

## 2019 REBOOT Recovery Outcomes

In 2019, we sampled **131 REBOOT Combat Recovery (RCR)** participants from **42 different locations** and **74 REBOOT First Responder (RFR)** participants from **22 nationwide locations** who had completed our 12-week faith-based trauma healing course. Participants completed a pre- and post-survey at Week 3 and Week 12 of their respective program. De-identified scores on our outcome measures and our REBOOT satisfaction survey were subjected to statistical analysis by a third-party data analyst. The results are listed in detail below.

### RCR Demographics

- 60% men; 40% women
- Average age was 49 years with a range of 18-84 years
- 40% of participants had experienced combat trauma
- Combat veterans had spent an average of 15 months in a combat zone
- 27% attended as a caregiver/support person

### RFR Demographics

- 56% men; 44% women
- Average age was 45 years with a range of 22-79 years
- 82% of participants were current or former first responders
  - 44% of participants were Law Enforcement Officers
  - 31% of participants were Firefighters
  - 34% of participants were EMS personnel
  - 18% of participants were Dispatch personnel
  - 4% of participants were Corrections Officers
- 22% attended course as a caregiver/support person

**Detailed Results** The following describes each measure that was used and the results according to the statistical analysis.

### PROMIS-29

The PROMIS-29 is an NIH-developed self-report tool which measures health-related quality of life in 7 domains related to physical, mental, and social well-being.

*Results: By the end of the course there was a **statistically significant reduction in measures of fatigue, anxiety, depression and an improvement in the ability to participate in social activities and roles** for RCR and RFR participants. Additionally, there was a statistically significant reduction in pain for RCR participants only. Interestingly, caregivers/support persons of both RCR and RFR participants had statistically significant reductions in fatigue, anxiety, and anger at the end of 12 weeks.*

### **PROMIS Emotional Distress Anger Short Form**

This tool measures an individual's emotional distress and anger by asking the individual to respond with how often they have been bothered by a list of symptoms describing irritability, anger and annoyance.

*Results: By the end of the course there was a **statistically significant reduction in feelings of anger** for RCR and RFR participants.*

### **PROMIS Meaning and Purpose**

This is another PROMIS self-report tool which measures meaning and purpose by asking the individual to respond with their level of agreement to a statement about their purpose.

*Results: By the end of the course, RCR and RFR participants had a **statistically significant improvement in their beliefs about meaning and purpose**.*

### **Social Connectedness Scale**

The individual rates their level of agreement with a statement about social connectedness, belonging, togetherness and a sense of brotherhood/sisterhood among their friends.

*Results: By the end of the course there was a **statistically significant improvement in feelings of social connectedness** for RCR and RFR participants.*

### **Duke University Religion Index (DUREL)**

The DUREL is a 5-item measure of religiosity that was developed to examine the relationship between religion/spirituality and health outcomes.

*Results: By the end of the course there was a **statistically significant improvement in RCR and RFR participants' spirituality** including attending church, spending time in spiritual activities like Bible study or prayer and experiencing God's presence in their lives.*

### **Brief Multidimensional measure of religiousness/spirituality (BMMRS)**

The BMMRS is a self-report measure of 11 dimensions of religiousness and spirituality developed to assess health-related domains of religiousness and spirituality. For the purpose of our research we only included the dimension of forgiveness.

*Results: By the end of the course there was a **statistically significant improvement in RCR and RFR participants' forgiveness of themselves and others**.*

### **Quality of Life**

The Kemp Quality of Life scale is a subjective rating of one's current quality of life from "life is very distressing; it's hard to imagine how it could get much worse" to "life is great; it's hard to imagine how it could get much better".

*Results: By the end of the course there was a statistically significant increase in the overall quality of life of RCR and RFR participants.*

### **RCR Participant Satisfaction**

- **95% stated they felt “very welcome” at REBOOT sessions**
- **98% stated their opinions on faith/spirituality were respected by the others in the group**
- **99% stated they were likely to reach out to someone from the group for support**
- 96% stated they were “quite” or “very” satisfied with their REBOOT experience
- **99% stated they would recommend REBOOT to a friend in the future**
- 35% of graduates stated they would like to train to become a leader
- 85% of graduates stated they would like to stay involved with the program by repeating the course, volunteering, training to become a leader, or participating in ongoing graduate activities

### **RFR Participant Satisfaction**

- **96% stated they felt “very welcome” at REBOOT sessions**
- **98% stated their opinions on faith/spirituality were respected by the others in the group**
- **98% stated they were likely to reach out to someone from the group for support**
- **99% stated they were “quite” or “very” satisfied with their REBOOT experience**
- **99% stated they would recommend REBOOT to a friend in the future**
- 53% of graduates stated they would like to train to become a leader
- 79% of graduates stated they would like to stay involved with the program by repeating the course, volunteering, training to become a leader, or participating in ongoing graduate activities

### **Conclusions**

REBOOT Recovery appears to have a positive effect on the physical, mental, and social well-being of combat veterans and first-responders in addition to caregivers/support persons. Satisfaction rates were high among both courses and the majority of graduates reported a desire to stay involved with the program after graduation.

