

Spondylolysis/Pars Fracture Rehabilitation Protocol

Phase 1	Day 1 after removal from sports participation for 4 weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Minimize pain and allow adequate time for healing to occur • Become pain-free with ADLs • Initiate deep abdominal muscle training • Educate patient in ways to alleviate pain when present
Precautions	<ul style="list-style-type: none"> • No sports participation • Avoid end-range extension ROM • Prescribed exercises should remain pain-free • Brace use as directed by physician • Avoid prone lying while sleeping
Suggested Therapeutic Exercise/Treatment	<ul style="list-style-type: none"> • Supine/side-lying/seated ADIM/multifidus activation • Flexion-based pain-free stretching for the lumbar spine and lower extremity muscles, mainly hip flexors, and hamstrings • Unloaded and supported pain-free core strengthening exercises in the neutral spine position utilizing UE and LE resistance in the supine/side-lying/seated positions. <ul style="list-style-type: none"> ○ Supine B UE flexion ○ Supine UE horizontal abduction ○ Supine SLR ○ Side lying clamshells/hip abduction ○ Seated supported T-band shoulder extension/rows ○ Seated supported B UE Flexion
Cardiovascular program	<ul style="list-style-type: none"> • Based on symptoms during activity • If patient can ambulate pain-free then initiate a daily walking program • If walking is painful, initiate a stationary biking program, upright bike preferred • Either program will start with 5-10 minutes and gradually progress to 30 minutes making sure the patient remains pain-free

<p>Criteria for Advancement to Phase 2</p>	<ul style="list-style-type: none"><input type="checkbox"/> Able to demonstrate and maintain transverse abdominis contraction (ADIM) and neutral spine during exercise routine<input type="checkbox"/> Able to demonstrate proper transfers, squatting, and lifting technique while maintaining transverse abdominis contraction and neutral spine position<input type="checkbox"/> Able to ambulate or bike for up to 20-30 minutes pain-free
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Phase 2	4-8 Weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Improvement in pain-free ROM • Pain-free with ADLs • Increase abdominal core strength and strengthen any deficiencies in the lower extremities, maintaining neutral spine position and keeping program symptom-based • Progress to more loaded/unsupported core stability exercises • Progress aerobic program
Precautions	<ul style="list-style-type: none"> • Avoid ROM into extension of the lumbar spine • Exercise should remain pain-free
Suggested Therapeutic Exercises	<ul style="list-style-type: none"> • Progress to loaded and unsupported core stability exercises • Continuation of OKC strengthening to address deficiencies • Initiate progressive LE strengthening program starting with DL and progressing to SL exercises as patient tolerates. <ul style="list-style-type: none"> ○ DL Bridges ○ Inclined planks ○ Seated exercise on physio ball with UE and LE movements ○ Quadruped arm/leg lifts ○ Supine dead bug progressions ○ Body weight squats to 90 degrees, progress to goblet squat if pain-free, T-band monster walks/side-stepping ○ SL balance training
Cardiovascular Exercise	<ul style="list-style-type: none"> • If patient can perform 30 minutes of walking pain-free progress to elliptical training starting with 5-10 minutes, progressing to 20-30 minutes as tolerates
Criteria for Advancement to Phase 3	<ul style="list-style-type: none"> <input type="checkbox"/> Noticeable increase in abdominal strength <input type="checkbox"/> Patient will be able to perform 20-30 minutes of elliptical training without an increase in symptoms <input type="checkbox"/> Patient can perform inclined planks and quadruped core routine without symptoms

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Phase 3	8-12 Weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Full pain-free lumbar ROM into all planes • Initiating a walk/jog program without increased symptoms • Progress to SL strengthening for lower extremities • Continue core stability exercises focusing on local and global strengthening
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> • Double and single leg lower extremity strengthening/plyometrics if appropriate • Loaded and unsupported core strengthening on a physio ball • Initiate return to appropriate, approved lifting for upper and lower extremities emphasis on proper technique and low weight/high reps training <ul style="list-style-type: none"> ○ Supine on physio ball UE flexion or horizontal abduction ○ DL or SL bridge on physio ball ○ Prone on physio ball opposite arm/leg lifts ○ Prone planks, side planks, anti-rotation ○ Walkouts on physio ball, push-ups with feet on physio ball ○ 3-way lunge matrix ○ Step ups ○ T-band side stepping/monster walks in squat position ○ RDLs ○ Prone passive lumbar extension without lingering symptoms
Cardiovascular Exercise	<ul style="list-style-type: none"> • Moderate intensity stationary biking or elliptical • Introduction to low-level, quick response plyometrics • Initiate walk/jog program if low-level, quick response plyos have been symptom free, progressing jog time as patient tolerated
Criteria for Advancement to Phase 4	<ul style="list-style-type: none"> <input type="checkbox"/> No increase in pain with lumbar range of motion and sport skills <input type="checkbox"/> Daily activities are pain-free <input type="checkbox"/> Able to perform low-level, quick-response plyos without increased symptoms <input type="checkbox"/> Tolerates walk/jog program for up to 10 minutes without reproduction of symptoms

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Phase 4	12-16 Weeks
Rehabilitation Goals	<ul style="list-style-type: none"> • Return to athletic movements • Return to sport must be at least 12 weeks or more • Initiate sprinting and progress to cutting • Advance plyometric activity • Maintain flexibility in key muscle groups • Maintain strength in abdominals and hip muscles
Suggested Therapeutic Exercise	<ul style="list-style-type: none"> • Progressive strength program to include: <ul style="list-style-type: none"> ○ Upper body vertical push and horizontal push ○ Upper body vertical pull and horizontal pull ○ Lower body push, double and single leg ○ Lower body hip dominant pull and knee dominant pull ○ Trunk strength and stability • In stance, Diagonal #1 and #2 trunk rotational patterns with medicine ball (wood chops) • Multi-planar training of total body movements • Gradual exposure to sport-specific activities and drills, making sure to concentrate on spine stability; this may include hitting, throwing, etc.
Exercise Progression	<ul style="list-style-type: none"> • Impact control exercises beginning 2 feet to 2 feet, progressing toward 1 foot to the other foot (bounding) then to single leg (hop) • Initiate return to running progression once patient shows good single leg control and tolerance to bounding • Manipulate intensity, amplitude, and velocity of impact forces to create a gradual progression • Moderate to high-intensity intervals with stationary bike • Training of sport-specific energy system through safe exercise selection
Criteria for Advancement to Phase 5	<ul style="list-style-type: none"> <input type="checkbox"/> Successful completion of comprehensive exercise program <input type="checkbox"/> Be able to demonstrate sport-specific skills and practice drills without pain; this depends on the sport and may include intervals of sprinting and pivoting, jumping and landing, back hyperextension and/or twisting

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Phase 5	Following Successful Completion of Phase 4
Independent Exercise Program and Re-Injury Prevention Program	<ul style="list-style-type: none"> • Cleared to participate in athletics • Maintenance exercises will be provided to enhance athletic performance and help prevent future injuries • Depending on the extent of the injury, recommendation may be made to avoid certain weightlifting moves such as Olympic lifts, back squats and deadlifts