

Don't waste your time Stretching

BY KEITH RUSSELL



Before you start stretching, why not decide why you are stretching, then choose a stretching regime that does not waste your time.

■ **Are you stretching to increase your range of movement?**

- Are you wanting to increase your passive range of movement? If so, is it for doing static or for doing dynamic movements?
- Are you wanting to increase your active range of movement? If so, is it for doing static or for doing dynamic movements?

■ **Are you stretching to warm up?** If so, for what purpose are you doing a warm-up?

- Are you warming up to do further stretching?
- Are you warming up to do strength training?
- Are you warming up to do endurance-type training?
- Are you warming up to prevent injury?

I guess the above boils down to this: Are you stretching to warm up, or are you warming up to stretch? You should employ different stretching techniques depending on your purpose; otherwise, you may be wasting your time.

Before proceeding with details on which stretching regimes you should employ for various outcomes, let's first standardize some terminology.

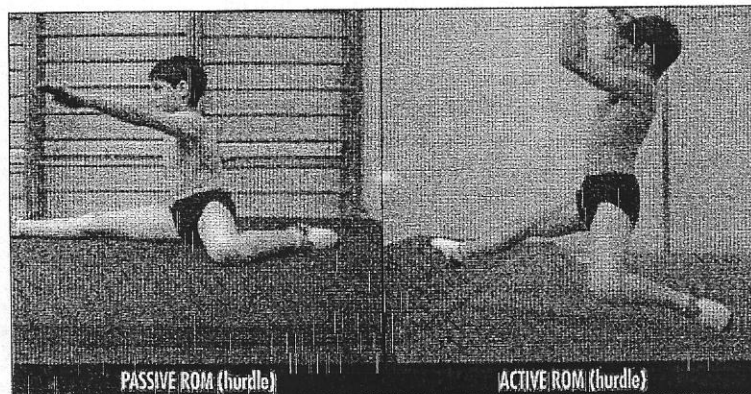
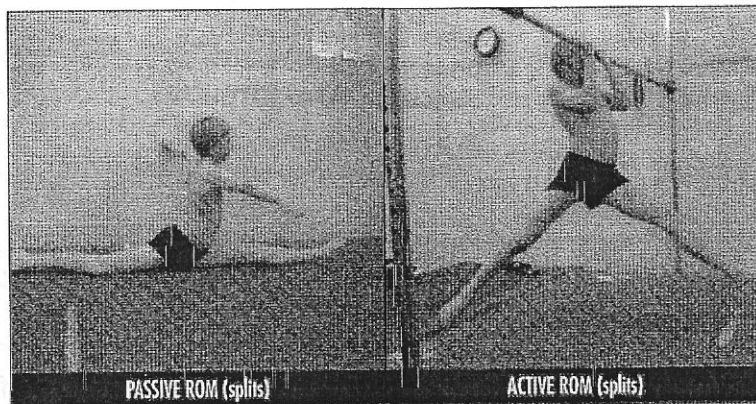
Active and Passive Ranges

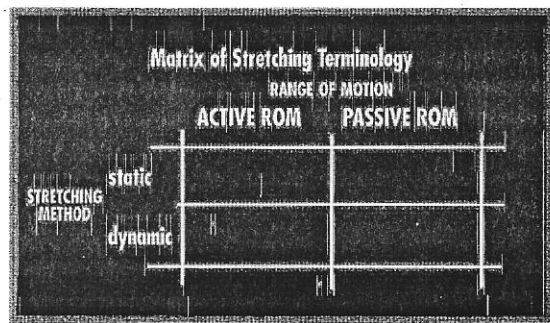
Range of movement (ROM) refers to the maximum joint excursion, or the maximum limits that a body segment(s) can move about a joint(s). These maximum ranges can be achieved by moving your body segment (usually a limb) with internal forces (muscular contractions) or by moving your limb with external forces (a partner or gravity, for example.). If the end range is achieved by

internal muscular contractions, it is termed the "ACTIVE ROM" (you "actively" move your limb to its end range). If an external force is used to achieve the end range, it is termed the "PASSIVE ROM" (your muscles are passive since the limb is moved to its end range by an external force).

Static and Dynamic Methods

The terms "static" and "dynamic" are frequently confused with "active" and "passive" in the flexibility literature. The term "static" refers to "still" or "held" positions, while the term "dynamic" implies movement. Therefore, you can demonstrate your ACTIVE ROM (using internal contractions) either statically or dynamically and you can demonstrate your PASSIVE ROM (using external force) either statically or dynamically.





For example, performing a “splits” on the floor is an example of PASSIVE ROM achieved statically, but hanging from a bar while holding your legs in a “splits” is an example of ACTIVE ROM achieved statically. In my experience, it is very rare that individuals who can do the splits on the floor can also raise their legs to a “splits” while hanging. On the contrary, it is more common for a person who can do “splits” on the floor to only achieve 50 per cent of that range when they must actively lift their legs into a “splits.” The point is that just because you have good PASSIVE ROM does not mean you have good ACTIVE ROM.

