	
		No or Sometimes	**94**	**79**	**1.18 (0.96–1.45)**	**0.05**
	Do you move cases with handles?	Yes	134	74	1.00	
		No or sometimes	21	76	1.03 (0.80–1.34)	0.36

Legend:
CI = confidence intervals
N/A = not applicable
APFT = Army Physical Fitness Test
AWC = Army Wellness Center
Note: Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table H-4. Univariate Comparisons of Risk for Any Injury, Administrative Data Only

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
Characteristics	Sex	Male	201	74	1.00	
		Female	**54**	**91**	**1.22 (1.09–1.38)**	**<0.01**
	Age	18–34	156	73	1.00	
		35–44	192	77	1.09 (0.87–1.37)	0.46
		≥45	**117**	**84**	**1.48 (0.99–2.22)**	**0.04**
	Primary instrument group	Administrative/ music production	57	81	1.14 (0.97–1.34)	0.14

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
		Brass	139	72	1.00	
		Conductor	12	83	1.16 (0.88–1.52)	0.61
		Keys	8	75	1.04 (0.69–1.58)	0.85
		Other leadership	12	83	1.16 (0.88–1.52)	0.61
		Percussion	41	78	1.09 (0.89–1.32)	0.44
		Strings	43	77	1.07 (0.88–1.30)	0.54
		Vocalists	40	78	1.08 (0.89–1.31)	0.49
		Woodwinds	*107*	*82*	*1.14 (1.00–1.31)*	*0.06*
		Unknown	6	50	0.70 (0.31–1.56)	0.25
Body Fat	Body fat percentage (tertiles)	≤21.48	154	70	1.00	
		21.49–26.06	**155**	**79**	**1.32 (0.98–1.77)**	**0.05**
		≥26.07	**154**	**84**	**1.57 (1.12–2.21)**	**<0.01**
		unknown	2	0	N/A	
APFT Performance	Run time (tertiles)	≤15:25	103	64	1.00	
		15:26–16:55	107	72	1.12 (0.93–1.35)	0.22
		≥16:56	**107**	**82**	**1.28 (1.08–1.52)**	**<0.01**
	Push-up repetitions (tertiles)	**≤40**	**152**	**82**	**1.23 (1.07–1.42)**	**<0.01**
		41–54	109	73	1.08 (0.92–1.28)	0.36
		≥55	127	67	1.00	
	Sit-up repetitions (tertiles)	**≤51**	**146**	**85**	**1.29 (1.12–1.48)**	**<0.01**
		52–66	*125*	*75*	*1.14 (0.97–1.34)*	*0.10*
		≥67	132	66	1.00	

Legend:
CI = confidence intervals
N/A = not applicable
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table H-5. Univariate Comparisons of Risk for Any Injury, TUSAB, Administrative Data Only

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
Characteristics	Sex	Male	201	74	1.00	
		Female	**54**	**91**	**1.22 (1.09–1.38)**	**<0.01**
	Age	18–34	78	69	1.00	
		35–44	103	78	1.12 (0.94–1.34)	0.20

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
		≥45	**74**	**87**	**1.25 (1.05–1.49)**	**0.01**
	Primary instrument group	Administrative/ music production	32	81	1.17 (0.94–1.46)	0.21
		Brass	82	70	1.00	
		Conductor	9	89	1.28 (0.97–1.68)	0.23
		Keys	5	80	1.15 (0.73–1.83)	0.62
		Other leadership	7	86	1.23 (0.88–1.72)	0.37
		Percussion	16	75	1.08 (0.79–1.48)	0.66
		Strings	32	81	1.17 (0.94–1.46)	0.21
		Vocalists	21	81	1.17 (0.91–1.50)	0.30
		Woodwinds	*48*	*83*	*1.20 (0.99–1.45)*	*0.08*
		Unknown+	3	67	0.96 (0.43–2.16)	0.92
Body Fat	Body fat percentage (tertiles)	≤21.67	86	71	1.00	
		21.68-26.28	82	77	1.18 (0.80–1.72)	0.45
		≥26.29	**85**	**87**	**1.79 (1.07–3.00)**	**0.01**
		unknown	2	0	N/A	
APFT Performance	Run time (tertiles)	≤15:25	103	64	1.00	
		15:26–16:55	107	72	1.12 (0.93–1.35)	0.22
		≥16:56	**107**	**82**	**1.28 (1.08–1.52)**	**<0.01**
	Push-up repetitions (tertiles)	**≤40**	**152**	**82**	**1.23 (1.07–1.42)**	**<0.01**
		41–54	109	73	1.08 (0.92–1.28)	0.36
		≥55	127	67	1.00	
	Sit-up repetitions (tertiles)	**≤51**	**146**	**85**	**1.29 (1.12–1.48)**	**<0.01**
		52–66	*125*	*75*	*1.14 (0.97–1.34)*	*0.10*
		≥67	132	66	1.00	

