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ORTHOPEDIC SURGEON

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Re: Gracie Survival Tactics (GST) Medical Review

OBJECTIVE:

The aim of this document is to discuss the benefits of the GST system compared to traditional defensive tactic methodologies, specifically in terms of efficiency regarding de-escalation and gaining compliance, and most importantly in terms of safety in preventing injury to the subject and officer.

PERSONAL BACKGROUND:

I am a physician licensed to practice medicine in the states of Florida and California. I am board certified in orthopedic surgery since 1995. I sub specialize in spine surgery. I was previously a clinical instructor and clinical assistant professor at Stanford University. I treat patients at my private practice in Jupiter, Florida. I have published and presented in the realm of musculoskeletal and spinal trauma, as well as in anatomy specifically related to the neck, and vascular anatomy about the cervical spine. *I have attached an abridged (pertinent) version of my curriculum vitae.*⁽¹⁾

INTRODUCTION:

While communication and de-escalation remains the preferred method with encounters in the community, confrontation with a noncompliant individual (herein I will refer to as a “subject”) during a community service officer’s career is inevitable. Technology has placed law enforcement officers (LEOs) use of force encounters with civilians front and center for public scrutinization. Additionally, assaults on officers are on the rise. Nationally, over 60,000 LEOs were assaulted while performing their duties in 2020.⁽²⁾ In 2021, there was a 59% increase in the number of police officers killed over 2020.⁽³⁾ This is a worsening tragic occupational hazard.

Traditional methods for gaining compliance rely on punches, kicks, baton strikes and choking techniques, and have several drawbacks. A single strike typically is insufficient, leading to escalation, optics notwithstanding. Putting aside the visual, which is most unsettling to onlookers and broadcasted eagerly by media for public analysis, there is significant risk of injury to both the subject and the LEO. Strikes and kicks have significant variability in

efficacy. They range from wholly inadequate to causing fatal injuries. Size discrepancies increase the likelihood of a prolonged physical encounter, often resulting in injury to both parties. A LEO typically will have more confidence in a use of force option on the duty belt, due to a limited set of tactical techniques and typically insufficient training in “empty hand” techniques. Most importantly, a strike that grounds an upright subject may lead to head and other injuries when the subject makes contact with the surface, with sometimes fatal results. Size/weight, mind altering ingestions, psychiatric disease, strength, and conditioning of a subject are all important factors that must be considered. Additionally, an attacker may have advantages of previous combat training or athleticism, and they always have the “ambush” advantage. Moreover, there is little to no concern for the safety of the officer during a physical altercation. The lack of regular training and overall inconsistencies in LEO methods have contributed to the crisis of the interaction of community service providers with the public.

WHY JIU-JITSU (JJ) FOR GST:

The developers of the GST *curriculum* utilized the founding principles of JJ in devising a *concise, safe, and tailored system for LEOs*. GST is a direct result of input and interaction *in cooperation with* LEOs with extensive experience in the field alongside lifelong teachers of JJ. The mission of the task force was to parse the comprehensive set of over 600 JJ techniques to a subset of movements specific for the user to safely gain compliance. The result of this multiyear development process is the current GST system.

The understanding of what JJ is has been muddied somewhat by media and sportive competition. JJ is a system of *knowledge based on leverage*, rather than use of strength, speed, or power. It is the only art where a practitioner can have mercy on their opponent, typically via a restraining technique. This makes it the “safest” of all martial art systems. Other “fighting” systems rely on injuring an opponent in order to achieve a final goal. This is why a JJ based system is the preferred martial art system for use by LEOs. The primary goal for someone with knowledge of and training in JJ is to neutralize an attack, not “win” a fight.

GST is a defensive tactics system designed for LEOs, military, and first responders that emphasizes de-escalation, self-defense relying largely on empty hand techniques, weapon retention, and safely gaining compliance with a subject.