Continuing with the splits example, how would you describe a splits performed during a leap or a jump? This would be an example of ACTIVE ROM achieved dynamically (versus statically in the above two examples).

It should be obvious from these examples that you have several ranges of movement about any joint:

- The greatest ROM is achieved with an external force (such as a partner stretching you to your end range). This is PASSIVE ROM achieved statically or dynamically.
- The middle ROM is achieved with internal force producing momentum in the limb (such as kicking your leg to end range). This is ACTIVE ROM achieved dynamically.
- The smallest ROM is achieved with internal force applied statically (holding your leg up as high as possible). This is ACTIVE ROM achieved statically.

Stretching To Increase ROM

It should follow from the above definitions that there are not only different ranges of movement (active and passive), but there are also different ways in which these ranges are employed in sport

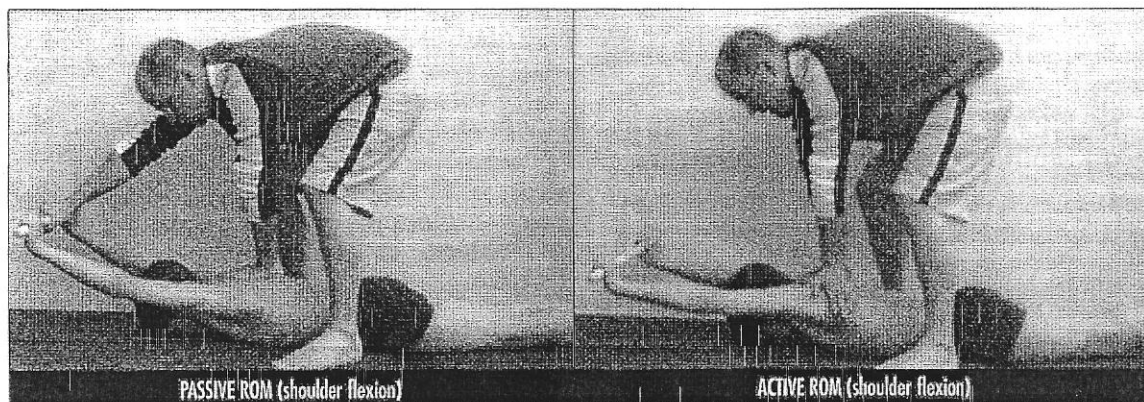
(dynamically or statically). It should also follow that there are going to be different methods to train these various combinations. For example, to increase one's PASSIVE ROM requires no muscular effort since the limb is moved by an external force. You can, therefore, increase your PASSIVE ROM simply by elongating tissue. This is what most stretching programs achieve—elongated tissue resulting in increased PASSIVE ROM. This, however, is rarely useful in sport.

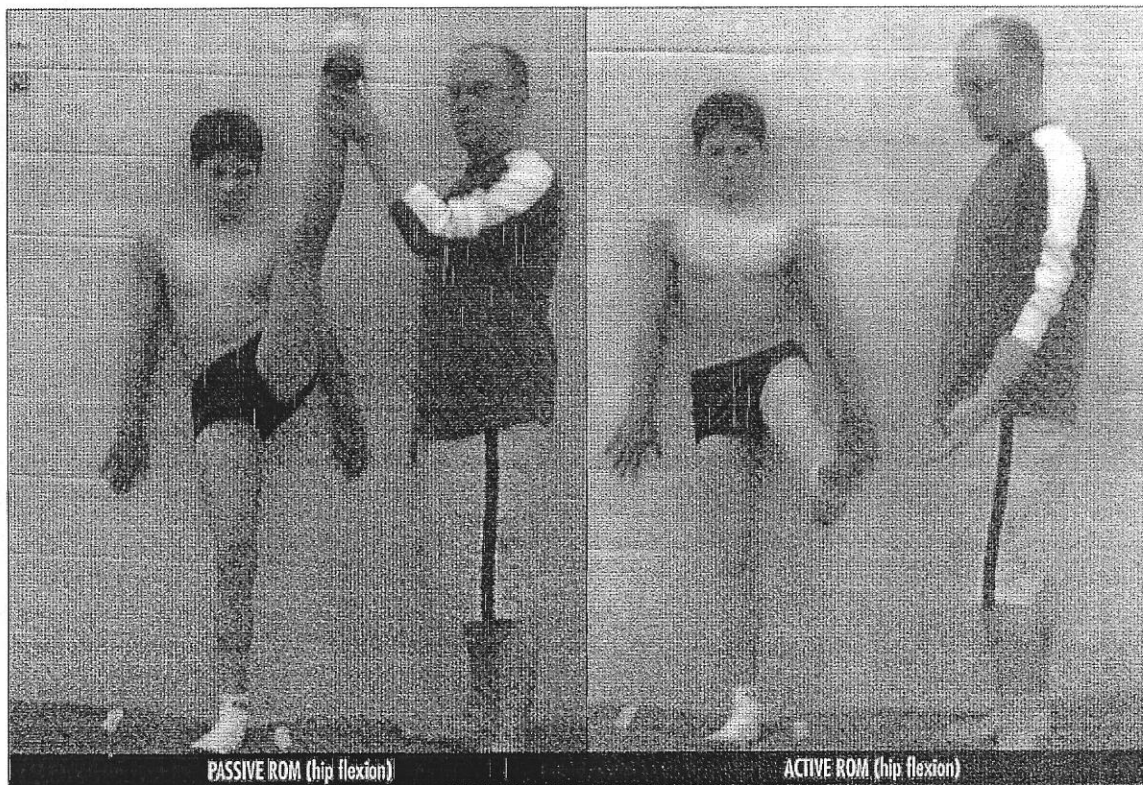
In sport we normally want to increase our ACTIVE ROM. The hurdler wants to increase ACTIVE hip flexion (and rotation) on the leading leg and ACTIVE hip extension on the trailing leg. The volleyball spiker wants to increase ACTIVE shoulder flexion to have a greater range of motion in which to accelerate the limb. The martial arts athlete wants to increase ACTIVE hip abduction when kicking. The golfer wants to achieve ACTIVE rotation in the hip, trunk, and shoulders in order to increase the range through which to apply force. The gymnast, figure skater, and diver all want to achieve ACTIVE flexibility in a variety of skills.

