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## Can Brazilian Jiu Jitsu be a Viable Treatment Option for Law Enforcement Officers with PTSD?

Megan Rinderer

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Can Brazilian Jiu Jitsu be a Viable Treatment Option for Law Enforcement Officers with PTSD?

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BY  
MEGAN RINDERER, M.A.  
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APPROVED: \_\_\_\_\_  
Mark Aoyagi, Ph.D, CMPC, Chair

\_\_\_\_\_  
Jamie Brower, Psy.D., ABPP

\_\_\_\_\_  
Tracy Vozar, Ph.D., IMH-E ® (IV-R)

### **Abstract**

Law enforcement officers (LEO) are more likely to experience symptoms of PTSD when compared to the general population yet are less likely to seek mental health treatment (Jetelina et al., 2020). Given that LEO face unique occupational stressors and repeated exposure to traumatic events, treatment for PTSD among law enforcement populations poses unique challenges for clinicians. The combination of these variables precludes officers from seeking and receiving mental health services. Research regarding the efficacy of Brazilian Jiu Jitsu (BJJ) as a psychotherapeutic intervention is limited. To date, no studies have examined the use of BJJ to mitigate symptoms of PTSD among LEO.

Through an extensive review of existing literature, this article takes a theoretical stance, advocating for further research into the possible psychotherapeutic benefits of BJJ for addressing symptoms of PTSD among LEOs. Based on existing literature, BJJ appears well suited to mitigate PTSD symptomology by facilitating increased self-regulation and fostering resiliency.

*Keywords:* Brazilian Jiu Jitsu; BJJ; law enforcement; PTSD

## Introduction

Law enforcement officers (LEO) are exposed to dangerous, life-threatening events at much higher rates and frequency than the general population. Repeated exposure to traumatic events, whether directly or indirectly, is an inevitable aspect of the job. On average, police officers are likely to experience three traumatic events for every six years of service with most officers experiencing a life-threatening incident within their first year of service (Hartley et al., 2013). A recent survey conducted by Lilly and Curry in August 2020, found that 47% of officers reported symptoms consistent with PTSD, which is nine to ten times more than the prevalence found in the general population. In addition, recent events such as the COVID-19 pandemic and ongoing civil unrest have led to increased challenges for law enforcement officers and departments (Lilly & Curry, 2020). As a result, LEOs have become increasingly isolated from the communities in which they serve.

Policing populations experience unique stressors that their civilian counterparts do not face. They are expected to make split second, life or death decisions, all the while taking into consideration legal policies/procedures and the best possible outcome for civilians, other officers, and themselves (Anderson et al., 2015). At the end of their shift, officers assume other roles such as parent, spouse, sibling, friend, and so on (Papazoglou & Tuttle, 2018). Further, officers experience routine organizational stressors related to department leadership, report writing, limited career mobility/flexibility, shiftwork schedules, overtime, insufficient training (Acquadro et al., 2022; Anderson et al., 2015; Arble et al., 2019; Velazquez & Hernandez, 2019), and bureaucracy (Maran et al., 2022). Although research suggests LEOs are largely more resilient than the general population, the culmination of repeated trauma, organizational

stressors, attempts to manage multiple roles/identities negatively impacts officers' mental health, physical health, and job performance (Galatzer-Levy et al., 2011; Papazoglou & Tuttle, 2018).

Appropriate treatment and intervention are paramount in preventing long-term consequences such as alcoholism, divorce, violence, isolation, loss of employment, and suicide (White et al., 2016). Mental health services are primarily utilized as a post-traumatic incident intervention. However, post-trauma intervention may not be enough to ensure optimal officer performance in the line of duty (Biggs et al., 2021). Pre-trauma resiliency and post-trauma recovery have a bi-directional relationship. Frequent exposure to traumatic stress can lead to decreased performance which in turn, hampers resiliency and increases the probability of long-term mental health consequences (Karaffa & Tochov, 2013).

In addition, unaddressed trauma (whether directly or indirectly exposed), may lead to organizational/departmental consequences such as staff turnover, burnout, or decreased productivity (e.g., decreased morale, communication, cohesion, quality of services) (Karaffa & Tochov, 2013). Departments must then utilize time and resources to train new recruits. In addition, line of duty stress has deleterious effects on events on physical health outcomes and may contribute to increased injuries or need for medical care (Anderson et al., 2015; Anderson et al., 2016; Papazoglou & Arnetz, 2016; Papazoglou & Collins, 2015). Worker's compensation claims place financial strain on departments and diminishes their ability to allocate funds toward resources that may indeed reduce rates of officer injury or physical health problems (Violanti et al., 2017).

Research suggests that early identification of at-risk officers coupled with utilization of mental health intervention may prevent long-term psychosocial impairments such as PTSD (Marshall et al., 2016; White et al., 2016). However, reluctance to report symptoms, skepticism

toward mental health professionals, and limited access to mental health services preclude officers from seeking and engaging in mental health treatment (Bell & Palmer-Conn, 2018; Karaffa & Tochkov, 2013; Jetlina et al., 2020; Papazoglou & Tuttle, 2018; White et al., 2016).

According to the DSM-V, an individual meets criterion for a diagnosis of PTSD if there is exposure to: “death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence.” This includes “direct exposure, witnessing the trauma, learning that a relative or close friend was exposed to a trauma, indirect exposure to aversive details of the trauma, usually in the course of professional duties (e.g., first responders, medics) (American Psychological Association, 2013). Police officers respond to and are expected to resolve a variety of violent, life-threatening situations that may require use of force or lethal means (e.g., such as violent criminals, terrorist attacks, or domestic violence) (Papazoglou & Tuttle, 2018). Further, officers are frequently required to respond to difficult calls that involves direct exposure to death (Anderson et al, 2015). Officers are also called upon to protect victims of violent crime (e.g., sexual abuse victims, victims of domestic violence, abused children) (Papazoglou & Tuttle, 2018). In reality, officers typically experience a combination of these events throughout the course of their career.

