

**JEREMY M. BUTLER AND SOLOMON WANG**

# **THE IMPACT OF BRAZILIAN JIU-JITSU TRAINING ON POLICE OFFICER CONFIDENCE IN USE OF FORCE PERFORMANCE: PERCEPTIONS FROM OFFICERS WHO TRAIN**

## **ABSTRACT**

Brazilian jiu-jitsu (BJJ) is a grappling-based martial art that has recently gained traction in the law enforcement community. However, there is limited research on the perceived impact of BJJ training from the perspective of officers who study the art. The purpose of this study was to examine how BJJ training experience impacts officer confidence and gain insight on officer views on the best training methods and techniques for subject control. Results from an online survey of over 300 officers revealed that there were positive correlations between BJJ experience, use of force experience, and perceptions of officer confidence in their defensive tactics. Officers also reported improved stress levels, use of force performance, and fitness levels since they began training. The results also highlight that officers have experienced the benefits of BJJ training, along with other martial arts, in meeting their occupational demands, and value its impact on their work performance.

## **CONTRIBUTORS**

*Jeremy Butler is a Kinesiology instructor at Northern Illinois University and a police control tactics instructor. His research focuses on the social cognitive factors impacted by martial arts training.*

*Solomon Wang is an Assistant Professor of Psychology at Judson University. His research focuses on program development and evaluation.*

## **KEYWORDS**

Brazilian jiu-jitsu, police, confidence, stress, use of force.

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## INTRODUCTION

Police officers are responsible for maintaining the safety of the public, which often requires controlling combative subjects while using minimal force. In 2021, 43,649 officers throughout the United States were assaulted during the performance of their duties and 35.2 percent of these attacks resulted in injuries to the officers (USDOJ, 2022). While officers are often equipped with a variety of less lethal tools (e.g., batons and pepper spray), there are times when the environment or circumstances may render these weapons ineffective or inappropriate. Examples include subjects who are under the influence of drugs and unresponsive to pain, or enclosed spaces where time to access these tools may be limited. Additionally, most use of force encounters are non-lethal as 74.3 percent of the aforementioned attacks were carried out with personal weapons (e.g., fists or feet) (USDOJ, 2022). Many officers have also reported dissatisfaction with their physical control tactics training due to concerns with the quality of training and low frequency of practice (Butler & Petruzzello, 2019; Kaminski & Martin, 2000; Renden et al., 2015). Therefore, learning effective empty hand control techniques is critical for an officer's occupational safety and an area of interest that officers have pursued outside their agency.

In addition to control techniques, another critical area of police training is physical fitness. Fitness levels have been shown to correlate with police task demands, particularly as it relates to control tactics (i.e., techniques used to subdue resisting subjects) (Arvey et al., 1992; Dillern et al., 2014; Wilmore & Davis, 1979). Fitness training is also associated with reduced medical and time off costs (Bissett et al., 2012; Boni, 2004). While officers are encouraged to maintain their fitness levels, some longitudinal studies have shown significant declines in physical fitness throughout their career due to reductions in activity levels post-academy (Lagestad et al., 2014). However, martial arts training has been shown to improve physical fitness and positively impact officer perceptions of their physical and mental preparation for force encounters (Andreato et al., 2017; Butler et al., 2023; Renden et al., 2015).

One self-defense art that has recently gained traction in pop culture and law enforcement is Brazilian jiu-jitsu (BJJ) (Andreato et al., 2017; Ridderbusch, 2022). BJJ is a grappling-based martial art that focuses on controlling and submitting one's opponent via positional dominance, joint locks, or strangulation. During force encounters, officers must effectively control subjects to effect an arrest while causing minimal harm. A core attribute of BJJ is the numerous techniques ergonomically designed to control another human being using the principles of biomechanics and leverage.

