



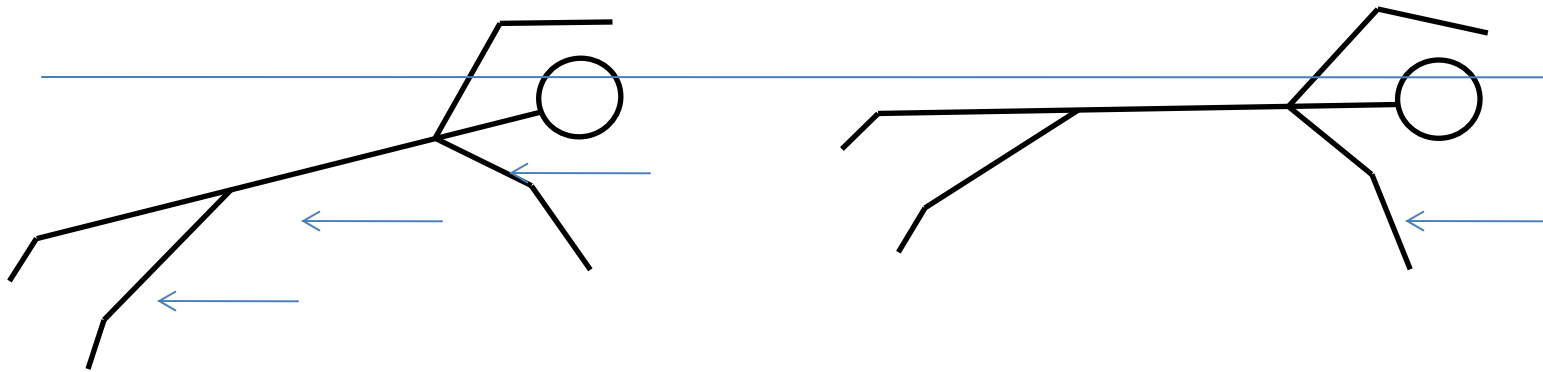
Swimming Consultation and Technique Coaching
"Blending Art and Science"

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Body Alignment



Enhanced Horizontal Alignment

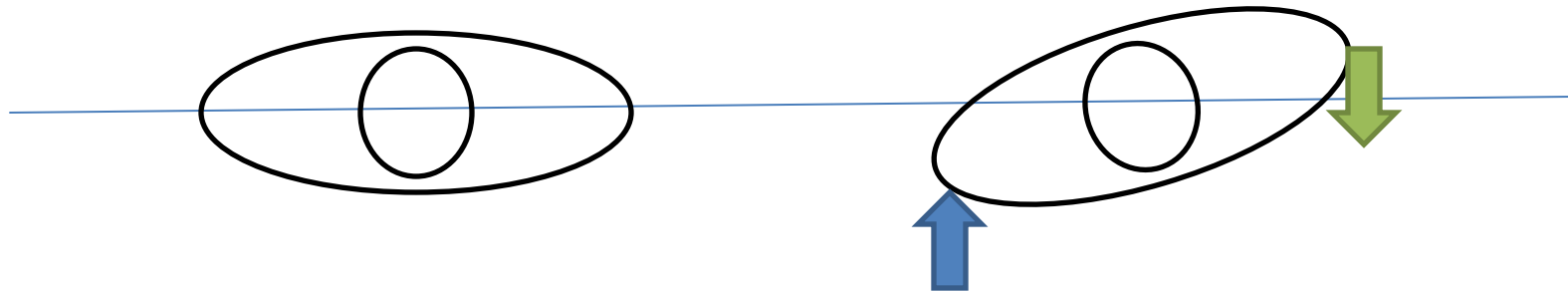
- If you decrease resistive drag by 12-14%; this corresponds to a 5% faster performance for a constant effort and propelling efficiency
- Accounts for 8-10% of variance in 400-m FR times (Chatard et al, 1990)
- Can alter energy costs by 6% (Lavoie et al, 1990)
 - The degree of body inclination is the main determinant of energy cost regardless of gender or skill (Capelli et al 1995)



