Lethal Force

Version 1.0 · Current · October 2026 · Codebook variable: `I_LethalForce`

Definition

Lethal force is the intentional use of a conventional firearm against a person when an officer uses penetrating projectile force to stop conduct reasonably perceived as presenting a threat of death or serious bodily injury.

For this evidence library, the parent category includes conventional police firearms such as:

- duty pistols;
- patrol rifles or carbines;
- designated-marksman or precision rifles; and
- lethal-ammunition shotguns.

The firearm platform affects how the force is delivered, but the underlying intervention is the same: a projectile is intentionally fired at a person with the expectation that it may produce serious bodily injury or death.

This parent entry therefore addresses the evidence common to all lethal police firearm platforms:

- how firearm injury works;
- what is known about incapacitation;
- why gunshot injury does not guarantee immediate cessation of action;
- general injury and lethality;
- when lethal force may be appropriate;
- edged-weapon relevance;
- U.S. constitutional principles; and
- core ethical considerations.

Separate platform profiles address the distinct deployment characteristics of Pistol, Rifle, and Shotgun.

How It Is Designed to Work

Conventional lethal force works through penetrating ballistic trauma. A projectile enters the body and may damage:

- skin and soft tissue;
- blood vessels;
- nerves;

- bone;
- lungs;
- heart;
- abdominal organs;
- spinal cord;
- brain; or
- other structures along the projectile path.

The physiologic effect depends less on the label attached to the firearm than on the interaction between:

- projectile construction;
- projectile velocity and remaining energy;
- projectile deformation, fragmentation, or yaw;
- anatomical location;
- tissue type;
- trajectory;
- intermediate barriers;
- number of wounds; and
- medical response.

Modern wound-ballistics reviews emphasize that firearm injury cannot be predicted from velocity or weapon category alone. Actual tissue destruction depends on the projectile and the tissues it encounters (Stefanopoulos et al., 2017; Santucci & Chang, 2004; Petrone et al., 2025).

Permanent cavity

The permanent cavity is the tissue directly crushed, cut, or destroyed by the projectile (Hollerman et al., 1990; Stefanopoulos et al., 2017). For many firearm injuries, this direct wound path is the most reliable component of tissue damage.

Temporary cavitation

Projectile energy can also accelerate tissue radially away from the wound path, producing a temporary cavity. The clinical importance of temporary cavitation varies substantially by (Fackler, 1988; Stefanopoulos et al., 2017):

- projectile velocity;
- deformation;
- tissue elasticity;
- organ structure; and
- location.

Highly elastic tissue may tolerate temporary displacement better than relatively inelastic organs. Temporary cavitation should therefore not be treated as a universal measure of "stopping power."

Fragmentation and deformation

Some projectiles deform, expand, yaw, or fragment after entering tissue. These behaviours can change:

- wound diameter;
- depth of penetration;
- energy transfer;
- number of wound tracks; and
- probability of striking vital structures.

The effects are ammunition-specific and should not be generalized simply from "handgun," "rifle," or "shotgun."

Incapacitation Is Not the Same as Being Shot

This distinction is fundamental to the lethal-force section. A person can be shot, seriously or fatally wounded, and not immediately incapacitated at the same time. Gunshot injury does not produce a single predictable behavioural response.

Immediate incapacitation

The most reliable mechanism for immediate physical incapacitation is major disruption of the central nervous system, particularly the brain or upper spinal cord (Maiden, 2009). Outside those injuries, a person may retain purposeful movement for a period after being shot.

Circulatory collapse

Injury to the heart or major blood vessels can produce rapid blood loss and loss of consciousness. However, the effect is not necessarily instantaneous. A person may remain physically capable of:

- moving;
- firing a weapon;
- stabbing;
- running;
- fighting; or
- otherwise continuing purposeful action

until cerebral perfusion falls sufficiently.

Pain and psychological response

Some people cease threatening behaviour after being shot because of:

- pain;
- surprise;
- fear;
- recognition that they have been injured; or
- a voluntary decision to stop.

Those responses can be operationally important but are not mechanically guaranteed.

