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PHYSICAL THERAPY AT St Luke's

Part 1: Return to Sport Criteria for Upper Extremity Athletes
Part 2: Movement Variability: Should Valgus be Demonized?

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Continuing Medical Education Credit Information

- Activity Description/Statement of Need:
  - Part 1: Return to Sport Criteria for Upper Extremity Athletes
    - This section will focus on the importance of using reliable, sport-specific tests to ensure a successful return to sport for upper extremity athletes. We will discuss the proper criteria that align athletes for success and the reliability of various upper extremity tests, emphasizing the importance of appropriate testing based on the specific sport.
  - Part 2: Movement Variability: Should Valgus be Demonized?
    - In this part, we will explore the relationship between movement variability and knee valgus. Research shows that while movement variability is not inherently bad, too much or too little can increase the risk of injury. We will discuss how improving motor control and reducing movement variability can decrease injury risk, enhance muscle activation, and improve lower extremity function. The presentation will delve into whether knee valgus should be avoided or if athletes should develop strength and control across the entire range of motion.
  - Medical professionals, including physical therapists, should expect to achieve enhanced evaluation, management, and communication skills for patients with or without referral.

- Target Audience: All Providers

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Designation Statement

- It is St. Luke's University Health Network policy to ensure balance, independence, objectivity and scientific rigor in all of our sponsored educational programs. Faculty and all others who have the ability to control the content of continuing medical education activities sponsored by the St. Luke's Hospital & Health Network are expected to disclose to the audience whether they do or do not have any real or apparent conflict(s) of interest or other relationships related to the content of their presentation(s).

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- The St. Luke's University Health Network designates this live educational activity for a maximum of 1 AMA PRA Category 1 Credits™. Physicians should only claim credits commensurate to the extent of their participation on the activity.

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Disclosure Information

- The Planners involved in this activity have no relevant financial relationships to disclose.
- The Faculty/Presenters involved in this activity have no relevant financial relationships to disclose.

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Learning Objectives

- At the end of this course, you will be able to:
  - Explain the importance of a sport specific return to sport criteria
  - Identify ways to prevent upper extremity injury in the healthy athlete
  - Define movement variability
  - Recognize the role of movement variability and its role in lower extremity injury prevention

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Return to Sport Criteria for the Upper Extremity Athlete

Abigail Lefebvre DPT, CSCS

RTS Definition

- Definition:
  - Return to sport (RTS)
    - a measure for assessment of clinical outcomes in orthopaedic sports medicine surgery
  - **No standardized definition for when an athlete has officially returned to his or her sport**

(Doege, 2021)

Why is RTS testing important?

- **Prevent reinjury** including instability, assess and evaluate functional recovery, and provide objective measures to guide return to sport activities

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(Hurley, 2021)(Junior, 2021)(Wilson, 2020)(Gaunt, 2010)

Objective & Subjective Measures

Tissue healing time frame

Patient reported outcome measures (DASH and NPRS)

Strength is measured by handheld dynamometer

ROM

Physical performance tests utilized include:

- Closed Kinetic Chain Upper Extremity Stability test
- Seated shot-put test
- Lower extremity/core tests.

(Barber, 2023)

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Recurrence Rates

- Higher recurrence rates in youth athletes following non-operative compared to operative management

~ 5–10% and up to 17%: further instability episodes

recurrence rate changes with type of sport

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RTS testing vs. Time-based clearance

Instability/ Labral injuries

- 2/3 failed 1 section of RTS when time-based clearance was allow indicating functional deficits
- Recurrence rates may be associated with return-to-sport protocols based on functional testing rather than time since surgery
  - Further research is needed

Bankart Repair

- Decreased reoccurrence of instability for those cleared by RTS criteria than those cleared to return based on time-based clearance

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(Reddy, 2023)(Junior, 2021)(Como, 2022)