Recent research has demonstrated the value of leverage-based control tactics for law enforcement in reducing excessive force settlements and injuries to officers and civilians. These tactics have also equipped female officers with a skill set necessary when facing physical assault threats (Gottfried, 2021; Huff et al., 2024; Ridderbusch, 2022). Studies have also highlighted the physical and psychological impact of BJJ training (Andreato et al., 2017;

Harmon, 2022; Willing et al., 2019), specifically on an officer's confidence in dealing with physical confrontation. Sipe (2024) found additional positive benefits of BJJ training on decision making and attentional focus, both of which can be associated with confidence in handling a force encounter. This growing body of research, and potential transferability of the art to the needs of officers in preparation for force encounters, has led to an increased interest from the law enforcement community. However, there has been a limited number of quantitative research studies highlighting insights on BJJ training from the perspective of officers who actively train recreationally.

### Study Aims

The aim of this study was to investigate how BJJ experience impacted officer confidence when faced with an on-duty physical confrontation. The study also aimed to lend insight to techniques that contribute to the most ergonomic methods of controlling a subject from the perspective of law enforcement officers. Officer motivations for training, best training practices, psychological impact and technique recommendations were analyzed as well.

### Hypothesis

It was hypothesized that a) officers would generally perceive positive benefits from BJJ training in use of force performance and that b) experience in BJJ would correspond with positively felt physical and psychological impact. Specifically, it was believed that both training and use of force experience would positively correlate with an officer's perceived ability to protect themselves using defensive tactics during a force encounter.

## METHODS

To gain insight into officer perceptions of BJJ training, data was obtained anonymously via an online self-report survey from police officers throughout the world, but primarily in the United States (95.9%). The data was collected from June 2021 through August 2021 utilizing Qualtrics. Subjects were recruited via social media, email, and word of mouth. The inclusion criteria for the study were that participants must be active duty police officers who were currently training in BJJ. Prior to beginning the survey, voluntary consent was obtained from all participants via completion of an informed consent form in Qualtrics.

Participants included active-duty police officers (n = 318; 297 men, 21 women) with a mean age of 37 years (SD = 8.5) and a mean working experience of 11.2 years (SD = 7.2). Table 1 (below) includes a more complete overview of the participant characteristics.

### Survey Instrument

The survey consisted of 28 questions, aimed at addressing topics associated with various task demands related to use of force such as fitness, confidence, and control techniques. The survey questions collected information on the following: officer demographic questions (e.g., age, sex, race/ethnicity, experience,

department size, etc.), questions on their BJJ background which included their belt rank and frequency of training, their opinions about the effectiveness and applicability of BJJ for subject control, their opinions about the impact of BJJ on their overall wellness (e.g., stress levels, fitness, etc.), the reasons why they train BJJ, and a free text question about any other martial art they've trained that compares in effectiveness to BJJ.

For this study, five variables were used. The first item addressed how officers perceive their ability to protect themselves in a physical encounter requiring empty hand defensive tactics where 1 represented 'very poor' and 5 represented 'very good'. In general, officers (n = 312) felt confident in their empty-handed defensive tactics, where M = 4.21, SD = 0.74, skewness = -.040, kurtosis = -0.89, missing = 0. The second item addressed whether officers believed that their BJJ training would improve their success in handling non-lethal force encounters with 1 indicating 'never' and 5 indicating 'always'. On this item, officers (n = 278) reported a strong belief in BJJ's utility where M = 4.56, SD = 0.69, missing =

34. Kurtosis and skewness were not at an acceptable level, where skewness = -1.86 and kurtosis = 4.30.

The other three items were five-point Likert scale items. The first item was an ordinal rated item where belt rank in BJJ was self-reported as (1) white belt, (2) blue belt, (3) purple belt, (4) brown belt, or (5) black belt. The distribution of belt ranks are shown in Table 1. The second item was an ordinal item where officers reported how long they had actively trained in BJJ, where 1) indicates less than a year, 2) one to three years, 3) four to seven years, and 4) indicates eight or more years. Frequency analysis found that approximately half of the officers actively trained between 1 to 7 years, where M = 2.35, SD = 1.10, missing = 0. The third item was a four-point likert scale item which indicated how many days a week officers trained in BJJ. On this scale, 1) indicated an officer trained once a week, 2) twice a week, 3) three times a week, and 4) more than three times a week. Officers (n = 312) generally appear to train a little over twice a week where, M = 2.60, SD = 0.98, missing = 0. For all three variables, skewness and kurtosis were below 2.0.

