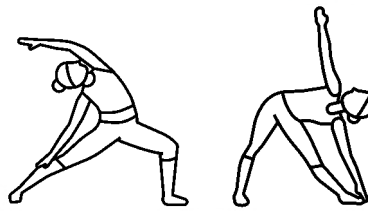


FLEXIBILITY

Written By: Thomas L. Bennett,
MPSM, LAT, ATC, FMT, FMS, GT



Everyone reading this article thinks they know what it means to “be flexible.” No, we aren’t talking about the immense variability of schedules between work, school, and socializing. We are talking about your body’s ability to bend and move around without feeling stiffness or pain in tissues and joints.

Right now, you are thinking to yourself “I know how to stretch,” and my colleague and I would agree that you know how to do the poster of aerobic and static stretching you received in high school. Another thought you might have is I go to Yoga, I am plenty flexible. While this may be true there are most likely numerous poses and flows you cannot complete due to inflexibilities or weaknesses.

It is my opinion that flexibility, as this article will discuss, consists of 2 variables: joint mobility and muscle/tendon elasticity.

These two components are cohesive (as one most certainly affects the other) and when each becomes efficient they will improve one’s flexibility. The trick is to find out what needs improvement and how to improve it. Remember that flexibility goals vary from person to person and the objectives to meet those goals along the way can be even more difficult to figure out and then achieve. In short, becoming more flexible is not as easy as it sounds.

Becoming more flexible

Okay, so what does it take to become more flexible? Think about it as three separate components to consider. First, flexibility can be broken into two variables: joint mobility and tissue elasticity. Second is what movements we take to improve these qualities. Third is what we all dread, consistent participation through programming.



DIVISION OF
STUDENT AFFAIRS
UNIVERSITY RECREATION & WELLNESS

🎵 📷 @umdrecwell

go.umd.edu/athletictraining

Joint Mobility & Tissue Elasticity

Joint Mobility focuses on the joint space and the surrounding supporting structures (joint capsules, ligamentous attachments, and structural supports such as cartilage). The best example of Joint Mobility most recently in the fitness industry is at the hip. Everyone everywhere is focusing on hip mobility. (Cook, Movement, Functional Movement Systems: Screening, Assessment and Corrective Strategies, 2010)

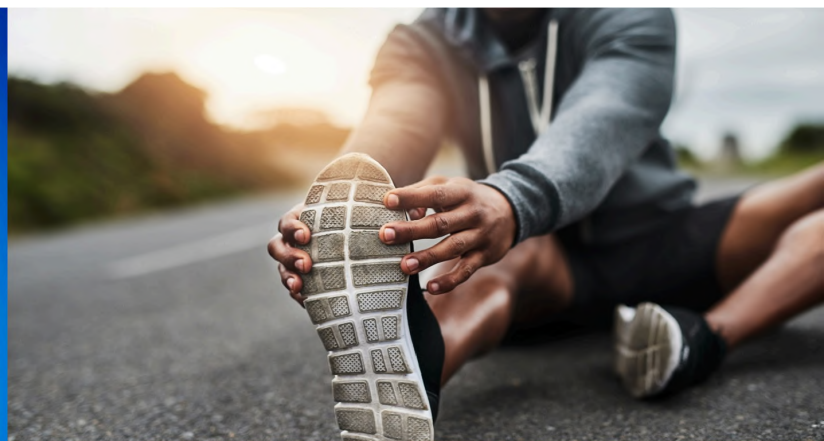
Tissue Elasticity refers to the muscle belly and tendon origins and insertions. The most suitable examples of tissue elasticity and one of the most iconic are the hamstrings. Hamstrings need to be both long and powerful. There is a tremendous amount of demand as it relates to the muscle group's function based on the activity. In short, they need to be supple. (Cook, Athletic Body and Balance: Optimal movement skills and conditioning for performance, 2003)

Movements to Improve Flexibility

Static Stretches: Everyone knows these stretches. These are the middle and high school poster aerobic stretches that our PE teachers show us to do after physical activity. (Klavora PhD, Foundations of Kinesiology: Studying Human Movement and Health, 2008)

Active Stretches: Dynamic stretches are activities used to prepare the body for the functional ranges of motion based on the demands of the physical activity one will be participating in. (Prentice PhD, Principles of Athletic Training: A Competency-Based Approach, 2011)

Joint Mobility Exercises: These can be both static and active with respect to each joint's particular range of motion. Most popular these days is hip mobility with 90-90s/fire hydrants or ankle mobility with ATG split squats/knees-over-toes.



