



St. Francis Sports Medicine

Six Critical Components to a Conditioning Program

Dynamic Warm-Up:

- A dynamic warm-up may promote dynamic flexibility and decrease potential injury by preparing tissues for high-speed, volitional-type exercise.
- A warm-up is to prepare you to play by warming up bodily tissues and increasing blood flow and nutrients to active structures.
- A warm-up may also improve kinesthetic awareness during activity.
- This kinesthetic awareness helps prepare our bodies for activity, so that we gain a certain amount of protection and psychological readiness necessary for reducing potential injuries.

Strength Training

- Muscular fitness is developed by placing a demand, or overload, on the muscles in a manner to which they are not accustomed.
- If the overload is applied progressively and sensibly, the neuromuscular system will positively adapt to the demand.
- The general guideline for change is a proper and specific overload that uses a progressive increase in resistance over time. This will fatigue the targeted muscles in about 30 to 90 seconds, and challenge the major movements (joint actions) to which the muscles contribute.
- Appropriate intensity is necessary to optimize training results.
- Gradual intensity increases will reduce the likelihood of injury.
- All of the major movements of the body must be challenged to ensure balanced strength between all of the opposing muscle groups.
- It is important to point out that female athletes can train at home or in a comfortable environment with a minimal amount of equipment and space. Using an air-ball, dumbbells, tubing bands or just body weight, can be effective training aids in delivering a great workout.

Plyometric Training:

- These are exercises or drills aimed at linking strength with speed of movement to produce power.
- Plyometrics is defined as exercises that enable a muscle to reach maximum strength in as short a time as possible. This speed-strength ability is known as power sports activities, athletes need to be **concerned** with three modes of muscle contraction: **eccentric** (when muscle lengthens under tension and decelerates the body), **isometric** (a static position in which there is no muscle shortening visible) and **concentric** (when muscle fibers pull together and shorten resulting in acceleration of a limb).
- In many sports skills an eccentric contraction is rapidly followed by concentric contractions therefore we must train the muscles to respond forcefully within this quick stretch-reflex action.
- Think of your muscles as rubber bands. Whenever you stretch a muscle there is the potential for a rapid return to its original length.
- Your muscles store tension developed by rapid stretching so that they possess a sort of potential elastic energy. When the energy is released the athlete can move forcefully.



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- Examples of plyometric drills are jumps-in-place, standing jumps, multiple hops and jumps, bounding, box drills and depth jumps. The goals of plyometric training are:
 - To change the strength of the response in terms of muscle contraction.
 - To decrease the amount of time spent on the ground; in other words to spring up off the floor quickly.
 - To increase vertical jump height.
 - To teach the body how to land properly, thus preventing injury.

Flexibility

- Flexibility is a joint's ability to move freely in every direction or, more specifically, through a full and normal range of motion (ROM).
- Within each joint and for each activity, there is an optimum ROM essential to peak performance. The optimum range of motion varies depending upon the activity.
- There are two basic types of flexibility: **static flexibility** and **dynamic flexibility**.
 - **Static flexibility** is the ROM about a joint, with little emphasis on speed of movement. This is moving slowly into a stretch, elongating the muscle and then holding the position anywhere from 10-30 seconds.
 - **Dynamic flexibility** involves speed during physical performance, and strength, power, neuromuscular coordination and tissue resistance. An example of a dynamic flexibility exercise would be a straight leg march across a gym floor, where one would alternate lifting the leg up with knees straight as high as possible off the ground.

Aerobic/Anaerobic Conditioning

- Aerobic means *with*, or in the presence of oxygen. The aerobic system is the metabolic pathway that, in the presence of oxygen, uses glucose for energy production; also known as aerobic glycolysis.
- Training aerobically typically means to sustain a level of activity for a prescribed period of time, (usually 30-60 minutes,) whereby the heart rate of an individual is elevated into a training zone, usually 65% to 85% of their maximum heart rate. *For example: a cross country runner or marathoner would train more within the aerobic system.*
- Anaerobic means *without* the presence of oxygen, not requiring oxygen.
- Anaerobic glycolysis is the metabolic pathway that uses glucose for energy production without requiring oxygen. Sometimes referred to as the lactic acid system or anaerobic glucose system, it produces lactic acid as a by-product.
- Training anaerobically typically involves high intensity activity for short periods of time. For example: a sprinter running the 100 meter dash
- When you have hit your anaerobic threshold, this is the point during high intensity activity when the body can no longer meet its demand for oxygen and anaerobic metabolism predominates.
- Sports conditioning are more intimately tied to training within the anaerobic energy system.

Cool-down

- The cool-down is an important part of the conditioning program. This is the period following a workout where we help the body return to a normal resting state.
- The purpose of the cool-down is to slowly decrease the heart rate and overall metabolism, both of which have been elevated during a workout.
- The cool-down helps prevent the sudden pooling of blood in the veins and ensures adequate circulation to the skeletal muscles, heart and brain.
- The cool-down may aid in preventing delayed muscle stiffness and reduces any tendency toward post-exercise fainting and dizziness. As a general rule, take 5-10 minutes to gradually decrease the intensity of your workout and bring your heart rate down towards your normal resting heart rate. Follow this with several minutes of stretching of the muscle groups involved in the workout.