

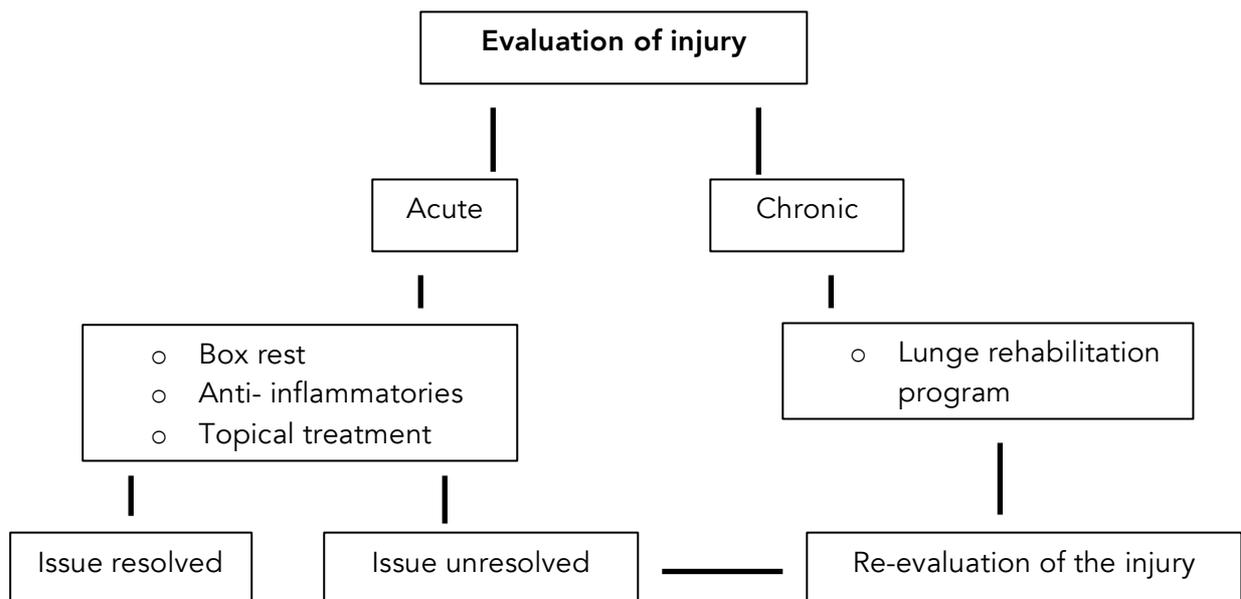
Lunge Rehab Program

Program concept

To facilitate healing and adjustment of the body back to its pre injury state, which involves a program of lunge work, stretching, acupuncture and other treatment modalities.

When developing and initiating this program it should be understood that there are evolutionary differences between horses and humans, the main difference is that horses are designed and function to be mobile whilst recovering from soft tissue injuries, this has allowed them to survive as animals of prey in the wild as they can be 'on the move' or 'mobile' while injured. This function does however make soft tissue injury symptoms much difficult to diagnose and allows the injury to develop into a chronic state before detected. Comments from the owner such as 'I cant put a finger on it' or 'he's just not right' are often used, as there are often multiple areas of the body compensating for the original injury.

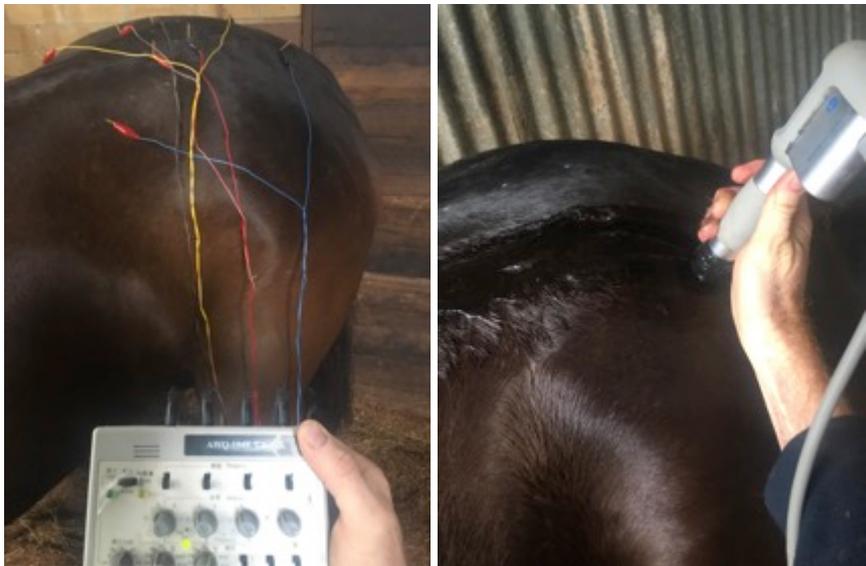
On inspection and palpation of a horse, a primary soft tissue injury can be found such as a muscle strain, spasm, tear, localized inflammation or an area with compromised circulation. Once the injury is found it can then be determined if it is an acute injury or if it has proceeded further to a chronic injury.