The stopping-power problem

Popular discussion often treats firearm effectiveness as though a particular calibre, weapon, or projectile has a predictable "one-shot stopping" capability. The medical and wound-ballistics literature does not support such a simple model (Fackler, 1988; Santucci & Chang, 2004; Maiden, 2009). A technically accurate firearm discharge can still fail to immediately stop behaviour if:

- the projectile misses vital anatomy;
- the wound is painful but not immediately disabling;
- blood loss requires time to affect consciousness;
- the subject remains motivated; or
- the person receives multiple wounds without immediate central nervous system disruption.

For this evidence library, immediate cessation of threatening behaviour should therefore be treated as an outcome distinct from projectile impact, injury, serious injury, and eventual death.

Evidence of Effectiveness

Overall assessment

Evidence strength is strong for the proposition that conventional firearms can produce lethal or incapacitating injury, but weak for predicting immediate behavioural incapacitation in any individual encounter. The basic capacity of firearms to produce death and serious bodily injury is not scientifically uncertain; the difficult operational question is how reliably firearm injury will stop a particular person quickly enough to end an immediate threat.

The peer-reviewed clinical literature is better at describing tissue injury, mortality, surgical consequences, and ballistic mechanisms than at measuring police-defined "stopping effectiveness."

Operational effectiveness

A firearm can end threatening behaviour through several pathways:

- immediate central nervous system disruption;
- rapid circulatory failure;
- mechanical destruction of a limb or other structure;
- pain or shock sufficient to stop voluntary action; or
- voluntary surrender after being shot or confronted with lethal force.

The relative frequency of those pathways in police shootings is not well established.

Number of shots is not a clean effectiveness measure

The number of rounds fired in a police encounter reflects more than the physiologic effect of any one bullet. It can be influenced by:

- multiple officers firing;
- subject movement;
- officer movement;
- missed shots;
- continued perception of threat;
- reaction time;
- weapon capacity;
- training;
- visual obstruction; and
- the interval between trigger presses and observable behavioural change.

Accordingly, a multi-shot encounter should not automatically be interpreted as evidence that a particular firearm platform or calibre was ineffective.

What is missing

There is limited high-quality peer-reviewed evidence establishing:

- a universal probability of immediate incapacitation from a police handgun round;
- a universal probability of immediate incapacitation from a patrol-rifle round;
- a universal probability of immediate incapacitation from shotgun ammunition;
- the number of wounds required to stop an edged-weapon attack;
- clean platform-to-platform comparative “stopping” rates in otherwise equivalent police encounters; or
- a reliable physiological rule linking calibre to immediate behavioural cessation.

These gaps are central to the platform profiles that follow.

Injury and Safety Evidence

Gunshot wounds are inherently high-severity force

Conventional firearms are capable of producing:

- major hemorrhage;
- vascular disruption;
- organ perforation;
- pneumothorax or hemothorax;
- spinal injury;
- traumatic brain injury;
- fracture;
- permanent neurologic impairment;
- limb loss;
- shock;
- permanent disability; and
- death.

Unlike less-lethal interventions, serious injury is not an exceptional failure mode of lethal force but an inherent and foreseeable consequence.

Anatomical location dominates outcome

The same projectile can produce very different outcomes depending on what structures it strikes. A wound through superficial soft tissue may be survivable with limited long-term impairment. A similar projectile striking:

- brain;
- cervical spinal cord;
- heart;
- aorta;
- major pelvic vessels; or
- other critical structures

can produce rapid incapacitation or death. This anatomical variability is one reason firearm “stopping power” cannot be reduced to platform or calibre alone.

Penetration, Exit, and Bystander Risk

A projectile that misses the intended subject, passes through the subject, or penetrates an intermediate barrier can endanger others. Relevant factors include:

- projectile design;
- ammunition;
- distance;
- angle;
- intervening material;
- whether the projectile deforms or fragments;
- tissue struck;
- backdrop; and
- bystander position.

The term over-penetration should therefore be used cautiously: it is not a fixed property of "rifles," "pistols," or "shotguns," but describes a projectile continuing beyond the intended stopping point with enough residual capability to cause harm. Platform profiles should assess this at the level of platform + ammunition + environment, not firearm category alone.

