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*Speed
and
Strength
Summit*



Programming for the P.E.A.K Athlete

Taking Assessment to Program Design

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Williston, Vermont

› Presentation Overview

Overlying question: How much *depth* is there behind your athlete's programs?

Key Attendee Takeaways:

- Identify what data we need to gather in our assessment process
- How to take assessment data and turn it into a beneficial program
- Navigating the injured athlete
- The pillars of program design (Case Study)

› “The devil is in the details” - Chad Coy

There are multiple factors that need to be considered from a programming standpoint

Lifestyle Factors

- Current and Previous Injury History
 - Visits with medical practitioners
 - Surgery
- Current training program
 - From a school
 - Another training facility
- Where is this athlete in their training calendar?
- Any nutritional variables
 - Religion/ Lifestyle/ Etc.

Movement Factors

Conduct a “needs analysis”

1. What athletic positions does this person have to get into (well) in order to succeed in their sport?
2. How many times a week is this athlete competing/ participating in sports/skill based activities
3. How many days can I expect to see this person (realistically) to facilitate an increase in movement competency?

› What is a movement screen?

A movement screen...

- Evaluates unbiased competency in baseline human movements
- Can be (almost) any dynamic movement as long as you know what you are looking for
- Shows asymmetries from limb to limb and/or from quadrant to quadrant
- Can easily be repeated or retested
- Gives the Performance Professional a chance to know when to REFER OUT
- Gives the Performance Professional a great starting point to construct an athlete's training program



› What is a movement screen?

A movement screen...

- Does not diagnose
- Does not include a screen/test/assessment that is outside of your scope of practice (or comfort)
- Does not put the athlete in dangerous or provocative positions
- Should not require fancy-dancy equipment. If it does you are probably measuring outputs and not assessing movement competency or quality.

Remember the PURPOSE of your screen...



› The Functional Movement Screen (FMS) & Inherent Limitations

We at The Edge use the FMS, however, this is not a pitch for the FMS...to each their own and that's totally cool.

- The FMS is the most well-known movement screen CURRENTLY in our industry
- Consists of 7 dynamic movement patterns that emulate human movement
- Provides a common language between Performance and Rehab Professionals (SFMA)
- It's a systemized approach - easily taught between staff members

With that said...there are limitations that affect the FMS as well as most other movements that are used as screens



› Understanding Your Movement Screen

What athletic positions does this person need to get in?

You can use any movement as a screen, but please understand HOW it will affect your programming going forward

The FMS helps us equate competence in the following areas:

1. Deep Squat: Landing/ Receiving Force/ Athletic Stance
2. Hurdle Step: Unsupported single leg/ Acceleration
3. Inline Lunge: Supported single leg/ Deacceleration
4. Shoulder Mobility: Pressing, some pulling
5. ASLR: Hip Hinge, Systematic engagement
6. Trunk Stability Push Up: Pushing, Anti-Extension
7. Rotary Stability: Rotation, Core

› Filling In The Gaps: What Strength Coaches Can Do

- Movement screens show dynamic movements and ACTIVE range of motion.
- It is in our interest to see PASSIVE ranges as well in certain populations
- The tests listed are non-invasive, non-provocative in nature, and are quick and easy to administer.
- Major deficiencies in Active vs Passive ROM provides further clues as to where to start our athlete in their training OR how to modify their program.

Filling in the blank...