In an acute injury treatment only needs to address the primary injury as explained above, this would usually involve rest, use of anti-inflammatory and some topical treatment. This addresses local inflammation from tissue damage and helps reduce pain triggered from the large 'A' myelinated nerves, which are triggered from noxious stimuli in the injured tissue.

If untreated or there is a failure in treatment to resolve/heal the injury than the injury can develop into a chronic one. As mention above once the 'A' nerves settle, there are secondary 'C' delta nerve fibers, which become and stay active from the resuming noxious stimuli. Treatments to resolve pain from this noxious stimulus include:

- Aquapuncture, injecting 1-2ml of vitamin B12, Saline or traumeel into acupuncture points
- Electro Acupuncture using electrical stimulation of acupuncture point pairs
- Ultrasound and shock wave therapy used locally to resolve spasm, contracted muscle, scar tissue and increase circulation
- Hot and cold therapy such as liniments (alo gel, alogard), astringents (penetrene), heat reflective rugs (mirotec), ice and poultices
- Medications both local and systemic



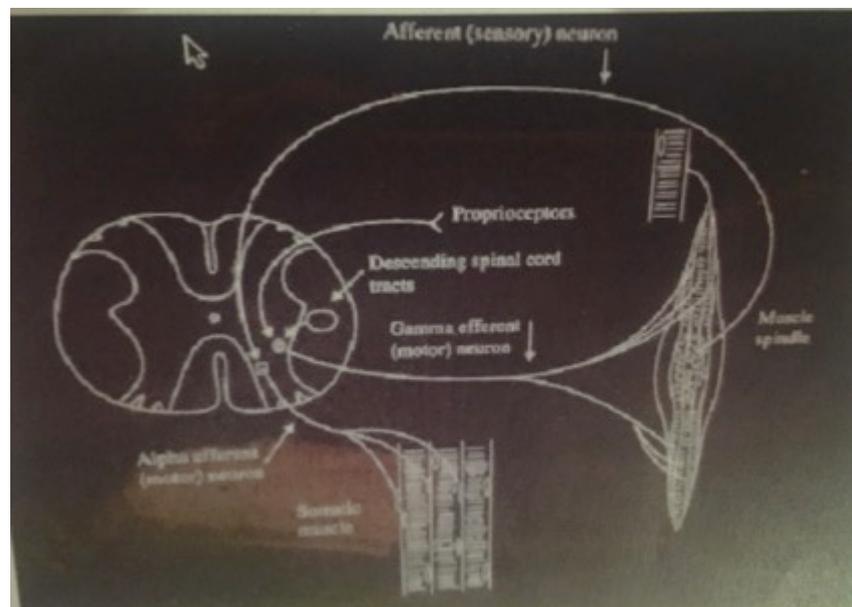
Once these therapies are initiated there are varying times for the noxious stimuli to resolve locally. However once the noxious stimuli has resolved the associated symptoms may still be apparent, which leads to another component of this rehab program which effects the free range of motion.

Modulation involves inhibition of noxious stimuli processing in the dorsal horn cells of the spinal cord, i.e. nullifying pain as nerve impulses travel through the spinal cord to the brain. This inhibition occurs through neurotransmitters such as dopamine, serotonin, acetylcholine, histamine and gamma-amino butyric acid,

which can all be influenced in different ways with acupuncture. They can be influenced by increases in adrenalin and cortisol secretion through the acute stage of injury which then causes an imbalance and/or underproduction of these neurotransmitters.

Modulation causes movement dysfunction through the production of muscle hypertonicity, this is a state of increased muscle tone both at rest and in movement in body regions associated with the noxious stimuli. As mentioned above, interneurons in the dorsal horn cells of the spinal cord function to inhibit what is known as the myotatic loop, when these neurotransmitters are imbalanced the ability of the interneurons to inhibit the myotatic loop is reduced, thus keeping the loop open between the sensory and motor neuron from the associated muscle (as shown below).

Treatment can be found through the application of acupuncture, to be specific through the stimulus of the dorsal spinal ganglion (nerve bunches along each spinal segment of the thoracic, lumbar and sacral regions) these dorsal ganglia excite and increase interneuron function in the spine and trigger the release of muscle hypertonicity in effected region. Correct location of treatment points is found through knowledge of acupuncture meridians and where their corresponding spinal points lie.



