

POSTERIOR LUMBAR FUSION

POST-OPERATIVE REHABILITATION GUIDELINE

- No NSAIDs for 3 months unless cleared by staff
- No driving while on narcotics
- No scar mobilization for 6 weeks
- No jog/run/high intensity activity/weightlifting 3 months
- Education booklet to patient before surgery (smoking cessation)
- All patients progress at different rates...progress as appropriate, with goal completion

Phase 1 (POD 1 - 6 weeks)

- Maintain Lumbar spine precautions – no lifting > 5-10 lbs, no bending/twisting/lateral bending/rotation at lumbar spine
- Brace, if needed, is patient specific
 - Typically needed for those with poor bone quality, smokers, sustained spinal fractures
 - Multi-level fusion may require longer wear

Focus:

- Mobilization, correctly performing ADLs
 - Putting shoes on, correctly picking items off ground (bend at hips/knees, not waist), etc
- Ambulation, endurance, posture
 - Begin progressive walking program
- Correct usage of assistive device (walker)

Phase 2 (6 weeks - 3 months)

- Maintain Lumbar spine precautions – no lifting > 5-10 lbs, no bending/twisting/lateral bending/rotation at lumbar spine
- Begin regimented OP PT (2-3x/week) for 6-8 weeks (12-24 visits)
- Give ODI, FABQ at initial evaluation - FABQ at 6th visit as well

Goals:

- ↓ pain, 0-2/10 pain at rest
- Improve scar mobility
- Maintain erect posture throughout 80% of the day
- Reestablish neuromuscular control of the lumbar stabilizers
- Volitional contraction of TA and lumbar multifidi for 5 x 5 sec

- Improve LE strength & mobility
- Demonstrate appropriate functional movement within precautions
- Continue progressive walking program
- Independent with HEP
- Progress exercises once patient demonstrates proper form/technique and control of neutral spine with each repetition
- D/C brace at 6 weeks or surgeon's orders

Focus:

- Initiate aerobic conditioning (gentle, progressive)
 - Ambulation, endurance
 - goal of discontinuing assistive device by 12 weeks
 - Treadmill, track, recumbent bike
 - Continue to walk within tolerance with progressive walking program
- Strengthening (legs core back)
 - Can use light weights, pulley system, resistance bands
 - Isometric lumbar stabilization exercises with trunk ext/flex/lateral flexion
 - 15s → 45s x 3
- Lumbar stabilization exercises (with trunk co-contraction) – 2 x 10,15,20
 - 1. Hook-lying pelvic neutral (hip at 45°): marches → SL heel slide → leg lift c knee ext.
 - 2. dying bug: alt. UE → alt. LE → alt. opposite UE/LE
 - 3. Bridges
 - 4. birddog: alt. UE → alt. LE → alt. opposite UE/LE
 - 5. pelvic tilts (all directions)
- LE strengthening exercises (maintain neutral spine) – 2 x 10,15,20 (progress c resistance):
 - 1. wall squats
 - 2. supine abdominal crunch (not a sit-up)
 - 3. Hook-lying bent knee fall outs
 - 4. Side-lying hip abduction/clamshells
 - 5. standing hip extension
- Stretching, LE flexibility
 - Bilateral LE stretching 3 x 30s (gastoc/soleus, hamstrings, hip flexor)
 - Nerve glides 2 x 10...15...20
- Balance, posture, Gait training
 - Neuromuscular activation of lumbar stabilizers (multifidi, TA)
 - Diaphragmatic breathing
 - Abdominal isometrics, hollowing of TA and lumbar multifidi
 - Drawing in maneuver and VC for volitional lumbar multifidi contraction

