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# Functional Anatomy of the Golf Swing

**Performance, Injury Prevention and Treatment**

**Scott Dunne – BScHK, MScPT**

**Physiotherapist**

**Titleist Performance Institute Certified**

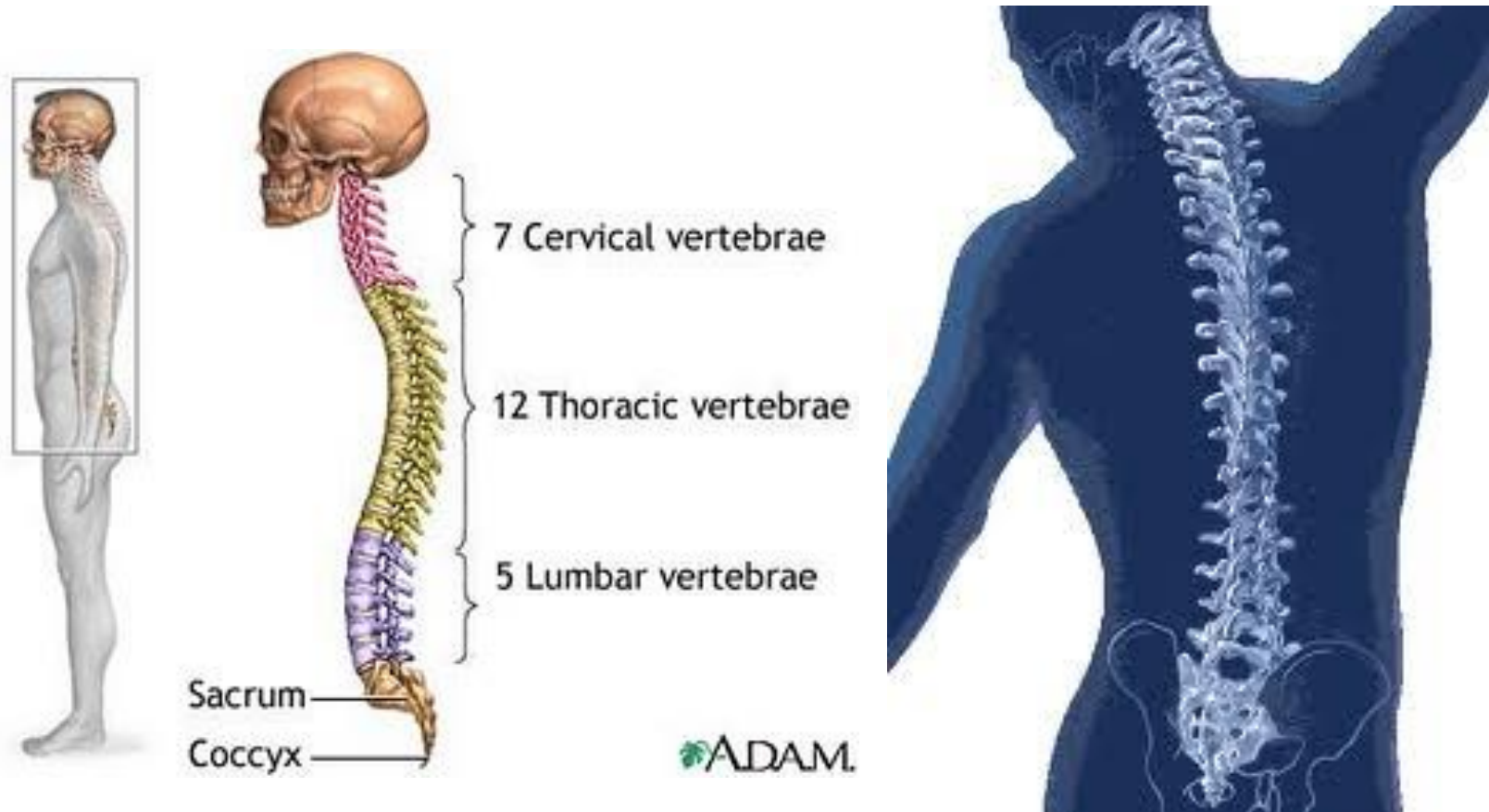
**FITforeGOLF Certified**

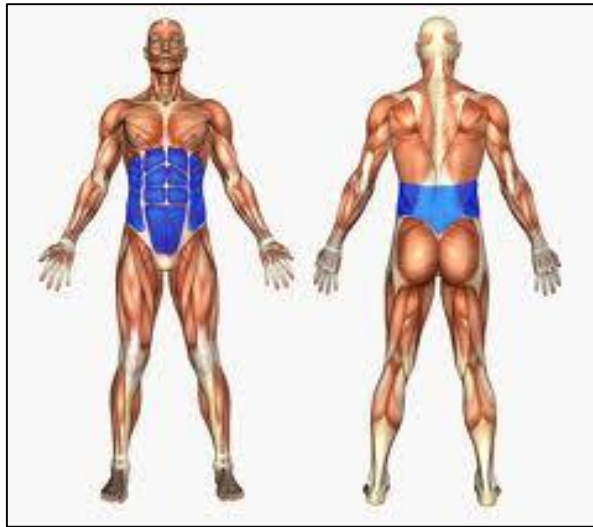
# Golf Swing Functional Anatomy Outline

- Anatomy - Spine, Hips, Shoulders
- Anatomy and the Golf Swing
- The Kinematic Sequence
- Swing Efficiency – Performance and Injury Prevention
- Managing the repetitive Nature of the Sport

