

US Eventing

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Conditioning Muscle Soreness and Massage

For Many Injuries During Competition, the Primary Problem May Result From the Effects of Conditioning.

By Robert Altman

Robert Altman, an equine sports massage therapist from New Salem, Mass., was the sports therapist for the Canadian and U.S. three-day event teams at the 1992 Barcelona Olympics.

In my seven years of working as a sports therapist with event horses, I have seen first hand how muscle restriction and soreness has limited the success and performance of many fine horses from novice to Olympic levels. Though many injuries occur during the heat of competition, further investigation often reveals that the primary problem can be traced back to when the horse was being conditioned for the job at hand.

Strength and flexibility are the goals of any athletic training program. In many sports, both equine and human, the normal pattern of exercise is what we call "sport specific". A runner will train by running; a weight lifter will lift weights, a swimmer with just swim, etc. This sort of program develops power but sacrifices suppleness. In eventing, we must train for three different sports, building power for running and jumping while maintaining suppleness for the lateral work of dressage. Stretching exercises, both under the saddle or from the ground, can only do so much to extract maximum performance from the event horse. As many human athletes have discovered, introducing massage therapy into their training program gives them the edge they need.

THE NATURE OF MUSCLE

Muscles work in pairs. For every movement, as one muscle contracts, an opposite muscle must release to allow the joint to move freely. To bend an elbow, a bicep must contract while a tricep must release. All movement is performed in this manner.

Muscles are made up of thousands of individual fibers which contract in response to nerve impulse. The strength of an individual contraction is determined by the number of fibers innervated. This means that for a muscle to be used to 50% of its total ability, 50% of the fibers are being used totally, rather than 100% of the fibers being used to half of their capacity.

A muscle is born with a set number of fibers. Although they can never be added to, they can be lost due to atrophy. Atrophy can be caused by lack of nerve impulse through lack of exercise or disease, trauma or the effects of extreme overuse.

The opposite of atrophy is hypertrophy. This is the enlargement of the muscle fibers through exercise. Hypertrophy is what we are trying to achieve

through conditioning. Easy exercise will not build muscle. It is only in the last 25% of muscle capacity that hypertrophy will occur.

INTERNAL RESISTANCE

In the fit horse, it is internal resistance that limits performance. In the horse being conditioned, resistance limits the potential for strength as well as increases the possibility of muscle injury.

Muscle tightening is the natural physiological response to trauma, be it from a blow or some form of overuse. This will initially show itself as an area sore to pressure or touch, along with a restriction in range of motion. A spasm is defined as a bunch of fibers unable to secure their own release, commonly perceived as a knot of tissue, as the muscle in question is asked to release to allow movement, additional effort is required to overcome the tightness. Continued use of this muscle pair will cause increased muscle spasms and pain, eventually leading the potential for a muscle tear.

Proprioception is a fancy term for coordination. Muscle tightening will affect proprioception and quality of movement as certain muscles are called upon to compensate for weakness, tightness or soreness in other areas. It is common to find that a horse who is off in one hind quarter is also tight in the opposite shoulder, synchronization suffers when a horse much overcome the resistance of a tight muscle.

Often an old injury to a foreleg will cause splinting of the shoulder muscles of that quarter. Splinting is a process where a muscle group will tighten in response to an injury by restricting the movement of a joint or body part. Long after the initial injury is healed, the muscles can remain tight and set the stage for loss of proprioception and risk of further injury.

MUSCLE SORENESS

A certain amount of muscle soreness is normal during the training process. This comes from new fibers being utilized in muscles as the level of work is increased. If a horse is not showing any signs of reaction to hard work, you are probably not approaching the 75% of muscle capacity needed for hypertrophy to occur.

Soreness in muscles that occurs immediately after exercise and may last several hours is not necessarily cause for concern. A more comprehensive warm-up, and cool down will help eliminate much of this type of problem. Delayed onset of soreness (24 to 48 hours after work) may be an indication of some degree of tearing of muscle fibers. This type of soreness usually is found when a new exercise is introduced or level of work is increased too quickly.

Muscle soreness that is accompanied by swelling or heat should be brought to the attention of a veterinarian. Muscle soreness which accompanies a weight bearing lameness indicates a veterinary problem as well.

MASSAGE AS ANTIDOTE

Generally, a muscle problem will present itself as a swinging lameness or restriction in range of motion. It could show itself as a resistance to bend in one

direction, a shortness of stride or decrease in performance. When dealing with athletes, anything short of maximum performance constitutes a problem.

Proper diagnosis of a muscle injury or restriction is essential in coming up with a treatment or rehab program. By watching a horse jogged up or ridden we can observe any irregularities in gait as well as any resistance to free range of motion. Palpation is the next step in the diagnosis and will usually verify and suspicion of a condition. A restriction in range of motion, muscle weakness, or inability of the horse to perform to its maximum potential is a sign that deep muscle massage may be the treatment of choice.

The techniques used to restore flexibility to tight muscle tissue are simple and straight to the point. Direct finger pressure to the spasm itself serves to break up the knotted tissue to aid in bringing blood and with it oxygen to the restricted area. What is called "cross fiber friction" is done by moving the fingers at right angles to the muscle fibers, separating the stuck fibers, freeing them to resume their normal range of motion. Compressions with the palm of the hand or loose fist to the muscle belly itself allow the entire muscle to accept that additional circulation.

Some passive range of motion may be called for. More often I will recommend exercises for the horse, with rider or trainer, designed to restore free range of motion and increase strength to the affected muscle or group.

It is important to remember that sports massage therapy is an accurate therapy designed to treat specific muscle problems and to enhance performance in the athlete. Massage therapy has been treatment of choice for muscle injuries for centuries. It is a treatment modality based on sound scientific principles of physiology and kinesiology. As an adjunct therapy to proper veterinary care or as a treatment alone addressing movement and performance problems related to musculature, massage therapy may be the treatment of choice for you or your horse.

Additional recommended reading –

Beating the Muscle Injuries for Horses, by Jack Meagher.

Conditioning the Sport Horses, by Dr. Hillary Clayton DVM.