Journal of Police Science and Administration

Volume 13, No. 3
Printed in U.S.A.

Police Use of Metal Flashlights as Weapons: An Analysis of Relevant Problems

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All occupations require tools for task facilitation and accomplishment of organizational objectives. The police occupation is somewhat unique in that various tools are required not only for task performance but are necessary for providing safety and security for themselves and the citizens they are obligated to protect and serve. As with other occupations, the more restrictions placed upon the resources one can use in accomplishing organizational and social goals, the less effective personnel will be in accomplishing those goals. In policing, these restrictions may impact the safety of the officers.

The list of tools both useful and necessary for the police occupation is long. One of the most useful tools for police officers entering a poorly illuminated area is the flashlight. Proper illumination is critical for achieving appropriate levels of task performance. While many important illumination devices can be attached to patrol cars, the most important resource receiving the highest percentage of use is one that is portable and can be carried on one's person.

PROBLEM

The need for proper illumination is self-evident. However, a slowly developing problem surrounding police use of flashlights does not focus on the illumination issue but on the formally or informally accepted practice of using it as a defensive weapon and in situations where use of nonlethal force is permitted. The widespread popularity of flashlights with barrels made of heavy-duty metal such as aircraft aluminum is at the center of this issue.

The advantages these models offer the police occupation in regard to illumination and durability are indisputable. Their potential in these areas is significant. However, environmental responses such as legislative and judicial developments are forcing organizational actions on flashlight policies.

Variances exist in organizational policies regarding flashlight allocation procedures and requirements. Flashlight policies in organizations familiar to these authors include: (a) permitting individual officer prerogative in selecting particular types and styles of flashlights; (b) distribution of styles approved by organizational standards; (c) prohibition of all metal flashlights exceeding standards pertaining to weight and length; (d) issuing selected styles with formal or informal policies associated with defensive uses and use of force in lieu of batons; and (e) absence of formal policies regarding uses of flashlights as weapons. While some states have created statutes designating the baton as a "deadly weapon," most have not created such standards for flashlights.

Using physical force to defend one's self or to effect an arrest is an inevitable occurrence for most police officers. Police officers are often confronted with situations in which their lives and physical well-being

are in jeopardy. Additionally, state laws establish legal standards for using various types of force in effecting arrests. Situations constituting grounds for using deadly force are not an issue concerning flashlights. However, in situations where nonlethal physical force definitions are applicable, the issue is very important.

It has been the traditional common law rule that an officer may employ reasonable force to effectuate a lawful arrest. However, when that force exceeds the quantum required to make the arrest, there is great potential for personal and governmental liability, particularly under 42 U.S.C 1983. Organizational training structures typically provide instruction on established procedures designed to reduce liability potential in these areas. Defensive training provides proper directives that, if followed properly, will produce results in actions not amenable to liability problems. Several well recognized training programs are available for teaching proper uses of the police baton. Similarly, Peters (1982), for example, has developed training curricula outlining defensive tactics with flashlights. Although available, numerous organizations provide no training or directions for using flashlights in defensive or "use of force" situations.

Policy concerning the type of weapon authorized for use in these situations is important. If, in choices of weapons, one has greater potential for producing more serious injuries, then the consequential liability threats must be weighed by organizational policymakers. Injuries produced by force exceeding the quantum necessary to effectuate the arrest can be very consequential. Judicial decision-makers are likely to view simple contusions and lacerations with lesser significance than fractured skulls and serious neural damage when deciding liability questions related to excessive use of force.

Training programs invariably emphasize the vulnerable areas of the human body and express admonitions for avoiding them in confrontations. In a discussion on vital points of the human body, Starrett warns "use extra caution in attacking those areas which are particularly vulnerable, for even a moderate blow to some of these areas can cause serious injury or even death" (1981, p. 7). In *Training Key #76*, the International Association of Chiefs of Police discusses the importance of avoiding certain vital portions of the anatomy when using the baton. This training source states:

> The most critical of these areas is the head. A blow delivered to this part of the body may result in a serious or fatal injury or brain tissue damage resulting in an incurable psychosis. Side blows to the temple, forehead or throat can also be lethal (p. 20).

