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Photo by Brian Gasman

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| ADVANCED CANINE ATHLETIC PROGRAM

By Sean McPeck, DVM, CCRP

When I speak with working dog handlers, I find many individuals don't realize the canine is subject to the same rules of conditioning that we are. Only after I start presenting the analogies of ourselves, and using human conditioning experiences as examples, do people start to view the canine as an athlete that is impacted by the same three pillars that humans are: genetics, nutrition, and a conditioning program.

The canine world has come a long way with regard to genetics and nutrition. The average working dog breed is a result of centuries of selective breeding where the top-performing individuals from each generation were bred to provide offspring with an improved genotype and subsequent phenotype. These generations of selective breeding have resulted in a remarkable specimen of an athlete. Additionally, ever-evolving discoveries in nutrition, along with constant research and development by high-end dog food companies, have produced amazing dog food formulas that provide balanced nutrition and the ability to fuel the physical demands of our canine athletes and build their bodies.

The number one pillar that most working dogs today are lacking is a conditioning program.

Just like their human counterparts, working dogs are expected to perform a variety of high-intensity tasks and work long hours with few days off. Whether it be the aerobic and endurance energy necessary for tracking long distances, the sudden sprint-type energy needed for a perpetrator engagement, or the endurance and physical health required for long hours of successful scent detection, the canine must be properly cross-trained to be successful in these types of operations. Handlers need to make sure that their canines are physically prepared to perform operations without fatigue, and are resilient to the physical stressors associated with the tasks to avoid injuries.

It is commonly known in sports medicine, whether for humans or animals, that obesity increases the risk of athletic injury. A fat dog that is running and stops or turns suddenly is much more prone to physical damage due to the increased force that is being applied to the joints and tissues. Veterinarians and nutritionists also agree that a canine carrying extra weight is more prone to endocrine disorders, musculoskeletal injuries, digestive disorders, and cardiovascular disease, and is in a constant state of inflammation. This inflammatory state negatively impacts detection rates by reducing particle detection in the nasal epithelium. In addition, an obese canine will be spending more time thermoregulating (panting) than moving air through the nasal passages, which is necessary for detection.

In the research paper entitled "Effect of Dietary Fat Source and Exercise on Odorant-Detecting Ability of Canine Athletes," the researchers reported that "canine athletes enrolled in a physical conditioning program were able to maintain greater olfactory acuity [accurate scent detection] compared with dogs that were not physically conditioned. Non-conditioned dogs displayed a 63.6% decrease in olfactory acuity following treadmill exercise, while conditioned dogs showed no significant change in detection capabilities pre or post workout" (*Allom, Davenport, Cummins, and Myers; Research in Veterinary Science, Nov. 2003*).

Allow that to sink in: 63.6% reduction in detection after physical exertion in dogs that are out of shape! Zero reduction in detection after physical exertion in dogs that have been on a conditioning program. Dogs that are out of shape are going to breathe rapidly through their mouth and not through their nose. A poorly conditioned dog will dehydrate faster, overheat faster, and fatigue faster. An in-shape dog, just like an in-shape human, will recover rapidly, pool heat effectively, and metabolize metabolic byproducts faster. Conversely, from the panting, out-of-shape dog, the in-shape dog will be able to close its mouth and continue to detect, even in the face of physical exertion.

Police and military dog handlers have been able to get by with minimal conditioning techniques due to the canine's natural physical prowess; the canine is a natural athlete (not including the breeds that have been selectively bred for looks rather than athletic capabilities). The canine also possesses a unique ability to adapt rapidly to physical stressors. For these reasons, there has previously been a lack of enthusiasm for development of a high-quality canine conditioning program.

Canine professionals outside the military and law enforcement world have known for centuries about the benefits of a high-quality conditioning program for their working or sporting dogs. However, the information has remained safeguarded due to the competitive nature of the athletic results. But even if these programs had been readily available, the definition of fit for a sporting dog is extremely different than the physical requirements necessary to consider a military or police working dog adequately prepared for a high-intensity type of operation.

Prior to implementing a conditioning program, it is essential to define what fit means for your canine based upon the dog's job description. What is the worst-case scenario, with respect to physical demand, that you can expect your dog to be exposed to? Is it working for four days in a row, 12-hour shifts, in a hot environment? Or is it conducting a man track for two miles, followed by a high-intensity pursuit that results in a bite, perhaps followed by a detection scenario? Or are we executing a long route clear leading to numerous building searches, often resulting in multiple bites day after day for a three-month deployment?

Conceptually, in shape or fit is tough to define because it is relative, and for someone who has never been involved in a conditioning program, it can come across as vague and unclear. A dog can be sufficiently in shape for a two-hour patrol but not in shape for a four-hour patrol. So, is the dog in shape? Again, being in shape depends on what you expect the dog to do. I would define in shape as having enough physiological capacity to perform a given task without injury or a subsequent long-term physiological change. In other words, if a canine performs a task without injury and without triggering further adaptation to that task, then he/she was fit for that task. This definition relies heavily on the concept of stress-induced adaptation (*i.e., no pain, no gain*).