Mere exposure to a traumatic event does not necessarily qualify someone for a diagnosis of PTSD unless symptoms persist longer than a month and significantly interfere with daily functioning. Many individuals who experience a traumatic event recover naturally, with symptoms subsiding after three weeks (Herman, 1992). Social support, resiliency, and time are considered key factors in recover from traumatic stress (Charuvastra & Cloitre, 2008; Lee et al., 2016; Shaw, 2007). However, law enforcement officers do not have the luxury of time. They may not have had time to fully confront one traumatic event before they experience another.

Shaw (2007) reported that human-generated violence breeds psychological distress and the frequency of such incidents increases the risk of psychological suffering. Hartley et al., (2013) investigated whether frequency, recency, and type of police-specific traumas were associated with PTSD symptom development. Additionally, officers may be inclined to utilize maladaptive coping mechanisms or withdrawal from social support systems following a traumatic event which further impedes recovery.

### **Consequences of Unaddressed Traumatic Stress**

The cumulative effects of trauma are commonly associated with the prevalence of co-morbid psychological concerns. LEOs may employ adaptive, short-term defense mechanisms to minimize, suppress, repress, or compartmentalize their emotions to continue performing their job. They frequently rely on dark, calloused humor to cope with difficult events (Pappazoglou & Tuttle, 2018). Defensive coping strategies employ avoidance as an adaptive way to delay the emotional impact of the event while substance use functions, similarly, allowing avoidance of disturbing thoughts/memories of past traumatic events (Pappazoglou & Tuttle, 2018).

Substance use behaviors are maintained through negative reinforcement, or immediate alleviation of psychological distress. Officers who use alcohol to cope are at increased risk of developing an alcohol use disorder and/or experiencing negative consequences related to their alcohol use (Violanti et al., 2011). In sum, these maladaptive coping mechanisms, and compound, resulting in additional mental health concerns or co-morbidities. Maladaptive short term coping mechanisms enable psychological effects of trauma to persist and interfere with functioning over time. While these strategies may offer short term alleviation of psychological distress, they ultimately perpetuate avoidance and impede recovery (Pappazoglou & Tuttle, 2018). Further, unaddressed trauma often leads to the comorbid mental health concerns such as

anxiety, depression, and suicide (Violanti et al, 2017). A study by The Ruderman Family Foundation conducted in the United States found that 129 officers died in the line of duty, while 140 officers died by suicide (2018).

Unaddressed trauma also poses significant risk for officer health. One study found that career police officers live an average of 22 years less than the general population (Violanti et al., 2017). Officers are at high risk for high blood pressure, cardiovascular disease, diabetes, and hypertension due to significant occupational stress (Mumford et al., 2014). These conditions can lead to other health related difficulties such as insomnia and may result in higher rates of injury, illness, or early medical retirement (Violanti et al., 2017). As mentioned earlier, these factors place significant strain on departments.

Resources that combat the negative impacts of stress on officers' physical health include wellness programming, nutrition education, fitness equipment, and low-cost medical screenings and lipid testing (Mitchell & Dorian, 2017, p. 227). While a myriad of resources for addressing physical health among officers exists, resources for addressing mental health related concerns remains scarce. In addition, Berg et al., (2006) reported that officers tended to seek assistance for mental health concerns (e.g., suicidal ideation, anxiety, depression) from medical providers (i.e., chiropractor, physiotherapist) as opposed to mental health clinicians. This supports previous literature regarding cultural and historical stigma surrounding the utilization of mental health resources among LEOs (Bell & Palmer, 2018). As such, there is a need for more equilibrium among preventative resources available to officers as well as increased attention to the intersection of physical and mental health concerns. BJJ may be well positioned to circumvent this dilemma, as it offers tactical relevance for job performance and fosters both physical and mental wellbeing.

### **Mental Health Treatment Barriers among Law Enforcement Officers**

The need for more effective mental health interventions among law enforcement personnel is undisputed. Yet, access to appropriate mental health services is limited and officers are often skeptical to seek treatment. Officers are reluctant to seek mental health treatment fearing clinicians do not understand the challenges they face (Papazoglou & Tuttle, 2018). Jetelina et al., (2020) surveyed 446 officers and found that 12% of respondents reported a lifetime mental health diagnosis, 26% screened positive for current mental health symptoms, and 17% sought mental health treatment in the past 12 months. The study conducted focus groups and identified four primary barriers for the utilization of mental health services among officers: 1) Officers are unable to identify symptoms associated with mental health concerns, 2) Concerns about confidentiality, 3) Belief that psychologists cannot relate to their experiences 4) Concern that seeking mental health services may look like they are not fit for duty (Jetelina et al., 2020).

Given the undisputed prevalence of mental health symptoms among law enforcement populations, the demand for qualified clinicians is paramount. Therein lies the dilemma of access to qualified professionals equipped to work with officer's mental health needs. Fortunately, there is recognition of this dilemma as a national certification program by the National Emergency Responder and Public Safety Center (NERPSC) was recently established in 2021 to quell this dilemma by providing an accessible training platform, offering the opportunity for clinicians to equip themselves with the skills to work with first responder populations. Certified and vetted training opportunities offers significant promise in advancing the number of clinicians qualified to work with LEO populations.

