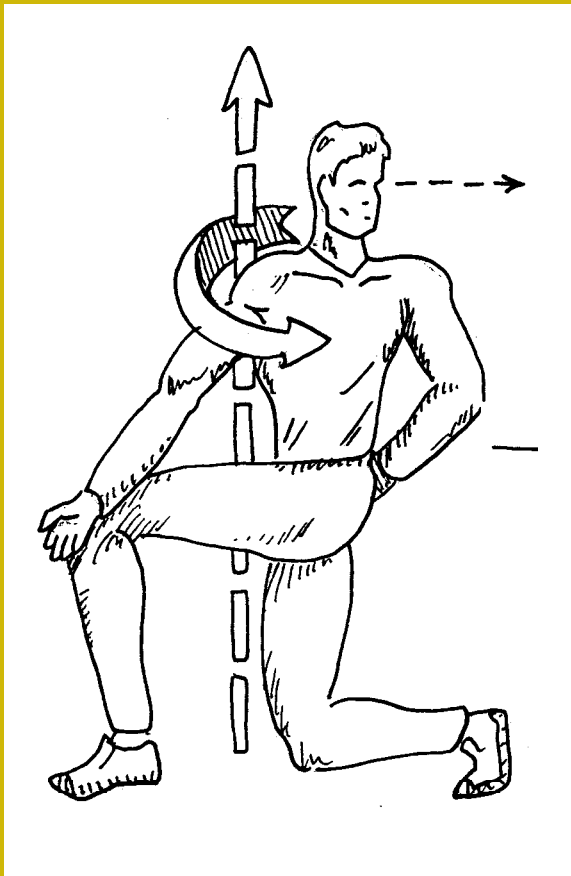


FASTER FLEXIBILITY

2nd Edition

Mary Shells and Gregory Finn



Modern stretching routines for all levels of fitness from beginner to advanced.

An indispensable guide to using flexibility training for recuperation and athletic performance.

DEMO CHAPTER

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Mary Shells and Gregory Finn

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by Mary Shells and Gregory Finn

2nd Edition - DEMO CHAPTER

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Contents

1.	Introduction	p. 3
2.	Lessons in Flexibility	p. 7
3.	Developmental Static Stretching	p. 23
4.	The Double A Routine	p. 27
5.	The Upper Body Routine	p. 45
6.	Fibrosis and Flexibility	p. 57
7.	The PNF Routine	p. 63
8.	The Faster Flexibility Splits Routine	p. 79
9.	Passive Stretching	p. 87
10.	Warming Up and Working Out	p. 97
11.	Training Schedules	p. 103

Introduction

Fitness and health have become of prime importance to more people in the last three decades, then in the last one hundred years. This would of course have to do with the advent of mass communications, but what started off as a trend, has now developed into a daily portion of the lives of men and women across the world. Without a doubt, stretching always makes up a small part of that daily portion of fitness. Whether it be warming up, cooling down or the focus of the routine, stretching exercises of some sort are usually involved.

Many exercise routines that are both familiar and ancient, are solely geared towards increased mobility. One such example of this, is referred to in the western world, as the art of Kung Fu. It is believed that the art originated with a man named Bohdidiharma, an Indian who came across a temple of Shaolin Monks who were

feeble and weakened. Through the delicate and precise nature of movement patterns, such as the "Eighteen Lohan", the Monks were able to renew their health and mobility. Another ancient teaching based upon the patterning of precise movements, is the art of Yoga. It is one of the few styles which, is for the most part, is solely geared towards increasing flexibility. It also develops balance, coordination and strength, to name only the obvious.

Individuals who are just starting to make fitness a daily part of their life, will find that a dedicated stretching program is a perfect way to start off a life time of exercising. Stretching is a mild form of exercise, that can accommodate almost any level of fitness, no matter how poor ones health. As gains become more apparent every day, confidence towards exercise increases consistently and the individual develops a desire to make exercise a day to day experience.