Evaluating the Effectiveness of REBOOT Combat Recovery:  
A Faith-Based Combat Trauma Resiliency Program

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Abstract

Evidence-based intervention programs attuned to the spiritual needs of service members, veterans, and their families are needed to help them deal with the potentially debilitating consequences of combat trauma. This study evaluated the effectiveness of a faith-based, peer-led combat trauma resiliency program called REBOOT Combat Recovery. Participants were 254 adults who reported on 8 aspects of physical, mental, and social well-being during the 3rd week and the 12th week of the program. Findings indicated improvement for pain interference, fatigue, sleep disturbance, anxiety and depressive symptoms, and social participation. Improvement was uniform except that veterans benefited more than currently serving military personnel with respect to anxiety symptoms. These results suggest the program may be effective for coping with the aftermath of combat trauma.

*Keywords:* combat trauma, health, military, REBOOT Combat Recovery, spirituality

*Public significance statement:* Participants in the REBOOT Combat Recovery program reported improvement in their pain interference, fatigue, sleep disturbance, anxiety and depressive symptoms, and social participation. These findings imply that the REBOOT Combat Recovery program may be useful for helping military service members, veterans, and their family members deal with combat trauma.

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*Combat trauma*, which may result from exposure to dangerous and/or disturbing events in a warzone (e.g., Shea, Presseau, Finley, Reddy, & Spofford, 2017; Stein et al., 2012), can take a considerable toll on military personnel and veterans. Not only can it diminish people's psychological and physical well-being, but it can upend their belief system and moral code (Smith-MacDonald, Norris, Raffin-Bouchal, & Sinclair, 2017). For example, combat trauma is associated with posttraumatic stress (Jakob, Lamp, Rauch, Smith, & Buchholz, 2017), mental health symptoms (Fritch, Mishkind, Reger, & Gahm, 2010), social anxiety (Kimbrel et al., 2016), and alcohol problems (Vest, Homish, Hoopsick, & Homish, 2018). Combat trauma, particularly exposure to killing and war atrocities, also is associated with suicidality (Bryan et al., 2015). Further, combat trauma has effects beyond service members by putting spouses and children at risk of developing secondary trauma stress (Herzog, Everson, & Whitworth, 2011).

Spiritual care has received increasing attention for addressing combat trauma (Maguen et al., 2017; Sherman, Harris, & Erbes, 2015; Wortmann et al., 2017). A growing body of research documents a link between spirituality and military readiness (Smith-MacDonald et al., 2017). Moreover, spiritual fitness is a key domain in both the U.S. Army Comprehensive Soldier Fitness model (Cornum, Matthews, & Seligman, 2011) and the DoD Total Force Fitness model (Jonas et al., 2010). Both initiatives highlight constructs such as valuing service, maintaining positive beliefs, making meaning, leading ethically, and respecting diversity (Jonas et al., 2010). These developments over the past decade spotlight the importance of spiritual care for enhancing the resilience of service members (Thomas, McDaniel, Albright, Fletcher, & Koenig, 2018).

The REBOOT Combat Recovery program ([www.rebootrecovery.com/](http://www.rebootrecovery.com/)) is a manualized combat trauma resiliency course designed to help participants cope with the aftermath of war. The 12-week peer-led program uses Christian principles to enhance resilience among military personnel, veterans, and their family members dealing with combat trauma. Despite anecdotal evidence of its success, the REBOOT program has not been subject to empirical evaluation. Our goal is to evaluate the effects of the program on the physical, mental, and social health of service members, veterans, and their caregivers. To that end, we conducted a study of 254 adults who completed the program in 44 locations across the country.

