UCL REHABILITATION & THROWING PROGRAM

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Introduction

- Surgery Techniques
- Graft Selection
  - Palmaris Longus
    - Immediate ROM
      - Avoid aggressive stretching x 2 wks

  - Gracilis graft
    - Avoid stretch x 2-3 wks
    - Avoid isolated hamstring for 3-4 wks
      - Bike ok 2-4 wks
      - Isotonics at 6 wks

Rehab Protocol Overview

- Phase 1: Immediate Post-Op (1-3)
- Phase 2: Intermediate (4-7)
- Phase 3: Advanced Strengthening (8-13)
- Phase 4: Return to Activity (14+)
  - ITP (initiated b/w 16-20 wks)
    - Flat Ground / Long Toss
    - Mound
    - BP/Sim Game
    - Game

Phase 1

Immediate Post-Operative

Weeks 1-3

Phase 1: Immediate Post-Operative

- GOALS:
  - Protect the graft/healing tissue
  - Pain / Inflammation Control
  - Reestablish Non-painful ROM
  - Retard Muscular Atrophy

Phase 1: Immediate Post-Operative

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Phase 1: Immediate Post-Operative

- Protect the graft:
  - Infection control
  - Suture Removal: 7-10 days post-op
  - Avoid Valgus Stress
  - Avoid ER
  - Post Splint
    - Week 1: Immobilized first 7 days
      - Posterior splint at 90° elbow flexion
  - Hinged Brace – (Weeks 2 – 6/8)
    - Week 2: 30-100
    - Week 3: 15-115

Phase 1: Immediate Post-Operative

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Phase 1: Immediate Post-Operative

- Control Pain / Inflammation:
  - Nutrition
  - MEDS (anti-inflam)
  - Hivamat
  - Laser
  - ROM
  - E-stim
    - Hi-volt, IFC
  - Cryotherapy
    - Elbow Joint + Graft Site
  - Compression Sleeve
  - Kinesiotape
    - Lymph drainage
  - Retrograde Massage
    - Scar Mobs (week 2+)

Phase 1: Immediate Post-Operative

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Phase 1: Immediate Post-Operative

- Reestablish *NON-PAINFUL* ROM
  - ***Pre-op #'s*** vs ND side #'s
- Week 1:
  - Wrist AROM (ext/flex)
    - FP detach = no wrist ext x 6 wk
    - mm split = ext ok
    - Knee ROM (if involved)
- Week 2:
  - Elbow: P/AAROM: 25-100
    - Humero-ulnar jt (FLEX/EXT)
    - Humero-radial + Radio-ulnar jt (SUP/PRO)

Phase 1: Immediate Post-Operative

- Reestablish *NON-PAINFUL* ROM:
  - Week 3:
    - Wrist/Hand: AROM
    - Elbow: AROM: 15-115
      - Flex/Ext
    - Shoulder: AROM
      - Avoid ER (valgus stress)
      - Full Can
      - Lateral raises
      - Scaption
    - Scap: PROM
    - Cervical ROM/Stretch

Phase 1: Immediate Post-Operative

- GOALS:
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  - Reestablish Non-painful ROM
  - Retard Muscular Atrophy

Phase 1: Immediate Post-Operative

- Retard Muscular Atrophy:
  - E-stim:
    - NMES (scap/RTC)
  - Gripping: week 1
  - Isometrics
    - Submax
    - Wrist Iso's: week 2
    - Elbow flex/Ext: Week 2 (biceps)
    - Shoulder: Avoid ER
    - Scap: squeezes
    - BFR
      - Shoulder/Scap/Wrist & Forearm

Phase 1: Immediate Post-Operative

- Other topics for Phase 1:
  - Cardio
    - Bike: week 3 (No LE Graft)
    - Avoid running/jumping = no treadmill

Phase 2

Intermediate

Weeks 4-7

Phase 2: Intermediate

- GOALS:
  - Promote Healing of Repaired Tissue
  - Gradual Increase to Full ROM
  - Regain and Improve Muscular Strength
  - Restore Full Function of Graft Site

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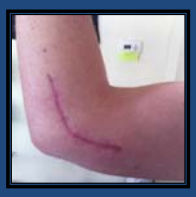
Phase 2: Intermediate

- Promote Healing of Repaired Tissue
  - Hivamat
  - Soft Tissue / Fascial mobility
  - Scar mobility



Phase 2: Intermediate

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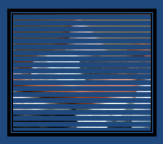
Phase 2: Intermediate