Body Alignment

Enhanced Horizontal Alignment

- Horizontal alignment is the primary source for generating body roll (Yanai, 2004)
- **Body Roll in turn affects hand speed and hand path**
- An increase in body roll increases hand velocity and medial hand motion (Payton, 1997; Prichard, 1993)



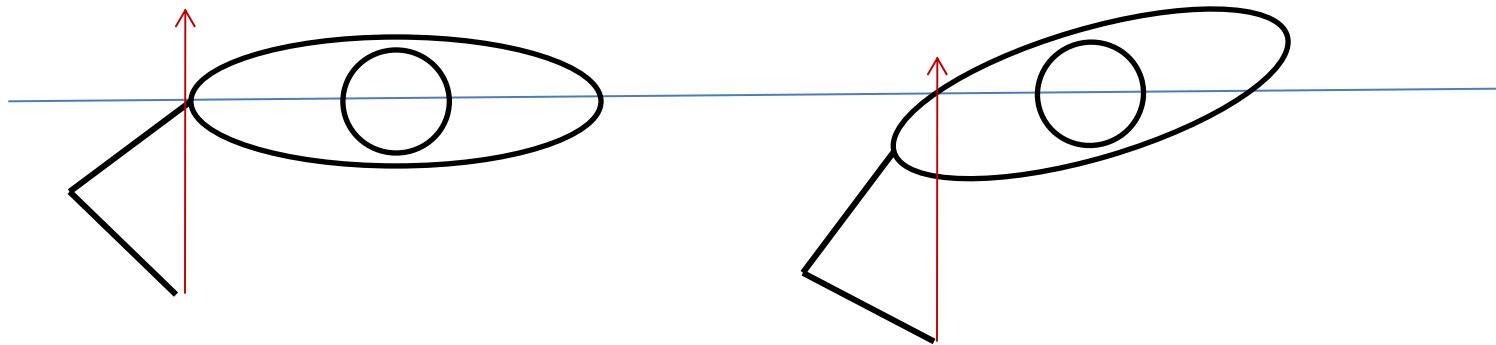
Technical Points

- 👁️ Body Roll & Hand Position
- 👁️ Pressure on the Palms
- 👁️ Hand Relative to Hand

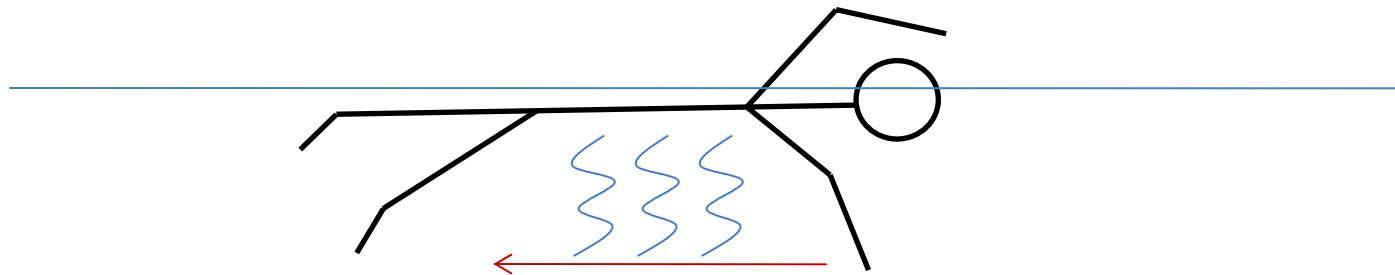


Body Roll & Hand Position

Increasing body roll changes hand position so that your hand is now under your body



You can utilize the column of water being pushed backward by your hand to push your body toward the surface, aiding alignment



