

Golden Retriever News Column: Integrative Care for Golden Retrievers
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Sports Medicine for Dogs
Part 1: Prevention of Injury

Introduction:

For many years, a small number of "therapists" from various disciplines were dispersed throughout North America, working with veterinarians, to address the rehabilitation needs of dogs. Initially there were no formal educational programs for canine rehabilitation specialists but therapists trained to work with humans applied their skills to dogs. Today at least two universities are developing programs in rehabilitation physical therapy in veterinary medicine.

Canine sports medicine encompasses conditioning and training protocols designed for peak performance, prevention of injuries, nutritional support, diagnoses of injuries and development of specific injury related regimens. As research and training programs spread throughout the country and specialists share information, I am hopeful that all consumers will have access to knowledgeable well-trained professionals for sports medicine consultation. Unfortunately, most communities currently lack sports medicine clinics or individual practitioners, thus Golden owners have the primary responsibility to protect their canine athletes. The purpose of this article is to assist owners in that endeavor by providing information general enough to apply to all venues in which Goldens participate yet specific enough to serve as guidelines for injury risk management.

Basic Prevention:

Currently, most prevention practices for dogs participating in the sports available to Goldens are based upon exhibitor/trainer opinions rather than on research or professional opinions. As the professional sports medicine

community publishes more didactic information, we will have better guidelines. The following prevention concepts come from the scientific and clinical literature or from my background in biomechanics, therapeutics, functional anatomy and physiology.

1. Age Appropriate Activity: It is common sense to use activity that is appropriate for the developmental age of the dog. M. Christine Zink in her text *Peak Performance: Coaching the Canine Athlete* (1) reminds us that the musculoskeletal structure of puppies is immature for more than a year. Growth plates do not close until approximately 14 months, bones are relatively soft, joints have more laxity and muscles continue to develop through adolescence. There are resultant implications for puppy play, exercise, training and conditioning. Experienced Golden owners know to avoid allowing puppies unsupervised play with older dogs. I recommend that an owner actively supervise a puppy playing with one trusted mature dog at a time. Unfortunately, I have treated puppies that were injured after being left to play with two or more older dogs.

Teaching basic obedience commands is important when working with a pup as is developing a bond of trust between the handler and pup. Once the puppy becomes more reliable, has been vaccinated, and has had socialization experiences in protected environments, he can progress to more public environments and broaden his experiences.

Monitoring the jumping activity of puppies is also critical. Seasoned agility and obedience competitors keep puppy jump heights very low and gradually increase them after a year. If a puppy were to repetitively jump from a high obstacle or piece of furniture onto a hard, unforgiving surface, it could result in a permanent injury to growth plates, ligaments, tendons and muscles. Jumping surfaces for training should be made of resilient material. Due to developmental laxity, puppy feet and pasterns are particularly at risk when pups spend all their time on concrete. I advise owners to expose puppies to a variety of surfaces (dirt, grass, gravel, textured concrete, carpet) to promote development of tight feet and prevent dropped pasterns. Nails, including dewclaws, must be trimmed frequently or maladaptive compensatory postural alignment and gait patterns will result along with splayed feet.

My preference is to let puppies exercise under their own control. When an owner starts to gradually increase a puppy's endurance training, it is important to watch for signs of fatigue that often results in less skilled movement with a greater margin for injury. Taking long walks with young puppies or sending them out for too many retrieves without rest may exhibit fatigue and injury. I like to see young puppies learn to swim if the climate allows and the facilities are available as swimming is an outstanding way to build endurance and muscle tone without stressing joints.

Before you begin an intensive training program with your puppy after his 14th month of age, have a veterinarian examine his general health including musculoskeletal integrity. Hip and elbow radiographs should be obtained to rule out dysplasia. This is also a good time to have a cardiac assessment by a cardiologist and eye exam by a vet certified in ophthalmology. A good trainer starts out with a dog that is fit and continues to screen that dog for injuries on a regular basis. Christine Zink advocates keeping our performance Goldens at proper weight and monitoring them often by palpating skin thickness at the neck in front of the shoulder, and feeling over the ribcage and the croup. We should easily feel the ribs and the bony prominences over the hips. An overweight dog stresses his joints and reduces his ability to perform. For some reason, we tend to show dogs at a heavier weight in conformation. Once dogs finish conformation competition, Dr Zink suggests that they lose weight before starting active performance careers.

Recently, I received an email from an agility enthusiast. Her dog was 8 years old and had a very successful agility career, completing the requirements for MACH four times over. She wondered what objective criteria I use to decide when to retire a dog from competition. If a dog is motivated to compete, is capable to do what is asked, and is not plagued by chronic injury, I see no reason to discontinue competition. If there is any question as to whether the dog is injuring himself by competition and training, he should be fully evaluated by canine sports medicine personnel. As with any older athlete, the heart and mind may be willing but the body may not be able. We must advocate for our dogs; however, stopping cold turkey is often cruel. Many owners enter older dogs in classes with less strenuous requirements. I have had the pleasure of treating many older dogs that hunt or do obedience and agility on a regular basis. Before we retire a dog, we have to consider

what that dog has done his whole life. I believe changing a dog's purpose requires just as much planning, as when we humans retire from a job we love. Having a purpose is a powerful reason for "being".