- FABER/ FADIR
- Thomas Test
- Goniometer Joint Measurements
 - Ankle Dorsiflexion
 - Shoulder IR/ER/TROM

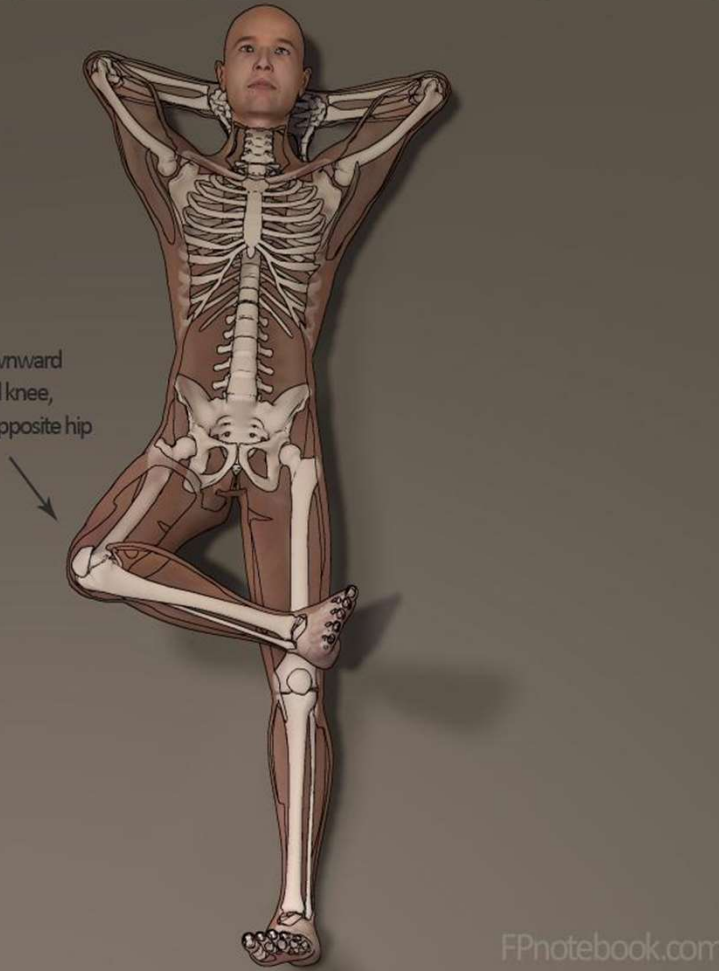
FABER Test

Flexion

Abduction

External Rotation

Examiner applies downward pressure at the flexed knee, while stabilizing the opposite hip



- A **positive** test occurs when groin pain or buttock pain is produced.
- This test can indicate pathology located in the hip or sacroiliac joint **(1)**.
- The position of flexion, abduction, and external rotation, when combined with overpressure, stresses the femoral-acetabular (FA) joint and produces pain, if irritated.
- +FABER Test in 97% of patients with labral impingement **(2)**

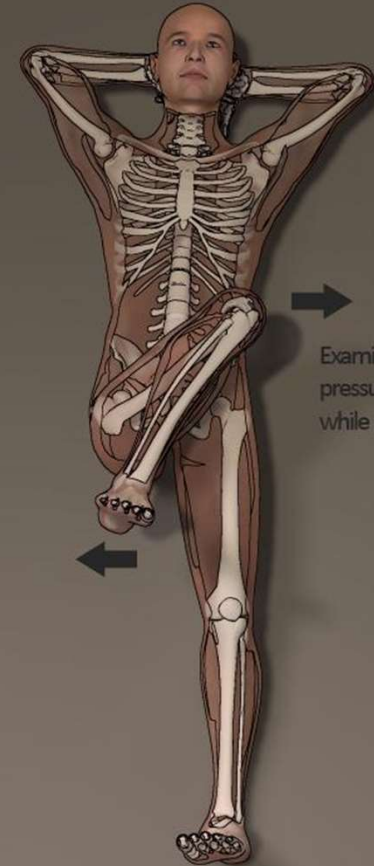
Positive test includes pain in the lateral, anterior hip OR lower back.