3 CRITICAL CONCEPTS:

The GST Program is not merely a set of tactical physical movements. GST architects felt that a knowledge-based program would be most pertinent due to the uniqueness of what LEOs need to accomplish in an altercation. The GST system intertwines the concepts of *situational awareness, distance management, sound decision making, as well as recognition of pre-event and event indicators.*

There are multiple factors involved in the unpredictability of an altercation in a resisting subject. Situational awareness, which starts immediately on encountering a subject, *is the “radar”* that helps recognize possible malicious intent (pre-event), or a change in intent or focus through body movements during altercation (event). Distance management is the ability to recognize a proper and safe range between combatants to minimize temporary incapacitation from a strike. Sound decision making is in regard to staying calm and keeping the prefrontal cortex portion of the brain in control so that one can make the best decision for the situation at hand. Pre-event and event indicators are specific bodily movements that assist a LEO in determining what a subject’s intent is. These concepts are interspersed throughout each technique to assist in reflex development and enhance skill set building.

The overriding psyche of the LEOs taught by the GST system is first and foremost, SAFETY (self AND subject). A LEO may not be privy to critical information at the time of an initial encounter. LEOs need to make rapid field decisions that may have significant ramifications, for example, in a domestic call, the LEO may not be privy to whether a subject is a psychiatric patient, or a subject with an outstanding warrant for a violent offense, or even misidentified. Having skills that can be applied in any situation to neutralize a threat is imperative. Moreover, numerous factors such as presumed innocence, anxiety, or claustrophobia may turn an individual who is otherwise passive into someone who is very aggressive. Based upon a subject’s intent, LEOs learn to identify and apply the appropriate technique with the least likelihood of injury to the subject or LEO. “Indicators” of a subject’s intent occur throughout an encounter, from the initial verbal engagement through both standing AND grappling interactions. Indicators may change DURING a physical encounter as a subject moves from strike focused to weapon focused, and the LEO must recognize this and respond without hesitancy. The GST system implements and varies these indicators throughout the course, again with the goal of reflex development.

3 PILLARS OF SELF DEFENSE (SD):

The GST SYSTEM relies on three pillars of SD: 1: Punch protection, 2: Weapon Retention, and 3: Positional Control.

1, Punch Protection: A LEO who has become incapacitated through strikes cannot protect themselves or secure their weapon. The students learn that the best option is to be OUTSIDE the striking range, i.e. arm's length, but in physical confrontation, sometimes it behooves the LEO to be "all the way in" so strikes have little effect. This is addressed in various upright and grappling positions. Students train in recognizing body language that indicates a change in intent to, or from, strike focused.

2. Weapon Retention: The real danger of an altercation is the possibility, since a weapon will be present, that the LEO loses its control. The overriding objective is for the weapon to stay holstered. On occasion, a subject may wish to obtain control of the LEOs weapon. Trainees are taught to recognize a subject's intent by body movements and to respond using JJ. Retention techniques that end in cuffing are drilled through the course that will enhance the LEOs confidence that the weapon will surely stay under their control.

3. Positional Control: LEOs may find themselves literally anywhere in a physical encounter. Regardless of the situation a LEO may find themselves in, maintenance of composure and energy efficiency are the critical concepts to keep safe. Whether in a upright altercation, as well as in a grappling situation. Obtaining positional control gives the LEO the upper hand, the subject expends energy while the LEO preserves it.

CURRICULUM:

There are 23 lessons" taught in GST 1 that encompass the vast majority of likely physical encounters by LEOs. While no technique has the benefit of 100% safety, with practice, skills acquired from the GST system lead to enhanced safety in self-protection and gaining compliance. The result is far less frequent utilization of use of force options.

Techniques can be grouped to include:

1. Defense Against Surprise Attacks: The most likely unprovoked attacks are striking or gaining control of the head (chokes and headlocks). There is a high focus placed on these encounters. These type of attacks may incapacitate an officer, even temporarily, that may give a subject access to a lethal force

option. Students are trained and repetitively drilled on the indicators specific for punch protection (**PP**) and weapon retention (**WR**) and to become aware of a change in an attacker's intentions, especially if a subject wants to ground an LEO. *Techniques to get back to an upright position are highly emphasized. They start at technique #1 (standing up in base).* The techniques are designed for self-defense (PP/WR) with the goal of disengaging if possible, and if not, exhausting the subject that will lead to compliance.

