



# Free/Back Rotation

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**Rotation is important!**

**...but it can easily be detrimental**



# Rotation

- There is a such thing as TOO MUCH rotation
- The details must be understood in order to use it to your advantage



# Rotation Mythbuster

True or False?

Rotating all the way onto  
your side minimizes drag



# Rotation Mythbuster

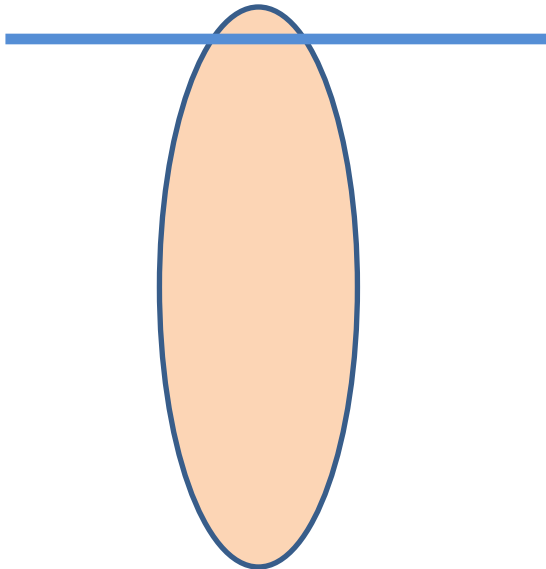
Answer: False

The same amount of your body is underwater whether you're all the way on your side or just rotated a little.

