



FLEXIBILITY

Normal levels of joint flexibility increase the potential to mechanically perform more efficiently. ***Below normal levels*** of joint flexibility; however, increases the potential for orthopedic injury and may decrease a player's ability to perform. Contrary to popular opinion, ***above normal levels*** of joint flexibility increases, rather than decreases the potential for orthopedic injury. Excessive laxity may create joint instability and predispose a player to injury. Also, since most injuries are believed to occur during eccentric contractions, ***within the normal range of motion***, more range of motion is not necessarily better.

For whatever reason, athletes tend to be extreme in their approach to flexibility training. Either they will do little or no stretching or they will become zealously obsessive compulsive. As is the rule for all components in the fitness equation, *moderation* is the key. The goal of flexibility training; therefore, is to attain ***normal ranges*** of flexibility – ***and no more!***

American Academy of Orthopedic Surgeons

NORMAL RANGES OF FLEXIBILITY:

UPPER EXTREMITIES

	<u>ELBOW</u>	<u>SHOULDER</u>	<u>WRIST</u>	<u>FOREARM</u>
FLEXION	0-150	0-180	0-80	
EXTENSION		0-60	0-70	
ABDUCTION		0-180		
INTERNAL ROTATION		0-70		
EXTERNAL ROTATION		0-90		
PRONATION				0-80
SUPINATION				0-80

LOWER EXTREMITIES

	<u>HIP</u>	<u>KNEE</u>	<u>ANKLE</u>
FLEXION	0-120	0-135	0-20
EXTENSION	0-30		0-50
ADDUCTION	0-45		
ABDUCTION	0-30		
INTERNAL ROTATION	0-45		
EXTERNAL ROTATION	0-45		

Each sport requires a particular range of flexibility that is specific to the array of skills that are performed. Research shows that participation in the practice of a sport will ultimately produce a habituated level of flexibility that will meet the requisite demands of that specific sport. As such, the activity of playing football, in and of itself is sufficient for attaining the adequate degree of flexibility required for football. The benefits of additional flexibility training above and beyond participation in the activity are speculative. It can be argued that since flexibility regimes have been an established staple of most team's practice/pre-game regimes the biggest merit is more psychological than physiological.

Flexibility/stretching routines increase the range of motion around a player's joint(s). Stretched positions should be performed slowly and deliberately. Stretch to the point of tolerance/discomfort where a moderate stretch is statically held for 10 – 30 seconds. The player may attempt to assume a more progressive posture with the stretch as the body adapts to the stretched position. Fast, ballistic (i.e. bouncing/jerky movements) stretches, as well as stretching to the point of pain should be strictly excluded.

Stretching is most prudent and productive following a *warm-up*. Warm-up decreases the internal viscosity of the muscle and increases the pliability of the connective tissue. Placing a “cold” muscle under stretch will place it at greater risk. This would be comparable to attempting to stretch meat taken out of a freezer. It is not until the meat thaws (“warms-up”) that it becomes pliable enough to stretch.

Flexibility training should reflect the programs strength training goals. Like strength training, flexibility protocols should include total body involvement, with emphasis on the areas of highest incidence of injury. Like strength training, the flexibility routine should flow smoothly from one movement to the next so as to facilitate a total body stretch in the least amount of time in the safest manner possible. Like strength training, it should be understood that flexibility retention, over and above that which is habituated from participation, is lost within one to two weeks.

As stated, frequent physical activity produces an adapted level of flexibility in the affected joints. As such, flexibility can also be increased/maintained when performing strength-training exercises *properly*. Joint(s) will adapt to changes in flexibility as a result of habitual performance of full range repetitions. Meaning, the lifter must perform repetitions that are lifted from the fully extended position to the fully flexed position. Likewise, lifters not lifting through the exercises fullest range of movement will decrease flexibility. For years it was a common misnomer that lifting weights would cause a player to become “muscle-bound”. To the contrary, it is not in lifting weights that creates inflexibility, but in lifting weights incorrectly. For this reason, it is essential that the execution of strictly performed full range repetitions be insistently coached.

If an athlete has an area that is chronically “*tight*” (whether perceived or real), it is recommended that it be stretched on a daily basis. Similarly, if an athlete has a psychological need to participate in a habitual stretching regime, it should be tolerated as long as it does not put the athlete at risk. Whether extra stretching is warranted or not, an athlete must be encouraged to do what is necessary to do to play at an optimal level. After all, an athlete that is *feeling* totally prepared will generally reflect it in his performance.



PRE-TRAINING/PRACTICE/GAME WARM-UP

Competition/training places great physiological/psychological demands on the athlete. For optimum performance/injury prevention, it is an absolute prerequisite to *warm up* the body prior to competition/training. Contrary to popular opinion, it is not an indispensable necessity to *stretch* before competition/training. *Stretching* is often mistaken for “warming up”. It is not. To warm-up means to engage in a non-fatiguing, aerobic activity that facilitates physiological/psychological readiness. As stated, flexibility, serves only to increase the range of motion around a joint(s). Stretching will not raise the internal core temperature of the body (i.e. *warm-up*).

Warm-up is any non-fatiguing, aerobic activity that facilitates the physiological readiness of the body for competition. The benefits of a proper warm-up facilitate an increase in the body’s core temperature, increase peripheral blood circulation, increase soft tissue elasticity and decreases cardiac trauma from sudden, strenuous exercise. It also facilitates an athlete’s psychological readiness by providing a time to mentally focus and provide for a smooth transition from the locker room to the field.

The warm-up format need not be complicated in any way. It should follow a gradual progression in the activities intensity level and movement specificity. It is suggested that athletes begin by performing sport specific drills at half-speed *tempo*. As athletes begin to break a sweat the intensity of effort and movement specificity should be increased to a few *game pace* reps.

How much warm-up is optimal? For the most part this is a trial and error happenstance. Obviously, it should not be so long or intense so as to cause fatigue, yet still long/intense enough so as to elicit the internal physiological changes to promote optimal performance and prevent injury. The general rule of thumb is that once a mild sweat is broken, the athlete is ready for higher levels of activity.