Some people already make exercise a daily ritual and are very familiar with a patterned exercise regime. For these individuals, incorporating a thorough stretching program into their routine is absolutely imperative. The rehabilitative nature of stretching will allow one to consistently continue with their training, by helping to restore muscle length and by preventing the build up of scar tissue. This is where stretching proves itself to be a catalyst for the process of improving ones health. No intense exercise program is complete, without an extensive rehabilitative stretching routine.

Modern stretching techniques are not only inherently rehabilitative, but also offer the opportunity to bring flexibility levels to their extreme. Being able to enter into a full splits position after the prime of ones life, can be considered a fitness accomplishment. The only reason being for this, is that most people

allow themselves to tighten up as time passes and the body loses all the mobility it once had as a youth. Modern training can restore that lost flexibility to a remarkable degree and has the benefit of doing so while relieving years of built up muscle tension. Modern research into stretching has also developed means of increasing range of motion faster than ever before possible. PNF stretching and cross fiber massage, are the result of scientific study of human anatomy and both are incredibly effective towards increasing mobility of the body.

The routines outlined ahead, are designed to accommodate all levels of fitness. Whether the stretcher is starting off as a couch potato or an Olympic medalist, the following sequences will effectively increase their flexibility as fast as possible. The levels of intensity of each program, can be varied to meet for the needs of the individual, without drastic modifications to the routine. Not only do the programs develop rapid increases in flexibility, but they also develop a fine connection between the nervous system and muscular skeletal system. This has the effect of increased balance, coordination and physical awareness.

Stretching above all, is a relaxing form of exercise, that can be both spiritually and physically enhancing. The only thing to remember, is that any stretching routine must meet the individual and not the other way around. Making the stretching enjoyable is priority number one.

Lessons in Flexibility

"Use it or lose it." This old saying heard countless times, holds so true when spoken in regards to ones health. Just as a vehicle which sits for prolonged periods undisturbed will result in its moving parts to cease, so does the moving parts of the human body. Atrophy of the muscles is a result of inactivity, which leads to diminished *range of motion* and *fibrosis*. Fortunately, it is possible to prevent muscle atrophy without intense training and long exercise sessions. Flexibility training is the first and foremost method for preventing the onset of fibrosis and increasing range of motion.

Range of motion refers to the overall flexibility of a muscle group around a joint. For instance, how far an individual can bend forward while maintaining a straight spine, is a measure of the flexibility around the hip structure. The major muscles which make

up the specific muscle group include the lower back, glutes, hamstrings and calves. If any of these muscles were to suffer from fibrosis due to prolonged inactivity, the result would be a diminished range of motion around the hip. In time, any loss in range of motion will develop into an inability to perform some common, everyday tasks.

Although it is inactivity which leads to the atrophy of a muscle, individuals who are constantly active will have to deal with the rapid onset of fibrosis. Constant physical training or labor can result in diminished range of motion much faster than through a lack of regular exercise. For those persons who do exercise regularly, a dedicated stretching program is absolutely imperative towards the prevention of muscular fibrosis.

Fibrosis occurs naturally and is brought upon from the resulting tissue damage, which occurs during intense labor. Damaged muscle tissue turns into a lengthy scar tissue, which intertwines with undamaged muscle fibers in order to protect them. This scar tissue does not stretch nor contract and as it entangles flexible muscle fibers, it restricts their ability to stretch and contract as well. In turn, this leads to a rapid stiffening and constricting of the muscle group effected. Stretching regularly can untwine the scar tissue from the undamaged muscle fibers and restore any loss in the muscles flexibility.