- Gradual Increase to Full ROM
  - Week 4: 0-120
    - Functional Brace set 10-120
  - Week 5: 0-135
    - Functional Brace set 10-120
  - Week 6: 0-145/Full (AROM)
    - Functional Brace set 0-130
    - D/C Brace (wk 6-8)

- PRE-TX:
  - Warm Whirlpool/MHP/UBE

Phase 2: Intermediate

- Trouble shooting ROM:
  - Acute (5-6 wks) vs Chronic Tear (6-8 wks)
  - ***Ideally FULL ROM by week 6***
  - *Don't force in early phases!!*
  - If still having trouble…
    - MEDS (prevent HTO)
    - LLLD
      - 4 x 15' / day
        - produce 'creep' = tissue elongation
        - no pain/mm spasm (low load)
    - Manual Therapy
      - MET's/PNF (Contract/Relax)
      - Joint Mobs
        - G I & II : stimulate type 1 & 2 articular receptors



Phase 2: Intermediate

- GOALS:
  - Promote Healing of Repaired Tissue
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  - Restore Full Function of Graft Site

Phase 2: Intermediate

- Regain and Improve Muscular Strength:
  - Week 4:
    - Begin light resistance isotonics (1 lb) + 1 lb per week
      - Wrist: Flex/Ext/Pro/Sup
      - Elbow: Flex/Ext
      - Shoulder: emphasize RTC
        - IR exc permitted thru full ROM
        - ER: limited arc of motion (until 6 wk)
      - Scapular
        - Manuals

Phase 2: Intermediate

- Regain and Improve Muscular Strength:
  - Week 5: Progress exercises
  - Week 6/7: Progress exercises
    - Add/Progress SHOULDER ER Strengthening
    - ER walkouts (iso's)
    - *Initiate Thrower's 10*
    - Progress above exercises
    - Increase weight
    - ***Neuromuscular Drills:***
      - *Initiate PNF diagonal patterns*
      - *Proprioception drills/Rhythmic stabs*
      - *(Swiss ball in CKC)*
      - *RS at mid/end-range*

Phase 2: Intermediate

- GOALS:
  - Promote Healing of Repaired Tissue
  - Gradual Increase to Full ROM
  - Regain and Improve Muscular Strength
  - Restore Full Function of Graft Site

Phase 2: Intermediate

- Restore Full Function of Graft Site:
  - Wrist:
    - ROM/Strength
  - Thigh:
    - ROM, Gait, Strength

Phase 3

Advanced Strengthening

Weeks 8-13

Phase 3: Advanced Strengthening

- GOALS:
  - Increase Strength, Power, Endurance
  - Maintain Full Elbow ROM
  - Gradually Initiate Sporting Activities

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Phase 3: Advanced Strengthening

- Increase Strength, Power and Endurance
  - Weeks 8-11:
    - Continue Isotonics
      - Wrist/Forearm/Shoulder
      - Initiate *eccentric* elbow flex/ext
      - *Manual resistance diagonal PNF patterns*
      - *Body Blade*
      - Emphasize *scap , core, lower body + balance*
  - Week 12-13:
    - Initiate isotonic machines (if desired)
      - Bench press (seated)
      - Lat pulldowns *(front)*

Phase 3: Advanced Strengthening

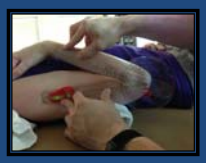
- Increase Strength, Power and Endurance
  - Initiate 2-Hand Plyo's (week 12)
    - Close to body
      - Chest Pass
      - Side throw (hands close to body)

Phase 3: Advanced Strengthening

- GOALS:
  - Increase Strength, Power, Endurance
  - Maintain Full Elbow ROM
  - Gradually Initiate Sporting Activities

Phase 3: Advanced Strengthening

- Maintain Full Elbow ROM
  - Continue Warm Whirlpool and Contrast Baths
  - LLLD (if necessary)
  - Stretching and Soft Tissue Mob as needed
    - Fascial Mobility
    - Joint Mobs
    - Stretch

Phase 3: Advanced Strengthening

- GOALS:
  - Increase Strength, Power, Endurance
  - Maintain Full Elbow ROM
  - Gradually Initiate Sporting Activities

Phase 3: Advanced Strengthening

- Gradually Introduce/Inc. Sporting Activities
  - Surgeon Follow-Up
  - Week 12:
    - Initiate golf/swimming
    - Initiate interval hitting program (if position player)

Phase 4

Return to Activity

Weeks 14-26

Phase 4: Return to Activity

- GOALS:
  - Continue:
    - Increase Strength, Power, Endurance
  - Gradual Return to Sport Activities

Phase 4: Return to Activity

- GOALS:
  - Continue:
    - Increase Strength, Power, Endurance
  - Gradual Return to Sport Activities