Legend:
TUSAB = The U.S. Army Band
CI = confidence intervals
N/A = not applicable
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included. Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table H-6. Univariate Comparisons of Risk for Any Injury, TUSAFB, Administrative Data Only

Variable Category			Total n	% With Band-related Injury	Risk Ratio (95% CI)	Category p-values
Characteristics	Sex	Male	105	78	1.00	
		Female	**37**	**76**	**1.22 (1.09–1.38)**	**<0.01**
	Age	18–34	49	80	1.07 (0.87–1.32)	0.51
		35–44	61	74	1.00	
		≥45	32	81	1.10 (0.88–1.37)	0.44
	Primary Instrument group	Administrative/ music production	25	80	1.26 (0.77–2.05)	0.30
		Brass	33	79	1.24 (0.77–2.00)	0.32
		Conductor	2	50	0.79 (0.18–3.37)	0.73
		Keys	3	67	1.05 (0.42–2.62)	0.93
		Other leadership	5	80	1.26 (0.67–2.35)	0.53
		Percussion	*8*	*100*	*1.57 (1.01–2.46)*	*0.06*
		Strings	11	64	1.00	
		Vocalists	19	74	1.16 (0.69–1.95)	0.57
		Woodwinds	33	82	1.29 (0.80–2.07)	0.22
		Unknown	3	67	1.05 (0.42–2.62)	0.93
Body Fat	Body fat percentage (tertiles)	≤21.21	46	76	1.00	
		21.22–25.52	49	76	0.99 (0.63–1.55)	0.95
		≥25.53	47	81	1.16 (0.68–1.97)	0.58
APFT Performance	Run time (tertiles)	≤15:57	35	66	1.00	
		15:58–17:24	34	74	1.12 (0.82–1.53)	0.48
		≥17:25	**34**	**88**	**1.34 (1.03–1.76)**	**0.03**
	Push-up repetitions (tertiles)	≤39	39	87	1.28 (0.96–1.70)	0.11
		40-50	42	76	1.17 (0.88–1.57)	0.27
		≥51	37	65	1.00	
	Sit-up repetitions (tertiles)	*≤54*	*39*	*87*	*1.24 (0.97–1.58)*	*0.07*
		55–69	42	74	1.05 (0.80–1.39)	0.73
		≥70	37	70	1.00	

Legend:
TUSAFB = The U.S. Army Field Band
CI = confidence intervals
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included.
Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.

Table H-7. Univariate Comparisons of Risk for Any Injury, OGFDC, Administrative Data Only

Variable Category			Total n	% With Injury	Risk Ratio (95% CI)	Category p-values
Characteristics	Sex	Male	46	72	1.00	
		Female	22	82	1.14 (0.87–1.49)	0.37
	Age	18–34	29	72	1.00	
		35–44	28	79	1.09 (0.81–1.46)	0.59
		≥45	11	73	1.00 (0.66–1.54)	0.98
	Primary instrument group	Administrative/ music production	24	71	1.00 (0.67–1.50)	0.99
		Conductor	1	100	N/A	
		Percussion	17	71	1.00	
		Woodwinds	26	81	1.15 (0.80–1.64)	0.45
Body Fat	*Body fat percentage (tertiles)*	≤21.54	23	61	1.00	
		21.55–26.88	*22*	*86*	*2.30 (0.83–6.40)*	*0.06*
		≥26.89	23	78	1.58 (0.73–3.39)	0.21
APFT Performance	Run time (tertiles)	≤14:23	17	59	1.00	
		14:24–16:15	18	67	1.13 (0.68–1.90)	0.64
		≥16:16	15	73	1.25 (0.76–2.06)	0.40
	Push-up repetitions (tertiles)	**≤41**	**21**	**76**	**2.06 (1.19–3.55)**	**<0.01**
		42–60	**25**	**80**	**2.16 (1.27–3.67)**	**<0.01**
		≥61	17	59	1.00	
	Sit-up repetitions (tertiles)	≤60	21	71	1.04 (0.69–1.57)	0.84
		61–69	19	74	1.08 (0.72–1.62)	0.72
		≥70	19	68	1.00	

Legend:
OGFDC = Old Guard Fife and Drum Corps
CI = confidence intervals
N/A = not applicable
APFT = Army Physical Fitness Test
Note: Variables obtained from rosters and training records; survey data are not included.
Significant categories (p≤0.05) are in bold; marginally significant categories (0.06 ≤ p ≤ 0.10) are in italics.