

**BEVA** 2022 7 - 10 Sept  
ACC, Liverpool

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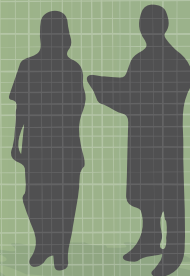
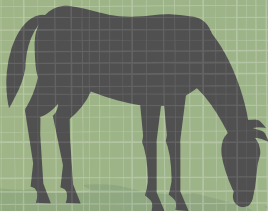
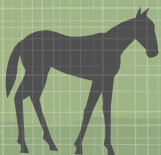
Championing the Equine Vet



**60th**



**Handbook of Presentations**



14.00

### Training techniques to improve proprioception and strength

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Techniques that are used to improve strength and proprioception may be used in the normal individual or in rehabilitation following injury. The primary difference between the two situations will be the rate of progression and intensity. Rehabilitation requires a much slower progression. Returning a horse to work following an injury or prolonged lay-off requires progressive retraining of movement dysfunction through controlled loading of abnormal or injured tissues and the re-education of altered movement patterns. It is limited by the weakest tissue. Progression is determined by serial re-evaluations of tissue and patient responses to the intervention. If applied too vigorously, therapeutic exercise can be detrimental. The goals of exercise include:

- Minimise the detrimental effects of rest and immobilisation
- Maximise strength and mobility of the injured tissue(s)
- Re-establish a cortical pattern of neuromuscular co-ordination and to develop correct, efficient movement patterns
- Restore strength and aerobic capacity
- Return to sport or work activities
- Prevent reinjury

There are many different exercises or interventions that can be used. It is important to establish a baseline level of conditioning or healing prior to beginning any type of exercise programme. Frequent re-evaluations should be done in order to assess the individual's progression and allow for modification of the exercise programme. Exercises that may be considered include:

- Flexibility exercises
- Neuromuscular re-education
- Balance, co-ordination and agility training
- Strengthening
- Endurance and aerobic conditioning
- Gait and locomotor training
- Functional training
- Sport-specific training

There are several aspects to improving proprioception. Not only does one wish to improve proprioception but also balance, co-ordination and agility. The goals of proprioceptive retraining include:

- Develop flexibility and suppleness
- Work in a relaxed frame
- Exposure to a variety of surfaces
- Incorporate variety into hand walking programme during early rehabilitation

The goals of balance, co-ordination and agility retraining include:

- Provide a link between hand walking of early rehabilitation and return to full work
- Retrain the co-ordination and timing of the neuromotor system
- Limit the stress placed on recently healed or deconditioned tissues
- Introduce light strengthening and conditioning

There are many different methods to improve proprioception, balance, agility and co-ordination. These include elastic bands, pastern stimulators/weights, different surfaces, obstacles, platforms, seesaws, ground poles and cavaletti.

Elastic bands encourage the horse to:

- Bring hindquarters underneath
- Round the topline
- Attain balance
- Co-ordinate movement of hindquarters with forequarters

Cavaletti have the following effects:

- Activate hindleg – increased flexion and protraction
- Stimulate abdominal contraction
- Raise the back
- 'Telescoping' manoeuvre of the neck
- Improve strength and balance
- Improve ability to carry rider
- Train at all three gaits with/without rider

Strengthening and conditioning may be accomplished by several different methods that include:

- Hill work
- Ponying
- Aquatic exercises
- Sport-specific training

The benefits of hill work include:

- Strengthen abdominals
- Strengthen muscles of propulsion
- At lower speeds achieve cardiovascular conditioning with minimal impact

Ponying allows a horse to be exercised without the need of being ridden or lungeing. It may be an effective way to begin longer distance exercise and is less control than with handwalking. There is a tendency to work in elevated head posture. If the head is pulled towards the lead horse, balance and gait biomechanics are altered so it is important to maintain a straight line if possible.

Aquatic exercise may be accomplished with swimming or an underwater treadmill. Swimming is an excellent tool for cardiovascular conditioning. There are several considerations when choosing swimming as a method of conditioning. These include:

- Nonimpact exercise
- Aids in maintaining fitness
- Is anaerobic
- Does not train the 'weightbearing' muscles
- Works the horse in an inverted frame
- Not all horses can swim well
- If the horse is 'flailing', can cause injury

The underwater treadmill provides resistance to motion and some weightbearing. It is an excellent tool for muscle strengthening and improving joint motion; however, it does not provide the same cardiovascular conditioning as swimming. There are several considerations when considering the use of an underwater treadmill. These include:

- Low impact exercise
- May be aerobic or anaerobic
- Accentuated active range of motion of limbs
- Trains weightbearing muscles
- Trains/strengthens in proper frame
- Can vary speed and resistance (water height)
- Can begin activity earlier after injury or surgery

At some point during rehabilitation or conditioning, a normal ridden work or sport-specific training program must be resumed.

**Table 1** is an example of a generic back to work programme. The back to work programme would be a transition from no ridden work to sport-specific training. The goal is to progressively increase the intensity and duration of ridden work. Once a horse has completed the ridden back to work programme, sport-specific training may be instituted. The following are considerations for sport-specific training:

- Is extremely important in the horse

**Table 1: Generic back to work programme; Initially start with 3 days of riding. After the second week, can be increased to 5 days per week if desired.**

Week	Walk	Trot	Walk	Trot	Walk	
1	20 minutes walking under saddle					
2	30 minutes walking under saddle					
3	40 minutes walking under saddle					
4	10 min	2 min	6 min	2 min	10 min	
5	10 min	3 min	4 min	3 min	10 min	
6	10 min	4 min	2 min	4 min	10 min	
7	10 min	6 min	2 min	6 min	10 min	
Starting Week 8 add canter						
Week	Walk	Trot	Canter/Lope	Walk	Trot	Walk
8	10 min	2 min	2 min	5 min	2 min	10 min
9	10 min	3 min	2 min	4 min	3 min	10 min
10	10 min	2 min	3 min	4 min	2 min	10 min
11	10 min	4 min	4 min	4 min	4 min	10 min

- After a lay-off, return to full activity must be progressive
- You must be confident in the extent of the recovery or condition before the horse begins competing

When planning a programme, one must consider the current condition of the horse and build a progressive programme that considers any existing tissue weakness and the overall condition of the horse. Gradual increasing duration and intensity with frequent re-evaluation is always preferred.