

Lumbar Spine Non-Fusion Rehabilitation Protocol

Phase 1	0-2 Weeks Post-op
Rehabilitation Goals	<ul style="list-style-type: none"> • Protect the incision, encourage healing and monitor for signs of possible infection • Independence in ambulation and ADL's • Improved aerobic tolerance • Good sitting/standing posture • Good motor control/body mechanics during all transitional and functional activities • Independence in phase 1 exercises • Maintain the nerve root mobility and prevent an adherent nerve root • Independence in donning/doffing back brace • Able to walk for 10 to 15 minutes 2 times per day
Appointments	<ul style="list-style-type: none"> • Every 1 to 2 weeks to advance home exercise program or more as indicated by re-assessment
Precautions	<ul style="list-style-type: none"> • No trunk flexion, extension, side bending or rotation • Limit hip flexion to 90 degrees (use a toilet seat extender as needed) • Limit sitting to 30 minutes • No lifting over 10-15 pounds • No sharp low back or radicular pain during or following exercises
Brace	<ul style="list-style-type: none"> • As recommended by Spine Surgeon
Treatment Strategies	<ul style="list-style-type: none"> • Instruct the patient to protect the incision site and to inspect for signs of infection • Gait training as needed with maintenance of proper posture • Instruct/re-instruct in proper sitting and standing posture • Instruct in transfers and bed mobility with maintenance of neutral spine and ADIM • ADL training with maintenance of neutral spine position and correct body mechanics • Instruct in donning/doffing of back brace • Instruct in using ice to control pain and inflammation 2 to 4 times per day for 20 minutes

Therapeutic Exercises	<ul style="list-style-type: none"> • Instruct in Phase 1 post-operative lumbar non-fusion exercises: <ul style="list-style-type: none"> • Diaphragmatic (abdominal) breathing • Transversus abdominis setting (ADIM) • Gluteal sets • Lat sets • Lower trapezius sets • Nerve flossing
Advancement Criteria	<ul style="list-style-type: none"> • Pain and swelling within tolerance, including no radicular symptoms • Independent in phase one home exercises • Functional with ADL's (self-care, hygiene, all transitional activities and brace donning/doffing) • Achieve all phase 1 goals

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Phase 2	2-4 Weeks Post-op
Rehabilitation Goals	<ul style="list-style-type: none"> • Healed incision • Independent normal gait without an assistive device • Able to ambulate 20 to 30 minutes 1 to 2 times per day • Good postural habits in sitting/standing • No nerve tension or pain provocation with the Slump test in sitting or SLR in supine • Independence in mid-range lumbar exercises to prevent dysfunction • Progress from unloaded to partially loaded and supported phase 2 lumbar stabilization exercises • Good motor control during phase 2 exercises and ADL's
Appointments	<ul style="list-style-type: none"> • Every 1 to 2 weeks to advance home exercise program or more as indicated by re-assessment
Brace	<ul style="list-style-type: none"> • As recommended by Spine Surgeon
Precautions	<ul style="list-style-type: none"> • Avoid excessive loading of lumbar spine • Avoid twisting and end-range motions of lumbar spine • No standing AROM testing until 6 weeks post-op • No sharp low back or radicular pain during or following exercises • No lifting over 10-15 pounds
Treatment Strategies	<ul style="list-style-type: none"> • Normalize scar tissue mobility • Instruct in progressive walking program (20-30 minutes) • Re-instruct in maintaining good posture as needed • Re-instruct in motor control and proper body mechanics for transitional and functional activities • Re-assess nerve tension and advance nerve flossing as tolerated

Therapeutic Exercises	<ul style="list-style-type: none"> • Instruct in phase 2 post-operative lumbar non-fusion exercises: <ul style="list-style-type: none"> ○ Supine single knee to chest if pain free ○ Prone lying on elbows, progressing to partial prone press-up ○ Supine arm lifts ○ Supine bent leg raises ○ Side lying bent leg hip abduction/external rotation ○ Prone arm lifts or sitting elastic band rowing ○ Sitting arm lifts with back supported ○ Standing balance exercises ○ Partial squats ○ Heel lifts
Advancement Criteria	<ul style="list-style-type: none"> • No increase in LBP or any radicular pain with home exercise program • Independent with home exercise program for phase 2 • Able to maintain a neutral spine, ADIM, and proper breathing technique for all transitional activities and exercises • Independent in postural correction in sitting, standing, and lying • Dynamic sitting and standing tolerance of 20 to 30 minutes • Able to ambulate 20 to 30 minutes at a moderate pace

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Phase 3	4-6 Weeks Post-op
Rehabilitation Goals	<ul style="list-style-type: none"> • Normal scar tissue mobility • Progressive walking/cardiovascular program 30 minutes/day • Normal sitting and standing posture without verbal cues • Normal nerve tissue mobility • Progression to phase 3 post-operative lumbar exercises • No mechanical signs or symptoms • Control pain and inflammation
Appointments	<ul style="list-style-type: none"> • Every 1 to 2 weeks to advance home exercise program or more as indicated by re-assessment
Brace	<ul style="list-style-type: none"> • As recommended by Spine Surgeon
Precautions	<ul style="list-style-type: none"> • Avoid reproduction of low back and radicular pain • Avoid pre-loading the spine in a posterior pelvic tilt • Avoid lumbar flexion or lifting exercises in the AM secondary to diurnal variations in fluid level of the inter-vertebral disc (more hydrated in the early A.M.) • No high load low repetitions for strengthening • 10–15 pound lifting restriction
Treatment Strategies	<ul style="list-style-type: none"> • Walking 30 minutes at a moderate to brisk rate • Re-instruct in postural correction as indicated • Re-instruct in motor control and body mechanics for transitional and functional activities as indicated • Re-assess nerve tension & advance nerve flossing as indicated

