Stretching The Truth

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It's finally cooling off in Austin. With cooler weather comes the start of all the marathon training programs in preparation for the Austin Marathon in February. And with cool fall weather and marathon training comes ... yes, the questions about stretching.

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Stretching has become a panacea. So let's attempt to put a few things to rest with some good sports sciences evidence - though I suspect much of it may come as a surprise to many.

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Let's start with a couple of interesting facts. Research on 5K runners has indicated that the fastest runners are the most inflexible. The increased passive muscle
tension effectively gives the runner "free speed" because it's not
requiring energy to produce it. Add to that the lack of research supporting the relationship between stretching and --- insert injury here --- [options include plantar fasciitis, achilles tendonitis, IT band syndrome, etc]. So we have to assess stretching by starting with the questions "why am I stretching in the first place?".

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"Doesn't stretching makes my muscles longer?" First of all, the literature is very clear on one thing - stretching
(as it is performed by most athletes, coaches, and health care
practitioners) does not actually make the muscle longer. What it does
do - is simply increase your tolerance to stretching - plain and simple.

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It is important to discuss what stimulus needs
to occur at the cellular level to evoke changes in the muscle, tendon,
or surrounding collagen structures. There are two primary potential
effects of stretching - a lengthening of tissue, and a neurological
relaxation of muscle and the central nervous system.These are two

different intents requiring two different strategies.

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Would the right degree of
stimulus (tension) cause these tissues to
lengthen? Yes. How many times must you take the tissue to it's fully
lengthened position per day? The literature would indicate 40 to 50
repetitions a DAY - minimum. How much stretching does the average
athlete do? Nowhere near that much! It would require many many
repetitions to the end of your range of motion for you to make true
changes to the tissue (as opposed to the improved "tolerance" you might
experience)
and these would then have to be utilized functionally (i.e in your
sport activity) to maintain them. Unfortunately, the task to get the
muscle and surrounding tissues to lengthen is a rather significant
one that is certainly not occuring with one or two repetitions by the
athlete (or provider).Â

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A sustained gradual stretch would be an appropriate stimulus to help to get the muscle to relax
neurologically. This would be beneficial as it would simply decrease the tone of the
muscle and to initiate recovery. But having said that, the timing of the stretching would be AFTER exercise, not
beforehand.

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"I thought that stretching needs to be done before and after my runs." As part of the
warm-up, the answer would be - no. You are about to go on a run. You
are about to get your central nervous system firing. If you have
elevated your core temperature (breaking a sweat), then the only other thing you would
want to do would be activities that help to get your central nervous
system "fired-up". Gradual stretching before an activity does exactly the
opposite - it gets everything to relax. This is counter-intuitive and
may actually put you at risk. And yes, the increased risk factor has
been documented in the sports sciences literature. After the run - a time
in which you want to get the central nervous system calmed down - would
be a good time for slow gradual stretching, maintaining a lengthened
position for a minimum of 60 to 90 seconds per position, perhaps even
longer.

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"But Allan, everything I have been told by my --- insert here --- [options include coach, physical therapist, chiropractor, ART practitioner, massage therapist, orthopedist, etc] is that stretching will help me to prevent injury and is the primary way to resolve an injury should it occur."

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At this point I would give a resounding "incorrect". The scientific literature has yet to confirm a relationship between these factors. As a matter of fact, the only relationship that has been established is that there is a higher risk of injury when stretching before the training activity! There has not been any supportive literature relating muscular tightness or "imbalance" to the onset of any specific injuries. So if you see a tight muscle, it's not necessarily a safe assumption that it caused your injury. Of course, this is against the beliefs of many but, once again, it is an issue of beliefs and not science.

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"Allan, I know that stretching has made me ---insert here--- [more flexible, more resistant to injury, more wealthy, better able to feed the starving of the world]. How do you explain THAT?".

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This is something I hear every day. You can hear the emotion creeping into the discussion. The difficulty lies in what we THINK makes a difference, and what truly effects the change physiologically. There are so many confounding variables, it is simply impossible to make the statement. We can look to the sports sciences to provide a foundation upon which to optimize our training, injury prevention, and injury recovery. Much of these issues with stretching are simply counter-intuitive physiologically or unproven in the scientific literature.

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But if we removed stretching from the discussion, what would all of the ---insert here--- [practitioners, coaches, running magazines] talk about?

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Now THAT could REALLY prove interesting.

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