Body Roll & Hand Position



Body Roll



No Body
Roll



Body Roll & Hand Position

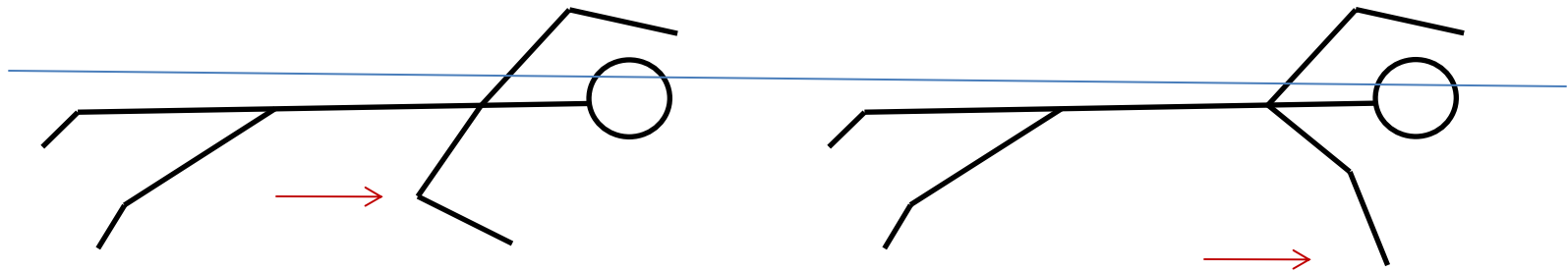
Things to Incorporate

- Initiate roll with your hips not the momentum of your arms
- 🥽 Reach for something on a high shelf
- 🥽 Belly button facing side walls

- Fully extend elbow without 'reaching' back
- 🥽 Thumb brushes thigh at resting arm length
- 🥽 Hand exits the water before elbow



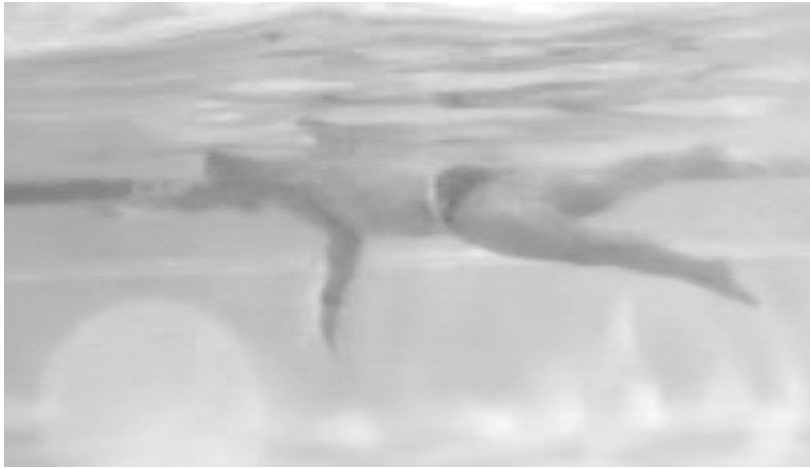
Pressure on the Palms



You can generate more power as well as transfer it more efficiently with the pressure on your palms and not your elbow



