TRAINING ARTICLES

The Strong Arm of the Law

The most overlooked muscle group in law enforcement

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7/28/2011 1:56:45 PM

Milos Sarcev (left) is a bodybuilding coach who was trained by Charles Poliquin and is shown here with police officer and former Mr. Olympia Ronnie Coleman.

For many devoted workout enthusiasts, training the biceps is viewed as vanity work, typically reserved for bodybuilders. But, aside from making you look good in short sleeves, strong elbow flexors can also play a critical role in the day-to-day tasks of law enforcement professionals.

Tasks ranging from restraining, grappling, and separating perpetrators, to climbing over obstacles and fighting to hold on to one's own gear, all have one thing in common: They all involve tremendous stress on the elbow flexors. Imagine the forces applied to the elbow flexors when a street thug is violently pulling at an officer's riot shield. This effort is similar to what would happen if you drove to the gym, walked right up to the barbell rack and performed a 1-rep max biceps curl without any warm-up. As such, the potential for injury is great. In fact, one study of workman's compensation filings in Virginia found that 23 percent of all injury claims came from instances in which law enforcement officers were trying to arrest an offender.

In grappling sports such as judo that have physical similarities to restraining tactics found in law enforcement, the elbow flexors can play a significant role in takedowns, opponent positional control, submissions, and submission defense. This explains why studies show that Olympic-level judo competitors have greater elbow flexor cross-section areas, particularly in the brachialis, than university and state-level competitors in the same weight class.

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The elbow flexors have numerous functions, from elbow flexion and forearm supination to maintaining shoulder integrity and total arm deceleration. Due to poor strength training practices, including program design and exercise performance, many trainees suffer from weakness in the brachialis. The brachialis does not insert on the lower arm bone called the radius; as such, it is not involved with supination or pronation of the forearm, only elbow flexion. Ideally, the brachialis should be roughly 82% percent of the biceps brachii strength. Unfortunately, this is not the case for most dedicated trainees, thereby leaving the door open for potential injury.

The biceps tendon sits along a groove that runs along the upper arm, held in place by several tendons and ligaments. Adhesions are bands of scar tissue that can interfere with proper functioning of the muscles. Adhesions in the rotator cuff muscles, or in the soft tissue between the tendon and biceps musculature, can lead to inflammation in the area of the biceps tendon. The inflammation can cause pain in the front of the shoulder during exercises such as bench pressing, push-ups and biceps curls. Injuries to the elbow flexor musculature also can arise from a variety of reasons, including structural imbalances.

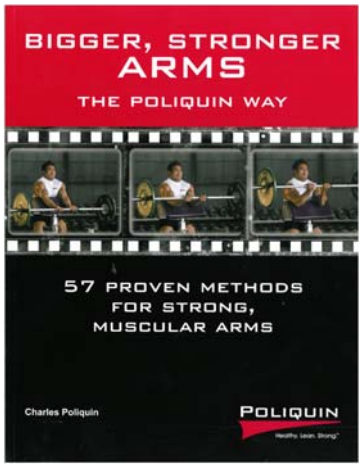
A Closer Look at Elbow Flexor Strength

Tendons are bands of connective tissue that attach muscles to bones. Tendon insertions are critical in the generation of force, as they determine the length of the muscle belly. A long muscle belly (lower insertion point) is a distinct advantage in bodybuilding. Larry Scott won bodybuilding's most prestigious title, the Mr. Olympia, in 1965 and 1966, and Franco Columbu won it in 1976 and 1981. Scott's biceps had a long muscle belly, whereas Columbu's biceps had a relatively short muscle belly. Although Columbu was only 5 feet 5 inches tall and had biceps that measured over 18 inches, Scott's arms were far more impressive than Columbu's.

In his book *Manthropology* Peter McAllister hypothetically pits 255-pound former World Arm Wrestling Champion Alexey Voyevoda, with his 22-inch biceps, against a 5-foot, 176-pound Neanderthal woman named "La Ferrassie 2" (named after the French cavesite where her remains were discovered). According to McAllister, the female Neanderthal would have two distinct anatomical advantages that would ensure a win: a biceps attachment that would improve supination and also relatively short forearms, which would give her greater leverage over her opponent.

Joint angles also play a critical role in the strength of the elbow flexors, especially in the realm of restraining techniques and hand-to-hand combat. When grappling with an offender, there are several elements that can play a role in altering the elbow flexor musculature recruitment: the position and angle of the upper arm relative to the torso, the position and direction of rotation of the wrist, and the degree of flexion of the elbow. For example, activation of the elbow flexors with the upper arms extended out in front and parallel to the floor, as seen in a grappling clinch, can elicit a different elbow flexor recruitment pattern than that of a conventional biceps curl with arms directly down by the sides.

With these factors in mind, here are a few tips for law enforcement professionals to strengthen the elbow flexors:



Strengthen the Traps. If an individual has a forward head carriage, this can cause neuro-inhibition in the trapezius (upper back) musculature. In other words, if the body senses weakness in the muscles that stabilize the shoulders, the nervous system inhibits the function of the elbow flexors. As such, tucking the chin during biceps curls can inhibit maximal elbow flexor recruitment. Among the best exercises to strengthen the traps are shoulder shrugs and the Olympic lifts.

Increase Isometric Strength at Various Angles. An isometric biceps curl performed at a 45-degree angle has been shown to increase strength at other angles. For a greater cross transference, utilizing isometric training at angles every 10-30 degrees is recommended. Isometric protocols also can be added to any elbow flexor strengthening routine.

Perform the Olympic lifts. A lesser-known fact about the Olympic lifts, particularly the snatch, is that there is an indirect recruitment of the elbow flexors due to rapid eccentric overload. For example, look at the physiques of middleweight Olympic weightlifters. These athletes rarely perform biceps curls, yet they often have muscle size and definition rivaling those of novice bodybuilders.

Increase Grip Strength. Among throwing-sport athletes, studies have shown that the hand with the stronger grip strength correlates to greater upper arm circumference. Certain muscles of the forearm actually assist in elbow flexion, such as the flexor carpi radialis (a muscle that helps flex the hand and move it towards the thumb). If the muscles responsible for forearm flexion are not strong enough to accommodate the primary elbow flexors, the result can be chronic soft-tissue inflammation and pain around the elbow capsule.

When it comes to job requirements in law enforcement, it's apparent that having strong elbow flexors is critical. Looking great in uniform as a result is just a perk to the more important benefits in injury prevention and improved job performance.

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