In a manual on defensive tactics for law enforcement officers presented by the Federal Bureau of Investigation, the vulnerable areas, or so-called "chinks in the armor," are discussed. Additionally, this agency states "blows, kicks, or pressure directed at or applied to these areas may cause pain, disablement, unconsciousness, and even death" (1970, p. 9).

Most flashlight liability cases surround the issue of force involving defendants who were struck in the head. This is likely a result of the tendency of an officer resorting to a clubbing effect when encountering the highly stressful circumstances involved in an altercation. The Federal Bureau of Investigation's manual on defensive tactics establishes that, as a rule, the untrained person will direct his blows to his opponent's head or face (1970, p. 9).

These factors are legitimate points. However, for the officer involved in a real or perceived threatening situation in the street environment, a different perspective may be functioning. While ignorance of techniques or pure maliciousness presents one unique set of problems, the training procedures presented to numerous police officers presents another. Defensive tactics are psychomotor movements typically taught by instructors with highly advanced skills. Amounts of training involving batons or flashlights are often minimal and may involve a small number of hours with a focus on individual motor sets. Success in any skilled movements is determined by past learned behavior and experiences, efficient development of perceptual and physical abilities, and intensive practice in the particular skill (Harrow 1972, p. 88). Therefore, when confronted with stressful situations involving threats, it is doubtful that most officers have acquired skilled proficiency levels sufficient to react instantly and spontaneously with highly developed synchronized motor movements and perceptual evaluations. If correct, the officer will likely resort to instinctive tactics or previously learned behavior which frequently involves striking the subject in the head. Even though this is a realistic problem, does the instrument being used have important implications?

INJURY POTENTIAL

Since society is willing to provide police with weapons for use in defense and arrest situations, it seems logical that the choice between batons or flashlights is unimportant if equality exists between factors such as

ethics, capability, utility, and injury potential. Democratic societies, by perforce, place an important emphasis on ethical conditions. However, it has been solidly established that police officers are occasionally required to use lethal and nonlethal force in various situations. Of equal importance, situations exist where some officers use physical force in cases involving gross misperceptions of the threat involved, disproportionate amounts of force necessary for particular situations, and, although infrequently, in situations involving pure maliciousness. In view of the overall circumstances facing police administrators, an investigation was conducted to evaluate differences between batons and metal flashlights of somewhat equal proportions.

Many styles and sizes of flashlights and batons with variances in weight and length variables are available. In this experiment, a light-weight, metal, five D-cell flashlight weighing 750 grams, including batteries, was tested. This particular model has a flat tail cap. A common wood baton weighing 690 grams was used as a comparison. Thus, the flashlight is somewhat more massive, but the difference that it could make if used as a weapon is so slight that this factor is virtually negligible. In fact, the slightly lower mass of the baton only means that it could be swung slightly faster and, therefore, could do about the same damage as the flashlight. Also, the baton is somewhat greater in length which slightly affects velocity. This means that, assuming the flashlight is more damaging, other factors must be significant determinants in outcome. These other factors are the sharp angles of the head and tail cap and protruding surfaces on the flashlights. The following calculations demonstrate these differences.

The basic equation used is the "impulse momentum theorem." This equation is stated as:

$$F\Delta t = mv_i - mv_f$$

where F represents the force delivered by the flashlight, Δt is the time that the flashlight is actually in contact with the subject's body, m is the mass of the flashlight, v_i is the velocity of the flashlight just before t strikes the subject, and v_f is the velocity of the flashlight just after it strikes the subject.

In order to use this equation, some assumptions about the velocities were used. The first assumption is that the speed of the flashlight just before it strikes the head is 10 m/s. Actual encounters can obviously produce velocities greater or smaller than this figure due to strength, position, length, and distance variances. The second assumption is that the velocity is 0 after striking the body. Again this may vary due to factors such as movement of the subject's body toward or away from the person who is performing the striking. The time of contact, Δt, can be estimated by assuming that the flashlight comes to a stop in a distance equal to the diameter of the flashlight, 4 cm. Thus, Δt can be estimated as:

$$\Delta t = x/v = .04 \text{ m}/10 \text{ m/s} = .004 \text{ s}$$

Using these numbers, an estimate of the average force exerted on an individual when struck by a flashlight, by use of the impulse momentum theorem, can be made:

$$F = (.750 \text{ kg})\ (10 \text{ m/s}) / .004 \text{ s} = 1875 \text{ N}$$

Rounding this force off to 1900 N equals 425 lbs. This is a significantly large force, but the true way to estimate the effects of this blow is to calculate the shear stress exerted on bones which is of obvious significance when considering blows to the head. The equation used is:

$$\text{Shearing Stress} = F/A$$

F is the force calculated above and A is the shear area of the bone in the subject's face or head.