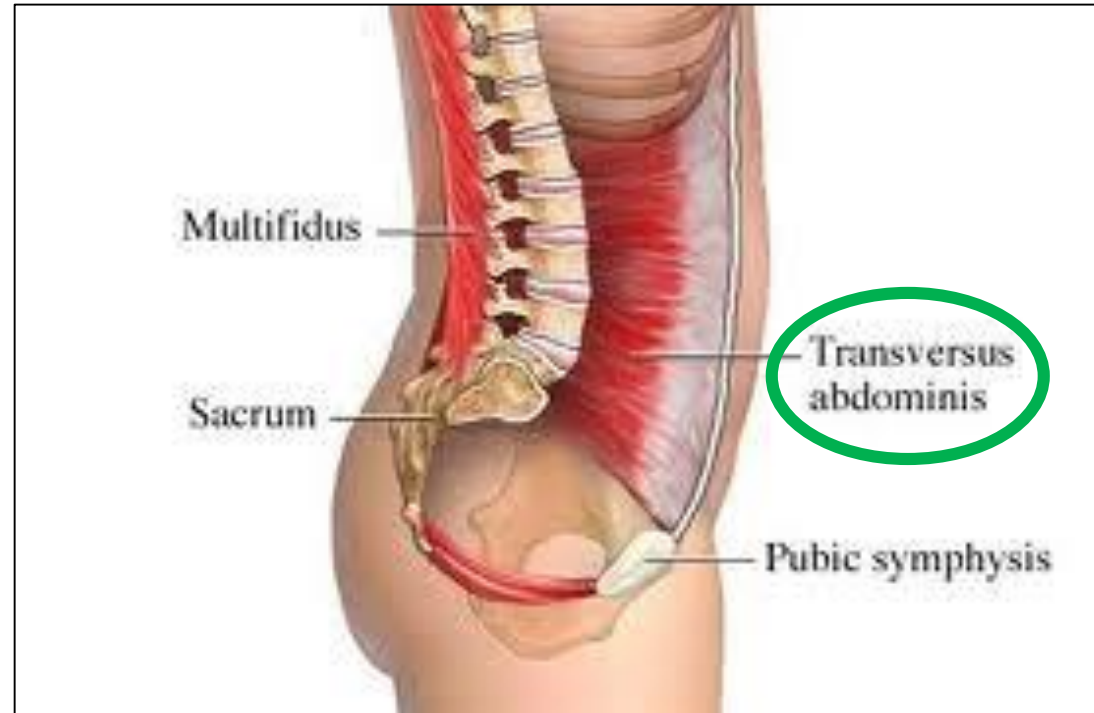
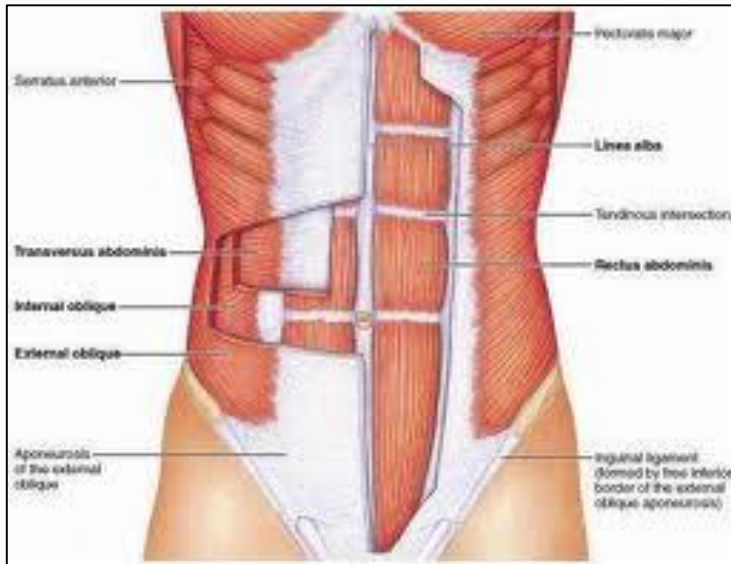
# Fundamental Movement

- Cervical, Thoracic and Lumbar Rotation





A **neutral lumbar spine** allows **more flexibility** in joints and the muscles; allowing for **more potential energy** and decreases chance of muscle strains.



