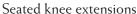
### Microfracture

This protocol should be used as a guideline for progression and should be tailored to the needs of the individual patient.

- Strict protective weight bearing status for two months (8-9 weeks).
  - Allow to place weight of leg on ground (neutralizes joint reaction forces).
- Emphasis on range of motion.
  - Active assisted motion for home program.
- Pool program to initiate functional exercises in reduced weight environment.
- Emphasis on cycling for range of motion without resistance (as long as this is tolerated by the individual).
- At 2 months, transition to full weight bearing (transition variable).
  - Some transition immediately to full weight bearing status.
  - Some require transition to 1 crutch or continued support for distances, which may be needed for 1-2 weeks.
- Minimum three months before progression of functional activities as tolerated.

# PHASE 1: WEEK 1 Initial Exercises (Weeks 1-3)







Ankle pumps

## Initial Exercises (Weeks 1-3)



Glut sets



Adductor isometrics



Quad sets



Heel slides, active-assisted range of motion



Hamstring sets



Log rolling

## Initial Exercises (Weeks 1-3)



Pelvic tilt



Prone on elbows



Trunk rotation



Prone knee flexion



Double leg bridges



Standing abduction without resistance

## Initial Exercises (Weeks 1-3)



Standing adduction without resistance



Standing flexion without resistance



Standing extension without resistance



Pain dominant hip mobilization - grades I, II

### Other Exercises Week 1

• Upper body ergometer, upper body strengthening

## Initial Exercises (Weeks 1-3)



Supine marching, modified dead bug



Theraband resistance on affected side – Abduction (start very low resistance)



Superman



Theraband resistance on affected side – Adduction (start very low resistance)



Abduction isometrics



Theraband resistance on affected side – Flexion (start very low resistance)

## Initial Exercises (Weeks 1-3)



Theraband resistance on affected side – Extension (start very low resistance)

#### Other Exercises Week 2

- Standard stationary bike without resistance at 3 days post-op (10 min. if tolerated)
- Pool exercises (water walking, range of motion, march steps, lateral steps, backward walking, mini-squats, heel raises, hamstring and hip flexor stretches)

### PHASE 1: WEEK 3

## Initial Exercises (Weeks 1-3)



Hip flexion, IR/ER in pain-free range



Leg raise – Abduction



Clamshells



Leg raise - Extension

### Initial Exercises (Weeks 1-3)



Seated physioball progression – active hip/knee

#### Other Exercises Week 3

- Active range of motion with gradual end range stretch within tolerance
- Leg raise Adduction

#### Goals of Phase 1

- $\hfill\Box$  Protect integrity of healing microfracture
- ☐ Restore range of motion within patient tolerance
- ☐ Diminish pain and inflammation
- ☐ Prevent muscular inhibition
- ☐ Normalize gait using two crutches with strict protective weight bearing of no more than the weight of the leg

### Criteria for progression to Phase 2

- ☐ Minimal pain with phase 1 exercises
- ☐ Minimal range of motion limitations
- ☐ Demonstrates restircted weight bearing during gait

PHASE 2: WEEKS 4-6

## Intermediate Exercises (Weeks 4-6)



Theraband resistance on affected side – Abduction (start very low resistance)



Theraband resistance on affected side – Adduction (start very low resistance)

PHASE 2: WEEKS 4-6

## Intermediate Exercises (Weeks 4-6)



Theraband resistance on affected side – Flexion (start very low resistance)



Theraband resistance on affected side – Extension (start very low resistance)



Crunches

### Other Exercises Weeks 4-6

- Initiate elliptical machine
- Pool water exercises flutterkick swimming, 4 way hip with water weights, step-ups

### Goals of Phase 2

- ☐ Protect integrity of healing tissue
- ☐ Restore pain-free range of motion
- ☐ Progressively increase muscle strength and endurance
- ☐ Continue to respect weight bearing precautions

### Criteria for progression to Phase 3

☐ Minimum pain with phase 2 exercises

## Advanced Exercises (Weeks 7-10)



Superman (quadriped position)



Clamshells with resistive tubing/band

#### Other Exercises Week 7

- Standing theraband/pulley flexion, adduction, abductio and extenion or multi-hip
- Pool water exercises flutterkick swimming, 4 way hip with water weights, step-ups

PHASE 3: WEEK 8

## Advanced Exercises (Weeks 7-10)



1/4 Mini squats



Standing heel lifts

## Advanced Exercises (Weeks 7-10)



Single leg bridges/stabilization/alternate kickouts

#### Other Exercises Week 8

- Gradually wean off crutches
- Wall mini-squats
- Physioball mini-squats with cocontraction
- Leg Press (minimal resistance, gradually increasing resistance to patient tolerance)

### PHASE 3: WEEK 9

### Advanced Exercises (Weeks 7-10)



Single leg balance – firm to soft surface with external perturbation (ball catch, sports specific/simulated ex.)





Physioball hamstring exercises – hip lift, bent knee hip lift, curls, balance

## Advanced Exercises (Weeks 7-10)



Sidestepping with resistance (pause on affected limb), sports cord walking forward and backward (pause on affected limb)



Bosu squats

#### Other Exercises Week 9

- Knee extensions, hamstring curls
- Single stability ball bridges

PHASE 3: WEEK 10

## Advanced Exercises (Weeks 7-10)



Step-ups with eccentric lowering



Lunges progress from single plane to tri-planar lunges, add medicine balls for resistance and rotation

## Advanced Exercises (Weeks 7-10)



Theraband walking patterns – forward, sidestepping, carioca, monster steps, backward, ½ circles forward/backward – 25 yds. Start band at knee height and progress to ankle height



Single leg body weight squats, increase external resistance, stand on soft surface



Side steps over cups/hurdles (with ball toss and external sports cord resistance), increase speed

### Goals for Phase 3

- $\ \square$  Restoration of muscular endurance/strength
- ☐ Restoration of cardiovascular endurance
- ☐ Optimize neuromuscular control/balance/proprioception

### Criteria for Progression to Phase 4

- ☐ Single leg mini-squat with level pelvis
- ☐ Cardiovascular fitness equal to preinjury level
- ☐ Demonstration of initial agility drills with proper body mechanics

PHASE 4: WEEKS 11-13

### Sports specific training rehab clinic based progression



Single leg pick-ups, add soft surface

#### Other Exercises Weeks 11-13

- All phase 3 exercises
- Pool running (progress from chest deep to waist deep), treadmill jogging
- Step drills, quick feet step-ups (4-6 inch box) forward, lateral, carioca
- Plyometrics, double leg and single leg shuttle jumps
- Theraband walking patterns 1 rep of six exercises x 50yds, progress to band at knee height and ankle height

### FINAL PHASE: WEEKS 14 & BEYOND

### Sports specific training on field or court

#### Other Exercises Weeks 14 & beyond

- ☐ Running progression
- ☐ Sport specific drills
- ☐ Traditional weight training

#### Criteria for full return to competition

- ☐ Full range of motion
- ☐ Hip strength equal to uninvolved side, single leg pick-up with level pelvis
- ☐ Ability to perform sport-specific drills at full speed without pain
- ☐ Completion of functional sports test