

## Ross' Precision Health & Fitness Newsletter

### Issue #12 – 7/1/2007 – Upper Body Neurological Patterns

Well it's already time for the July newsletter, which means we are about halfway through the year. This is another great time to assess your progress and decide if you are happy with your improvement or if you need to make changes to your eating habits or exercise routine. July is also one of the hottest months and a popular month for outdoor activities, so I encourage everyone to stay hydrated and drink extra water if you spend a significant amount of time in the heat.

Now as with the previous newsletter, I will get right to the next part of the article, which you may also be happy to know is the conclusion. This part will continue discussing neurological patterns and muscle activation during resistance training, but it will be a little different from part 2, because I will not go into as much detail on one specific movement. Instead I will cover the most important aspects of a couple different upper body movement patterns.

### Featured Article

#### Mental Focus & Concentration During Resistance Training

#### Part 3

This final part of the article will cover basic upper body movement patterns with the focus of explaining which muscles should be active and which should be relaxed during various movements. For the purposes of this article, upper body movements involve the chest, back, shoulders, neck, and arms (biceps, triceps, & forearms). Many activities will simultaneously use the legs, abdominals, or other muscles, but these will be minimally discussed in order to focus on upper body muscles and neurological patterns. Now without further ado, here is the first upper body movement pattern.

#### **Upper Body Movement Pattern 1: Pushing Your Arms Away From Your Body**

This movement pattern involves most movements where your arms start close to your body and extend forwards away from your body. However, this does not include pushing your arms directly overhead or out to your sides. In terms of resistance training exercises, this is the general movement pattern used during flat, incline, and decline presses performed on a bench, exercise ball, machine, or while standing. This also includes bodyweight exercises such as push-ups.

These movements are performed mainly to work the chest (pecs), triceps, and front portion of the shoulder (anterior deltoid). Plus some positions, such as standing or on lying on an exercise ball will work additional muscles such as the abdominals and/or legs. This is one of the most basic movement patterns and it is also the most commonly performed upper body movement in resistance training programs, so it is very important that your muscles are used correctly during the exercises.

When discussing this general movement I will focus on the most well-known exercise in this category, which is of course the bench press. As you probably know the bench press involves laying face up on a bench and pressing a weight up and down above your chest. Your elbows can be close to your body or out to the side, but it is important to keep your wrist straight (not bent back) and directly above your elbow as much as possible during the movement.

From a muscular standpoint, the key to getting the most out of this and other pressing exercises is to focus on contracting your chest muscles (pecs) while pushing the weight away. Many people just think about using their arms to move the weight and the chest muscles end up being inadequately stimulated. A good approach is to concentrate on feeling your pecs stretch as the weight nears the bottom position and then actively contract the muscles you feel stretching when the weight is moving up/away.

Consciously activating your pecs will also help prevent incorrect muscles from working too hard during the exercise. When dealing with pressing movements, there are two primary muscle groups that may incorrectly work too hard. The first offender is the biceps and this is usually due to the chest muscles not working enough and the arms try to do all the work. When the pecs become engaged more, this problem is often corrected without too much extra effort.

The other main problem occurs when your shoulders perform too much work during the exercise. This is often the result of a chronic faulty recruitment pattern. This particular problem is especially important to recognize and correct, because when the shoulders work too much during this movement, they almost always have the same problem during other movements.

Luckily however there is a relatively easy way to identify undesired shoulder activity, which is simply to look for excess tension in the shoulder and especially the muscle between the shoulder and neck (upper trapezius or traps for short). When pressing movements are performed correctly, the traps stay fairly relaxed, although there may be some mild tension which usually intensifies as fatigue increases. When the shoulders work too hard, the traps are usually stiff or tight.

The other big giveaway when it comes to identifying a faulty recruitment pattern is when your shoulders actually rise and move closer towards your ears. This is your body's way of altering body position to put your shoulders in a better position to produce more force, while simultaneously putting your pecs in a position where they are not able to generate as much strength.