**Inside the upper Barrel**

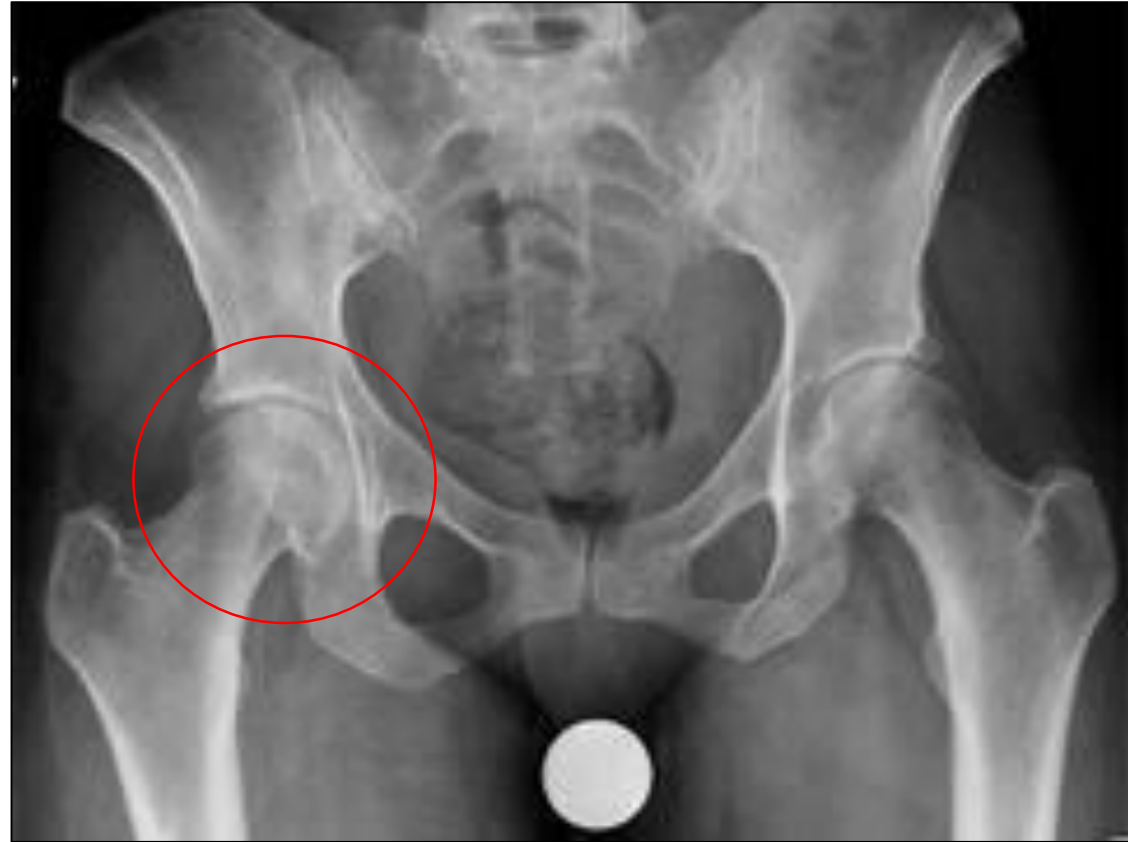
# ***Spine Angle and Axial Rotation***



# Hip Joint = Ball and Socket Joint

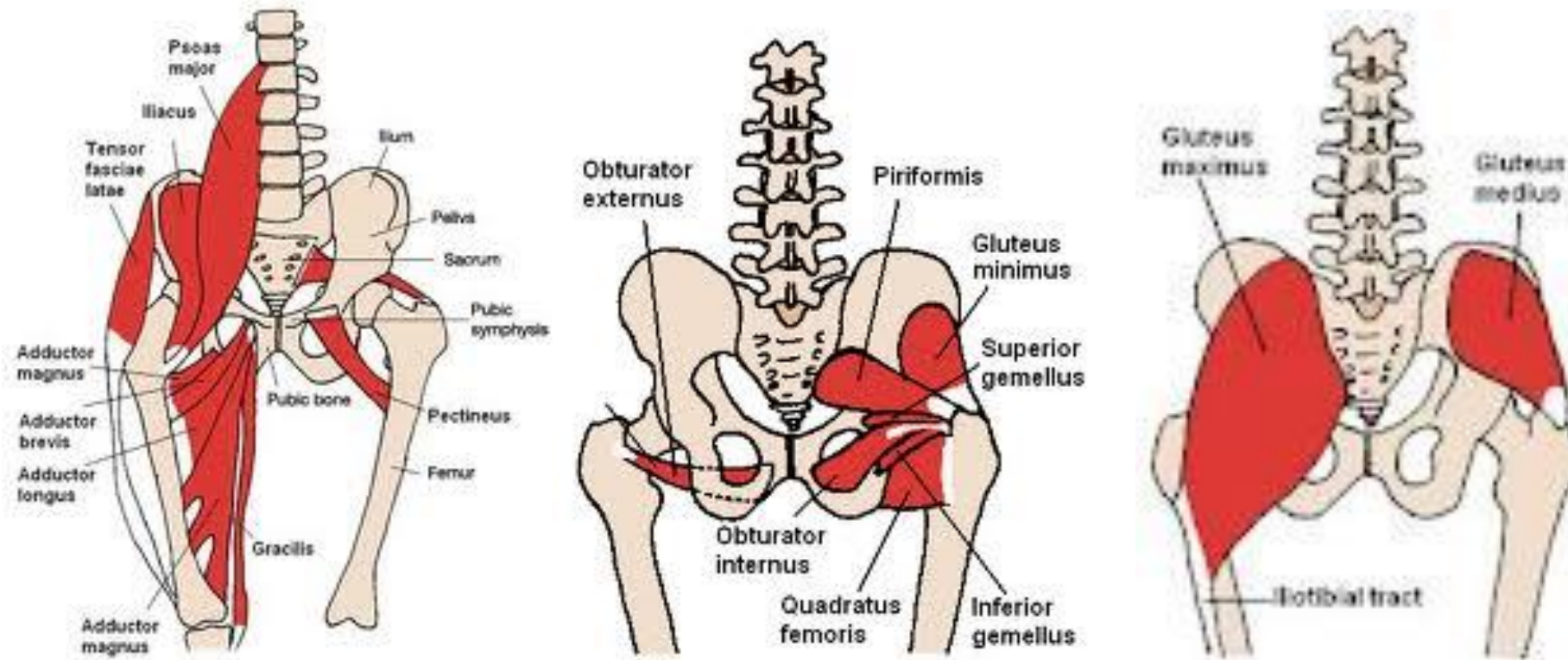


**Designed for ROTATION!**



# Hip Joint Muscles

## Rotators and Power House



# Hip Rotation

IR/ER ↔ Neutral ↔ ER/IR

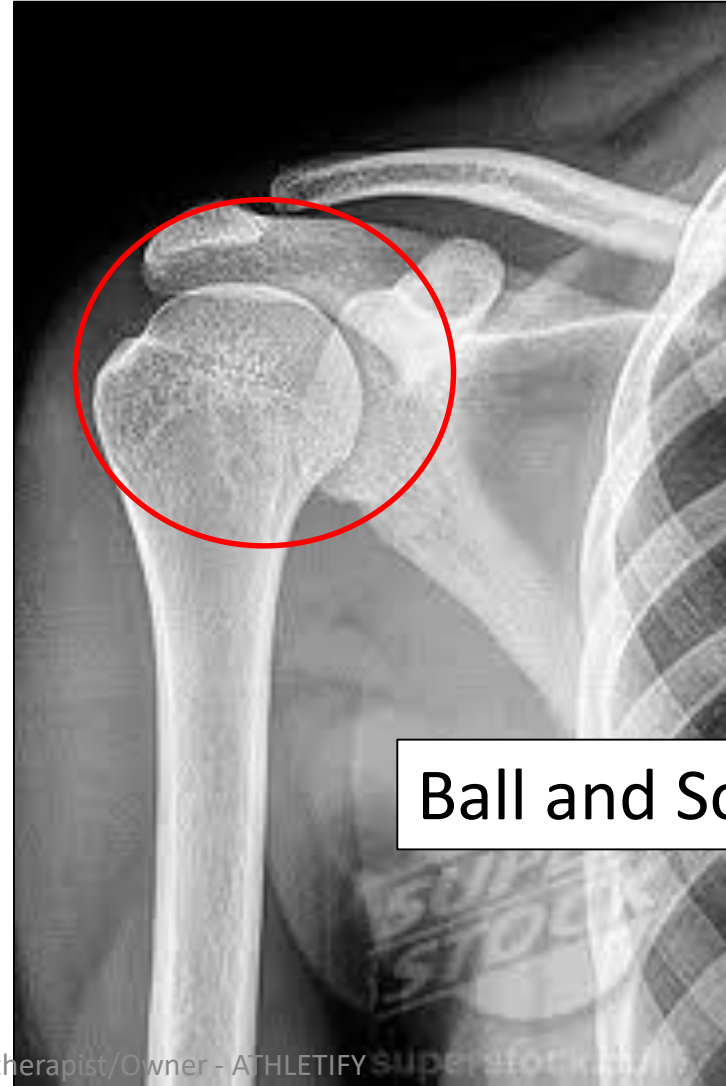




# ***SHOULDER JOINT***

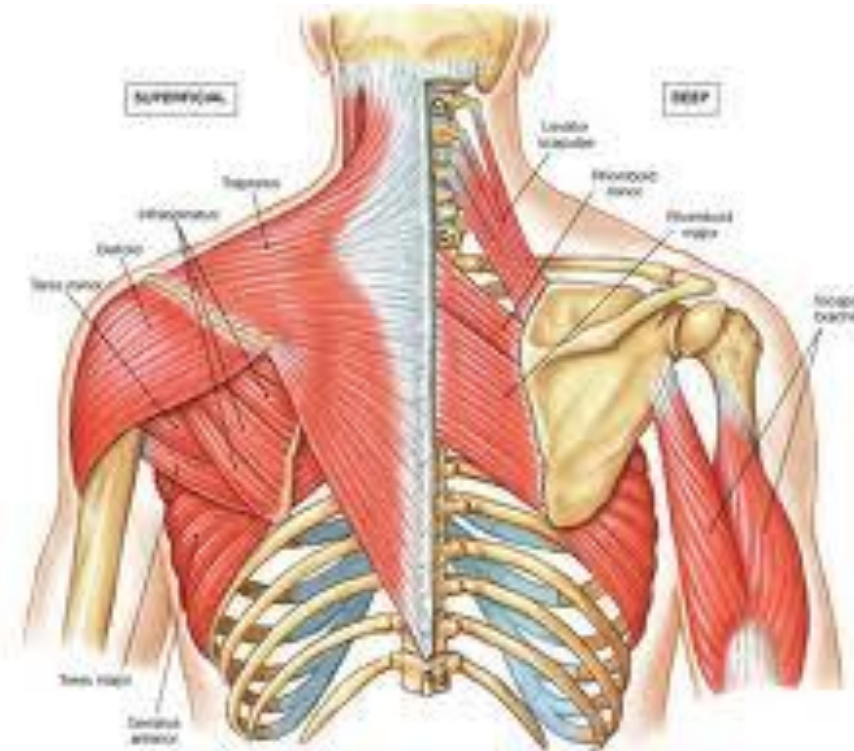
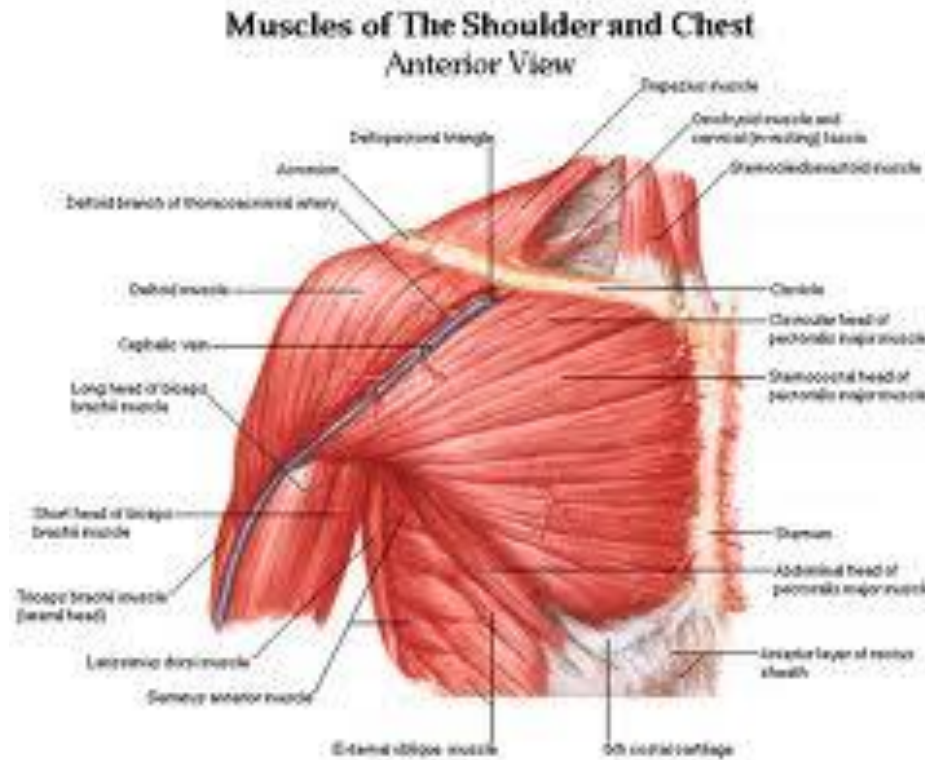


