Oestergaard LG, Nielsen CV, et al. The Effect of Early Initiation of Rehabilitation After Lumbar Spinal Fusion. Spine 2012;37:1803-1809

Design: Randomized clinical trial

Population/sample size/setting:

- 82 patients (38 men, 44 women, mean age 52) undergoing rehabilitation following instrumented fusion at a university hospital in Denmark
- Eligibility criteria were either degenerative disc disease or Grade 1 or 2 spondylolisthesis as indications for either posterior or transforaminal fusion, age 18-64, and ability to communicate in Danish
- Exclusion criteria were dementia and residence at a nursing home

Main outcome measures:

- Randomized to either fast-track rehabilitation starting 6 weeks postoperatively (n=41) or "usual" rehabilitation starting 12 weeks after surgery (n=41)
- The groups underwent the same rehabilitation program, which consisted of four sessions each lasting 2 hours
    - Sessions began with 20 minutes of discussion and psychological support, undertaken in groups of 3 to 6 patients
    - Home exercises, focusing on stabilizing the trunk and large muscle groups, were taught by a physical therapist, either with floor exercises or with an exercise ball
    - At one session, an occupational therapist gave instruction to the group in proper ergonomics and working postures in relation to activities of daily living and work activities
- Study outcomes were measured at baseline and again at 6 weeks, 3 months, 6 months, and 12 months after surgery
- Primary outcome was the Oswestry Disability Index (ODI)
- Secondary outcomes were Dallas Pain Questionnaire, Low Back Pain Rating Scale, and days of sick leave after surgery
    - Sick leave data were taken from a national database administered by the Danish Ministry of Employment
- The 6 week group met with the spine surgeon 6 weeks after surgery, and the 12 week group had the same meeting 12 weeks after surgery
- Both groups had approximately equal attrition; 3 patients in the 6 week group and 2 in the 12 week group had refusion within the first year; 2 patients in each group had removal of instrumentation within the first year
- At 1 year, the 12 week group had a greater average reduction in the ODI (20 points) than the 6 week group (5 points)
    - ODI reductions in the groups at 6 months were 15 points and 6 points respectively
- The secondary measures (Dallas questionnaire and Low Back Pain Rating Scale) followed similar patterns of greater improvement in the 12 week than in the 6 week group

- Return to work in the first 6 months was greater in the 6 week group among patients in the workforce (6 of 26) than in the 12 week group (1 of 25); however, at 12 months, the rates of return were more equal (10 patients in the 6 week group and 8 in the 12 week group)
- Median weeks of sick leave at the 12 month follow-up were nearly equal between groups (46 weeks for the 6 week group and 48 weeks for the 12 week group)

Authors' conclusions:

- Patients undergoing instrumented fusion did not benefit from early initiation of rehabilitation; the usual 12 week postoperative rehabilitation yielded greater functional mobility and function than the fast track 6 week postop rehabilitation
- The results for fast track rehabilitation for fusion differ with those for disc herniation surgery; in the latter, it appears that starting rehabilitation at 6 weeks is advantageous compared to starting it 12 weeks after surgery
- The optimal timing of rehabilitation after fusion surgery may be as important as the elements of the rehabilitation itself
- Despite the more rapid return to work in the 6 week group, there was not difference in return to work at the 12 week mark

Comments:

- Blinding cannot be achieved, but other sources of bias appear to have been controlled adequately
- Not all rehabilitation need be physical exercise; it may be possible to provide cognitive interventions before physical activity is resumed, and there should be a 12 week window of opportunity for cognitive instruction in the slower track rehabilitation efforts

Assessment: Adequate for some evidence that it is appropriate to defer active physical rehabilitation following instrumented fusion to 12 weeks after surgery rather than initiating it 6 weeks postoperatively