

Temporal Trends in the Epidemiology of Disabilities Related to Posttraumatic Stress Disorder in the U.S. Army and Marine Corps From 2005–2010

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Since the start of Operation Iraqi Freedom and Operation Enduring Freedom, over 2 million U.S. military members were deployed to Iraq and Afghanistan. The estimated prevalence of posttraumatic stress disorder (PTSD) among soldiers and Marines returning from combat zones varies from 5%–20%; little is known about those individuals whose PTSD renders them unfit for duty. This report describes the rates and correlates of PTSD in soldiers and Marines evaluated for disability. Data for service members who underwent disability evaluation between fiscal years 2005–2010 were analyzed for trends in disability rates, ratings, retirement, and comorbid disability. PTSD rates varied by age, sex, race, rank, branch of service, and component. Most cases were deployed and were considered combat-related. Over the study period, the rate and severity of disability from PTSD increased substantially. Significant increases in disability from PTSD incidence, rating, and retirement were observed in both services. Other medical conditions, largely musculoskeletal and neurological, were present in the majority of cases indicating many cases also experienced disabling physical injuries. Further research is needed to target interventions accurately for redeploying service members to minimize comorbidity associated with disability from PTSD and facilitate continuation in military service or successful transition to civilian life.

The frequency of deployment among military service members has increased in the last decade as a result of combat operations in Iraq and/or Afghanistan (National Center for Post-Traumatic Stress Disorder and the Walter Reed Army Medical Center, 2004). As of June 31, 2011, over 2.3 million U.S. service members had been deployed to the wars in Iraq and Afghanistan as part of Operations Enduring Freedom (OEF), Iraqi Freedom (OIF), and New Dawn (Defense Manpower Data Center, 2011). Combat exposures are common during deployment to Iraq and Afghanistan, and are consistently found to be associated with posttraumatic stress disorder (PTSD; Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Ramchand et al., 2010; Tanielian & Jaycox, 2008; Vasterling et al., 2010). Although most veterans have no lasting mental health problems

after returning from combat operations in Iraq and Afghanistan (Friedman, 2005; Tanielian & Jaycox, 2008), an understanding of the epidemiology of PTSD and associated long-term morbidity, particularly among combat veterans, is essential to ensure successful continuation of military service or transition into civilian life.

Studies of the prevalence of PTSD in military personnel returning from deployment have been estimated at 5%–20% (Ramchand et al., 2010) and new-onset PTSD symptoms occur in 2%–8% of service members over a 3-year period (Smith et al., 2008). A review of studies of PTSD in military personnel showed consistent associations between combat exposure and the development of PTSD (Ramchand et al., 2010). PTSD is the most commonly diagnosed mental health condition among veterans who present to Veterans Affairs (VA) health facilities following OEF/OIF service (Seal, Bertenthal, Miner, Sen, & Marmar, 2007) and symptoms of PTSD are frequently reported on postdeployment health assessments (Hoge et al., 2004, 2006; Martin, 2007; Milliken, Auchterlonie, & Hoge, 2007; Smith et al., 2008; Tanielian & Jaycox, 2008; Vasterling et al., 2010). Longer deployments have been associated with increased risk for adverse health effects, including PTSD (Adler, Huffman, Bliese, & Castro, 2005; Buckman et al., 2011). Army deployments, however, are about twice as long as Marine Corps deployments on average (Buckman et al., 2011).

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Despite increased interest in PTSD among military personnel returning from war, little research has been conducted to describe the population of individuals with PTSD who are evaluated for disability due to medical conditions that render them unfit to continue military service. Most studies on military disability have focused on the epidemiology of the disabled population as a whole (Bell, Schwartz, Harford, Hollander, & Amoroso, 2008a, 2008b; Bohnker, Telfair, McGinnis, Malakooti, & Sack, 2003; Niebuhr et al., 2011; Schwartz, Bell, & Hollander 2007; Songer & LaPorte, 2000) or musculoskeletal conditions (Amoroso & Canham, 1999; Feuerstein, Berkowitz, & Peck, 1997; Hollander & Bell, 2010; Songer & LaPorte, 2000). Bell, Hunt, Harford, and Kay (2011) examined risk factors for mental health-related disability discharges in the U.S. Army from 1994–2007, but did not describe risk factors for disability related to PTSD separate from all mental-health disability. A better characterization of the prevalence of PTSD related disability, with an emphasis on deployment or combat-related exposures and comorbid disabilities, is needed to understand the burden of PTSD on service members as well as the health care and disability systems.