This faulty recruitment pattern may not be visible when pressing light weights, but typically becomes immediately evident under heavy loads. People with this recruitment pattern are frequently referred to as being shoulder dominant, although technically it is dominance in the front (anterior) portion of the shoulder and not the shoulder as a whole.

This is important, because when the front portion of the shoulder is too strong, the back portion is usually at least a little too weak.

This can be a difficult recruitment pattern to correct, because this is not really an issue of using incorrect muscles (except for the traps), but rather using a correct muscle too much. When pressing movements are performed correctly, the anterior deltoid still a primary muscle, but its relative contribution needs to be significantly less while the force produced by the pecs needs to significantly increase.

As with all recruitment patterns, this can take a long time to correct, but focusing on relaxing your neck, traps, and shoulders (to some degree) while increasing the contraction in your pecs, you will be able to improve your form and the results you receive from performing pressing movements.

## **Upper Body Movement Pattern 2: Pulling Your Arms Towards Your Body**

This movement pattern involves any movement where your arms start away from your body (from above or in front) and are pulled towards the center of your body. These movements are commonly referred to as rows or pull-downs (including pull-ups). In terms of resistance training, these exercises can be performed on benches, exercise balls, machines, hanging from a bar, and of course standing.

The primary muscles used to perform these movements are the back and biceps with the back (posterior) portion of the shoulder having a main role in some exercises. Also, the forearms playing a supporting role in all pulling exercises. However, due to the diverse nature of pulling/rowing movements, the muscles emphasized will be different during various exercises, especially in terms of the back muscles used.

In general, when your elbows stay close to your body during an exercise, the emphasis will be more on the middle back and lats (muscles on the side of your back below your armpit). When your elbows are in a wider position and kept away from your torso, the emphasis will be more on the upper back, upper lats, and posterior shoulders. Your biceps will be used to some degree in all positions, but should ideally play a secondary role to your back/posterior shoulder muscles.

When discussing this general movement pattern I will not focus on any particular exercise, because there are many popular variations without one universal standout as with the bench press. More importantly, there is one predominant recruitment pattern issue that occurs during pulling movements and it is almost always identifiable by examining the muscles that are working during the exercise.

As strange as it may sound, when pulling exercises are performed incorrectly, people often use completely different muscles than the ones that should be working. The obvious sign that incorrect muscles are being used is when the anterior (front) shoulder and/or tricep muscles are working more than the back or bicep muscles.

As with the pressing movements, excess use of the anterior shoulder muscles is the primary concern, although the issue is a little more complicated with pulling movements. During pulling movements, the front of your shoulder should stay fairly relaxed to allow the muscles on the back of the shoulder to contract more, allowing movement through a full range of motion.

When the anterior (front) shoulder muscles are contracting strongly during a pulling movement, your body is essentially trying to change the mechanics of a movement to more closely resemble a pressing movement. This typically occurs when pressing muscles are significantly stronger than pulling ones, but it can also happen when people find pushing movements more natural or comfortable than pulling ones.

Of course the exercise will still involve pulling a weight towards your body or pulling your body towards a fixed object, but the muscles involved can be very different. When your anterior shoulder is too active during pulling movements, it will cause your shoulder to rise up and/or rotate forward. From this position, your arms can exert a downward pressing force while you are still pulling. This will further increase the tension in your anterior shoulders and cause your triceps to contract.

For example, if you are standing and pulling a cable horizontally towards your body with your elbows in a narrow position, you should feel your lats (side of your back) and biceps initially, with increased tension in your mid and upper back muscles as your hands get closer to your body. Also your forearms should stay in a relatively horizontal position throughout the movement.

If your pressing muscles (shoulders/triceps) are trying to do the work, you will probably feel some immediate tension in the front of your shoulders that may be accompanied by an upward or forward movement in your shoulders. You may also lean your whole upper body forward, which puts your shoulders in a better position to produce more force.

As you start pulling there will soon feel increased tension in your triceps (if you don't feel it at the beginning). If your triceps are working way too much, you will actually change the movement of your arms so that your forearms start pointing more towards the ground instead of straight ahead. This change in movement will be accompanied by increased stiffness in your shoulders as well as an overall lack of range of motion in your back/shoulder muscles.