When Its Use May Be Appropriate

Lethal force is not defined merely by the presence of a weapon. The central issue is whether the officer reasonably perceives an immediate or sufficiently imminent threat of death or serious bodily injury to the officer or another person. Potentially appropriate circumstances can include:

- an active firearm assault;
- an edged-weapon attack;
- an armed person advancing in a manner that creates an imminent lethal threat;
- a subject attempting to kill or seriously injure another person;
- a vehicle or other instrument being used as a deadly weapon; or
- another rapidly developing situation where lower levels of force cannot reasonably address the threat in time.

The existence of a less-lethal option does not automatically make lethal force unreasonable; the relevant question is whether that alternative could reasonably be expected to address the threat within the available time and tactical conditions.

When Its Use May Be Inappropriate

Weapon possession without an immediate threat

Possessing an edged weapon or firearm does not automatically establish that shooting is reasonable. Relevant behaviour may include whether the person:

- is attacking;
- advancing;
- threatening another person;
- raising or aiming the weapon;
- attempting to gain access to a victim;
- complying;
- retreating;
- contained; or
- otherwise capable of causing immediate harm.

Threat has ended

Lethal force becomes increasingly difficult to justify once the subject:

- drops the weapon;
- becomes physically incapable of continuing the threat;
- surrenders;
- is safely contained without immediate access to others; or
- otherwise ceases presenting the lethal threat that justified shooting.

Indiscriminate or poorly controlled fire

Lethal force may also be tactically or ethically inappropriate where the expected risk to uninvolved people is disproportionate to the threat being addressed. This is especially relevant where:

- the background cannot be assessed;
- crowds are present;
- officers are firing toward occupied structures;
- target identification is uncertain; or
- crossfire risk is substantial.

Relevance to Edged-Weapon Encounters

Edged-weapon incidents are particularly useful for understanding why lethal-force analysis must separate threat justification from firearm platform selection. A pistol, patrol rifle, precision rifle, or shotgun can all be

used to respond to a lethal edged-weapon threat; the justification for lethal force ordinarily turns on the nature of the threat rather than on which firearm is selected, while the platform affects how that force can be delivered.

Potential role

Where an edged-weapon subject presents an immediate threat of death or serious bodily injury, lethal force may provide the officer with a means of attempting to stop the threat without entering the weapon's contact range. A firearm may be relevant where the person is:

- actively stabbing or cutting;
- charging an officer or third party;
- rapidly closing distance with apparent lethal intent;
- holding a victim at immediate risk;
- attempting to gain access to a person who cannot escape; or
- otherwise creating a lethal threat that cannot reasonably be contained in time.

Conditions favouring deployment

The appropriateness of lethal force depends on the total encounter rather than a fixed distance rule. Relevant considerations include:

- subject behaviour;
- distance;
- rate and direction of movement;
- obstacles;
- cover;
- barriers;
- officer position;
- third-party proximity;
- weapon position;
- ability of others to escape;
- availability of containment;
- warning where feasible;
- time available for decision-making; and
- whether another intervention can safely be attempted.

Distance matters because it affects time, not because a particular number of feet automatically determines whether a knife is or is not dangerous.

Failure and continuation considerations

Even after being shot, an edged-weapon subject may remain capable of continuing the attack. The relevant failure question is not only whether the firearm discharged successfully, but whether the threatening behaviour stopped. A projectile may strike and cause a fatal wound while the subject remains capable of purposeful movement for some period. Officers may therefore fire additional rounds while they continue to perceive an unresolved lethal threat. Conversely, once the threatening behaviour has stopped, the justification for continuing to fire must be reassessed.

Risk trade-off

For the subject, lethal force carries a high foreseeable probability of serious injury or death. For police and third parties, its principal advantage is that it can be delivered without entering contact range and may provide greater immediate threat-stopping capability than lower-force options. Its principal limitations are:

- no guarantee of immediate incapacitation;
- missed-shot risk;
- projectile continuation or barrier penetration;
- bystander risk; and
- the possibility that firing itself changes movement, backdrop, or crossfire conditions.

Platform selection in edged-weapon incidents

The evidence does not support a general rule that pistol, rifle, or shotgun is empirically superior for edged-weapon encounters. Their outcomes overlap: all can produce penetrating firearm injury capable of serious injury, death, or incapacitation. What differs is the deployment ecology, and those differences belong primarily in the platform profiles rather than in the underlying justification for lethal force.