The objective of this report was to describe the rate and correlates of disability related to PTSD in soldiers and Marines with symptoms severe enough to interfere with their ability to perform their duties, resulting in referral into the Army or Marine Corps disability evaluation system. This report describes trends in the rate of disability related to the evaluation of PTSD, retirement, rating/compensation, and comorbid disability conditions from fiscal years (FYs) 2005–2010, stratifying by service to account for interservice variation in disability evaluation. As more service members are deployed into combat situations, it is essential to understand the epidemiology of disability from PTSD to target appropriate interventions and to prevent or mitigate deleterious long-term mental health outcomes in service members and in those transitioning to civilian life.

Method

Participants and Procedures

The core functions of the Department of Defense (DoD) Disability Evaluation System (DES) are to ensure a fit military force and to provide compensation for service members who are unable to continue their military careers due to illness or injury (Under Secretary of Defense, Personnel and Readiness, 1996). Referral into the DoD DES begins with assessment by a medical evaluation board comprising at least two physicians, one of whom is board-certified or board eligible in the specialty most relevant to diagnosing and treating the referred condition (Bureau of Medicine and Surgery, 2005; Department of the Army, 2010). The medical evaluation board assessment occurs when a service member has one or more medical conditions that are cause for referral or does not meet medical retention standards of the service as determined by a physician (Under

Secretary of Defense, Personnel and Readiness, 1996; United States Government Accountability Office [GAO], 2006). Following the determination by the medical examination board that a service member does not meet retention standards, the member is referred to the physical evaluation board. Service-specific physical evaluation boards then determine whether a service member is unfit to perform the duties associated with their particular military occupation (Under Secretary of Defense, Personnel and Readiness, 1996). Disability evaluations of soldiers are the responsibility of the Department of the Army; for Marines, the evaluations are the responsibility of the Department of the Navy.

Soldiers and Marines who underwent disability evaluation within DoD DES to determine fitness for continued military service between October 1, 2004 and September 31, 2010 were eligible for inclusion. Disability cases were identified as related to PTSD if the most recent disability evaluation record available contained a Veterans Affairs Schedule of Rating Disabilities (VASRD) code 9411 indicating PTSD. The nomenclature employed in the mental health rating schedule, which includes PTSD, is based on diagnostic criteria in the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., *DSM-IV*; American Psychiatric Association, 1994; United States Code, 2011). Therefore, the presence of the VASRD code for PTSD indicates the physical examination board determined the service member was unfit for duty as a result of either PTSD alone or PTSD in conjunction with other medical conditions, as determined by the medical evaluation board. This research was approved by the Walter Reed Army Institute of Research (WRAIR) Institutional Review Board (Silver Spring, MD).

Data Sources

Because each service is responsible for disability evaluation of its members, data on disability evaluations for medical discharge from the military are maintained separately by each service where data are abstracted from disability evaluation files and recorded electronically. Army disability evaluation records were obtained from the U.S. Army Physical Disability Agency in Washington, DC. Marine Corps disability evaluation records were obtained from the Secretary of the Navy Council of Review Boards in Washington, DC. Disability evaluation data received from both agencies include demographic characteristics of the service member at the time of disability evaluation as well as information pertaining to the disability evaluation, including key dates, disposition, disability rating/level of compensation, and the conditions for which the service member was deemed unfit.

The Defense Manpower Data Center (DMDC; Seaside, CA) provides extracts on deployments of individual service members, including dates and location of deployment. All deployments completed prior to September 30, 2010 were included. The DMDC also provided aggregate military and deployed personnel counts for the study period that were used in

the calculation of rates. The DMDC is the primary source for personnel data for the military.