When performed correctly, you will end up with your forearms horizontal, hands by your sides above hip level, and elbows sticking out behind your back. When performed using incorrect muscles, your forearms will be angled down towards the floor and your hands may even be below your hips. Plus, your elbows will not extend as far back or will be at your sides and your shoulders will likely be stiff and significantly rolled forward.

I recommend trying out a variety of pulling/rowing exercises to see if you use the correct muscles and movement during the exercises. If you find that you have some or all

of the problems listed above, don't worry because even though this may sound like a lot to correct, sometimes they can be quickly and relatively easily corrected. It all depends on your level of muscle control and the amount you favor your pushing muscles over your pulling ones.

In any case, the place to start is your hands, specifically your grip on the cable, weight, etc. during pulling exercises. Many people grip too tightly during pulling exercises, which increases the initial tightness in the forearms, biceps, triceps, and may even increase tightness in the anterior shoulder muscles before the pulling motion even starts. The key is to hold the resistance as lightly as possible or in other words just enough to keep you from letting go or dropping the weight.

In some cases just relaxing your grip will fix the whole exercise and you will immediately feel a shift from your pushing muscles to your pulling ones. However it is more likely that you will feel a decrease in anterior shoulder tension and your arms (biceps and triceps) will still be tight. You may also feel an increase in tension in the back of your shoulder or between your shoulder blades, both of which are positive changes.

In all honesty, fully engaging the back muscles (particularly the lats) during pulling exercises is one of the most difficult muscle actions to learn. This is because most people use their arms for almost all everyday activities and back muscles only start to work after the arm muscles become overwhelmed. This faulty neurological activation pattern is often present in pulling exercises and it can take a while for the body to figure out how to create a strong back contraction without excessive arm tension.

This may take some time to do correctly, but if you can decrease the intensity of your grip, you are definitely headed in the right direction. The next step is to concentrate on relaxing your entire arm(s) as much as possible. As with your grip, your arm muscles will still be somewhat tense and you can have a fair amount of tension in your biceps, but there should be less tightness in your triceps.

This step is important in the learning process, because if your arms and anterior shoulder are more relaxed, your back muscles will be forced to work more. To increase the amount of back contraction, you should concentrate on pulling your elbow(s) as far back as possible, while keeping your shoulders from rising or rotating forward. You can also actively squeeze your back muscles at the end position to increase the contraction as well as the awareness of your back muscles.

Over time you will develop better control of your back muscles, which will allow you to contract them more forcefully, even before your arms fatigue. This will improve your strength in all pulling movements and should significantly improve the results you get from pulling exercises. In addition, your muscles will be more effective and you will be able to accomplish everyday physical tasks with less stress/fatigue.

Well this finally marks the end of the multi-part neurological training article. Of course this article addresses just a small portion of the many neurological patterns used in

training programs, but it should help you evaluate and/or improve your performance of a number of exercises included in your workout routine.

Even if you are not interested in improving your neurological patterns, which hopefully by now you are, this article should illustrate the importance of thinking about your muscles while you exercise instead of just going through the motions. This really is one of the most important components of a quality training program and it will greatly improve your workout results as well as the way your body feels and performs during everyday activities.

## WRAP UP:

This edition not only brings an end to the discussion of neurological training, but it also brings an end (at least for the time being) to my Precision Health and Fitness Newsletter. I apologize to those of you who are loyal readers and want the newsletter to continue, but at this point in time I am starting to get a little burned out between my increasing personal training schedule and my newsletter writing, so the newsletter has to go.

I may end up sending out writings from time to time if there are certain topics that I think you would find useful or interesting, but I am going to stay away from having a set writing schedule. Also I will still respond to any questions that you have about health and fitness related topics and if you e-mail me topics you want to learn more about will try to write at least a mini newsletter on the subject.

All that I have left to say is thank you for your continued support and I hope my newsletters have helped you get closer to your fitness goals or at least encouraged you to continue living a healthy lifestyle. I wish you all the best,

Ross