- Pistol: typically immediately available on the officer and therefore most likely to appear in rapidly evolving spontaneous encounters.
- Patrol rifle/carbine: may be deployed during rapidly evolving incidents when an officer has access to the rifle and anticipates or encounters a lethal threat.
- Designated marksman / precision rifle: more commonly enters after containment, specialist-team deployment, observation, and deliberate positioning.
- Shotgun: deployment depends on agency equipment, ammunition, operating environment, and the tactical role assigned to the platform.

U.S. Legal Considerations

Fourth Amendment framework

Police use of lethal force during a seizure is analyzed under the Fourth Amendment's objective reasonableness standard established in *Graham v. Connor*, 490 U.S. 386 (1989) (*Graham v. Connor*, n.d.), and the assessment considers the totality of circumstances from the perspective of a reasonable officer on the scene rather than through hindsight. Factors include severity of the suspected offense, whether the person poses an immediate threat, active resistance, flight, and the rapidly evolving circumstances confronting the officer; the immediacy of the threat is typically the most important consideration in deadly-force cases.

Tennessee v. Garner

In *Tennessee v. Garner*, 471 U.S. 1 (1985), the Supreme Court held that deadly force may not be used merely to prevent escape of an apparently unarmed, non-dangerous fleeing suspect, distinguishing circumstances where officers have probable cause to believe the person poses a significant threat of death or serious physical injury to officers or others.

No rigid firearm-specific constitutional rule

The Fourth Amendment generally does not ask whether an officer should have used a pistol rather than a rifle, or a rifle rather than a shotgun. The principal constitutional question is whether deadly force itself was reasonable under the circumstances. Platform selection may still become relevant where it affects:

- precision;
- bystander risk;
- foreseeable severity;
- target identification; or
- the reasonableness of how force was delivered,

though platform choice does not ordinarily create a separate deadly-force threshold.

Warning

Where feasible, warning before deadly force can be relevant to reasonableness, though in rapidly developing attacks officers may not have sufficient time to provide one safely.

Each shot occurs in time

A shooting should not be conceptualized as one indivisible event if circumstances materially change while shots are being fired; if the subject ceases presenting a lethal threat, the justification for further lethal force must be reassessed.

Ethical and Moral Considerations

Necessity

The ethical justification for lethal force is strongest when the officer reasonably believes serious injury or death will otherwise occur and the threat cannot be controlled in time through a lower-harm alternative.

Proportionality

Because lethal force carries a high probability of catastrophic harm, the governmental objective must be correspondingly serious.

No duty to choose an ineffective lesser option

An intervention is not ethically preferable merely because it is nominally “less lethal.” If a lower-force option has a substantial probability of failing before an attacker can seriously injure someone, choosing it may simply transfer risk from the subject to:

- the officer;
- a victim;
- a bystander; or
- another responder.

Termination of force

The ethical justification for shooting is tied to the threat rather than punishment, and once the lethal threat ends, continued shooting loses its harm-prevention rationale.

Medical aid

A person who has justifiably been shot remains a person requiring emergency medical care, and once the scene can be made sufficiently safe, prompt first aid and emergency medical response form part of the post-force harm-reduction obligation.

Evidence Limitations

The firearm literature is extensive but does not answer every police operational question.

First, clinical wound-ballistics research is primarily designed to understand injury and treatment, not police incapacitation.

Second, firearm platform categories conceal substantial ammunition variation.

Third, anatomical shot placement dominates many outcomes and is difficult to separate from weapon characteristics.

Fourth, laboratory ballistic performance does not equal real-world behavioural stopping performance.

Fifth, fatal shootings systematically exclude survivable firearm uses from some research datasets.

Sixth, police shooting studies often lack detailed projectile, distance, hit-location, and timing information.

Seventh, multiple officers and multiple shots complicate shot-level effectiveness analysis.

Eighth, psychological surrender and physiologic incapacitation are rarely separated cleanly.

Ninth, pistol/rifle/shotgun comparison is strongly confounded by deployment context: precision rifles, patrol rifles, duty pistols, and shotguns are not deployed randomly into equivalent incidents.

Tenth, there is little high-quality empirical research comparing firearm platforms specifically in edged-weapon confrontations.

Bottom Line

Effectiveness

Conventional firearms are clearly capable of producing incapacitating and lethal injury, though no platform guarantees immediate behavioural cessation.