Measures

Demographic and military characteristics, including race, gender, rank, and service component, were obtained for all subjects from data collected at the time of first disability evaluation. Service component was classified as either active duty or reserve (including Army Reserve, Army National Guard, and Marine Corps Reserve). Fiscal year of disability evaluation was determined using the date of first disability evaluation during the study period. Time to disposition was defined as the total months from the date of first medical evaluation board to the most recent disability evaluation. Service members were designated as deployed if they had a deployment date preceding the date disability evaluation began.

Determinations of whether an unfitting condition was combat related were made by each service's physical evaluation board. Disposition and disability rating are assigned at the conclusion of each evaluation (Undersecretary of Defense, Personnel and Readiness, 1996; USC, 2011). Dispositions reflect whether a service member was medically retired, medically discharged, or determined fit for duty. There are three categories of medical retirement: permanent disability retired, placed on the temporary disability retirement list, and retained on the temporary disability retirement list. In addition to retirement, medical discharge as the result of unfitting conditions can be further classified as either separated without benefits or separated with severance pay. Separation without benefits occurs when a condition is considered unfitting, but is not related to service or did not occur in the line of duty. Separation with severance pay is given if the unfitting condition is related to service, but does not receive a rating high enough to qualify for retirement benefits. Service members deemed fit are returned to duty. Only the most recent disposition was used for each service member included in this report.

Conditions unfitting for continued military service were defined using the VASRD code associated with each medically unfitting condition at the most recent disability evaluation. The VASRD codes are not considered medical diagnoses, but codes showing the basis of the rating assigned (USC, 2011). Each condition that renders an individual unfit for service is assigned a VASRD code. VASRD codes, however, vary widely in specificity and analogous codes are often used for rating, particularly when rating musculoskeletal conditions, when the appropriate code does not exist.

Ratings for disability, expressed as a percentage, are associated with VASRD codes at the time of disability evaluation (USC, 2011). These ratings represent the average impairment in earning capacity in a civil occupation that occurs as a result of disabling diseases, conditions, and injuries during military service and are used to determine the amount of compensation a service member is entitled to following discharge. For mental health conditions, including PTSD, ratings are based on all

evidence of occupational and social impairment in a service member's medical history (USC, 2011). Disability ratings are calculated from the combined disability ratings of all unfitting conditions present in a service member evaluated for disability, ranging from 0% to 100%. Individuals receiving a rating of 30% or more are eligible for medical retirement. Disability ratings may be changed when a service member is removed from the temporary disability retirement list after his or her condition becomes stable for purposes of rating.

Data Analysis

All analyses were stratified by service to account for interservice variability in the disability evaluation and rating process. Rates of disability related to PTSD per 10,000 service members were calculated using aggregate counts of total force strength and total number deployed by FY and service. Aggregate counts of total force strength were also used to calculate the overall rate of disability per 10,000 service members. Rates of disability from PTSD by age at first disability evaluation, gender, race, rank, and component were calculated by service using total force strength for each demographic characteristic for the period from 2005–2010. Cochran-Armitage tests for trend were conducted to determine whether significant trends in the rate of disability evaluation for disability from PTSD were present in either the Army or the Marine Corps and two-sided *p* values were calculated.

Distribution of dispositions (i.e., retired, separated with severance, separated without benefit, or other) were calculated for each year and overall. Total disability ratings were described in terms of mean, median, and mode, and were classified as either less than 30% or 30% or higher, for each year of the study period. Two-sided Cochran-Armitage tests for trend were used to test for trends in disposition and rating across FYs within each service. Tests for trends in disposition over the study period compared retired to other dispositions; test for trends in rating over the study period compared ratings less than 30% to those 30% or higher. Comorbid disability was described by categorizing VASRD codes, excluding duplicate VASRD codes and VASRD codes used analogously, for disabilities not from PTSD evaluated in PTSD disability cases. Comorbid disability was categorized by type, and frequency of each condition type was calculated among cases with conditions other than PTSD. All analyses were conducted using SAS statistical software version 9.2 (SAS Institute, Cary, NC).