In addition, the need for routine mental health screening has been promoted to detect early signs of mental health disorders to provide access to treatment and support among

individuals in high-risk occupations such as military, law-enforcement, and firefighters. Routine screening for PTSD is conducted using self-report measures (i.e., PCL-5, CAPS) or clinician interviews which also rely heavily on an individual's self-report. However, as mentioned earlier, officers are reluctant to report mental health symptoms due to fear of negative occupational consequences (Bell & Palmer-Conn, 2018; Jetlina et al., 2020; Karaffa & Tochkov, 2013; White et al., 2016). These factors pose a significant challenge in the detection of PTSD symptoms necessary for timely intervention. Given this, it is reasonable to presume that the prevalence of PTSD among law enforcement populations is higher than what has been reported, as officers are more inclined to underreport their symptomology. As a result, accurate reports of symptomology cannot be presumed. While early intervention of PTSD symptomology is ideal, it is not necessarily pragmatic given that officers may not recognize or be willing to disclose mental health difficulties until their symptoms tangibly interfere with job performance.

Thus, traditional PTSD screening measures are objectively ineffective, especially among populations where the risk for developing a mental health disorder is high and rates of help-seeking behaviors is low (Marshall et al., 2021). Levy et al., 2014 found that first responders who experience repeated exposure to traumatic events often report low levels of PTSD symptoms. Consequently, they may not meet criteria for a diagnosis of PTSD according to traditional measures.

Mental health intervention following a traumatic incident may increase the likelihood of recovery. However, retroactive, post-traumatic intervention may not be enough for LEOs to maintain optimal performance in the field (Biggs et al., 2021). Thus, proactive prevention strategies are necessary for officers to sustain optimal mental and physical health (Anderson et al., 2015). Other studies have advocated for similar prevention strategies such as resiliency or

mental preparedness training (Anderson et al., 2015; Biggs et al, 2021; Christopher et al., 2018). These studies unanimously suggest that a combination of preventative strategies and appropriate post-traumatic incident mental health intervention decreases the risk of long-term psychological consequences related to traumatic stress injury while simultaneously fostering resiliency to serve as protection against future traumatic stress.

### **Existing Departmental Mental Health Resources**

Peer support programs, Employee Assistance Programs, and Critical Incident Stress Management (CISM) programs are commonly utilized departmental resources that aim to mitigate long-term psychological consequences associated with traumatic stress injury (White et al., 2016).

Bledsoe (2003) evaluated the efficacy of CISM in preventing the development of PTSD following a traumatic event. This research concluded that the CISM program had no effect on preventing PTSD among officers and showed a paradoxical worsening of trauma and stress-related symptoms. This is likely due in part to the program being geared toward short-term support of an immediate, identifiable problem. Further, research surrounding the efficacy of the program suggests some forms of post-incident debriefings may cause harm through trauma contamination. CISM conducts group debriefings following a critical incident. Officers directly involved in an incident may be debriefed alongside dispatchers and other relevant parties who did not directly witness the incident. This method of debriefing inherently poses a risk of traumatic re-exposure or cross contamination of trauma (Bledsoe, 2003).

Peer support programs are an additional resource available to many officers, though not every department utilizes peer support services. These programs work in conjunction with or under the guidance of a licensed mental health professional. They receive training in early

identification of mental health symptoms and are encouraged to facilitate referrals to mental health professionals. Given the cultural stigma surrounding mental health treatment, peer support team members serve a vital role in early identification of mental health concerns and encouraging those peers to seek appropriate treatment. However, peer support programs function primarily as a bridge between officers and mental health professionals. Peer Support Members are unqualified to intervene when specific mental health issues present, as they are only trained to recognize these symptoms and facilitate appropriate referrals.

Regarding clinical intervention for mental health concerns, departments frequently rely on third party agencies or Employee Assistance Programs (EAPs) to provide necessary clinical services, with very few departments embedding police psychologists into their field divisions (Goldstein, 2006). Concerns regarding confidentiality and fear of negative occupational consequences make officers hesitant to utilize seek internal assistance for mental health issues. Goldstein (2006) reported that a hybrid model of EAPs and Peer Support may promote increased engagement in mental health services among officers, as the combination of “casual” or less formal internal support and external professional intervention mitigates concerns regarding breaches in confidentiality and negative occupational consequences.

### **Reducing Resistance**

Due to cultural stigma and resistance surrounding mental health services, past studies have investigated LEO engagement in alternative, non-conventional treatment options. The use of biofeedback, heart rate variability training, neurofeedback, and mindfulness training have received positive acclaim across law enforcement departments (Weltman et al., 2014). Biofeedback and neurofeedback have become increasingly utilized across departments with officers reporting tangible benefits regarding job performance as well as overall well-being

(Welton et al., 2014). These modalities are also becoming common place with among military populations, with many units incorporating biofeedback and neurofeedback training into their operational training protocols. As such, officers may be more likely to engage in modalities that they perceive to have relevance to their job performance. Welton et al. (2014) investigated the impact of a self-regulation-based Stress Resilience Training System (SRTS) among active San Diego Police Department officers. The program incorporated education surrounding the stress response and the role of self-regulation and utilized heart rate variability coherence and biofeedback to facilitate self-regulation techniques. Officers reported less fatigue, more emotional “buoyancy,” increased energy, and increased ability to self-regulate based on reduced anger, anxiety, and sleep difficulties (Welton et al., 2014, p. 79). As such, modalities targeting self-regulation may enhance overall stress resiliency.

Similarly, individuals often gravitate toward Brazilian Jiu Jitsu (BJJ) to improve physical health or fitness, but inadvertently experience significant improvements related to mental health (Weinberger & Burraston, 2021). BJJ facilitates appropriate regulation of one’s stress response during physical confrontation which prevents panic and increases stress resiliency. Rener Gracie, established Gracie Jiu Jitsu University, which offers specific BJJ training protocols for police departments and advocates for BJJ as a form of non-violent/harmful control during incidents of physical confrontation.

