Determinants of Medical Care-Seeking Behavior for Musculoskeletal Conditions During US Marine Corps Training: A Thematic Analysis

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Context: Musculoskeletal injuries (MSK-I) are a welldocumented problem in military populations and a leading contributor to disability across military services. However, only a portion of Service members who sustain an MSK-I report it to medical providers. Although several studies have identified barriers to seeking medical care in military populations, less is known about what motivates Service members to seek care for MSK-I.

Objective: To describe determinants of medical care-seeking behavior for MSK-I and/or musculoskeletal pain (MSK-P) in recently enlisted US Marines during military training.

Design: Qualitative study.

Setting: School of Infantry-West (SOI-W), Marine Corps Base Camp Pendleton, California.

Patients or Other Participants: A total of 1097 US Marines entering Infantry Training Battalion or Marine Combat Training at SOI-W.

Data Collection and Analysis: Participants completed written surveys at entry to (baseline) and graduation from SOI-W. Closedended question responses were used to calculate MSK-I/MSK-P and care-seeking frequencies. Open-ended responses describing determinants of care-seeking behavior were analyzed using inductive thematic analysis.

Results: Ten percent of participants self-reported sustaining MSK-I during basic training, whereas 14% self-reported sustaining an MSK-I in SOI-W training. A greater proportion reported seeking medical care for their MSK-I/MSK-P during basic training than during SOI-W training. The thematic analysis resulted in 3 main themes that describe drivers and barriers for seeking medical care: (1) self-perceived need for medical care, (2) prioritizing military training, and (3) training-specific influences.

Conclusion: Understanding determinants of care-seeking behavior is valuable when designing intervention strategies to promote early MSK-I treatment. Our findings add to previous research to elucidate reasons underlying the decisions about care-seeking for MSK-I/MSK-P. Interventions, including educational strategies and direct approaches like embedding medical providers within units, to minimize barriers to seeking medical care in the military may reduce the burden of MSK-I/MSK-P on Service members throughout their military careers.

Key Words: military, healthcare-seeking behavior, barriers, drivers

Key Points

- Care-seeking behaviors for musculoskeletal conditions are influenced by an array of perceived and actual determinants, including factors that are unique to military training.
- Understanding barriers and drivers to seeking care is an important first step in designing and implementing interventions to promote early treatment for musculoskeletal conditions.

E arly medical care for musculoskeletal injuries (MSK-I) can result in improved patient outcomes, decreased morbidity, and reduced medical costs.^{1–3} However, underreporting of MSK-I to medical providers is a known problem in military populations.^{4,5} Studies have found that up to 64% of US Army soldiers who sustain an MSK-I do not seek care, and up to two-thirds of Reserve Officers' Training Corps (ROTC) cadets concealed their injuries.^{4–6} Reported care-seeking behaviors for MSK-I are particularly low in entry-level training settings, such as US Army Initial Entry Training.⁴ Even in populations with direct access to onsite medical care, such as US Marine Corps (USMC) entry-level

training, only a portion of trainees who sustain an MSK-I seek care for their injury,⁷ leaving them vulnerable to reinjury, chronic pain, and performance detriments.^{8–9}

Studies have identified psychosocial, cultural, and/or structural factors that may influence care-seeking behaviors. In civilian populations, psychosocial factors often relate to the injury itself (eg, perceptions of injury severity,¹⁰ fearavoidance beliefs,^{10,11} or recovery expectations¹²) but may also include depression/psychological distress¹⁰ and social support.^{13–15} Cultural factors that may be unique to military populations, such as stigma and an emphasis on resilience, grit, or "deployability,"^{16,17} can also influence decisions to seek medical care. Stigma associated with seeking mental health care is well documented^{18,19}; similarly, the perception that seeking medical care indicates weakness or is embarrassing may influence Service members' decisions to seek care for MSK-I. Evidence suggests that military personnel feel that their unit embraces a "suck it up" mentality²⁰ and fail to report MSK-Is to avoid negative perceptions or seeming weak.^{6,21} Finally, several studies report that medical mistrust, inconvenience associated with seeking care, ^{4,6,10,16,20} and communication issues with providers¹⁰ can serve as barriers to seeking medical care, leaving much work to be done in the military operational and medical communities to encourage early careseeking for MSK-I.

