TOMMY JOHN REHAB:
MORE THAN ELBOW EXTENSION AND GRIP STRENGTHENING

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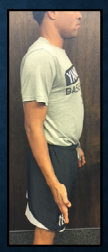
PRESENTATION OVERVIEW

- Pre-operative Considerations
- Implications of Surgical Technique and Procedure
- Rehabilitation Overview
- Interval Throwing Program
- Identifying and Managing "Set-Backs"

PRE-OPERATIVE CONSIDERATIONS

- Previous assessments
  - Range of Motion
  - Strength
- Symptom reporting
- Past medical history
- Timing of Injury
- Conservative rehab?
- Education
- Insurance coverage



PRE-OPERATIVE CONSIDERATIONS

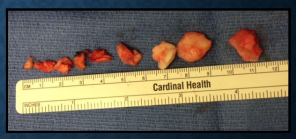
- **EDUCATION!**
  - "It's just and oil change"
  - "Why aren't they throwing harder??"
  - "I'm going to come back throwing gas/cheddar/fire"
  - "My college coach told me to stop doing arm care"
  - "Why does the throwing program take so long"

PRE-OP EDUCATION

- Public Perception (Ahmad et al. 2012)
  - Should TJ be performed on a healthy elbow to enhance performance?
    - 30% Coaches, 37% Parents, 51% HS Athletes; 26% College Athletes
  - Will performance be enhanced following TJ?
    - 28% Players; 20% Coaches
  - Will return to sport be < 9 months?
    - 24% Players, 20% Coaches, 44% Parents

SURGICAL TECHNIQUE CONSIDERATIONS

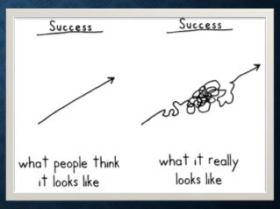
- Surgical Technique
- Concomitant Procedures
  - FP Reattachment
  - Nerve transposition
  - Bone spurs, loose bodies, etc
- Graft choice
  - Gracilis: Stretch at 2-3wk, Bike at 2-4 Wk, Isotonics at Wk 6
- Expected post-op symptoms
  - Transient ulnar n. parathesia
  - Posterior/tricep "tightness"



❖ Removal of loose bodies and ossification within UCL

REHABILITATION TIMELINE

- Phase I – Immediate Post-Operative (Wk 0-3)
- Phase II – Intermediate (Wk 4-7)
- Phase III – Advanced Strengthening (Wk 8-13)
- Phase IV – Return to Activity (Wk 14+)

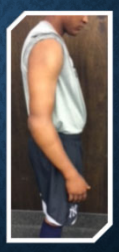


REHABILITATION TIMELINE

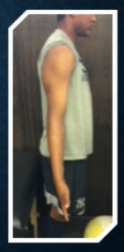
- **Phase I – Immediate Post-Operative**
  - Wk 1: Gripping Exercises, Wrist AROM
  - Wk 2: Initiate elbow extension isometrics
    - Initiate light scar mobilization
  - Wk 3: Initiate shoulder and elbow ROM
    - Initiate light scapular TEx
- Phase II - Intermediate
- Phase III – Advanced Strengthening
- Phase IV – Return to Activity

PHASE I – IMMEDIATE POST-OP

- **GOALS**
  - Protect Graft
  - Protect Tissue Healing
  - Decrease Pain/Inflammation
  - Retard mm atrophy
- Range of Motion
  - Per MD protocol
  - Active wrist ROM
  - HS Graft – Knee ROM



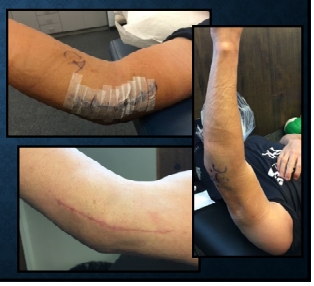
❖ 9 Days p/o



❖ 11 Days p/o

PHASE I – IMMEDIATE POST-OP

- Tissue healing and infection control
- Remove post-op splint at 5-7 days p/o
  - Cover area with gauze + Tegaderm
- ROM Considerations
  - Less is more
  - Decision making for brace settings
    - Immediate ROM?
    - Body type?
  - Avoid ER/Valgus stress