<p>Therapeutic Exercises</p>	<ul style="list-style-type: none"> • Instruct in phase 3 post-operative lumbar non-fusion exercises: <ul style="list-style-type: none"> ○ Supine single knee to chest to double knees to chest ○ Partial to full prone lumbar extension ○ Supine unilateral arm lifts ○ Supine SLR ○ Supine bridges ○ Side lying straight leg hip abduction ○ Quadruped FWD/BWD rocking ○ Lumbar stabilization exercise sitting on a ball ○ Squatting & lunging to 60 degrees progressing to 90 degrees ○ Strengthen neurologically compromised muscles PRN ○ Mobilize/stretch tight tissues
<p>Advancement Criteria</p>	<ul style="list-style-type: none"> • No increase in LBP or any radicular pain with phase 3 exercise program • Independent with home exercise program for Phase 3 • Able to maintain a neutral spine and ADIM during all ADL's and extremity strengthening exercises • Able to demonstrate proper breathing technique during all home strengthening exercises • Independent in postural correction and body mechanics for ADL's • Demonstrate dynamic sitting and standing tolerance of 30 minutes • Able to tolerate walking and cardiovascular exercise for 30 minutes

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Phase 4	6-8 Weeks Post-op
Rehabilitation Goals	<ul style="list-style-type: none"> • Good postural habits in sitting and in standing • Lumbar AROM will be WNL's through all planes • No nerve tension or pain provocation with nerve tension testing • 4+ to 5/5 strength for all trunk and hip musculature with MMT • Independence in Phase 4 post-operative lumbar exercises • Functional lift training to achieve all functional goals • No mechanical signs or symptoms with HEP and ADL's
Appointments	<ul style="list-style-type: none"> • Every 1 to 2 weeks to advance home exercise program or more as indicated by re-assessment
Precautions	<ul style="list-style-type: none"> • Avoid reproduction of low back and radicular pain • Avoid pre-loading the spine in a posterior pelvic tilt • Avoid lumbar flexion or lifting exercises in the AM secondary to diurnal variations in fluid level of the inter-vertebral disc (more hydrated in the early A.M.) • No symptoms with functional lift training • Follow weight lifting restrictions as indicated by surgeon
Treatment Strategies	<ul style="list-style-type: none"> • Reinstruct in postural correction as indicated • Reinstruct in motor control and body mechanics for ADL and functional activities as indicated • Assess lumbar AROM and instructed in stretching exercises as indicated • Manual muscle testing of all trunk and hip musculature instructing in specific strengthening exercises as indicated • Advance patient's progressive walking program, 30 to 45 minutes, 1-2 times per day at a brisk rate • Instruct in neural mobilization to normal end range response with overpressure as needed

<p>Therapeutic Exercises</p>	<ul style="list-style-type: none"> • Instruct in phase 4 postoperative lumbar exercises: <ul style="list-style-type: none"> ○ Supine double knees to chest to end range in the p.m. only ○ Prone press ups and or standing back bends to end range ○ Front, back and side planks progressing from standing to lying ○ Sustained bridge with alternating bent leg lifts and alternating knee extension ○ Push-ups in standing progressing to lying ○ Advanced lumbar stabilization exercises in supine and in prone on a ball ○ Squatting, lunge matrix, and functional lift training (floor to waist, waist to chest, chest to crown, front carry, unilateral carry, push/pull)
<p>Advancement Criteria</p>	<ul style="list-style-type: none"> • No increase in low back pain or any radicular pain during physical therapy or with patient's home exercise program • Independence in home exercise program for phase 4 • Lumbar, thoracic and hip AROM within normal limits • 4+ to 5/5 strength for all trunk and lower extremity musculature • Good static and dynamic sitting and standing balance • Demonstrate dynamic sitting and standing tolerance of 30 minutes • Able to tolerate 35 to 45 minutes of brisk walking or other cardiovascular exercises

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Phase 5	8-12 Weeks Post-op
Rehabilitation Goals	<ul style="list-style-type: none"> • Patient will be independent in a comprehensive home stretching and strengthening program for the low back • Patient will be able to demonstrate normal sitting and standing posture • Patient will be able to demonstrate normal thoracic, lumbar and hip AROM • Patient will be able to demonstrate 5/5 strength for all trunk and hip musculature with manual muscle testing • Patient will be able to demonstrate good cardiovascular fitness • Patient will be able to participate in a full mechanical evaluation without pain or increased symptoms • Patient's functional capacity results will be suitable for employment, sports and ADLs/functional activities at home • Patient will return to full activity or fully redefined activity level • Patient will be responsive to mechanical signs and symptoms
Appointments	<ul style="list-style-type: none"> • PRN
Precautions	<ul style="list-style-type: none"> • Any mechanical signs or symptoms with testing • Any neurological signs or symptoms
Treatment Strategies	<ul style="list-style-type: none"> • Assess patient's ability to perform their independent home exercise program for maintenance of functional status • Assess sitting and standing posture instructing in correction as indicated • Perform a full mechanical evaluation • Manual muscle testing of all trunk and hip musculature • Assess gait on multiple surfaces • Assess cardiovascular status • Set up a functional capacity evaluation (results suitable for employment, sports and ADLs/functional activities at home) if ordered by physician • Instruct patient in how to return to activities or fully redefined activities

Advancement Criteria (Discharge)	<ul style="list-style-type: none">• Achievement of all phase 5 goals• A full understanding of prophylaxis:<ul style="list-style-type: none">○ Maintenance of normal posture○ Functional ROM/flexibility○ Functional trunk and extremity strength○ Good cardiovascular fitness○ Responsive to mechanical signs and symptoms○ Proactive
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