Strength Training for Development

Theory and practice

First Considerations

- How does the body ACTUALLY work ?
- What Pathologies are getting in the way of swimming strokes
- Consider the idea of QUALITY OF MOVEMENT
- REMEMBER: Begin with balance

Evolution, Posture & The Scapular Plane

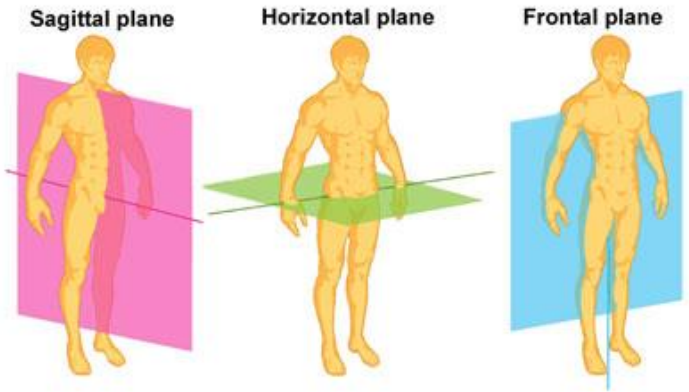
- Evolution: gravity and the human skeleton on land and in water
- Posture not power: Can we wake up our fascial system ?
- Scapula, Fascia, muscles and moving through the water

Considerations Before Starting

- Muscles need to lengthen before they shorten
- Breathing as a control parameter
- Teaching order for learning and athlete protection
  - Parasympathetic system
  - Body understanding
  - Quality of movement
  - Strength for the water

Focusing Attention on Land

- Focus Points in Order
  1. Feet
  2. Hips
  3. Back & lower spine
  4. Shoulder & arms



- Gravitational Resistance on land
  - Mainly based in the Pelvis, the Talus (lower ankle) and neck

- 3 planes of movement

Foundations: Primary Human Movement Patterns

- Squat
  - Bodyweight, Goblet, Front Squat,… only for advanced Back Squat
- Pull
  - (Vertical/Horizontal) Assisted, Bodyweight, loaded
- Hip Hinge
  - Bodyweight, Loaded, Unilateral
- Push
  - (Closed Chain-Open Chain) Modified, Bodyweight, Loaded
- Lunge
  - (Static-Dynamic) Split Squat, Walking Lunges (multidirectional)
- Carry
  - Farmers carry, Suitcase carry, Goblet carry, waiters carry
- Ground Based
  - Supine Ab work back supported, Rolling, Prone Abs- Back unsupported, Crawling

No Bad Exercises, Just Poor Execution of Movement

- Begin with minimum equipment exercise plans for swimming
- Progress towards more advanced movements and equipment

Dynamic Warmup

- Minimize Static Stretching
  - Walk-squat, Open hip circles
  - Drag Lift and Sumo Slide, Spiderman crawl
  - Back raises for balance, Standing on hands (with partner support)
  - Walk, jog, sprint

Ab Work: The Core

- Bicycles (multi direction)
- Wide leg sit-ups
- Planks
  - 1 arm reach, with 1 arm and opposite leg
- V ups
  - Reach ups full and one side only
- Back supported crunches- grab heels
- Med Balls in ankles lift, raise, and support lift with bent knees
- Partner throws
- Opposite arm leg crawls
- Swiss ball work

Overhead Bar Exercises

- Leg Lifts and Raises**********
- Leg circles
- Pull-ups
- Lateral pull-ups (keep shoulder in socket)
- Partial scapular pull-ups
- Assisted (towel or band) pull-ups

Medicine Ball Exercises

- Throwing, moving and catching the medicine ball captivated and has been a mainstay of western swimming land training since the 1930s
- Extremely customizable and allows for movement-specific innovation
- Useful for ALL levels, not just young swimmers
  - Dynamic nature of the med ball allows for safer repetition and the development of functional muscular depth over time that can help swimmers

Medicine Ball Exercises

- Throws
  - Squat, chest pass, overhead, partner, wall bounce, pass while kicking on front, thrust while kicking on back, full body squat throws, etc.
- Asymmetrical work
  - Ball pushups, alternate arm pushups, burpees, combination with throwing
- Abdominal
  - Sit up with ball and stand, repeat and throw, V ups with ball, receive pass and sit up throw, twisting sit ups side to side with ball
- Leg lifts with ball, legs up ball reach etc.

