Stretching Master Guide

What are the different stretching techniques?

- Static Stretching - combines low-to-moderate forces with long duration
  - **Hold at the first point of tension or resistance barrier for 30 seconds**
  - Results in decreased muscle spindle activity and motor neuron excitability (neural), muscle compliance and changes in fascicle angles and orientation (mechanical), and increased stretch tolerance (psycho-physiological)
  - Associated with the lowest risk for injury during the stretching routine and deemed the safest to use
  - Reduces the incidence of lower body muscle and tendon injuries, especially with high-velocity contractions and rapid change of direction activities
- **Neuromuscular Stretching (Best Option)** - combines the mechanisms and benefits of both static and active stretching while keeping the risk of tissue injury low
  - take the muscle to its end-ROM (point of joint compensation), **hold that position for 10 to 30 seconds**, and then actively **contract** (20% of max intensity) the **stretched muscle for 7 to 10 seconds**, then elongate muscle to new end-range. **repeat this process up to 3 times**
- Dynamic Stretching (excites muscles rather than calming them) - A controlled movement through the full or nearly full joint ROM.
  - no more than **90 seconds of dynamic stretching** should be performed **for each muscle group**, if the goal is to preserve performance
  - The velocity of the dynamic movement should be under active control (unlike ballistic stretching), and thus is typically performed at **one cycle per second (e.g., hip flexion and extension should take approximately 1 second), 3-6 days per week**
- Active Stretching (not recommended for Corrective Exercise)
  - Uses multiple repetitions of a 2-second static stretch but emphasizes a contraction of the antagonist to induce reciprocal inhibition

How long should I stretch for?

- **For optimal results, do less than 60 seconds of stretching per muscle group within a single stretching session, and repeat 3-5 times per week.**

How Far Should I Stretch?

- approach the point of discomfort momentarily and then reduce that elongation by about 10% (i.e., go near the point of discomfort but not to the point of discomfort)
  - high-force (i.e., stretching to the point of discomfort), shorter-duration stretches may emphasize elastic (short-term or temporary) tissue deformation, whereas low-force (i.e., less than or near the point of discomfort), prolonged stretching emphasizes plastic (long-term or semi-permanent) changes in tissue length
  - Stretching beyond the point of discomfort increases likelihood of injury (strains and sprains)
  - **ROM can be improved within 2 to 6 weeks if performed 3 to 5 days per week.**

Stretching Summary

TABLE 4-2 Suggested Warm-Up Components

Myofascial Rolling	Static Stretching	Dynamic Stretching	Task-Specific Activities
90 seconds to 2 minutes of myofascial rolling per muscle group to increase muscle temperatures, decrease tissue viscoelasticity, increase inhibition, and other factors.	< 60 seconds per muscle group if participating in high-intensity exercise or athletic activity. No need to go to the point of discomfort or pain. Stretch major muscle groups and specific muscle groups to the activity. Focus on muscles identified as overactive/shortened during assessment stages.	≤ 90 seconds per muscle group. Use full range of motion with a controlled movement at moderate speeds.	5 to 15 minutes. Practice movements that are associated with the sport or task at velocities close to the actual movement. This may include exercises performed during the Activate and Integrate phases of the Corrective Exercise Continuum.

NOTE: Most research studies have used a general cardio warm-up as a method to both prepare the tissue for stretching and for standardization of protocols. However, NASM suggests beginning with self-myofascial techniques (myofascial roller or another myofascial tool) in an effort to improve blood flow and tissue mobility prior to stretching protocols. In the presence of muscle imbalance and dysfunctional movement, myofascial rolling may prevent exacerbating tissue overload and reinforcing dysfunctional patterns.

TABLE 4-4 Acute Training Variables for Static Stretching

Frequency	Sets	Repetitions	Duration
Daily (unless specified otherwise)	n/a	1 to 4*	20- to 30-second hold 60-second hold for older clients (≥ 65 years)

*Perform no more than 60 seconds of static stretching per muscle group if completed before an athletic competition or high-intensity activity.