With the support of Gracie University, the first (and so far, only) attempt to examine the effects of a BJJ training program with LEO was made. However, this data must be interpreted with caution, as the results have yet to be formally published or peer reviewed. Marietta Police Department instituted a mandatory BJJ training program for all new hires. Due to positive feedback from BJJ participants, the department extended the department BJJ training program to

all in-service officers, noting that 95 of the 145 sworn in officers have chosen to participate in the program.

The department conducted training sessions at carefully vetted local Gracie affiliate BJJ academies. Results found a 23% reduction in taser deployments with the BJJ participant group. In addition, they noted that taser deployment was used primarily to stop foot pursuits rather than end a physical altercation during use of force incidents (UOF). The study also noted decreased injuries to suspects and noted that BJJ participants were 59% less likely to engage in UOF compared to officers who did not participate in the training program.

Departments may be concerned about possible risk of injury among officers who participate in BJJ. However, data obtained from the Marietta PD's BJJ training program cited only one injury out of 95 officers after attending 2,600 BJJ classes. Further, there was a reduction in officer injuries while carrying out arrests after 18 months of the BJJ training program. During UOF incidents, no officers were injured from the BJJ participant group. One possible explanation is that BJJ fosters positive physical health outcomes which minimizes risk of injury. Regardless, Marietta PD saved a net \$40,752 in workers compensation claims after accounting for their initial \$26,000 investment in the training program (Marietta Police Department, 2019).

These results are promising for several reasons: 1) The data suggests that officers may voluntarily engage in BJJ training if available and if they perceive the program has departmental support/endorsement. 2) Investment in BJJ training may be economically beneficial for departments; 3) BJJ training may result in decreased UOF or use of tasers to end physical altercations. However, further research is necessary to determine whether a BJJ training can be casually linked to decreased uses of UOF.

Data from this study also provides preliminary evidence suggesting that officers may be willing to voluntarily participate in BJJ due to tactical relevance and application. Despite its significant empirical limitations, this study is the first of its kind to accumulate data related to the use of a BJJ training program with law enforcements personnel. The following sections theorize how BJJ may reduce symptoms of PTSD, facilitate lasting adaptive behavior change, and foster tactical/mental preparedness.

### **Brazilian Jiu Jitsu as a Treatment Option for PTSD Among Law Enforcement Officers**

Appropriate clinical intervention is essential for the treatment of PTSD. However, as previously discussed, services are limited, and officers are often reluctant to engage. BJJ may be well positioned to serve as a therapeutic treatment option (not replacement) for LEO with symptoms of PTSD. Given that officers underreport or fail to report mental health concerns, BJJ may help to reduce symptoms of PTSD regardless of a formal diagnosis. BJJ may also proactively prepare officers for critical incident stress and decrease long-term adverse psychological outcomes that implicates officers' well-being and job performance.

The psychotherapeutic benefits of traditional martial arts training have been well documented (Bird et al., 2019; Fuller & Lloyd, 2020; Lakes & Hoyt, 2004; Moore et al., 2019; Vertonghen & Theeboom, 2010). Lakes & Hoyt, (2004) examined the impact of a school-based Tae Kwon Do training program on self-regulatory abilities. Students who participated in the Tae Kwon Do training program demonstrated greater improvements in cognitive self-regulation, affective self-regulation, prosocial behavior, classroom conduct, and performance on a mental math test. Bird et al., (2019), investigated the impact of a 10-week MMA training program coupled with weekly individual psychotherapy among at-risk males (ages 20-35). The study

found that the combination of MMA and psychotherapy produced positive mental health outcomes such as improved relationships, work-life, and self-esteem.

While research surrounding the psychotherapeutic benefits of BJJ is limited, existing literature reflects similar mental health benefits to traditional martial arts (Blomqvist Michelsson, 2019). Brazilian Jiu-Jitsu (BJJ) adheres to traditional martial arts philosophy, emphasizing “yielding to an opponents’ force, rather than opposing force with force” (Renzo & Dahnaher, 2003). BJJ is a form of ground-grappling in which each opponent works to obtain advantageous positions and ultimately, submissions (i.e., arm locks, chokes, leg locks). If an athlete achieves a submission, the opposing athlete “taps out.” In other words, the athlete taps their opponent signaling the end of the match thus acknowledging defeat. Inherently, the act of acknowledging defeat is a humbling endeavor, yet one that is ubiquitous regardless of belt rank. Accepting defeat is necessary to progress through the ranks, as it allows athletes to acknowledge areas of growth and hone their training accordingly.

Aggressive, uncontrolled behavior has no place in BJJ practice or culture (Sugden, 2021). To the contrary, BJJ relies on minimal strength and focuses on technique, strategy, patience, problem-solving abilities, and minimal force in order to subdue an opponent and gain control (Gracie & Danaher, 2003). Those with minimal knowledge of the underlying philosophy surrounding BJJ may be inclined to view it as an offensive fighting technique teaching skills with the potential for abuse. This may be due in large part to distorted image of martial arts for commercial/entertainment purposes (Vertonghen & Theeboom, 2010).

Specifically, Mixed Martial Arts (MMA), a sport popularized through the birth of the Ultimate Fighting Championship, seemingly encourages significant displays of bravado and poor sportsmanship for largely entertainment purposes. Most MMA fighters have significant training

in BJJ due to its practical application within the context of cage fighting. As a result, the general public may be inclined to perceive BJJ as an aggressive fighting technique with the potential for abuse, when it is quite the opposite. Interestingly, both BJJ and MMA athletes demonstrate self-control and pro-social outcomes; however, MMA athletes demonstrate higher levels of aggression which may be more reflective of individuals with aggressive predispositions gravitating to the sport (Blomqvist Michelsson, 2019).