Table 1. Participant characteristics.

		Males	Females	N
Participants		297	21	318
Mean Age (years)		37.2	33.9	316 M=36.9
Race	White	242	16	258
	African-American	4	0	4
	Asian	14	0	14
	Hispanic or Latino	22	2	24
	Native Hawaiian or Pacific Islander	3	0	3
	Multi-racial	9	3	12
	Other	3	0	3
Work experience (years)	Less than a year			4
	1-5 years			83
	6-10 years			83
	11-20 years			110
	20+ years			35
Use of force experience (since starting BJJ)	None			34
	1-5 encounters			121
	6-10 encounters			52
	More than 10 encounters			111
BJJ experience (minimum once a week)	Less than a year			92 (28.9%)
	1-3 years			94 (29.6%)
	4-7 years			64 (20.1%)
	8 or more years			68 (21.4%)
BJJ rank	White			162 (50.9%)
	Blue			68 (21.4%)
	Purple			43 (13.5%)
	Brown			17 (5.3%)
	Black			28 (8.8%)

### Data Analysis

Data analysis involving numerous frequency distributions were analyzed to test the univariate assumptions of each variable as well as observe officer's confidence in BJJ and their self-defense skills. Additionally, Spearman *rho* correlations were analyzed to determine the relationship between BJJ training and officer confidence in their ability to use their defensive tactics.

A Mann-Whitney U (MWU) test was also applied to test whether officers who had experienced many physical confrontations (More than 5) had higher level of confidence in their ability to protect themselves than those who had less encounters (5 or less), which aligns with the study's purpose of examining how encounter experiences interplays with use of force confidence. The MWU test is the nonparametric equivalent to the independent t-test and was used due to the variables being ordinal.

## RESULTS

The complete overview of the participant and agency characteristics, including age, experience, agency size and region, and rank in BJJ, is presented above in Table 1.

As seen in Table 1, a variety of experience levels both in policing and BJJ were represented in this study. Regarding agency characteristics, 28.8% of agencies were small (less than 50 officers), 52.6% were midsize (less 50-999 officers), 14.7% were large (1000-4999 officers), and 3.8% were very large (5000 or more officers). Officers were from northeastern (18.2%), midwestern (38.1%), southern (24.5%), and western (14.5%) regions of the U.S. A small number of the participants were from Pacific regions such as Alaska and Hawaii (0.6%) and other countries including Canada, Singapore and Australia (4.1%).

Results of the descriptive analysis found support for the study's main prediction. It was hypothesized that officers would generally perceive positive benefits from BJJ training in use of force performance. This hypothesis was confirmed as 91.3% of participants reported improvements in fitness level and 97.4% reported improvements in confidence. Additionally, regarding success in handling encounters, 94% of participants reported that their BJJ training improved success "always" or "most of the time." Similar results were found for participants who had less than a year of training. Of these officers, 96.7% (n = 91) reported they felt more confident due to their training and 91.3% (n = 69) reported their training improved success during encounters "always" or "most of the time."

In assessing perceived impact on stress levels, 85.9% reported reduced stress since they began training and 98.2% reported BJJ training had a positive impact on their ability to perform under stress, aligning with stated predictions.

The most cited motivations for training in BJJ were self-defense/control tactics (98.1%), fitness (91.2%) and fun (86.8%).

Conversely, the least cited motivations were community/social support (40.6%), and competition (26.1%).

### Technique Preferences

When asked about the top five most applicable BJJ techniques that officers would recommend of law enforcement, as hypothesized, most officers recommended controlling/pinning techniques from the top position over submission techniques and sweeps. Interestingly, isolating the recommendations of the black belt participants yielded similar results (see Tables 2a and 2b, below).

### Spearman Correlation Coefficients

Spearman *rho* correlation coefficients were calculated for the relationships between officer confidence in successfully using defensive tactics and time (years) actively training in BJJ, BJJ rank, and number of force encounters since starting BJJ. Moderate positive correlations were found between officer confidence and time actively training in BJJ ( $\rho(310) = .490, p < .001$ ), officer confidence and BJJ rank ( $\rho(310) = .486, p < .001$ ), and officer confidence and number of force encounters ( $\rho(310) = .322, p < .001$ ). These results indicate a significant relationship between these variables, with the strongest relationship being between officer confidence and time actively training in BJJ.