### **Combat Trauma and Spirituality**

Aversive experiences in the line of duty can generate combat trauma (Hoge et al., 2004; Stein et al., 2012), including being in danger, observing the aftermath of violence, experiencing traumatic loss, and committing or witnessing a morally offensive act (Shea et al., 2017; Stein et al., 2012). Sizeable numbers of service members deployed to Iraq or Afghanistan report being attacked or ambushed, shooting at the enemy, knowing someone injured or killed, and seeing ill or injured civilians but being unable to help (Hoge et al., 2004). Military service in a warzone can lead people to see and do things that challenge their ethical values (Drescher et al., 2011; Litz et al., 2009; Wortmann et al., 2017).

Participation in combat can have long-term implications for the spirituality of service members (Currier et al., 2017; Purcell, Koenig, Bosch, & Maguen, 2016). *Spirituality* refers to service members' personal belief system related to the meaning of life and possibly faith in a higher power (e.g., Sherman et al., 2015; Smith-MacDonald et al., 2017; Thomas et al., 2018). Spirituality is central to occupational performance in general (Baum, Christiansen, & Bass, 2015) and military readiness in particular (Cornum et al., 2011). *Moral injury* has been defined

as the inner conflict that can occur when people are involved in situations that transgress their deeply held moral beliefs (Drescher et al., 2011; Litz et al., 2009). Service members report grappling with guilt, hostility, and aggression long after returning home from combat (Dennis et al., 2016). In the words of a Vietnam veteran: “I feel proud to be a soldier who tried to do something that I thought was right for the country. But it’s hard to be a soldier. It tears away from your moral fiber. It changes your life” (Purcell et al., 2016, p. 1079).

The strong links between combat trauma, spirituality, and moral injury (e.g., Currier et al., 2017) highlight the importance of programs that address the spiritual repercussions of military service. A great need exists for spiritual interventions designed to help military personnel and veterans deal with the aftermath of witnessing, perpetrating, and/or failing to prevent objectionable activity (Sherman et al., 2015; Smith-MacDonald et al., 2017). For example, Purcell et al. (2016) encouraged efforts to “help veterans connect with one another by creating or advocating for venues that bring veterans together to explore the moral and spiritual dimensions of war’s violence” (pp. 1091-1092). REBOOT is designed to provide such services.

### **The REBOOT Combat Recovery Program**

The REBOOT Combat Recovery program is a 12-week manualized course that relies on Christian principles to address whole-person wellness for those affected by combat trauma. The program is open to current and veteran service members of all eras, branches, and ranks. It is offered to participants free of charge by REBOOT Alliance, a 501(c)(3) nonprofit organization, in more than 150 locations throughout the United States, Australia, and Germany. The program was developed in 2011 by a civilian Army hospital occupational therapist to fill a gap in the treatment of military combat trauma by targeting the spiritual wounds of war. Its goals are to educate, affirm, and support those dealing with combat trauma and their families.

REBOOT is grounded in three theoretical frameworks. Following the transtheoretical model of health behavior change (Prochaska, Wright, & Velicer, 2008), the program recognizes that people vary in their readiness to make changes in their lives, and the curriculum is designed to help them move through sequenced stages of behavior modification. Guided by social-cognitive theory (Bandura, 1986), the program seeks to enhance learning through observation, motivation, and self-efficacy. Informed by the occupational therapy practice framework (American Occupational Therapy Association, 2014), REBOOT works to facilitate engagement in personally meaningful activities as central to the ability to thrive.

Five core values infuse the program. First, it uses Christian Biblical concepts to reframe adversity as an opportunity for growth rather than distress. Second, it cultivates a culture of trust by relying on course leaders who have personal experience with combat trauma, by emphasizing equality regardless of rank, and by upholding confidentiality. Third, because combat trauma affects the entire family (Herzog et al., 2011), REBOOT welcomes spouses, children, and loved ones of service members and veterans. Fourth, the program encourages Christian fellowship to foster supportive relationships among participants who share similar experiences. Finally, it offers volunteer opportunities for graduates to serve others who are dealing with combat trauma.

REBOOT has a manualized curriculum (Owens & Owens, 2016) taught in each location by a trained leadership team with military experience. Staff members at the REBOOT national headquarters oversee the selection and education of the course leaders, who become certified by completing a formal training program and then receive ongoing support.

Weekly sessions are held at locations such as military installations, VA hospitals, churches, prisons, and community centers. Each session begins with a family-style meal to facilitate fellowship. After children begin childcare activities, participants engage in an ice-

breaker activity and watch a short video introducing the session topic. Then, the course leaders teach the curriculum presented in the manual for approximately 40 minutes using a combination of lecture and discussion strategies. Participants follow along using a field guide workbook containing Scripture passages, discussion questions, and reflection activities. Sessions conclude with an experiential “homework challenge” for the upcoming week and a closing prayer of thanksgiving and petition for the needs of the group.