Preventing a loss in range of motion should not be the only reason why one would undertake in a regular flexibility program. There are many physical benefits that come with a stretching program designed to *increase* a muscle groups range of motion. Increased strength, agility and physical awareness are but a few of the associated benefits. After understanding how a stretching program aids the body in so many ways, one can notice the effects

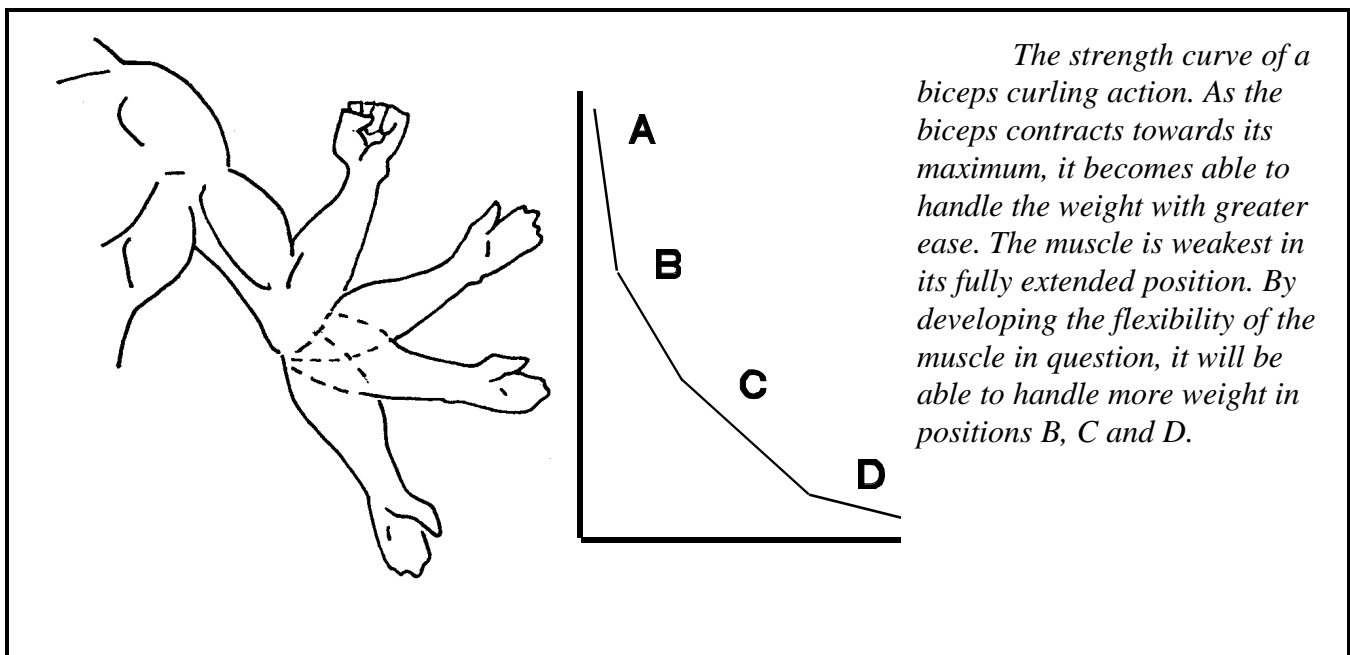
taking place as their flexibility develops.

Increased Speed and Agility

Working towards developing a greater level of flexibility, will result in decreased muscle tension throughout the body. Muscles work in pairs. The *triceps* must relax, in order for the *biceps* to contract. How rapidly the biceps can contract, is somewhat dependant on how rapidly the triceps can relax. This is how a reduced muscle tension can help to increase the overall contraction speed of a muscle group.

Increased Strength and Power

Physical training refers to power, as a measure of strength times speed. The faster a muscle can contract, the faster it can move a given weight a specific distance. This is a direct increase in a muscles ability to output power. If time is not a factor in moving the object, then the weight of the object and the distance it moved, is a direct measure of the physical strength of the involved muscle



group.

Every movement has its own specific *strength curve*. This is a plot or graph of the force a muscle group exerts throughout the movement. Strength curves show that a muscle is weakest while in its fully extended positions and strongest in its fully contracted position. Poor flexibility in the muscle limits its ability to enter into its fully extended position, in turn hindering its ability to contract with force. Increased flexibility diminishes the hindering of the muscle and in turn, results in an increased strength curve for the movement involving the muscle in question. An increase in strength is one of the first benefits noticed by an individual, who has not before engaged in a regularly scheduled stretching program.

