EXTREME BACK TRAINING

By Brendan J. Fox

Back pain and back injuries are one of the most common ailments we deal with as personal trainers. In our position we can either HELP the client, or HURT the client. Unless we take the responsible approach, we are playing a game of Russian Roulette at both the expense of our client, and our own reputation.

Screening the client

It is important to screen the client to find the possible cause of their low back problems. We should take the necessary steps to ***remove the stressors*** that create or exacerbate damage, then enhance activities to ***build supportive tissue***.

It is important to find out what the client does with their body to determine how we can help them. We want to ***educate the client***, and encourage behavioral changes to minimize stress caused by uneven strain. For example, we could instruct a golfer that they must take one practice swing from the opposite side after each ball they shoot in golf to balance out the rotational stress.

Postural Alignment Tests

Testing the sacroiliac joint

Sacroiliac joint function is linked to **98% of low back pain**[8]. One of the easiest ways to test the sacroiliac joint is to have the client lay flat on their back and check the length of each of their feet. If it appears that they have a **leg length discrepancy**, then it is most likely that one side of their pelvis has rotated. If the innonimate on the short leg is rotated anteriorly we should incorporate PNF stretching for the gluteus maximus, and if it is rotated anteriorly, we should include PNF for the rectus femoris. This will level the pelvis and improve sacroiliac joint function.

Testing the Lordotic Curvature

Have your client stand with their back to the wall. Have them slide their hand behind their lower back. The thick part of the hand should fit snuggly behind the back.

Excessive Lordosis

If they are able to get their whole hand and part of their forearm past the mid-part of their back, then they have excessive lumbar lordosis. Have them stretch out the low back, psoas, hamstrings, and chest, then retest. If the situation has improved, these exercises should be incorporated to commencing exercise. We can also decrease tension of these muscles by strengthening the upper back, lower abdominals, gluteals, and quadriceps.

Excessive lordotic curvature should also be passively treated via a bridge (see healthbridges.com for more information).

We also want to avoid exercising the psoas too much, which means the feet should not be anchored during abdominal exercises. Therefore we want to avoid the majority of abdominal machines which anchor the feet.

Swayback Posture

If during the test the low back is really tight on their fingers, and they are unable to get the knuckles to the mid part of their back then they have swayback posture. For this condition, we would reverse the stretching and strengthening protocol described for excessive lumbar lordosis.

Sample Back Training Techniques

Back Extension

- With the tip of the ASIS lined up with the padding, will work the spinal erectors.
- With the tip of the greater trochanter lined up with the padding, will work the hip muscles as well.

Progressions

1. Arms at sides
2. Arms at chest
3. Arms out at 45 degrees with thumbs up
4. Extend weight in front during descent, then pull back in during ascent.
5. Hold upright position at end of set, and push weight in front and pull back.
6. Trainer circles client while tossing medicine ball back and forth.

Horse Stance

Hands should be placed below the shoulders. The knees should be placed under the hips. The spine should be parallel, with the head and face parallel to the floor (should be able to balance a bar across the clients back).

Progressions

1. Vertical – Lift opposite hand and knee 1 inch off of ground.
2. Horizontal – Extend opposite knee and opposite leg.
3. Horizontal with shoulder and hip abduction
4. Dynamic – Extend opposite knee and opposite leg, then tuck knee and elbow underneath. Repeat
5. Alphabet. – Do letter about 1 foot big. First with leg, then with arm.

The Plank

- Plank from elbows and knees
- Plank from elbows and feet
- Plank with feet crossovers
- Plank/Side Plank
- Elbows on fit disk
- Feet on fit disk
- Elbows on BOSU and feet on exercise ball or vice versa

Chin Up Variations

1. Modified (Feet Up on a support, or rested on ground)
2. Modified with Trainer – Client between legs, grips trainers forearms and pulls up.
3. Neutral Grip
4. Supinated Grip
5. Pronated Grip
6. End Bar Chin Ups
7. Side To Side Chin Ups
8. Eccentric Loading Chin Ups (release one hand on descent)

