

THE ROLE OF STRETCHING EXERCISES IN BODYBUILDING

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Abstract: *Stretching can help every athlete to build bigger muscles that are strong and well shaped. When a bodybuilder finishes a set of a weight lifting exercise, his muscles will be filled with blood. That same blood is what transports nutrients to those muscles to provide them the necessary building blocks for growth. What if there was a way to get more blood and, therefore, more nutrients into that muscle? That is what stretching do!*

Key words: *Stretching, flexibility, bodybuilding, training.*

1. Introduction

Good flexibility is known to bring positive benefits in the muscles and joints. It aids with injury prevention, helps to minimize muscle soreness, and improves efficiency in all physical activities. Increasing flexibility can also improve quality of life and functional independence.

Good flexibility aids in the elasticity of the muscles and provides a wider range of motion in the joints. It provides ease in body movements and everyday activities. A simple daily task such as bending over and tying shoes is accomplished better with flexibility.

Unfortunately, flexibility is generally not a focus of people wanting to start a fitness program. In fact, many times it is minimally addressed or neglected altogether. While the benefits of regular cardiovascular and strength training exercise are well known, few people realize that flexible joints and regular

stretching are also essential for optimum health and activity [5].

Recently, many whole-body fitness and wellness programs, such as yoga and Pilates, which incorporate some flexibility training, have increased in popularity. While these programs may improve the flexibility of individual body segments, their emphasis is not specifically aimed at improving the range of motion of all of the major joints.

Yoga emphasizes balance in all areas, seeks to strengthen all muscle groups equally, creates balance between the mental and physical, and encourages moderation in everything.

Yoga involves holding static poses while exploring breathing, physical feelings, and emotions.

The increase in flexibility comes from holding the body in the desired poses. Pilates, on the other hand, is an exercise program that encourages the use of the mind to control the muscles. It emphasizes strengthening the postural muscles that

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help keep the body balanced and provide support for the spine. In contrast to traditional strength training programs that involve multiple sets and repetitions of a single exercise, a Pilates workout stresses few repetitions of each exercise and emphasizes doing these movements with precise control and form. The increases in flexibility are primarily accomplished from the ballistic movements used to increase strength.

How much stretching should a person do every day? Usually, most stretching tends to be a very brief routine concentrating on the muscle groups of the lower body. The total time spent in a stretching routine hardly ever exceeds 5 minutes; people tend to stretch a particular muscle group for no more than 15 seconds. Additionally, the stretching usually occurs at the start of the exercise session [4].

Even in sport training, stretching is given minor importance in the overall training programs. An athlete might spend just a little more time stretching than the average person. This is usually because it is part of a warm-up routine. After the workout, however, most athletes are either too tired to do any stretching or simply do not take the time to do it. To be the most effective, however, stretching should be performed both during warm-up before a workout routine and as part of a cool-down after the workout.

For any person, whether an athlete or not, a regular stretching routine can bring some interesting benefits. Research studies on hamstring injuries have shown that those people with the lowest flexibility have the greatest chance of injury. Interestingly, the type of increased flexibility needed for reducing injury did not come from doing stretching exercises right before the activity. Rather, the increased flexibility required for fewer injuries came only from doing weeks of stretch training. Additional research has

shown that regular, intense stretching for a minimum of 10 minutes will bring some major beneficial changes in the neuromuscular–tendon units. Increased strength and endurance gains have been reported as well as improved flexibility and mobility.

2. The problems

2.1 Types of Stretching

In general, any movement that requires moving a body part to the point at which there is an increase in the movement of a joint can be called a stretching exercise. Stretching can be done either actively or passively [6].

Active stretching occurs when the person doing the stretch is the one holding the body part in the stretched position (figure 1).



Fig.1. *Example of active stretching exercise*

Passive stretching occurs when someone else moves the person to the stretch position and then holds the person in the position for a set time (figure 2).



Fig. 2. *Example of passive stretching exercise*

The four major types of stretches are *static*, *proprioceptive neuromuscular facilitation (PNF)*, *ballistic*, and *dynamic*.

The static stretch is used most often. In static stretching, one stretches a particular muscle or group of muscles by slowly moving the body part into position and then holding the stretch for a set time. Since the static stretch begins with a relaxed muscle and then applies the stretch slowly, static stretching does not activate the stretch reflex (the knee jerk seen when the tendon is tapped with a mallet). Activation of the stretch reflex causes the stretched muscle to contract instead of elongate. This contraction of the muscle is directly opposite of the intent of the exercise.