Increased Physical Awareness

As stated previously, regular stretching will help to reduce muscle tension. This will aid the connection between the muscular skeletal system and the nervous system, through the reduction of the inefficient firing of neurons. This is a response from physical conditioning. Physical awareness is also developed through mental conditioning. Proper flexibility training requires concentrating on the muscle being stretched, while holding the stretched position. Over time, this practiced concentration strengthens the mental connection between the nervous system and muscular skeletal system, eventually reaching a level unprecedented. Muscular control becomes intensified and the ability to learn complex physical movements is heightened.

Correct Muscular Imbalances

Once again, muscles work in pairs. Correct posture is the number one most critical factor to a healthy structure. Muscular

imbalances cause muscle pairs to work against each other instead of with each other. This leads to dangerous health problems, especially for those involved with anaerobic exercise. Impingement within the joints, lower back problems and neck pains to name just a few, are all common ailments directly associated with muscular imbalance. Chronic shoulder, back and knee injuries, can all begin rehabilitation by restoring muscular balance to the whole body, through a dedicated stretching program.

Helps to Prevent Injuries

It goes without say that accidents occur most unexpectedly and without warning. A twisted ankle, or a hyper extended wrist are both injuries that can be prevented by increasing flexibility around the joints. This holds true for some of the most common injuries of a similar nature. Sprains, twists and pulls do not occur unless the muscle or connective tissue is brought past its flexibility extreme. It becomes obvious that increased range of motion, can decrease chance of injury to the joints and surrounding tissues.

Aside from the physical benefits from engaging in a stretching program, there are characteristics which make flexibility training suitable for modern lifestyles. Stretching is a mild exercise, but at the same time it can also be made intense. There are very few people who are not physically fit enough to begin stretching. It takes little time and does not require special attire, nor does it require a long cool down. Stretching routines do not require any equipment more specialized then a floor to stand on and are easily tailored to suit the specific needs of the individual. Stretching is probably one of the single most important exercises to be considered and at the same time so accessible to everyone.

Physiology of Flexibility

When it comes down to self preservation, the human body is indispensable in its abilities to instinctively protect itself. The most familiar form of instinctive defence system that is commonly displayed by the human body, is involuntary reflex action. A persons reflexes help to contract specific muscle groups with specified sensory input. Tap the knee with a medical hammer and the leg kicks out. In the real world, this response would be to straighten the leg, if the knee was to come in contact with an object which could be tripped over. The *stretch reflex*, contracts muscles in order to prevent tearing from over extension. This reflex response is the single most important consideration, to those involved with stretching. Through understanding this defensive reflex, one can understand why proper stretching technique is imperative.

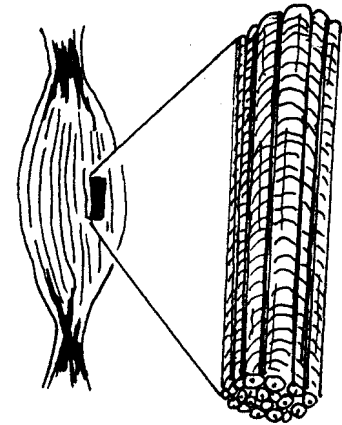
The reflex responsible for contracting a muscle against rapid extension, is referred to as the *myotatic reflex*. The more forceful the extension of the muscle, the more aggressively the reflex responds to contract the muscle. Plyometric exercises such as; jumping from a box or jumping over pilons, are designed to train rapid response into the myotatic reflex. This develops explosive power and incredible agility. When someone jumps from a box, they do not have to think about contracting the necessary muscles in order to safely land. It is the myotatic reflex which senses the rapid lengthening of the muscles in question and reacts to contract them in order to stop from hitting the ground.