The simplest and most reliable means of conditioning for a specific activity is to perform that activity. Depending on the intensity and physical demands of a desired activity, it may be possible to perform that activity without metabolic heat or musculoskeletal injuries. However, without conditioning, the risk of injury increases. Furthermore, simply not being able to complete or accomplish the desired physical task is more likely when training for baseline fitness rather than building incrementally to a level of fitness that would support advanced activity.

Though training for a specific physical demand will make an athlete more successful at that event, no tactical scenario has only one physical requirement. The nature of tactical operations is dynamic, and cross-training accordingly will allow the canine body to be more adept at successfully completing those unforeseen challenges.

Numerous limiting factors impact the handler's ability to execute and maintain a quality physical conditioning program. Lack of time, lack of support from leadership, and lack of knowledge on how to condition properly all play a part of this ever-present issue. Mission success is directly related to the conditioning of the canine. Subsequently, the success in conditioning a canine requires implementing the correct physical exercises, all while maximizing the time spent doing so.

In any of these cases, we want the dog to perform at peak fitness without injury or failure. Be honest about where your dog is physically now, in the present, and know that it may take up to four months of progressive work to meet the demands of your canine's job description.

Due to the above-mentioned factors, an organization generally needs to get the most bang for the buck. In human physiology, interval training has been shown to produce cardiovascular and musculoskeletal changes similar to those from traditional endurance training. The Advanced Canine Athletic Program (ACAP) mobile application developed by Guardian Point uses the interval training philosophy to meet the need for canine-specific conditioning that produces maximum results in minimal time. The ACAP is a progressive canine conditioning program that capitalizes on the dog's natural ability to rapidly adapt to exercise challenges while providing a steady progression to avoid injury.

Keep in mind, a highly effective conditioning program for any species will inherently carry a slight risk for injury; indeed, it is necessary for conditioning to occur. Mike Davis, DVM, of Oklahoma State University explained it the following way: "If the system is to be changed, it must first be 'proven' to be insufficient: for bone/tendon/ligament/cartilage to remodel, you must exceed an accepted strain threshold; for the cardiovascular system capacity to increase, you must run out of cardiovascular capacity; for muscle to improve its ability to make ATP, you have to run out of ATP." An appropriate conditioning program is designed to push the systems just far enough to trigger adaptation, then provide the resources and time for that adaptation to occur. Inappropriate conditioning programs fall on both sides of that ideal: not pushing hard enough so that you are just wasting time or pushing too hard, resulting in fatigue or overexertion injuries.



In 2017, 11 of the 13 law enforcement K9 deaths nationally were due to heat-related injuries. This is 100% preventable, and a properly conditioned dog is much more resilient to heat-related injuries. Handlers must be educated on and aware of the signs and signals of heat stress and heat exhaustion so that heat injuries and/or death can be avoided. They must also understand the four physiologic mechanisms by which the canine thermoregulates (controls its body temperature): panting (evaporation), conduction, convection, and radiation. While we won't go into detail for the purposes of this article, to demonstrate the importance of the handler in preventing heat-related injuries or death in the canine, I will reference a study the Army conducted. It found that if while in route to veterinary care, a handler purposely used water to saturate the coat of an MWD experiencing heat exhaustion, less than 20% of those MWDs died. This is in stark contrast to the over 50% mortality rate of the MWDs that were not saturated with water while in route to veterinary medical care. This comparison shows the significant importance of the role the handler plays in recognizing and assisting the canine, and whether the canine survives.

This article does not have enough space to fully educate about canine thermoregulation, but complete information on the subject can be found in the ACAP educational videos. The bottom line: educate yourself on how the canine thermoregulates and understand the behavioral cues of a hot dog. Take time to help the canine cool when necessary. Conducting water saturation prior to intense physical activity can give the canine a head start in keeping the core temperature down by initiating the evaporation

process. The handler may need to assist the canine by moving to a cooler location, removing the kit and vest, loosening or removing collars, and removing muzzles. Common sense prevails, but do not wait to seek veterinary assistance if you believe your dog is overheating.

As medicine and technology continue to advance and evolve, our understanding of disease processes and our ability to treat and cure illnesses continue to advance in tandem. Regardless of how many advances we make on the fronts of treatment, the ever-constant truth remains that prevention is a much easier and smarter investment. Benjamin Franklin famously said, "An ounce of prevention is worth a pound of cure."

The ACAP has taken years of veterinary research and knowledge and combined it into a progressive conditioning program that is guaranteed to provide you with insight and education as well as athletic results for your canine. The interval training exercises found in the ACAP have been specifically designed to meet the needs of the working dog community (military, law enforcement, search and rescue, hunting, and dog sport competitors). There is no quick fix for being out of shape. Proper conditioning takes time, patience, and effort.

Dr. Sean McPeck entered his military service in 1996. Since then, he has worked his way through various leadership positions — active duty, national guard, enlisted, and as an officer. Dr. McPeck served as a sniper team leader and as a veterinarian while with the United States Special Operations Command. He has a combined canine experience of 20 years. While pursuing both his biology degree and his doctorate in veterinary medicine, he continued his service in both LRSD and National Guard Special Forces units as a search and rescue team leader and an operations officer. Dr. McPeck has traveled throughout the U.S. and abroad, training and briefing handlers on K9 husbandry and veterinary care. He has also worked to rehabilitate canines who have suffered from both mental and physical trauma.

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