The curriculum topics are (a) an introduction to the spiritual wounds of war, (b) the roots of trauma, (c) humility in healing, (d) making wise decisions, (e) gaining freedom from guilt, (f) forgiveness, (g) grief and loss, (h) depression and suicide, (i) rebuilding a positive self-identity, (j) dealing with discouragement, (k) sharing your story, and (l) the graduation ceremony (see online supplement Table A). Scripture passages from both the Old Testament and the New Testament are incorporated into each session to illustrate key points. Although the curriculum is grounded in Christian principles, the program is open to attendees of all faith and no faith backgrounds, and course leaders are trained to foster an atmosphere that is inclusive and respectful. The retention rate for attendees averages 81.5% from Week 1 to Week 12.

The REBOOT Combat Recovery program seeks to help those dealing with combat trauma to live in a purposive, hopeful, and socially connected way. Evidence of improvement in these areas may include diminished physical suffering, reduced anxiety and depression, and increased social and community involvement. Accordingly, we hypothesize that people completing the program will report improved physical health (H1), mental health (H2), and social health (H3). We also pose two research questions to investigate who benefits the most from the program: What personal characteristics (RQ1) and military characteristics (RQ2), if any, predict more improvement from the program?

### **Method**

People enrolled in the REBOOT program from the spring of 2016 through the spring of 2018 completed measures of their well-being during the 3rd week and the 12th week of the program. The 3rd week was selected for the first questionnaire so course leaders could build rapport before asking participants to provide sensitive information. Although our study lacks a true pretest-posttest control group design, the delayed administration of the baseline measures means that our investigation may be less susceptible to the response shift bias that can plague traditional pretest-posttest comparisons (e.g., Pratt, McGuigan, & Katzev, 2000). Data collection and confidentiality procedures were approved by the relevant Institutional Review Boards.

### **Procedures**

Recruitment and data collection occurred after the fellowship meal during program sessions. Course leaders described the study, the voluntary nature of participation, and the confidentiality of responses. Attendees had time to review written materials and ask questions before deciding if they wanted to participate. Those who chose to participate completed informed consent documents before beginning.

Participants completed the questionnaires online or in hard copy. The Week 3 questionnaire solicited demographic information and ratings of well-being. The Week 12 questionnaire asked about session attendance and included the same ratings of well-being. Both questionnaires took approximately 20 minutes to complete. No incentives were offered.

### **Participants**

The sample contained 254 adults (138 men, 116 women) who graduated from the REBOOT program and completed both the Week 3 and Week 12 questionnaires. Participants

represented 67 small groups hosted in 44 locations across 18 U.S. states and the District of Columbia. They completed the study in 2016 (24.8%), 2017 (61.0%), or 2018 (14.2%).

Participants ranged in age from 20 to 89 years old ( $M = 43.55$  years,  $SD = 13.83$  years). They described their relationship status as single (6.5%), dating (6.1%), engaged to be married (1.0%), married (65.8%), separated (5.5%), divorced (12.1%), widowed (2.0%), or other (1.0%). The majority of participants were completing the course for the first time (87.4%), while others were repeating the course (12.6%). On average, they attended 10.67 of the 12 sessions (range = 5 to 12 sessions,  $SD = 1.52$  sessions). Attendance percentages were five (0.8%), six (0.8%), seven (2.9%), eight (5.0%), nine (11.6%), ten (14.0%), eleven (24.8%), or twelve (40.1%) sessions.

Participants reported their employment status as currently employed (55.3%), retired (19.1%), homemaker (7.6%), unable to work (7.0%), out of work and looking for employment (5.0%), out of work and not looking for employment (3.0%), or attending school (3.0%).

Of the 254 participants, 146 (57.5%) had experienced military combat trauma, 92 (36.2%) were caregivers of a person with military combat trauma, and 16 (6.3%) attended in a civilian capacity (e.g., individual with civilian trauma, clinician).

***Characteristics of participants with military combat trauma.*** The subsample of 146 participants with military combat trauma contained 120 men (82.2%) and 26 women (17.8%). A total of 27.4% were currently serving in the military, and 72.6% were veterans. They were affiliated with the Army (65.0%), Navy (10.9%), Air Force (9.5%), or Marines (14.6%). They averaged 19.20 months ( $SD = 15.13$ ) of combat deployment during their military career.