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**Ball and Socket Joint**

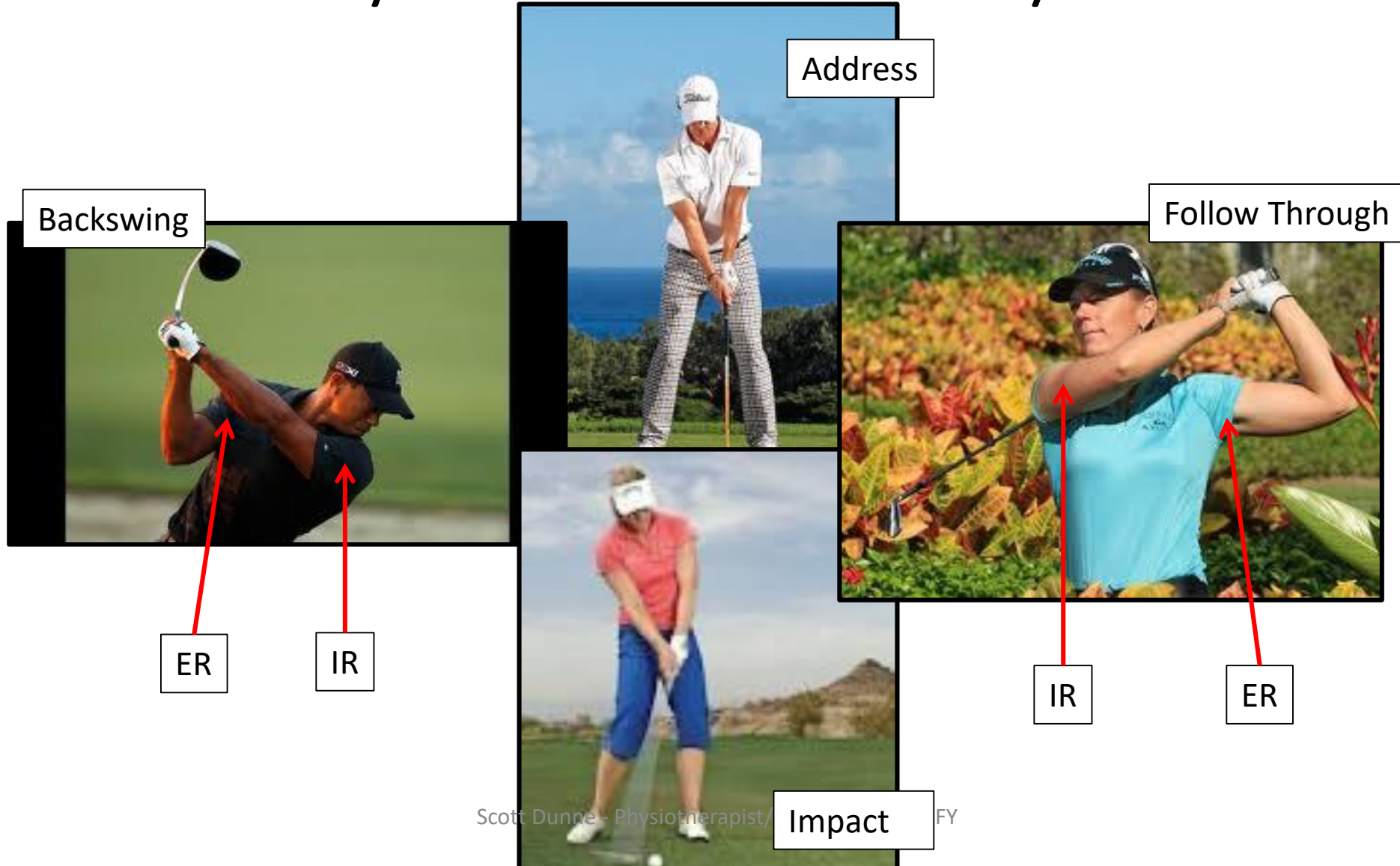
## Muscles that rotate and produces forceful movement



The muscles of the rotator cuff, upper arm, chest and shoulder blade make up the **shoulder girdle**.