Often with treatment accompanying the reduction of muscle hyper tonicity is also a reduction in chronic pain (from the 'C' delta fibers) from remaining noxious stimulus and therefore increase in the horse's willingness to return to normal movement.

How the program works

Firstly, lunge program times basically depend on both the horse and how long the injury has been present for. A horse with a strained muscle that is no longer than a week old and hasn't had strenuous work with the injury should only require a 3-5 day lunge period and would only require treatment on the primary injury site. Where as a horse that has had the issue for months and has developed in to a chronic stage would require treatment on both the primary site and treatment for the secondary modulation component, this could require multiple treatments a 1-2 week intervals.

The lunge program is designed to benefit the treatment process by stimulating movement of the body, the key with the program is to STIMULATE and not to STRESS and this is always best evaluated on an individual basis based on the horses injury, its general health and condition and also the urgency to return the horse normal movement at performance.

The reason why lunging is a popular and successful exercise:

- It can be completed in a controlled environment i.e. safely fenced, on a consistent surface such as soft gravel or sand
- The horse can be exercise without a saddle and rider (which is important as most soft tissue injuries involve back tightness and pain)
- Different levels of resistance can be added, the psoas training system or the lunge roller with side reins can be used to engage and build up topline and lateral limb muscles. They can also encourage more use and flexibility of the body on the circle.
- Small lunge poles can also be placed a stride apart on the circle at the trot, this adds resistance physically and mentally though stimulation of proprioceptive nerves, adding a greater level of concentration required from the horse while exercising with the obstacles
- The direction can be consistently changes and gaits altered and changed to vary stress and even the stimulation on the body.
- Conditioning/weighted boots can be used to stimulate weak regions of the body while adding no stress to tight overused areas.



Note- The lunge program may be contraindicated for some soft tissue and joint injuries in the lower limbs.

There are other exercise programs that can be initiated and can be used successfully with the key to STIMULATE and not STRESS, they involve:

- In harness horses heavy cart exercise can be used as a resistance exercise at a slower walk or trot
- Heavy sand surfaces at a slow pace can add resistance and help with conditioning muscles while reduction concussion stress
- Water walker and swimming provides resistance and low concussion stress (swimming is contra indicated when there are issues along the front of the fore and hind limbs as they are excessively stretched and cause the body to lock up and over protect)
- Treadmill exercise is great as it provides movement on a consistent surface with limited weight bearing as there is no saddle and rider required. Some treadmills now allow for a changing in angle of the incline, which can help accommodate, fore and hind limb injuries and stress. It can also be helpful to stimulate bone, tendon, ligament and joint conditioning post injury.
- Light trotting and walking on hard gravel roads or tracks to stimulate bone strengthening and remodeling.

Balance is the key as different exercises can either STIMULATE or STRESS the body so variety and regulation is really important.

Time frame example

Day 1-4

Light lunge including walk and trot in a long and loose frame, starting with 5 minutes each way walking, 10 minutes each way trotting and finishing 5 minutes each way walk.

Day 4-8

Increased walk/trot intensity, the psoas or lunge roller can be added at a light resistance to stimulate more flexion through the body. 5 minutes each way walking, 10 minutes each way trotting and finishing 5 minutes each way walk.

Day 8-14

Similar walk/trot intensity, canter can be added and more pressure can be applied with side reins or psoas system, also trot poles can be added for resistance. Start with 5 minutes each way walking, 10mins each way trotting, 10 minutes each way cantering and finishing 5 minutes each way walk.

Day 14 onward

10min each way walk and trot with the saddle on before mounting. 20-30 minutes walk, trot and canter, mix the combinations and diagonals and look to add trot poles as improvement comes. A good long loose walk at the end of exercise help to disperse muscle adjustment soreness and tightness created.

Stretching

Stretching helps to reset and loosen tight muscles as well as activating weak in inactive muscles. The action is not a wrench but a slowly applied manoeuvre that is gradually increased. A good indication of a positive stretch is a shaking of the antagonist (opposite) muscle to those being stretched, for instance this would be seen in the hamstrings while stretching the hip flexors.

Forelimb backwards stretch

This involves flexing the knee, placing one hand on the forearm and one on the shin. The stretch involves drawing the leg backwards, which stretches the muscles along the front aspect of the forelimb and also along the top and back of the scapular and the topline at the wither.



Forelimb forward stretch



This involves flexing the knee, placing one hand behind the forearm and one on foot, the stretch involves drawing the limb forward while flexed. This stretches the shoulder flexors and front of the scapular. The leg can further be straightened to stretch the flexor muscles behind the forearm as well as drawn laterally/outward to stretch the cranial pectoral muscle.



Lateral neck stretch

This involves flexing the front leg and coaching the head around to the girth, it stretches the neck and topline as well as activating the rump, lumbosacral and sacral muscles, the latter helps release hip flexor and groins.