2. Conformation and Activity: The Official Standard for Golden Retrievers serves several purposes including:

A. Description of the general appearance of a Golden along with desired characteristics for each part of the body.

B. Provision of an ideal phenotypic "product" for a Golden breeding program to achieve.

C. Outlining expected movement and temperament.

The closer a dog reflects our Standard, the more likely he is to perform well as a Golden athlete. The Standard describes the structure that results in optimum function for our breed. It is always wise to consider a dog's conformation before training for a given sport. Matching a dog's conformation to the physical demands of a sport seems logical. For example, should a dog with short straight upper arms and straight stifle angles be allowed to jump repetitively? Based on my training in biomechanics and functional anatomy, I speculate that a dog that lacks the return of upper arm and bend of stifle would demonstrate a decreased ability to diffuse and absorb transmission of shock through the long bones of the arms and legs during jumping and running. This is my own opinion based on the injuries I see in my practice. Canine sports medicine research is in its infancy and studies need to be conducted in the types of injuries that occur for specific sports, breeds, and conformation. One must also consider a dog's motivation and aptitude for a sport as well. There are those dogs that appear to be unlikely candidates for a sport but do excel because of intense drive and desire. If your dog does not approximate the Standard but loves an activity that could cause injury, moderation in frequency of competition and practice and close monitoring are mandatory.

3. Proper Warm-up for Exercise:

My favorite way to begin every work session is to use Tellington Touch (2) all over the dog. Those of you who have read my columns know I advocate TTouch™ for calming, pain management and for focusing attention. I have seen many dogs that perform well in practice but are over-stimulated at the

competition site. TTouch™ gives your dog a competitive advantage due to the increase in his focus that results from using this stroking system regularly. In addition to TTouch™ I also advocate a general massage of your dog's body to warm up muscles. If you have no training in canine massage, there are books available for consultation. One that provides clear instruction and pictures is Ballner (3). Use this time to read your dog's body language. Is he moving away from your hands? Maybe he prefers a slower tempo with less pressure. Learning to massage a dog is an art. Do not impose yourself on your dog just because massaging him might warm him up. If he does not seem to want to be massaged, there are other ways to warm up your dog's muscles. The key to successful massage is to know your dog, his body language and his needs. If he is a hyperactive dog and hard to control, a calming massage may produce a more desirable outcome by reducing hyperactivity. Sue Furman, Ph.D., Associate Professor, Department of Anatomy and Neurobiology, Colorado State University is planning a new book entitled *Balance Your Dog: Canine Massage*. Watch for that publication. She suggests a warm up massage to increase the circulation in the muscles and a cool down massage to relax the dog after his performance.

For years, exercise physiologists and human sports medicine specialists have advocated doing stretches before exercise. There are many misconceptions and conflicting research studies about the use of pre-stretching before exercise and prevention of injury. Newer studies in humans report that stretching immediately before exercise does not prevent overuse or acute injury (4-5). It is often more effective to have your dog warm-up by actually doing the activity he is going to be doing but at a slower rate, with lower intensity. That is not to say that stretches are contra-indicated. Dogs do them naturally, often when leaving their crates. They can learn the word "stretch" and then do the stretch under their own control. I have often wondered why agility dogs are allowed to have a jump set-up for warm-ups but obedience trials do not have warm-up rings or jumps. Dogs should be properly "aired" as we say in the field venue (allowed to go to the bathroom) and walked over an area of field of variable terrain. A slow run is also very valuable.

4. Conditioning with Safety:

Before a dog can compete with skill in any performance area he must be conditioned to the level of physical fitness to avoid fatigue. Our Standard calls for Goldens to be presented in hard working condition. How do we condition our Goldens safely when they are ready for more strenuous training?

A. Scan for injury before initiating conditioning session (see my last column).

B. Allow the dog to warm up.

C. Do a task analysis of all the individual elements a dog will have to master to learn to perform in a given skill. Train each element with enough repetition so that the dog can do what is asked with confidence and physical stamina. You want to work at your dog's ability and experience levels. Safety is always a primary concern.

D. Start your program gradually, increasing distance, frequency, intensity only with careful monitoring and successful experiences at each increment. Be prepared to go back down a few levels as dogs learn new skills. Do not expect a consistent and gradual upward slope in the learning curve. Many dogs have what I call a stair-step approach to learning. They seem to regress on some skills they had been conditioned to do when a new skill is added to the repertoire. That may be due to the fact that they are expending more energy learning the new skill to add to the old one and then they lack the energy to do the old skill as well as they had been doing it. Be patient. Remember you are also training the mental aspects of the activity as well as the physical. While the dog concentrates on one aspect, skill in the other may be slightly reduced.