# Shoulders

ER/IR ↔ Neutral ↔ IR/ER

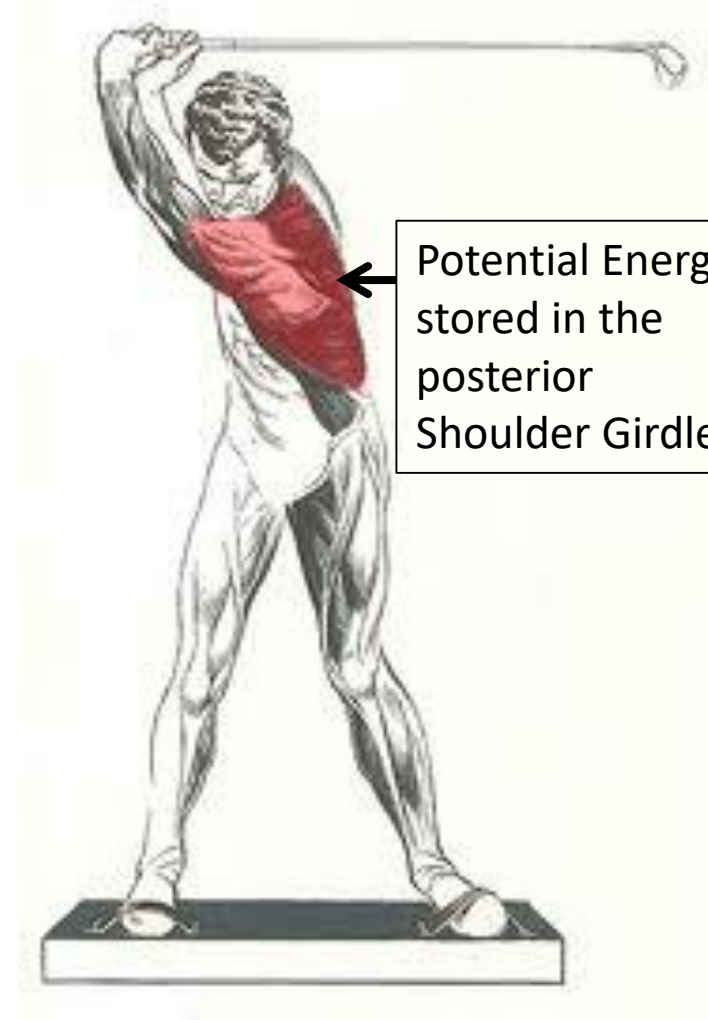


# Tap the Power and Decrease Injury



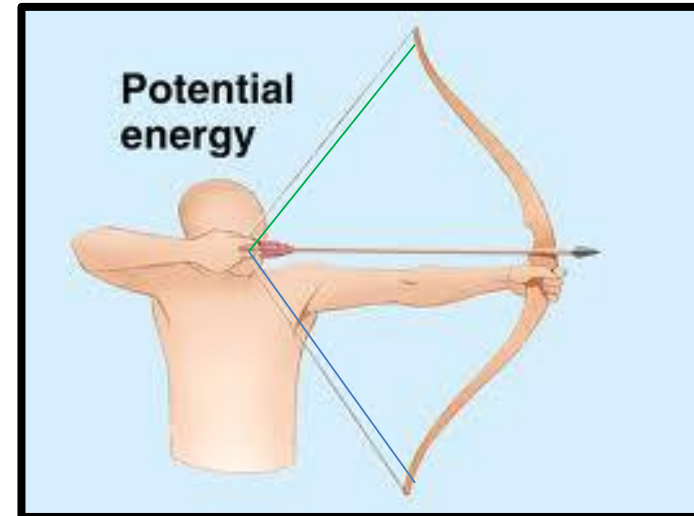
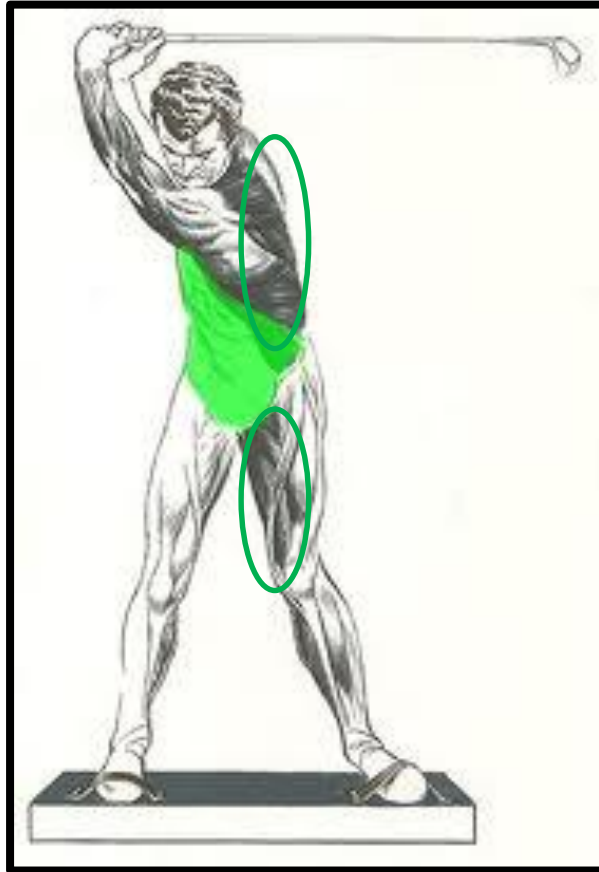
Maintain the trunk angle with a NEUTRAL and STRONG lumbar spine. **Activate the TA by drawing in the belly button.**