Most studies have reported why Service members fail to seek care for MSK-I, but less is known about what positively influences care-seeking for MSK-I, particularly during entry-level training where Service members begin to develop their understanding of military culture and attitudes toward medical care. Understanding determinants of care-seeking in entry-level trainees is a vital first step in changing the culture around MSK-I and medical careseeking behavior. Therefore, the purpose of this mixed methods study was to describe positive and negative determinants of medical care-seeking behavior for MSK-I and/or musculoskeletal pain (MSK-P) in recently enlisted Marines during military training.

METHODS

Study Design

This study is a secondary analysis of data collected during the Reducing Injuries with Training Enhancement, Targeted Rehabilitation and Core Conditioning (RITE-TRACC) study, a 2-part prospective cohort study designed to understand risk factors for MSK-I during infantry training in recently enlisted Marines and develop and implement a targeted injury prevention curriculum during infantry training at School of Infantry-West (SOI-W; Marine Corps Base Camp Pendleton, CA). For this secondary analysis, participants were recruited from the Marine Combat Training Battalion (MCT; 4 weeks in length) and Infantry Training Battalion (ITB; 9 weeks in length) courses at SOI-W between 2016 and 2019.

The USMC entry-level training pipeline begins with recruit training, or "boot camp," a 13-week course consisting of physical training, ceremonial drill, general military training, and education in the culture of being a Marine. Thereafter, Marines enter their assigned secondary (occupational) training course. This training consists of either MCT or ITB. MCT is a 4-week course in which Marines become familiar with essential tactical skills that could be applied during combat situations, such as marksmanship and patrolling, before further training in their noninfantry occupational specialty. ITB is a 9-week course in which infantry Marines become proficient in infantry skills, such as weapons training, land navigation, patrolling, and other military operations, before entering the operating forces with an infantry occupational specialty. Sustaining an MSK-I during recruit training, MCT, or ITB can lead to training attrition, being "dropped" from training and recycled into future iterations of the course, prolonged time in training, or even attrition from military Service.

Although the RITE-TRACC study was designed to focus on ITB, we also included MCT at the request of SOI-W leadership. This analysis examines quantitative and qualitative self-reported MSK-I, MSK-P, and medical care-seeking data collected via surveys administered upon entry to and graduation from participants' designated SOI-W training course. Demographic data were obtained from the Recruit Assessment Program conducted by the Naval Health Research Center at Marine Corps Recruit Depot – San Diego, and available data were combined with RITE-TRACC study data.

This study was approved by the Uniformed Services University of the Health Sciences (USUHS) Institutional Review Board and the USMC Institutional Review Board. Civilian research staff briefed Marines entering SOI-W, including a discussion of the benefits and risks of participation. All participants provided written informed consent before participation. In compliance with Department of Defense Instruction 3216.02, permission was granted by the USUHS Institutional Review Board to enroll Marines who were 17 years of age and considered adults while in federal duty status; these participants were allowed to consent without parent or guardian approval.

Procedures

MSK-I/MSK-P and medical care-seeking behaviors during basic training and during MCT/ITB training at the SOI-W were assessed using written surveys administered at entry to (baseline) and graduation from SOI-W, respectively. As Marines entering SOI-W had recently completed USMC basic training, the baseline survey referred to MSK-I/MSK-P and care-seeking behaviors during their time in basic training, whereas the phrase "SOI training" was used in the graduation survey to refer to participants' time in training at SOI-W, regardless of which course (MCT or ITB) they entered/completed. The surveys asked, "During [basic/SOI] training, did you have an injury to any bone, muscle, tendon, ligaments, and/or cartilage?" and "Did you have any pain during [basic/ SOI] training?" Participants were then asked to indicate the exact part(s) of the body that were injured/painful on a visual body map. Participants who reported MSK-I and/or MSK-P during basic/SOI training were then asked the following open-ended questions about care-seeking behaviors for their MSK-I or MSK-P: "Did you seek medical attention for your [injury/pain]?" and "If no, why not?" or "If yes, why?" Participants were free to skip any question(s) they were not comfortable answering.