Pressure on the Palms



Not on palm – dropped elbow



On palm – high elbow



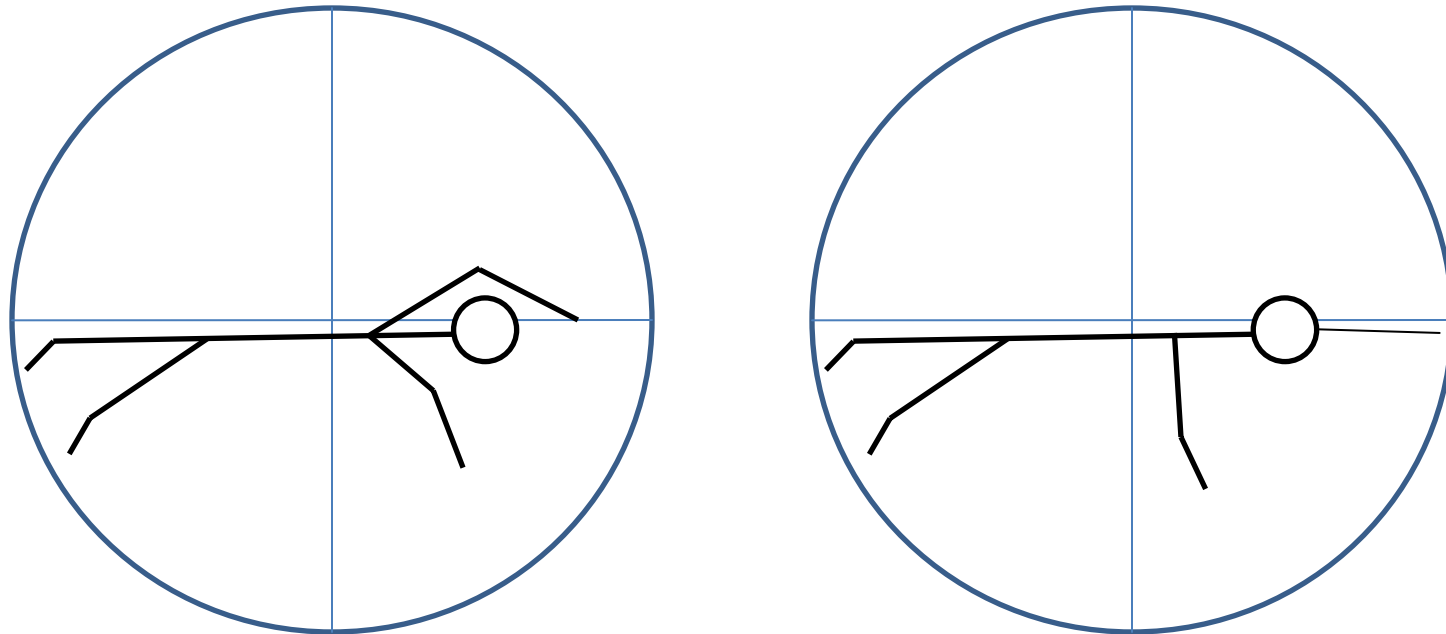
Pressure on the Palms

Things to Incorporate

- Stabilize hand at the catch so you can move your body over your hand
- 🥿 Scooter on a gym floor
- 🥿 Pushing yourself out of the pool
- 🥿 Flip flops
- Keep upper arm near surface to allow for maximum pulling distance
- 🥿 Arm to ear



Hand Relative to Hand



“Catch-up” optimizes glide but reduces body roll

“Opposition” allows for 2 propulsive phases for every stroke cycle instead of 1

To utilize advantages of both coordination patterns: Both hands should be in the lower front quadrant during the catch for optimal pull and body roll



Hand Relative to Hand



Catch-up



Front Quadrant



Hand Relative to Hand

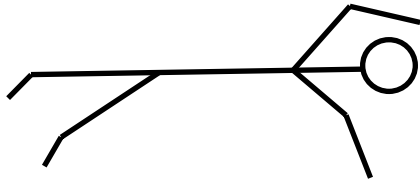
Things to Incorporate

- Maximize stroke length in front and back
- 🥽 Reach for something on a high shelf
- 🥽 Thumb brushes thigh at arm's length
- Set arm cadence to match your hip rotation
- 🥽 Contra-lateral thumb in ear before initiating pull
- 🥽 Catch-up drill
front & back (to gain spatial orientation)

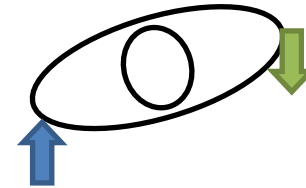


Summary

- 👁️ Body alignment dictates body roll



- 👁️ Body roll dictates hand path and hand speed



- 👁️ Proper hand positioning throughout the hand's path yields efficient use of force for forward propulsion and aids in body alignment