# Potential Energy



Potential Energy  
stored in the  
posterior  
Shoulder Girdle

# ***Store the Energy and Release it!***



# ROTATIONAL KINEMATIC SEQUENCE IN DEGREES/SECOND

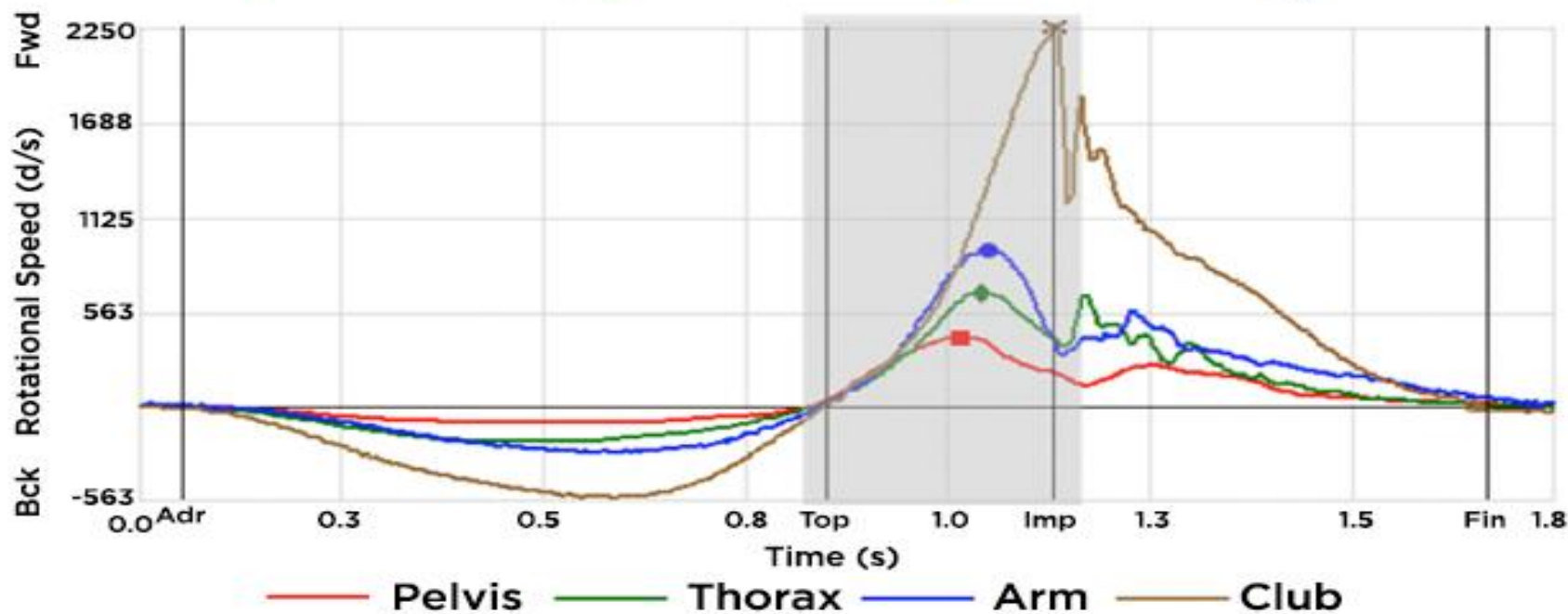
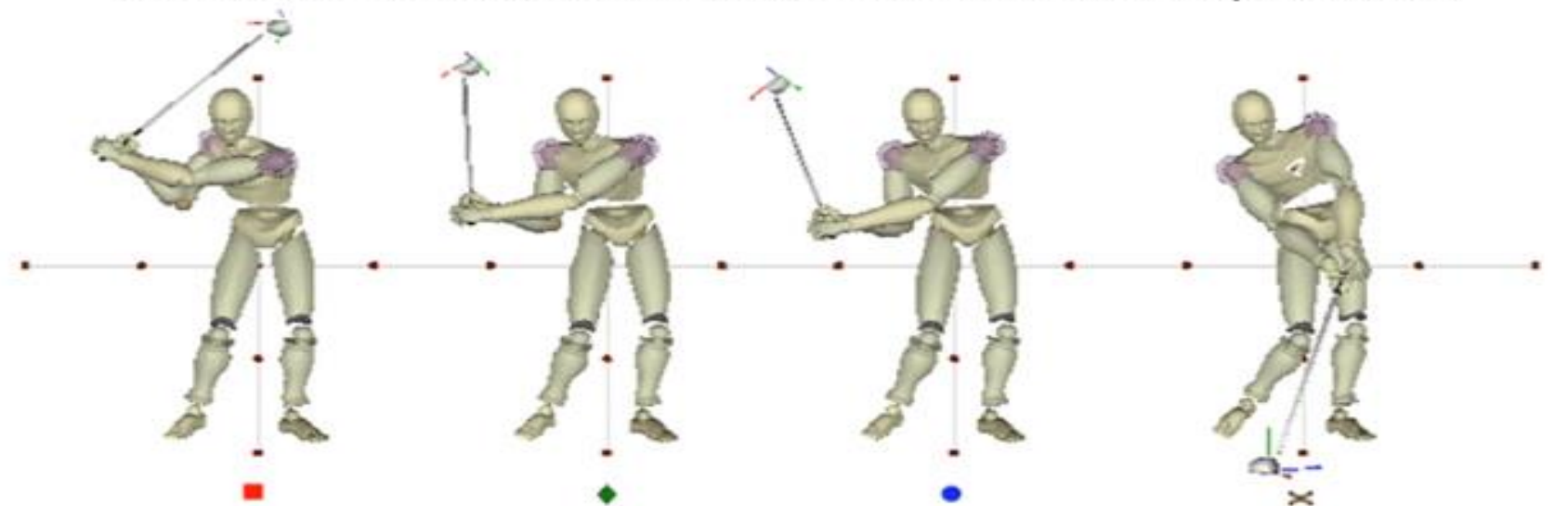
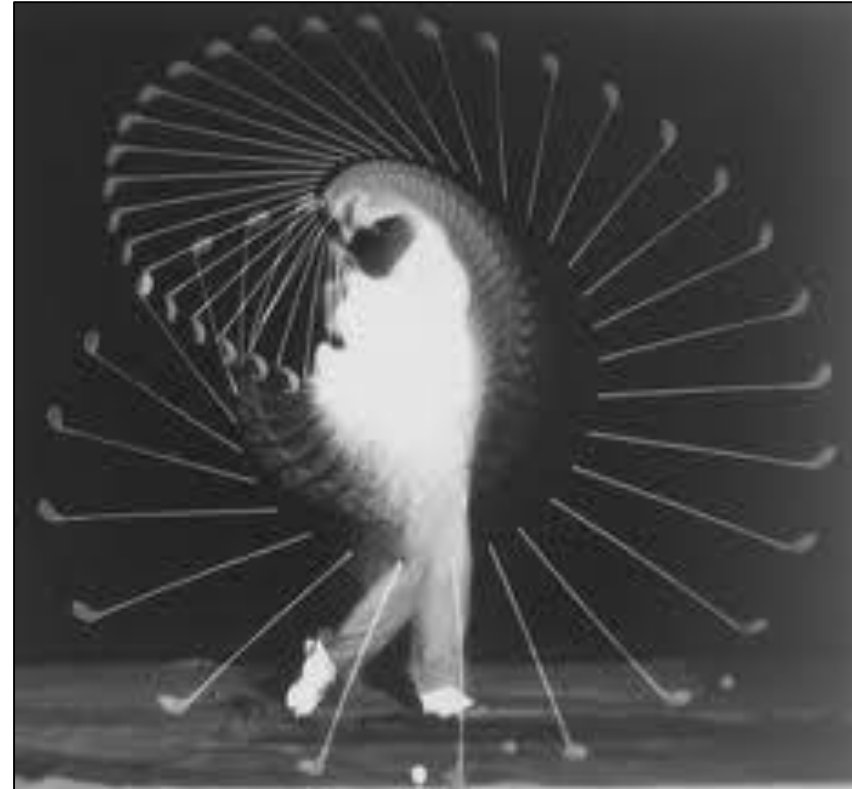


Figure 1. The Rotational Kinematic Sequence of a World Class Golfer

# *Sequential Movement = Efficient Swing*

- Backswing
  - Hips, trunk and shoulders coil up to store energy
- Downswing
  - Hip, trunk, and shoulders uncoil to release energy
  - Timing is everything





# Efficient Swing Benefits

- Improved Performance
- Lower Scores
- Less Pain While Playing
- Decreased Risk of Injury
- Faster Return to Golf After an Injury

