Olympics – clotting in sports

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■ In the last few years, several sports professionals have suffered from deep vein thrombosis

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In this Olympic year, the question is asked: does exercise prevent venous thromboembolism (VTE)? There are two situations in which exercise can be implicated in the aetiology of such thromboses. The first is called 'effort thrombosis' by couch potatoes, 'Paget-Schroetter' syndrome by vascular surgeons of a certain age, and 'subclavian vein thrombosis' by everybody else. This involves thrombosis of the main vein in the upper arm, where it kinks around the armpit through various mysterious muscle groups around the shoulder, close to the first rib. Although the literature is redolent with articles explaining the many various treatment options, the link with exercise is very clear.[1] I have seen a case in a county tennis captain who played two matches in a row; and a man having a midlife crisis who started training for triathlons by tying his ankles together and swimming multiple laps using only his arms. Case reports include people who throw javelins, baseballs and basketballs. There is even a description of a young man who developed bilateral subclavian vein thromboses following a day of intense wheel-barrowing – admittedly, not a sport outside a few tradition-prone Cotswold villages, but undoubtedly an effort.

The second situation is more tenuous in that the link is indirect. All who indulge in regular exercise expose themselves to the risk of traumatic injuries. These may range from minor sprains through more acute damage from collisions (with immovable objects or two people) to chronic damage, such as shin splints and knee cartilage problems. Any of the more serious of these injuries may end up being treated by orthopaedic surgeons – which may, in itself, be a thrombotic risk.

But the important question remains: does regular exercise increase or reduce the risk of deep vein thrombosis (DVT) when associated with other risks? Over the last few years there have been several high-profile sports professionals who have suffered from DVT, usually after orthopaedic surgery or long-haul flights (or both). These have included cricketers, a tennis player, a gymnast and several triathletes. It is reported that three members of the UK Olympic team suffered DVTs after the flight to Sydney in 2000. At the least, these cases suggest that intense exercise does not protect against DVT.

Moreover, in a study of over 5,000 participants aged over 65, van Stralen *et al*[2] defined sport as the regular expenditure of over 500 kcal/week on exercise, including walking. Overall, self-reported exercise levels at baseline were not related to the risk of VTE after adjustment for sex, age, race, self-reported health and body mass index (adjusted hazard ratio [HR (adj)] 1.16; 95% confidence interval [CI] 0.84–1.61). However, for mild exercise, such as walking, there was a non-significant trend towards benefit. Strenuous exercise, such as jogging, however, was associated with a greater risk of VTE (HR (adj) 1.75; 95% CI 1.08–2.83, compared with no exercise at all).[2] This certainly makes sense; immobility is recognised as an important contributor to DVT risk, so increased blood flow should be beneficial.

However, van Stralen *et al*[3] also examined this issue in a younger cohort indulging in exercise at a variety of frequencies and intensities. This investigation, part of the MEGA study, compared 3,606 patients with a first VTE (malignancies excluded) with 4,252 controls. Participating in sports activities reduced the risk of VTE compared with not participating in sports activities (odds ratio 0.64; 95% CI 0.58–0.71). No difference was found between the intensity or frequency of these activities.[3]

It is difficult to reach firm conclusions from these limited data. However, a reasonable interpretation from the evidence available, and one that is intuitive, is that moderate, regular exercise is beneficial with regards to reducing DVT risk. Strenuous exercise, however, when associated with other risk factors, may be dangerous. Thank goodness for that ■

Key points

- Subclavian vein thrombosis is directly linked to exercise.
- Regular exercise increases the risk of traumatic injuries, which are an indirect link to thrombosis.
- A general conclusion to the question of whether exercise increases or reduces thrombosis risk is that moderate exercise reduces the risk, while strenuous exercise, when combined to other risk factors, may increase it.

Declaration of interest
None declared.

References:
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