Causes of positive test **(3) (4)**

1. Hip Impingement (femoral-acetabular impingement)
2. Hip Labral Tear
3. Hip loose bodies
4. Hip chondral lesion- loss of articular cartilage along the top of the femur

FADIR Test

Flexion
ADduction
Internal Rotation



Examiner applies downward pressure at the flexed knee, while pulling the heel laterally

FPnotebook.com

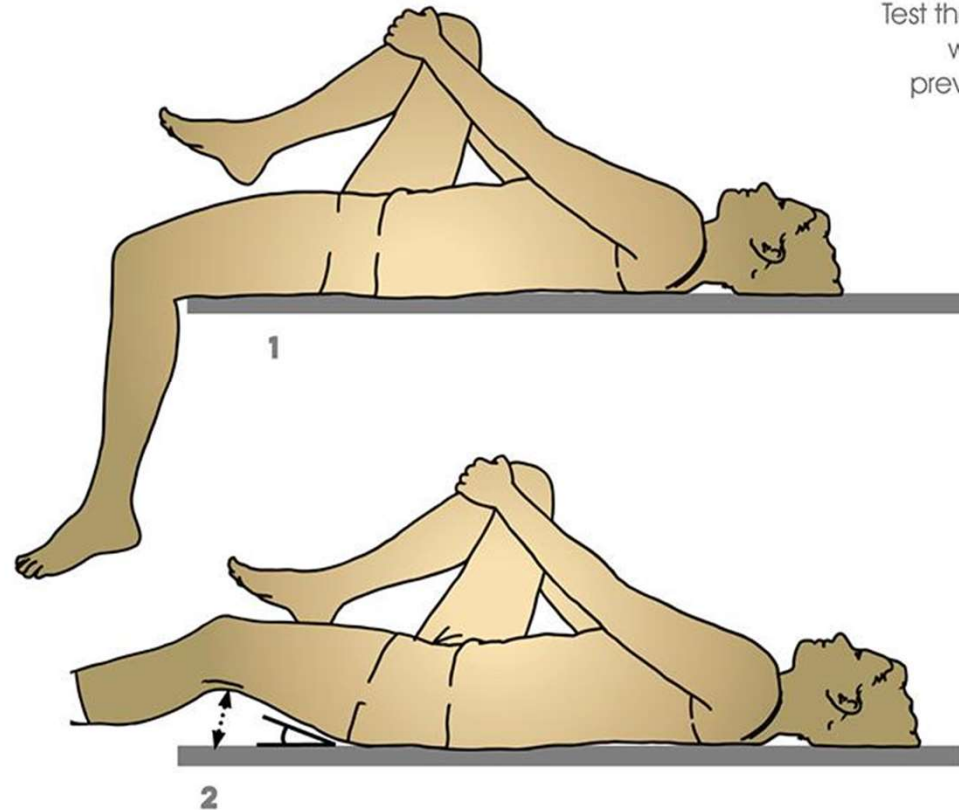
- Research has shown limited validity (5)
- Works best in a comprehensive screen where other tests to the hip are performed. (5)