Static stretching is slow and constant with the end position held for 10-30 seconds. A slow and smooth stretch prompts less reaction from stretch receptors and is safe. Holding the stretch longer than 10 seconds allows for the muscle spindles to relax and be less sensitive.

Static stretches can be done either passively or actively. Passive stretching requires an outside force to move the joints through their range of motion. The outside resistance can be from yourself, a partner or even gravity. You can achieve a greater range of motion passively stretching but there is also a greater risk of injury due to the stretch not being controlled by the muscles themselves.

PNF stretching refers to a stretching technique in which a fully contracted muscle is stretched by moving a limb through the joint's range of motion. After moving through the complete range of motion, the muscle is relaxed and rested before resuming the procedure. The combination of muscle contraction and stretching serves to relax the muscles used to maintain muscle tone. This relaxation allows for increased flexibility by

“quieting” the internal forces in both the muscles that assist and the ones that oppose the movement of the joint in the desired direction.

PNF stretching methods may be more superior to static stretching because they facilitate muscular inhibition (reciprocal and autogenic inhibition).

The hold-relax and contract-relax techniques for PNF stretching are essentially the same, where one entails the muscle to contract isometrically and the other concentrically before being stretched.

Ballistic stretching uses muscle contractions to force muscle elongation through bobbing movements where there is no pause at any point in the movement.

Although the bobbing movement quickly elongates the muscle with each repetition, the bobbing also activates the stretch reflex (or knee jerk) response. Since the stretch reflex stimulates the muscle groups to contract after the stretch is finished, ballistic stretching is usually discouraged.

Ballistic stretching involves the muscles being stretched suddenly in a bouncing-type movement with active muscular effort. The end position is not held as in static stretching. Ballistic stretching is not recommended because it may injure muscles and connective tissues, it also causes a heightened activity of the muscle spindles not allowing the muscle to relax, which defeats the purpose of stretching.

Dynamic stretching refers to the stretching that occurs while performing sport-specific movements. Dynamic stretching is similar to ballistic stretching in that both use fast body movements to cause muscle stretch, but dynamic stretching does not employ bouncing or bobbing. Additionally, dynamic stretching uses only the muscle actions specific to a sport. Practically speaking, dynamic stretching is similar to performing a sport-specific warm-up (that is, performing the

movements required for the activity but at a lower intensity).

2.2. Benefits of Stretching

The following are several chronic training benefits gained from using a regular stretching program [3].

Improved flexibility, stamina (muscular endurance), and muscular strength. The degree of benefit depends on how much stress is put on the muscle. Medium or heavy stretches are recommended. You can do this by building up to doing long stretches of high intensity (see the next section for a detailed explanation of light, medium, and heavy stretching).

Reduced muscle soreness, aches, and pains. Use only very light stretches if muscle soreness prevails.

Improved flexibility with the use of static or PNF stretches. Medium or heavy stretches are recommended. Good muscular and joint mobility. More efficient muscular movements and fluidity of motion. Greater ability to exert maximum force through a wider range of motion.

Prevention of some lower back problems. Improved appearance and self-image. Improved body alignment and posture. Better warm-up and cool-down in an exercise session.

2.3. Stretching Programs

The following programs can be performed by anyone who is interested in improving flexibility, strength, and strength endurance. To make changes to any of these areas, you need to be involved in a regular stretching program, preferably as a daily routine or as close to that as possible. Changes will not come in a day or two but rather after a dedicated effort of several weeks.

You can incorporate your programs with or without any other kind of exercise routine.

According to the latest research, heavy stretching, even without any other exercise activity, can bring about changes in flexibility, strength, and muscular endurance.

As in any other exercise program, progression is an integral part of a successful stretching program. The stretching progression should be gradual, going from a lighter load with less time spent on each stretch to a heavier load with more time spent on each stretch [7].

For the programs outlined, you should begin with the initial program, or level I, and then progress through to level V. However, you may customize this program according to your current level of experience and flexibility.

Generally, working through each level at the recommended speed will result in meaningful and consistent workouts. After such workouts, you will find improved flexibility in the muscles you worked as well as the satisfaction of having done something beneficial.

