# Flyball Dogs and Injury Prevention

Conditioning, warm-up and cool-down

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Most injuries seen in flyball and agility dogs are repetitive stress injuries, not the result of an acute event.

One of the most important goals for a handler is to minimize the possibility of those injuries and give our companions a long, comfortable and successful career.

By creating a workable program for conditioning and using warm-up and cool-down routines religiously, I believe we can greatly benefit our companions. Most of the research regarding sports medicine has been done in humans and, in the veterinary world, horses, so we will be making some assumptions in applying what has been learned to dogs. The field of canine sports medicine is relatively new and developing quickly. Don't be afraid to ask questions and challenge long held beliefs regarding what dogs should and shouldn't do.

## ***Conditioning***

*Weight*

"There is no breed standard which states that the ideal dog of that breed should be 'flabby, moderately overweight, and with a pendulous abdomen'". (Chris Zink, I believe).

*The single most important thing a handler can do to lengthen the career of their canine athlete is to keep their dog lean.*

The ribs should be easily felt and subcutaneous fat in that region should be barely detectable. When you look down on your dog from above, he should have a definite "waist" and when viewed from the side there should be a "tuck" from the ribs to the hips. Not even Dachshunds should look like a hot dog with legs.

If you are uncertain about your ability to objectively evaluate your dog, get the opinion of someone who competes successfully in your chosen sport and whose dogs look great. If you have a veterinarian familiar with sports medicine, or, even better, your particular sport, then also get their opinion.

If your dog is overweight there are no secret formulas. She must take in fewer calories and/or exercise more. I have never seen a dog starve to death as a result of the owner's efforts to take weight off.

*Structure*

There are very few perfectly structured dogs in this world. Structure should be evaluated in relation to your chosen activity or activities. Become familiar with the strengths and weakness of your own dog and keep them in mind both during conditioning and warm-up/cool-down.

Before beginning in a sport or a conditioning program, your dog should have a thorough examination by a veterinarian. All dogs should have their hips radiographed and specific breeds should have elbows radiographed and eyes checked.

Young dogs: The conservative recommendation is that young dogs should not jump higher than elbow height before all growth plates are closed. Usually by 10-14 months. Because some surgical corrections for

orthopedic problems are very time sensitive, elbow radiographs should be done by 5-6 months of age and initial hip films done at about one year of age.

*Conditioning Program*

Conditioning is NOT just a weekend activity.

Conditioning a dog for flyball should include strength exercises, which increase speed and power, as well as endurance exercises.

*Strength exercises* usually involve short, intense bursts of movement, e.g. short retrieves on land or in water, short runs up steep hills, weight pulling. It takes about 48 hours for muscles to recover from this type of anaerobic work out and, therefore, these exercises are best performed on an alternate day schedule.

*Endurance exercises* are most often long distance running or long distance swimming (20+ minutes). Endurance exercises are more about conditioning heart and lungs than about muscle building.

*Interval training* alternates short, fast bursts of intensive exercise with slow, easy activity. Interval training works both the anaerobic and aerobic systems. In high intensity, anaerobic activity, glycogen – a form of carbohydrate stored in the muscle – is utilized. Anaerobic activity is, by definition, performed without oxygen and lactic acid is its by-product. Lactic acid is theorized to be responsible for the burning sensation felt in muscles that have been worked intensively. During the high intensity interval, lactic acid builds in the muscles and the muscle progresses to a state of oxygen debt. During the recovery interval of slower, less intense activity, the oxygen debt is "paid off" by the work of the heart and the lungs and lactic acid is broken down. In the recovery phase the aerobic system is in control and uses oxygen to convert stored carbohydrates into energy.

Interval training leads to an adaptation response: new capillaries to the muscle are built and are better able to take in and deliver oxygen to working muscles. The muscles develop an increased tolerance to the build up of lactic acid, and the heart muscle is strengthened as well. With interval training one can increase training intensity while minimizing the risk of overtraining or burnout.

*Principles of Sports Conditioning*

1. *Principle of Individual Differences:* No two dogs are alike. The training program for an individual should reflect those differences.
2. *Principle of Overload:* A greater than normal stress or load on the body is necessary for training adaptation to occur. Once the body adapts, then a different stimulus is required to continue the change. The intensity and/or the length of the training program must continue to increase in order to see progressive improvement.
3. *Principle of Progression*: If overload is increased too slowly then improvement is unlikely. Increase it too rapidly and injury becomes a high risk. No weekend warrior!!
4. *Principle of Adaptation:* Repeating a skill or activity causes the body to adapt to the stress and the skill becomes easier to perform. Implications for "muscle memory" and the Principle of Overload.
5. *Principle of Use/Disuse:* Use it or lose it. Find the correct balance between stress and rest.
6. *Principle of Specificity:* The body adapts to training in a highly specific way. Begin with a strong athletic foundation before training on specifics. Highly general training => highly specific training. In order to jump higher or run faster you must practice jumping higher and running faster.