Data Analyses

Surveys were collected on paper and scanned into Snap-Survey Software (SnapSurveys) for processing. Self-reported MSK-I or MSK-P and whether or not medical care was sought for MSK-I or MSK-P were coded as binary (no/yes) responses. Body part(s) indicated as injured/painful were also coded as binary (injured/uninjured) responses. Left- and rightsided body parts were collapsed into a single body region, which were also coded as binary (injured/uninjured) responses, regardless of whether the injury/pain was indicated unilaterally or bilaterally. MSK-I/MSK-P and care-seeking frequencies were calculated for both basic training and SOI training. Quantitative analyses were conducted using SPSS for Windows Version 27 (IBM Corporation).

Open-ended responses describing determinants for why medical care was or was not sought for MSK-I/MSK-P were



Figure 1. Response coding and theme development diagram. Abbreviations: MSK-I, musculoskeletal injury; MSK-P, musculoskeletal pain; SOI, School of Infantry.

analyzed using inductive thematic analysis as described by Braun and Clarke.²² In thematic analysis, the frequency of responses does not necessarily define the presence or strength of a theme; however, it may be important to note frequencies of responses or codes for stakeholders to interpret the thematic analysis and develop strategies to implement actionable solutions. The open-ended responses were read carefully several times by 2 independent reviewers (C.E.D., A.B.G.) to identify meaningful features that were assigned initial codes. Responses were typically brief; however, when necessary, more than one code could be applied to an individual's response. After initial coding, the two independent reviewers convened to compare codes and reach a consensus on a final list of codes. When a consensus was not reached for how to code a given response, a third reviewer (E.A.R.) served to reconcile the disagreement. Responses that received the same codes were collated together to ensure that the code was consistently applied across similar responses.

Although codes were initially separately organized by musculoskeletal condition (MSK-I or MSK-P), training location (basic or SOI), training course (MCT or ITB), and whether care was sought (yes or no), the codes overlapped considerably across these categories, and the decision was made to collapse all the codes into one all-encompassing list before theme development. Next, all three reviewers collaborated to sort codes into groups based on broader meanings, ultimately developing themes that described drivers and barriers for seeking medical care for MSK-I or MSK-P during training. After initial theme development, the principal investigator (S.J.D.) reviewed the themes and provided additional input and guidance for theme refinement and interpretation. Through iterative review of the codes and participant responses, themes were revised until final themes were delineated and agreed upon by the study team (Figure 1). The final themes were uniquely and distinctly defined and supported by the codes and individual participant responses and contributed to fulfilling the study's purpose.

RESULTS

A total of 1097 Marines consented to participation and completed baseline surveys during the RITE-TRACC study. All participants were male (age = 19.8 ± 1.7 years), as females were not yet training at SOI-W at the time of data collection. The majority (89%) of participants were enrolled in the ITB course (n = 980/1097), and the remainder were enrolled in the MCT course (n = 117/1097). Approximately 60% (n = 654/1097) of participants who completed the survey at baseline also completed the survey at graduation. Note that, because participants were free to skip questions, sample sizes vary for each item assessed (Figure 2).

At entry to SOI-W, 612 participants had education and marital status information, and 613 had race/ethnicity information available for analysis. Demographic information is shown in Table 1. Due to unforeseen circumstances, some Recruit Assessment Program demographic data were missing and were not able to be integrated into the RITE-TRACC data set. Although demographic information was only available



Figure 2. Participant enrollment and follow-up diagram. Abbreviations: ITB, Infantry Training Battalion; MCT, Marine Combat Training Battalion; MSK-I, musculoskeletal injury; MSK-P, musculoskeletal pain; RITE-TRACC, Reducing Injuries with Training Enhancement, Targeted Rehabilitation, and Core Conditioning; SOI, School of Infantry; SOI-W, School of Infantry - West.