***Characteristics of caregivers.*** The subsample of 92 caregivers contained 16 men (17.4%) and 76 women (82.6%). Most caregivers were civilians (78.3%), but others were currently serving (4.3%) or had previously served (17.4%) in the military.

**Characteristics of civilian attendees.** The subsample of 16 participants who attended in a civilian capacity had experienced civilian trauma or were behavioral health professionals. The group contained 2 men (12.5%) and 14 women (87.5%).

### **Measures of Physical, Mental, and Social Health**

Participants completed the Patient-Reported Outcomes Measurement Information System (PROMIS-29 v2.0) to report their physical, mental, and social health. PROMIS-29 v2.0 assesses eight domains of wellness: (a) five aspects of physical health (physical function, pain interference, pain intensity, fatigue, and sleep disturbance), (b) two aspects of mental health (anxiety symptoms and depressive symptoms), and (c) one aspect of social health (ability to participate in social roles and social activities). The PROMIS measures were developed through extensive testing, contain excellent psychometric properties, and possess substantial evidence of validity (see Hays, Spritzer, Schalet, & Cella, 2018).

**Physical function.** Four items operationalized physical function: (a) are you able to do chores such as vacuuming or yard work? (b) are you able to go up and down stairs at a normal pace? (c) are you able to go for a walk of at least 15 minutes? and (d) are you able to run errands and shop? (1 = *unable to do*, 5 = *without any difficulty*).

**Pain interference.** Items assessing the degree to which pain limited participants' daily activities completed the stem "In the past seven days ..." (a) how much did pain interfere with your day to day activities? (b) how much did pain interfere with your work around the home? (c) how much did pain interfere with your ability to participate in social activities? and (d) how much did pain interfere with your household chores? (1 = *not at all*, 5 = *very much*).

**Pain intensity.** The following item assessed pain intensity: In the past seven days, how would you rate your pain on average? (0 = *no pain*, 10 = *worst imaginable pain*).

**Fatigue.** Four items measuring fatigue began with the stem “In the past seven days ...” (a) I feel fatigued, (b) I have trouble starting things because I am tired, (c) how run down do you feel on average? and (d) how fatigued are you on average? (1 = *not at all*, 5 = *very much*).

**Sleep disturbance.** Items addressing sleep disturbance followed the stem “In the past seven days ...” (a) my sleep quality was (1 = *very poor*, 5 = *very good*), (b) my sleep was refreshing, (c) I had a problem with my sleep, and (d) I had difficulty falling asleep (1 = *not at all*, 5 = *very much*). We reverse-scored responses to the first and second items.

**Anxiety symptoms.** Four items assessing anxiety symptoms completed the stem “In the past seven days ...” (a) I felt fearful, (b) I found it hard to focus on anything other than my anxiety, (c) my worries overwhelmed me, and (d) I felt uneasy (1 = *never*, 5 = *always*).

**Depressive symptoms.** Items measuring depressive symptoms were introduced by the stem “In the past seven days ...” (a) I felt worthless, (b) I felt helpless, (c) I felt depressed, and (d) I felt hopeless (1 = *never*, 5 = *always*).

**Ability to participate in social roles and activities.** Four items solicited ratings of social participation: (a) I have trouble doing all of my regular leisure activities with others, (b) I have trouble doing all of the family activities that I want to do, (c) I have trouble doing all of my usual work (include work at home), and (d) I have trouble doing all of the activities with friends that I want to do (1 = *always*, 5 = *never*).

We followed the recommended scoring procedures for the PROMIS by (a) analyzing the raw scores for pain intensity, and (b) summing the responses to the individual items to form subscales for the other measures (Hays et al., 2018).

## Results

### Preliminary Analyses

Bivariate correlations indicated overlap among the well-being measures for both the Week 3 and the Week 12 ratings (see online supplement Table B). The within-person correlations ranged from  $r = .60$  to  $r = .80$ , all  $p < .001$ .

Because the PROMIS measures offer a normed metric via standardized  $t$  scores ( $M = 50.00$ ,  $SD = 10.00$ ), we calculated one-sample  $t$  tests to compare participants with the national average (see online supplement Table C). Our sample reported worse functioning than the general U.S. population in all aspects of well-being except social participation at Week 12.