Intensity is always a critical factor when you want changes and improvements to come from an exercise program. In a stretching routine, intensity is controlled by the amount of pain associated with the stretch. Using a pain scale from 0 to 10, initial pain is light (scale of 1 to 3) and usually dissipates as the time of stretching is extended.

Light stretching occurs when you stretch a particular muscle group only to a point where you feel the stretch with an associated light pain.

Moderate stretching (scale of 4 to 6) occurs when you start to feel increased, or "medium," pain in the muscle you're stretching.

In heavy stretching (scale of 7 to 10), you will initially experience a moderate to

heavy pain at the start of the stretch, but this pain slowly dissipates as stretching continues.

Research studies have shown that heavier stretches rather than lighter stretches provide greater improvements in flexibility and strength. Thus, you are the key to your own success, and how well you are able to monitor stretch intensity and tolerate the pain level determines how quick and large the improvements will be.

Because of the complexity of muscle attachments, many stretching exercises simultaneously affect a variety of muscle groups in the body and stretch the muscle groups around multiple joints [2].

Thus, a small change in body position can change the nature of a stretch on any particular muscle.

To get the maximal stretching benefit in any muscle, it is helpful to know joint movements that each muscle can do. Putting the joint through the full range of each motion allows for maximal stretching.

You can customize the exercises, which will allow for numerous stretch combinations. You can adapt the stretching exercises to fit your individual needs and desires. For example, if you have soreness in only one of the muscles or just a part of the muscle, you can adapt each exercise to stretch that particular muscle. If the explained stretch or particular body position does not stretch a particular muscle as much as you want it to, then experiment by slightly altering the position.

Keep making alterations in the position until you reach the desired level of stretch (using a pain scale rating). Also, you should incorporate only two to four heavier stretching days in each week and have a lighter stretching day in between each of the heavier stretching days. Finally, for any stretch involving sitting or lying down, you should do the stretch with a cushion underneath you, such as a carpet or athletic mat. Cushioning makes the exercises more

comfortable to perform. However, the cushioning should be firm. Too soft of a cushion will reduce the effectiveness of the stretches.

General recommendations:

- Try to include all the major muscle groups in any stretching program.
- Do at least two different stretches for each joint movement.
- Before any physical activity, use light stretches as part of the warm-up.
- After an exercise routine, cool down with medium-intensity stretches.
- If muscles are sore after exercising, use only light stretches two or three times with a 5- to 10-second hold for each stretch performed.
- If muscle soreness persists for several days, continue using light stretches two or three times with a 5- to 10-second hold for each stretch performed.
- The majority of the stretches should be static.

Recommended Programs:

The following programs are specific stretching recommendations and are based on your initial flexibility.

In addition to following the programs listed, you should follow the general recommendations listed previously. Stay on each level for two to four weeks before going to the next level.

Level I

- Hold the stretching position for 5 to 10 seconds.
- Rest for 5 to 10 seconds between each stretch.
- Repeat each stretch two times.
- Use an intensity level on the scale from 1 to 3, with light pain.
- Duration is 15 to 20 minutes each session.
- Stretch two or three times per week.

Level II

- Hold the stretching position for 10 to 15 seconds.
- Rest for 10 to 15 seconds between each stretch.
- Repeat each stretch three times.
- Use an intensity level on the scale from 2 to 4, with light to moderate pain, one or two times per week.
- Use an intensity level on the scale from 1 to 2, one or two times per week.
- Duration is 20 to 30 minutes each session.
- Stretch three or four times per week.

Level III

- Hold the stretching position for 15 to 20 seconds.
- Rest for 15 to 20 seconds between each stretch.
- Repeat each stretch four times.
- Use an intensity level on the scale from 4 to 6, with moderate pain, two or three times per week.
- Use an intensity level on the scale from 1 to 4, two or three times per week.
- Duration is 30 to 40 minutes each session.
- Stretch four or five times per week.

Level IV

- Hold the stretching position for 20 to 25 seconds.
- Rest for 20 to 25 seconds between each stretch.
- Repeat each stretch five times.
- Use an intensity level on the scale from 6 to 8, with moderate to heavy pain, two or three times per week.
- Use an intensity level on the scale from 1 to 6, two or three times per week.
- Duration is 40 to 50 minutes each session. Stretch four or five times per week.