Table 1. Participant Demographics

	Percentage of Tota (Number of Participants/Total)
Race/ethnicity	
White/Caucasian	55.3 (339/613)
Hispanic or Latino/Latina	29.9 (183/613)
Multiracial	8.3 (51/613)
Asian	2.3 (14/613)
Black or African American	1.6 (10/613)
Native Hawaiian or other Pacific Islander	1.1 (7/613)
American Indian or Alaska Native	0.8 (5/613)
Other	0.5 (3/613)
Unknown	0.2 (1/613)
Highest level of education completed	
Graduated high school	80.4 (492/612)
Some college or technical school	17.2 (105/612)
Graduated 4-year college or university	0.8 (5/612)
Obtained GED	0.7 (4/612)
Graduated from trade or technical school	0.5 (3/612)
Some high school but no diploma	0.5 (3/612)
Marital status	
Single	98.5 (603/612)
Married	1.0 (6/612)
Divorced	0.5 (3/612)

Abbreviation: GED, general educational diploma.

for about 56% of our participants, comparison of this subsample with demographic information provided by the Defense Centers for Public Health – Portsmouth for Marines training at SOI-W at the time showed similar marital status and White/ Caucasian and Hispanic or Latino race/ethnicity representation; however, our subsample contained a smaller percentage of those identifying as Black or African American and a greater percentage of Marines with some college or technical school education.

Fourteen percent (n = 148/1090) self-reported that they sustained an MSK-I during basic training, whereas 10% (n = 64/641) self-reported sustaining an MSK-I during SOI training. Compared with MSK-I, the proportion of Marines self-reporting MSK-P was higher during both basic (30%, n = 330/1087) and SOI (52%, n = 114/219) training. A greater

proportion reported seeking medical care for their MSK-I and MSK-P during basic training than during SOI training (Figure 3). Body parts in the lower extremities accounted for approximately two-thirds of MSK-I/MSK-P during basic training and SOI training (Table 2).

Fifty-three distinct codes were applied to 623 distinct responses about care-seeking behavior. The thematic analysis of open-ended responses for reasons why care was or was not sought for MSK-P and MSK-I resulted in the following 3 main themes that describe drivers and barriers for seeking care: theme 1, self-perceived need for medical care; theme 2, prioritizing military training; and theme 3, training-specific influences. The 3 themes and illustrative quotes included in these themes are described in Table 3. There was a small number of participant responses that did not provide meaningful insight into the research question and were not included in any of the developed themes.

Theme 1: Self-Perceived Need for Medical Care

This theme encompasses the participants' self-perceived reasons about why care was or was not needed for their injury or pain during training. Responses often referenced the participants' perceptions of the severity of the condition, such as "I could tell the bone was injured in some way." Some participants did not seek care because they felt that the condition was not severe enough to warrant medical attention or that they could deal with or work around the injury or pain (eg, "I could use personal remedies for healing"). Conversely, some stated that the severity of their injury or pain was the reason that they chose to seek medical care (eg, "It was painful to walk on"). Some participants stated that they chose to seek care because they wanted to prevent the condition from worsening, to make sure that they could keep training, or because they wanted to promote healing or recovery. For example, one participant stated that their reason for seeking care was "to see how I could heal and keep training." Another prominent feature of responses included in this theme was that participants often referenced the effect, or lack thereof, that their injury or pain had on their training, performance, or physical function. In one example case, the reason stated for not seeking care was that the musculoskeletal condition "did not affect



Figure 3. Self-reported care-seeking for musculoskeletal injury (MSK-I) and musculoskeletal pain (MSK-P) during basic and School of Infantry (SOI) training. Percentages are reported out of the participants who self-reported sustaining an MSK-I and/or MSK-P during either basic or SOI training.

Table 2.	Self-Reported Musculoskeletal Injury (MSK-I) and
Musculos	keletal Pain (MSK-P) During Basic and School of
Infantry (S	SOI) Training

