**Lumbar post-operative protocol after lumbar fusion**

*Definition:*

* Spinal fusion: A surgical procedure in which two or more of the vertebrae in the spine are united together so that motion no longer occurs between them.

*Procedure:* 2 – 4 days hospital stay with start of physical therapy to teach logrolling, proper posture, work on gait and ADL for safe return to home or previous environment.

*Limitations:* no bending, twisting, lifting> 10 lbs (6 – 12 weeks depending on clearance per surgeon)

*Brace:* 6 – 12 weeks for Dr Lim only

*Recovery:* desk work: 6 weeks, manual labor 12 weeks / per MD discretion

Sports and recreational activities 3-6 months

*Goals:*

* Return to PLOF
* Teach proper posture and body mechanics
* Teach self-management techniques and prevention strategies

*Baseline assessment:* L-spine ROM, neurological deficits, PLOF, CLOF

PHYSICAL THERAPY PROGRAM: starting at 12 weeks 2

*Education:*

* Posture: sitting, standing and sleeping
* Procedure: fusion
* Therapy process: goals of PT and type of exercises: stability, NO flexibility / mobility Expectations of PT.
* Review limitations and address fear avoidance behavior as indicated 1,3
* Body mechanics: squatting, bending, lifting, standing, cleaning, household ADL

*Exercises:*

 **- Phase 1: week 1 - 2**

* Core strength: pelvic tilt: prone, supine, on all fours or standing, with leg lift / kickout, swimmers: upper or lower extremities only, bird dog: upper extremities only, hip abduction
* Standing: shoulder flexion / abduction, squats 4
* Endurance: walking at least 30 minutes daily
* Education: posture, body mechanics, explain the pain, healing process and relaxation techniques 1

**- Phase 2: week 3 - 4**

* Core strength: Bridges, swimmers, superman, bird dog
* Standing: ITY, squats, hip abduction, step ups 1,4
* Endurance: walking at least 45 – 60 minutes daily, swimming, water exercises

**- Phase 3: week 4 – 8**

* Core strength: Bridges with leg kickout, swimmers, crunches, superman, planks, lunges, chops
* Stabilization exercises on ball: crunches, bridges, superman, squats
* Standing core exercises with Theraband / bodyblade, lunges
* Use positive reinforcement! 1

Repetitions / sets: 10 – 20 repetitions, 2 – 3 sets

Progressions of exercises: as tolerated per patient’s symptoms.

*Discharge criteria:*

* No functional limitations.
* Able to return to PLOF with modifications as needed
* Safe gait with least restrictive assistive device
* Independent with HEP and self-management
* Maxed out PT benefits

*Discharge instructions:*

* Adherence to proper posture and body mechanics
* Maintenance program of core strength exercises: at least 2 times per week
* Engage in physical activity 2 – 3 days a week for at least 30 minutes

*References:*

1. Abbott A, Tyni-Lenné R, Hedlund R. Early rehabilitation targeting cognition, behavior, and motor function after lumbar fusion: A randomized controlled trial. *Spine (Phila Pa 1976)*. 2010;35(8):848-57.

2. Oestergaard L, Nielsen C, Bünger C, et al. the effect of early initiation of rehabilitation after lumbar spinal fusion: A randomized clinical study. *Spine (Phila Pa 1976)*. 2012;37(21):1803-9.

3. Soegaard R, Christensen F, Lauerberg I, Bünger C. Lumbar spinal fusion patients' demands to the primary health sector: evaluation of three rehabilitation protocols. A prospective randomized study. *Eur Spine J*. 2006;15(5):648-56.

4. Tarmanen S, Neva M, Dekker J, Hakkinen K, et al. Randomized controlled trial of post-operative exercise rehabilitation program after lumbar fusion: study protocol. *BMC Muscoloskelet Disord. 201*2;13(123):1-7