Finally, we conducted paired-samples  $t$  tests comparing well-being at Week 3 versus Week 12 in the raw metric (see Table 1). Findings showed improvements in all aspects of well-being except physical function. The absolute value of the effect size  $d$  corrected for the correlation between Week 3 and Week 12 (following Morris & DeShon, 2002, p. 111) for the measures showing improvement ranged from .17 to .53.

### **Substantive Analyses**

We used multilevel modeling for the substantive analyses to account for the nesting of people within course groups. First, we calculated unconditional models to examine dependence in the data. A between-group clustering effect was apparent for all aspects of well-being (Wald  $Z$  ranged from 2.14,  $p = .03$  for anxiety symptoms to 3.20,  $p = .001$  for physical function). The intraclass correlation coefficient, which documents the proportion of total variance in well-being attributable to course group, ranged from .11 for anxiety symptoms to .23 for physical function.

**Hypotheses.** To test the hypotheses, we added time of assessment into the multilevel models as a Level 1 predictor (Week 3 = 0, Week 12 = 1). Improvement was apparent for pain interference, fatigue, sleep disturbance, anxiety and depressive symptoms, and social participation, but not physical function or pain intensity (see Model 1 in Table 2). These results

imply mixed support for our logic regarding physical health (H1) and full support for our predictions regarding mental health (H2) and social health (H3).

**Research questions.** Next, we included five personal characteristics as Level 1 predictors: (a) role (0 = caregiver, 1 = individual with combat or civilian trauma), (b) gender (0 = woman, 1 = man), (c) age, (d) number of sessions attended, and (e) graduate status (0 = first completion of the course, 1 = repeat completion). Those with combat or civilian trauma reported more anxiety symptoms and less social participation than caregivers (see Model 2 in Table 2). Men reported worse physical function, pain interference and intensity, sleep disturbance, and social participation than women. Older participants reported worse physical function and pain interference, but also less fatigue and anxiety symptoms, than younger participants. People repeating the course reported more fatigue than those completing it for the first time.

To evaluate the personal characteristics as potential moderators of improvement (RQ1), we added five interaction terms computed as time of assessment multiplied by each personal characteristic. Despite the mean-level differences (see Model 2 in Table 2), no statistically significant interaction effects were apparent. In other words, improvement did not vary by role, gender, age, the number of sessions attended, or graduate status.

We investigated RQ2 by examining military characteristics as potential moderators of improvement using the subsample of participants with military combat trauma ( $n = 146$ ). We replaced the personal characteristics in the multilevel models with three military characteristics: (a) military status (0 = veteran, 1 = currently serving), (b) number of months of combat deployment, and (c) military branch (0 = Navy, Air Force, or Marines, 1 = Army). Findings for time of assessment indicated that participants with military combat trauma mirrored the full sample in reporting improvement for pain interference, fatigue, sleep disturbance, anxiety and

depressive symptoms, and social participation (see Table 3). With respect to military characteristics, veterans reported poorer well-being than currently serving personnel in terms of physical function, pain interference and intensity, sleep disturbance, and anxiety and depressive symptoms. Those with more months of combat deployment reported more pain interference and intensity, sleep disturbance, and depressive symptoms.

One moderation effect emerged when we added the two-way interaction terms. Time of assessment interacted with military status to predict anxiety symptoms,  $B = 1.94, p = .02$ . The direction of the interaction was such that veterans ( $M_{\text{change}} = -2.32, SD_{\text{change}} = 2.97$ ) reported more improvement than currently serving military personnel ( $M_{\text{change}} = -0.78, SD_{\text{change}} = 2.39$ ),  $t(144) = 2.95, p = .004$ . In sum, the program was more effective for veterans than for current service members in terms of anxiety symptoms (RQ2).

## Discussion

Combat trauma in general, and the spiritual and psychological wounds of war in particular, can be debilitating (Fritch et al., 2010; Smith-MacDonald et al., 2017; Wortmann et al., 2017). Although combat trauma cannot be erased in people's minds, their *perceptions* are potentially malleable (e.g., Vest et al., 2018), which suggests a site of intervention for helping service members, veterans, and their families move forward. The REBOOT Combat Recovery program is a 12-week faith-based course led by peer facilitators. Our study involving 254 attendees is the first to examine whether the program is effective. Although caution is warranted in the absence of a pretest-posttest control group design, the initial findings appear promising.

