

To Stretch or Not To Stretch?

Picture yourself in that last ten minutes before a race. You are probably a little nervous, few butterflies in the stomach and getting yourself mentally prepared to break the course record for those in the age category four decades above. At the same time you've done a couple of short jogs up and around the car park and now your standing leaning on the car stretching the hell out of those calf muscles ready to go for that sprint start. Now if this sounds familiar, stop for a moment and ask yourself why you stretch the muscles in those last vital few minutes. For most of us it is what we have always done, that tyrant of a PE teacher forced us to do at school, or we've led ourselves to believe that by stretching we have stayed injury free for all these years.

Now it might come as a shock to some, but **recent research seems to suggest that stretching immediately prior to exercise has no benefit and might actually increase the risk of injury.** It seems that stretching is about to go the way of sit-ups. These have been modified to ab crunches of various forms that target different abdominal muscles and to the same token stretching has been modified. Stretches now come in different forms and there are changing thoughts on when it is appropriate to use them.

My back up to this is a recent article in the Clinical Journal of Sports Medicine where the authors looked at 138 research papers on stretching. From these they found only 12 which used a control group of non-stretchers. Of these 12 deemed to be good research papers, only four claimed to show the benefits of stretching and even these are pretty dubious. Unfortunately they didn't just compare non-stretchers to stretchers but non-stretchers to a range of activities including warm up, leg guards, special shoes, rehab and stretching. We can not be sure therefore whether stretching or one of the other interventions was responsible for decreased injuries.

Of the other good studies all showed that stretching before exercise had no benefit or was detrimental. There is no definite reason behind these results. However, it has been theorised that by increasing the length of the muscle by stretching, the muscle itself becomes more compliant (stretchy). Although this stretchy muscle ruptures at a greater length it ruptures under a lower force and absorbs less energy. The muscle may therefore be under higher risk during eccentric contractions which generate higher forces in muscle. Added to this argument is the question of whether stretching at rest helps active muscle and the concern due to over stretching. Stretching even 20% beyond resting fibre length, which you would expect to occur with correct stretching techniques, causes localised muscle damage. This is fine if the tissue is given time to repair but not if you are about to use the muscle to fatigue with exercise.

Now before you give up the idea of stretches all together, please don't. The studies only relate to stretching before exercise. It has been shown that regular stretching outside of activity periods may actually cause hypertrophy of the muscle (an increase in muscle bulk). Energy absorbing capacity would be expected to increase with this change in muscle bulk. A recent study of military recruits who stretched three times per day in addition to pre exercise showed a significant reduction in injuries.

In conclusion my advice would be to;

- Stretch regularly (daily if possible) rather than leaving it to a quickie prior to exercise

- Warm up slowly prior to exercise going through some of the motions involved in that exercise e.g. slow jog for running, arm swings/slow swim for swimming, passing, one on one scrummaging etc. for rugby. The warm up increases heart rate, acts as a mini strength workout and prepares the bodies nervous system to control the musculoskeletal system more effectively. Going through these motions is advised by the Journal of Strength and Conditioning Research which suggests switching from static to dynamic warm ups prior to exercise.
- Cool down and do your normal static stretches immediately post exercise. Research has shown that stretching can stimulate the transport of amino acids into muscle cells, accelerate protein synthesis and decrease protein degradation (basically it fosters muscle repair). Research on marathon runners showed that athletes who stretch after workouts are hurt less often.

I have taken examples of the warm up from Peak Performance. They are the suggested routines developed by Walt Reynolds a strength and conditioning specialist in the States. I have removed one or two exercises, as the street cred of Tauranga Triathletes would have seriously been brought into question should these have been included.

1. Jog, cycle or swim easily for 10 minutes to loosen up.
 2. Skip for twenty metres landing in the mid foot area.
 3. As for step two but this time landing on your toes
 4. Complete four bouts of high knee running. Run with quick, short steps. Every third step lift your knee as high as you can in a very explosive manner. Do this for thirty seconds and then rest for 15 and repeat three times.
 5. Rhythm bounding. Jog along with very springy, short steps landing in the mid foot area. Try and get the ankle to act as a coiled spring, compressing slightly as you land and then recoiling quickly. Alternate one minute bounding with a 10 second break.
 6. Jog easily for a minute or so, and then complete two 200 metre strides at a pace which feels close to maximal and finish off with a minutes easy jog.
- It is suggested that you do the bouncing and skipping on a forgiving surface if possible.

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