In addition, anecdotal reports from BJJ athletes indicate that lessons learned through BJJ practice translate to their lives off the mat. Chinkov & Holt (2016) reported that participation in BJJ facilitates implicit transfer of life skills such as respect for others, perseverance, self-control, and healthy habits. Given this, the benefits of BJJ extend beyond mere recreation or physical exercise; it is a path toward better physical, mental, emotional, and spiritual health and well-being, promoting empowerment and self-development (Weinberger & Burraston, 2021). Oulanava et al., investigated the potential efficacy of incorporating karate training into therapy by drawing upon the philosophical and historical underpinnings of karate and drawing parallels between the fundamental goals of martial arts and psychotherapy (2009). Based on an extensive theoretical investigation, the authors of this article posited that marital arts helps individuals regulate interpersonal behaviors which in turn, may enhance verbal interventions that are routinely incorporated in traditional therapeutic modalities. As such, BJJ may be well positioned to facilitate psychological change and growth if implemented within the bounds of its associated values and underlying philosophy.

Emerging research points specifically to the efficacy of BJJ in reducing symptoms associated with PTSD. Only two studies have attempted to examine the relationship between BJJ training and PTSD symptom reduction (Weinberger & Burraston, 2021; Willing et al, 2019).

However, these studies only speculate as to the underlying factors that may have contributed to PTSD symptom reduction among the BJJ participants. To date, no attempts have been made to examine the efficacy of BJJ as a therapeutic option for LEOs with traumatic stress injury. Given the limited literature in this domain, the present paper presents a potential theoretical perspective regarding the efficacy of BJJ training as a therapeutic treatment option for that may offer both pre-trauma prevention and post-trauma mental health symptom reduction.

Willing et al., (2019), found that BJJ demonstrated clinically significant reduction in symptomology among Veterans diagnosed with PTSD. Participants in this study reported decreased symptoms of PTSD, major depression, anxiety, and alcohol use (Willing et al., 2019). The study enrolled 23 male active-duty service members or veterans who met criteria for PTSD in a five-month (40 session) BJJ training program. Participants were screened utilizing the PTSD symptom checklist (PCL-5), Psychiatric Diagnostic Screening Questionnaire (PDSQ), Physical Activity Readiness Questionnaire (PARQ), and a clinical interview.

For those who completed the five-month program, scores on the PCL-5 decreased significantly with a large effect size between pre-intervention and post-intervention. However, only five participants completed the program resulting in a smaller than intended sample size. The authors cited logistical issues (i.e., transportation, relocation, work responsibilities) as the primary explanation for the limited sample size. Thus, significant limitations exist regarding the overall generalizability of these outcomes. Despite the small sample size, this study presents as one of the first attempts to quantify anecdotal reports regarding the efficacy of BJJ training for reducing symptoms of PTSD.

The study hypothesized that the reduction of symptoms could be attributed to the physical health benefits. However, a study examining the benefits of exercise for symptoms of

PTSD with military veterans revealed only promising and not definitive results (Willing et al., 2019) As such, it plausible that the reduction in PTSD symptoms may be attributed to a combination of factors.

A more recent study expanded upon this research, to determine the benefit of BJJ for symptoms of PTSD and assess factors that lead to veteran participation. The study postulated that BJJ may be an efficacious form of somatic psychotherapy for veterans with PTSD. Further, veterans provided testimonials regarding their experiences. These testimonials are anecdotal, yet worth acknowledging. Veterans reported decreased depression/anxiety, greater self-control, decreased isolation and increased social connectedness, improved mental clarity, less irritability or impulsivity, less reliance of psychotropic medications, decreased symptoms of PTSD, and better overall quality of life (Weinberger & Burraston, 2021).

One veteran who struggled with aggression related to PTSD noted that BJJ “feeds and channels the aggressive nature in [him] to be more productive.” Another veteran highlighted, “In Jiu-Jitsu, tunnel vision is counterproductive...there is no room for ego...you can’t get mad because you’ll get smashed...you have to be controlled, it’s productive as opposed to destructive life (Weinberger & Burraston, 2021).” This testimony offers further support regarding BJJ’s inherent tactical relevance – regulating one’s emotional response productively. While these studies suggest promise in leveraging BJJ for PTSD symptom reduction individuals, causality was not determined. Based on existing literature, BJJ may be well positioned to mitigate cognitive/mood alterations and changes in arousal which are two primary clusters of symptoms that impact LEOs. Further, officers with repeated exposure to traumatic events may become increasingly isolated. Social connection and support are considered factors that facilitate resiliency and protect against the development of PTSD (Evans et al., 2013).

A diagnosis of PTSD is marked by reported changes in arousal such as increased startle response, hypervigilance, difficulty concentrating, sleep disturbance, and/or irritability or angry outbursts. LEOs are required to make rapid decisions in complex, fast paced environments with often ambiguous, limited information. While police training prepares officers for exposure to disturbing events (e.g., dead bodies, traffic accident victims), they may lack appropriate training for handling more difficult or stressful situations (e.g., abusive victims, events in which officer may be harmed) (Hartley et al., 2013). LEO performance during high stress calls is paradoxical in nature – vigilance is bolstered while complex cognitive processes (e.g., communication, problem solving) are disrupted. Interestingly, *well-rehearsed*, procedural skills seem to be spared, specifically when those skills have been practiced in simulated high stress.

Acute stress impacts officers' abilities to regulate levels of arousal and execute appropriate judgment (Anderson et al, 2015; Biggs et al, 2021; Christopher et al., 2018). Essentially, an individual's inability to self-regulate when confronted with real or perceived threat may result in the prolonged activation of survival-based operations. As such, it can be argued that one's ability to self-regulate in the face of stress influences the degree to which an individual is able to recover from a traumatic stressor.

