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Post-Operative Protocol: Standard Mid-Portion Achilles Tendon Repair

PRE-OPERATIVE			
PRE-OP (2-4+ WEEKS)	**RESTRICTIONS & PRECAUTIONS**	**PHYSIOTHERAPY INTERVENTIONS**	**REHABILITATION GOALS**
	None	- Education RE: what to expect & what is expected of you post-operatively - Education & practice RE: use of gait aid, mobility, transfers, and stairs while maintaining post-op WB status - Education re: benefits of strengthening & cardio pre-operatively - Review immediate post-operative exercises	- Prepare for post-op rehabilitation - Procure equipment for post-op rehabilitation - "Even up" shoe - Gait aid - Walking boot with wedges - Safe ambulation, transfers and stairs with gait aid while maintaining post-op WB status
POST-OPERATIVE			
IMMEDIATE POST-OP (0-2 WEEKS)	**RESTRICTIONS & PRECAUTIONS**	**PHYSIOTHERAPY INTERVENTIONS**	**REHABILITATION GOALS**
	- NWB with ankle in padded splint at a minimum 30 degrees PF - Elevation of affected side in supine *"Toes above the Nose"* **50+ minutes elevation/hour with a MAXIMUM 2 hours/day non-elevated until follow-up with surgeon* - Do not get the foot wet - Seated shower	***MOBILITY*** - AROM of hips and knees ***STRENGTH*** - Strengthening of hips, knees and core while maintaining NWB status ***OTHER*** - Education RE: use of gait aid, mobility, transfers, and stairs while maintaining NWB status	- Control pain and swelling - Minimize loss of core strength - Minimize loss of hip and knee ROM and strength - Promote incision healing - Protect repair - Safe ambulation, transfers and stairs with gait aid while maintaining NWB status
Criteria to Progress: - *Follow-up appointment with surgeon* - *Staples/sutures and bandage/splint removed* - *Adequate pain control (< 5/10)*			
INTERMEDIATE POST-OP (3-4 WEEKS)	**RESTRICTIONS & PRECAUTIONS**	**PHYSIOTHERAPY INTERVENTIONS**	**REHABILITATION GOALS**
	**Continue with Physiotherapy Interventions from immediate post-op phase as appropriate*		
	- No active or passive ankle movement	***MOBILITY*** - As per previous phase	- Protect repair - Control pain and swelling

AROM – Active Range of Motion
LSI – Limb Symmetry Index
WB – Weight Bearing
DF – Dorsiflexion
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INTERMEDIATE POST-OP (3-4 WEEKS)	- Protected WB in walking boot with 30-degree heel lift 4 cm height) + "Even up" shoe - Gait aid - Gradual increase in WB by 25% each week *Week 3 = 25% WB* *Week 4 = 50% WB* - Seated shower - Boot stays on for sleep - Avoid post-exercise pain and swelling	***STRENGTH*** - 4-way ankle isometrics in boot - LE & core strengthening as tolerated ***OTHER*** - Stair practice "good goes up, bad goes down" pattern - Cardiovascular exercise as tolerated while maintaining WB status - Therapeutic modalities as deemed appropriate by physiotherapist	- Restore ankle strength - Restore/maintain cardiovascular endurance - Normalize gait as much as possible in boot + wedges, with gait aid and "Even up" shoe - Safe ambulation, transfers and stairs with gait aid while maintaining appropriate WB status
Criteria to Progress: - *Adequate pain control (< 5/10)* - *Decreased swelling (figure 8 measurement)*			
LATE POST-OP (5-6 WEEKS)	**RESTRICTIONS & PRECAUTIONS**	**PHYSIOTHERAPY INTERVENTIONS**	**REHABILITATION GOALS**
	**Continue with Physiotherapy Interventions from intermediate post-op phase as appropriate*		
	- Avoid DF past neutral - Protected WB in walking boot with 20-degree heel lift (2cm height) + "Even up" shoe - Gait aid - Gradual increase in WB by 25% each week *Week 5 = 75% WB* *Week 6+ = WBAT* - Seated shower - Boot stays on for sleep - May remove boot for ROM exercises - Avoid post-exercise pain and swelling	***MOBILITY*** - PF as tolerated - DF to neutral - IV and EV with ankle below neutral ***STRENGTH*** - 4-way ankle isometrics below neutral - Seated heel raises - Intrinsic foot strengthening ***OTHER*** - Proprioception - Stair practice "good goes up, bad goes down" pattern	- Restore ankle ROM and strength - Restore proprioception - Normalize gait as much as possible in boot + wedges, with gait aid and "Even up" shoe - Safe ambulation, transfers and stairs with gait aid while maintaining appropriate WB status
Criteria to Progress: - *Adequate pain control (< 3/10)* - *Incision fully healed* - *Decreased swelling (figure 8 measurement)*			