Consistency Through Programming

Now for the tricky part. One cannot simply improve flexibility by slamming it into a workout cycle. Flexibility needs to be consistently accounted for in the workout program for it to be improved. Like lifting cycles, flexibility demands can change depending on the goals of the cycle (Bompa Phd & Buzzichelli, *Periodization of Strength Training for Sports* 2022). However, it is more commonly accepted to have a basic/common warmup and cooldown routine consistent throughout every cycle in the program. This is where goals and individual needs/demands are very important and will differ from person to person, even if they play the same sport or participate in the same physical activity. (Baechle & Earle, *Essentials of Strength Training and Conditioning*, 2008)

Why focus on Flexibility?

But, why is this so important? I am plenty flexible in my fitness and recreational activities. Are you sure about that? Can you honestly say that you maintain flexibility without routine participation in such activities or exercises? We all feel stiff from time to time. Muscles will get stiff as they repair and recover post-exercise sessions and joints will follow suit. If we do not routinely participate in even the most basic stretching routines (aerobic exercise stretches) there is the possibility of losing/reducing ranges of motion. When this happens people will continue to participate in the same level and intensity of exercise based on the program they are following and will most certainly increase their risk for injury. (Heyward, *Advanced Fitness Assessment and Exercise Prescription* 2006)



How do I manage the components?

Now that we have defined the different components of becoming more flexible let's discuss how to apply them. Previously we mentioned Static and Active stretches. We know what they are but what really works? When do we use these and for how long or how many sets and reps? How many times a week should I participate in a stretching routine? Do I stretch before a workout or after a workout? There is a lot of information out there, it is our hope this article can help you make a more informed decision or provide a direction for you to do your own research.

First, how many times a week should I stretch given the particular training program I am using? Stretching soft tissue (muscles) and participation in joint mobility exercises are most effective when performed at least 3-4 times, at most 4-5 times a week, or daily as most active individuals do (Flexibility Research, 2021). When you are looking to improve flexibility overall, as with most programming it needs to be the focus of your cycle (Mayo Clinic Staff, Stretching: Focus on Flexibility 2022). Therefore participation in Yoga and Pilates classes 2-3 days a week while actively stretching or focusing on joint mobility is quite possibly the best way to achieve success.

Second, when do I stretch? At the beginning of my workout or at the end or both? There is arguably a difference between warmup stretches and cooldown stretches and the outcome is generally the same. Both maintain current ranges of motion while actively participating in any workout cycle or physical activity (Meroni, R. P. et al, Comparison of Active Stretching Technique and Static Stretching Technique on Hamstring Flexibility, 2010).

Dynamic stretches are utilized prior to specific physical activity because they prepare the joints and tissues for the intensity and specific motions of the activity. Static stretches are utilized after physical activity because they assist in returning the tissue to its "normal length" or in some cases (depending on programming) new lengths and help to release adhesions developed during activity (Cleveland Clinic, Understanding the Difference Between Dynamic and Static Stretching, 2023).

Finally, how long do I hold a stretch, and how many sets and reps should I be using? Stretching exercises/movements can be held from 20-30 secs up to 60 secs (1 min). The overall effective volume of these stretches is a total of 5-10 minutes. You can work out the simple math from there. Here in the clinic, we give out stretching sets and reps as 2-3 sets and 8-10 reps each rep held for 2-3 or 3-5 seconds. Depending on the number of stretching or joint mobility exercises (usually 3-6 exercises) given out the total routine can take about a total of 5-10 minutes (Cronkleton E., How Long Should You Hold a Stretch, 2019).



Final Thoughts

Flexibility is spoken of so nonchalantly, almost as if it is no big deal to solve. There is a great deal of work and creativity being applied to each individual's personal flexibility based on the demands of their fitness goals. Much like strength, speed, and endurance goals flexibility should be addressed routinely and specifically, it should not be taken so lightly. A primary source of injury is decreased joint mobility from relatively unelastic tissues surrounding and supporting those joints.