- Maintain neutral spine, initiate pelvic tilts in all directions
- Appropriate lumbar lordosis
- + / - pool therapy
 - Swimming within tolerance (given wounds completely healed with no residual scabbing/drainage)
- Functional movement for home/work
 - Proper body mechanics
 - Bend with knees when reaching toward floor
 - Shift weight, don't twist body
 - Lift slowly, close to body
 - Bring feet/leg up to self when donning/doffing shoes, socks
 - Scoot to front of chair when standing
- Education/review on precautions, anatomy/biomechanics, surgical procedure, prognosis
- Control pain/inflammation
 - ice/modalities
 - Manual
 - Grade I-II joint mobilizations above/below surgical site for pain modulation
 - Soft tissue mobilization for hypertonic paraspinal muscles
 - ok for dry needling as long as no scabbing, signs of infection
- Facilitate healing of incision (watch for increased redness/drainage/swelling)

Suggested Components for Daily HEP:

- Pain management PRN
- Appropriate stretches
- LE strengthening with neutral spine
- Postural awareness, pelvic tilts
- Abdominal hollowing in isolation and with extremity movement
- Progressive walking program as tolerated, monitoring steps
 - See end of protocol

Avoid:

- Lifting, bending, twisting > 20 lbs until 3 months post-op (BLTs)
 - Includes yardwork, pushing/pulling
- Sitting prolonged periods - encourage position changes 30-45 minutes
 - Sit with back support, feet flat on floor, knees level with hips
- Lotions/creams, submerging incision underwater until fully healed

Other considerations/precautions:

- Brace wear as indicated by surgeon

- Consult doctor for return to driving, return to work
 - May be shorter return for sedentary jobs
- Sleeping
 - Supine with pillow under knees
- S/L with pillow between knees

Phase 3 (3 - 6+ months)

- ODI + FABQ at discharge

Goals:

- Progress to return to baseline standing/walking duration, distance
- Maintenance of trunk co-contraction throughout therapeutic activities
- Volitional contraction of TA and lumbar multifidi for 7 x 7 sec → 10 x 10 sec
- Maintenance of neutral spine during therapy interventions
- Improve trunk and LE strength
- Achieve functional ROM
- Demonstrate proper ergonomics and work simulation
 - Able to tolerate work simulation activities without increase in symptoms
 - Verbally understands return to work progression
- Continue, ultimately complete progressive walking program
- 0-2/10 pain with activity → 0/10 pain with all/most activities
- Independent with HEP
- Achieve ODI MCID

Focus:

- Progress endurance
 - Aerobic conditioning
 - walking/treadmill
 - Progress to elliptical
- Trunk + LE mobility, flexibility
 - Aim for mid-end range ROM by 3-4 months
 - Quadruped rocking, cat/camel, prayer stretch
 - Bilateral LE stretching
- Strengthening
 - Increase weight limit by 5 lbs every other week as tolerable
 - Muscle Strength of lumbar stabilizers
 - Dynamic exercises
 - with trunk co-contraction – 2-3 x 10,15,20:
 - 1. Hook-lying pelvic neutral (hip at 90°): marches → SL heel slide → leg lift c knee ext.
 - 2. sitting or standing pelvic neutral: alt. UE → marching → marching c alt. UE

- 3. SL bridges or DL c marches
 - 4. prone and side-lying planks (on knees: 5-10 sec)
 - 5. standing isometric core resistance c Theraband
 - 6. standing pelvic neutral: shoulder ext, hor. abd., row, D1/D2 c Therband (bil → uni)
- Further progressions - 2-4 x 10, 15, 20
 - bridges on Dynadisc or BOSU
 - upward/downward chops (cable column)
 - prone and side-lying planks (off knees: 5-10 sec)
 - walkouts/rollouts on stability ball
 - cable column resistance walking (close to body → away from body or OH)
 - prone superman's
- LE strengthening exercises (maintain neutral spine) – 2-3 x 10,15,20 (progress c resistance)
 - 1. stability ball wall squats
 - 2. standing hip abduction and extension
 - 3. side stepping
 - 4. lunges (SP and FP)
 - 5. SL deadlifts
- Further progression (2-4x)
 - squats (DL → SL)
 - SL deadlift on Dynadisc or BOSU
 - lateral band walks
 - lunges (add TP)
 - stability ball H/S curl
 - Core strengthening (planks, antirotation)
- Facilitate neuromuscular re-education
 - Abdominal hollowing of TA, lumbar multifidi
- Balance, progressing as needed
 - DL → SL, EO → EC, no UE mvmt → UE mvmt, stable → unstable surface
 - High level
 - Rebounder toss, medicine ball rotations on stability ball, etc
- Pain/inflammation reduction
 - Joint mobilization (grades I-II) above/below surgical site for pain modulation
 - ice/modalities
- Light work simulation activities → full duty work simulation