## Implications of the Results

Participants appear to have benefited from the program in clinically meaningful ways. They reported improvement from Week 3 to Week 12 in pain interference, fatigue, sleep

disturbance, anxiety and depressive symptoms, and social participation. In other words, gains were apparent for three of the five domains of physical health (H1), both domains of mental health (H2), and the domain of social health (H3). The two indicators of physical health not showing statistically significant improvement were physical functioning and pain intensity. These findings offer initial evidence that the REBOOT program may enhance the well-being of service members, veterans, and their caregivers, particularly with respect to psychological functioning and social involvement. In fact, our data suggest improvements in well-being even in the presence of ongoing problems with physical functioning and pain intensity.

Men, veterans, and those with more months of combat deployment reported worse health overall, but improvement was largely uniform across a variety of personal and military characteristics. Improvement did not vary by the personal characteristics of (a) role as a caregiver versus an individual with combat or civilian trauma, (b) gender, (c) age, (d) attendance, or (e) previous completion of the course (RQ1). Notably, the findings for the latter two variables imply that participants may accrue benefits in toto rather than additively by session attendance. Improvement also did not vary by military characteristics such as months of combat deployment or military branch, but veterans reported more reduction in anxiety symptoms than current service members (RQ2), perhaps because some level of anxiety may have adaptive value (e.g., Corr, 2011) for those currently serving. Overall, REBOOT Combat Recovery may be broadly helpful to participants with diverse backgrounds but particularly so for veterans.

Although the spiritual needs of service members can be overlooked in systems of care, spirituality is a key element of military resilience (Sherman et al., 2015; Smith-MacDonald et al., 2017). Our data cohere with recent work implying benefits from other interventions addressing spiritual issues. Building Spiritual Strength (BSS) is a group course led by mental health

providers and chaplains that strives to enhance religious meaning-making among those with military trauma (Harris et al., 2018). Clinician-administered individual approaches informed by the cognitive-behavioral therapy tradition include (a) Trauma Informed Guilt Reduction (TrIGR) therapy, which seeks to diminish feelings of guilt related to war experiences (Norman, Wilkins, Myers, & Allard, 2014); (b) Acceptance and Commitment Therapy (ACT), which seeks to promote flexibility in thoughts, emotions, and behaviors (Nieuwsma et al., 2015); (c) Adaptive Disclosure, which seeks to help people experientially and emotionally process their war experiences (Litz, Lebowitz, Gray, & Nash, 2016); and (d) Impact of Killing (IOK), which seeks to reduce the distress of combat veterans responsible for deaths in war (Maguen et al., 2017). Our results, coupled with promising findings for other programs grounded in similar themes, suggest that values-based content can be helpful for healing after combat trauma.

Because REBOOT is a peer-led and community-based intervention, our data also imply a role for nonclinical programs administered outside of mental health care settings. Prior results are mixed for programs that rely on peers to help service members and veterans cope with mental health issues. Some studies show no help or harm; others suggest potential benefits (Eisen et al., 2012; Whybrow, Jones, & Greenberg, 2015). Our data fall into the latter category by implying that nonclinical peer-led services can be useful for assisting those affected by combat trauma.

### **Limitations and Directions for Future Research**

Despite our results suggesting the effectiveness of the REBOOT program, several limitations of our study are important to note. First, the research design lacked a control group for benchmarking success. In the absence of data from people not participating in the program, conclusions about improvement due to REBOOT remain speculative. Second, the baseline assessment occurred during the third week of the program, so any gains (or losses) during the

first portion of the course were not represented in the over-time analyses. A true pretest-posttest control group design (e.g., Morris, 2008) or a retrospective pretest design (e.g., Chang & Little, 2018) would be useful next steps. Third, we lacked comparative data from participants who withdrew prematurely. Additional work is needed to evaluate whether differences exist between those who drop out versus complete REBOOT. Finally, we did not assess the fidelity of program administration across the course leaders. We statistically controlled for differences among course groups, but information about the uniformity of execution by course leaders would offer more fine-grained insight.

Other directions for future research involve evaluating the broader effects of spiritually-focused interventions on combat trauma. *Who* is drawn to participate in a program such as REBOOT and *how* does participation affect their spirituality? *What* are the mechanisms through which such interventions provide benefits? Answers to these questions would inform the theoretical frameworks at the crux of the program (American Occupational Therapy Association, 2014; Bandura, 1986; Prochaska et al., 2008). *How long* do any effects persist? Such data would be useful for understanding whether sequenced programming could cement any gains. Finally, *how helpful* are spiritual systems of care for coping with intractable challenges such as lingering guilt (e.g., Norman et al., 2014), moral injury (e.g., Litz et al., 2009), and posttraumatic stress (e.g., Harris et al., 2018)? Insight into these questions would help policymakers, military command, practitioners, and community members better assist military personnel, veterans, and their family members affected by combat trauma.