# Managing the Inevitable

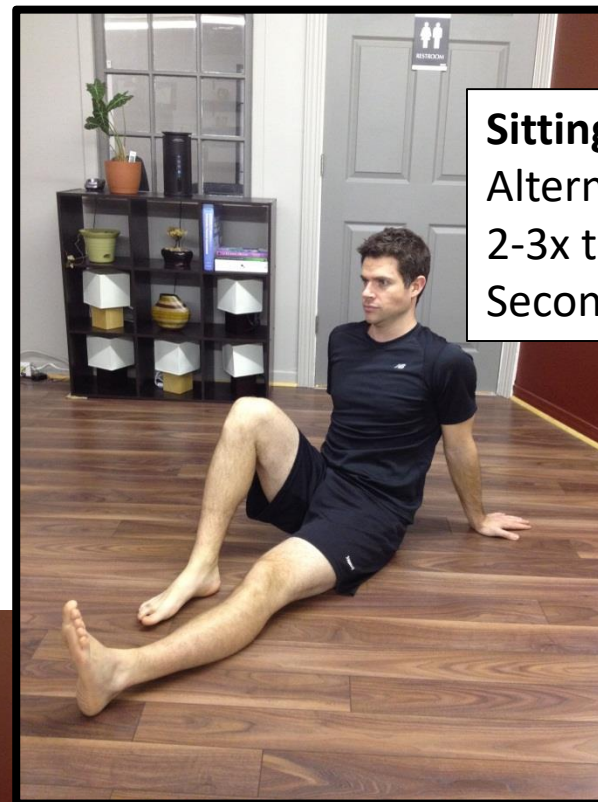
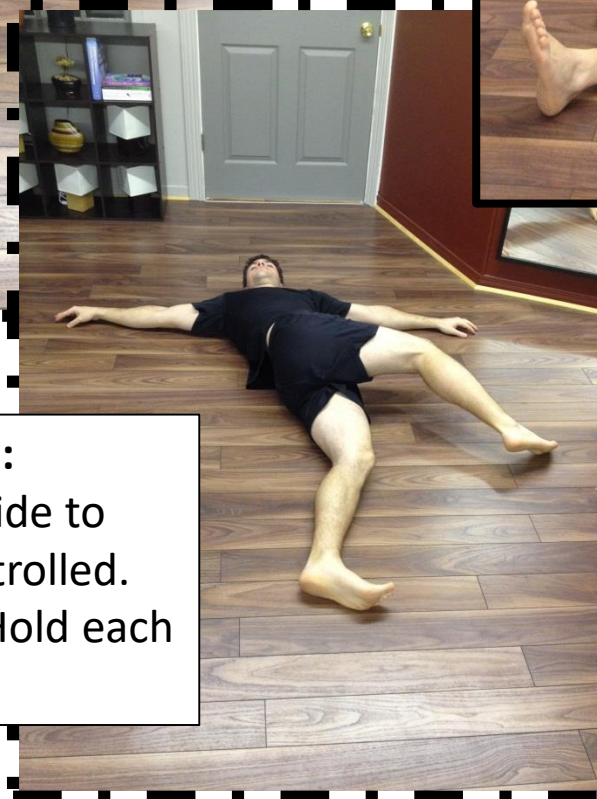
- All sports require some type of repetitive motion that can lead to an “over use” injury or a “repetitive stress” injury.
- An avid golfer – even with an efficient swing – should take action to avoid these injuries
- There are many key ranges of motion in the golf swing but if there is one to highlight, it would be ROTATION in the spine, hips and shoulders
- An individualized maintenance program should always address ROTATION

# SPINE ROTATION



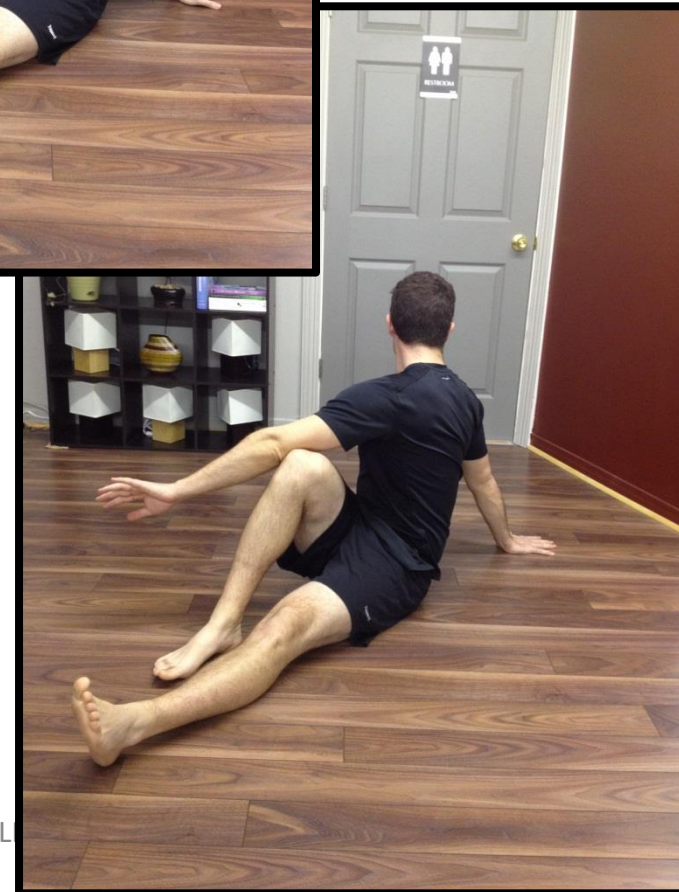
## **Supine Trunk Twist:**

Alternate moving side to side. Slow and controlled. 4-5x to each side. Hold each 10-15 seconds.



## **Sitting Trunk Twist:**

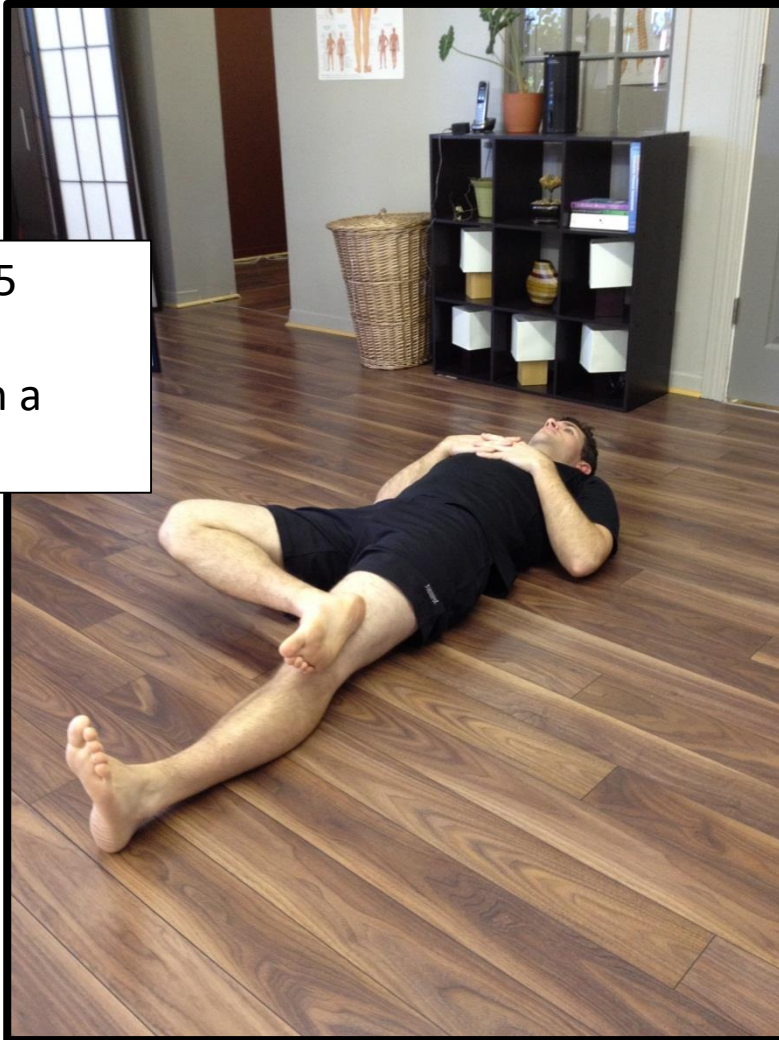
Alternate side to side. 2-3x to each side. 10-15 Second holds.