Test Reliability

- Reliability of Upper Extremity Functional Performance Tests for Overhead Sports Activities
  - Tests:
    - Prone Medicine Ball Drop Test at 90° Shoulder Abduction (PMBDT 90°)
    - Prone Medicine Ball Drop Test at 90° Shoulder Abduction/90° Elbow Flexion (PMBDT 90°-90°)
    - **Half-Kneeling Medicine Ball Rebound Test (HKMBRT)**
    - **Seated Single Arm Shot Put Test (SSASPT)**
  - **Findings:**
    - **Sufficient reliability with SSAPT and HKMBRT**

(Riemann, 2023)

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Shoulder Arm RTS test Battery

6/8 tests **reliable:**	• Ball abduction ER, Overhead snatch, Modified CKC UE stability test, Push- up claps, Line hops, Side hold rotations
2/8 tests **unreliable:**	• Drop catches and ball taps • shown to have a learning effect across testing thus scores can improve without actual progress made
Familiarization session required:	• BABER • Side hold rotations • Push-up clap

(Olds, 2019)

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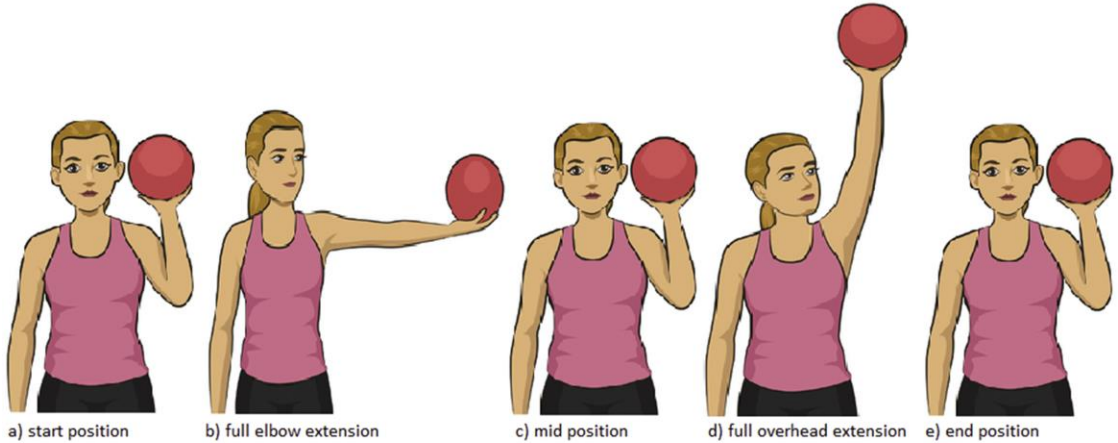
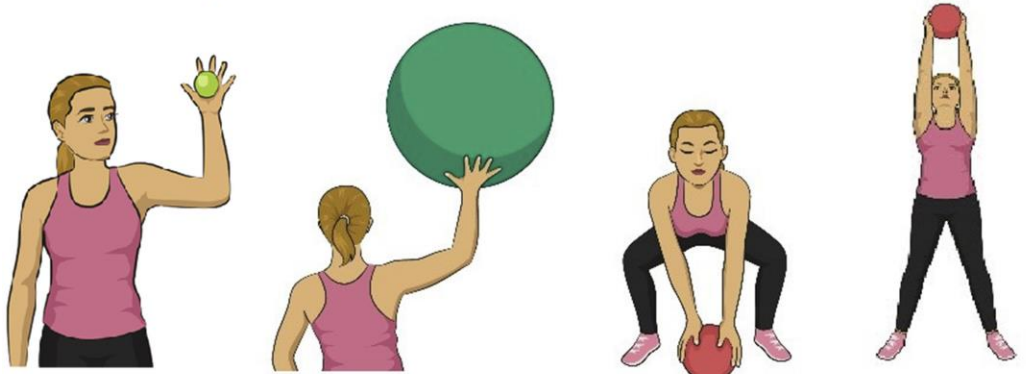
Shoulder Arm RTS test Battery

- Open chain tests:
  - **Ball abduction ER**
  - Drop Catches
  - Ball taps
  - **Overhead snatch**