## ***Warm-up***

Warm-up is essential if your goal is to prevent injury. Its main purpose is to prepare the body and mind for more strenuous activity. One of the ways it achieves this is by helping to increase the body's core temperature, while also increasing the body's muscle temperature. By increasing muscle temperature you're helping to make the muscles loose, supple and pliable.

An effective warm up also has the effect of increasing both the heart rate and respiratory rate. This increases blood flow, which in turn increases the delivery of oxygen and nutrients to the working muscles. All this helps to prepare the muscles, tendons and joints for more strenuous activity.

A good warm-up: produces faster, more forceful muscle contractions, increases the metabolic rate so oxygen is delivered to the working muscles more quickly, gives better muscle control by speeding up the neural message pathways to the muscles, and allows your dog to work out comfortably longer because all her energy systems are able to adjust to exercise, reducing the buildup of lactic acid in the muscles.

*How to*

For dogs participating in a sprint event like flyball, the best warm-up will start with a fast walk, working into a trot. Include some short sprints and low jumps if hurdles are available. Total warm-up time should be no less than 5 minutes.

## ***Stretching***

Recent research suggests that stretching immediately before exercise has little effect on the incidence of injury. A better predictor of injury is overall conditioning. The best time for stretching is probably immediately following exercise as part of the cool down routine. At that time, the muscles, tendons and ligaments are maximally warmed and, therefore, the most flexible and amenable to a good stretch. The bottom line is that stretches should NEVER be done without some warm-up or prior activity. Injury is much more likely when trying to stretch cold muscles.

When looking at the effect of stretching alone (in humans) on range of motion, a review of MEDLINE finds that for both the immediate (an hour) and long-term (several weeks) improvements in range of motion one 15 to 30 second stretch per muscle group is sufficient for most people. Some people require longer duration or more repetitions. Research also supports the idea that the optimal duration and frequency for stretching may vary by muscle group.

The long-term effects of stretching on range of motion show that after six weeks, those who stretch for 30 seconds per muscle each day increased their range of motion much more than those who stretched 15 seconds per muscle each day. No additional increase was seen in the group that stretched for 60 seconds. Another 6 week study conducted found that one hamstring stretch of 30 seconds each day produced the same results as three stretches of 30 seconds.

These studies support the use of 30 second stretches as part of general conditioning to improve range of motion. 30 seconds is a long time when holding a stretch on a dog, but aim for at least 15 seconds. Stretches should never be painful, but should produce a noticeable tension in the muscle being stretched.

## ***Cool down***

The main goal of the cool down is to promote recovery and return the body to a pre-exercise, or pre-work out level. During a strenuous work out your dog's body goes through a number of stressful processes. Muscle fibers, tendons and ligaments get damaged, and waste products build up within the body.

The cool down, performed properly, will assist your dog's body in its repair process. One area the cool down will help with is "post exercise muscle soreness." This is the soreness that is usually experienced the day after a tough work out. Most people experience this after having a lay-off from exercise, or at the beginning of their sports season.

This soreness is caused by a number of things. During exercise, tiny tears called micro tears develop within the muscle fibers. These micro tears cause swelling of the muscle tissues which in turn puts pressure on the nerve endings and results in pain. Lactic acid accumulation is a big factor in muscle soreness as well. The cool down helps to remove the lactic acid from the muscles and reduces soreness.

When exercising, the heart is pumping large amounts of blood to the working muscles. This blood is carrying both oxygen and nutrients that the working muscles need. When the blood reaches the muscles the oxygen and nutrients are used up. Then the force of the contracting (exercising) muscles pushes the blood back to the heart where it is re-oxygenated.

However, when the exercise stops, so does the force that pushes the blood back to the heart. This blood, as well as waste products like lactic acid, stays in the muscles, which in turn causes swelling and pain. This process is often referred to as "blood pooling."

So, the cool down helps all this by keeping the blood circulating, which in turn helps to prevent blood pooling and also removes waste products from the muscles. This circulating blood also brings with it the oxygen and nutrients needed by the muscles, tendons and ligaments for repair.

The cool down should utilize the same muscles that were used during the sports or training activity. For most dog sports, a slow trot to a walk is a good place to start. As suggested above, stretching should also be incorporated into the cool down. Cool down should last until the dog's breathing returns to normal prior to being put back into its crate.

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Your dog's health and well-being are in your hands. It is up to you to take care of his needs and give him the best care possible for a long, healthy life.

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