	Basic Training		SOI Training	
	MSK-I	MSK-P	MSK-I	MSK-P
Injury Region	n (%)	n (%)	n (%)	n (%)
Head/trunk				
Head/neck	0 (0.0)	8 (1.4)	3 (3.4)	1 (0.9)
Upper back	8 (4.4)	23 (4.1)	2 (2.3)	5 (4.6)
Chest or ribs	1 (0.6)	0 (0.0)	1 (1.1)	0 (0.0)
Lower back	7 (3.9)	58 (10.4)	14 (16.1)	17 (15.7)
Abdomen	2(1.1)	5 (0.9)	0 (0.0)	0 (0.0)
Total	18 (9.9)	94 (16.8)	20 (23.0)	23 (21.3)
Upper extremity	. ,	. ,	. ,	. ,
Shoulder	18 (9.9)	65 (11.6)	4 (4.6)	13 (12.0)
Upper arm	1 (0.6)	16 (2.9)	0 (0.0)	2 (1.9)
Elbow	1 (0.6)	8 (1.4)	1 (1.1)	1 (0.9)
Forearm/wrist/hand	9 (5.0)	10 (1.8)	2 (2.3)	0 (0.0)
Total	29 (16.0)	99 (17.7)	7 (8.0)	16 (14.8)
Lower extremity	. ,	. ,	. ,	. ,
Hip	8 (4.4)	35 (6.3)	2 (2.3)	3 (2.8)
Pelvis/groin	2(1.1)	8 (1.4)	0 (0.0)	0 (0.0)
Thigh	3 (1.7)	23 (4.1)	2 (2.3)	5 (4.6)
Knee	45 (24.9)	105 (18.8)	20 (23.0)	23 (21.3)
Lower leg	22 (12.2)	82 (14.6)	4 (4.6)	15 (13.9)
Foot/ankle	54 (29.8)	114 (20.4)	32 (36.8)	23 (21.3)
Total	134 (74.0)	367 (65.5)	60 (69.0)	69 (63.9)

my performance during training." Care-seeking was sometimes determined by how the condition did or did not affect physical function, such as walking, running, or lifting (eg, "it was difficult to pivot without pain" versus "I could still walk on my ankle after rolling it on a hike").

Theme 2: Prioritizing Military Training

This theme captures responses that indicate the participants prioritized military training over seeking medical care. In some cases, participants prioritized completing specific training events over seeking medical care for MSK-I or MSK-P (eg, "It was during the crucible and I was going to finish one way or another"); however, in other cases, the participants prioritized training as a whole, regardless of specific events or how far along in the training program they were (eg, "Training is very important not to miss as it could save my life one day"). Responses in this theme also captured the perceptions that seeking medical care would lead to the participant being "dropped," or removed from the training program to recycle into a later course, and delay graduation. For instance, one participant stated that they did not seek care "because I didn't want to get dropped to another company/platoon," and another said, "It was too close to graduation, and I wanted to graduate with my platoon." This sentiment was expressed by a large number of participants.

Theme 3: Training-Specific Influences

This theme captures drivers and barriers to care-seeking that are specific to the military training environment. Within this theme, 2 subthemes were defined: (1) logistical considerations associated with seeking medical care during military training and (2) factors related to military culture. The logistical considerations referenced included the perception of not having time to seek medical attention (eg, "didn't have time to go") or not being able to get an appointment for medical treatment (eg, "medical didn't take me"). The factors related to military culture in this theme included the idea that pain is normal during training (eg, "pain was expected and was the usual") or that pain is a signal of weakness (eg, "quitters go to medical"), and military hierarchy and leadership dynamics either encouraged or discouraged care-seeking. Specifically, some participants responded that they did not seek medical attention because they were afraid of their instructors (eg, "was scared of the drill instructors"); others responded that they were told that their injury was not serious or that it was a normal part of training (eg, "I was told it's normal for your feet to hurt"). Interestingly, some respondents stated that they were told not to go to medical, whereas others reported that they were explicitly told to seek medical attention. Some participants even reported that they were told by others that they would be dropped if they sought care and therefore decided against seeking care. Some responses were unclear about who exactly told the trainee to seek or not seek care; other responses noted that they were told by an instructor, medical corpsman, or their peers.

DISCUSSION

This is the first study to assess medical care-seeking for musculoskeletal conditions in USMC trainees during basic and SOI training, two distinct military trainings. This mixed methods exploration of USMC trainees' experiences with MSK-I and MSK-P during the entry-level training pipeline and their reasons for seeking or not seeking medical care were summarized by three overall themes, each revealing barriers and drivers for care-seeking: (1) self-perceived need for medical care, (2) prioritizing military training, and (3) training-specific influences. Additionally, reported care-seeking behaviors for MSK-I in this cohort of USMC trainees were consistent with MSK-I reporting in US Army trainees; however, participants in this study reported seeking medical attention for MSK-I at a greater rate during basic training (71% of injured USMC trainees versus 36% of injured US Army trainees).⁴ The rate of care-seeking for MSK-I during SOI training was more similar to the percentage of US Army trainees (28%) and may reflect, among other things, Service branch as well as gender differences.⁴ Our results are specific to male trainees, as females were not yet training at SOI-W at the time of this study, whereas the US Army sample was about 18% female.