### Mann-Whitney U-test

A Mann-Whitney U test revealed a significant difference in confidence between the officers who had more than five encounters ( $m = 180.81, n = 161$ ) to those who had five or less encounters with a moderate effect size ( $m = 130.58, n = 151; U = 8241.00, z = -5.31, p < .01, r = .3$ ). Officers who had more encounters reported higher confidence in their ability to defend themselves using defensive tactics. These results aligned with the correlational data above, along with the hypothesis that officers who had more non-lethal physical encounters would feel more confident in their ability to defend themselves.

## DISCUSSION

The current study investigated officer perceptions of BJJ training on police use of force performance along with its psychological impact, officer training motivations, and technique applicability.

It was hypothesized that officers would generally perceive positive benefits from BJJ training in use of force performance. The study results generally confirm this hypothesis as officers reported improvements in success with handling force encounters, performance under stress, and physical fitness since they began training in BJJ. Since BJJ's training methods, which often involve regular training against an actively resisting partner, simulates officer experiences during physical encounters, the boost in control tactics confidence was not surprising. Additionally, the results suggest that training in BJJ promoted fitness, which has been found to make officers feel more efficacious at their job and require less time off due to injury (Bissett et al., 2012; Boni, 2004).

Table 2a. Top 5 BJJ techniques (participants under black belt).

Techniques	Total (N=290)	Percentage (%) of participants
Side Control	175	60.3
Knee on Belly	150	51.7
Full Mount	131	45.2
Full Mount Escapes	127	43.8
Kimura (Bent arm lock)	113	38.9

Table 2b. Top 5 BJJ techniques (black belt participants).

Techniques	Total (N=28)	Percentage (%) of participants
Knee on Belly	24	85.7
Side Control	20	71.4
Kimura (Bent arm lock)	12	42.9
Full Mount Escapes	11	39.3
Full Mount	9 (tied)	32.1
Rear waist takedown	9 (tied)	32.1

The results confirmed the primary motivations for training were for self-defense and personal fitness, two functional dimensions that underpin police use of force-related demands (Dillern et al., 2014). Understanding these motivations for training may help martial arts instructors understand how to train and retain officers as students.

It was believed that officers would recommend controlling/pinning techniques from the top position over submission techniques and sweeps. This was confirmed as four of the five most frequently recommended techniques from the officers were pinning variations (i.e., side control, knee on belly, and mount), and a submission that is often used as a control position (i.e., kimura lock). Additionally, all black belt officers (a rank denoting expert level skill) selected the same techniques, which offers added validity to the potential of the techniques for law enforcement. Controlling pins such as the mount position and side control are ergonomically efficient in accomplishing the objective of controlling the human body at three critical points: the head, shoulders, and hips. Knee on belly offers control over the hips with limited control over the upper body; however, it affords officers a greater ability to quickly disengage if necessary.

When questioned about the applicability of training in the gi in comparison to no-gi, most of the officers reported both are equally

applicable. This can likely be explained by the fact that officers may encounter subjects with various types of clothing, or no clothing. Training experiences in the gi may build skills in controlling a subject using their clothing and helping the officer get used to responding effectively when their uniform is grabbed. Gaining BJJ experience without the gi may help officers refrain from being reliant on clothing to execute their techniques. Overall, these perspectives offer insight into the physical techniques and standards of practice for officers to consider focusing on in training.

Another notable finding was the psychological impact of BJJ training. Officers reported increased confidence and reductions in overall stress because of BJJ training. These findings, along with those mentioned above support previous studies that found a positive association between BJJ training, fitness and self-confidence boosts and simultaneously, a reduction in anxiety (Andreato et al., 2016; Faro et al., 2019). Officer confidence, as hypothesized, was also associated with both BJJ rank and training experience. The more BJJ training an officer had, the more confident they felt in using defensive tactics, likely due to a higher level of mastery of the techniques. These findings were consistent with well established research findings supporting the influence of

mastery experiences on confidence (Agrawal & Borkar, 2021; Bandura, 1977; Butler et al., 2023).