But what does this really mean towards stretching? Proper stretching technique must at all times, prevent the triggering of the myotatic reflex. If otherwise, the entire time stretching was wasted, probably doing more harm than good. The myotatic reflex as stated,

acts to contract the muscle against a forceful extension. Bouncing in and out of the stretched position does exactly that. Every bounce triggers the reflex into contracting the muscle as opposed to stretching it. This damages connective tissues and works to degrade flexibility. Preventing the stretch reflex is accomplished through a slow and gentle entering into the stretched position. If a stretched position is painful, it is because the stretch reflex is trying to ease off from the stretched position.

As well as the myotatic reflex, the human body also utilizes an *inverse myotatic reflex*. The defensive response related to the inverse myotatic reflex proves quite extraordinary. It will prevent an over extended muscle to tear, by deactivating or preventing the stretch reflex action. Take for example, a man jumping from a moderate height of twice his length. When he lands to the ground, he will either land gently and absorb the shock through the contraction of the muscles triggered by the myotatic reflex or he will land as if nothing tried to stop him. The question is; were the muscles in his legs strong enough to absorb the shock from the fall or not? If the man was not strong enough, the inverse myotatic reflex would have prevented his muscles from even trying to contract against the force of the fall. The *Golgi Tendon*, responsible for the action of the inverse myotatic reflex, sensed that such an action would lead to cellular damage and thus disengaged the stretch reflex. Some physiologists hypothesis that the Golgi Tendon “knows” the limits of the muscle as opposed to detecting the limits of the muscle.

When entering a stretch position whether it be forcefully or not, the point at which the myotatic reflex is triggered, is referred to as the *end point*. This is the limits of a muscles flexibility. One who is entering a stretched position, will know they have reached the



*Muscles are mainly composed of **extrafusal** and **intrafusal** muscle fibers. Both run parallel to each other within the muscle. Extrafusal fibers are those responsible for contraction and elongation. The stretch reflex is activated through the intrafusal fibers, also known as muscle spindles. These are the main stretch receptors within the muscle. Muscle spindles detect the forcefulness of the stretch and relays this message to the brain. The brain will trigger the stretch reflex by sending a message back to the muscle spindles. Intrafusal muscle fibers are responsible for keeping correct balance and posture, by detecting and controlling the tension within the muscle and its opposing muscles. Physical movement patterns are taught to the body, by engraving specific neuro pathways, responding from the sensory detection of muscle spindles.*

end point, because the muscle being stretched will begin to contract. This puts tension on the connective tissues, which starts triggering pain receptors, in an attempt to prevent further stretching of the muscle. Straining past a muscles end point is detrimental to a muscles flexibility and can be damaging to the surrounding connective tissues. Once again, it is important to prevent the triggering of the stretch reflex when entering any stretched position.

Factors Limiting Flexibility

Flexibility is not measured in units of muscles, but rather in units of muscle groups. How far one can bend forward is not only a measure of flexibility within the lower back, but with the buttocks, hamstrings and calves also. However, the overall flexibility of the muscle group is increased by not only training the whole, but its individual parts as well. Besides the elasticity of each individual muscle, the connective tissues protecting the muscle, also limit the muscle groups overall flexibility. Connective tissues are dense, fibrous and very stretch resistant. Some types of flexibility training help to elongate connective tissues, usually alleviating flexibility plateaus.

Muscle elasticity and connective tissue density are physical factors which effect all humans, but the severity of these conditions, is dictated by the development of the individual. Take age for instance. A child can bend itself in all directions, playing games and engaging in activities which require tremendous levels of flexibility. As the child grows, so does the development of scar tissue. The child may not suffer any ill effects through adolescence, but as an adult, fibrosis will have developed to the point where it severely diminishes flexibility. The rate at which this fibrosis develops, is dependant upon the physical habits of the individual while growing

into an adult. Exercise history, job history and previous injuries, all effect the physical development of the human body.

