

Relationship between sporting discipline and aortic dimensions in middle-aged sportsmen

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Background

A previous study reported a high prevalence (21%) of clinically relevant aortic dilatation (≥ 40 mm) in competitive veteran runners and rowers. It is uncertain whether this also applies to middle-aged sportsmen performing other sporting disciplines.

Purpose

To relate aortic dimensions to sporting disciplines in middle-aged sportsmen.

Methods

Middle-aged sportsmen, ≥ 45 years of age, underwent coronary CT angiography. Aortic size was measured at the sinus of Valsalva (cusp-cusp) and the ascending aorta (at the height of the pulmonary trunk). Dominant sporting discipline was categorized as running, cycling or other. Analysis of variance was used to compare baseline characteristics and aortic dimensions across sporting disciplines. Multivariable linear regression was used to adjust for baseline characteristics.

Results

A total of 260 sportsmen (mean age 55.1 ± 6.4 years; 64 runners, 75 cyclists and 121 other sporting disciplines) were included (Table). Clinically relevant aortic dilatation was found in 5.0% ($n = 13$). Aortic size or presence of aortic dilatation did not differ across sporting disciplines. Ascending aorta and aortic root size were significantly related to age, body surface area, diastolic blood pressure and exercise tolerance, but not sporting disciplines.

Conclusions

We found clinically relevant aortic dilatation in 5% of middle-aged sportsmen. Aortic size was not different between sporting disciplines. Aortic size may be more related to level of exercise performance rather than sporting discipline.

	Running (n = 64)	Cycling (n = 75)	Other (n = 121)	p value
Participant characteristics				
Age, yrs	54.6 \pm 6.4	56.1 \pm 6.8	54.8 \pm 6.2	0.30
Systolic BP, mmHg	129 \pm 12	128 \pm 13	129 \pm 12	0.95
Diastolic BP, mmHg	80 \pm 8	79 \pm 8	80 \pm 9	0.32
Body surface area, m ²	2.03 \pm 0.14	2.02 \pm 0.15	2.07 \pm 0.15	0.08
Exercise tolerance, Watt	310 \pm 42*	329 \pm 47	307 \pm 48	0.003
Aortic dimensions				
Ascending aorta maximum diameter, mm	32.5 \pm 3.1	33.0 \pm 3.8	32.5 \pm 3.6	0.64
SoV mean diameter, mm	34.3 \pm 2.8	34.1 \pm 2.8	33.7 \pm 3.2	0.46
SoV, NCC-RCC diameter, mm	34.2 \pm 2.9	34.0 \pm 2.9	33.7 \pm 3.4	0.61
Any aortic diameter ≥ 40 mm, n (%)	3 (4.7)	2 (2.7)	8 (6.6)	0.46

Values are mean SD or n (%). *significantly different from cycling and other. BP = blood pressure; SoV = sinus of Valsalva; NCC = non-coronary cusp; RCC = right coronary cusp