“Just stretch”

I would like to make a shameless plug for two excellent resources to improve one's flexibility: Yoga and Pilates. If you are reading this you are wondering if you even have the time to participate in these kinds of classes. Understand that participating in these classes even once a week will improve your overall flexibility and tissue resiliency to injury. This does not mean you have to keep participating in these classes (even though I strongly encourage you to do so) you can take the movements/flows and exercises learned from these classes and do them on your own. The eccentric and isometric actions that explore new joint ranges of motions safely and routinely (both through repetition and consistency) drastically improve overall flexibility and decrease the risk of injury dramatically.

Move with purpose

In conclusion, stretch! Even if it is a few minutes a day or longer for twice a week (such as yoga or pilates classes) It will benefit your body in the long run and most certainly will keep you active and feeling good. Do not take it so lightly!



**Written By: Thomas L. Bennett,
MPSM, LAT, ATC, FMT, FMS, GT**

Thomas is the Assistant Athletic Trainer for the RecWell Athletic Training Program and has been since the program's inception in 2018.

References

- Baechle, E. C., & Earle, M. C. (2008). *Essentials of Strength Training and Conditioning* (3rd ed.). Champaign, Illinois, USA: Human Kinetics. Bompa Phd, T. O., & Buzzichelli, C. A. (2022). *Periodization of Strength Training for Sports* (4th ed.). Champaign, Illinois, USA: Human Kinetics.
- Cook, G. (2003). *Athletic Body and Balance: Optimal movement skills and conditioning for performance*. Champaign, Illinois, USA: Human Kinetics.
- Cook, G. (2010). *Movement, Functional Movement Systems: Screening, Assessment and Corrective Strategies*. Aptos, California, USA: On Target Publications.
- Heyward, V. H. (2006). *Advanced Fitness Assessment and Exercise Prescription* (5th ed.). Champaign, Illinois, USA: Human Kinetics.
- Klavora PhD, P. (2008). *Foundations of Kinesiology* (1st ed.). Toronto, Ontario, Canada: Sport Books Publisher.
- Prentice PhD, W. E. (2011). *Principles of Athletic Training: A Competency-Based Approach* (14th ed.). New York, New York, USA: McGraw-Hill.
- Bandy, W. D., Irion, J. M., & Briggler, M. (1997, October 01). The Effect of Time and Frequency of Static Stretching on Flexibility of the Hamstring Muscles. *Physical Therapy & Rehabilitation Journal*, 77(10), 1090-1096. doi:10.1093
- Cleveland Clinic. (2023). Understanding the Difference Between Dynamic and Static Stretching. Retrieved from Cleveland Clinic:healthessentials: <https://health.clevelandclinic.org/understanding-the-difference-between-dynamic-and-static-stretching/>
- Cronkleton, E. (2019, October 17). How Long Should You Hold a Stretch? Retrieved from healthline: <https://www.healthline.com/health/how-long-to-hold-a-stretch#:~:text=You%20should%20hold%20a%20stretch,to%2030%20seconds%20is%20sufficient>
- Flexibility Research. (2021, August 11). 003: How Many Times Per Week Should You Stretch? Retrieved from Flexibility Research: <https://www.flexibilityresearch.com/blog/003-how-many-times-per-week-should-you-stretch>
- Gillard, J. (2015, September 17). Static vs Dynamic Stretching: Your Performance. Retrieved from Endorphins Health & Wellness Centre: http://endorphinshealth.com/2015/09/17/static_dynamic_stretch_performance/
- Mayo Clinic Staff. (2022, February 12). Stretching: Focus on flexibility. Retrieved from Mayo Clinic: Healthy Lifestyle Fitness: <https://www.mayoclinic.org/healthy-lifestyle/fitness/in-depth/stretching/art20047931#:~:text=Stretching%20can%20be%20time%2Dconsuming,a%20time%20can%20be%20helpful>
- Meroni, R. P., Cerri, C. G., Lanzarini, C. P., Barindelli, G. P., Morte, G. D., Gessaga, V. P., . . . De Vito, G. M. (2010, January). Comparison of Active Stretching Technique and Static Stretching Technique on Hamstring Flexibility. *Clinical Journal of Sport Medicine*, 8-14. doi:10.1097
- Page, P. P. (2012, February). CURRENT CONCEPTS IN MUSCLE STRETCHING FOR EXERCISE AND REHABILITATION. *National Library of Medicine*, 07(01), 109-119. Retrieved 2023, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3273886/>