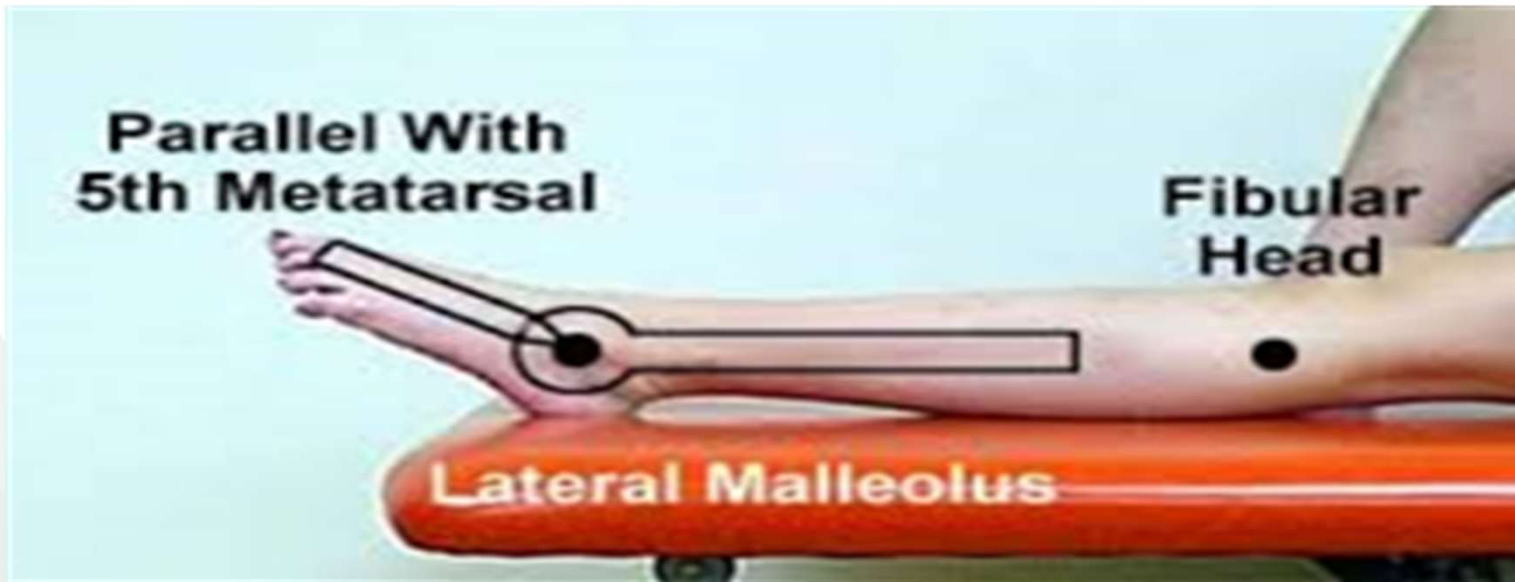
THOMAS TEST

Test the rectus femoris muscle which may be restricted, preventing flattening of leg.

1: normal condition

2: restricted condition





- Research has shown that changes in ankle ROM could contribute to a mechanism of injury for MCL injuries, meniscal injuries, or chronic injuries such as patellar tendinopathy or patellofemoral pain syndrome. (6)
- Ankle dorsiflexion motion absorbs up to half of the kinetic energy associated with a jump landing...with a restricted ankle motion it lead to greater loads on the knee in sports that require jumping. (7)
- **Dorsiflexion 20 degrees / Plantar Flexion 50 degrees**