Similar to previous reports, participants in this study often indicated that their self-assessed cause and/or severity of their injury or pain influenced their decisions about whether or not to seek medical care.⁴ For example, several participants described experiencing "just pain/soreness" that, in their opinion, did not require medical attention. Although some participants cited not seeking care because their condition did not interfere with their physical function or performance, many participants indicated that they did seek care once their musculoskeletal condition impaired their performance. This is consistent with determinants of care-seeking in US Army personnel and ROTC cadets.^{5,17} Others indicated that they sought care because they wanted to promote healing or keep their injury from worsening. Together, these sentiments indicate beliefs among trainees that seeking medical care allows for more expedient healing from the injury or pain and a safe return to training.

Theme	Thematic Analysis and Illustrative Responses		
 Perceived need for medical care (33 distinct codes; 57% of responses [n = 402/711]) "It was painful to walk on." "It was difficult to pivot without pain." "I wanted to make sure it wasn't broken or anything." "I was concerned about my health." "The pain grew worse after every day." "I could tell that the bone was injured in some way." "To see how I could heal and keep training." 	"Did not affect my performance during training." "It was just pain/soreness; it did not require medical attention "It went away after a few weeks." "Didn't think it was severe enough to seek medical attention." "I could use personal remedies for healing." "I could still walk on my ankle after rolling it on a hike."		
 2. Prioritizing military training (11 distinct codes; 28% of responses [n = 196/711]) "It was too close to graduation, and I wanted to graduate with my platoon." "Because I didn't want to get dropped to another company/platoon." "Fear of being dropped." "Couldn't afford to miss training." "It was during the crucible, and I was going to finish one way or another." "Training is very important not to miss as it could save my life one day." "I wanted to learn as much as possible in boot camp." "It was just tendonitis and would have prolonged me being there." 			
 3. Training-specific influences (9 distinct codes; 5% of responses [n = 34/711]) a. Logistic considerations "Didn't have time to go." "Medical didn't take me." b. Military culture "Pain was expected and was the usual. Also, there was training to do, we all hurt." "Quitters go to medical." "Pain is weakness leaving the body." "Because I'm not weak." "Was scared of the drill instructors." "I was told it would go away." "S[enior] D[rill] I[nstructor] said we'd get dropped." "I was told it's normal for your feet to hurt." "I told myself to suck it up buttercup." "The combat instructors told me to go to medical." 			

^a More than one code could be applied to an individual participant response, resulting in a total of 711 coded responses.

Participants may also believe that they can treat MSK-I themselves, especially for injuries that they perceive as less severe. Prior research has shown that, rather than seek medical care, both US Army soldiers and ROTC cadets used a variety of self-management strategies for their unreported MSK-I, including pain relief medications or topicals, ice/heat packs, pain avoidance, splints/braces, illicit drugs, alcohol, or yoga/ meditation.^{5,20} However, it is unknown if the participants' self-perceived need for medical care aligned with what a medical professional would recommend in each case. Many MSK-Is during military training are overuse injuries and often begin with minimal impact on physical function or performance.²³ However, these relatively minor injuries can become debilitating without early intervention; early treatment for overuse injuries may reduce healing time or reduce time lost from training.¹ As such, there may have been cases when medical care would have been beneficial to the health and well-being of the trainee, but judgement about their own injury severity led to not seeking care.

Responses comprising the theme of prioritizing military training captured participants' enthusiasm to complete training as well as their desire to graduate with their current platoon. Enthusiasm or eagerness to complete training may contribute to delaying medical care for musculoskeletal conditions during training, as trainees might suspect that spending time to rehabilitate an injury will delay their entry to the operating forces; this delay may or may not occur depending on the nature and severity of the injury. To that end, trainees' relationships within their training units may have created reluctance to transition to another unit if they were in fact dropped from training due to their musculoskeletal conditions. The widespread perception that seeking medical care would lead to the participant being dropped from training is not unique to USMC trainees and has been reported among other military training cohorts.⁴