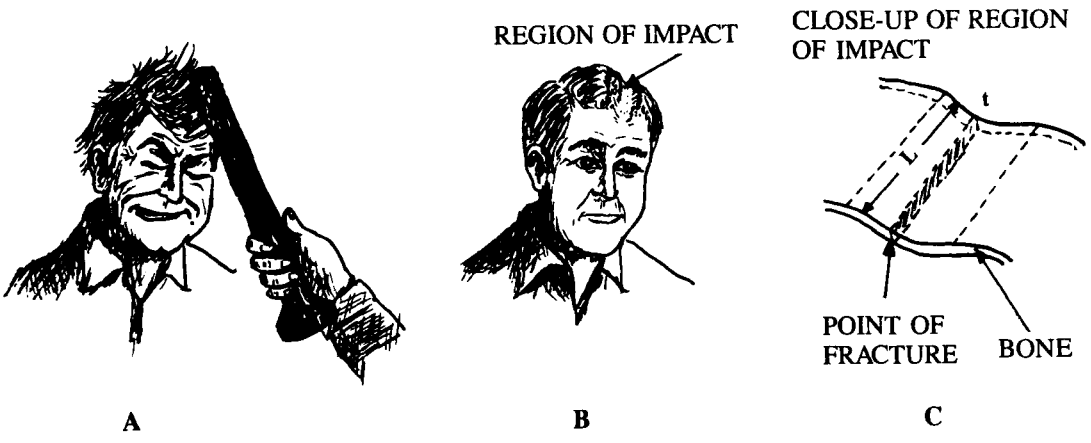
Figure 1 attempts to demonstrate what the area is that must be considered. Part (a) shows the blow delivered. Part (b) shows the region of impact, and part (c) shows a close-up view of the impact region, including the point where fractures are most likely to occur. In part (c) the shaded area is the length of the line along which the blow is administered, L, times the thickness of the bone at that location, t. For a case in which the blow strikes flush with the surface, we assume a length L of 0.1 m (10 cm) and a bone thickness of ⅛ in. (.003 m). Thus, the shearing stress is:

$$F/A = 1900 \text{ n} / (.003)\ (.1 \text{ m}) = 6 \times 10^6 \text{ N/m}^2$$

This is a damaging blow, but the truly serious situation arises when the flashlight is swung at an angle such that it does not hit the subject flush. That is, if the sharp squared off tail cap area of the flashlight hits, the area of stress is reduced considerably. A reasonable assumption is that when the flashlight is swung at an angle, the line L along which the stress is exerted is reduced to about .005 m. Certainly, this length is justified if the struck area is in the vicinity of the eye socket where sharp bone angles ensure that the line of the force will be extremely short. The shearing stress for this case, assuming the same 1900 N force, is:

$$F/A = 1900 \text{ N} / (.003 \text{ m})\ (.005 \text{ m}) = 1.25 \times 10^8 \text{ N/m}^2$$

FIGURE 1



To illustrate what damage this can cause, consider that the shear stress that can fracture a bone in the skull is between about 1×10^8 N/m^2 for a thin bone to about 1.3×10^8 N/m^2 for a thicker bone. The conclusion is that even when using approximations and assumptions, if the flashlight is swung such that it strikes the skull at an angle, the possibility of a fracture of the skull is very likely, and almost a certainty if the blow is delivered near the eye socket or the temporal region of the head. The potential is great since several favorable conditions exist in these confrontations. First, the clubbing effect is most likely the result of uncontrolled striking and the blow is likely to land randomly. Second, the officer is likely to utilize the advantage of distance which makes striking with the tail cap on an angle a strong possibility. Third, an officer frequently holds the flashlight "police style" in an encounter with a citizen. In this situation the flashlight is held with the head near shoulder height and with the tail cap extended upward. Striking from this position is likely to produce a downward motion with the tail cap impacting at angles on the subject's head.