Suggested Components for Daily HEP:

- Stretches, ROM (progress to maintenance therapy)
- Trunk, LE strengthening, stabilization (progress to maintenance therapy)
- Proper lifting and functional movement
- Progressive walking program

Progressive Walking Program, begin POD 1

<p>AIM: 10,000 steps/day, if: age under 65 years, healthy and no restrictions to increase physical activity</p>	<p>MODEL OF PROGRESSION:</p> <ol style="list-style-type: none"> 1. If baseline level <5,000 (sedentary), number of steps is increased 15% every other months until the target level is reached. 2. If baseline level 5,000–7,499 ("low active"), number of steps is increased 10% every other months until the target level is reached. 3. If baseline level 7,500–9,999 ("somewhat active"), number of steps is increased 5% every other months until the target level is reached. 4. If baseline level >10,000 (active), this level is maintained or number of steps is increased 5% every other months until 12,500/day ("highly active") is reached.
<p>7,500 steps/day, if: age >65 years and/or chronic diseases and/or some restriction to increase physical activity</p>	<ol style="list-style-type: none"> 1. If baseline level <4,250, number of steps is increased 15% every other months until the target level is reached. In later phase, this level is maintained or a new goal is set. 2. If baseline level >4,250, number of steps is increased 10% every other months until the target level is reached. In later phase, this level is maintained or a new goal is set.

Recommendations for return to work based on job type:

Work Type:	Return to Work:
<p>Sedentary (<10lbs) or Light (frequently 10lbs, occasionally 20lbs)</p>	<ul style="list-style-type: none"> ● After 8-14 weeks, with limited sitting duration for 30 min at a time for 6 weeks
<p>Moderate (frequently 20lbs, occasionally 50lbs)</p>	<ul style="list-style-type: none"> ● At 10-16 weeks, patient may return to light duty if available <ul style="list-style-type: none"> ○ no lifting >10lbs ● At 14-20 weeks, return to full duty <ul style="list-style-type: none"> ○ no lifting >25 lbs
<p>Heavy (frequently 50lbs, occasionally 100lbs)</p>	<ul style="list-style-type: none"> ● At 10-16 weeks, patient may return to light duty if available <ul style="list-style-type: none"> ○ no lifting >10lbs ● At 14-20 weeks, moderate duty <ul style="list-style-type: none"> ○ no lifting >25lbs ● At 22-28 weeks, return full duty

Return to Sport Guidelines (discuss with Dr. Krob if any concerns exist):

Activity	No earlier than	Activity	No earlier than
<i>Walking Progression</i>	<i>At least 30 minutes per day</i>	<i>Skiing</i>	<i>12-16 weeks</i>
<i>Stationary Bike</i>	<i>Gradual increase in resistance over 4 weeks</i>	<i>Yoga</i>	<i>12-16 weeks</i>
<i>Hiking</i>	<i>6 weeks</i>	<i>Swimming</i>	<i>6 weeks (incision entirely healed)</i>
<i>Outdoor Biking</i>	<i>8 weeks</i>	<i>Running</i>	<i>12-16 weeks</i>
<i>Pilates (neutral spine)</i>	<i>8 weeks</i>	<i>Golf</i>	<i>12-16 weeks</i>
<i>Elliptical</i>	<i>8 weeks</i>	<i>Soccer/Basketball/ Contact sports</i>	<i>16 weeks (Contact sports clear with Dr. Krob)</i>

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