During the rehabilitation of injuries, muscle atrophy and scar tissue develop rapidly, but shortening of the ligaments, is the predominant factor in limiting flexibility around a joint involved in an injury. Broken bones and bad sprains which may have required a cast for at least six weeks, are sure to suffer diminished range of motion from tightening of connective tissues. This is a result of the position in which the cast held the injured bone. The traditional L-position for a broken forearm for instance, will keep the biceps muscles contracted and the triceps muscles extended. Connective tissues around the biceps, are sure to lose any elasticity that they may have attained previously. This is but one example of how imbalance around a joint can develop from rehabilitation.

A common practice for rehabilitation therapists treating lower back problems, is to engage the patient in activities which stretch the lower back and strengthen the abdominal. This can be extremely harmful to the human body, as it may permanently damage the posture of the individual. A faulty posture can then lead to any number of muscular skeletal ailments. No matter which muscle is the target of rehabilitation, the goal should be towards strengthening and stretching the *entire* body. The target muscle can be treated with greater accuracy using methods such as EMS or localized infrared massage.

As mentioned, fibrosis can develop rapidly from engaging in intense physical exercise. An individual who regularly partakes in weight training for example, will be entirely flexible within the confines of the range of motion of each exercise they may perform, but outside those ranges of motion their flexibility is limited. Exercise diversity would help to keep a wider range of motion with

- Flexibility Test -

A simple test of flexibility, is easily demonstrated by standing with the backside pressed against a wall, while seeing how high one can lift a straight leg. The key is to keep the glutes and shoulders against the wall at all times, so as to be sure that the spine does not hunch forward. How much height is attained by the leg, is a good measure of flexibility in the lower back, glutes and hamstrings. The average person should come to a point just below the groin area, while a very inflexible person will not be able to lift their leg higher than the knee. For those who can raise the leg above their waist and hold it there for a modest period of time, this is a good sign that the body has not built up much scar tissue in the area. A measure of extreme flexibility in the muscle group, is displayed by those who can raise their leg to head level and hold it for an extended period of time.

the body as a whole and therefore can help to assess the effects from years of physical training. These factors apply only to those who do not stretch before and especially after a workout. This is a dangerous condition for the body, as it can lead to muscular imbalance.

Some people have no time for exercise whatsoever. Their work takes up most of the day, leaving what little precious time remains for the requirements of being a human. Still, fibrosis is constantly creeping its way through the body.. Whether their work is sitting at a desk the whole time or pushing a wheel barrel all day long, is the main factor in determining the extent of this fibrosis and ultimately, the limits of their flexibility. Everything a person does, *maintains* their range of motion and everything a person does not do, *decreases* their range of motion. Sitting at a chair all day will not develop fibrosis as rapidly as intensive labor, but will diminish range of motion from lack of movement. Just as weight lifters who do not stretch, are physically limited to the range of motion of the

exercises they perform, someone who sits all day limits their flexibility to the range of motion involved with sitting. Connective tissues within the contracted muscles begin to tighten, while the rest retains its viscoelasticity. If sitting down is the only exercise one performs, then chronic back problems will definitely result from unbalanced abdominal and lower back muscles. Regularly stretching the whole body, is one of the few effective methods of eliminating muscular imbalance, that is readily available to all people.

Types of Stretching Programs

There are five basic types of stretching styles, each having their own specific purpose and flexibility requirements. These five styles of stretching include; Ballistic, Dynamic, Static, Passive and Proprioceptive Neuromuscular Facilitation (PNF).

Ballistic Stretching

Bouncing in and out of stretched positions or swinging kicks into the air, are both examples of ballistic stretching technique. This type of stretching triggers the stretch reflex action which contracts the muscle at the peak of its stretch. The result is stress on the connective tissue, which helps to increase the viscoelasticity of the ligaments and tendons around the involved joints. Ballistic stretching can be either extremely harmful or highly beneficial. A person should only engage in a ballistic stretching program if they are also engaged in a program designed to strengthen connective tissues. Exercises which increase connective tissue density, usually consist of isometric type jerking actions. These jerking routines are only performed at the end of training cycles and are kept at least eight weeks apart. This is when ballistic training is then incorporated into the routine, in order to maintain

the viscoelasticity of the connective tissue. It too is only performed at the end of the training cycle, along with the isometric jerks.

