



Lower Extremity Stress Fracture

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GENERAL PRINCIPLES

This protocol for lower extremity stress fractures is designed to provide the rehabilitation professional with a general guideline for patient care with the [AlterG Anti-Gravity Treadmill®](#). As such, it should be stressed that this is only a protocol and should not be a substitute for professional clinical decision-making regarding a patient's progression. And it should be further noted that progression should be individualized based upon each patient's specific needs, pain level, physical examination, progress, and presence of any complications.

PHASE I (Immediate): Week 1-Week 2

GOALS

- Control pain and inflammation
- Maintain joint mobility and AROM/PROM of appropriate joints
- Maintain base level of cardiovascular conditioning
- Promote normal walking gait mechanics within the AlterG

TREATMENT OPTIONS:

Modalities

Ice and interferential electric stimulation for pain/inflammation control, Game ready as needed to control swelling

Manual Therapy

Appropriate ankle joint mobilizations as needed to maintain ankle mobility (Gr 2/3), Mild PROM for foot/ankle and knee as appropriate, Edema massage as appropriate

Therapeutic Exercise

Aqua jogging for CV fitness, Stationary Bike, LE stretches, NWB or PWB AROM (ie: Babst/Wobble/Teeter board), Towel stretching, towel curls, Theraband ankle exercises, Hip and knee strengthening in open chain. Begin proprioceptive activities in the [AlterG Anti-Gravity Treadmill®](#).

Gait Training

Emphasis on proper gait mechanics within the [AlterG Anti-Gravity Treadmill®](#). Utilize forward and backward walking in the AlterG at 60% to 65% BW. Walking 2.5 mph to 3.5 mph at 0% incline

PHASE II (Early Recovery Phase): Week 3-Week 4

GOALS

- Control pain and inflammation
- Maintain joint mobility and AROM/PROM of appropriate joints
- Begin weight bearing activities
- Initiate strengthening progression
- Maintain base level of cardiovascular conditioning
- Promote normal walking gait mechanics within the AlterG

TREATMENT OPTIONS:

Modalities

Ice and interferential electric stimulation for pain/inflammation control, Game ready as needed to control swelling

Manual Therapy

Appropriate ankle joint (subtalar and talocrural) mobilizations as needed to maintain ankle mobility (Gr 2/3), Mild PROM for foot/ankle and knee as appropriate, Edema massage as appropriate, Soft tissue mobilization techniques to the plantar fascia, gastrocnemius, soleus, peroneals, and anterior/posterior tibialis. Lower extremity PNF patterns (hip D1/2 F/E)

Therapeutic Exercise

Stationary Bike, LE stretches, NWB or PWB AROM (ie: Babst/Wobble/Teeter board), Towel stretches in long sitting, Controlled closed chain activities in [AlterG Anti-Gravity Treadmill®](#) (Squats, Single Leg Mini-Squats, SLS, Heel and toe raises), Progression to FWB: Squats, Leg Press, Step-Ups, Band walks

Gait Training

Emphasis on proper gait mechanics within the [AlterG Anti-Gravity Treadmill®](#). Utilize forward and backward walking in the AlterG – 65% to 75% BW. Walking 3.5 mph to 6.0 mph at 0% to 6% incline (incline at lower walking speeds only). Beginning week 3 may increase incline range for lower walking speeds to 0% to 8%.

PHASE III (Intermediate Phase): Week 5-Week 7

GOALS

- Painfree ADLs
- Full painfree AROM/PROM
- FWB closed chain strengthening progression
- Progress to sports and recreational activity progressions
- Progress walking and jogging progressions on AlterG

TREATMENT OPTIONS:

Modalities

Ice and interferential electric stimulation for pain/inflammation control, Game ready as needed to control swelling

Manual Therapy

Advanced mobilization techniques for foot and ankle to normalized ROM and mechanics. Ankle PNF patterns. Lower extremity PNF patterns (hip D1/2 F/E). Edema massage as appropriate, Soft tissue mobilization techniques to the plantar fascia, gastrocnemius, soleus, peroneals, and anterior/posterior tibialis.