In all of these examples, the athletes' ACTIVE ROM was achieved by internal contraction forces. If the muscles are not powerful enough to overcome the resistance of the limb's mass and the tightness of tissue, then ACTIVE ROM is reduced. Obviously, to increase ACTIVE ROM it is necessary to increase both your muscular power and to elongate tissue (reduce the resistance to the movement). It is my opinion that much time is wasted in flexibility training because athletes who want to increase their ACTIVE ROM (most athletes) waste time by concentrating only on elongating tissue (by stretching). This is not the most effective way to increase your ACTIVE ROM. To increase your ACTIVE ROM, you must increase the power to move the limb at the same time that you decrease the resistance to the movement (by elongating tissue). As can be seen in the photos, the athletes have a very good PASSIVE ROM, but they do not have the power (strength) to actively get into the range that they have been stretching to achieve.

Power Stretching

I would like to suggest that flexibility training in sport really should be thought of as “power stretching.” You should be increasing the “power” of the agonists (muscles that are going to move the limb) while at the same time decreasing the resistance of the antagonists (the muscles being stretched by the movement). Hence, power stretching focuses on two tasks:





- increasing your ability to overcome resistance by increasing power
- decreasing the resistance or tightness by stretching.

We have all encountered athletes who are very powerful, but very tight. It is also common to find athletes who are very "flexible" passively, but their ACTIVE ROM is quite limited. I have often encountered athletes who stretch diligently, but whose ACTIVE ROM is 30 degrees to 60 degrees less than their PASSIVE ROM. Doing a splits on the floor, but not being able to come close to the same range of motion when hanging, is a good example of this. Likewise, hurdlers may be able to sit in a perfect hurdle position, but can they achieve the same position while hanging by their hands from a bar?

It is very easy to test the ACTIVE and PASSIVE ROM of your athletes. If the two ranges are the same, you need to do some stretching because the antagonist tissues are too tight for the agonist muscles to elongate any further.

If, however, the ACTIVE ROM is much less than the PASSIVE ROM (20 degrees or more), then it is time to train power in the agonist muscles because they are obviously too weak to move the limb, even though the tissues are long enough.

When there is more than 20 degrees difference in the two ranges, continuing to stretch is a waste of time if you wish to increase your ACTIVE ROM.

The following are the steps used to determine which phase of the "power stretching" program you should be using:

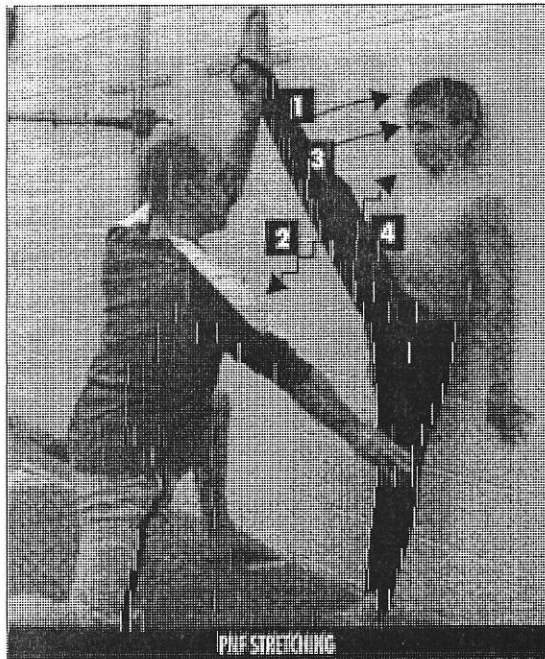
- Determine which ROM you wish to increase (hip flexion for example).
- Analyse whether PASSIVE or ACTIVE ROM is needed (almost always ACTIVE).

