

## NO 28 STRETCHING BEFORE EXERCISE; DAVID GARLICK

14 December 2009

1. Today I am going to do two things. First I am going to tell you a bit about stretching before exercise. And then I will tell you about a quite well-known Australian sports scientist called David Garlick who became an Alexander teacher and made some quite interesting contributions to the science of the AT.
2. First, the question of stretching before exercise. One of my pupils asked me about it.
3. I remembered seeing an article about it in the *British Medical Journal* some time ago. So I went back to that and like a lot of these things, it was earlier than I thought – in 2002.<sup>1</sup>
4. The *BMJ* thought it important enough to do an editorial on it and point out that it showed that

*... stretching before exercise does not reduce the risk of injury or muscle soreness.*<sup>2</sup>

5. I looked round to see if medical opinion had changed and found a couple of later papers and the story was the same. A review published in the *Journal of Athletic Training* by some researchers in the University of Florida said

*...the results of this review do not support the role of pre-exercise or postexercise stretching as an intervention addressing postexercise soreness. In addition, the evidence presented in this review does not support the role of pre-exercise stretching in the reduction of lower extremity injury risk.*

6. And in a paper in the *British Journal of Sports Medicine* a researcher called Ian Shrier discusses the fact that stretching can cause damage and, at the same time, has an anaesthetic effect on muscles. He says

*...stretching somehow increases tolerance to pain – that is it has an analgesic effect. It does not seem prudent to decrease one's tolerance to pain, possibly create some damage at the cytoskeletal level and then exercise this damaged anaesthetised muscle.*<sup>3</sup>

---

<sup>1</sup> Herbert and Gabriel (2002)p

<sup>2</sup> Ibid. p

<sup>3</sup> Shrier (1999)

7. It is also worth bearing the “stretch reflex” in mind. This is also called the myotatic reflex.
8. When a muscle is stretched, it responds by tightening. We see this is the doctor’s surgery where the doctor gives you a little tap just below the patella which produces an automatic straightening of the leg.
9. This happens because the tap on the tendon slightly extends the quadriceps muscle in the thigh causing a reflex contraction which straightens the leg. So by stretching the muscles you are actually making them contract.
10. So what do we as AT teachers recommend to our pupils with regard to muscle stretching? We ask people to allow standing to happen which brings the muscles into a state of balanced equilibrium. We allow lengthening and widening. Then we go through a gentle process of warming up to whatever level of activity we want.
11. An interesting little follow-up is that I was looking at a recent medical question-and-answer column in the *Guardian* Saturday review. Someone had written-in saying they were aged 55, went to the gym three times a week, had a 30 minute work-out, made a point of doing the necessary stretching exercises before and after, and were exhausted for the rest of the day.
12. The reply by the *Guardian* doctor was that it should not be happening and the person should have a health check.
13. I sent an e-mail wondering whether it might be to do with the stretching and could the person be doing too much of it.
14. I got quite a nice reply which I will read to you.

*You may be right. It's true that studies on stretching before and after exercise haven't confirmed that it is beneficial, and won't prevent strains, sprains and pains. I note that you are an Alexander technique teacher, and that you suggest a quiet period, relaxing the muscles, before exercise. In practice I've found that some of the Alexander positions for relaxing the neck muscles very helpful for patients with tension headaches and nerve pains in the shoulders and arms, so I am sympathetic, in principle, to your approach.*
15. I am leaving a copy of the little paper I have written on the question of stretching before exercise, with its various

references, for the library and it is available on my website for anyone who wants it.

\*\*\*\*\*

16. I now want to tell you a bit about the late, and much lamented, Australian sport-medicine scientist and AT teacher David Garlick who died in 2002.
17. He was born in Sydney in 1933 and qualified as a doctor of medicine in Sydney University and went on to get a PhD in 1963.
18. After his PhD, he became a lecturer in pathology at the University of New South Wales in Sydney. He then took a few years for study and research abroad. In 1970, he came back to the University of New South Wales to work in the Department of Physiology and Pharmacology.
19. He was always very keen on running and other forms of physical exercise and this, combined with his physiology work, began to lead him increasingly into the area of sports medicine.
20. He wasn't just interested in the research aspects of his work. He was also keen on educating doctors and health professionals dealing with sports medicine and he developed a Master's Degree course at the University which was aimed at clinicians. This was later expanded into an undergraduate degree course in Health and Sports Science.
21. His Alexander moment came when he read Niklaas Tinbergen's 1973 Nobel Prize acceptance speech. As a result, he had Alexander lessons and became increasingly interested in looking into the relevance of the AT for sports medicine. Eventually, like all of us here, he felt he needed more than just lessons and he decided to train as a teacher.
22. He joined the training course run by Kri Ackers who trained here in the sixties and is something of a legend among those who knew her. Garlick qualified as a teacher in about 1994. After he got his teacher's certificate, he continued to teach on a weekly basis at her school.
23. As a highly qualified medical scientist, with a research position in a major university, as well as an active involvement in a training course, he was uniquely well-positioned to carry out further research into the physiology and neurophysiology of the AT.