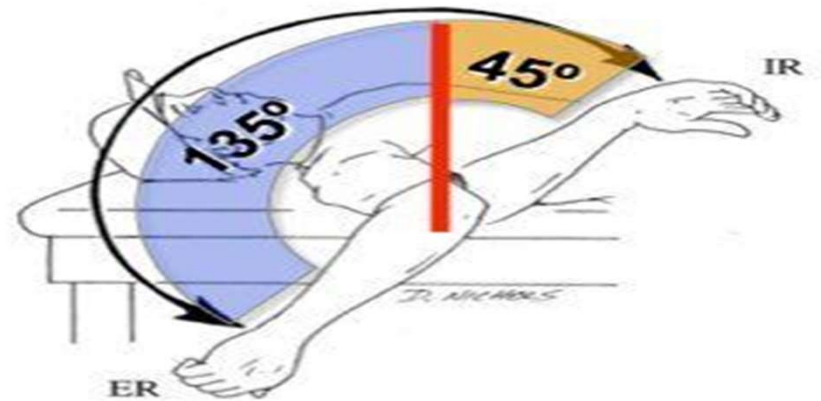
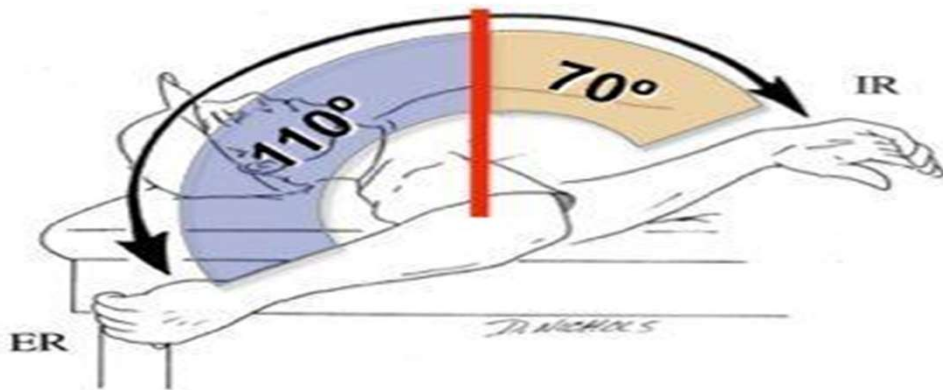
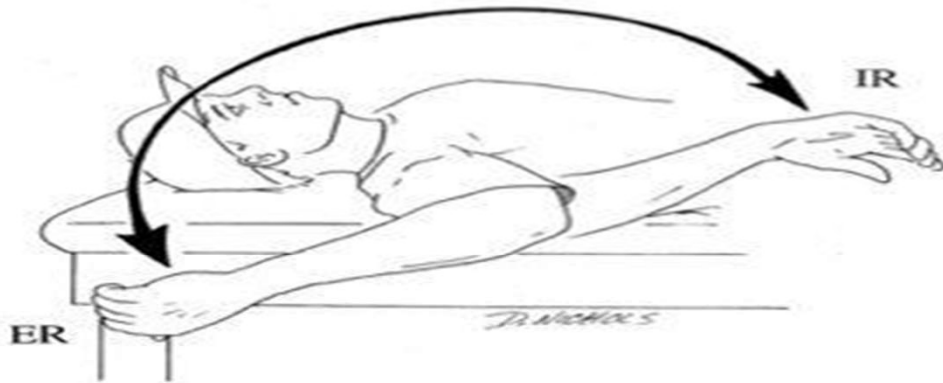


Photo courtesy of www.MikeReinold.com

The Translation of Assessment to Program Design

“The right intervention, at the right time, with the right person, works every time” - Greg Robins, The Strength House

“If an athlete struggles in a movement pattern, the last thing they need is more exposure to that pattern” - Gray Cook, FMS

Program design is, and largely will always be a blend of:
Assessment + Scientific/Evidence Theory + Coaching Experience
+ Athlete's Mental State

Now What? Taking Assessment to Program Design

Avoid assessing to find “what’s wrong” with your athlete. We know there are 54454398 wrong with our (high level) athletes.

RATHER

Use your assessment data and measurements to build a ‘Training Menu’ that will meet your athlete where they are and improve on their strengths.

Greg Rose - Titleist Performance Institute (TPI)- 4x4 Matrix

- 1. Deep Squat:** Landing/ Receiving Force/ Athletic Stance
- 2. Hurdle Step:** Unsupported single leg/ Acceleration
- 3. Inline Lunge:** Supported single leg/ Deacceleration
- 4. Shoulder Mobility:** Pressing, some pulling
- 5. ASLR:** Hip Hinge, Systematic engagement
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4x4 Matrix	
1. Supine/Prone	1. Assisted/Unloaded
2. Quadruped	2. Unloaded
3. Tall/Half Kneeling	3. Assisted Loaded
4. Standing	4. Loaded

Progressions vs Regressions vs Lateralizations

Progressions: “Taking a step forward”, An advancement in movement

Examples: Changing Body Positioning/ Increased Motor Control/ T.U.T/ Power or Force Requirement/ Increasing absolute intensity (weight).

Regressions: “Taking a step back”, Decreasing the required skill or complexity of a movement

Examples: Moving to a more supported position (4x4)/ Decreased load/ T.U.T/ Changing the environment (box squat)

Lateralization: Taking a “side step”- Still IMPROVES fitness where a regression helps build a pattern.