Veterans who participated in a BJJ training program reported increased ability to work through the fight-or-flight response associated with PTSD by relying on BJJ principles, in a manner similar to that accomplished by prolonged exposure therapy (PE). PE is a highly efficacious evidence-based treatment for PTSD and has been shown to improve a wide variety of related symptoms, including anxiety, depression, functional impairment, suicidal ideation, and anger (Brown et al., 2019).

LEOs are also at increased risk for the development of sleep disorders and metabolic syndrome, which describes a group of metabolic risk factors that increased the risk of cardiovascular problems such as heart attack or stroke (Garbarino & Magnavita, 2019). Occupational stress, shiftwork schedules, poor health, and exposure to traumatic events contribute to the development of sleep apnea and insomnia. Due to complex variables, it can be difficult to address sleep concerns. However, intrusion symptoms related to PTSD such as nightmares, can exacerbate existing sleep difficulties impacting the quality and quantity of sleep. Inadequate sleep has disastrous consequences cognition, motor abilities, and mood (Violanti et al., 2017). Taken together, these consequences compound making it difficult for officers to maintain alertness, sustain attention, problem-solve, and perform other essential job functions.

While this topic has yet to be formally explored, consistent BJJ practice may mitigate sleep difficulties. To date, evidence to support this notion remains anecdotal. Weinberger & Burraston (2021) highlighted the testimonial of a veteran who participated in a BJJ training program. In addition to less aggressive tendencies and increased social trust, this veteran reported, “BJJ has definitely decreased my PTSD symptoms. I sleep better than I have in years.” The testimony of one participant is insufficient for any definitive conclusion. However, taken in concert with the noted physical health benefits associated with regular BJJ practice and the known relationship between physical health concerns and sleep difficulties, it may be reasonable to presume that BJJ may improve sleep by bolstering physical health. Further, lack of adequate recovery from stress impacts quantity and quality of sleep (Violanti et al., 2017). In this regard, BJJ may be well positioned to address sleep difficulties through increased stress management and self-regulation abilities. In essence, BJJ may be an advantageous avenue to facilitate

increased self-regulation necessary for controlling one's response in the face of threat and may provide additional benefits such as physical health and improved sleep.

Moderate levels of stress and arousal are adaptive and often boost performance; however, chronic exposure to high levels of stress inversely effects performance and impairs cognitive functioning (Biggs et al., 2021). For instance, individuals with a diagnosis of PTSD often report difficulty concentrating which is associated with neurocognitive impairments in executive functioning (Oleff et al., 2014). Impaired executive functioning implicates an officers' ability make appropriate decisions/judgments (Biggs et al., 2021). Executive functioning also plays a pivotal role in officers' ability to make split second decisions and inhibit instinctual responses.

An EEG imaging study measured brain function in relation to decision making with officers who reported symptoms consistent with a diagnosis of PTSD. Participants in the study were presented with a decision-making situation. Results indicated that officers with higher levels of PTSD experienced disruptions in frontal cognitive control systems related to response inhibition (Covey et al., 2013). This suggests that high levels of PTSD can impair officers' ability to filter and evaluate competing information in a high stress situation, making it difficult for them to choose an appropriate response while inhibiting potentially detrimental responses.

A study conducted with students with secondary school students in United Arab Emirates found strong evidence suggesting that BJJ practice positively influences executive functioning development, specifically regarding inhibitory control (Bueno & Saavedra, 2016). Another study reported increased executive functioning capacity in middle aged adults who participated in marital arts when compared to individuals who engaged in aerobic exercise (walking) (Douris et al., 2015).

A neuroimaging and behavioral study also found neurological and cognitive consequences associated with individuals exposed to traumatic events regardless of their self-reported symptomology (Levy-Gigi et al., 2014). This suggests that there is a “hidden price of repeated traumatic exposure.” The study found that police officers with a history of repeated exposure to traumatic events demonstrated impairments in cue reversal learning. Officers struggled to associate certain cues with a positive outcome after the cue was previously presented with a negative outcome. This impairment is associated with amygdala dysfunction and may have dire consequences, as repeated exposure to traumatic events may affect how officers interpret and react to their environments which in turn, poses a risk to the communities in which they serve (Levy-Gigi et al., 2014).

Numerous other studies have investigated impact relationship between BJJ and aggression (Blomqvist Mickelsson, 2020; Janowska et al., 2018; Mickleson et al., 2021; Pujszo et al., 2018; Vít et al., 2019; Wojdat & Ossowski, 2019). The results from these studies unanimously suggest that individuals who participate in regular BJJ training demonstrate lower levels of aggression. Burke (2022) ethnographically examined the process at which BJJ athletes calibrate their behaviors during training to maintain socially appropriate levels of intensity. This study noted that entry level male BJJ athletes tended to “spazz” or exhibit behaviors associated with pride and perceived strength, regardless of technical ability. Interestingly, the social norms associated with BJJ tend to correct this behavior. For men, appropriate levels of training intensity was calibrated through physical feedback during sparring session. When less experienced athletes train with more seasoned practitioners, they learn the futility of strength and excessive aggression (i.e., “spazzing out”), as the more seasoned athletes demonstrate the effectiveness of

technique over strength. This level of social calibration offers further support for BJJ as a pro-social activity.

### **Mental Preparedness and Resiliency**

Studies also point to the role of resiliency as a protective factor against the development of PTSD (Buckley et al., 2018; Lee et al., 2016). When an individual is exposed to real or perceived threat, their initial response is biological but is highly influenced by that individual's subjective interpretation of the event. Yehuda (2004) suggests that recovery from trauma requires vulnerability and confronting one's history in a manner that promote learning and resilience. In this regard, resilience is not only a pre-trauma protective factor; rather, fostering resilience post-trauma may contribute to recovery. The act of learning and fostering of resilience is inherently embodied in traditional martial arts philosophy and experienced through practice (Fuller & Lloyd, 2020).