The Pulley Machine Variations

- Feet In a high rest position: Restricts the pelvis, resulting in increased activity from the low back muscles.
- Feet In a low Rest Position: The thoracic extensors and rhomboids will be activated more.
- Neutral Grip: Enhances Latissimus Dorsi involvement
- Pronated Grip: Enhances Rhomboid involvement
- One Arm: Increases neural drive when you work one limb at a time. For example, you may be able to bicep curl 60 pounds with two arms, but you're able to do 40 pounds when each arm curls a weight independently.[9] Also results in transfer in the nervous system: The body always learns from performing an exercise on one side, facilitating learning on the other side, so the response is much quicker.[3]

Question and Answers

"Why Train the Back Muscles?"
Typically, an osteoligamentous lumbar spine from a cadaver with muscles removed will buckle under approximately 20 pounds of compressive load. This is all that a spine can withstand![1] The spine is an anchor point for the attenuating musculature that take forces out of the spine. The spine is not designed as a passive weight bearing column. This information clearly demonstrates the critical role of developing the back muscles, as 80% of back injuries are caused by weak muscles.[4]

"How can we avoid low back injuries in the weight room?"

1. More than 60% of low back injuries are associated with trunk twisting.[2] This means that we should avoid rotational exercises such as the rotary torso machine, cable woodchops, medicine ball side toss, etc.
2. In addition, we should also have the knees bent to 20 degrees in any forward bending activity. The #1 correlating factor to disc injury is bending over, lifting things with the knees locked or in hyperextension. Otherwise the iliotibial band is not at maximal tension to stabilize the glutes, and if the glutes aren't stabilized by the IT band, then there is significant erector spinae work.[7]
3. In addition, it is important not to round the back when bending forward during exercises. Maintain the lordotic curve in the back to minimize potential strain.

"How should I train the low back muscles if the client has had recent surgery or a lot of low back pain?"
For the warm up, clients with low back problems should avoid the exercise bike, as the tendency to lean forward can perpetuate low back problems. Additionally, the running on the treadmill should be avoided as the ballistic shock will be transferred up the legs to the back.

With the given scenerio, the muscles will typically have developed faulty recruitment patterns, which only perpetuate the dysfunction and chronic low back pain. Balancing on an ***unstable surface*** such as a wobble board, fit disk, or bosu ball will result in a momentary loss of balance, which is perceived as a threat by the brain. In response to the potential threat, the brain will override the faulty recruitment patterns. According to neuromuscular therapist Paul Chek, this is when the low back muscles that have not been working correctly get a jump-start. With repetitive exposure, the back muscles begin working again in many cases.[3] In addition, we should also keep in mind that ***single leg exercises*** are also less likely to result in back problems.[5]

"How should I organize the program when designing for a healthy back?"
Several studies have shown that muscle strength cannot predict who will have future back troubles. On the other hand, it has been shown that muscle endurance (as opposed to strength) is protective.[6] In addition, Dr. Stuart McGill outlines the following guidelines in his book *Low Back Disorders*:

Notes for Rehabilitation Exercise Prescription

1. Low back exercises appear to be most beneficial when performed daily
2. The no pain-no gain axiom does not apply when exercising the low back.
3. General exercise programs that combine cardiovascular components are more effective in both rehabilitation and prevention
4. People should not perform full-range spine motion under any load shortly after rising from bed
5. More repetitions of less demanding exercises will enhance endurance and strength
6. No set of exercises is ideal for all individuals

Both patients and clinicians should be patient and stick with the program. Increased function and reduction in pain may not occur for 3 months.[6]

1. McGill, Stuart (2002) Low Back Disorders: Evidence based prevention and rehabilitation. Human Kinetics, Windsor ON.
2. Davis, Janet. Rotation In Sport. CPTN annual conference, May 30, 2004
3. Chek, Paul (2001) The Golf Biomechanics Manual: Whole in one Golf Conditioning. A C.H.E.K. Institute Publication, Vista CA.
4. Patchell-Evans, David (2002) Living the Good Life: Your Guide To Health and Success. ECW Press, Toronto ON.
5. Garrick, James and Peter Radetsky (1989). Be Your Own Personal Trainer. Crown Publishers, New York NY.
6. McGill, Stuart (2002) Low Back Disorders: Evidence based prevention and rehabilitation. Human Kinetics, Windsor ON.
7. Chek, Paul (1995) Scientific Back Training Correspondence Course. Chek Institute, Vista CA.
8. Chek, Paul (1999) Scientific Approach to Golf Conditioning Video. A Chek Institute Production.
9. Catanzaro, John Paul (2004). Advanced Strength Training Workshop. June 12-13, 2004, Scarborough ON.