2. Grounding Techniques: This is never necessary in a compliant individual and will only occur during a physical altercation in a non-compliant suspect. A grounding technique is the most efficient way to neutralize a difference in size, strength, athleticism, and combative experience. GST teaches a simple and effective strategy to ground an *aggressive* upright subject. They are taught from all angles including frontal, side, and rear attacks. These techniques arguably have the most risk when it comes to safety of the subject. Therefore, they are only used when the subject assumes an "attacking" type of indicator. However, experience has shown that proper utilization of grounding tactics have low potential for injury to the subject or officer. However, there is significant unpredictability associated with grounding techniques. The LEO often needs to perform this expeditiously following an aggression. In an ideal situation, the officer can ground a subject in a soft area such as grass or sand. However, due to the unpredictability of the environment, this may not be possible. The GST curriculum includes safety tips for all grounding techniques to minimize the potential for injury to the subject and LEO. While no one can ever guarantee safety in a physical confrontation, even in training, officers repetitively drill grounding techniques to emphasize safety of self and subject, as well as proper body positioning during application for minimal use of force as well as weapon retention. These techniques, used for hundreds of years, assisted by gravity and utilizing leverage, are adapted to current and modern use of duty belts to minimize potential injury in a resisting subject.

The overriding message that pre-empts grounding technique application is to **DISENGAGE** when possible, and **ONLY** go to the ground when you cannot disengage. Students learn how to fight on the ground only because they may find themselves there. Example: An individual may not know how to swim. They may choose to just "never go in the water". That is one option. However, they may find themselves pushed into a body of water, or be in a flood catastrophe, and then the inability to swim may cause their demise. Another option is to learn how to swim, so if the situation ever arises where the ability to swim is necessary, the skill is there.

3. Positioning/Pinning Techniques: A major component of the GST curriculum involves repositioning and maneuvering techniques. They enable the LEO to thwart an attacker's intentions, whether a subject intends to strike and injure the LEO or to obtain/take control of a force option. These techniques are designed to optimize a LEO's position, whether upright or grounded, either on top or underneath the attacker. Bottom techniques include shrimping, trap and roll, elbow escape, and guard control. Top techniques include various mount techniques (4 variations). These have the lowest potential for injury of all the techniques taught. These techniques serve to preserve energy expenditure and restrain a subject in order to exhaust them both physically AND mentally. The discovery of the ease of applicability of these tactics is always the most surprising to new students of jiu-jitsu. GST has saturated the curriculum with these techniques for one specific reason. Using the mechanics of the human body, incorporating the legs, and the physics of leverage, students are taught how to restrain an individual's movement in any position. Moreover, when on top of a subject, one can safely restrain a subject without impeding respiration. During training, it becomes obvious that the sensation that an individual is "stuck" comes on gradually because it is unnecessary to use physical strength. Successful implementation relies on moving either the opponent or, more often, oneself, to a position of safety depending on the "focus" of the subject (PP/WR), irrespective of position.

4. Joint/Limb Immobilizations: Once a subject is successfully restrained and energy depleted from positioning techniques, a LEO *may* transition to an immobilization technique. These techniques typically apply pressure to an arm or leg, and often across a joint. They have the highest potential for injury both in the field and during training. These methods are typically only utilized in a continually noncompliant subject and can inflict pain. The mechanism is a capsular distraction of the joint undergoing stretch. The joints are surrounded by a nerve rich envelope that, when distended, can produce a significant pain response. Rotation in excess of the physiologic capacity of the joint will render the extremity non-functional, causing significant injury to the subject. However, in a subject with an altered physiological state (drugs, alcohol, certain medical conditions), it is possible that compliance still may not be gained. However, the joint immobilization technique can still be used as a positional technique to continue to exhaust the subject. These tactics are the most technical and require the most proficiency by nature of their capacity to cause injury to the subject. Joint lock and extremity immobilization

techniques are taught to gain compliance only, and not to injure the subject, although injury is certainly possible in someone who maximally resists. Application of these techniques in the most extreme environments will prevent the need for a use of force option. Applications in GST 1 include shoulder and elbow locks.

