Low Back Rehabilitation Program Summary

(Revised 7/07)

Indicators

- Chronic low back pain
- Recurrent low back pain
- Clinically suspected instability
- Patients with significant yellow flags (e.g., fear avoidance behavior, catastrophizing)
- Athletes
- Mild to moderate injury in patient with high physical demand
- Subacute low back pain (over 6 weeks before care or after initiating passive care)

Complete list of Low Back Rehabilitation Tracks (Basic tracks are indicated in bold with arrows.)

- ➢ **Abdominal Bracing/Hollowing, Neutral Pelvis & Hip Hinge**
  Bridge
  Bridge on Ball
- ➢ **Curl Up/Sit Back**
  Curl Up/Sit Back on Ball
  Dead Bug
  Kneeling
- ➢ **Lunge**
  Prone
  Prone on Ball
- ➢ **Quadruped**
- ➢ **Seated**
- ➢ **Side Bridge**
  Side Lying
- ➢ **Squats**
  Squats with Ball
- ➢ **Standing (stable surface)**
- ➢ **Standing (unstable surface)**

8 Part Basic Low Back Rehabilitation Program

1. **Neutral pelvis, hip hinge, and abdominal bracing/hollowing.** Give neutral pelvis and abdominal bracing/hollowing as an exercise as soon as possible in a variety of positions. Teach strategies (e.g., hip hinge) to avoid end-range loading during ADLs.
2. **Directional preference.** Give exercises and advice to modify daily activities based on any directional preference (therapeutic bias) or load sensitivity that is discovered (see McKenzie Protocol: Centralizing Low Back and Leg Pain).
3. **Posture and breath training.** Assess and address inefficient posture and breathing patterns.
4. **Return to activity (reactivation).** Gradually return the patient back to work and daily activities (i.e., walking, eventual aerobic exercise, etc.)
5. **Floor exercises to reprogram stability.** Patients are given non-weight-bearing exercises in multiple body positions. Generally, all 3 of the following tracks are given. Progress from the easiest to the most difficult steps.
   Quadruped exercises. Cat-camel to limber the patient, then the Quadruped Track is assigned. (If the patient cannot perform any steps in this track, consider starting with the Prone Track.)
   Trunk curls. Assign the Curl-up Track. (Or substitute the Dead Bug Track.) For qualitative assessment: Janda's curl-up movement pattern. For endurance reference values: the repetitive sit-up test or timed sit-back test.
   Side-bridge exercise. Endurance can be measured by holding times.
6. **Weight-bearing exercises.** Give double- and single-leg squats and lunge (e.g., star diagram patterns). Exercises should also be modeled after work or recreational demands. Pulleys and weights may be added to create resistance.
7. **Balance large global muscles.** Stretch tight muscles (e.g., psoas, hamstrings, piriformis), activate inhibited muscles (e.g., gluteus maximus, gluteus medius, low back extensors), and build endurance as needed. Assess using postural analysis, Janda's key movement patterns, manual muscle tests, and static endurance tests. In the subacute phase, consider exercises to increase extensor endurance. Assign portions of the Prone Track such as superman on a ball. Use static back endurance test to assess.
8. **Proprioceptive/balance training.** Prescribe exercises on unstable surfaces, such as a foam pad, rocker board, rocker sandals, gym ball, etc.

Do not assign more than 3 or 4 exercises at a time. Selection can be based on some or all of the following considerations:

- **Job requirements** (E.g., carpet layer may need Kneeling track, office worker the Seated Track.)
- **Activity questionnaires** (Problems with lifting might require Squat Track.)
- **Postural and movement analysis** (e.g., poor hip abduction firing sequence might suggest a single leg bridge or single leg squat track).
- **Performance on track itself** (Too easy or too difficult suggests a different track might be advisable.)
- **Patient motivation** (E.g., poor motivation might suggest emphasizing "reflex training" tracks like the standing on unstable surface or seated on ball tracks.)

Exercise Repetitions

Option 1: Start with 6 repetitions and progress to 10-15 reps. Isometric holds can range from 6-10 seconds. Some steps in a track may require even longer holds. Stop when shaking begins or quality is lost.

Option 2: Work to get a "muscle burn" regardless of the number of repetitions. Stop if there is shaking or loss of *quality* (e.g., loss of abdominal brace, neutral pelvis, poor form). Rest or peel back to an easier step and continue until there is again shaking or loss of quality.

Frequency: Office Visits and Home Exercise

- 1-2 visits per week to 3-4 (exercises are taught and quality is briefly monitored and charted during the visit).
- Longer, supervised sessions may be necessary for patients with severe chronic pain, well entrenched pain-avoidance behaviors, or patients with poor kinesthetic awareness having difficulty with the exercises. (Referral to physical therapist may be necessary.)
- Home exercises for control and coordination (e.g., abdominal bracing activities, abdominal clocks) should be performed every day, multiple times per day.
- Tracks in general should be done daily or every other day.

Duration of Exercise Sessions

- Brief sessions to teach control and coordination.
- Longer sessions (30-40 minutes) are necessary to ensure *endurance* gain in multiple tracks.
- An intermediate strategy: multiple brief activities throughout the day (e.g., abdominal bracing, repeated throughout the day in a variety of static and dynamic body postures), along with short structured track exercises of 10-15 minutes.

Program Length

About 6 weeks for the basic program. Range 8-12 weeks for herniated disc or chronic LBP. In one study of chronic low back pain (with x-ray evidence of spondylosis/spondylolisthesis), 10 weeks was successful.

Training Tips

- If patients cannot find a neutral pelvis, try passive pre-positioning (a pillow under their back placed in a variety of positions may help). Use visual cues (e.g., watch patients' muscles tense or relax and changes in breathing). Have them learn a sitting or quadruped position.
- Train in a variety of positions. *Start* patients at the most difficult step that they can do *properly*. Teach them to "peel back" to an easier step when they shake or lose form.
- Always limit movements within the patient's *functional range* (i.e., maintaining good biomechanics, little or no muscle recruiting, no joint pain, and no peripheralization of pain).
- Exercise progression should be relatively pain free (except for feeling muscle soreness or a burn)
- Teach the patient to monitor neutral pelvis and abdominal hollowing during the exercises. (Monitor abdominal bracing just medial to the ASIS.)
- If kinesthetic awareness is poor, have patients exaggerate their errors so they can feel them or they can watch themselves in a mirror.
- Practitioner or exercise partner can apply rotational isometric contractions in the various tracks.
- Supported exercises (where limbs are allowed to momentarily touch the floor) precede unsupported (where they do not touch down between repetitions).
- Be sure that initially exercise movements are slow and controlled.
- Introduce balance activities as soon as possible (e.g., rocker board, ball, rocker shoes), eventually introducing rapid perturbations. **Note:** Rocker board activities may sometimes precede the stabilization tracks.
- Choose tracks that address the patient's functional deficits. Try to find training exercises that will mimic their job or recreational demand, first in slow controlled movements and then advancing to the normal speeds required by that activity.

Clinic Policies

- Refer for formal rehab program as according to current clinic policy.
- Fill out Low Back Pain log for the computer in the clinician's office.
- View video training tape and consult complete text of protocol.
- Keep chart exercise log up to date.
- Give patients education materials.
- Fill out route slip charges appropriately.