

More on Weightlifting Injuries

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The preceding *Images in Cardiovascular Medicine* article by Parikh and colleagues¹—limited in narrative and references by *Texas Heart Institute Journal* specifications for *Images* submissions—shows that weightlifting can lead to catastrophe. Presented here is more information on the possible dangers of weightlifting, with a focus on the cardiovascular sequelae.

Weightlifting is associated with 3 categories of injury: musculoskeletal,^{2,3} neurologic,^{4,7} and cardiovascular.⁸⁻²² Common to all 3 categories are poor conditioning or technique, inadequate strength or endurance, improperly selected resistance, insufficient warm-up or stretching, loss of balance, and fatigue.² Musculoskeletal ailments are reported frequently. Noteworthy neurologic effects, such as subarachnoid hemorrhage,⁴ brain stem dysfunction,⁵ and acute paraplegia,^{1,12} are apparently rare.

Among the cardiovascular sequelae, aortic dissection receives substantial attention⁸⁻¹²; the internal carotid artery,¹³⁻¹⁶ coronary arteries,¹⁷⁻¹⁹ and celiac artery²⁰ can also dissect. In addition, implanted pacemaker leads can fracture.^{21,22} The chief culprit is vascular stress, applied to the arterial walls through exceptionally elevated blood pressure. Indeed, the intra-arterial blood pressure can soar as high as 480/350 mmHg at the moment of maximal weightlifting effort.^{23,24} Investigators attribute this 4-fold rise to mechanical compression of the blood vessels, increased cardiac output, and the same pressor effects that are seen in the Valsalva maneuver.²³ Other contributory factors are emotional stress,²⁵ structural aberrations of the arterial walls, and defective connective tissue in the surrounding extracellular matrix.¹⁶

Certain individuals are at special risk and should lift weights cautiously, if at all: people with chronic systemic hypertension; the elderly, with their comparatively inelastic arteries; persons who have congenital or acquired disease of the aorta; and anyone with a heritable disorder of the connective tissue, such as Marfan syndrome, Ehlers-Danlos syndrome, Turner syndrome, pseudoxanthoma elasticum, osteogenesis imperfecta, and autosomal dominant polycystic kidney disease.^{10,12,16}

Despite its potential for grievous bodily harm, weightlifting—when properly undertaken—yields distinct benefits and is relatively safe for most participants.

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