Therapeutic Use of Aquatic Exercise

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Peer Teach
MOV 300-04
Properties of Water
(Datillo & McKenney, 2011)

* Buoyancy
* Hydrostatic Pressure
* Center of Buoyancy/Gravity
* Viscosity
* Turbulence
* Warm Water
* General Biologic Effects of Immersion
Buoyancy

* “The force opposing gravity that results in a feeling of weightlessness when immersed in water” (Datillo & McKenney, 2011).
* Benefit: People who are limited in weight bearing exercise can participate in aquatic exercise that they could not safely participate in on land (Datillo & McKenney, 2011).
Hydrostatic Pressure

- The pressure exerted by water molecules on an individual's body as it is immersed (Datillo & McKenney, 2011).
- Benefit: The level of immersion can effect circulation and swelling (Datillo & McKenney, 2011).
A person participating in aquatic exercise will find an equilibrium when their center of buoyancy and their center of gravity are in the same vertical line (Datillo & McKenney, 2011).

Benefit: Individuals experiencing physical impairments including edema and paralysis can adjust their center of gravity in water by repositioning their body to find center of buoyancy (Datillo & McKenney, 2011).
Viscosity

* The attraction of water molecules to other water molecules and the attraction of water molecules to a person’s body (Datillo & McKenney, 2011).
* Benefit: Creates resistance in water when exercising which increases with velocity (Datillo & McKenney, 2011).
Turbulence

* Uneven patterns of water movement (Datillo & McKenney, 2011).
* Benefit: Can be used to assist individual in moving through the water if another individual creates turbulence in the direction of movement OR can be used to improve balance and coordination when turbulence is created against the direction of movement (Datillo & McKenney, 2011).
Warm Water

* “Increased circulation to arms and legs and blood supply to muscles occurs due to the dilation of blood vessels from exposure to warm water” (Datillo & McKenney, 2011).

* Benefits: When combined with the benefits of buoyancy, individuals can experience greater range of motion (Datillo & McKenney, 2011).
General Biologic Effects of Immersion - Musculoskeletal System (Datillo & McKenney, 2011).

- Improvement in oxygen levels of delivery to muscles
- Improves removal of lactate and other metabolic end products
- Immersion decreases edema in extremities
- Can increase muscle relaxation
- Higher level of energy expenditure without excessive strain on joints
- Buoyancy decreases joint compression
Aquatic Therapy

- The use of water to improve physiological and psychological functioning (Broach & Datillo, 1996)
- Improvements have been observed for many people with disabilities including individuals with multiple sclerosis, cystic fibrosis, spinal injury, arthritis, orthopedic impairments, cerebral palsy, acquired brain injury, ALS (Broach & Datillo, 1996)
Watsu which uses the movements of Zen Schiatsu to decrease muscle tension, promote self awareness, relaxation, and emotional release

* Stabilization techniques for improving balance, coordination, strength and circulation to joints

* Bad Ragaz which uses the water to provide proprioceptive neuromuscular facilitation patterns

* Deep or shallow water strength or endurance exercises.
Benefits of Aquatic Therapy

- Decreased levels of pain (Langridge & Phillips, 1988)
- Prevention of bone loss (Benedict & Freeman, 1993)
- Improvements in motor performance (Broach & Dattilo, 2001)
- Increased strength (Broach & Dattilo, 2003)
- Increased endurance (Routi, Troup, & Berger, 1994)
Aquatic Exercise in Action

* [http://www.youtube.com/watch?v=VBnrpiiX3LU](http://www.youtube.com/watch?v=VBnrpiiX3LU)
References