5. Handcuffing Techniques: GST Curriculum was developed in conjunction with LEOs who have extensive experience in the field. The team recognized the myriad of handcuffing techniques utilized by different departments. The goal of this portion of the curriculum is the most unique. GST provides a segue from leverage-based compliance to a position that allows the LEO to safely apply a standard handcuffing technique approved/utilized by the department. From each technique, whether it be grounding, pinning, or an immobilization, GST provides a smooth transition to handcuffing. This is drilled throughout the course so LEOs are comfortable moving from the jiu-jitsu application to the final restraint, with which they are most familiar. Additionally, a safe “hidden hand” cuffing application is taught in response to a “passively resisting subject” who keeps their hands under their body to resist handcuffing.

I would call on the reader to note the absence of “striking techniques” in the curriculum. Students are highly encouraged NOT to use striking techniques, secondary to the potential to INJURE the dominant hand (the hand used in the case of necessitating a use of force option, such as a TASER or Sidearm. In Orthopedics, it is well known that striking techniques often cause injury to the hand, not the head, which is the most common area struck, due to the bone architecture differential between the two. The bones of the skull, which protect the most important organ in the body (brain), are far more resilient than the bones of the hand, used primarily for fine motor manipulation, not punching. A resulting injury to the hand from a strike will be met with immediate swelling, due to the enriched blood supply, and may render the hand incapable of properly deploying a use of force option, which may have devastating results for the LEO. In the rare instance that calls for a strike, LEOs are trained to use open hand palm slaps, as a distraction, to obtain isolation of a limb, that may result in a joint immobilization, or get a subject to turn to a position that allows the LEO an opportunity for a pinning technique.

METHODOLOGY:

The GST method is taught in a slow and cooperative, noncompetitive training environment. LEOs are educated that “you don’t need to fight, to learn how to fight.” This inclusive type of method is rapidly embraced by the LEOs. Speed is gradually increased in a stepwise manner, with emphasis on accuracy, AFTER the student has gained a full understanding of the application of force through LEVERAGE, and understands the movements needed to apply the technique safely and accurately. Students are taught to operate within a “compliance window”, a critically important concept to minimize the chance of a subject who is largely restrained to “freak out” and become more resistive. Field feedback from countless videos of failed handcuffing transitions that have led to use of force encounters has shown this dangerous escalation. LEOs perform repetitions merely restraining their partner, without the need to breach the compliance window”. Utilization of a “100-second rule”, to ensure the successful likelihood of transitioning to handcuffing is implemented. This rule refers to compliance through energy reduction or depletion, which precludes the necessity for escalation, and easier and safer transition to handcuffing.

Later in the course, the methodology of disseminating this vital information is taught in order to be inclusive of all LEOs. The students, by this time, recognize the impact of what they have been drilling, and how well it works even against their larger, stronger colleagues. A systems-based approach is implemented so the attendees can confidently bring back their new skills to their departments, with the full support of the GST organization.

The course sets out to not only learn the techniques for individual utilization, *but from an instructor’s perspective*, so graduates acquire skills to successfully disseminate this critically important information to their colleagues in a defensive tactics training facility. Repetition, accomplished in a *cooperative* learning AND noncompetitive environment enables students (future instructors) to gain confidence in the execution of techniques that do not rely on strength, speed, or power.

Attendees are taught self-defense techniques with the *primary endpoint of safely restraining an individual*. I would note that it continues to evolve to this day, and it is updated continuously based upon feedback from interactions with subjects in the field with LEOs trained in GST, as well as in response to updated state and federal policy mandates.

