Equine Hydrotherapy

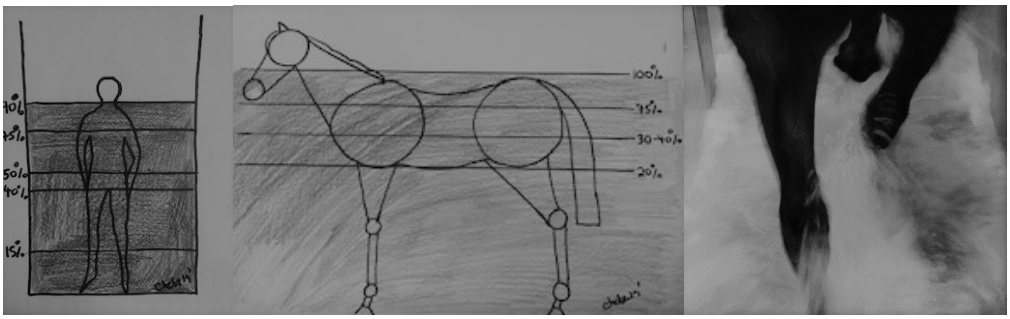
What is water buoyancy? Buoyancy is the ability for something to float in water – the deeper you are the lighter you will be. “Buoyancy is defined as the upward thrust acting in the opposite direction of gravity” Thein J, Brody LT. Aquatic-based rehabilitation and training for the elite athlete. *J Orthop Sports Phys Ther.* 1998;29(1):32-41.

The principles of buoyancy are used in equine aqua-treadmill exercise in three different ways:

Assists – by decreasing axial load on the limb you reduce the stress and the force attenuation is reduced allowing the limb to go through a more functional range of motion. This also aids with pain relief.

Supports – buoyancy decreases the amount of pressure and weight bearing on a horse’s limbs also helping prevent contralateral limb complications.

Creates resistance – increasing depth of water, increases resistance. Increasing levels of water has different effects on a horse’s action. At lower levels of water it is easy for the horse to step through but once the level gets to the carpus/tarsus level they can no longer reach and have to lift the leg up and out of the water to overcome the resistance, this increases the horses stride length. Recent studies have shown that increasing water depth increases stride length Scott R, Nankervis K, Stringer C, Westcott K, Marlin D. The effect of water height on stride frequency, stride length and heart rate during water treadmill exercise. Equine Vet J 2010 42:662-4.



The buoyancy in humans is different to horses. Human buoyancy does vary between a male and female but on average the percentage in weightbearing is at neck level 90%, chest level 75%, 50% umbilicus, 40% symphysis pubis. In horses the percentage of weightbearing is at 5-6 inches above the withers 100%, tuber coxae level 75%, point of the shoulder level 30-40% and elbow level 20%.

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