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Do I Have a Problem?

Mary had been going to a fitness class when she suddenly developed a burning pain in the back of her right shoulder. The pain occurred after she did sit ups and crunches and had risen from a mild discomfort to an throbbing achethat woke her from sleep and limited her work as a paralegal. Over a three week period, the pain spread from her shoulder, down her arm, and into her hand. Mary had a pain problem that needed to be evaluated by a health care professional.

Don decided to ramp up his exercise program and began strength training instead of the usual spin sessions on a recumbent bike. After three sessions of lifting weights and calisthenics he developed pain in the back of both legs that made it difficult for him to rise from a chair. His hamstring and gluteal muscles were sensitive to pressure. The discomfort resolved with forty-eight hours of rest but returned after another lifting session. Don was concerned that he had damaged his legs and sought out an evaluation with the physical therapist. Don had the typical symptoms of delayed onset muscle soreness (DOMS) that resolve with time and acclimation to a new activity.

Is it pain or simple soreness?

What symptoms should you be concerned about and what symptoms are normal for an individual traveling through a new exercise experience? These two patients give us some insight.

Mary had a problem that she could immediately identify with a single activity. Her pain did not resolve between bouts of exercise and was evolving into other areas of her body. The pain was becoming more intense and began to interfere with many aspects of her life.

Musculoskeletal injury pain is usually provoked at the time of the exercise. Your back hurts during a bike ride, the shoulder twinges with a bench press, an elbow aches after pull ups. Injuries deep inside the body are frequently perceived as pain distant from the site of the tissue insult. Hip injuries send pain along the inside of the thigh, neck injuries create head and arm pain, lower back injuries create symptoms down the leg. Pain that progressively spreads is an injury indicator that should not be ignored. If the pain evolves to the point that it limits aspects of your life other than your exercise program, you have a problem that should be evaluated.

Don did not notice any discomfort during his sessions of exercise. He had symptoms the next day (delayed onset). The pain was centered in the muscles and did not evolve or spread. Although the pain was intense, it did resolve with rest. Modification of his exercise routine decreased the severity of his symptoms. Don was having the typical expression of DOMS.

Several factors can make DOMS more severe. Exercise activities with a greater eccentric bias (the muscle lengthens against resistance) create more muscle soreness. A program of squats and lunges

is more eccentric biased than riding an elliptical or a stationary bike. A sudden increase in exercise volume can also increase DOMS. Several medications, such as those in the statin family, have a history of creating more muscle soreness.

We got Don started on activities to improve his muscle recovery between exercise sessions. He has found relief with consistent use of a foam roll and dedication to lower extremity mobility drills. We reduced the eccentric loading of his leg muscles by cutting back on the lunges and replacing them with some sled pushing and pulling. His pain was gone in two weeks.

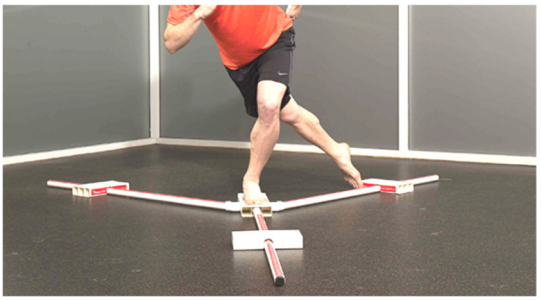
Mary had a cervical nerve root compression that resolved with ten sessions of physical therapy. She was able to return to her fitness program but has to refrain from activities that pull her head and neck forward. Mary has altered her work posture and reports a happy side effect of fewer headache episodes.

Five Fitness Components of a Comprehensive Training Program

Strength
Mobility
Muscle Endurance
Cardiorespiratory Capacity
Injury Prevention

For the novice, deconditioned, or older fitness client, the most important of these five components is injury prevention. Your training program should make you more durable and less likely to breakdown. Injuries that occur as the result of poor training choices are a tragedy that surgery and therapy are often unable to fully restore. Nothing will derail your attempts at becoming healthier and fitter than an activity induced trip to the orthopedic surgeon's office.

Most people see a personal trainer and launch into exercise activity with no attempt made at evaluating their initial performance capacity. Exercise is very much like medicine. If you take the correct medicine, at the proper dose, over the prescribed time period, the results are universally good. Take too much of the wrong medicine and the results can cause damage and distress. At Fenton Fitness, we base our exercise prescription on the results of the Functional Movement Screen.



The Functional Movement Screen (FMS) is a seven-step dynamic movement based evaluation that has become a standard of practice in physical therapy and sports performance centers. The FMS helps prevent injuries before they occur by identifying risk factors. The FMS has its greatest impact on the deconditioned population returning to fitness activities. This population is generally the weakest, most movement restricted, and most likely to be injured. Just like a good medical work up, the FMS permits the health care professional to make the proper decision about the client's most urgent needs and avoid activities that could cause harm.