Other responses within the prioritizing military training theme captured the idea that participants valued their military training above seeking medical care. Some participants indicated that they did not want to miss a day of training to obtain medical care for an injury, noting that training was too important to miss and that they prioritized learning. Some participants even noted that their training could potentially "save my life," the perception that military training is more important than seeking early medical care for a musculoskeletal condition. Relatedly, training-specific logistical factors often referenced insufficient time during training to seek medical care. USMC entry-level training is fast paced and tightly scheduled, which can impact the amount of time available for medical care. Policies also limit the amount of time that trainees are allowed to be absent from training, and the amount of time necessary for medical evaluation and treatment may exceed these limits. These sentiments are not unique to seeking medical care; a recent scoping review noted that logistical factors such as competing priorities and limited resources also serve as barriers to implementing MSK-I prevention programs in military settings.²⁴ During entry-level training, Marines also have limited autonomy and must first ask permission to seek care. Marines that do seek care often need to be escorted to various sites/ appointments by an instructor and/or a "battle buddy," impacting multiple individuals and presenting a greater inconvenience in seeking medical care. US Army Drill Sergeants expressed a similar sentiment that seeking help would cause inconvenience to self and to others, interfering with their ability to train recruits or causing a burden to other Drill Sergeants.²⁵ The physical distance of medical treatment facilities from training sites and long wait times for appointments further contribute to the perceived inconvenience of seeking care. The logistic considerations referenced by the trainee responses in this study are similar to the reasons described by Smith et al, where nearly 20% of respondents cited inconvenience associated with seeing a medical provider as a reason for underreporting musculoskeletal conditions.⁶

Approaches to prioritizing care-seeking without interfering with training demands, such as employing onsite or embedded medical assets during essential training elements, can positively influence care-seeking. Previous studies have demonstrated that improved access to MSK-I/MSK-P care promotes early treatment and reduces attrition and morbidity in training and operational units.^{16,26,27} Embedding athletic trainers in US Air Force basic training resulted in improvements in training attrition, fitness scores, health care utilization, and injury incidence rates.^{26,27} The USMC also utilizes athletic trainers in several ways, including via the Sports Medicine Injury Prevention (SMIP) program, whose mission is to reduce attrition and lost work days associated with MSK-I.28 The SMIP program has shown a reduction in both lower leg stress fracture rates and medical attrition rates for recruits as well as improvements in physical fitness scores.²⁹ Further refinement and implementation of these programs, and others like them, may be an effective means to reduce a wide range of reported barriers expressed by USMC trainees and promote early medical treatment for musculoskeletal conditions.^{3,8,9,30}

Leadership dynamics and the hierarchical nature of the military, particularly military training, may serve as important influences on trainees' perceptions of and motivations for seeking care for MSK-I or MSK-P. During the entry-level training pipeline, trainees have a low rank and must follow orders from those who hold a higher rank, particularly their instructors. Therefore, if instructors explicitly tell trainees that they should or should not seek medical care, the trainee will likely comply. Most of the responses that indicated that participants were told that they should or should not seek medical attention were unclear about who exactly told the trainee to seek or not seek care. If the trainee was receiving this information from someone in a leadership position, such as an instructor or a unit leader, the respondent could have perceived it to be a direct order. There also may be components of intimidation or fear that can affect whether a trainee is comfortable seeking medical attention for an MSK-I or MSK-P. As most entry-level Marine trainees are young, the training environment also may be their first independent experience in deciding whether or not to seek medical attention for an MSK-I or MSK-P. Marine trainees may model their behaviors off of the experienced Marines who serve as instructors. Thus, instructors' attitudes and behaviors toward seeking medical attention may also shape trainees' care-seeking behaviors. Elliman et al examined the treatment-seeking behaviors of US Army Drill Sergeants during initial entry training and noted that nearly 40% of those who were injured did not seek care for their own injuries.²⁵ The barriers noted by the Drill Sergeants were often similar to the barriers noted by the Marine trainees in this study and may reflect a cultural perception or stigma toward seeking medical care for MSK-I across the military.²⁵

Trainees may perceive that their peers or instructors would consider them "weak" or "a quitter" if they sought medical attention for an MSK-I or MSK-P. These ideas are common in military environments and reflect perceived stigmatization of injuries and/or medical care-seeking within military society. Similar data in other military personnel indicate that perceived stigmatization of injuries impacts injury-reporting behavior and that injury minimization is still prevalent in military culture.^{4–6,17,20} Social and military cultural factors may be the most challenging barrier to address when promoting early treatment for MSK-I or MSK-P. For example, many participants expressed the belief that pain was normal during training or that pain was equated with weakness. This sentiment was reflected in the careseeking rates for Marines who reported MSK-P. Compared with those who reported MSK-I, care-seeking was much lower for MSK-P during both basic and SOI training (Figure 3). Additionally, care-seeking for MSK-P was incredibly low during SOI training (just 7% of Marines with MSK-P versus 32.7% during basic training).

