Water Treadmill Therapy

Exercising in water has many benefits that include improving strength, muscular endurance, cardiorespiratory endurance, range of motion, agility and psychological well-being while minimizing pain.

The forces that work in the water are: relative density, buoyancy, hydrostatic pressure, viscosity, resistance and surface tension.

Let's look at each one and see how we can use it to our benefit.

Relative density: Basically fat things float. This is one of the huge benefits to water for our obese and arthritic patients

Buoyancy: is the force pushing opposite to gravity. We use this force to help our weak patients stand so they can exercise and decreased to force on diseased or injured areas.

Hydrostatic Pressure: is the pressure of the water that exerts onto the body itself when it is immersed. Since it is an even pressure it provides an improved environment for working with swollen joints or edematous tissues.

Viscosity and Resistance: are the extra forces required to move through a water medium compared to air. Therefore water can provide resistance to help improve cardiovascular fitness and muscle strength.

Surface tension: is the increased adhesion at the surface of the water that increases resistance at that level. This may be a factor when determining the height of the water that we desire.

The physiological effects of working in water compared to on land are an increased heart rate, respiratory rate and metabolic requirements given the same amount of exercise. Since the water decreases the impact on joints and soft tissue there is less inflammation produced in water than on land. The water itself can increase proprioceptive feedback to aid in neurologic rehabilitation. Water exercises are generally less painful than exercises on land. This helps maintain range of motion and functional movement before the strength gains needed to perform the same movements on land are achieved.

Heated water provides some additional benefits. These include increased circulation to muscles, increased joint flexibility and decreased joint pain.

Cardiovascular changes happen slightly differently in water than on land. Blood pressure and heart rate have a trend downwards in water and cardiac stroke volume tends to rise. Because of the need for the heart to change functioning in water, animals with congested

heart disease should be carefully considered before any water treadmill therapy is instituted.

Candidates for water treadmill therapy

- Post op fractures
- CCl stabilization
- Neurologic conditions
- Tendonitis
- Conditioning
- Reluctance to use a limb
- Lack of strength ROM proprioceptive ability or weight bearing status

Chart for evaluating appropriate water level

Ground	no water
Level 1	greater trochanter
Level 2	stifle joint
Level 3	hock
Level 4	bottom of the foot

Maximum motion

	Flexion	Extension
Shoulder	Level 1	ground
Elbow	Level 3	Level 3
Carpus	Ground	Level 4
Hip	Level 2	ground
Stifle	Level 2	ground
Hock	Level 2	Level 2

Minimum motion

	Flexion	Extension
Shoulder	ground	Level 1
Elbow	Level 4	ground
Carpus	Level 4	Level 1
Hip	ground	Level 1
Stifle	ground	Level 1
Hock	ground	Level 1