PHASE I – IMMEDIATE POST-OP

- **Motion Restoration**
  - Gradually advance extension as tolerated
    - Ensure appropriate location of "stretch" on elbow
    - Neural inhibition
  - **Limit excessive elbow flexion**
  - Encourage spending time (i.e. ROM/Manual Therapy/Exercise) on one direction vs. back and forth
    - Progress to carry-over of flex/ext

REHABILITATION TIMELINE

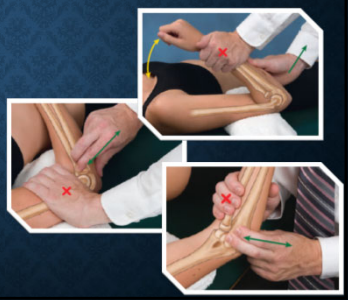
- Phase I – Immediate Post-Operative
- **Phase II – Intermediate**
  - Wk 4: Initiate light resistance TEx (1lb)
  - Wk 5: Discontinue brace
  - Wk 6: Initiate Thrower's Ten
  - Wk 7: Initiate light PNF diagonal
- Phase III – Advanced Strengthening
- Phase IV – Return to Activity

PHASE II - INTERMEDIATE

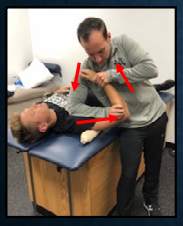
- **GOALS**
  - Gradual increase to full ROM
  - Promote healing of repaired tissue
  - Regain and improve mm strength
  - Restore full function of graft site

PHASE II - INTERMEDIATE

- Assessment of Elbow Joint Mobility
- Abnormal End-Feels :
  - Firm
  - Hard
  - Boggy
  - Empty
- Assess other joints
  - Shoulder, C-Spine, and T-Spine

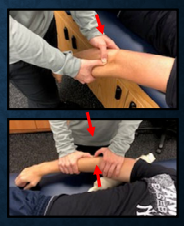


ELBOW JOINT MOBILIZATIONS



Elbow Flexion w/ Ulnar Gapping

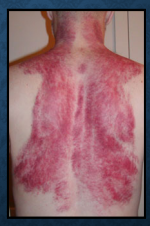
Elbow Extension w/ Forearm Distraction



Radial Head Mobilizations

SOFT TISSUE TECHNIQUES

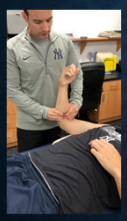
Soft Tissue Massage



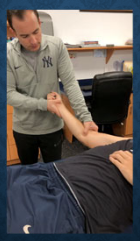
Instrument Assisted

Cupping

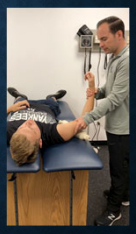
SOFT TISSUE TECHNIQUES



Pronator



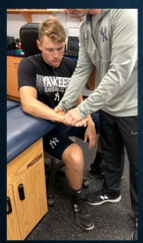
Flexor Bundle



Distal Biceps

PHASE II - INTERMEDIATE

- Forearm Strengthening



➢ Manual Extensor Ecc.

➢ Powerweb at 0 deg ER

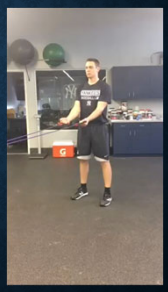
➢ Powerweb in Scaption

PHASE II - INTERMEDIATE

- Rotator Cuff Strengthening/Activation
- Appropriate muscle activation is key!!!
  - Verbal and Tactile Cues
  - E-Stim (Russian)
  - Modify exercise
- USE A TOWEL ROLL!!
  - Optimal line of force production for mm.
  - Adduct humerus w. ER (Graichen et. al)
    - Inc. EMG activity of cuff
    - Inc. sub-acromial space

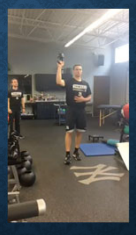
PHASE II - INTERMEDIATE

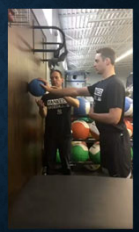
- Periscapular Muscle Strengthening
  - Technique
  - Appropriate mm activation
  - Wall slides, W's, Scap Depression, Serratus Ant.
- "I-W-Y" Exercise
  - Challenging scapular strengthening/stabilization exercise
  - 2 for 1 --- Engages CORE