- Test the athlete:
 - you, or a partner, move the athlete's limb to its end range
 - have the athlete move it there slowly and hold it (static)
 - have the athlete move to end range dynamically
- If ACTIVE and PASSIVE ROM are the same, stretch the antagonists.
- If ACTIVE ROM is 20 degrees less than PASSIVE ROM, train power of the agonists.

Stretching Methods

Increasing the length of tissues is a fairly simple process of stretching diligently. If the stretching is started slowly and is not too severe, then soreness should be minimized and progress should be steady. Although research evidence is surprisingly sparse on this subject, practical experience shows that the more often and the longer the stretching sessions, the better the results. Many athletes that I've coached have shown rapid results in increasing passive flexibility if they stretch habitually (during flexibility training time, while waiting for their turn during training, and also when away from the training venue). Stretch several times a day and hold the stretch several minutes (preferably while doing other tasks such as reading, talking on the phone, watching television).

In the training situation, it is also recommended that the athlete do some **PASSIVE PNF STRETCHING**, that is, when at your end range of stretch, contract the muscles that are being stretched. This can be done with partner assistance, or the athletes can do this by themselves.



PNF STRETCHING

- 1. Passively stretch the antagonists (hamstrings in photo). Hold the stretched position for 20 to 30 seconds.
- 2. With the leg held at end range, slowly contract the antagonists (push leg downwards) and hold for 5 to 10 seconds.
- 3. Relax the contraction and passively stretch further.
- Repeat sequence several times.

Power Training Methods

While coaches should have few questions about how to increase muscular power, the point here is that power training should be an integral part of flexibility training. You have stretched the antagonists until there is a 20 to 30 degree difference in the ACTIVE and PASSIVE ROM. Now you are strengthening the agonists so the differences in the two ranges can be reduced (so that the athlete can actively move the limb to the range that you have been training with stretching).

As is normal for power training, you will overload the specific muscles in a cascade of contraction sets.

- Perform several sub-maximal warm-up contractions.
- Then train with 3 to 5 sets of 5 to 10 maximum contractions.
- Contractions should take place between PASSIVE and ACTIVE ROM.
- Cascade the reps in each set (e.g. 3,5,3).
- Use a variety of contraction states (concentric, eccentric, isometric) but concentrate on the contraction state that will be used in sport skills.
- Use resistance (partner, tubing, weights) that best mimics skill mechanics.

In the training situation, it is also recommended that the athlete do some ACTIVE PNF STRETCHING, that is, at your end range of stretch, contract the muscles that are being stretched, hold, and then contract the agonists (power training) as the limb is actively held at maximum range!

This can be done with partner assistance, or the athletes can do this by themselves.

- 1. Passively stretch the antagonists (hamstrings in photo) and hold the stretched position for 20 to 30 seconds.
- 2. With the leg held at end range, slowly contract the antagonists (try to push leg downwards) for 5 to 10 seconds.
- 3. Relax the contraction and passively stretch further.
- 4. During this passive stretch, actively contract the agonists (lift leg upwards), in sets as described in previous bullets, in order to increase their power.
- Repeat sequence several times.

Stretching to Warm Up

This is the second area that I feel is a time waster. The belief that static stretching is a good warm-up for any activity has been part of sport doctrine for many years, yet there is very little evidence or logic to support this. If you are warming up to do skills or activities that are static, then it would follow that static stretching would be useful.

If, however, you are going to be doing repetitive contractions such as running, then it would be more logical to warm up by doing repetitive light stretches.

Likewise, if you are going to be doing heavy muscular contractions, then it would seem logical to warm up with light, then moderately heavy, muscular contractions.

Why waste your time doing static stretching when you are not going to be performing any static stretches? An excellent source of information on this can be found in the book *Stark Reality of Stretching*, by Steven D. Stark (published by The Stark Reality Corp., Richmond, B.C., 1997).

Warm-up stretching should start gently and should mimic the activity for which you are warming up. Athletes waste much time doing inappropriate stretching.

In summary, don't waste your time stretching inappropriately. Tissue elongation is only a part of flexibility training and thus "power stretching" is really what you want to be doing in most sport situations. ♦

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