Phase 4: Return to Activity

- Continue to Increase Strength, Power & Endurance
  - Week 14:
    - Initiate 1-hand plyo's (stationary)
      - Progress away from body
        - Side to Side
        - Soccer Throw
        - Side
        - Wrist flips / extension grips
  - Week 15:
    - **Initiate 1-hand wall dribble**
    - Continue strengthening program
    - Emphasis on elbow/wrist strengthening and flexibility ex

Phase 4: Return to Activity

- GOALS:
  - Continue:
    - Increase Strength, Power, Endurance
  - Gradual Return to Sport Activities

Phase 4: Return to Activity

- Gradual Return to Sport Activities
  - Week 16-20:
    - Initiate ITP: Phase 1
  - Week 34-38:
    - Progress ITP: Phase 2
  - Months 8-9 of ITP:
    - Progress to Competitive Throwing/Sports

Throwing Program

- Criteria to initiate ITP:
  - Physician Approval / Pass Clinical Exam
  - Full Pain-Free ROM
  - Elbow Stability
  - Appropriate time frame
    - Tissue has healed

Throwing Program

- Objective/Goals
  - Build tolerance to incr. demands/stress on elbow
  - Start at 50% intensity and slowly build to 75%-100%
  - Pain-Free
  - Take breaks as needed
  - Get the ball there
  - Proper warm-up and cool-down
    - Jog/Cycle (sweat); Stretch, Activate
  - Provide feedback
- Amount per week: 3d x/wk
- Amount per session (time or throws)

Interval Throwing Program Overview

- Phase 1: Initiate ITP
  - Week 16 / 20 (4-5 mo post-op)
    - Flat Ground/Long Toss
      - 18 weeks
- Phase 2: Progress ITP
  - Weeks: 34 / 38
    - Mound/BP
      - 10-12 weeks (reliever vs starter)
- Phase 3: Progress to Competitive Throwing
  - Month 8-9 of ITP
    - Sim Game
    - Game

Phase 1

Initiate ITP

Weeks 16 / 20

Phase 1: Initiate ITP

- ***Flat Ground***
  - Week 1 - 2:
    - 60' x 25 throws
  - Week 3-6:
    - 60' x 50 throws
  - Week 7-10:
    - 60'-90' x 25 throws
    - + PFP (no throws)
  - Week 11-14:
    - 90' x 50 throws
  - Week 15-18:
    - 90'-120' x 25 throws

DOWNLOAD WEEKS:
Week 6
Week 12
Week 18

Phase 2

Progress ITP

Weeks 34 / 38

Phase 2: Progress ITP

- ***Mound***
  - Week 19-20: *½ mound*
    - Side 25 FB
  - Week 21-22: *reg mound*
    - Side 25 FB
  - Week 23-24:
    - Side 30 FB/CH
  - Week 25-26:
    - Side 35 ALL
  - Week 27-28:
    - Side 45 ALL
  - Week 29:
    - 1 / 20 (BP)
  - Week 30:
    - 2 / 35 (BP)

DOWNLOAD WEEK: Week 24

- *Relievers:*
  - *Progress to hitters after 35 ALL (week 2)*
- *Starters:*
  - *Progress to hitters after 45 ALL (week 29)*

	M	*T*	*W*	*R*	*F*	*Sa*	*Su*
	LT	Side	OFF	LT	Side	OFF	
Wk 19-20	x	x		x	x		
Wk 21-22	Add CH (flat ground)			CH (flat ground)			
Wk 23-24	Start Flat Ground Spin			Flat Ground Spin			

Phase 3

Progress to Competitive Throwing

Month 11 – 11 ½

Phase 3: Progress to Competitive Throwing

- ***Sim Game:***
  - ***Week 31:***
    - ***1 / 20-25***
    - ***Inc intensity***
      - ***Take away L-Screen***
      - ***Add defense***
      - ***Offense players are running***
      - ***Game situation***
        - ***Hitters don't know what pitch is coming***

- *Game Ready!*
  - *Starter (2/35)*
  - *Reliever (1/20)*

Other ITP Programs:

- Standard for return to competition
  - 12 mo
  - 14 mo
  - 16 mo
- Down time from throwing (flat ground)
- Down time from mound progression
- Velocity based programs
  - Radar
- Long Toss to 200 ft?
  - 150 or < for 1st year post-op

ACKNOWLEDGEMENTS:

- Kevin Wilk
- Matt Holland
- NYY Sports Medicine Staff
  - Dr. Chris Ahmad
  - Steve Donohue
  - Tim Lentych
  - Mark Littlefield
  - David Colvin
  - Jeremy Maddox