Delaying care-seeking for a musculoskeletal condition may lay the groundwork for Service members to develop more severe musculoskeletal conditions later in their military career and beyond. Thus, seeking early treatment for MSK-I or MSK-P may promote improved health outcomes or career longevity. Based on the reported drivers and barriers to care-seeking for MSK-I or MSK-P, solutions to improve care-seeking can be developed. For example, educational interventions can be developed to target both trainees and leadership. For trainees, interventions could leverage enthusiasm to complete training by providing education and resources for self-management strategies that can be used in the early stages of musculoskeletal conditions to prevent worsening. However, not all injuries can be prevented, and some will inevitably delay graduation from training. Education that emphasizes how seeking medical care for injuries can often help trainees continue training may also be useful and capitalize on trainees' enthusiasm to advance into the operating forces as well as alter their perception that military training may be more valuable than seeking early medical care. Educational interventions that target leadership, such as instructors or small unit leaders, may play a role in combating cultural barriers to care-seeking by destigmatizing MSK-I and/or care-seeking and by promoting medical care as a component of performance optimization. Importantly, since many respondents reported being told to seek care by someone in leadership, it may be possible to encourage more individuals in leadership positions to promote early treatment for MSK-I or MSK-P by educating instructors and other leaders about

the benefits of seeking early medical care to stay in training. To this end, our group is currently working on educational products for basic and SOI trainees and instructors that aim to promote and destigmatize early care-seeking for MSK-I. Additional interventions which improve access to musculoskeletal care may also be beneficial, especially efforts to reduce logistical barriers to seeking care. Embedded providers can build rapport with their units, including trainees and instructors, creating a culture of teamwork that can support seeking early treatment for injuries. In one study, athletic trainers embedded with US Air Force training units worked to change the culture surrounding pain during training; changing the idea of "pain as weakness" to one of "pain as an indication of injury" was one way in which seeking early treatment for injuries was destigmatized and treated as a component of maintaining health and performance optimization.²⁶

Limitations

The qualitative portion of the study used written short-answer responses, which may have limited participants' explanations of their sentiments surrounding their reasons for seeking care or not. Despite supplying adequate space for responses, most were only a few words long. Future research should use methods that allow for further discussion or expansion on these sentiments, such as focus groups or interviews. In addition, this study was completed in one training setting within the USMC entrylevel training pipeline; as such, results of this study might not translate to other branches of Service or training environments, each of which may have unique cultures and specific barriers or drivers for seeking care for MSK-I or MSK-P. Although some of our findings align with findings from other branches or environments, future research should assess barriers and drivers for care-seeking behavior across a broader scope of Service branches, training, and deployment settings.

Strengths

This study also had several strengths. The anonymized and open-ended nature of the questionnaires may have allowed for more candor from the participants about their sentiments surrounding seeking medical care. In addition, the study asked participants about their experiences across the entire entrylevel training pipeline (ie, both basic training and MCT/ITB training at SOI-W). Assessing participants' experiences with a broader lens rather than focusing on a single training site may allow for generalizability of many results regarding the USMC entry-level pipeline.

CONCLUSIONS

The findings from our current research build upon a growing literature base examining barriers and/or drivers to seeking care for MSK-I in the military. The similarities between our findings and previous research help clarify the reasons underlying the decisions to seek care for MSK-I or MSK-P and can inform the development of interventions aimed at promoting early treatment for musculoskeletal conditions or minimizing barriers for seeking medical care in the military. In addition to educational approaches aimed at increasing early treatment for MSK-I or MSK-P, direct approaches, such as embedding providers into training and providing effective self-management strategies during training, may also be useful in reducing barriers to seeking medical care. Ultimately, these findings inform future interventions that can be developed to reduce the overwhelming burden of MSK-I and MSK-P on military Service members during training and beyond.

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DISCLAIMER

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