

“Dynamic Warm-Ups” & Human Movement

(Ron Jones, MS, ACSM Health/Fitness Instructor, Corporate Wellcoach)



Dynamic Warm-Up vs. Static Stretching: Latest research has shown there is no benefit to static stretching “prior to activity” for preventing injuries. Optimal flexibility is healthy—but deep holding stretches right before you perform actually decreases the efficiency of your movements and slows you down for about 15 minutes. Static stretching *can* increase flexibility but should be done following activity.

The New Way to Warm Up: State of the art warm-ups have become “dynamic” which means that you move throughout full ranges of motion without any static holding. Optimal dynamic warm-ups are balance challenging and make you reach in extended positions with diagonal and rotational movements. When you challenge your balance in extended positions you “turn on” smaller muscles around your joints called **stabilizers**. The large muscles that do most of the weight lifting are called “prime movers,” but the little muscles surrounding joints that keep our movements coordinated and efficient are stabilizers; these are most often overlooked with traditional or outdated exercise programs.

- With a *Dynamic Warm-Up* movement, you are likely to reach out with a twist or turn then snap right back to the starting position—this is very “real world” in terms of human movement and for optimal efficiency requires activation of stabilizer muscles. We usually reach, push, or pull with a diagonal and rotation. In addition to these dynamic movements, we also need to react and move quickly at times to avoid danger, injury, or to just increase efficiency of movement or task while maintaining our balance. ***If you don’t train for multiple planes of motion with rotation, quickness, and balance you simply won’t be able to move as well.***

Injury Prevention! The *Dynamic Warm-Up* is designed to increase the efficiency of your everyday movements, reduce or eliminate injuries, and to “open you up” so you can return to normal and functional movement patterns with less compensation from other parts of your body. If the exercises feel awkward and difficult this means you have lost some of your normal function. ***A person should be able to move forward/back, left/right, up/down while also moving in diagonal planes of motion with rotation and some degree of quickness.***

- For example, if you can’t get into a low position with your hips to lift something heavy, you will compensate by bending at the waist and trying to lift with your low back which increases chance for injury. Additionally, many times what we are lifting is not a simple square box—it is an awkward piece of equipment with a protruding handle or something that shifts in our arms that will require you to “quickly” react to the shifting load, reposition your body, and maintain balance while controlling the load. You need strength, flexibility, and movement patterns you can use in the real world—not just on a gym machine or static stretching class. The *Dynamic Warm-Up* will help you to restore or improve functional movement patterns. Eventually you’ll be forced to move dynamically whether you like it or not—if your body has not been trained properly, you’ll probably be injured in the moment of truth. ***Better to prepare now than be injured later!***

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BIOMECHANICS & LOAD FACTORS

Think of your body as a machine. There are certain principles and guidelines for using equipment at work—your body is no different. We push equipment to acceptable loads they are designed to perform whether it is industrial equipment or our bodies. Equipment has tolerances or ranges for use. Sprinkler PVC cannot handle the pressures of oilfield pipeline. Use common sense when “rating” your current level of function and application. What are safe tolerances for you now? What kind of load can you safely handle? What kind of load do you *need to handle*—light, medium, heavy, or extra heavy? Are you sprinkler PVC rated? If so, you won’t be able to handle an industrial load without being injured. Use the following biomechanical guidelines along with your *Dynamic Warm-Up* to increase what you can safely handle at work and at home.

Joint Stability: *Ability to maintain a posture or control motion.* Stability can be either static or dynamic. Static stability is the ability to “maintain stillness” in a certain position or posture. Dynamic stability is the ability to control and/or to decelerate motion. **Stability is “reactive” in nature; it is the body’s automatic response to unstable or changing environments.**

- The *Dynamic Warm-Up* will make you react to your own movements with balance challenge—this is real world!

Joint Mobility: *Freedom of movement around a joint or body segment.* Mobility is a balance of flexibility, strength, and uninhibited motion. Mobility should be the initial goal of functional movement.

- Mobility equates to real world movements that are dynamic and require using multiple body systems in multiple positions—this goes far beyond static stretching!

Core Muscles: *Muscles that surround and brace your trunk or midsection.* They form a wrap-a-round “girdle” or “bowl of support” that stabilizes your spine. Core muscles are more than just abdominals on the front of your body—they are also on your sides and mid/low/upper back areas. Some are deep and some are superficial which creates a layered effect for increased stabilization.

- **All movement starts in your core!** The *Dynamic Warm-Up* is very core oriented and will challenge your midsection to maintain dynamic balance.

Balance: *Balance underlies all movements!* Balance is one of the fundamental movement skills. If you can’t balance, your movements will be awkward or even unsafe. Functional balance (dynamic equilibrium) is the interplay of imbalance and balance as the body constantly tries to regain balance to perform efficient movement using these senses: ocular (vision), vestibular (inner ear), kinesthetic (body position awareness), and auditory (hearing).

- The *Dynamic Warm-Up* will *challenge and improve* your balance through various positions of forward/back, left/right, up/down, single leg, reaching, and rotating—this is dynamic balance you can use!

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Proprioceptive Demand: *Neural input from joints, muscles, tendons, and tissues that stimulate functional movement patterns.*

- Proprioceptive development is the key to all movement. Strength, speed, and flexibility are all regulated by proprioceptive feedback and adjustment.
- Static balance is low proprioceptive demand and not very functional. Dynamic balance has higher proprioceptive demand and thus is more functional to “real world” human movements.
- ***Good proprioception keeps you standing up instead of falling down!***

Compressive Force/Spinal Loading: This happens when you activate the core muscles. Some degree of compressive force occurs with all movements and exercises. The key is to keep the compressive force or spinal loading within an “acceptable range” while still challenging those muscles enough to improve strength and endurance.

- You have to challenge yourself and move out of your comfort zone—if you make it too easy, you simply won’t improve your movements and control.

End-Range Position: Point of danger for spinal injuries where the spine is at the end of normal ROM. *End-range positions can be approached safely*, but you should avoid “pushing” the end-range positions of flexion, extension, and rotation because of high compressive forces and increased chance for injury.

- The *Dynamic Warm-Up* will take you towards your end-range positions. Go there gently. Initially your end-range position might not be far beyond a neutral spine position. As you “open up” you will be able to safely increase your end-ranges and flex, extend, and rotate through greater and more functional ranges of motion. Note that if your spinal column is very tight or “locked up” that your movements will be very rigid therefore requiring your body to go through many unhealthy compensations. Compensations are NOT good! They require muscles to perform functions they are not primarily designed to do thus overworking them to the point of possible injury.

Functional CORE Training: Train core muscles for “your” daily activities. Industrial workers have different functional needs than office workers. Some people need to perform exercises that have higher compressive loading forces because these loads are more specific to their daily activity requirements. The *Dynamic Warm-Up* will engage your core, but specific core exercises should also be included in your weekly exercise programming beyond the warm-up.

- ***No “one exercise” can be labeled “the best” core exercise.*** Use a *variety* of core exercises that challenge all the various muscles surrounding your trunk. Some exercises will work certain muscles better than others.
- Some core exercises are better for improving strength while others are better for improving endurance—you need both for optimal function. Crunches and back extensions are for strength while “bridging or bracing” exercises are for the deeper core muscles of endurance that are important for stabilizing the spinal column.

* Ron Jones (8.12.08)