Few studies to date have investigated the relationship between BJJ practice and resilience. Anecdotally, BJJ participants seem to agree: BJJ training fosters resiliency. However, further research is necessary to understand the underlying factors that contribute these anecdotal claims. Other existing literature points to the positive effects of traditional martial arts training on self-efficacy and resilience among youth (Moore et al., 2019).

As mentioned previously, being unable to regulate one's response in the face of threat and being unprepared to address the threat increases the likelihood for the development of PTSD. Lack of adequate training may lead to further activation of the sympathetic nervous system during dangerous calls which left unregulated can lead to impaired decision making or decision making based on one's survival response, rather than appropriate judgement (Arble et al., 2019). Mental health intervention with LEOs involved in critical incidents involving use of force

addresses post-incident stress recovery. Yet, consideration of the factors that impact behavior during use of force incidents is equally necessary (Biggs et al., 2021).

Numerous studies have documented the effectiveness of stress inoculation, mental preparedness, and resiliency in maintaining optimal performance in the line of duty (Anderson et al., 2015, Biggs et al., 2021, Christopher et al., 2018; Welton et al., 2014). Based on previous literature, this paper suggests that pre-trauma mental preparedness and post-trauma stress recovery have a cyclical relationship. The more prepared one is to regulate their cognitive and behavioral responses to stress, the less likely they are to experience long-term psychological distress. Inadequate recovery after a traumatic incident may impact officer's performance during a subsequent incident. This in turn impacts their ability to regulate their level of arousal in the face of threat. Increased arousal disrupts higher order cognitive processes (i.e., executive functioning, communication, problem-solving). The disruption of essential cognitive processes may result in ineffective behavioral responses. The combination of the aforementioned factors leads to increased stimulus-driven attentional control and reduces goal-directed behaviors (Biggs et al., 2021). The combination of prevention strategies and post-incident intervention can interrupt this cycle and prevent long-term psychological consequences through the facilitation of increased self-regulation.

A 2016 case study documented the implementation of a Stress Resilience Training System (SRTS) with police officers at officers to examine the use of biofeedback and heart rate variability training with LEO (Weltman et al., 2014). Participant testimonials were unwaveringly positive. Of note, participants reported increased ability to self-regulate in the face of stress, citing benefits with both job performance and everyday life. Further, one participant cited a specific incident in which he was able to utilize the skills learned through the training

program to a real-life situation. Another participant stated, “I use it in my job every day because the physiology basis of the techniques took it out of the realm of ideas and made it tangible.” These positive testimonials provide further evidence that officers may be more likely to engage in services that they perceive to have tangible results with practical application to their job performance. The US military also recognizes the consequences of unregulated responses to stress and has moved to include self-regulation and resilience training into their operational training requirements (Welton et al., 2014).

BJJ also offers tactical relevance as an avenue for stress inoculation training. Stress inoculation training (SIT) is a known method of training to increase officers’ ability to execute decisions in high-stress, life threatening situations. Further, SIT may protect against the development of PTSD. Hourani et al., (2016) evaluated whether a pre-deployment SIT program may serve as a preventive strategy among Marines prior to deployment to Iraq. Hourani et al., (2016), examined the impact of a stress inoculation training program with 351 Marines. Participants who participated in SIT received education on operational stressors, stress regulation coping skills (e.g., focused diaphragmatic breathing using biofeedback), and exposure to video multi-media stressful environment in order to apply learned skills. Utilization of coping skills was measured with heart rate variability (HRV) and symptoms of PTSD were measured using the PCL-5. Results showed that SIT protected against the development of PTSD with Marines with no reported mental health symptoms at baseline (Hourani et al., 2016).

Participation in BJJ, facilitates a comparable activation of the body’s stress response, and success relies heavily on the competitor’s ability to execute learned skills in a high stress environment. Specifically, BJJ competition amplifies an athlete’s stress response and tests their ability to utilize learned skills in a heightened state of arousal. Moreira et al., (2012) found that

BJJ competition increases stress hormone responses (specifically cortisol) which is also (Moreira et al., 2012). BJJ practitioners are exposed to a physically threatening stimulus (their opponent) and must regulate their response to the perceived stressor in order strategize and problem solve.

Interestingly, when seasoned BJJ athletes compete, their breathing is slow and controlled. New BJJ practitioners often experience a sense of “gassing out” early in their training program, as they have not yet learned how to regulate their body’s stress response. With increased rehearsal and acquisition of techniques, BJJ practitioners regulate their breathing and conserve vital resources (e.g., strength, stamina) and utilize complex cognitive processes necessary for strategic planning.

Self-regulation in the face of stress may enhance officers’ ability to apply previously learned skills/techniques without resorting to force. Equally important is an officers’ ability to effectively de-escalate conflict through verbal communication. Both verbal and non-verbal communication requires complex cognitive processing which can be impaired during stressful situations (Arble et al., 2019). Essentially, the more one is inoculated to stress, the less these functions are impaired during high stress events. This in turn increases their ability to think clearly and utilize skills learned during training. In this sense, the decreased UOF incidents among BJJ officers in Marietta PD study may be attributed to improved self-regulation abilities among officers who participated in the BJJ training program.