Results

Between FYs 2005 and 2010, 88,315 soldiers and 18,515 Marines were evaluated for disability; 8,615 soldiers and 1,381 Marines were evaluated for disability from PTSD during this time. Rates of disability from PTSD have significantly increased in all personnel as well as in deployed personnel in the study period (Table 1). In the Army, the overall rate of disability evaluation significantly decreased during the study period

Table 1
Rate of Evaluation for Disability From Any Cause or PTSD per 10,000 by Fiscal Year in Army and Marine Corps Groups

Variable	Fiscal year						z
	2005	2006	2007	2008	2009	2010	
Army							
Any cause	161.1	132.4	127.7	129.3	142.1	130.8	-12.3***
PTSD	5.5	6.1	8.4	12.1	23.3	23.2	48.9***
PTSD in deployed	15.9	18.0	29.0	41.2	68.1	70.5	47.3***
Marine Corps							
Any cause	127.7	144.6	131.4	130.8	127.1	141.3	0.8
PTSD	4.7	9.6	9.0	11.3	13.8	11.0	8.3***
PTSD in deployed	10.6	25.3	24.6	30.8	46.9	42.2	13.6***

Note. The z value is from the Cochran-Armitage test for linear trend. PTSD = posttraumatic stress disorder.

*** $p < .001$.

($z = -12.3, p < .001$), but in the Marine Corps the overall disability rate did not change significantly during the study period ($z = 0.8, p = .41$).

Variations in the rate of disability from PTSD were observed by age, gender, race, rank, and component (Table 2). Those aged 25–29 years were most frequently evaluated for disability from PTSD in both the Army (19.6%) and Marine Corps (15.2%) relative to other age groups. Rates of disability from PTSD were higher among Whites, men, enlisted, and active duty in both services. Most disabilities from PTSD were deemed combat-related by the service disability agency, and most evaluated for disability from PTSD had been deployed. Months to final disposition was approximately twice as long in the Marine Corps ($M = 14.0, SD = 16.7$) as compared to the Army ($M = 7.1, SD = 10.9$).

Disability ratings and the proportion of evaluations resulting in retirement dispositions significantly increased in both the Army and Marine Corps during the study period (Table 3). In 2010, more than 95% of those with disability from PTSD were medically retired in both services. In 2005, however, 35% of Army and 70% of Marine Corps PTSD cases were medically retired. The trend of increasing proportions of service members retired each year during the study period was statistically significant for both the Army ($z = 51.7, p < .001$) and Marines ($z = 12.7, p < .001$) when comparing retired dispositions to all other dispositions. In 2010, more than 98% of PTSD cases received a disability rating of 30% or higher in both services as compared to 2005 when about one third of Army PTSD cases and 70% of Marine Corps PTSD cases received a rating of at least 30%. Significant trends towards increasing proportion of service members rated 30% or higher with each year were observed in both soldiers ($z = 53.5, p < .001$) and Marines ($z = 12.3, p < .001$).

Comorbid disabilities were listed at the time of disability evaluation in 65% of Army PTSD cases and 56% of Marine Corps cases (Table 4). The conditions listed in Table 4 include any disability for which a service member is rated for

in addition to PTSD, and do not include unrated conditions. Among soldiers evaluated for disability in addition to PTSD, the most common comorbid disability category was Dorsopathies, present in nearly half of disability from PTSD cases. In the Marine Corps, residuals of traumatic brain injury was the most frequent comorbid disability in disability from PTSD cases and was present in 42% of disability from PTSD cases. Residuals of traumatic brain injury were less common in soldiers with disability from PTSD, but were present in nearly one quarter of disability from PTSD cases. As a group, musculoskeletal disabilities were present in a higher proportion of Army disability from PTSD cases, whereas neurological disability was present in a higher proportion of Marine Corps disability from PTSD cases. For the Army, the mean number of conditions was 2.53 ($SD = 1.53$). For the Marine Corps, the mean was 2.34 ($SD = 1.88$).