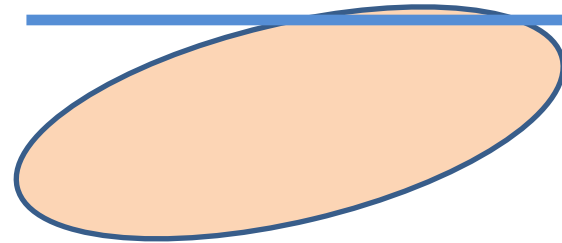


# Rotation Mythbuster

Head-on view of swimmer



Rotated onto the side



Rotated a little bit

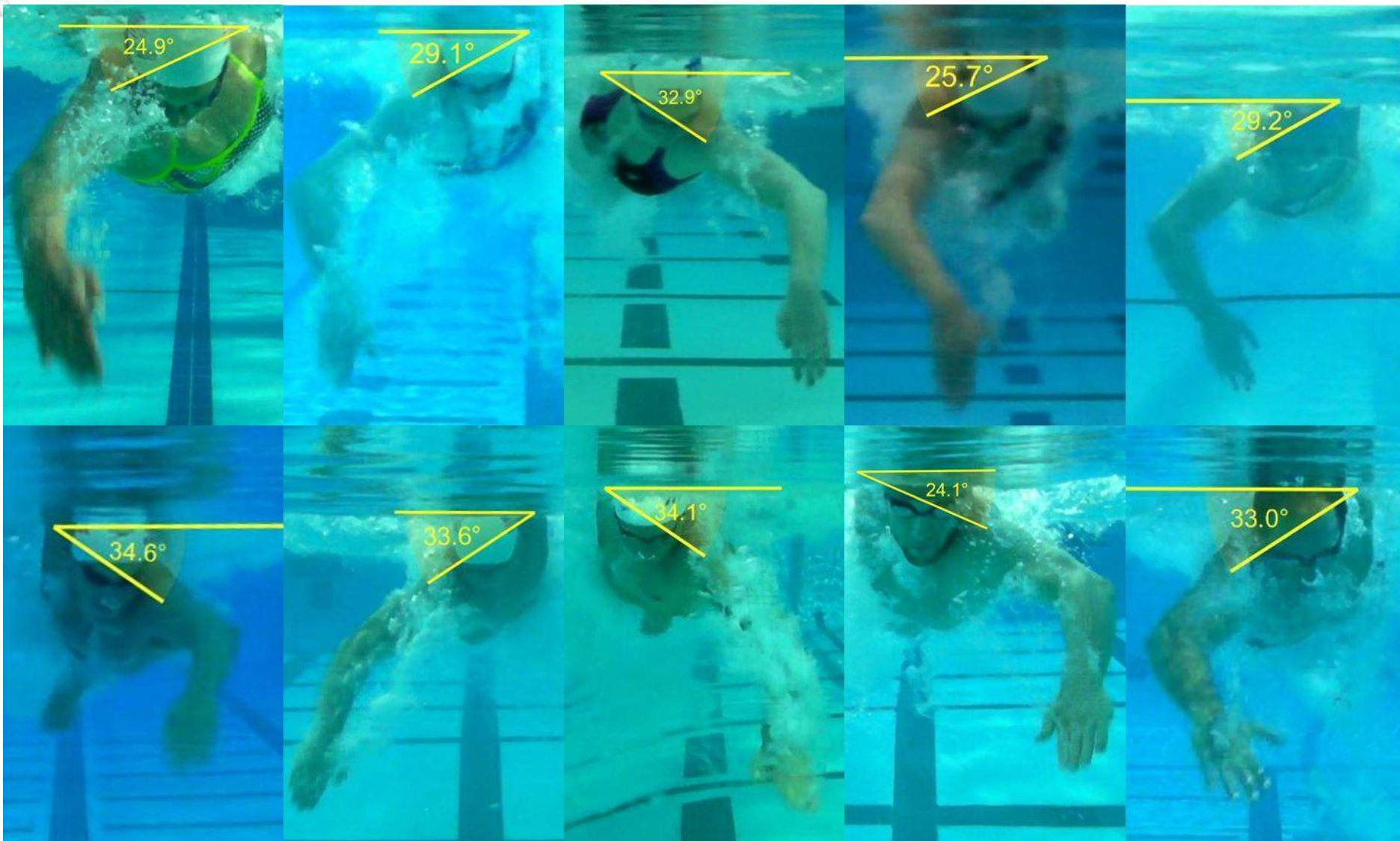


# Rotation: Freestyle

- The best freestylers rotate their shoulders about 30 degrees to each side underwater
- The stroke takes place more on your stomach than it does on your side



# Rotation: Freestyle







# Why Not More?

- The Catch!
  - The most important part of the arm stroke
  - After entry and extension, bend the elbow with fingertips pointing down
  - Grab ahold of as much water as possible
  - Hand/arm must be at least shoulder-width

Too much rotation hurts the ability to  
hit a good catch!!



# The Catch





# Why Not More?

- Too much rotation when the pull starts...
  1. Arm is too narrow
  2. Elbow can't bend to hit the catch
- Catch-up Timing
  - Typically paired with a good catch because the rotation is flat when the catch begins



# Narrow Pull





# Rotation: Additional Notes

- Kick stops
  - The legs can't kick when the hips rotate too much
- Be especially aware during the breath
  - Big tendency to rotate too much when breathing
- Rotate from upperbody/shoulders
  - Hips pivot a little, but definitely does not drive the rotation
  - Cannot compare to baseball/golf swing or throwing a ball



# Free Rotation: To Do List

- Rotate Forward! Not side-to-side
- Hand entry at shoulder width
- Arm extends forward; shoulder next to face
  - Never roll shoulder down; in front of cheek/face
- Hand path traces the side of the body
  - Elbow is wider than shoulder



# Rotation: Shoulder Issues

- Too much rotation can put the shoulder at risk
  - Shoulder issues are caused by the arm being behind the body (line of the shoulders)
  - Keep the arm in natural position with the body
  - More rotation leads to greater chance of arm being behind the body



