

Tibial Tubercle Osteotomy

PHASE 1 - ACUTE (0-6 Weeks)

PHASE GOALS: PROTECT OSTEOTOMY, RESTORE QUADRICEPS ACTIVATION

RANGE OF MOTION

0-1 WEEKS - ALLOW FLEXION TO 30 DEG

1-2 WEEKS - GRADUALLY PROGRESS FLEXION TO 60 DEG

2-4 WEEKS - GRADUALLY PROGRESS FLEXION TO 90 DEG

4-6 WEEKS - GRADUALLY PROGRESS FLEXION TO 120 DEG

WEIGHT BEARING

0-2 WEEKS – TOE TOUCH WEIGHT BEARING

2-6 WEEKS – PARTIAL WEIGHT BEARING, WBAT AFTER 6 WEEKS

BRACE & CRUTCH USE

0-2 WEEKS - BRACE LOCKED IN EXTENSION, CRUTCHES FOR 6 WEEKS

2-6 WEEKS – UNLOCK BRACE 30 DEG EACH WEEK **WITH GOOD QUAD

STRENGTHENING & CONDITIONING

0-2 WEEKS - QUAD SETS

2-6 WEEKS - QUAD SETS, SLRs, UPPER BODY ERGOMETER

CRITERIA FOR PROGRESSION

- **WITHIN 2 DEG NORMAL KNEE EXTENSION & \geq 90 DEG KNEE FLEXION**
- **\leq 2/10 PAIN AT REST**
- **STRAIGHT LEG RAISE WITHOUT QUAD LAG**

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PHASE 2 – AMBULATION & ADLs (7-10 Weeks)

PHASE GOALS: RESTORE AMBULATION STATUS & ADLS

RANGE OF MOTION

7-10 WEEKS - GRADUALLY PROGRESS FLEXION TO FULL

WEIGHT BEARING

7+ WEEKS – PROGRESS AS TOLERATED

BRACE & CRUTCH USE

7+ WEEKS – PROGRESS TO FULL *WITH GOOD QUAD CONTROL

STRENGTHENING

7-8 WEEKS - QUAD SETS, LEG RAISES, HIP & CORE STRENGTHENING, SIDE PLANKS, GAIT TRAINING, SINGLE LEG BALANCE

9-10 WEEKS - CONTINUE PREVIOUS, SAQ, LAQ, PARTIAL RANGE LEG PRESS (LIGHT), STEP-UPS (6" OR LESS), PSOAS AND POSTERIOR CHAIN FLEXIBILITY

CONDITIONING

UPPER BODY ERGOMETER, BIKING WHEN > 115 DEG FLEXION,

CRITERIA FOR AMBULATION WITHOUT ASSISTIVE DEVICE

- **AT LEAST 7 WEEKS POST-SURGERY**
- **PAIN LESS THAN 2/10 (WORST)**
- **WITHIN 2 DEG NORMAL KNEE EXTENSION & 120 DEG KNEE FLEXION**
- **SINGLE LEG BALANCE > 20 SEC (BESS)**
- **MD OR PT APPROVAL**

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PHASE 3 - STRENGTH (11-18 Weeks)

PHASE GOALS: IMPROVE STRENGTH & INITIATE JOGGING PROGRAM

RANGE OF MOTION

11+ WEEKS – MAINTAIN ROM

STRENGTHENING

11-13 WEEKS – CONTINUE PREVIOUS, SQUAT PROGRESSION (PARTIAL RANGE -> BODYWEIGHT – SQUATS)

13-16 WEEKS – CONTINUE PREVIOUS, SINGLE LEG SQUATS, SMALL HOPS IN PLACE, JUMP ROPE

CONDITIONING

11+ WEEKS - STATIONARY BIKING, ELLIPTICAL, ROWING MACHINE, SWIMMING

CRITERIA FOR JOGGING

- **AT LEAST 16 WEEKS POST-SURGERY**
- **PAIN LESS THAN 3/10 (WORST)**
- **WITHIN 2 DEG NORMAL KNEE EXTENSION & 125 DEG KNEE FLEXION**
- **AT LEAST 1 MINUTE OF SINGLE LEG SQUATS**
- **MD OR PT APPROVAL**

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PHASE 4 - AGILITY (19-24 Weeks)

PHASE GOALS: INTRODUCE DYNAMIC & POWER MOVEMENTS

STRENGTHENING

GYM SPECIFIC STRENGTHENING (BARBELL SQUATS & DEADLIFTS)

BIODEX QUAD & HAMSTRING FATIGUEING PROTCOLS

CORE EXERCISES (MOUNTAIN CLIMBERS, PLANKS, V-UPS)

SINGLE LEG SQUATTING TO FATIGUE

CONDITIONING

ROAD OR STATIONARY BIKING

JOGGING PROGRAM

PLYOMETRICS & LIGHT AGILITY

LADDER DRILLS, BOX JUMPS (UP/DOWN TO 24"), BROAD JUMP,

VERTICAL JUMPS, HOP PROGRESSION

CRITERIA FOR HEAVY AGILITY & SPORT SPECIFIC MOVEMENTS

- **20 WEEKS POST-SURGERY**
- **PAIN LESS THAN 2/10 (WORST)**
- **QUAD & HAM STRENGTH \geq 80% NORMAL; \geq 50% H/Q RATIO FOR FEMALES**
- **AT LEAST 2 MINUTES OF SINGLE LEG SQUATS (RESISTED)**
- **\leq 5 ON LANDING ERROR SCORING SYSTEM (LESS)**
- **MD OR PT APPROVAL**

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PHASE 5 - RETURN TO PLAY (24+ Weeks)

PHASE GOALS: INITIATE SPORTS SPECIFIC MOVEMENTS & RETURN TO PLAY

STRENGTHENING

PROGRESS GYM ROUTINE (SQUATS, DEADLIFTS, OLYMPIC LIFTING)

BIODEX QUAD & HAMSTRING FATIGUE PROTOCOLS & CORE EXERCISES

CONDITIONING

JOGGING, BIKING, & SWIMMING

INTERVAL SPRINT WORKOUTS

PLYMETRICS & AGILITY (2-3 DAYS/WEEK)

MAX EFFORT BOX JUMPS (PROGRESS WITH ROTATION)

LATERAL & ROTATIONAL AGILITY

SINGLE-LEG HOPS TESTING

UNPREDICTABLE CUTTING & CONTACT DRILLS

RECOMMENDED CRITERIA FOR RETURN TO PLAY

- **PAIN LESS THAN 2/10 (WORST)**
- **QUAD & HAM STRENGTH \geq 90% NORMAL; \geq 60% H/Q RATIO FOR FEMALES**
- **AT LEAST 3 MINUTES OF SINGLE LEG SQUATS (RESISTED)**
- **90% NORMAL ON ALL SINGLE-LEG HOP TESTS**
- **95% NORMAL - FIGURE OF 8, 5-10-5 PRO-AGILITY, & S-L VERTICAL JUMP**
- **MD OR PT APPROVAL**