Injury

Serious bodily injury is an inherent and foreseeable consequence of lethal force.

Incapacitation

Gunshot injury and immediate incapacitation are not synonymous. Central nervous system disruption provides the most reliable immediate physiologic incapacitation; other fatal wounds may still permit purposeful movement for some period.

Comparative platform evidence

The literature does not support a simple rule that pistol, rifle, or shotgun is universally superior for stopping an edged-weapon threat.

Edged-weapon context

Lethal force may be reasonable where an edged weapon creates an immediate threat of death or serious bodily injury. The analysis depends on behaviour, time, movement, containment, third-party risk, and available alternatives – not weapon possession or distance alone.

Platform selection

Pistol, patrol rifle, precision rifle, and shotgun should be understood as different delivery platforms for the same lethal-force intervention, with different deployment patterns, handling characteristics, ammunition considerations, and tactical contexts.

Risk-benefit assessment

The strongest justification for lethal force is an immediate or sufficiently imminent threat of death or serious bodily injury that cannot reasonably be controlled in time through lower-harm means. Its weakest justification is mere weapon possession, a threat that has ended, or circumstances where the subject can be safely contained and no immediate person is at risk.

Core Peer-Reviewed Evidence

1. Petrone, P., Dagnesses-Fonseca, J. O., Marín-Garcia, J., McNelis, J., & Marini, C. P. (2025)

Principles of wound ballistics and their clinical implications in firearm injuries.

European Journal of Trauma and Emergency Surgery, 51(1), 101.

DOI: 10.1007/s00068-025-02777-y

Citation key: `<span class="cite">(Petrone et al., 2025)</span>`

Priority: Essential contemporary review.

Contribution: Reviews contemporary wound-ballistics principles and their relationship to diagnosis and treatment of firearm injuries.

Key finding: Wound severity depends on projectile behaviour, trajectory, tissue characteristics, and the anatomical structures encountered rather than weapon category or velocity alone.

Key value: Provides an up-to-date clinical framework for separating projectile characteristics from actual tissue injury.

Limitation: Clinical review rather than a study of police shooting effectiveness or behavioural incapacitation.

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2. Stefanopoulos, P. K., Pinialidis, D. E., Hadjigeorgiou, G. F., & Filippakis, K. N. (2017)

Wound ballistics 101: the mechanisms of soft tissue wounding by bullets.

European Journal of Trauma and Emergency Surgery, 43(5), 579–586.

DOI: 10.1007/s00068-015-0581-1

Citation key: `<span class="cite">(Stefanopoulos et al., 2017)</span>`

Priority: Essential mechanism review.

Contribution: Reviews the mechanisms of permanent tissue destruction, temporary cavitation, projectile destabilization, deformation, and soft-tissue injury.

Key finding: Tissue damage depends on both projectile behaviour and the physical characteristics of the tissue through which it travels.

Key value: Strong support for avoiding simplistic high-velocity/low-velocity or platform-only interpretations of firearm injury.

Limitation: Primarily trauma and biomechanical evidence; does not estimate police stopping probability.

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3. Hollerman, J. J., Fackler, M. L., Coldwell, D. M., & Ben-Menachem, Y. (1990)
Gunshot wounds: 1. Bullets, ballistics, and mechanisms of injury.
AJR American Journal of Roentgenology, 155(4), 685–690.
DOI: 10.2214/ajr.155.4.2119095

Citation key: `<span class="cite">(Hollerman et al., 1990)</span>`

Priority: Foundational wound-mechanism evidence.

Contribution: Describes how bullet mass, velocity, orientation, deformation, fragmentation, and tissue properties affect injury.

Key finding: Two major wound mechanisms are direct crushing of tissue and stretching associated with temporary cavitation.

Key value: Foundational basis for separating permanent wound cavity from temporary tissue displacement.

Limitation: Older review; not policing-specific.

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4. Fackler, M. L. (1988)
Wound Ballistics: A Review of Common Misconceptions.
JAMA, 259(18), 2730–2736.
DOI: 10.1001/jama.1988.03720180056033

Citation key: `<span class="cite">(Fackler, 1988)</span>`

Priority: Foundational / essential myth-correction paper.

