



How “Less” is Less Than Lethal?

LTL . . . It means less than lethal. It means not using deadly force to bring a violent or noncompliant individual into custody. It, however, does not always mean that the individual is subdued without trauma or injury.

So just how safe, how effective, are LTL devices?

The National Institute of Justice (NIJ) is trying to take some of the guesswork out of the use of LTL devices, specifically incapacitating, nonpenetrating projectiles, also known as blunt trauma weapons.

“It’s called our Blunt Trauma Program, part of our Less-Than-Lethal Technology Program,” says Sandy Newett, NIJ program manager. “We have funded studies that are examining the effectiveness of blunt trauma projectiles and the physiological impact they have on the human body.”

There are a number of LTL devices on the market, but manufacturers do not always include scientific validation of the effectiveness or safety of their devices, Newett says. One reason is that these types of studies can add considerable development time and money to a device, sometimes delaying its entrance into the commercial market for years. Newett says, however, that according to anecdotal information and some preliminary operational data, most blunt trauma instruments, such as rubber bullets or bean bag rounds, work well. NIJ wants to add to that level of confidence with the addition of studies that provide scientific, statistical, and operational verification.

In one of these LTL studies, Sgt. Ken Hubbs of the San Diego Police Department’s (SDPD’s) Special Response Team is looking at the types of incidents in which blunt impact projectiles are used. Hubbs has been following the use of less-than-lethal devices since 1987—the result of a number of officer-involved shootings in which the subjects were armed with something other than a firearm, such as a baseball bat, knife, stick, shovel, or some other type of nontraditional weapon. SDPD wanted to find a way to disarm these suspects without the use of deadly force.

After much research, testing, and study, the department determined the type of low-lethality munition it preferred.

Hubbs, however, continued his LTL research. With the help of NIJ funding, he teamed up with a criminology researcher and has been collecting data from agencies around the country to study the use and effectiveness of blunt impact projectiles. With data from more than 600 incidents, this study will provide a database of information, everything from the type of incident to the kind of projectile used, to whether or not it worked, to type and extent of injuries.

“They’re looking at whether the suspect was a 250-pound man or a 100-pound woman, what happened during the incident, whether alcohol or drugs were involved, along with a variety of other factors,” Newett says. “Preliminary data have revealed that about 61 percent of the incidents in which a blunt impact [LTL] projectile was used involved ‘suicide by police.’ This is when a suspect attempts to force police [to use lethal means] to kill him. More information will be available when the study is published.”

In another study, a biomechanical surrogate developed by the automobile industry is being modified and validated for LTL blunt trauma. NIJ is focusing specifically on the chest area to determine the level of trauma caused by relatively high-velocity, low-mass blunt-impact projectiles (automobile tests look at low-velocity, high-mass impacts). In addition, research from the sports arena, specifically baseball, is adding to the knowledge base.

“You can calculate the kinetic energy of a device,” she says. “However, this may only give you a clue as to what kind of injury you might get. And even then, it’s not been validated scientifically or operationally. The biomechanical surrogate will provide that information at a level of confidence for blunt trauma weapons that hit the chest. We can then provide the information to law enforcement and corrections.”

Another NIJ-funded study is looking at the various empirical and theoretical models that have been previously used to predict the probability of injury. This study is building on similar work already done by the military and will examine the strengths and weaknesses of each model.

The final component to the Blunt Trauma Program, Newett says, is the development of the ring airfoil projectile (RAP). (See "NIJ Takes the RAP," in *TechBeat*, Winter 1998.)

Created more than 30 years ago by a U.S. Army engineer, this 2½-inch, 1-ounce rubber ring flies straight at about 200 feet per second. Its impact on the body has the feel of being hit by a fastball thrown by a major league pitcher. The ring has cavities that can be filled with pepper powder, which is expected to make the device much more effective.

In its initial incarnation, the RAP was fired by a launcher-adaptor that fit over the barrel of a M16A-1 rifle and was propelled by a 5.56mm low-grain blank

cartridge. NIJ's work has been to create a new kind of launch device. According to Newett, the engineering on a pistol-grip launch system that fires the RAP from a single-use cartridge is nearly complete and will be ready for demonstration sometime this summer.

For more information on NIJ's Less-Than-Lethal Technology Program or the Blunt Trauma Program, contact Sandy Newett, 202-616-1471. For a copy of "NIJ Takes the RAP," call the National Law Enforcement and Corrections Technology Center, 800-248-2742, or log on to the center's Web site, JUSTNET, at www.nlectc.org.



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