

BE WISE ABOUT WATER EXERCISE



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Water exercise can be beneficial, but requires an understanding how to best utilise it and consideration of the individual horse.

Rehabilitation programs designed to manage arthritis and musculoskeletal injuries in people often incorporate some form of water exercise.

Proposed beneficial effects include improved endurance, joint mobility, muscle strength and balance and reduced limb oedema. The best way to use water exercise - pool (swimming), beach (wading, surging and swimming), water walker and underwater treadmill exercise - in the training and rehabilitation of racehorses is not as clearly established.

However, many of these forms of exercise are popular because they enable the horse to exercise with reduced impact loading on the limbs and add welcome variety to the program.

There is clear evidence that swimming promotes aerobic fitness although there is some debate over how intense this exercise is compared to a gallop, particularly if horses swim their own pace. Even with strenuous swimming exercise, the heart rate reaches a lower maximum (150-200 beats/min) than at a peak gallop (240 beats/min) presumably due to surrounding water pressure aiding return of blood to the heart.

Lactate levels are also lower after swimming. Compared to galloping, the body temperature does not get as high when swimming as heat is transferred more readily to water than air. Heart rate recovery occurs sooner and should be less than 60 beats/min within 10 minutes after a swim.

Horses adopt a different breathing pattern when swimming, taking 25-28 breaths per minute, 5 times less than the 120 breaths/min at a gallop. After exiting the water this increases to 160 breaths/min. The pressure in the airways and therefore respiratory stress is greater. Although there is not uniform agreement, most trainers do not swim horses that are bleeders, have respiratory disease or wind problems.

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As horses differ in their fitness, swimming technique and ability it is difficult to standardise swimming programs. As a guide - depending on whether swimming is used to replace or supplement track work or simply to refresh - most horses start with several straight laps (4-8 min) and increase to 8 min or more continuous laps in a circular pool 3-6 days per week within 6 weeks. Some do several 5-8 min sets with 1-3 min rest between.

Swimming is used to replace track work in the management of some injuries but is better used to supplement some track work.

Clearly, swimming is not the same as land based exercise and this offers both advantages and disadvantages. In one of the few studies to assess the effect of water exercise on joint disease, underwater treadmill exercise improved the range of carpal motion, reduced joint capsule fibrosis and inflammation of the joint lining and improved standing balance in horses with carpal joint osteoarthritis.

However, it is of great importance to recognise that some speed work on the track is needed to adapt the musculoskeletal tissues, particularly bone to fast exercise. A horse that has been swimming while recovering from an injury may be fit in terms of cardiovascular conditioning and muscle strength and able to go fast before the bones are adapted putting it at risk of bone injury or fracture.

Muscles are used differently when walking in water and swimming than during track work. To overcome drag in water the muscles that act to accelerate the limb in the direction of movement (eg. the quadriceps at the front of the thigh) must work harder while the muscles that normally act eccentrically to decelerate the limb before it hits the ground during a gallop (eg. the hamstring muscles at the back of the thigh) are minimally activated during movement through water. Water based exercise is therefore unlikely to train muscles in the same way as ground exercise, but we currently don't know the impact of this on risk of muscle soreness and injury.

Horses adopt different limb movement strategies in water. They also show a postural change, extending their neck and back, and rotating the pelvis more. Some horses naturally, or due to lower back-pelvic or hindlimb dysfunction, swim with a lop-sided action. Observing for this through clear water is important to avoid fatigue and soreness due to incorrect use. Avoid swimming or use caution if a horse has upper hind limb lameness or back soreness.

Variables to consider in addition to the duration and intensity of water exercise include the water depth, temperature and salt content.

Buoyancy increases with depth; water to the level of the pelvis reduces the weight of the horse by 75% compared with only a 10-15% reduction in weight bearing in elbow depth water.

The water depth also affects the stride length and frequency. As water depth increases, stride length increases and stride

frequency decreases. Furthermore, water depths varying between hoof and shoulder height have different effects on the range of motion of the various joints and back and should be considered when using an aqua walker, underwater treadmill or when wading at the beach.

For example, the range of motion of the carpus is greatest in hock depth water, hock motion is greatest in stifle depth water, while fetlock flexion is greatest in hock depth and fetlock extension is greatest at fetlock depth. In rehabilitation of certain injuries this may be important. For example, excessive fetlock extension may be best avoided following a suspensory ligament injury.