Examples: Rack Pull vs Conventional DL vs Handcuff Hinge / DB vs BB Bench

Movement Regressions/ Progressions/ Lateralizations

<u>Sample BASE Movement (Movement Pattern)</u>	<u>Lateralization</u>	<u>Regression</u>	<u>Progression</u>
Goblet Squat (Squat Pattern)	Goblet Squat to Box (reducing depth)	Quadruped Rock Back OR TRX Pattern Assisted Squat	BB Front Squat
Conventional Deadlift (Hip Hinge)	TB Deadlift OR Rack Pull	KB Handcuff Hinge (standing or kneeling)	Accommodating Resistance
DB 3pt. 1 Arm Row (Horizontal Pull)	DB Incline Prone Row	Quadruped 1-Arm Row	BB Pendlay Row

Movement Regressions/ Progressions/ Lateralizations

<u>Sample BASE Movement (Movement Pattern)</u>	<u>Lateralization</u>	<u>Regression</u>	<u>Progression</u>
BB Bench Press (Horizontal Push)	1/2/3 Board Press	Push Up (from various incline height)	Cable Push/Pull
Seated DB OHP (Vertical Push)	High- Incline Seated DB OHP	Landmine OHP (from various positions)	Standing DB OHP
Chin Up (Vertical Pull)	Band Assisted Chin Up	Tall Kneeling Lat Pull Down	Pull Up Or Added Resistance

Programming Case Study #1- Assessment

16 year old Jr. National Swimmer- 100/200 Backstroke and FreeStyle-
history of (bad) back pain

OH Squat: 1	Negative
Hurdle: 2/2	Thomas Test
Lunge: 2/2	~ Equal & No
Shoulder: 3/3	pain during
ASLR: 3/3	FABER/FADIR
Push Up: 1	Call with
Rotary: 1/1	previous PT
	clears for
	physical activity

Movement notes show “wobbly”
stance on all SL movements.
Right ankle rotated out during
deep squat. Excessive T-spine
and Lumbar Extension during
Lunge, Squat, and Push Up. Pain
free in quadruped but requires
aggressive coaching to maintain
proper positioning

Programming Case Study #1- Programming Strategy

1. Everything supine and/or quadruped. Maintain neutral. Aim is to teach tension creation and when/how to 'turn it on'.
2. Reassess every third session to track improvement
3. Resistance exercises are done largely in isometrics
4. Warm up is used to master current ability and progress athlete to the
“next step”

i. **Example:** Currently warming up supine/prone/quadruped. Looking to progress to split stance and tall kneeling stance.

Again: All previous medical practitioners have cleared (and encouraged) this athlete to begin strength training.

Programming Case Study #1: Sample Program

- A1) Supine Chest Pass 2x5
- A2) Supine Banded Palloff Hold 2x20sec
- A3) Quadruped Deep Belly Breathing 2x6 breathes
- B1) Quadruped 1-arm Iso Row 3x8
- B2) ½ Band Lumbar Traction with Exhale 3x8 breathes
- B3) Toes Up Baby Crawl 3x10 total yards
- C1) Split Squat Iso Hold 3x20 sec per leg
- C2) Quadruped OH Reach with belly support 3x6 per limb
- C3) Hardstyle Plank 3 x 4 breathes

Programming Case Study #2- Assessment

16 year old Female Ice Hockey/Field Hockey Athlete- No Injury History

OH Squat: 1 Negative Thomas Test
Hurdle: 1/2 FABER- Positive-
Lunge: 1/2 Showed less than 10
Shoulder: 3/3 degrees of Ext. Hip
ASLR: 2/3 Rotation and pain
Push Up: 1 response
Rotary: 2/2 FADIR- Negative- All
 clear
 Ankle ROM- 37
 Degrees- good stuff

FMS produced zero pain response. The only red flag was the positive FABER test. Given the 1 OH Squat and limited movement quality with the left leg, the limited External Rotation is a concern. Finished assessment with upper body strength demonstrations and REFERRED OUT IMMEDIATELY.