DISCUSSION POINTS:

States mandate only 4 hours of DT training per year on average. A physical encounter during an arrest is highly likely for a field officer during their career. This amount of training is wholly inadequate for preparing a LEO for gaining compliance in a resisting subject. A lack of confidence in empty hand techniques during resistance is far more likely to lead to accessing the duty belt. Any perceived threat, any lack of knowledge on how to restrain a larger subject, for example, leads to activation of a part of the brain responsible for the fight or flight response (FOFR). The amygdala sends out signals that release stress hormones, and causes a *temporary loss of rational behavior*, the responsibility of the front of the brain, the prefrontal cortex (PFC).⁽⁵⁾ This is HIGHLY undesirable for LEOs. When danger is perceived, the amygdala wants to activate the FOFR, *but in a confident, well-trained individual, studies have shown that the PFC will override this and lead to a measured rational response.* ^(6,7) For LEOs, this means de-escalation, control, continued rational behavior, and use of knowledge in restraining techniques to control the maximally combative subject. *As a physician, this is the most compelling reason for JJ training for LEOs.*

In 2021, for the first time, there is now data from Marietta, Georgia that is published that shows the benefits of LEOs implementing JJ in DT training.⁽⁸⁾ The confidence gained from JJ led to an overall reduction in ANY use of force, and even in arrests that needed physical confrontation, LEOs with JJ training were 59% less likely to resort to a use of force (UOF) option. This important observation reflects enhanced confidence of the officers and improvement in de-escalation techniques to obtain compliance. Most importantly, JJ is SAFER, both for the suspect AND the LEO. A 53% decrease in suspect injuries was noted, reflecting enhanced energy depleting tactics vs. traditional tactics. NO officer, who trained in JJ, was injured. Overall injuries sustained to LEOs during the investigation reported a 48% decrease. This led to an average saving of over \$44,000, which is much more than the cost of the program. The overall improved safety in restraining subjects, safety to the officers, lower risk of injuries and Worker's Compensation claims is proof of the effectiveness and safety of the curriculum-based GST program.

Throughout the course, and throughout all quality jiu-jitsu training, is the emphasis on using only the minimal amount of force necessary for a technique to be effective. Efficacy of a technique is based on proper application with use of leverage. This type of methodology allows consistent training with

avoidance of unnecessary injury as the student gains more confidence in their ability to restrain their partner. They become more comfortable with understanding varying amounts of force necessary for proper and safe application required for restraint and compliance. Moreover, the increased confidence leads to improved regular training and overall improvement in physical wellness. This training leads to improved resiliency and adaptability in stressful situations. Confidence is gained in the training facility, "the laboratory," where LEOs can increase the resistance to test the applicability and safety of the techniques that they are using. Evidence from LEOs who have used these techniques in the field strongly report a reduction in stress when involved in a resisting subject because of the confidence that they have gained through their training.

A consistent observation in the decade of training officers and instructors in the GST curriculum is the overwhelmingly positive feedback in every post course evaluation. The training environment, positivity, cooperative feedback and mutual respect of the instructors and students is palpable throughout the week of training. LEOs highlight the overriding safety and efficacy, and training and teaching methodology that is emphasized throughout the course. Whether it be LEOs with extensive experience in the field, experience in previous defensive tactics training and/or teaching, or other martial arts including sports jiu-jitsu, upon completing the GST course, the feedback is uniformly exemplary. It receives the highest grading for every measured objective.

Summary:

- GST is the culmination of a system devised for safely restraining a noncompliant suspect with an emphasis on de-escalation.
- GST does not rely on injurious use of force options and instead focuses on leverage and the physics and mechanics of the human body.
- The techniques are adapted specifically for use by law enforcement.
- Safety protocols for training as well as application in the field are clearly established and are the top priority of the instructors for dissemination to the trainee.
- The GST curriculum has seen acceptance and widespread adoption among LEO departments throughout the country over the last decade.
- The training atmosphere begets comfort in learning techniques and practicing this physically demanding art.

- The cooperative environment that is emphasized leads to enhanced acceptance of regular training.
- Feedback from attendees strongly support the likelihood of reducing injury to the suspect and LEO with knowledge gained from the course.

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Sincerely,

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