24. In addition to the work he did in his laboratory, he also involved himself publicly in the AT and became a well-known lecturer in the AT circuit of meetings and conferences. He was here numerous times and knew Walter, Dilys, John, Ruth. Everyone I have talked to about him remembers him as pleasant, lively and good-humoured. Another word I have heard used about him is “kind”.
25. He died of cancer at the age of 69. At the time, he had various ideas for further scientific research into aspects of the Technique. One of these research topics was to be a study of the effect of AT lessons on the multifidus muscle which runs right down the spine. It connects up the spinal vertebrae and is deeply involved in posture.
26. It would have been very interesting to see what they would have discovered if this project had gone ahead. His death was a considerable loss to the AT community.
27. His published AT work is fairly thin. His main work is a booklet published by the University of New South Wales in 1990 called *The Lost Sixth Sense: a medical scientist looks at the Alexander Technique* which we have in the library.
28. This is the nearest thing we get to an overview of the AT from the Garlick perspective. The lost sixth sense to which the title of refers is “proprioception” – the internal sense or awareness that the body has of itself. It tells me where the bits of my body are in relation to each other. It also tells me when I am tired or tense, when I am carrying a heavy or a light load, whether I am still or moving – and so on.
29. One way of thinking about proprioception is that it about the sense of the internal state of the body as opposed to the other five senses: sight, hearing, smell, taste and touch which tell us about external objects.
30. Proprioception is often used interchangeably with kinaesthesia. Sometimes, they are distinguished, with proprioception referring to the sense of the position of the various bits of the body and kinaesthesia referring to a sense of the body in movement.
31. Garlick says that in modern life we are tending to lose our proprioceptive sense. He says  
*...our minds become so occupied with so many inputs and outputs to do with the outside world that signals*

*from the body are suppressed or “gated out” before reaching consciousness.*

32. This, of course, is very much what Alexander was saying in his own day when he talked about our faulty sensory perception. In CCCI, he talks of our “*debauched kinaesthesia*” and our “*unreliable and delusive sensory appreciation.*”<sup>4</sup> We literally do not know what we are doing to ourselves as we go about our daily activities.
33. *The lost sixth sense*, in my view, is a very nice introduction to quite a bit of the physiology and neurophysiology underlying the AT. If you have forgotten or never knew about the workings of the flexor and extensor muscles, the role of muscle spindles, tendon organs, joint receptors and other such details of the workings of the neuromuscular system and how the muscles go about their business, this presents quite a few of the basic facts in a succinct and accessible way.
34. He also provides a useful neurophysiological perspective on important AT concepts like inhibition, direction and primary control. If you are trying to explain these to someone with a medical background, Garlick’s way of looking at them can be quite useful. In that sense he acts as a bridge between the world of medical science and the AT.
35. The only other published source of his work that I know about is a series of about 20 articles which he wrote for the AT magazine *Direction* over the period 1988-2002. The earliest of these were written before he began to train as a teacher but he continued to produce them after he qualified right up to his death in 2002.
36. They are all quite short. They basically develop and add to the ideas in *The Lost Sixth Sense*. They give you bite-sized portions of insightful neurophysiology and I very much like them.
37. One of the topics to which he comes back in various ways is the important distinction between the white and the red fibres in ordinary muscle. I think what he says about these is particularly interesting.
38. Basically, the red fibres have a smaller diameter and are relatively weak and slow to act. All muscle fibres produce waste products when they contract. The red fibres produce

---

<sup>4</sup> Alexander (1923) p

carbon dioxide which they are able to get rid of quite easily and quickly. As a result, there is no build-up of waste products in these fibres when they are in action. This means they do not get tired which is why they are commonly described as non-fatiguable.

39. Their main function is in posture and slow rhythmic movement. In normal standing, sitting, walking, where we are not putting any major effort into what we are doing, but are basically relying on our postural reflexes to organise things for us, it is primarily the red fibres which are doing the work. These are the muscles that athletes rely on for endurance events like the marathon.
40. The white fibres, in comparison, are thicker and stronger. These are what give body-builders their big bulging muscles.
41. They are also quicker to act. They are sometimes referred to as fast-twitch muscle fibres. The white fibres are used for movements which require speed and strength like sprinting and weight-lifting.
42. One of the problems with these muscles is that when they are in action they cannot get rid of their waste product lactic acid. As this builds up the muscles feel tiredness and pain. For this reason, the white fibres are described as fatiguable.
43. Even in a trained athlete, white muscle fibres can only keep going at maximum power for about thirty seconds.
44. The interesting point that David Garlic makes is that in many people, our use of ourselves is such that we are relying on the white fatiguable fibres rather than the red ones for maintaining our sitting or standing posture.
45. Once this begins to happen, we can find ourselves in a cycle of deteriorating use. This is because the unused red fibres start to atrophy, leaving us increasingly dependent on the fatiguable white fibres for sitting and standing. And because this causes us tiredness and pain, we start using props and supports for our back which means the red fibres are used even less and we are led deeper into a self-reinforcing cycle of misuse.
46. This analysis ties up nicely with Walter's observation that the function of the AT is to create the conditions under which the autonomic, or reflex system, can get on with its job – which is mainly done by the red fibres.

47. There is, for me, a real sense of incompleteness about David Garlic's work. Perhaps, if he had lived longer he would have been able to weave the pieces into a more satisfying big picture. But that said, I think what we have is extremely valuable.
48. I would also mention that Paul Cook, the last editor of *Direction* has been trying to revive it as an on-line journal. You can buy back issues of the journal or download them. I have a lot of sympathy for anyone who puts as much effort into supporting the AT as he does.
49. One of the things he has done is put all David Garlick's pieces into a special issue of *Direction* which you can buy from him. I don't think anyone can go through them all without gaining a variety of new and valuable insights.
50. The address of his website is [www.directionjournal.com](http://www.directionjournal.com)

## **REFERENCES**

- ALEXANDER, F. M. (1923) *Constructive Conscious Control of the Individual* - Mouritz, London 2004 edition
- HERBERT, R., GABRIEL, M. (2002) *Effects of stretching before and after exercising on muscle soreness and risk of injury: systemic review* - British Medical Journal Vol 325, pp 468-470
- SHRIER, I. (1999) *Stretching before exercise does not reduce the risk of local muscle injury* - Clinical Journal of Sports Medicine 9 (4) abstract