Contribution: Critiques common misconceptions in wound ballistics and emphasizes objective evaluation of projectile-tissue interaction.

Key finding: Energy or velocity alone does not adequately describe wound severity; the actual location and amount of tissue disrupted are more important.

Key value: Particularly important for avoiding unsupported claims about calibre, kinetic energy, hydrostatic shock, or generalized “stopping power.”

Limitation: Historical review and partly based on military/experimental wound-ballistics literature.

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5. Santucci, R. A., & Chang, Y.-J. (2004)

Ballistics for physicians: myths about wound ballistics and gunshot injuries.

The Journal of Urology, 171(4), 1408–1414.

DOI: 10.1097/01.JU.0000103691.68995.04

Citation key: `<span class="cite">(Santucci & Chang, 2004)</span>`

Priority: High supporting review.

Contribution: Reviews more than 70 publications and book chapters addressing wound-ballistics assumptions.

Key finding: High projectile velocity does not reliably predict massive tissue destruction, and wound management should be based on actual tissue injury rather than generalized weapon characteristics.

Key value: Supports a cautious approach to comparing pistol and rifle injury based solely on nominal velocity.

Limitation: Clinical treatment focus rather than operational police effectiveness.

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6. Maiden, N. (2009)

Ballistics reviews: mechanisms of bullet wound trauma.

Forensic Science, Medicine and Pathology, 5(3), 204–209.

DOI: 10.1007/s12024-009-9096-6

Citation key: `<span class="cite">(Maiden, 2009)</span>`

Priority: Essential forensic synthesis.

Contribution: Reviews projectile placement, trajectory, permanent cavity, temporary cavitation, projectile construction, and anatomical vulnerability.

Key finding: Entrance location and projectile path are dominant determinants of serious injury and death. Immediate incapacitation is most reliably associated with disruption of the brain or spinal cord, while massive organ injury and hemorrhage can produce incapacitation through different timelines.

Key value: Directly supports the library's distinction between being shot, being fatally wounded, and being immediately incapacitated.

Limitation: Forensic review rather than prospective police encounter research.

Evidence Rating

Capacity to cause serious injury/death: ★★★★★
Scientifically established.

Wound-mechanism evidence: ★★★★★
Large clinical, forensic, experimental, and trauma literature.

Immediate incapacitation prediction: ★★☆☆☆ to ★★★☆☆
Mechanisms are understood, but individual behavioural outcome remains difficult to predict.

Police encounter stopping-effect evidence: ★★☆☆☆
Limited clean denominator-based research.

Pistol-versus-rifle-versus-shotgun comparative evidence: ★★☆☆☆
Platform effects are heavily confounded by ammunition, shot placement, distance, and deployment context.

Edged-weapon-specific comparative evidence: ★☆☆☆☆ to ★★☆☆☆
Very limited direct empirical evidence.

Overall confidence: High for injury mechanism and lethality; moderate-to-low for immediate behavioural stopping predictions and platform comparison.

Research-library conclusion

Lethal force is best understood as one intervention delivered through several firearm platforms rather than as three fundamentally different uses of force. Conventional firearms are capable of producing catastrophic penetrating injury, but being shot, being fatally wounded, and being immediately incapacitated are not equivalent outcomes. Immediate physiologic incapacitation is most reliably associated with major central nervous system disruption; other serious or ultimately fatal wounds may still permit purposeful movement for some period. This distinction is critical in edged-weapon encounters, where the relevant operational question is whether the threatening behaviour stops before the subject can cause serious injury. The scientific literature does not support a universal rule that a pistol, rifle, or shotgun is inherently superior for that purpose. Platform selection is better understood through deployment context: duty pistols are typically immediately available during rapidly evolving encounters; patrol rifles may be introduced when officers have access to a long gun during an evolving lethal threat; precision rifles generally appear after containment and specialist deployment; and shotguns have their own ammunition, handling, and environmental considerations. The justification for lethal force should therefore remain anchored to the threat, while platform profiles explain how the force is delivered and what additional tactical risks each platform introduces.

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HOW TO CITE

Edged-Weapon Response Lab. (2026). *Lethal Force*. In *EWRL Evidence Library* (Version 1.0). https://droptheknife.org/evidence-base/I_LethalForce (https://droptheknife.org/evidence-base/I_LethalForce)