

WHAT RESEARCH TELLS US ABOUT FLEXIBILITY - I

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That flexibility is an important component of fitness, required in some sense for all activities, is generally the accepted view. It is not a position unanimously held and as such is a burden on the shoulders of advocates to substantiate the claim. Flexibility exercises are supposed to increase range of motion, enhance performance, and reduce the chance, severity and frequency of injuries. It is because of their breadth that these claims are seldom evinced as a group, and most wisely attempt to tackle the problem piecemeal.

There are three essential benefits, research tells us, derived from an increase in flexibility, increased range of motion, improved performance, and the prevention of injuries. The more flexible one is, the more range of motion will obtain, and the greater the range of motion, the wider the scope of movement that can be performed (Holt, 1974; Smith, 1982). Some hold that increased flexibility leads to better conditioning, and that conditioning enhances performance (Shellock & Prentice, 1985). Experimentation has yielded a correlation between range of motion and performance (Dubuc & Bohannon, 1985), especially with respect to sports such as swimming (Prichard, 1987). Some commentators suggest, with or without commensurate data, that flexibility is good for performance and consequently that it is incumbent upon athletes to avail themselves of techniques to help augment flexibility (Ishvili, 1983; Smith, 1982). Put forward also is the notion that stretching muscles prior to activity facilitates contraction and by necessity improves force output (Cavagna, Dusman & Margaria, 1986; Wilson, Elliott & Wood, 1991 [a]; Wilson, Elliott and Wood, 1991 [b]; Wilson, Elliott & Wood, 1992). Thus does the literature constitute near consensus on the importance of flexibility in performance.

But there is a point which ought to be made here. That gymnasts, divers, dancers and swimmers are more flexible than the average person is accepted at face value. But that the same need may exist for enhanced flexibility in most other sports has been neither established nor accepted. Thus it appears that people are either too quick or too slow to make generalizations from sport to sport, and too slow to conduct experiments the results of which might help validate or falsify such generalizations.

Not only does increased flexibility seem to allow better performance, it also helps prevent injuries (Holt, 1974; Taylor, Seaber & Garrett, 1985). Whether they agree or not, some have discovered either correlation or evidence to support a causal link between the level of flexibility and susceptibility to injury (Levine, Lombardo, McNeely & Anderson, 1987), particularly in the case of rotator cuff injuries in swimmers (Greipp, 1985). Unlike the consensually accepted effect on performance, there are those whose views are antithetical to the supposed reduction in likelihood of injury (Leimon, Snodgrass & Sharpe, 1988; Sutton, 1984; Wilson, Wood & Elliott, 1991). Such commentators are often biased in favour of strength conditioning and attribute injuries to lack of muscle stiffness, whatever that means, more than anything else. It must be granted, however, that many allow that they are not certain and recommend further experimentation.

Range of motion is often said to decrease with age (Clarke, 1975; Corbin & Noble, 1980; Smith, 1982; Stanish & Hubble-Kozey, 1982). While the supporting evidence is overwhelming, it does not seem unreasonable to point out that what is seen as law is only tendency, albeit profound. This phenomenon does not manifest itself until the onset of adolescence (Clarke, 1975; Corbin & Noble, 1980). Though the elderly are in general

less flexible than earlier in life, much evidence supports the notion that they are equally responsive to flexibility training (Bell & Hoshizaki, 1981; Chapman, DeVries & Swezey, 1972; Dummer, Vaccaro & Clarke, 1985; Germain & Blair, 1983). Age is, in short, a factor which without affecting one's responsiveness to flexibility training affects one's level of flexibility. Sex is another factor. Females are generally more flexible than males, especially in younger age groups (Kirchner & Glines, 1957; Phillips, 1955). Also, it is suggested that women become more flexible during pregnancy, and that this is somehow related to the overall need for pliability during childbirth (Alter, 1988).

Also said to be an influence is temperature. Through warmup or environmental changes, an increase in temperature results in increased flexibility (Sechrist & Stull; Stanish & Hubley-Kozey, 1982). This is accounted for by appealing to the concept of collagen viscosity, which decreases and thus allows for greater liveness and range of motion when temperature is increased (Alter, 1988; Williford, East, Smith & Burry, 1986). Often used as auspices for warming up before any activity, the benefit, though as yet not well measured experimentally, has generally been accepted. And yet, interestingly, others have found both that cold facilitates tendon extensibility (Lehmann, Masock, Warren & Koblanski, 1970) and that cryotherapy, in conjunction with a stretching regimen, is more effective than the stretching regimen alone (Cornelius & Jackson, 1984). Into this matter more investigation is required.

Posture has been suggested but not proven to be related to level of flexibility. It has been stated generally (Hutchins, 1965; Smith, 1982), and specifically with respect to hip and trunk flexion (Flint, 1964) that there is a negative correlation between posture and flexibility. Unfortunately, the term 'posture' is not adequately defined. One assumes it to mean 'good posture', but one is not sure whether it is the chiropractor or one's mother that delineates the nuances of this vagary.

Degree and type of exercise by necessity affects flexibility level. It has been suggested that regular quality activity, whether a physical education program or activity in general, is related to flexibility (Clarke, 1975; Holland, 1981). Active people are often more flexible than those not so active (McCue, 1963), and regular flexibility exercises increase liveness still further (Cureton, 1941). Also an important factor is exercise type, for example weight training. Many, too numerous to mention, hold that weight training decreases flexibility, while some assert that it has a negligible effect (Massey & Chaudet, 1956). Still others believe that strength training, especially those involving isometric contraction, actually increases flexibility (Wickstrom, 1963). Further study must come forth before anything conclusive can on this point be written.

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