PHASE II - INTERMEDIATE

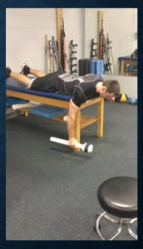
- Neuromuscular Stabilization
  - Eyes Open/Closed
  - Supine with Legs Raised
  - FF, Scaption, ER/IR, Mid and Low Trap
- Role in dynamic shoulder stability
  - Wilk et al; JOSPT '97
  - Wuelker et al; J Biomech '95





PHASE II - INTERMEDIATE

- Prone Horizontal Abd. w/ ER
  - Focus on scapular control
  - Progress by increasing lever arm
  - Progress to rotating humerus at end-range



REHABILITATION TIMELINE

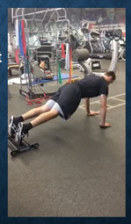
- Phase I – Immediate Post-Operative
- Phase II - Intermediate
- **Phase III – Advanced Strengthening**
  - Wk 8: Initiate Double-Arm Plyos (Close to Body)
  - Wk 10: Progress Double-Arm Plyos (Away from Body)
  - Wk 12: Initiate machine strengthening exercises
- Phase IV – Return to Activity

PHASE III – ADVANCED STRENGTHENING

- **GOALS**
  - Increase strength, power, endurance
  - Maintain full elbow ROM
  - Gradually initiate sporting activities

PHASE III – ADVANCED STRENGTHENING

- Closed Kinetic Chain TEx
  - Box Step-Overs
  - UE Walks
  - Push-Up w/ Stability Component
    - Wobble Board
    - Physioball
- Machine Strengthening
  - Chest Press
  - Lat Pull

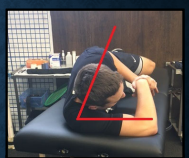


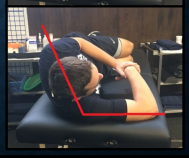
SELF-STRETCHING TECHNIQUES

- Weighted elbow extension
  - Stretch should be felt over biceps/anterior elbow….NOT POSTERIORLY !!!
  - Bicipital crease facing up
  - Limit humeral external rotation
  - Low load, long duration
- Weighted elbow flexion
  - No symptoms medially
  - Gentle posterior stretch

SELF-STRETCHING/MOBILITY EXERCISES

- Sleeper Stretch
  - Consider modified stretch position
  - Wilk et al; JOSPT '13
    - Scapular plane - better stretch for posterior capsule
    - Decreased reports of symptoms associated w/ sub-acromial impingement
  - Communicate and education on location of appropriate stretch
- AVOID ANTERIOR "PINCHING" !!!!



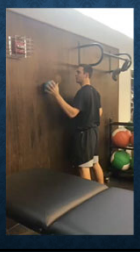


REHABILITATION TIMELINE

- Phase I – Immediate Post-Operative
- Phase II - Intermediate
- Phase III – Advanced Strengthening
- **Phase IV – Return to Activity**
  - Wk 14: Initiate Single-Arm Plyometrics
  - Wk 16-24: Begin Interval Throwing Progression
  - Wk 20-24: Begin Hitting Progression

PHASE IV – RETURN TO ACTIVITY

- Progress to Single-Arm Plyometrics
  - Week 14
  - Full and Pain-Free ROM
  - Asymptomatic with TEx
  - Appropriate strength
- Mix in perturbations

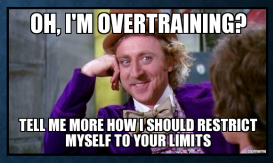


INTERVAL THROWING PROGRAM

- Full Re-assessment prior to throwing
  - 4-6 months post-op
- Gradual Progression
  - Flat Ground ~4.5 mo
  - Mound Progression ~4mo
  - Incorporate Download Periods
  - Continue to collect objective measures
  - Communicate with player/coach
  - Monitor overall volume

IDENTIFYING AND MANAGING "SETBACKS"

- Subjective reporting
  - Expected/normal soreness
- Objective findings
  - Joint mobility, ROM, Strength, etc
  - Assess before progressing!!
- Protocols are guidelines
- Assess volume of activity
  - Over or under-working?
- Communicate with staff/MD
  - Pictures, Facetime, Etc.



THANK YOU!