E. Add variety to the conditioning program. Swimming is one of my favorite exercises for building endurance. It is especially beneficial for dogs that have arthritis. Some days, the healthy athlete may do specific skills for his competition event; other days he may trot for a period of time. My preference is to find a safe area to allow the dog to trot under his own control or on a loose lead. If you are going to use a trotter, you must be sure you know the right speed so as not to change the dog's stride length.

F. Linda Tellington Jones (2) demonstrates many training methods including walking across poles called cavaletti exercises. She says that the cavaletti work increases concentration, focus, gait, lightness of movement, and general agility. A dog can be conditioned for activities on days when he is not doing longer distance work.

G. Zink (6) warns us to be careful using retrieving as a form of conditioning. There is potential for injury depending upon the object thrown, the height has to jump to catch it, and his drive to retrieve. I have treated many dogs that twisted their backs during a jump through air going after a Frisbee or tennis ball. If they landed while turning, a serious biomechanical torque results, potentially changing alignment, damaging soft tissue and joints. If you use this mode of conditioning, avoid throwing any object too high or near a stationary obstacle that may be in the dog's path. Dogs colliding into stationary objects produces jam injuries. Exercise in an open field if possible.

H. Do resistance exercises to build endurance. When shallow water is available, encourage dogs to walk through it. The water serves as resistance against the legs. Some sports centers have under water tread mills. Walking through water takes more strength than walking on level land. Zink (6) suggests teaching sitting up to strengthen a dog's back muscles and play bowing to help them learn to stretch.

I. Make sure you plan in a rest day and plenty of playtime.

5. Equipment and Environment: If you are training in the field, walk the area looking for holes and uneven terrain that might cause the dog to fall or stumble. Obviously one cannot walk a track before doing a tracking test or walk an area that will be used in hunt tests but must rely on those who construct the test. Agility exhibitors can walk the course and check the equipment. There is a whole set of cautions regarding agility equipment that novice exhibitors need to learn such as providing shock absorption pads for the teeter to avoid the sudden jerk that can occur and produce neck injuries (7). All equipment should be sturdy and not too steep for the dog's size and ability level. Landing surfaces should be safe and resilient. I have watched agility matches held on grass in heavy rain and wondered why exhibitors did

not pull their dogs, as the footing seemed slippery. Dr. Van Dongen quotes the late Mr. Scharmhardt, a biomechanics lecturer, Utrecht Veterinary University, Netherlands who found that faster courses have the potential of producing more injury due to increased speed during jump. Also, there is increased risk of injury if there are turns during landing. Ultimately, exhibitors must assess an environment or the equipment and decide if they offer too great a risk for their dogs.

6. Recognition of Injury:

Frequently, during training, dogs fall, stumble, stutter-step and then maybe look normal to the average exhibitor/trainer. During these incidents, there is a perturbation in the dog's musculoskeletal system resulting in a minor damage. The dog may soon learn to compensate for the injury. If the injury is not addressed, or if the trainer encourages the dog to do more and more difficult tasks, the compensation ability cannot keep up with the demands. At that time, the dog may appear lame. It is important to have the dog checked with each incident and to keep screening for injury. The sooner one treats the dog after the insult to the system occurs, the shorter the rehabilitation time and the faster the dog can return to his activity. If a dog is injured, he should not be performing.

What are signs that the dog may have an injury?

- A. One body side may seem tighter or heavier than the other. The dog's body is no longer symmetrical.
- B. The dog may be hesitant to come out of his crate or to jump.
- C. The dog may spend more time sleeping.
- D. The skin over the injury site may jump when touched or the dog may suddenly dislike being touched.
- E. There may be stutter stepping before jumping.
- F. There may be changes in gait or posture. The dog's pre-injury sit may have been square with his feet tucked tightly under him but now sits on one hip with one or both feet splayed out.
- G. The dog performs at a lower level than he typically performs.
- H. If the injury is to a leg, the dog may not be bearing much weight on it.

7. Nutritional Support for the Canine Athlete:

According to Robert L. Gillette, DVM, MSE, Director, Sports Medicine Program, Auburn University (8) to best design a nutrition program for a canine athlete, we must know what type and level of activity they will be performing. After the dog's athletic program has been planned, the diet can be formulated including supplementation if necessary. Our dogs expend a certain amount of energy just to maintain their body's natural balance, the homeostasis. The energy needs of high-level performance dogs often exceed that maintenance energy requirement. Performance is divided into two groups, strength-power activities that are short in duration and endurance activities that exceed 4 minutes. Carbohydrates, fats and proteins all provide energy sources in our diets. Dogs who sprint need more carbohydrates in their diet unless they do repetitive sprints. In that case, a balance among carbohydrate, fat and protein is recommended. Canine athletes who do endurance activity need more fat in their diets. A comprehensive review of metabolism and the role of the three nutritional elements are beyond the scope of this article. The owner of a performance dog should make the study of nutrition a priority to guarantee that the dog has adequate energy and is at the correct weight.

Summary:

Golden Retrievers are stoic dogs that want to please their owners. It is our responsibility to study the demands of any task we ask of them, train and condition them, monitor their physical and emotional status as they work, feed them appropriately, and if they are injured, rest them and get them help. Preventing injury is much easier than treating it.

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