

# Flexibility and Sports Performance

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**Abstract – Flexibility as the quantity of movement, because this is a good reminder that it tells us nothing about the quality of the movement. The quality is defined by other factors such as speed, strength, power, or control. For most functional purposes, quality of movement is far more important. . If you watch football, soccer, tennis, or basketball, you rarely see unusual displays of flexibility. You can prove this for yourself by looking through pictures of athletes in action. You can probably mimic almost all the joint positions displayed in the pictures. Of course you probably cannot move into these positions quickly, powerfully, smoothly, painlessly, accurately, and with the coordinated activity of other joints. But these deficiencies usually have nothing to do with range of motion. These are issues of strength, power, mobility, or coordination, not flexibility.**

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## INTRODUCTION



Decreasing flexibility is partially the result of normal aging: Your connective tissue and collagen lose water content and get stiffer and weaker, which limits what your joints can do, says sports medicine physician Susan Joy, MD, director of women's sports health at Cleveland Clinic Sports Health. But the way we live is also a huge factor: We sit hunched at desks, in cars and on couches — our shoulders creep more forward with each passing year, our hips become misaligned and muscle fibers become shorter. "We stop taking our joints through the range of motion," says yoga teacher and fitness coach Sage Rountree, author of *The Athlete's Guide to Yoga*. Eventually, your body just adapts and figures out ways of moving that require less range of motion. "The muscles we use get strong, and everything else gets tight.

Flexible people can do: Gymnasts, dancers and acrobats are fun to watch because their bendy bodies

move in cool and unexpected ways. But for the rest of us, flexibility doesn't have to be a floor show. It's not about trying to contort yourself into a pretzel. Rather, it's about good health — and joints that have a fuller range of motion are healthier joints. That means more enjoyment and ability to move in all the ways that your busy life demands.

## FLEXIBILITY DEFINED

Flexibility is basically the range of motion at a particular joint - how far it can move from A to B. I like to think of flexibility as the quantity of movement, because this is a good reminder that it tells us nothing about the quality of the movement. The quality is defined by other factors such as speed, strength, power, or control. For most functional purposes, quality of movement is far more important than quantity.

## MOST SPORTS REQUIRE ONLY AVERAGE FLEXIBILITY

Imagine you took an assortment of elite athletes into a lab and measured their physical qualities to determine what makes them great. You might find that they had exceptional levels of strength, power, endurance or balance. But their flexibility would probably be pretty average. For the most part, athleticism is not about how large your range of motion is, it's what you do with the range you have. The vast majority of movements in sport take place

within ranges of motion easily achievable by the average person. If you watch football, soccer, tennis, or basketball, you rarely see unusual displays of flexibility. You can prove this for yourself by looking through pictures of athletes in action. You can probably mimic almost all the joint positions displayed in the pictures. Of course you probably cannot move into these positions quickly, powerfully, smoothly, painlessly, accurately, and with the coordinated activity of other joints. But these deficiencies usually have nothing to do with range of motion. These are issues of strength, power, mobility, or coordination, not flexibility.

### **MORE ISN'T BETTER**

But all things equal, isn't more flexibility better than less? Not necessarily. It is plausible that increasing range of motion could have negative effects on certain aspects of sports performance. For example, studies show that flexibility in the muscles of the posterior chain correlates with slower running and poorer running economy. Of course, this does not prove that increasing hamstring extensibility would slow you down, but it definitely doesn't make me want to do some hamstring stretches as a way to improve my running.

### **LOOKS AREN'T EVERYTHING**

Of course there are some sports or physical activities where high levels of flexibility are required. I find it interesting that many of these activities involve an aesthetic element, such as dance, gymnastics, diving, or certain forms of martial arts. There is something about a large range of motion that is very pleasing to the eye, and this is why we see dancers, gymnasts, and Jean Claude Van Damme getting into the splits a lot. But you won't see the splits very often in sports where there are no points awarded for style. Of course there are exceptions, but for the most part, if you tell an athlete what to do, and not how to look while doing it, they will choose to move in a way that does not involve extreme ranges of motion.

### **FLEXIBILITY AND INJURY**

One common rationale for increasing range of motion at a joint is to prevent injury from overextension of the joint, such as a pulled muscle. So for example if you want to be able to prevent a groin strain, you would try to increase your range of motion into hip abduction. This makes sense in theory but the evidence in support appears weak.

Prospective studies looking for correlations between preseason flexibility and in season injury rate show only mixed results. For example, two studies on soccer players and hockey players show that players with more flexible groins do not suffer fewer groin injuries.

Interestingly, the players with stronger adductors had less strains. It should be noted that there are a few studies showing that preseason flexibility in the groin or hamstring does correlate a little the rate of muscle pulls in the season. But these are only correlations. It is a big jump to conclude that the reduced flexibility was the cause of the injuries. My guess is that some unmeasured third factor, like adverse neural tension or poor strength at the end range of motion caused both the reduced flexibility and the injuries.

Further, we also know that stretching seems to do nothing to prevent injuries, and if we believe that it increases range of motion, we must also conclude that any increased range of motion caused by stretching is useless in terms of injury prevention.

### **CONCLUSION**

For most athletes in most sports, there is probably little to be gained by increasing flexibility or range of motion. Of course there are exceptions, but the bread and butter for movement is in the neutral zones, and this is where you should direct most of your efforts. It may very well be that you need additional control or strength at a particular end range of motion, but again this has nothing to do with flexibility. It is a specific form of strength or mobility, to be developed by spending some time at that range of motion, and practicing whatever it is you need to do there, e.g. apply force, move quickly, move other joints, etc. I will talk a little bit about how I do that in my sport, squash, in the next article. I know, huge cliffhanger, you can hardly wait to hear about squash training. You'll just have to be patient.

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