Level V

- Hold the stretching position for 25 to 30 seconds.
- Rest for 25 to 30 seconds between each stretch.
- Repeat each stretch five or six times.
- Use an intensity level on the scale from 8 to 10, with heavy pain, two or three times per week.
- Use an intensity level on the scale from 1 to 8, two or three times per week.
- Duration is 50 to 60 minutes each session.
- Stretch four or five times per week.

2.4. Bodybuilding Streching*Exercises for Strength Training Neck*

- In a seated position, take your hand and gently pull your head towards your shoulder - i.e. your ear towards your shoulder.
- Apply gentle pressure with your arm over your head.
- Repeat on the other side.

Upper Back

- Hold on to an upright support at waist height with your arms straight.
- Bend at the hips until your torso is parallel to the floor.
- Gently pull back, ensuring your back is flat.

Lower Back

- Lie on your back, knees bent and arms straight out to each side.
- Rotate both legs to each side, keeping your head, shoulders and arms in contact with the floor.

Shoulders

- Grab one elbow with your opposite hand.

- Gently pull it across your body, aiming the elbow towards the opposite shoulder.
- Repeat on the other side.

Chest/Biceps

- With your arm fully extended, hold on to an upright support at shoulder level.
- Gently turn your body away from your arm, pressing your shoulder forwards.
- Repeat on the other side.

Triceps

- Place one hand between your shoulder-blades, hand pointing downwards and elbow pointing upwards.
- Use your opposite hand to gently press down on your right elbow until you feel a stretch in the triceps.
- Repeat on the other side.

Quadriceps

- Hold on to a sturdy support.
- Bend one leg behind you and hold the ankle.
- Keep your thighs level, knees close, and push your hips forwards until you feel a good stretch.
- Repeat on the other side.

Adductors

- Sit on the floor and place the soles of your feet together.
- Hold on to your ankles and press your thighs down using your elbows. Keep your back straight.

Hamstrings

- Sit on the floor with one leg extended and the other leg bent.
- Keeping your back straight and flat, bend forwards from the hips. Reach down towards your foot.
- Flexing your foot will increase the stretch on the calf.
- Repeat on the other side.

Hip Flexors

- From a kneeling position, take a large step forwards so that your knee makes a 90° angle and is directly over your foot.
- Keep your body upright and press your rear hip forwards, keeping it square.
- Repeat on the other side.

Hips/glutes

- Sit on the floor and cross one foot over your straight leg.
- Place your elbow on the outside of the bent knee and slowly look over your shoulder on the side of the bent leg.
- Keep your opposite arm behind your hips for stability.
- Apply pressure to the knee with your elbow.
- Repeat on the other side.

Calves

- From a standing position, take an exaggerated step forwards, keeping your rear leg straight. Hold on to a wall for support if you wish.
- Your front knee should be at 90° and positioned over your foot.
- Lean forwards slightly so that your rear leg and body make a continuous line.
- Repeat on the other side.

2.5. Stretching for muscle growth

Every muscle of your body is covered by a tissue called a 'fascia'. The fascia is like a bag and envelopes your muscles. This tissue is very important because it holds your muscles in the right place in your body.

But the fascia can limit your muscle growth. Your muscles try to grow but the fascia stops the process. Do you know why? The muscles have no room to grow. It's so simple.

The fascia is a very tough tissue and does not allow the muscle much room to expand (grow). Take this example: you try to blow a balloon inside of another balloon, when the balloon inside grows and touches the second balloon, it will be hard for you to keep going. No matter how well you train and how great your nutrition is, the fascia will stop your muscles growing. That's why stretching is the solution!

Using the example of the 2 balloons, imagine if you can stretch the outside balloon first. It will give you more room for the inside balloon to get bigger. By stretching your muscles, you will at same time stretch the fascia tissues. You will give your muscles some room to grow!

The best time to stretch your muscles and expand the fascia at the same time is when your muscles are pumped - that means they are full of blood. This is the perfect time for stretching because your muscles push against the fascia and try to grow. For example, finish your chest routine with some incline dumbbells fly. Hold the position at the bottom of the movement for few seconds for a good stretch. This will really stretch the fascia.

One of the major reasons Arnold Schwarzenegger had such incredible chest development was that he finished his chest workouts with dumbbell flyes, an exercise that emphasizes the stretched position of the pectoral muscles. He would pump his chest up full of blood during the workout then do flyes, holding the stretch at the bottom of the flye. This gave his chest room to grow to amazing proportions [8].