Therapeutic Exercise

Continue with foundation strengthening activities. Begin lower level functional training (progress linear to lateral movements). Begin progressive dynamic proprioceptive activities.

Gait Training

In **AlterG Anti-Gravity Treadmill®** single leg strengthening; Walk and jog/run progressions at 70% to 85% BW at 2% to 4% incline (incline at lower speeds only). Speeds from 5 mph to 8 mph. During week 5 may increase to 75% to 90% BW at 2% to 6% incline at lower speeds only.

PHASE IV (Advanced Phase) : Week 8+

GOALS

- Advanced progressions with sports and recreational activity
- Advanced progressions with jogging and running on the AlterG

TREATMENT OPTIONS:

Modalities

Ice and interferential electric stimulation for pain/inflammation control, Game ready as needed to control swelling

Manual Therapy

Advanced mobilization techniques for foot and ankle to normalize ROM and mechanics – AS NEEDED. Ankle PNF patterns. Lower extremity PNF patterns (hip D1/2 F/E). Massage/Soft tissue mobilization as needed to assist in recovery and soreness to the plantar fascia, gastrocnemius, soleus, peroneals, and anterior/posterior tibialis.

Therapeutic Exercise

Continue with foundation strengthening activities. Begin advanced functional training (progress linear to lateral movements). Begin plyometric and advanced agility as appropriate. Progress dynamic proprioceptive activities.

Gait Training

In **AlterG Anti-Gravity Treadmill®** single leg strengthening; 1st week of PHASE IV to consist of active rest period with decreased BW% (65% to 75% BW) at 4.5 mph to 6.0 mph (incline of 2% to 6% at lower speeds only). Following first week of active rest may begin jogging and running progressions at 85% to 90% BW at 0% to 2% incline as appropriate. Speeds from 6 mph to 12 mph. Second week after active rest may increase BW% range to 85% to 100% BW.

ALTERG PROGRESSION TABLE

Day or Week (for surgical patients this must be listed as "post-op week")	Program Walking? Running? % Body Weight	Speed (mph)	Incline (%)	Time (Minutes)	Frequency (How many times per day or week was the exercise or training?)
PHASE I (1 – 3 weeks in duration)	60 - 65%	2.5 to 3.5 mph	2%	15 to 30 minutes	2 – 3x/week plus pool
PHASE IIa (2 weeks in duration)	65 - 75%	3.5 to 6.0 mph	Can do incline intervals from 2 – 6% (incline at lower walking speeds only)	*20 to 30 minutes (jog/ walk intervals combined with incline intervals)	3x/week plus pool
PHASE IIb (1 week duration)	65 - 75%	4.5 to 6.0 mph	Can do incline intervals from 2 – 8% (incline at lower walking speeds only)	*20 to 30 minutes (jog/ walk intervals combined with incline intervals)	3x/week plus pool and cross training
PHASE IIIa - FUNCTIONAL (2 weeks in duration)	70 - 85%	5.0 to 8.0 mph	Can do incline intervals from 2 – 6% (incline at lower speeds only)	*30 min Run/jog intervals – can be combined with incline intervals	3 - 5x/week (inter- vals x 3: distance x 1) plus cross training
PHASE IIIb – FUNCTIONAL (1 week in duration)	75 - 90%	5.0 to 8.0 mph	Can do incline intervals from 2 – 6% (incline at lower speeds only)	*30 min Run/jog intervals – can be combined with incline intervals	3 - 5x/week (inter- vals x 3: distance x 1) plus cross training
ACTIVE REST PHASE (1 week in duration)	65 – 75%	4.5 to 6.0 mph	Can do incline intervals from 2 – 6% (incline at lower speeds only)	*30 min jog/walk or run/ jog intervals can be com- bined with incline intervals	3x/week plus aquajog, plus cross training
Week 7 - RTA	85% - 95%	6.0 to 12.0 mph	1-2%	*35 min continuous run	2-3x/week plus overland & agility
Week 8 - RTA	85% – 100%	6.0 to 12.0	1-2%	*45 min continuous run	2-3x/week plus overland & agility

* In time column denotes that this time does not include a 5-10 minute walking warm up at the workout weight percentage prior to the designated workout.