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Table 1

*Descriptive Statistics and Paired Comparisons by Time of Assessment*

	Week 3			Week 12			<i>t</i> (253)	<i>d</i>
	<i>M<sub>t</sub></i>	( <i>SD<sub>t</sub></i> )	$\alpha$	<i>M<sub>t</sub></i>	( <i>SD<sub>t</sub></i> )	$\alpha$		
Physical Function	17.21	(3.56)	.93	17.23	(3.34)	.92	-0.11	.01
Pain Interference	9.32	(4.63)	.97	8.56	(4.31)	.97	3.54 ***	.22
Pain Intensity	3.58	(2.62)	--	3.25	(2.47)	--	2.75 ***	.17
Fatigue	11.92	(4.09)	.94	10.36	(3.89)	.94	7.34 ***	.45
Sleep Disturbance	12.51	(3.86)	.87	11.26	(3.71)	.88	6.66 ***	.41
Anxiety Symptoms	11.13	(3.64)	.90	9.45	(3.11)	.89	8.92 ***	.53
Depressive Symptoms	10.15	(4.00)	.93	8.34	(3.38)	.93	8.58 ***	.51
Social Participation	13.39	(3.91)	.91	14.66	(3.75)	.94	-6.41 ***	.39

*Note.*  $N = 254$  participants.  $M$  and  $SD$  are reported in the raw metric,  $\alpha$  is Cronbach's measure of internal consistency, paired-samples  $t$  test values indicate within-person change from Week 3 to Week 12, and  $d$  is the absolute value of the effect size corrected for the correlation between Week 3 and Week 12.

\*\*\*  $p < .001$ .

Table 2

*Multilevel Modeling Results for Time of Assessment and Personal Characteristics Predicting Well-Being*

	Physical Function	Pain Interference	Pain Intensity	Fatigue	Sleep Disturbance	Anxiety Symptoms	Depressive Symptoms	Social Participation
<u>Model 1</u>								
Time of Assessment	0.02	-0.78 *	-0.34	-1.55 ***	-1.30 ***	-1.69 ***	-1.83 ***	1.28 ***
<u>Model 2</u>								
Time of Assessment	-0.02	-0.79 *	-0.34	-1.43 ***	-1.21 ***	-1.62 ***	-1.81 ***	1.20 ***
Role	-0.44	0.35	0.34	0.64	0.51	1.02 *	0.61	-1.10 *
Gender	-1.25 **	1.58 **	0.87 **	0.52	1.02 *	0.55	0.77	-0.91 *
Age	-0.03 *	0.04 *	0.01	-0.05 **	-0.03	-0.04 **	-0.01	-0.01
Number of Sessions	-0.08	0.19	0.10	-0.01	0.11	0.14	0.22	-0.01
Graduate Status	-0.80	0.57	-0.08	1.89 **	0.79	-0.39	-0.14	-0.95

*Note.*  $N = 508$  observations (two waves of data from 254 participants). Cell entries are unstandardized coefficients. Time of assessment was coded 0 = Week 3, 1 = Week 12. Role was coded 0 = caregiver, 1 = person who had experienced trauma. Gender was coded 0 = woman, 1 = man. Graduate status was coded 0 = first completion of the course, 1 = repeat completion of the course.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 3

*Multilevel Modeling Results for Military Characteristics Predicting Well-Being*

	Physical Function	Pain Interference	Pain Intensity	Fatigue	Sleep Disturbance	Anxiety Symptoms	Depressive Symptoms	Social Participation
Time of Assessment	-0.02	-1.16 *	-0.35	-1.45 **	-1.10 **	-1.72 ***	-1.84 ***	1.41 ***
Military Status	1.57 *	-2.00 **	-1.24 **	0.20	-1.33 *	-1.20 *	-2.04 **	0.72
Months Deployed	-0.02	0.06 **	0.04 ***	0.02	0.03 *	0.02	0.06 ***	-0.03
Military Branch	-0.83	0.11	0.05	-1.03	-0.51	-0.38	-0.44	0.90

*Note.*  $n = 292$  observations (two waves of data from 146 service members). Cell entries are unstandardized coefficients. Time of assessment was coded 0 = Week 3, 1 = Week 12. Military status was coded 0 = veteran, 1 = currently serving. Military branch was coded 0 = Navy, Air Force, or Marines, 1 = Army.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .