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Presentation Breakdown

- Anatomy of Rotation
 - Thoracic Spine = Mobility
 - Lumbar Spine = Stability
 - Hips = Mobility
- Rotational Exercises
 - Strength
 - Power / Speed
- Programming and Implementation
- Questions???

Why Train for Rotation?

- Everybody trains in sagittal plane
 - Virtually everything we do w/ weight is in the sagittal plane
- Few train in the transverse (Horizontal) plane
- Russian Twists and oblique crunches don't count!!!
- Train rotation / anti-rotation through total body movements
- Many sports have too big a rotational need not to train it
- Tools:
 - Medballs - POWER
 - Cables / Bands - STRENGTH
 - Plates - MOVEMENT PATTERNS



Thoracic Spine

- The overall range of lumbar rotation is ...approx 13 degrees. The rotation between each segment from T10 to L5 is 2 degrees. The thoracic spine, not the lumbar spine should be the site of greatest amount of rotation of the trunk... when an individual practices rotational exercises, he or she should be instructed to "**think about the motion occurring in the area of the chest**"
 - (Sahrmann, 2002)

Thoracic Spine Rotation

Rickie Fowler – 150 lbs

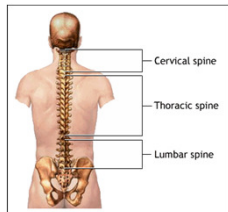


Tim Lincecum – 165 lbs



Thoracic Spine

- 12 Vertebrae (T1 – T12)
- Average of 8 deg. of rotation
- Most important factor in achieving rotation
- Overlooked in increasing movement / sports performance
- Mobility highly important
- Inability to rotate / extend compromises the lumbar spine and/or the shoulder



T-Spine Mobility

- Shoulder health and T-Spine Mobility are directly related
 - T-spine – Scapula – Shoulder
- Very easily integrated into warm-ups or active recovery
- Make you a more powerful athlete rotationally
- EXTENSION and ROTATION are important



Hip Flexor Steps w/ Rotation

- Pushup position
- Step outside the hand and drive the hips towards the ground
- Try to keep the back leg straight and flex the opposite glute
- Rotate up with the inside arm and reach as high as possible



Upper Body Clamshells

Progression 1


- Drive legs into the ground and keep at 90 deg. angle to the body
- Slowly rotate upper body to the opposite side
- Reach out as far as possible with hands
- Turn head and look with arm reach



Upper Body Clamshells


Progression 2

- UB Clamshells w/ Reach
 - Opposite arm reach
 - Eliminates compensation
 - Creates more rotation



Progression 3


- Side Lying w/ Single Leg
 - Foot to knee
 - Support for lumbar spring
 - Active rotation
 - Adductor activation



Side Lying Int/Ext Rotation

Progression 1


- Legs to the side at 90 deg. w/ foam roll between
- Rotate torso so shoulders touch the ground
- Try to keep the forearm and elbow on the ground the entire time
- Slide the hand up behind the head for external rotation, then slide down underneath the low back for internal rotation



Side Lying Int/Ext Rotation


Progression 2

- Side Lying w/ Reach



Progression 3

- Side Lying w/ Single Leg Activation



Lumbar Spine

- L1 – L5
- 2-3 degrees of rotation per vertebrae
- Only 13% of total spine rotation.
 - (Sahrmann, 2002)
- We don't want it to rotate or go into flexion (RECIPE FOR DISASTER)
 - Strong and Stable
- A mobile lumbar spine = low back problems
- Movements should occur in the hips



Hips

- Hip mobility and rotation extremely important in sports
- 30+ Muscles attach throughout hips and pelvis
- Inability to rotate causes problems up and down
 - Lumbar Spine
 - Knees
 - Elbow and Shoulder
- Problems w/ hip rotation during throwing causes losses of energy production resulting in increased stresses (Wilk, 2000)
- Rotational athletes:
 - Rotation needed depends upon movement required



Lumbar Spine Stability

- Beginner (Stability)
 - 4 Way ISO Series
- Intermediate (Anti-Rotational)
 - Pushup w/ Opposite Hand Touch
- Advanced (Anti-Rotational)
 - Quick Hand Touches



Lumbar Spine

- Anti-Rotational exercises develop rotational power as well as stability
- Mobile T-Spine and stable lumbar spine create more elasticity = more rotational power
- COIL EFFECT
 - Imagine rubber band



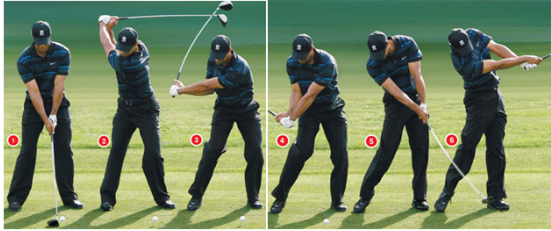
Swing Sport - Follow Through Internal Rotation - Front Side



Throwing Athletes - Internal / External on Both




Hips & Low Back move together




Hip Mobility

- Hip Internal Rotation
 - Common Problem
 - 30 deg. (Seated / Active)
 - Necessary for squatting
 - Lack of IR + Ankle Mob = TROUBLE
- 1. Soft Tissue
 - Foam Roll
 - Lacrosse Ball / Shot Put
- 2. Reset Length
- 3. Motor Programming
 - Ingrain motion / movement
- 4. Integrate into Training




Hip Internal Rotation

Hip IR on Foam Roll	Prone Hip IR
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External (Internal) Rotation


90/90 Seated Hip ER	Seated Hip IR
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Hip Mobility

Hurdle Series <ul style="list-style-type: none">• Excellent for hip mobility and t-spine mobility• Coaching cues:<ul style="list-style-type: none">◦ Keep feet straight and heels down◦ Hips below the knees◦ Keep chest tall	
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Hip Mobility

All Fours – Hip Mobility <ul style="list-style-type: none">• Develops hip mobility, also strengthens and activates the glutes• Proper set up is key• Reps of 5 – 10 for each movement• Watch for compensation patterns<ul style="list-style-type: none">◦ Signs of:<ul style="list-style-type: none">- Glute weakness – First and foremost- General lack of ROM	
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Strength exercises for rotation

- Bodyweight
 - Lunge Variations w/ Rotation
 - In Front
 - Overhead
- Plate
 - Alternating Plate Rotations
 - Plate Stamps
- Barbell (Landmine)
 - Landmine Rotations
- Bands / Cables
 - Torso Rotations
 - Torso Chops

Speed/Strength Exercises for Rotation

- Med-ball
 - Throws
 - Rebound Throws
 - Side Throws
 - Slams
 - Overhead Slams
 - Rainbow Slams
- Sledgehammer Work
 - w/ Follow Thru
 - w/o Follow Thru
 - Alternating

Implementing / Programming

- Integrate T-Spine / Hip Mobility work into your warm-up
- Lumbar Spine / Torso Stability is nothing more than traditional “ab” training
 - Don’t be scared to get rid of crunches, and situps
 - You may also get rid of low back problems

Implementing / Programming

- We implement str & sp rotation exercises everyday in the off-season for our rotational sports
- Off-Season Programming
 1. Rotational Strength
 2. Rotational Strength and Speed Complex
 3. Rotational Speed
- In-Season Programming
 1. Rotational Speed – Day 1
 2. Rotational Strength – Day 2
- Baseball / Golf
 - Offset one-sided demands by training other side more
 - 3:1 ratio at some point during the year

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