The primary difference between the flashlight and the baton is the features of the design of the flashlight that make it more likely that the area of shear contact is small. That is, the sharp angles at the ends of the flashlight would cause a small area of contact and, hence, a very damaging blow. Likewise, many of these flashlights have a small protruding on/off switch which would present a small area of contact if the blow is delivered such that this button makes contact with the subject's body. In comparison, the baton has smooth rounded ends and no protrusions. Thus, the likelihood of a damaging blow is considerably reduced. Based on calculations like those above, it is reasonable and conservative to assume that the flashlight, used in this experiment, is at least two or three times more likely to produce serious injuries than the baton.

Another consideration surrounds the weight of the flashlight used in this test. To compare this one to others on the market, an analysis was performed on the five D-cell flashlight weights listed by Peters (1982, p. 34). According to Peters (1982, p. 35), the mean weight for D-cell batteries is 3 oz. (85.05 grams). Based on 10 brands specified as five D-cell sizes, the mean weight for D-cell battery mean weight added is 958.98 grams. The range was 354.37 grams with a

maximum of 1063.12 and a minimum of 708.75. The standard deviation was 110.93 grams. The weight of the flashlight used in the experiment was −1.88 standard deviation units below the mean. Several models in this cell category significantly exceed the test model in weight. Mass is therefore increased which significantly affects the impulse momentum and shearing stress factors. This is of particular interest when considering that some seven D-cell models weigh 1445.85 grams with batteries included.

LIABILITY POTENTIAL

As stated above, variances exist among states regarding the classification of batons as lethal or nonlethal weapons. Kentucky and some other states have classified the baton as a deadly weapon in KRS 500.080(C). The flashlight has currently not been classified as a weapon in Kentucky.

While it is established that an officer may employ reasonable force to effectuate an arrest, there is little dispute that deadly force may not be employed to make an arrest for a misdemeanor [*Love* v. *Davis*, 353 F. Suppl. 587 (W.D.La.1972)]. Since a very high percentage of arrests are for misdemeanor offenses, the use of metal flashlights as weapons presents a very serious legal problem.

As demonstrated in the above research, many flashlights have the potential to produce much more serious injuries than many batons. Considerable confusion surrounds how the flashlight should be classified. Should it be classified as as a deadly weapon? Under common law there are distinctions between instruments which are deadly weapons *per se* and weapons which become deadly when examined in the context of use. Items are deadly weapons *per se* which serve little other purpose but to produce death or serious bodily injury. Guns, lethal spring traps, and demolitions fall within this category. On the other hand, objects which may be designed for a peaceful purpose, but are nonetheless capable of producing mortal harm, may be deadly weapons. Some jurisdictions classify them as "dangerous instruments" [KRS 500.080(3)]. A prime example of this is the baseball bat. It is defensible that the flashlight is not a deadly weapon *per se* but falls in the second category since its primary purpose is to illuminate rather than to inflict injury. However, since the device is so often used as a weapon, and is commonly known to officers and administrators as such, and has the capability of producing serious injury, there is a developing theory that it should be considered a deadly weapon *per se*. If the metal flashlight is to be considered a deadly weapon *per se*, then *any* use would be excessive in a misdemeanor arrest, even if death or serious bodily harm did not ensue.

Such an argument was indirectly advanced by the plaintiff in *Wellington* v. *Daniels*, 717 F.2d 932 (4th Cir. 1983), with little success. The plaintiff urged the court to find that, since it was widely known to law enforcement administrators that the metal flashlight was dangerous, the defendant municipality was negligent in not issuing directives or regulations to control its use as a weapon. The court found that there must be actual knowledge of the use of the weapon in an excessive manner with the department in question in order to establish liability. Had the court accepted the metal flashlight as a *per se* deadly weapon, then it would be likely that liability would have been attached.

