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Time to move on

Pre-exhaust your muscles

■ BY MATT BRZYCKI

Essentially, there are two types of movements: single-joint and multi-joint. A single-joint movement involves a range of motion around one joint. An example is a tricep extension in which movement occurs at the elbow joint. The advantage of a single-joint movement is that it usually isolates a muscle.

A multi-joint movement involves ranges of motion around more than one joint. An example is a bench press in which movement occurs at the shoulder and elbow joints. The advantage of a multi-joint movement is that it engages a relatively large amount of muscle mass. But multi-joint movements have a distinct disadvantage.

THE "WEAK LINK"

It's said that a chain is only as strong as its weakest link. That adage also applies to multi-joint movements that have a "weak link."

Think about a pull-up, for example. A pull-up is a multi-joint movement since it involves ranges of motion around the shoulder and elbow joints. The three main muscles used in a pull-up are your upper back (which draws your upper arms downward and backward), your biceps (which bend your arms) and your forearms (which are used to grasp and pull things).

Now, suppose that you tried to do as many pull-ups as possible. When you cannot do any more repetitions, which of the three muscles has fatigued so much that it causes you to stop? Is it your upper back, your biceps or your forearms? If you're like most people, it's your biceps and/or forearms. That's where you "feel the burn," right? And why is it that your biceps and/or forearms fatigued first? Well, it's because they're smaller and weaker than your upper back; they're the weak link. So, your biceps and forearms get a pretty good workload but your upper back – which is the main muscle that you really want to address in this exercise – gets very little workload.

THE PRE-EXHAUSTION PRINCIPLE

The disadvantage that's inherent with multi-joint movements can be avoided by utilizing the Pre-Exhaustion Principle, a training technique that was first popularized in the early 1970s. With the Pre-Exhaustion Principle, the idea is to "pre-exhaust" the main muscle that you're trying to work in a multiple-joint movement by first performing a single-joint movement. In effect, this "double set" will negate the weak link. After doing the single-joint movement, a multi-joint movement is performed which uses associated muscles to help work the pre-fatigued muscle to a much greater degree of exhaustion.

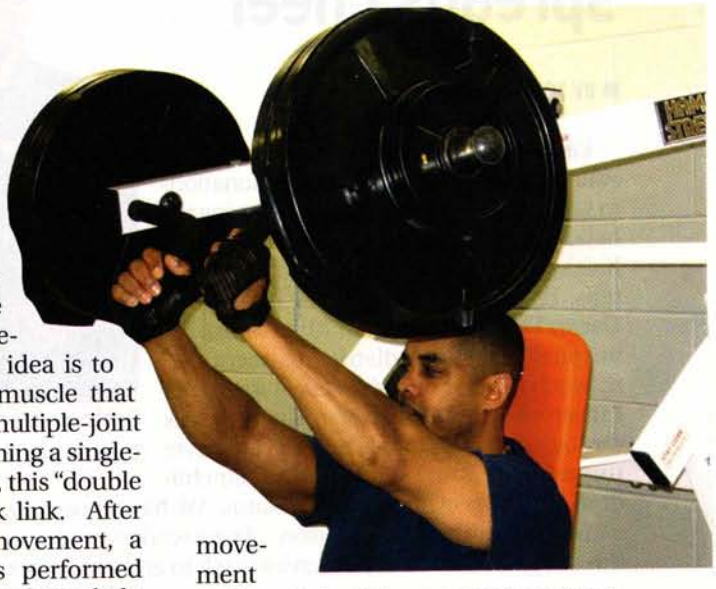
Key point: For maximum results, the second exercise should be done as soon as possible after completing the first exercise. Taking too much time between the first and second exercises will allow the pre-fatigued muscle to gradually recover some of its original level of strength. If the muscle recovers too much, then you're back to where you started with the weak link still being the limiting factor.

PRACTICAL APPLICATIONS

Let's look at a few specific ways to pre-exhaust the major muscle groups of your torso with conventional equipment (barbells, dumbbells and machines).

Chest: A single-joint movement that targets the chest is the bent-arm fly. This exercise can be done with dumbbells or a machine (the "pec dec"). After pre-exhausting your "pecs" with the bent-arm fly, you can fatigue the muscle more by immediately doing a multi-joint movement such as a bench press, decline press, incline press, push-up or dip.

Upper Back: A single-joint movement that targets the upper back is the pullover. This exercise can be done with a barbell, dumbbell or a machine. After pre-exhausting your "lats" with the pullover, you can fatigue the muscle more by immediately doing a multi-joint movement such as a lat pulldown, seated row, bent-over row or chin/pull-up.



Shoulders: The shoulders are a bit more complicated since this area includes the deltoids and trapezius. Single-joint movements that target the deltoids are the front raise (anterior deltoid), lateral raise (middle deltoid) and bent-over raise (posterior deltoid). These three exercises can be done with dumbbells. After pre-exhausting your anterior "delt" with the front raise, for example, you can fatigue the muscle more by immediately doing a shoulder press. A single-joint movement that targets the trapezius is the shoulder shrug. This exercise can be done with a barbell, dumbbells or a trap bar. After pre-exhausting your "traps" with the shoulder shrug, you can fatigue the muscle more by immediately doing an upright row.

THE BOTTOM LINE

Remember, the limiting factor in multi-joint movements is the smaller, weaker muscle. This issue can be circumvented, however, by first pre-exhausting a muscle with a single-joint movement and then immediately performing a multi-joint movement. ■

Matt Brzycki is the Assistant Director of Campus Recreation, Fitness at Princeton University. A former Marine Drill Instructor, he has authored, co-authored or edited 16 books on strength and fitness, including SWAT Fitness (which is available at www.optacinternational.com).