

STRETCHING GUIDELINES

Prepared by

Active Motion Physiotherapy

Canmore & Banff, AB

Hugh Simson Physiotherapist, BScHK, MPT, ART

Erin Struch Physiotherapist, BScKin, MScPT

www.activemotionphysio.ca

The latest research, including the highest level of evidence (systematic reviews) states that stretching pre- or post- activity does not necessarily prevent injury or enhance performance. Although this is what the research concludes, practical or clinical evidence often proves otherwise.

When appropriately performed, stretching has been found to balance muscular tension throughout the body and prepare the muscles and joints for activity. In doing so, stretching can prevent certain types of injuries and even enhance performance at times.

Just as there are different types of flexibility, there are also different types of stretching including static, active, dynamic, ballistic and PNF. Static stretching is the most frequently used stretching technique. Due to the body's stretch reflex static stretches must be gentle and held for a long enough period of time to over-ride this contractile reflex and avoid damage to the muscle. Therefore static stretches should be held for at least 30 seconds. Research shows static stretching can alter neuromuscular properties; lessening a muscles capacity to respond to neural input. Therefore static stretches should customarily be done post-exercise and only done prior to exercise when a particular muscle (group) is too tight to perform the activity.

Active stretching requires you to actively use the opposite muscle group than the one you are trying to stretch. An example of this is a standing quad stretch where you activate your gluts to pull your knee back (as opposed to pulling your knee back with your arm as you would if you were doing a static stretch). As with static stretches active stretches should customarily be done at the completion of an activity.

Alternately, dynamic stretching warms up the muscles while stretching them, without altering neuromuscular properties. Examples of dynamic stretching are forward lunges, butt kicks, running A's) It is important to utilize dynamic stretching for pre-activity stretching

Ballistic stretching should no longer be used, based on the concern that it may lead to micro-tearing at the musculotendonous junction.

PNF stretching utilizes autogenic inhibition; where the muscle group being stretched increases in "stretchability" after an isometric contraction. An example of this would be doing a standing

quad stretch pulling your heel to your butt, activating your quads by trying to straighten your knee holding for 10 sec, relax and pull your leg back to increase your quad stretch.

In review, as part of your warm up, be sure to include dynamic stretching. Should a particular tightness affect your ability to perform this is the time to use static, active or PNF stretching techniques. Following exercise spend some time doing active, PNF or static stretches.

The following stretching guidelines are applicable to all individuals of different genders and age groups:

- When stretching a muscle, the goal is to gently separate the muscle's origin and insertion
- On a scale of 0-10, where 0 = no stretch and 10 = muscle damage, a stretch should be between 3 and 5 out of 10.
- **Flexibility gained from a stretching session will be lost within 2.5-3hrs post-stretching. Therefore in order to improve flexibility it is important to stretch regularly throughout the day.**
- Below is a table that addresses specific considerations for certain genders/age groups:

Age Group	Female	Male
Adolescent Female 0-10 Male 0-11	- Very flexible, but still a good time to develop good stretching and warm-up/cool-down habits	- Flexible, but less so than females - Growth spurts occur where bones may grow faster than the muscles that attach to them. This means frequent stretching is required to prevent damage to muscles and tendons
Young Adult Female 11-17 Male 12-18	- Still flexible, however more attention to maintaining flexibility is required	- Decreasing flexibility - Continued growth spurts, requiring continued stretching
Adult Female 18 + Male 19+	- Decreasing flexibility, requiring stretching of tight muscle groups to enhance function and prevent injury	- Poor flexibility requiring continued stretching of tight muscle groups to enhance function and prevent injury

References

Nelson AG, Kokkonen J, Eldredge C, et al. Chronic stretching and running economy. *Scand. J. Med. Sci. Sports*, 2001; 11: 260-265.

Rauh MJ, Koepsell TD, Rivara FP, et al. Epidemiology of musculoskeletal injuries among high school cross-country runners. *Am. J. Epidemiol.* 2006; 163: 151-159.

Thacker SB, Gilchrist J, Stroup DF, et al. The impact of stretching on sports injury risk: a systematic review of the literature. *Med. Sci. Sports Exerc.*, Vol. 36, No. 3, pp. 371-378, 2004.