Verdicts of police misconduct litigation and cases such as the above raise the specter of a court or legislature defining the metal flashlight as a weapon *per se*. These events are also important since they contribute to a developing body of knowledge of the metal flashlight's vulnerabilities. In *Wellington*, the court reasoned that the plaintiff must prove that the municipality knew or should have known that members of its force were carrying flashlights which were potentially dangerous if used as a weapon, and also must prove that the municipality knew or should have known that such potentially dangerous flashlights were being used as weapons by members of the police force. If future arguments are presented it will be difficult to establish ignorance of problems surrounding the metal flashlight since a growing body of information and police misconduct litigation is emerging.

RECOMMENDATIONS

Metal flashlights are potentially valuable tools for the police occupation. However, the design of many current models, organizational policies concerning application, and lack of training are creating problems for police organizations. Important ethical, human relations, and liability problems must be addressed.

While those problems identified above most be considered, it is of equal importance to consider the importance of metal flashlights for the police officer. The utility of a device capable of providing illumination and being used as a defensive weapon is a valuable asset for the police officer on the street. However, before it can be prudently assigned as a defensive weapon, several changes must be made.

Structural Redesign

Changes in some prominent structural flashlight features would drastically reduce its injury potential and make it no more of a liability threat than most batons.

Angles

The primary problem is sharp angles which increase shearing stress factors. First, flat tail caps have angles and should be eliminated. A plausible substitute would be a rounded, bullet shaped, durable rubber tail cap. Second, angles on the flashlight head should be rounded. This area isn't the greatest threat since striking often occurs in the tail cap region. Third, all protrusions, such as the on/off switch, should be eliminated or recessed. These changes would effectively reduce shearing stress ratios.

Mass

Structural changes referred to above combined with reduced weight would produce flashlights less dangerous than most contemporary batons. Several five and six C-cell brands weigh much less than the flashlight used in this experiment. This does not significantly alter its utility as a weapon since appropriate length is present. The illumination capacity is more than adequate since the candlepower is many times greater than two-cell alternatives.

Training

Perhaps the most vulnerable area to challenge under a negligence theory of liability for law enforcement deals with the area of training [*Owens* v. *Haas*, 601 F. 2d 1242 (2nd. Cir. 1979)]. The law developing in the area of alleged insufficient and negligent training includes excessive use of force and the improper use of certain items of issued equipment (Scuro and Souza 1983, p. 37). Both of these categories have strong implications for flashlights issued as weapons.

Organizations informally or formally permitting flashlights to be used as weapons have a strong need to provide appropriate levels of training and directives for appropriate use. Proper training combined with structural changes and proper style selection should make the flashlights no more vulnerable than batons.

According to Scuro and Souza (1983, p. 38), if a police agency can demonstrate that its training mode is directly related to performing tasks common in the daily performance of official duties, such training will be more defensible when challenged in court. There should be no problem with demonstrating the need for use of weapons in defensive and "use of force" situations. The important issue is demonstrating that appropriate training is provided. Law enforcement agencies with policies permitting their officers to use flashlights as weapons, but which provide no training for their use, are very vulnerable to civil actions.

Training programs emphasizing defensive tactics with flashlights are available. If preferable, local training curriculum could adopt techniques similar to those used for the baton. Methods such as the "Lamb Method" stress techniques important for defensive purposes. The program adopted or developed should strongly emphasize effective techniques which avoid striking vulnerable areas of the human body. Training should be thorough and realistic enough to assure skill development sufficient to be applicable in field situations. Additionally, training should be uniform and required of all organizational members.

CONCLUSIONS

Police organization policy-makers should formulate a flashlight policy capable of providing direction for police officers and buffering the effects of civil litigation. If flashlights are issued exclusively for illumination purposes then this position should be included in personnel policy manuals. Organizations permitting the use of flashlights in defensive or "use of force" situations should clearly establish parameters associated with these policies. In some instances, this will protect the agency when particular actions, not included in these policies, occur.

Equipment policies should consider the problems identified above. Flashlights which have sharp angles and are exceptionally high in mass present potential serious liability problems. Current trends are certain to result in the widespread loss of a potentially valuable tool unless policy changes alter the current course of direction.

ACKNOWLEDGMENTS

We wish to thank Mr. Allen K. Johnson, Section Supervisor, Kentucky Department of Criminal Justice Training, for the art contributions and Dr. Larry K. Gaines, Chairman, Police Administration Department, Eastern Kentucky University, and John J. Charles, doctoral candidate, The University of Akron, for their editing contributions.

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