# HIP ROTATION

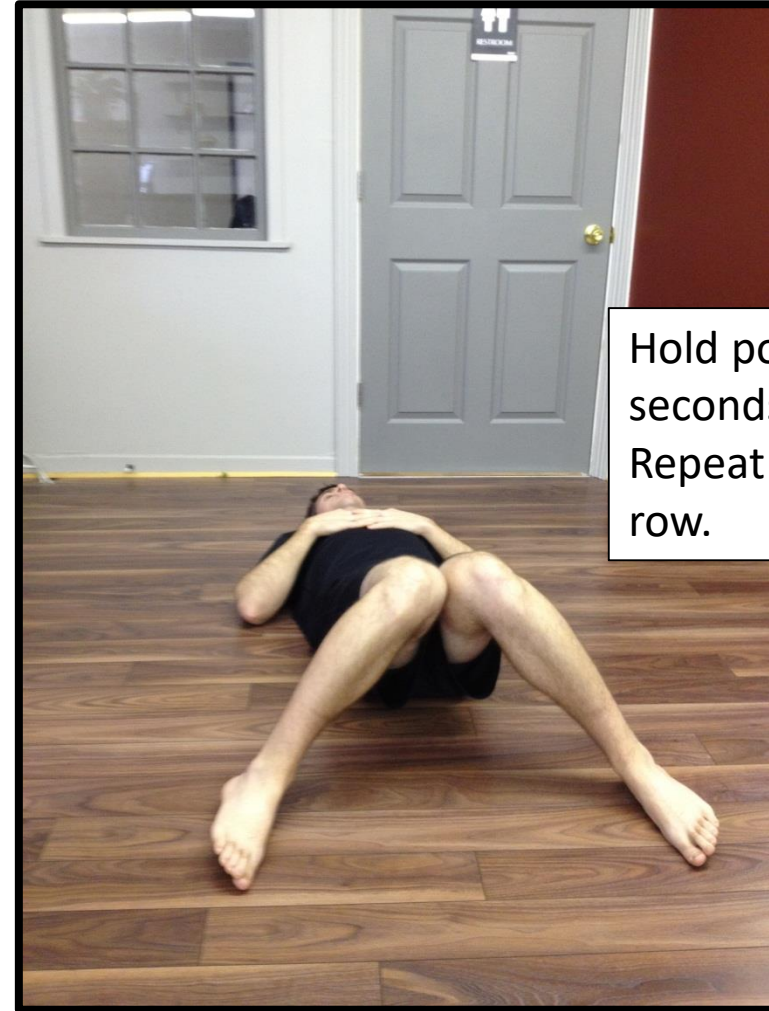
## Figure 4 Stretch

Hold position for 15 seconds.  
Repeat 3-4 times in a row.



## Hip Internal Rotation Stretch

Hold position for 15 seconds.  
Repeat 3-4 times in a row.



# SHOULDER ROTATION

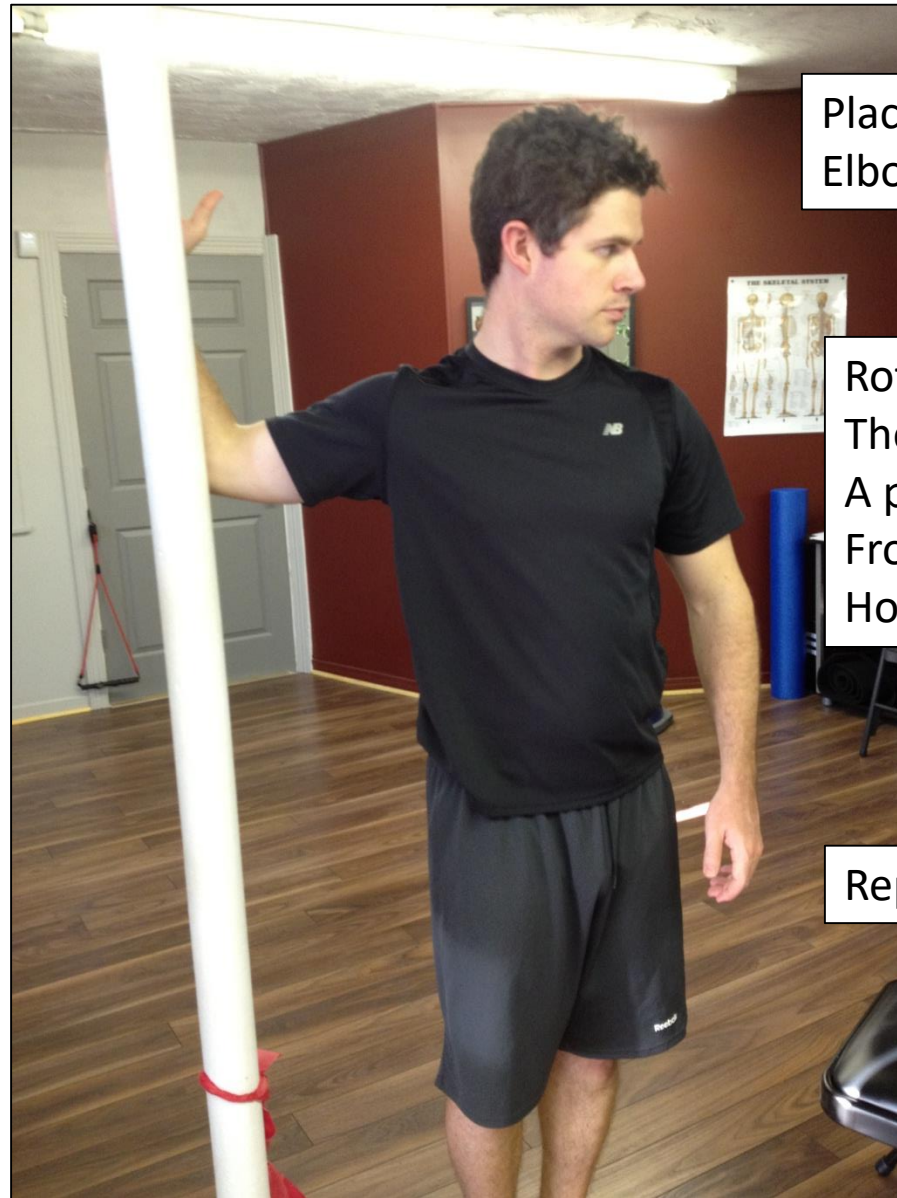
## *Posterior shoulder girdle stretch*



Bring right arm across body at  
Shoulder level. Hold 10-15  
Seconds x 3. Alternate left side

# SHOULDER ROTATION

## *Anterior Shoulder Girdle Stretch*



Place inside of right  
Elbow on the door frame

Rotate your trunk to  
The left until you feel  
A pull in the chest and  
Front of your shoulder  
Hold 10-15 second x 3

Repeat on left side



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- Questions?



Scott Dunne – Physiotherapist/Owner

ATHLETIFY

15105 Yonge Street, unit 105

Aurora, ON

[www.athletify.ca](http://www.athletify.ca)