

Pediatric ACL Reconstruction/Tibial Spine Fracture Rehabilitation Protocol

Time	Goals	Precautions/Restrictions	Treatment
Weeks 0-4	<ul style="list-style-type: none"> • Protect surgical site • Reduce pain and swelling • ROM: 0-90 degree • Full passive extension • Active quadriceps control • Reduce muscle atrophy • Safe use of crutches with altered weight bearing status 	<ul style="list-style-type: none"> • TWB x 4 weeks with crutches in brace • ROM: <ul style="list-style-type: none"> ○ Full extension week 1 ○ 90 degrees flex week 2-4 ○ As tolerated week 4 • No resisted open chain knee extensions 	<ul style="list-style-type: none"> • Quadriceps recruitment/NMES • Global LE/hip strengthening • TWB gait training with crutches • Modalities as indicated <ul style="list-style-type: none"> ○ Cryotherapy: 5-7 times per day • Initial Visit: FOTO, LEFS, PSFS • 1-2 week follow up with MD
Weeks 4-8	<ul style="list-style-type: none"> • ROM as tolerated • Progression to WBAT • SLR without extensor lag • Normalized gait mechanics • Progression of quadriceps strength/endorance • Increase functional activities 	<ul style="list-style-type: none"> • Open kinetic chain is limited to bodyweight leg extensions (weeks 4-8) • No resisted open kinetic chain exercises • No running, jumping, cutting, pivoting, or twisting • Avoid painful activities/exercises 	<ul style="list-style-type: none"> • AAROM - AROM • Gait training progressing from assistive device beginning week 4 • Core stabilization exercises • Global LE strengthening <ul style="list-style-type: none"> ○ Begin functional strengthening exercises (bridge, mini-squat, step up, etc) • Double limb to single limb balance/proprioception • Aerobic training: <ul style="list-style-type: none"> ○ Walking program when walking with normal gait mechanics ○ Stationary bike • Optional therapies (if available/as indicated): <ul style="list-style-type: none"> ○ BFR therapy ○ Aquatic therapy once incision is healed and cleared by surgeon (4 weeks) ○ NMES • Modalities as indicated • Week 6-8: FOTO, LEFS • 6 week follow up with MD (SGYM)
Weeks 8-12	<ul style="list-style-type: none"> • Full, symmetric and pain-free ROM • Progress quadriceps strength/endorance • Increase functional activities 	<ul style="list-style-type: none"> • May initiate resisted open kinetic chain exercise <ul style="list-style-type: none"> ○ 90-45° at 6 weeks ○ 90-30° at 8 weeks ○ 90-0° at 10 weeks ○ 90-0° with progressive loading at 12 weeks • No running, jumping, cutting, pivoting, or twisting • Avoid painful activities/exercises • Avoid patellofemoral pain 	<ul style="list-style-type: none"> • End range flexion and extension • Aerobic training on stationary bike, elliptical, stair climber, UBE • Core stabilization exercises • Progressive double and single limb strengthening • Single to multi-plane exercise • Progression of balance/proprioception • Modalities as indicated • Week 12: FOTO, LEFS, PSFS, ACL-RSI

This protocol is not meant to be prescriptive but a recommendation to guide the rehabilitation process.

Each patient's progress may vary based on specifics of their injury and procedure.