# Rotation & Shoulder

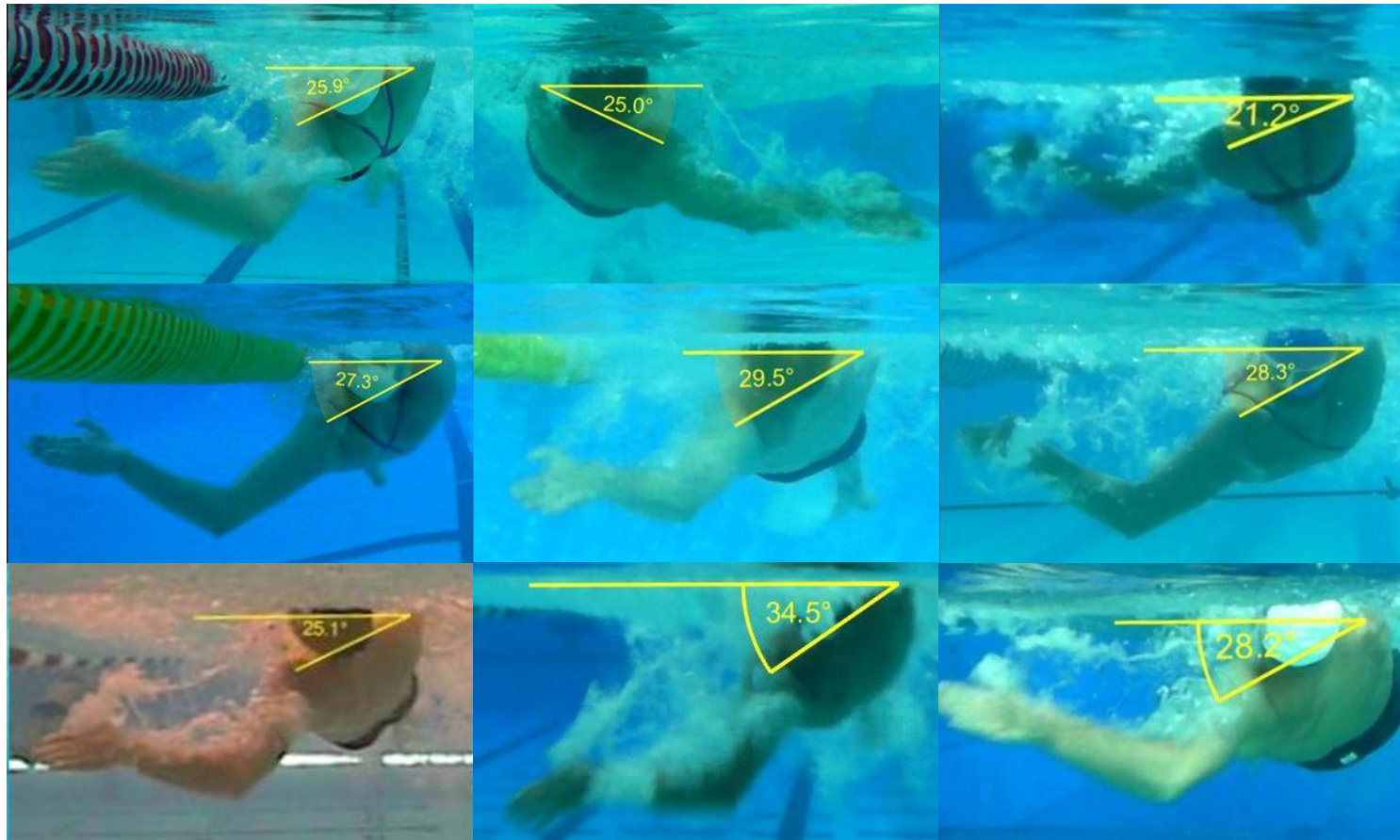






# Rotation: Backstroke

- The best backstrokers rotate under 30 degrees to each side





# Rotation: Backstroke

- Not necessary to rotate more
  - The best pull is with the arms to the side, fingertips pointing to the side and just under the surface
  - Rotating more...
    1. takes more time (slows tempo)
    2. doesn't help (not necessary to reach deeper)



# Backstroke Catch



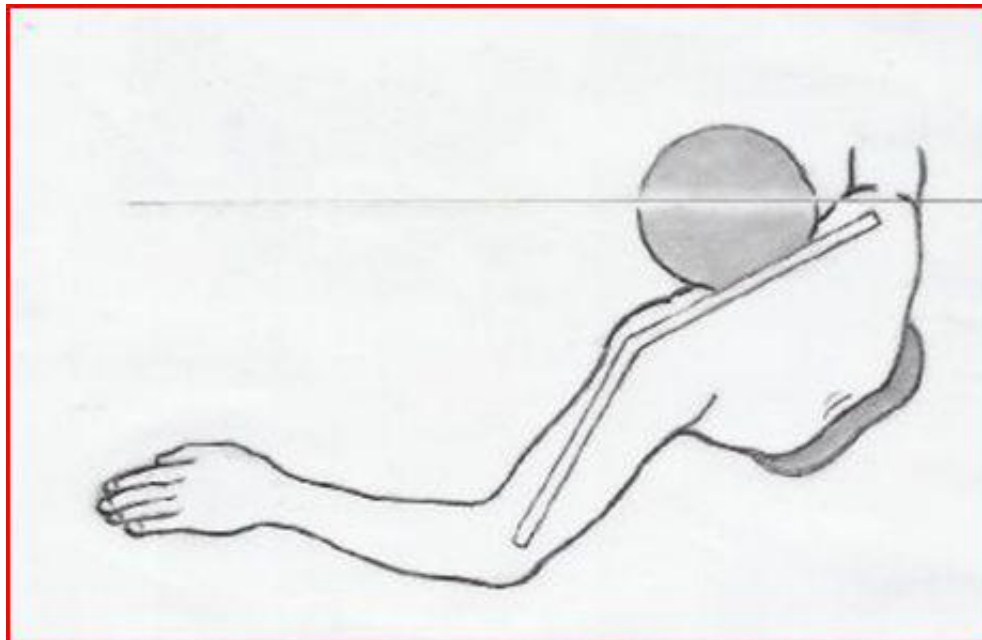


# Rotation: Backstroke

- Hips and shoulders rotate together
- Rotation is driven by the finish and entry
- Proper pull depth + 20 degree rotation =  
Arm/Shoulder connected



# Rotation & Shoulder





# Front view underwater video

- Rotation
- Arm / shoulder connected
- Pull depth (back) or width (free)
- Catch (elbow bend & fingertips)