Hindlimb stretch

Involves flexing the hindlimb and stretching the limb backwards, it is done in three stages as shown in the photos. It stretches the hip flexor group, groins and hamstrings.



Contraindications

Then most common issues arising from a lunging program post treatment involve muscle training soreness associated and or supporting the primary injury. To give an example of this a muscle injury in the chest/pectoral region would be treated and a lung rehab program would be started, accompanying the chest would be associated neck and shoulder muscle hyper tonicity, if then the exercise program and treatment enhances the movement in these supporting muscles then soreness will develop and plateau or stir up the original symptoms. Treatment then needs to be adjusted, for example anti-inflammatory, rest or reduced exercise would be added.

Another common issue encountered in the program involves issues of the horse's feet. If the horse has been moving in a certain frame for some time due to injury compensation, there will be abnormal weight bearing on a limb or foot. A good example of this would be an issue causing the horse to tighten the inside of the forelimb and land with more concussion on the inside of the foot, this can create bruising and corns on the inside of the foot and softness and lack of growth on the outside of the foot bearing less concussion. Issues then arise once normal weight bearing is initiated and need to be addressed with hoof ointments, anti-inflammatory and backing off exercise.

When treating soft tissue injuries as a the primary injury, it is quite common for there to be a primary or secondary boney issue. A primary boney issue involves an underlying bone or joint disorder where the horse has compensated for the boney issue to the extent that soft tissue injury has developed into the primary area of restriction and soreness.

A secondary boney issue arises from a primary soft tissue injury where the horse has been worked through the soreness and has caused excessive loading on an associated bone, ligament or joint creating inflammation and tissue damage. These boney issues are hard to detect when the soft tissue injuries are showing an obvious cause of soreness, however once they are resolved with treatment and restriction is reduced, the boney issue can become more obvious due to enhanced movement of the body which has aggravated the boney issue and it's level of inflammation. Diagnosis of the bone issue needs to be implemented which involves veterinary intervention, this involves nerve blocks, x-rays and nuclear scintigraphy/bone scans to determine the issue and develop further treatment.

Extras

It is also worth taking a preventative approach to management of soft tissue injuries pre and post rehab program. This approach is based on getting to know your horse and applying the concept of stimulating and not stressing. Things like mixing up a lunge day between ridden days, looking at what footing or surface the horse is exercising on and changing them to suit the horse's weaknesses.

Being aware of the environment the horse is living in is important

Summer and/or hot weather

- Use ice/mud on the horses legs when exercising on hard ground
- Increase electrolytes to deal with increased body heat, waste products and sweating

Colder weather

- Keep the horse warm pre and post exercise, a 25% increase in warm up and cool down, groom or use hot water to wash the horse post exercise to keep warm
- Increase calories when feeding to help maintain increased body heat

Supplements can be of help in maintaining tissue nutrition in compromised areas. Joint cartilage and fluid can be helped by products such as 4cyte epiitalis, hylaronic acid, pentosan and glucosamine products.

Muscle and soft tissue supplements containing nutrients such as vitamin E, selenium, magnesium, potassium and sulphur (MSM) are important as tissue turn over and repair is at optimum through the rehab period

As a guide a 500kg horse on light to limited work would require daily

2-3kg of hay

2-4kg of grain/pellet mixture

5kg pasture

these levels would be adjusted according to body weight and condition

Proper saddle and tack fit is important to the horse's comfort and ability to move under saddle. A qualified saddle fitter can be sought out to evaluate and assist with ensuring proper saddle placement and comfort.

Regular dentistry work should be undertaken to address bit, teeth and jaw discomfort which when active play an important role in affecting movement, particularly when under saddle.

General veterinary needs should be up to date such as
-regular vaccination and worming

Farrrier work, as the foot is the first contact point to the ground, foot imbalances will create significant stress on muscles and soft tissues, hoof imbalances to look for include

- excessive toe length and with under run (low) heels
- inside and outside hoof wall imbalances

Conclusion

Follow up treatments are important to ongoing success with managing and dealing with contraindications to resolve soft tissue injuries. Treatments can be spread fortnightly to monthly to quarterly depending on the injury and the urgency to return the horse to performance. These follow up treatments continually help the muscle change and adjust with less soreness as well as continuing improvement.

A common change noticed post lunge program and treatment can come after the horse is given a short break say 1-3 weeks, this period gives the horse body a chance to catch up to an intensity of the program and allow for muscle adjustment, I have often seen increased muscle and fat development over the topline in this short rest period.

The rehab program can be changed either due to time limitations or closeness of competition dates. Secondary issues can be treated primarily to allow the horse to compete easier whilst compensating for the primary issue. Once the competition is completed the program can fully started and time can be taken to complete if properly.