These findings also highlight discipline as a shared quality required for success in both martial arts and policing. A law enforcement career requires months of academy and field training, followed by years of sacrificing one's personal life for the needs of the job. It takes similar discipline, time, and effort to build confidence as a police officer that it takes to become confident in one's martial arts skills. Officers who chose to commit more training time reaped more cognitive benefits. However, it remains possible that negative experiences during skill development might also lead to diminished confidence. Therefore, to reduce potential negative effects from short-term training outcomes, it is important for officers interested in BJJ to understand that it may take time to build sufficient skill and confidence.

In addition to BJJ training, the results suggest that use of force experience also had a significant positive impact on officer confidence in their ability to defend themselves. There was an observable positive correlation between use of force experience and confidence, particularly for those who experienced more than five force encounters. This highlights the value of practical experiences. While BJJ training can provide the physical and mental tools to improve officer perceptions of their ability to defend themselves, it appears that experience, whether in BJJ or in the field, is critical to defensive tactics self-efficacy. But caution must be taken in addressing how officers may process poor use of force performance as it could negatively impact confidence.

Another interesting finding was that many officers found other combat sports like Muay Thai/kickboxing, wrestling, judo, and boxing were, at minimum, equally beneficial to law enforcement. The perceived benefits of various martial arts for law enforcement were consistent with previous findings (Kaminski & Martin, 2000; Renden et al., 2015). However, the striking arts that were reported as equally effective were not expected. During non-lethal encounters, officers are expected to control a subject while causing minimal harm, which supports the perceived value of grappling arts like BJJ, judo, and wrestling. Perhaps the perceived equality in benefits for the striking-based arts may be grounded in the fact that striking is the type of aggression that officers will likely encounter. Therefore, being accustomed to receiving this level of aggression, countering these forms of attack, and responding with similar levels of force would be beneficial. Another possibility is that one's belief in the martial art they practice may be more influential than the techniques of the art. Future studies may explore the effects of BJJ training, or other comparable martial arts, on those with no prior background in martial arts to examine its predictive effect on fitness, confidence and use of force performance.

#### Limitations

Some limitations must be considered when interpreting the findings of this study. First, self-selection bias must be taken into consideration. Since the study targeted officers who actively train in BJJ, those who chose to participate likely chose to do so based

on their positive experience with BJJ. However, this should not diminish the value of the insight provided by the participants regarding their experiences with the art. Second, there were no comparative analyses based on demographic variables (such as gender or race/ethnicity) considering the vast majority of participants were white males. Third, considering this was not intended to be a mixed-method study, the survey methodology used did not afford much detailed explanations for the officers' responses endorsing other martial arts in addition to BJJ. A future qualitative study may explore these perspectives further.

Another limitation is the inability to draw conclusions on the ergonomic efficacy of any techniques since this was a perceptions-based study. However, this insight from officers might lay the foundation for future studies on the technique selection for officers from a biomechanical perspective. This additional exploration might also investigate the potential benefits of the ecological dynamics approach to control tactics training in comparison to specific technique selection.

Finally, given the correlational nature of the data analysis, the researchers are unable to conclude whether training or force encounters predict officer confidence. The investigators were unable to run a factor analysis or any predictive general linear models due to the non-normally distributed data and absent psychometric properties of the scales. However, in spite of this weakness, these findings and their alignment with some previous research is promising. Future studies on the association between BJJ training, field experience, and defensive tactics self-efficacy is fruitful as this is a relatively under-explored area that was found to be interrelated in this study.

#### CONCLUSION

The results of this study provided insight into the benefits and best training practices in the art of BJJ for law enforcement from the perspective of officers. An officer's training in BJJ and use of force experience positively impacted their confidence in handling force encounters. Additionally, officers reported improvements in fitness levels, performance under stress, and overall success during their use of force encounters after they started training in BJJ. Officers also provided recommendations for the top five most applicable BJJ techniques for police officers along with other martial arts that may be beneficial to the law enforcement field. These suggestions may aid in decisions on future training modalities for police officers both within and outside their agencies.

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