### **Conclusion**

This paper examined the prevalence of PTSD, consequences of unaddressed traumatic stress injury, and barriers to mental health treatment engagement among LEOs. Repeated exposure to traumatic events places officers at increased risk of developing long-term mental health difficulties. However, officers are reluctant to engage in mental health services or report

symptoms related to mental health difficulties. A review of existing literature highlighted the impact of traumatic stress injury on officer well-being and performance. A common theme that emerged through past studies suggest traumatic stress injury compromises self-regulatory abilities. Existing research suggests that BJJ training enhances individuals' self-regulatory abilities and promotes positive psychosocial outcomes.

Most of the studies reviewed for this paper lack large sample sizes limited generalizability. Further, there is a lack of randomized control studies investigating the casual relationship between BJJ practice and psychotherapeutic outcomes. To date, only two studies have examined the impact of BJJ training on PTSD symptom reduction among male veterans. Theoretically, the reduction in PTSD symptoms reported among male veterans who participated in these studies may translate to LEOs. However, given that LEO officers are reluctant to report symptoms of PTSD on traditional self-report measures, future studies may have difficulty establishing a baseline of PTSD symptomology. As such, future studies should consider the use of alternative PTSD assessment methods (i.e., semi-structured interviews) to examine the impact of BJJ on PTSD symptom reduction among LEOs. These studies should also consider examining whether BJJ training improves specific areas of LEO functioning (i.e., social, occupational, and operational functioning) rather than focusing exclusively on PTSD symptomology as outlined in the DSM-V.

Given that LEOs experience repeated exposure to traumatic events, future research should also examine the if BJJ training offers similar preventative benefits when compared to existing mental preparedness protocols such as mindfulness-based stress reduction training or stress inoculation training. Collaboration with departmental agencies may allow for accumulation of data related to specific operational outcomes (e.g., uses of force, taser

deployments, injury). Future research may consider utilizing examining the impact of BJJ training through the theoretical lens of self-regulation theory, as PTSD is marked by decreased cognitive, affective, and physiological self-regulation. Finally, futures studies may attempt to examine the specific mechanisms through which BJJ may foster adaptive behavior change as a means of fostering increased resiliency and reducing externalizing behaviors. In sum, this paper presents a theoretical case for the need of alternative, yet equally efficacious treatment options for LEO who experience symptoms consistent with PTSD. Based on a review of literature, BJJ is a promising psychotherapeutic intervention that may mitigate symptoms of PTSD while fostering resiliency to protect against long-term psychological impairments that may arise from repeated exposure to traumatic events.

**TABLE 1: THEORETICAL SUPPORT FOR BJJ AND PTSD SYMPTOM REDUCTION**

DSM-V PTSD Symptom Criterion	PTSD Symptoms	Author(s)	Date	Rationale
<b>Intrusions</b>	Emotional distress after exposure to traumatic reminders	Weinberger & Burraston	2021	BJJ training fosters appropriate engagement with situation and level of threat; teaches participants to deal effectively with emotions.
		Lakes & Hoyt	2004	
<b>Avoidance</b>	Avoidance of trauma-related thoughts, feelings and/or external reminders	Willing et al.	2019	↓ use of avoidant coping (as evidenced by decreased PDSQ AAD subscale and AUDIT).
<b>Negative alterations in cognition/mood</b>	Increased negative emotion, decreased positive emotion	Willing et al.	2019	↓ symptoms of depression and anxiety (on PDSQ MDD and GAD subscales).  PHQ-9 scores ↓ from a baseline of 14.90 ± 7.38 at zero hours of BJJ training, 10.16 ± 7.63 at 20 hours, 8.50 ± 6.31 at 40 hours, 5.10 ± 4.9 at 60 hours.
		Weinberger & Burraston	2021	
	Decreased social interaction/engagement and/or isolation	Willing et al.	2019	Promotes social engagement and interaction
		Weinberger & Burraston	2021	Facilitates social support, camaraderie, accountability, and sense of community
<b>Alterations in arousal</b>	Irritability or aggression Risky or destructive behavior	Weinberger & Burraston	2021	↑ patience and self-control; ↓ reactivity and aggression (per participant interviews)
		Wojdat & Ossowski	2019	
		Chinkov & Holt	2016	Long term BJJ practice leads to ↓ frequency of aggressive behavior in both men and women
			2020	BJJ fosters life skills transfer (self-control necessary for BJJ practice transfers to self-control in daily life)
		Blomqvist Mickelsson	2016	BJJ (when implemented within the bounds of traditional martial arts philosophy) leads to ↓ levels of aggression and reduces antisocial behaviors among at-risk youth
		Bueno et al.	2017	BJJ fosters greater inhibitory control among secondary school participants
		Harwood et al.		
		Vertonghen et al.	2014	Meta-analysis on the effects of martial arts training on externalizing behaviors (examined 12 studies, n=507; ages 6-18); found homogenous effect sizes for 9/12 studies pointing to reduced aggressive behaviors among marital arts participants
			2018	
		Pujso et al.	2019	BJJ athletes demonstrated lower levels of aggression when compared to Mixed Martial Arts (MMA) athletes
		Vit et al.	2022	Long term BJJ practice demonstrated more significant effects in reduced levels of anger, aggression, and hostility among female participants compared to Hip Hop dancing
		Burke		
			BJJ fosters “social calibration” in which more seasoned practitioners teach novel BJJ athletes an appropriate/safe level of training intensity by reducing the impulse to use strength (as opposed to technique) when in a threatening position	

Hypervigilance; Heightened startle reaction	Weinberger & Burraston	2021	↓ hypervigilance (per participants' reports); ability to work through fight-or-flight responses associated with PTSD using BJJ principles, similar to Prolonged Exposure (PE)
Difficulty concentrating	Weinberger & Burraston	2021	↑ clarity and present moment focused achieved through deep focus or "Flow" achieved during sparring
Sleep difficulties	Weinberger & Burraston	2021	↓ sleep difficulties (per participant interviews)

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