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TRANSITIONAL (7-8 WEEKS)	RESTRICTIONS & PRECAUTIONS	PHYSIOTHERAPY INTERVENTIONS	REHABILITATION GOALS
	**Continue with Physiotherapy Interventions from late post-op phase as appropriate*		
	- Avoid DF past neutral - Protected WBAT in walking boot with 10-degree heel lift (1cm height) + "Even up" shoe - Gait aid as needed - Seated shower - May remove boot for sleep - Avoid post-exercise pain and swelling	***MOBILITY*** - All AROM/PROM of the ankle to be below neutral ***STRENGTH*** - Progress ankle strengthening below neutral - Standing heel raises as tolerated ***OTHER*** - As per previous phase	- Maintain ankle ROM - Restore foot and ankle strength below neutral - Normalize gait as much as possible in boot, lift, and "Even up" shoe, with/without gait aid - Normalize stair pattern
Criteria to Progress: - *No post-exercise pain and swelling* - *Pain free DF to neutral achieved*			
ADVANCED POST-OP (9-12 WEEKS)	**RESTRICTIONS & PRECAUTIONS**	**PHYSIOTHERAPY INTERVENTIONS**	**REHABILITATION GOALS**
	**Continue with Physiotherapy Interventions from transitional phase as appropriate*		
	- Avoid sock/barefoot walking - Avoid DF past neutral - No WB restrictions - Supportive shoe with 1cm lift - Standing showers permitted once ankle neutral is comfortable - Avoid post-exercise pain and swelling	***MOBILITY*** - Stretching for the calf may be added to comfortably attain ankle neutral ***STRENGTH*** - Progress ankle strengthening as tolerated ***OTHER*** - Progress proprioception/balance as tolerated	- Restore DF and loaded DF to neutral - Restore full foot and ankle strength - Wean out of boot into supportive shoe with 1cm lift - Normalize gait as much as possible in boot, lift, and "Even up" shoe, without gait aid - Restore balance and proprioception
Criteria to Progress: - *Normalized gait in supportive shoe* - *Minimal swelling (< 1cm difference in figure 8 measurement)* - *> 80% LSI single leg heel raise in both height and number of repetitions*			
RETURN TO ACTIVITY (13-16 WEEKS)	**RESTRICTIONS & PRECAUTIONS**	**PHYSIOTHERAPY INTERVENTIONS**	**REHABILATION GOALS**
	**Continue with Physiotherapy Interventions from advanced post-op phase as appropriate*		
	- Transition into regular footwear	***MOBILITY*** - Gently progress Achilles stretching beyond ankle neutral	- Restore full ankle ROM - Prepare for return to daily activity

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<table>
<tr><td>RETURN TO ACTIVITY (13-16 WEEKS)</td><td>- Sock/barefoot walking as tolerated
- DF past neutral permitted
- Avoid standing stretching of gastroc and soleus until 6 months post-op</td><td>STRENGTH
- As per previous phase
OTHER
- Progress to alternating stair pattern as tolerated</td><td>- Normalize gait pattern
- Transition into regular footwear</td></tr>
<tr><td colspan="4">Criteria to Progress:
- > 90% LSI single leg heel raise in both height and number of repetitions
- > 90% LSI Y-balance test
- No pain or swelling with 30 minutes of fast paced walking</td></tr>
<tr><td>PREPARE FOR SPORT (17+ WEEKS)</td><td colspan="3">- Increase dynamic WB activity
- Beginner level plyometrics
- Sport specific training
- Jogging</td></tr>
<tr><td colspan="4">Criteria to Progress:
- Good tolerance and performance with beginner level plyometrics
- > 80% LSI single hop test for distance and triple hop for distance
- > 90% ATRS</td></tr>
<tr><td>RETURN TO SPORT (6-11 MONTHS)</td><td colspan="3">- Return to normal sporting activities that do not involve contact, sprinting, cutting, or jumping</td></tr>
<tr><td colspan="4">Criteria to Progress:
- No post-exercise pain or swelling
- > 90% LSI (single hop test for distance and triple hop for distance)
- > 95% LSI ATRS</td></tr>
<tr><td>RETURN TO CONTACT (12+ MONTHS)</td><td colspan="3">- Return to contact sport that involve running, cutting, and jumping</td></tr>
</table>

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Achilles Tendon Rupture Score (ATRS)

Patient's are asked to grade from 0 to 10 according to their level of limitations and/or difficulties

1. Are you limited because of decreased strength in the calf/Achilles tendon/foot?
2. Are you limited because of fatigue in the calf/Achilles tendon/foot?
3. Are you limited due to stiffness in the calf/Achilles tendon/foot?
4. Are you limited because of pain in the calf/Achilles tendon/foot?
5. Are you limited during activities of daily living?
6. Are you limited when walking on uneven surfaces?
7. Are you limited when walking quickly upstairs or uphill?
8. Are you limited during activities that include running?
9. Are you limited during activities that include jumping?
10. Are you limited in performing hard physical labor?

Beginner Level Plyometrics

- 3x15 bipedal heel raises
    - Move to rebounding bipedal heel raises as tolerated
- 3x15 single leg heel raises
    - Move to rebounding single leg heel raises as tolerated
- Bipedal hopping in place
- Single leg hopping in place

Single Hop Test

- Jump as far as possible on a single leg, without losing balance and landing firmly
- The distance is measured from the start line to the heel of the landing leg

Standing Heel Raise Progression

- 25 repetitions needed to progress
    - Bipedal standing heel raises with 25% body weight on affected side
    - Bipedal standing heel raises with 50% body weight on affected side
    - Bipedal standing heel raises with 75% body weight on affected side
    - Bipedal standing heel raises with single leg lowering on affected side
    - Single leg heel raises

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Triple Hop Test

- Jump as far as possible on a single leg three consecutive times, without losing balance and landing firmly
- The distance is measured from the start line to the great toe of the landing leg

Y-Balance Test

- Patient stands on one leg while reaching out in 3 different directions with the contralateral leg (Directions are anterior, posteromedial, and posterolateral)
- 3 trials in each of the 3 directions for each foot are collected and the maximum reach in each direction is used for analysis

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