TRX Band Exercises

- Atomic push-ups
- Scapular back lift
- Suspended incline press
- Tricep extension
- Single leg squat
- Suspended back row
- Pushups (symmetrical/asymmetrical)
- Pull up from suspended bridge
- Overhead chest raise

Stretch Cord and Bench Exercises

- Develop exercises and patterns for your swimmers
- Set up a training scheme that can be physiologically compatible with the training phase at each part of the season or the development stage.

- Example: 20 minute exercise pattern for Bench or Cord
  - 20 sec on, 10 sec rest with 60 sec Rest In between: repeat 8 times
  - 90 sec on, 30 sec Rest do as many reps as possible: repeat 5 times
  - 4 Minutes on 1 Minute rest as fast as possible: Repeat 4 times

Asymmetrical Exercise Circuit

4x

Ex 1 Suspended Back raise
Ex 2 Goblet Squat
Ex 3 Dumbbell Skiing
Ex 4 Turkish Raise with kettlebell

Round 1	21(1)	13(2)	8(3)	4(4)
Round 2	13(1)	8(2)	5(3)	3(4)
Round 3	8(1)	5(2)	3(3)	2(4)
Round 4	5(1)	3(2)	2(3)	1(4)

Variables are rest, weight load, speed of exercise

The Future:
Do Muscles Matter?

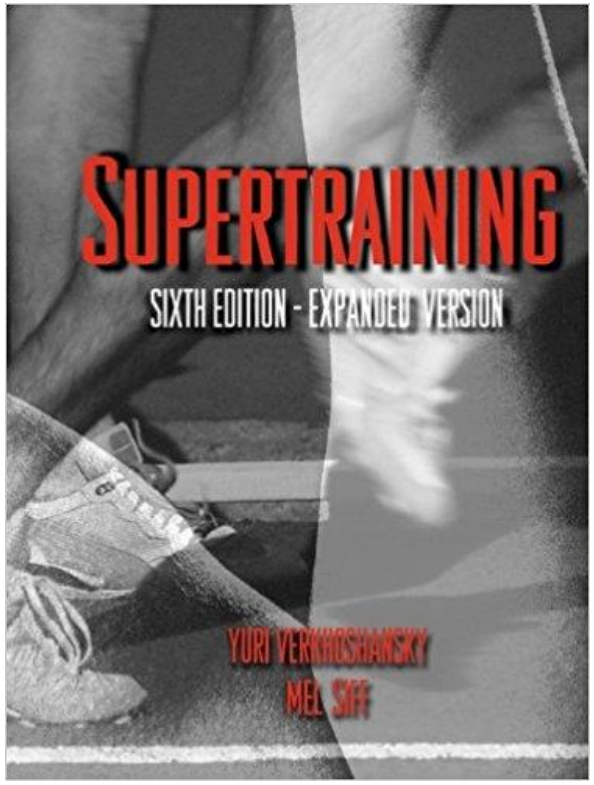
- Theory One- Dynamic Systems Theory
  - Strength Model
    - Assemble a Coordination Pattern
    - Gain control of the Pattern
    - Fully optimize the skill level of the control pattern
- With lots of movement variability; how do we do the above?
  - Perceptual motor coupling!
    - PMC is used to employ and control “Degrees of Freedom” based on countless possibilities
    - On land- we use games to teach this understanding
    - In the water?

Frans Bosch- The Pioneer

- "Bring things together, but…?!"
  - Just because something changes doesn't mean EVERYTHING changes or is changing
    - Fixed elements= attractors, changeable components= fluctuators
  - "Ideally we have enough changeable components to adapt and NO MORE"
  - "A good description of training a sporting movement does not prescribe ideal joint angles, but one that describes valid underlying principles of the movement and leaves room for variants that develop from self-organization and are related to the individual properties"
  - "Think outside the body! Intention of the movement, not flexion of the muscle"
  - Everything has a cost- energy!

The Future: Do Muscles Matter?

- Theory Two- Old Russians: Yuri Verkoshansky
  - Supertraining
    - Algebraic relations in training
    - Kinematic system and perfecting the motor function of movement
    - Endurance and functional specialization
    - Mini-max
    - PNF as training system
    - Delayed training effect and long duration work



The Future:
Do Muscles Matter?

- Theory Three: Homayun Gharavi
  - Fascia Stretch
  - https://www.youtube.com/watch?v=w6rIjJySNSQ

Conclusion

- My current program
  - Handout
  - Discussion
  - Questions?