These routines can only be safely utilized by very well conditioned individuals, who have been training *correctly* for at least six years and are fully grown.

Dynamic Stretching

As it was in the case of the individual who works at the chair all day, their flexibility becomes limited from a lack of movement. The same goes for the weight lifter, who is only flexible within the confines of the exercises performed. Dynamic stretching does not increase flexibility, but it does prevent losses in range of motion, which would develop from a lack of movement. Reaching for the ceiling, rotating the arms, knees or hips, turning ones head from side to side, squatting and knee lifts, are all examples of dynamic stretching. The range of motion involved with the specific movement, is what maintains the flexibility around the specific joints. Dynamic stretching is suitable for anyone and is probably the best place to start for an absolute beginner. Tai Chi is an ancient example of dynamic stretching.

Static Stretching

Yoga is a wondrous display of limb manipulation and in most likely hood was the first formal stretching routine taught to mass numbers. It is the perfect example of what is meant by the term; static stretching. Yoga holds the body in a stretched position for a short duration, while concentrating on maintaining a consistent breathing pattern. Muscle relaxation is the key to proper technique, the goal being to eliminate all tension. Yoga also

manipulates the body in manners which require outputs of strength, making it an excellent means of developing overall physical fitness. Static stretching will be discussed thoroughly in the next chapter, as it forms the basis of the first routine to be outlined.

Proprioceptive Neuromuscular Facilitation (PNF)

PNF is one of the few examples of stretching style that is not ancient, but in fact modern and brought upon from the scientific study of human physiology. It is based on the inverse myotatic reflex of the Golgi Tendon and how it is used to "shut down" a muscle in order to prevent damage. PNF rapidly increases flexibility in an individual and drastically reduces the development of fibrosis caused by heavy labor or intense exercise. The effect is that an individual who would otherwise, only be able to maintain a certain level of flexibility with static stretching, can utilize PNF in order to increase their flexibility as well. PNF involves bringing a muscle to its end point and then gradually contracting the muscle in an isometric manner. Fibrosis, isometrics, massage and PNF, all will be examined more carefully in the chapter preceding the PNF Routine.

Passive Stretching Technique

Body manipulations performed with the help of a partner is a display of passive stretching technique. The easiest way to alleviate all tension in a muscle during a stretch, is to have someone else stretch the muscle. Passive stretching coupled with shiatsu or deep fiber massage, can greatly enhance ones flexibility in as little as a half dozen sessions. Being stretched by another is very therapeutic and helps to rapidly recuperate the body from an intense work out. Two partners can stretch each other alternately or a single

individual can be the sole beneficiary of the routine. A small portion of the text will discuss a few passive stretching techniques, both for two partners together and also for one person being passively stretched by another.

Anatomy

The routines to be outlined, will constantly refer to specific muscles within the human body. The following illustrations show each specific muscle that will be mentioned and how it will be referred to as, during the instructions for each manipulation to be discussed.

Get Flexible Fast!

Faster Flexibility is an indispensable handbook for achieving maximum levels of flexibility as fast as humanly possible. Suited to all levels of fitness from beginner to advanced, Faster Flexibility has routines for everyone. Whether your goal is to achieve maximum range of motion or simply to aid in recuperation, Faster Flexibility can help to make the experience enjoyable and efficient. Here are a few aspects of stretching which are featured inside Faster Flexibility.

Developmental Static Stretching - Learn the basics of proper static stretching. An essential lesson for beginners.

P.N.F. Stretching - Proprioceptive Neuromuscular Facilitation is a modern technique for increasing flexibility plateaus. Learn how to use PNF to remove unwanted scar tissue.

Partner Stretching - Stretch with a friend and allow for total body relaxation. An excellent addition to an athletic massage.

The Faster Flexibility Splits Routine - Use this unique method of splits training to increase range of motion as fast as humanly possible. Achieve consistent flexibility gains on a daily basis.

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