Discussion

This report has shown disability from PTSD increased in prevalence and severity in both the Army and the Marine Corps; disability from PTSD rates among all personnel increased 400% in soldiers and by more than 200% among Marines during the study. In deployed personnel, the rate of disability from PTSD increased by about 400% in both services. Nearly all who underwent evaluation for disability from PTSD had a history of deployment, and for most their disability was deemed combat-related. More than 90% of soldiers and Marines who were evaluated for disability from PTSD were medically retired, suggesting severe and highly compensated disability. Temporal trends during the study period reveal substantial increases in the proportion of disability related to evaluations of PTSD resulting in medical retirement and higher ratings. Comorbid disabilities, largely musculoskeletal and neurological conditions, were present in the majority of Army and Marine Corps personnel with disability from PTSD indicating possible physical or deployment-related trauma.

Table 2

Characteristics of Cases of PTSD and Rates of Disability From PTSD for Army and Marine Corps

Variable	Army (n = 8,615)			Marine Corps (n = 1,381)		
	Count	% of Total	Rate/10,000	Count	% of Total	Rate/10,000
Age first evaluation						
<20	31	0.4	0.6	12	0.9	0.7
20–24	1,999	23.2	11.1	748	54.2	11.4
25–29	2,663	30.9	19.6	399	28.9	15.2
30–34	1,499	17.4	17.5	138	10.0	11.0
35–39	1,075	12.5	13.4	60	4.3	6.7
≥40	1,342	15.6	11.9	24	1.7	3.6
Sex						
Male	7,961	92.4	14.6	1,320	95.6	10.2
Female	648	7.5	6.5	60	4.3	7.2
Missing	6	0.1	–	1	0.1	–
Race						
White	6,667	77.4	14.3	1,034	74.9	9.7
Black	1,086	12.6	9.0	80	5.8	5.7
Other	860	10.0	33.8	261	18.9	38.3
Missing	2	0.0	–	6	0.4	–
Rank						
Enlisted	8,300	96.3	15.2	1,360	98.5	10.9
Officer	309	3.6	3.2	21	1.5	1.5
Missing	6	0.1	–	–	–	–
Component						
Active duty	7,008	81.3	22.2	1,191	86.2	10.4
Reserve	1,607	18.7	4.9	190	13.8	8.1
Combat related ^a						
Yes	7,935	92.1	–	1,192	86.3	–
No	680	7.9	–	159	11.5	–
Missing	–	–	–	30	2.2	–
Deployed						
Yes	8,283	96.2	–	1,281	92.8	–
No	332	3.9	–	100	7.2	–

Note. PTSD = posttraumatic stress disorder.

^aDetermination made by physical evaluation board at time of disability evaluation.

Though medical retirement is a common outcome following disability from PTSD, disability from PTSD is a rare event in both the Army and Marine Corps. Ramchand et al. have estimated the prevalence of PTSD in service members with a history of deployment to be between 5%–20% (Ramchand et al., 2010). This report has shown that approximately 0.4% of the deployed soldier and Marine population was evaluated for a disability from PTSD. Based on the previously estimated prevalence of PTSD among the military population following deployment (Ramchand et al., 2010) and the rate of disability from PTSD among deployed personnel observed, approximately 2–8 service members per 10,000 with PTSD symptoms following deployment have PTSD severe enough to affect their ability to perform their military occupation and are referred for disability evaluation.

Several studies have described the epidemiology of PTSD among service members returning from war (Hoge et al., 2004; Kolkow, Spira, Morse, & Grieger, 2007; Lapierre, Schwegler, & Labauve, 2007; Larson, Highfill-McRoy, & Booth-Kewley, 2008; Martin, 2007; Ramchand et al., 2010; Seal et al., 2007; Smith et al., 2008; Tanielian & Jaycox, 2008; Vasterling et al., 2006). To our knowledge, this is the first effort to characterize the epidemiology of PTSD severe enough to merit disability evaluation in the Army and Marine Corps. One study examined the rate of disability evaluation in Army-enlisted soldiers, but was conducted on a pre-OIF/OEF cohort that included only soldiers who were hospitalized for a mental disorder (Hoge et al., 2005). Another study found individuals who screened positive for a mental health condition following deployment were more likely to be discharged within 1 year of

