Accelerated Healing of Aquatic Therapy

Workers' Compensation

Presented by: Greg Hankins, CEO & Danielle Hinson, PT, DPT

The Properties of Water

- **Buoyancy**
  - Allows the patient to safely move a body part with minimal effort while supporting the rest of the body, decreasing lumbar stresses, decompressing the joints and minimizing pain
- **Hydrostatic pressure**
  - Compresses deeply submerged body parts to increase balance and help reduce edema and inflammation pain
- **Viscosity/turbulence**
  - Increases resistance to moving body parts directly proportionate to the person's efforts while increasing strength and conditioning
- **Temperature**
  - Allows for the immediate shunting of blood to all joints and muscles which increases flexibility while reducing pain and muscle spasms

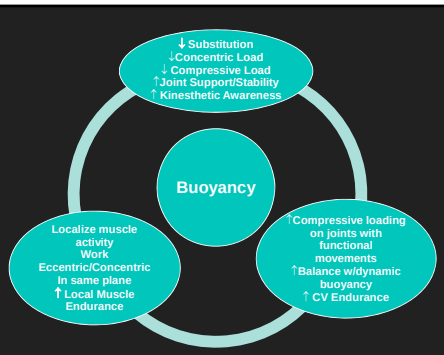
Dynamic Buoyancy

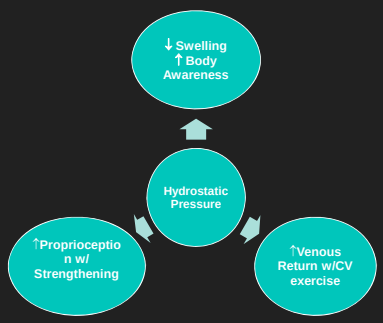
- 3 Types:
  - Buoyancy Assisted- movement bottom of pool to top.
  - Buoyancy Supported- movement along top of water only.
  - Buoyancy Resisted- movement at top of water to bottom.

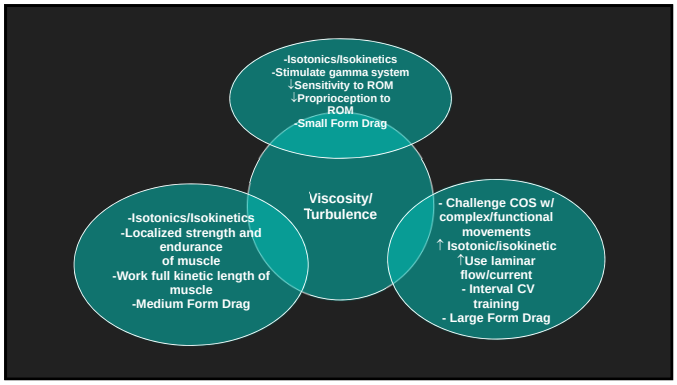
Gait and Weight Bearing

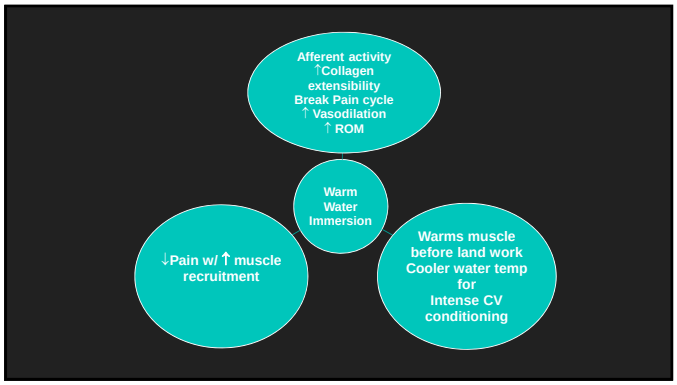
- % of WB according to 5 anatomical landmarks and speed of motion:

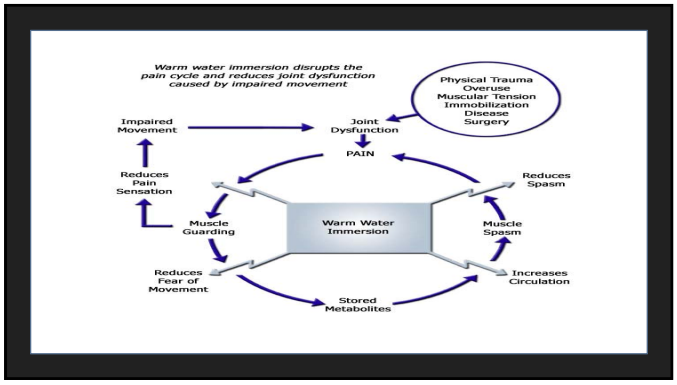
	Static	Slow	Fast
C7:	0-25% (10%)	20%	25%
Chest:	25%	30%	40%
Xiphoid:	25-50%	45%	55%
L3:	50%	60%	80%
ASIS:	50-75%	75%	80-85%[1]






-Isotonics/Isokinetics
-Stimulate gamma system
↓Sensitivity to ROM
↓Proprioception to ROM
-Small Form Drag
Viscosity/ Turbulence
-Isotonics/Isokinetics
-Localized strength and endurance of muscle
-Work full kinetic length of muscle
-Medium Form Drag
- Challenge COS w/ complex/functional movements
↑ Isotonic/isokinetic
↑Use laminar flow/current
- Interval CV training
- Large Form Drag


Afferent activity
↑Collagen extensibility
Break Pain cycle
↑ Vasodilation
↑ ROM
Warm Water Immersion
↓Pain w/ ↑ muscle recruitment
Warms muscle before land work
Cooler water temp for
Intense CV conditioning


Warm water immersion disrupts the pain cycle and reduces joint dysfunction caused by impaired movement
Physical Trauma
Overuse
Muscular Tension
Immobilization
Disease
Surgery
Impaired Movement
Joint Dysfunction
PAIN
Reduces Pain Sensation
Reduces Spasm
Muscle Guarding
Warm Water Immersion
Muscle Spasm
Reduces Fear of Movement
Increases Circulation
Stored Metabolites

Why it matters

- *"Workers who do not return to work quickly are unlikely to return later."*
  - No return to work after 1 year from injury resulted in:

Compensation for: lost wages, medical services, and other support services

Mathematica Policy Research

What are the Stats?

- Out of work >6 months = 50% chance of ever returning in any capacity[19]
- 80-90% of injured employees would rather return to work than be on disability[19]
- Positive return to work factors:
  - Higher education and socioeconomic status, higher self-efficacy and optimistic expectations for recovery and return to work, lower severity of injury/illness, return-to-work coordination, and multidisciplinary interventions[20]
- Negative return to work factors:
  - Older age, female, higher pain and disability, depression, higher physical work demands, previous sick leave and unemployment, and activity limitations[20]

Workman's Compensation

- Aquatic Environment Provides:
  - Earlier ROM
  - Earlier Strengthening
  - Improved kinesthetic awareness
  - Earlier recovery times *with* return to work

Inclusion Criteria

From land evaluation:

- Pain rating of joint with A/R/PROM or with ADLs, work duties, recreational/competitive sports
- % AROM deficit as compared to uninvolved side
- % Score w/ Disability Questionnaires
- % Score w/ Functional Questionnaires
- Weight bearing restrictions

"Bodies move better in water and can progress back to land with decreased pain and improved function." Greg Hankins

Questions?

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