Fascial stretching is more rigorous than regular stretching but the results can be amazing. When you stretch hard enough to cause the fascia to expand, you will really feel it! When you are stretching the fascia, you should feel a powerful pulling sensation and pressure as the muscle works against the fascia to expand it.

Stretching at the same time as doing your strength training encourages a better blood flow. This is the key for a better 'pump' and better muscle growth.

Hold your stretch between 30 to 40 seconds. To be able to stretch your fascia you need to stretch little more than just a regular stretch. But be careful not to pull a muscle. This is why you need to stretch when you are warm, and your body temperature is raised from your warm-up and from your workout.

Don't forget, for better muscle growth next time you hit the gym, don't forget to stretch. Try this for a few weeks and you will start to see a big difference in your muscle growth. Yes, stretching is for bodybuilders too! In Aaron Anderton's book „50 tips to bodybuilding succes” [1], eight time Mr. Olympia winner, Ronnie Coleman, reveals one of his secrets for succes.

Stretching can help you build bigger muscles that are strong and well shaped. When you finish a set of a weight lifting exercise, your muscles will be filled with blood. That same blood is what transports nutrients to those muscles to provide them the necessary building blocks for growth. What if there was a way to get more blood, and therefore more nutrients, into that muscle? That's what stretching for muscle growth can do.

I am not talking about your warm-up, or about stretching for hours until you can do the full-splits. Those things are not necessarily bad, but what I am talking about is stretching for muscle growth. To do that, you need to stretch the muscles you are training, between sets like Ronnie Coleman does.

When you take a muscle after completing a set of your weight lifting workout, and that muscle is filling with blood, you can increase the flow and circulation of blood by stretching the muscle. Another very important thing that

this kind of stretching does is to stretch the fascia around the muscle, making it easier for that muscle to grow larger.

I will use the chest as an example of how to perform these stretches. After you do a set of bench presses, you will do a light stretch.

If you have a training partner, he or she can stand behind you, take hold of your wrists, and pull them back and up behind you until the chest, shoulder and biceps muscles stretch.

You can have them bring your wrists closer together to further enhance the stretch if you wish.

If you are training alone, you can use a wall or other stationary object to achieve the same effect. Place your hand on the wall and turn away from it, making sure to get a good stretch of the chest, shoulders and biceps. Then switch and do the other side.

The important thing to remember is that you want to start with an easy stretch, and then go a little farther, and a little harder each set.

When your muscles are fully pumped is the time to go for a hard stretch and maximize the stretch of the fascia. Remember, however, do not push so hard that you overstretch and injure yourself. You have to use some common sense and stretch the muscle, not tear it.

If you incorporate stretching for muscle growth into your workouts between sets, I know you will experience new and substantial growth!

3. Conclusions

Incorporating key stretches into your strength training programme will result in greater muscle growth and the enhancement of muscle shape. Failing to stretch will not only, limit your range of motion but also your growth rate.

Stretching elongates the fascia, a strong protective sheath of connective tissue covering all muscles and their cells, allowing the muscle underneath room in which to grow. Fascia tissue can become thick and tough if the muscles are not stretched and are subjected to a limited range of motion.

The best time to stretch the fascia is when the muscles are very warm and 'pumped' (i.e. full of blood). This occurs during and after a workout, so stretch between and after sets, and at the end of your training session.

Stretching increases flexibility, giving the muscles and joints a greater range of motion. It can prevent muscle soreness and promote faster recovery between workouts, helping to release lactic acid from the muscle cells into the bloodstream so that it does not hinder further muscle contraction. Therefore, stretching during your workout may enable you to train harder and longer.

Stretching improves posture as well, and gives the body a more athletic or graceful appearance instead of that clumsy awkward gait that many bodybuilders develop.

For Arnold Schwarzenegger, training wasn't just a means to create a muscular body, but rather a way to grow and develop into the best person he could be.

As much as he loved his time in the gym, he also knew that rest periods were vital to success. He was well-known for his legendary toughness, but also realized that there was a fine line between enough and too much. If you crossed that line, overtraining would set in [8].

He recommended 48 hours of rest after working larger muscle groups and slightly less for the smaller ones. He also felt that as your training level progressed, you'd be able to handle more work with less recovery time and could tolerate more frequent workouts.

Finally, he believed the best way to treat injuries was to prevent them. His prevention methods included always performing a thorough warm-up before workouts and stretching once he was finished.

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