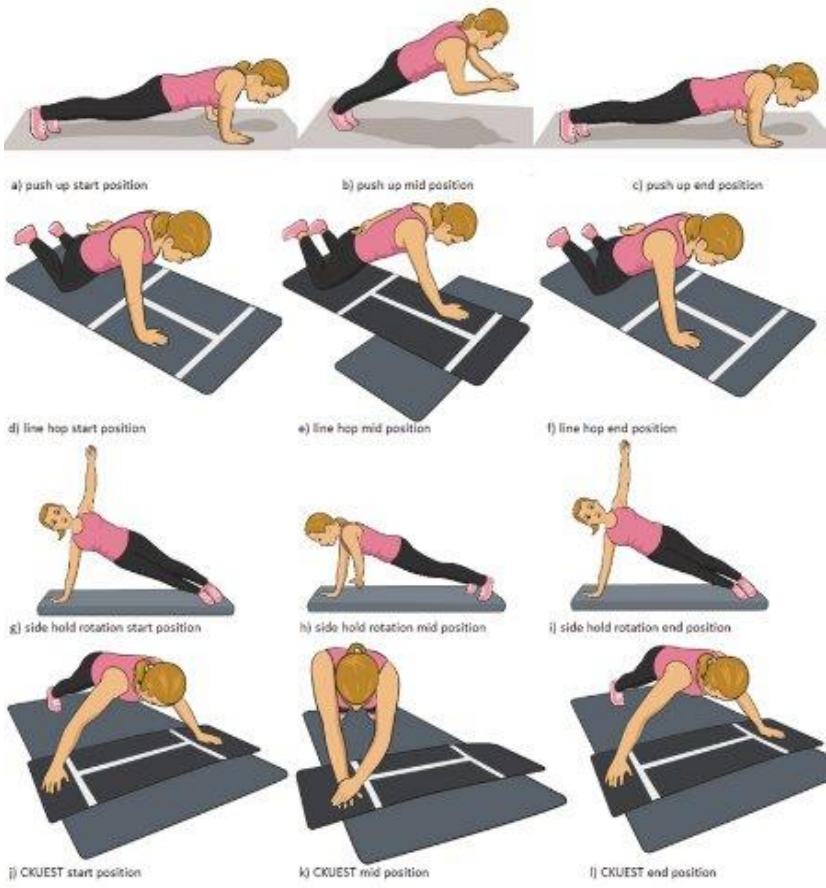




(Olds, 2019)

Shoulder Arm RTS test Battery

- Closed chain tests:
  - **Modified CKC UE stability test**
  - **Push- up claps**
  - **Line hops**
  - **Side hold rotations**



(Olds, 2019)

Return to sport testing 6 months post op

Arthroscopic shoulder stabilization surgery (anterior or posterior)

- Functional Tests:
  - **Closed Kinetic Chain Upper Extremity Stability test**
  - **Unilateral Seated Shot Put test**
- Results
  - 11% passed test battery for strength and function
  - Functional goals most likely met compared to strength
  - IR strength greater likelihood of achievement compared to ER strength

"Strength and functional testing could provide more reliable criteria than arbitrary passage of time for return to play after shoulder stabilization surgery.

(Wilson, 2020)

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Preventing Shoulder Injuries

OSLO SPORTS TRAUMA RESEARCH CENTER (OSTRC) SHOULDER INJURY PREVENTION PROGRAM

SHOULDER CONTROL PROGRAM

THROWING INJURY PREVENTION PROGRAM

FIFA 11+ SHOULDER INJURY PROGRAM

(Liaghat, 2023)

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Throwing Injury Prevention Program

Focuses on:

- Stretching
- dynamic mobility
- balance training during warm-up

52% injury risk reduction

(Liaghat, 2023)

FIFA 11+ Shoulder Injury Prevention program

- For goalkeepers
- Effective at reducing UE injuries by increasing shoulder stability and strength
- 3 parts:
  - general warming-up exercises,
  - exercises to improve strength and balance of the shoulder, elbow, wrist, and finger muscles
  - advanced exercises for core stability and muscle control

(Liaghat, 2023)(Ejnisman, 2016)

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Summary

- **RTS testing**
  - Depends on sport
  - Use reliable and valid tests
- **Prevention Program**
  - Educate on prevention programs to prevent reoccurrence

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