Programming Case Study #2- Programming Strategy

- 1. PT diagnosis:** Hip Flexor compensation from extension issue in lumbar spine.
2. Work from Tall Kneeling Stance (down) to promote active glutes and limited ability to compensate through lumbar.
3. Heavy diet of ground based movements in the warm up prior to low level plyometric work/ locomotion.
4. Introduce motor control exercises to repattern TRUE hip extension - Isometrics, FRC, Environmental Cues
5. Check in with PT every 7-10 days to monitor progress. Readminister FMS after PT discharge

Programming Case Study #2: Sample Program WHILE in PT

- A1) Seated MB Chest Pass 3 x 5
- A2) Plank with Shoulder Tap 3 x 5 per arm
- A3) Upper/Lower Quadrant Rolling 3 x 2 rolls per limb per side
- B1) Split Stance 1-Arm Keiser Row 4 x 8 per arm
- B2) DB Goblet Split Squat 4 x 8 per leg
- B3) Toes Up Baby Crawl 3x10 total yards
- C1) DB Farmer Carry 3x 60 yards
- C2) Seated DB 1 Arm OHP 3 x 8 per arm
- C3) Supine 90/90 Breathing with Hip Lift

Programming Case Study #2: Sample Program AFTER PT

- A1) MB Rotational Throw 3 x 5
- A2) Plank with Shoulder Tap 3 x 5 per arm
- A3) Upper/Lower Quadrant Rolling 3 x 2 rolls per limb per side
- B1) Standing 1-Arm Keiser Row 4 x 8 per arm
- B2) DB Goblet Squat (to box) 4 x 8 (321 tempo)
- B3) Bear Crawl 3x10 total yards
- C1) DB Farmer Carry 3x 60 yards
- C2) Seated DB 1 Arm OHP 3 x 8 per arm
- C3) Supine 90/90 Breathing with Hip Lift

Programming Case Study #3 - Assessment

15 year old baseball pitcher- Freshman- Pitching Coach/ Varsity/
Travel Ball

OH Squat: 2 **R-IR: 84**

Hurdle: 2/3 **L-IR: 79**

Lunge: 3/3 **R-ER: 112**

Shoulder: 3/2 **L-ER: 108**

ASLR: 3/3 **RTROM: 196**

Push Up: 1 **LTROM: 187**

Rotary: 2/2

OH Squat: 2

Hurdle: 2/2

Lunge: 2/2

Shoulder: 2/2

ASLR: 3/3

Push Up: 1

Rotary: 2/2

R-IR: 52

L-IR: 68

R-ER: 105

L-ER: 113

RTROM: 152

LTROM: 181

Programming Case Study #3

Programming strategies:

- 1) Refer out to PT to fully diagnose GIRD and figure out what is causing Shoulder IR limitations
- 2) All movement notes from movement screens showed excess T-Spine extension and inability to control hip extension vs lumbar extension
- 3) Warm up- followed 4x4- supine/prone to standing - quadruped heavy
- 4) Training- quadruped and half/tall kneeling dominant to start off-season program.
- 5) Reassess FULL FMS every third session until back to baseline.
- 6) Reassess Shoulder Mobility every (other) training session

Programming Case Study #3: Sample Program

- A1) BW Snap-Down with Hip Circle @ Knees 3x5
- A2) KB Reverse Crunch with Exhale 3x5
- A3) TRX Serratus Slide with Exhale 3x5
- B1) Quadruped 1-arm Row 3x8 per arm
- B2) Landmine Split Squat 3x8 per leg
- B3) Quadruped Rear Heel End Range Lift Off 3x8 per leg
- C1) SB DBL Leg Hamstring ISO Hold 3x20 second
- C2) Landmine Split Stance 1 Arm OHP 3x10 per side
- C3) Tall Kneeling Palloff Press 3x10 per side

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Thank you!

If you ever want to talk shop, never hesitate to reach out!

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