-Michael S. O'Hara, P.T., OCS, CSCS

Additional Resources

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The Periodization of Training

What Every Woman Should Know to Optimize her Monthly Performance

Within my decade of professional experience in the fitness industry, I have seen a rather consistent trend. Many of the women I've trained have fluctuated with their performance / strength from session to session. I often attributed this to poor nutrition, sleep, or lack of focus. However, there is now a growing body of evidence demonstrating that much of this inconsistency in training performance is likely due to hormone fluctuations in the menstrual cycle. The evidence now strongly supports the notion that women who are cycling naturally can gain more strength and muscle by periodizing their training. This periodization is based on where they are hormonally in their cycle.

Cycle Fit

During a woman's cycle, there are two primary hormones at play: Estrogen and Progesterone. At the beginning of menstruation (follicular phase, or phase 1), both hormones are low. Estrogen gradually starts to climb and peaks just before ovulation (around day 12-14 in a typical cycle). Progesterone remains low until immediately after ovulation when it markedly increases. The data suggests that the higher the ratio of Estrogen to Progesterone, the better the opportunity for increasing strength and muscle mass. Strength and performance are better during the follicular phase, particularly during days 7-14 of the woman's cycle. Conversely, after ovulation, Estrogen sharply drops off while Progesterone begins to rapidly climb. This last phase of the cycle is referred to as the luteal phase (phase 3). For most women, this means that the last 8-12 days of their cycle will be the least productive in terms of training to increase strength and muscle mass. There have been several studies dating back to 1995 that have shown superior results when training is periodized based on these natural hormonal fluctuations that occur during the menstrual cycle.

Know Your Body

The practical implications of this are quite simple. If you're cycling naturally and would like to take advantage of your body's natural hormonal performance aid of estrogen, you need to determine the length of your typical cycle (normally 24-32 days, with 28 being the average). Generally, the first half of your cycle will be your follicular phase (phases 1 and 2) with the last half being your luteal phase (phase 3). If you want to be precise, you can use cycle charting to better gauge this, but for training purposes, a rough estimate should be just fine.

Peak Performance

During the first half of your cycle, you will want to use a higher training frequency, volume, and possibly a higher intensity. During the later portion you will want to decrease all of these variables. The following is a sample 28 day cycle regimen:

Week 1: Full body training 4 days/week, 16 sets per day, over 80% of 1 rep max

Week 2: Full body training 5 days/week, 16 sets per day, over 85% of 1 rep max

Week 3: Full body training 4 days/week, 12 sets per day, 70-80% of 1 rep max

Week 4: Full body training 3 days/week, 12 sets per day, 65-75% of 1 rep max

Give this a try and see how it goes. For questions or if you would like help with cycle-based training, please feel free to contact me at any time.

-Jeff Tirrell, CSCS, Pn1

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Fenton FITNESS & ATHLETIC CENTER

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Muscle and Mobility on a Smaller Gas Tank

Age Forty Plus Training Priorities

To age gracefully, remain durable (no injuries), and stay metabolically healthy, your fitness program has to focus on two areas: enhancing muscle mass and maximizing mobility. In their 1991 book, *Biomarkers*, the Tufts University researchers, Drs. Evans and Rosenburg identified four crucial biomarkers**:**

1. **Muscle Mass** What percentage of your body is made of muscle?
2. **Strength** Can you use that muscle to push, pull, lift, and carry?
3. **Basal Metabolic Rate** How many calories does your body expend at rest?
4. **Body Fat Percentage** What percentage of your body is composed of fat?

The authors named these top four biomarkers the *decisive tetrad*. They are the prerequisites to maintaining healthy numbers in the other essential biomarkers such as lipid levels, insulin sensitivity, bone density, aerobic capacity, and blood pressure.

Downward Spiral 101

Mobility is a key component to remaining injury-free and staying metabolically healthy. This is how the downward spiral starts. You lose some mobility in your lunge, squat, or overhead reach. Limited mobility means you can no longer work the muscles through a full functional range of motion. The muscles work less, muscle atrophy takes hold, and muscles shrink. Less muscle mass creates a slower metabolism. A slower metabolism means you gain fat more readily, and because you are weaker and heavier, you move less. Less daily movement activity leads to performance problems with walking and basic activities of daily living. Less muscle mass reduces stored glycogen and insulin sensitivity suffers. Insulin sensitivity problems lead to diabetes, obesity, metabolic syndrome, etc… Poor mobility and limited strength are the gateway to falls and fractures.

Lies My Bathroom Scale Told Me

After the age of 25, the average American gains a pound of fat and loses a ½ pound of muscle every year. If no action is taken to reverse this trend, the average American will have gained 25-30 pounds of fat and lost 12-15 pounds of muscle by the time they reach 55 years of age. The average 55 year old American will stand on the scale 12 to 18 pounds heavier but the true alteration in body composition is far more dramatic.

Work Capacity and Training Priorities

Older gym goers need to place mobility work and strength training first and foremost in their exercise programming. They have a work capacity “gas tank” that is smaller than their younger friends. Their neural and energy pathways fatigue faster and take longer to recover. Multi-joint strengthening activities such as squats, lunges, hip hinge, and push and pull patterns restore mobility and increase muscle mass. Isolation type muscle training can increase muscle mass, but it frequently blunts functional mobility and takes too long to produce a systemic training effect in older clients.

-Michael S. O’Hara, P.T., OCS, CSCS