Table 3
Final Disposition and Disability Rating of Disability From PTSD by Year of First Disability Evaluation for Army and Marine Corps

Variable	2005		2006		2007		2008		2009		2010		Total	
	<i>n</i>	%												
Army														
Disposition														
Retired ^a	190	34.2	278	43.7	478	53.8	1,004	75.8	2,530	97.5	2,569	98.2	7,049	81.8
Severance	349	62.8	335	52.7	386	43.5	303	22.9	37	1.4	4	0.2	1,414	16.4
SWOB	4	0.7	5	0.8	8	0.9	9	0.7	2	0.1	4	0.2	32	0.4
Other ^b	13	2.3	18	2.8	16	1.8	8	0.6	26	1.0	39	1.5	120	1.4
Rating														
<30%	363	65.3	352	55.3	413	46.5	316	23.9	44	1.7	9	0.3	1,497	17.4
≥30%	193	34.7	284	44.7	475	53.5	1,008	76.1	2,551	98.3	2,607	99.7	7,118	82.6
Mean	25.9		29.0		32.3		41.9		62.3		64.5		52.0	
SD	23.0		22.7		23.4		22.6		16.1		13.5		23.6	
Median	20		20		30		40		60		60		60	
Mode	10		10		10		30		60		60		60	
Total	556		636		888		1,324		2,595		2,616		8,615	
Marine Corps														
Disposition														
Retired ^a	71	68.6	148	70.0	131	64.4	194	72.8	327	98.2	262	98.9	1,133	82.0
Severance	31	30.4	59	28.1	71	35.1	68	25.7	2	0.6	0	0.0	231	16.7
SWOB	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Other ^b	1	1.0	4	1.9	1	0.5	4	1.5	4	1.2	3	1.1	17	1.2
Rating														
<30%	31	30.1	60	28.4	71	35.0	71	26.7	2	0.6	0	0	235	17.0
≥30%	72	69.9	151	71.6	132	65.0	195	73.3	331	99.4	265	100	1,146	83.0
Mean	32.9		36.0		32.7		33.4		60		58.9		45.0	
SD	19.0		22.7		21.8		18.2		13.7		13.6		22.0	
Median	30		30		30		30		60		50		50	
Mode	30		30		30		30		50		50		50	
Total	103		211		203		266		333		265		1,381	

Note. PTSD = posttraumatic stress disorder; SWOB = separated without benefits.

^aIncludes permanent disability retirement, placed on the temporary disability retirement list, and retained on the temporary disability retirement list. ^bIncludes fit determinations, conditions not related to duty, and administrative terminations.

redeployment, but did not examine disability discharge as an outcome separate from all-cause attrition (Hoge et al., 2006). This study demonstrates that PTSD is an increasingly more common and severe disability, primarily in deployed soldiers and Marines who experience concurrent musculoskeletal and neurological disabilities.

Comorbid disability was present in 65% of Army and 56% of Marine Corps cases with disability from PTSD, with musculoskeletal disabilities most common in the Army and neurological disabilities most common in the Marine Corps. The presence of musculoskeletal comorbid disabilities in cases with PTSD is consistent with previous research findings that PTSD is significantly associated with being wounded or injured while deployed (Hoge et al., 2004; Hoge, Terhakopian, Castro, Messer, & Engel, 2007; McGeary, Moore, Vriend, Peterson, & Gatchel, 2011; Schneiderman, Braver, & Kang, 2008). In contrast, the

lack of psychiatric comorbid disability found in this study is not consistent with previous research demonstrating that psychiatric conditions and depression are common among service members with PTSD (Hoge et al., 2007; Milliken et al., 2007; Seal et al., 2007; Tanielian & Jaycox, 2008). The lack of comorbid psychiatric disability in this study population, however, does not indicate a lack of comorbid psychiatric conditions; instead, it shows that PTSD disability cases are not rated for a comorbid psychiatric disability. It is possible comorbid psychiatric conditions in disability from PTSD cases do not separately render the service member unfit to perform their military occupation due to successful treatment of these conditions, but the service member still meets the diagnostic criteria for PTSD. In addition, psychiatric comorbidity may be taken into consideration as contributing to the overall impairment during the rating of PTSD or another separately unfitting condition, such as