Weeks 12-16	<ul style="list-style-type: none"> • Full, symmetric ROM • No effusion with increased activity • Increase intensity and duration of functional LE strength • Initiate return to jogging program • Begin low level plyometric and agility training 	<ul style="list-style-type: none"> • Avoid painful activities/exercises • Jogging program initiated at 12 weeks if cleared by surgeon <ul style="list-style-type: none"> ○ No effusion ○ Full AROM ○ >80% LSI • No jogging on painful or swollen knee 	<ul style="list-style-type: none"> • Increase loading capacity for lower extremity strengthening exercises • Continue balance/proprioceptive training • Week 12: begin return to jogging program <ul style="list-style-type: none"> ○ If applicable, start with pool/anti-gravity treadmill • Begin low level plyometric and agility training at 12 weeks • Functional assessment (see attached) • 3-4 month follow up with MD (SGYM)
Months 4-6	<ul style="list-style-type: none"> • Continue to progress functional strengthening • Successful progression of the return to running program • Initiate higher level plyometric and agility training 	<ul style="list-style-type: none"> • No jogging on a painful or swollen knee • Avoid painful activities/exercises • Avoid patellofemoral pain • No participation in sports unless specified by care team 	<ul style="list-style-type: none"> • Progression of return to jogging program • Gradually increase lifting loads focusing on form, control, and tissue tolerance • Progress as tolerated: <ul style="list-style-type: none"> ○ Core Stability ○ Strength ○ Endurance ○ Proprioception/Balance • Increase intensity of plyometric and agility training • Foot speed and change of direction • Functional assessment at 6 months (see attached) • Month 6: FOTO, LEFS, PSFS, ACL-RSI
Months 6 - 9	<ul style="list-style-type: none"> • Continue to progress functional strengthening • Sport-specific training 	<ul style="list-style-type: none"> • No participation in sports unless specified by your care team • Avoid painful activities 	<ul style="list-style-type: none"> • Progress as tolerated: <ul style="list-style-type: none"> ○ Core Stability ○ Strength ○ Endurance ○ Proprioception/Balance • Begin sport-specific training • Single-to multi-task • Reactionary drills • Perturbation training • Closed to open environment
Months 9+	<ul style="list-style-type: none"> • Pass return to play criteria (re-test at 12+ months, if necessary) • Begin gradual return to sport 	<ul style="list-style-type: none"> • Gradual return to full participation in sports 	<ul style="list-style-type: none"> • Progress as tolerated: <ul style="list-style-type: none"> ○ Core Stability ○ Strength ○ Endurance ○ Proprioception/Balance ○ Plyometric training ○ Agility drills ○ Sport-specific activities • Gradual return to sport progression • Month 9: FOTO, LEFS, PSFS, ACL-RSI • Functional assessment (see attached) • 9+ month follow up with MD (SGYM)

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Anterior Cruciate Ligament Testing Protocol

Phase	Goals	Surgery	Testing
Week 12 (SGYM)	<ul style="list-style-type: none"> • Full, symmetric ROM • Y-balance anterior reach asymmetry < 5 cm • Quadriceps strength for isometric test > 80% of uninvolved side 	<ul style="list-style-type: none"> • ACL reconstruction • ACL reconstruction with meniscus repair • ACL Allograft (12 week and 6 month recheck) • ACL revision (12 week and 6 month recheck) 	<p>TESTING:</p> <ul style="list-style-type: none"> • Knee assessment including assessment for effusion • Passive and active ROM • Y-balance anterior reach • Isometric knee extension at 60° and 90° • FOTO, LEFS, PSFS, ACL-RSI
Month 6 (No SGYM)	<ul style="list-style-type: none"> • Full, symmetric ROM • Y-balance anterior reach asymmetry < 3 cm • > 80% LSI for isokinetic testing • 90% LSI for functional testing • ACL-RSI > 56 	<ul style="list-style-type: none"> • ACL reconstruction • ACL reconstruction with meniscus repair • <u>ACL Allograft (9 month)</u> • <u>ACL revision (9 month)</u> 	<p>TESTING:</p> <ul style="list-style-type: none"> • Knee assessment including assessment for effusion • Passive and active ROM • Hop Test <ul style="list-style-type: none"> ○ Single Hop ○ Triple Hop • Isokinetic Test (90°, 180°/s) • Y-Balance Anterior Reach • Agility T-Test • FOTO, LEFS, PSFS, ACL-RSI
Month 9-10 (SGYM)	<ul style="list-style-type: none"> • Full, symmetric ROM • > 90% LSI for isokinetic and functional testing • Y-balance anterior reach asymmetry < 3 cm • ACL-RSI > 56 	<ul style="list-style-type: none"> • ACL reconstruction • ACL reconstruction with meniscus repair • <u>ACL Allograft (12 month)</u> • <u>ACL revision (12 month)</u> 	<p>TESTING:</p> <ul style="list-style-type: none"> • Knee assessment including assessment for effusion • Passive and active ROM • Hop Test <ul style="list-style-type: none"> ○ Single Hop ○ Triple Hop ○ Cross-over Hop • Isokinetic Test (90°, 180°/s) • Y-Balance Anterior Reach • Agility T-Test • FOTO, LEFS, PSFS, ACL-RSI

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