

# Don't Waste Your Time Stretching

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published in Canadian Coaches Report, 2003

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

1. 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?
2. 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: "**Are you stretching to warm up, or are you warming up to stretch?**" You should employ different stretching techniques depending on which of the above is your purpose, **otherwise you may be wasting your time!**

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

## Terminology - Active and Passive Ranges

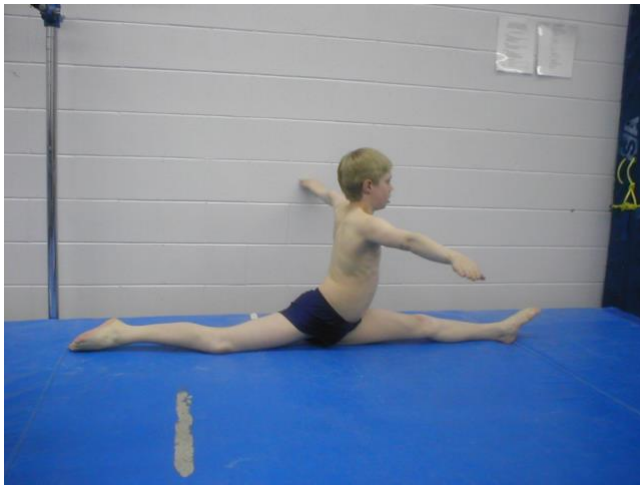
Range of movement (ROM) refers to the maximum joint excursion, or the maximum limits that a body segment(s) can move about a joint(s). These maximum ranges can be achieved by moving your body segment (usually a limb) with **internal forces** (muscular contractions) or by moving your limb with **external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

## Terminology - 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' infers 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 the author's experience it is very rare that individuals who can do the splits on the floor can also raise their legs to "splits" while hanging. On the contrary, it is more common for a person who can do "splits" on the floor to only achieve 50% of that range when they must actively lift their legs into a "splits". The point is: **just because you have good PASSIVE ROM does not mean you have good ACTIVE ROM.**

### picture 1

PASSIVE ROM (splits)



ACTIVE ROM (splits)



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 2 examples above).

Hopefully it is 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.

## 1. Stretching to Increase ROM

It should follow from the above definitions that there are not only different ranges of movement (active and passive), but that 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 gymnast, figure skater and diver all want to achieve ACTIVE flexibility in a variety of skills.

In all of the above 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 this author's 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 above, 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.**

## 1.1 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).

***Increase your ability to overcome resistance by increasing power***

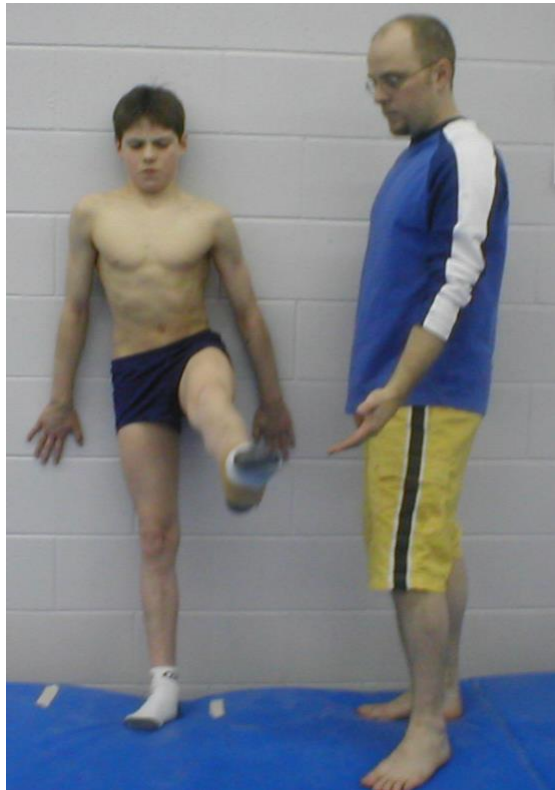
***Decrease the resistance or tightness by stretching***

We have all encountered athletes who are very powerful, but very tight. But it is also common to find athletes who are very "flexible" passively, but their ACTIVE ROM is quite limited. The author often finds athletes who stretch diligently, but whose ACTIVE ROM is 30° to 60° **less** than their PASSIVE ROM. The example of

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. Or, choose hurdlers who can sit in a perfect hurdle position, then see if they can 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. (That is, the agonist move the limb, but the antagonists are so tight that they are resisting the movement.)

If, however, the ACTIVE ROM is much less than the PASSIVE ROM (20° 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.



ACTIVE ROM hip flexion

PASSIVE ROM hip flexion



When there is  $>20^\circ$  difference in the two ranges do not just keep stretching as that 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)
- analyze if PASSIVE or ACTIVE ROM needed (almost always ACTIVE)
- test your athlete:
  - you, or partner, move the athlete's limb to its end range,
  - then have the athlete move it there slowly and hold it (static)
  - finally, have the athlete move to end range dynamically.
- if ACTIVE and PASSIVE ROM are the same - **stretch the antagonists**
- if ACTIVE ROM  $20^\circ$  less than PASSIVE ROM - **train power of agonists.**

## 1.2 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 the author has 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 of day and hold the stretch several minutes (preferably while doing other tasks such as reading, talking on the phone, watching television, etc.)**

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.

- hold a stretched position for 20 or 30 seconds
- with this stretched position stabilized, slowly contract the antagonists
- increase the contraction to maximum and hold for several seconds (5-10)
- slowly release the maximum contraction
- as contraction abates, **increase the stretch** ~~the antagonists~~ a bit further

#### **Passive PNF training:**

1. Passively stretch the antagonists (Hamstrings in photo)
2. Contract the antagonists (push leg downwards)
3. Relax the contraction and passively stretch further
4. Repeat several times





### 1.3 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°-30° 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 submaximal 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 (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, **when 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.

- hold a stretched position for 20 to 30 seconds
- with this stretched position stabilized, slowly contract the antagonists
- increase the contraction to maximum and hold for several seconds (5-10)
- slowly release the maximum contraction
- as the antagonist contraction abates, stretch these antagonists a bit further, while at the same time, **contract the agonists (in sets as described in bullets above!) in order to increase their power.**

### Active PNF training:

1. Passively stretch the antagonists (Hamstrings in photo)
2. **Contract the antagonists** (push leg downwards) 5-10 seconds
3. Relax the contraction and passively stretch further
4. During this passive stretch **actively contract the agonists (hip flexors)** 5-10x
5. Repeat several times

## 2. Stretching to Warm-Up

This is the 2<sup>nd</sup> area that the author feels 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**" (as described above) is really what you want to be doing in most sport situations.

Acknowledgements:

The author would like to thank Tom Kinsman for suggesting the title and editing article and Shane Russell and the gymnasts from Taiso Gymnastics Club in Saskatoon (Jessie, David, Keenan)