Table 4
Comorbid Disability for Cases Also With Disability From PTSD
in Army and Marine Corps

Condition	Count	%
Army		
Dorsopathies	2,646	47.4
Arthritis	1,541	27.6
Residuals of traumatic brain injury ^a	1,323	23.7
Limitation of motion (arthropathies)	678	12.1
Migraine	361	6.5
Paralysis	317	5.7
Limitation of motion of muscles	254	4.5
Skeletal and joint deformities	231	4.1
Joint disorders or inflammation ^b	213	3.8
Neuralgia	149	2.7
Total	5,584	100
Marine Corps		
Residuals of traumatic brain injury ^a	326	42.0
Dementia	126	16.2
Dorsopathies	121	15.6
Arthritis	110	14.2
Limitation of motion (arthropathies)	108	13.9
Paralysis	93	12.0
Migraine	60	7.7
Mood disorder	46	5.9
Neuralgia	44	5.7
Amputations	38	4.9
Total	777	100

Note. PTSD = posttraumatic stress disorder.

^aIn fiscal year 2008 the definition associated with this Veterans Affairs Schedule of Rating Disabilities (VASRD) code (8045) changed from "Brain disease due to trauma" to "Residuals of traumatic brain injury." Individuals with the code 8045 are included in this count regardless of the definition associated with the code at the time of disability evaluation. ^bThese include arthropathies and rheumatism.

traumatic brain injury, and thus not rated independently. Further research is necessary to determine if the discrepancy observed with respect to psychiatric comorbidity reflects differences in PTSD cases with a disability discharge relative to PTSD cases that are able to continue military service.

Strengths of this study include the large study population and the comprehensive data capture of a variety of demographic and military unique factors. Because all aspects of this population and their combat experiences are unique to the military, including their physical and psychosocial trauma, there is limited generalizability to other populations. This study's generalizability to civilian workplace disability systems is further limited by the DoD disability system's use of VASRD codes, developed to rate and compensate unfitting conditions, rather than *International Classification of Disease* (9th ed., Clinical Modification; *ICD-9-CM*; National Center for Health Statistics and the Centers for Medicare and Medicaid Services, 2011) diagnosis codes. The VASRD codes are often nonspecific, particularly for mus-

culoskeletal conditions, limiting their utility for research and surveillance purposes (Bell, Hollander, Williams, & Amoroso, 2008) and standardized measures of PTSD were not available to validate the diagnosis of PTSD inferred from the presence of the appropriate VASRD code. Studies of hospitalized service members who later were discharged with a disability, however, have shown that the most commonly assigned *ICD-9-CM* diagnosis codes are consistent with the condition group of the unfitting medical condition (i.e., a psychiatric condition is noted in both the hospitalization and disability record; Bell et al., 2008; Hoge et al., 2005). Interpretation of the combat-related determination is also limited because it cannot be determined whether the PTSD condition was combat-related when more than one condition is listed, and because no information was available to distinguish deployment to Iraq from deployment to Afghanistan, or to measure trauma exposure. Recent policy changes outlined in the National Defense Authorization Act FY 2008 may affect future interpretation of these data as all new disability from PTSD cases are now placed on the temporary disability retirement list with a rating of 50% and reevaluated in 6 months (Dorotheo, 2010; Under Secretary of Defense, Personnel and Readiness, 2008).

This report extends current research on military PTSD by demonstrating that PTSD is becoming an increasingly more common medically retired disability in the Army and Marine Corps. Disability from PTSD is generally related to deployment and accompanied by comorbid musculoskeletal and neurological disabilities. Future work includes determining risk factors for disability related to PTSD, emphasizing accession and deployment factors, as well as psychiatric morbidity. Further research is needed to compare the disabled to nondisabled military PTSD population to more accurately target interventions for redeploying service members to minimize comorbidity associated with disability from PTSD and facilitate continuation in military service or successful transition to civilian life.

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