

The Aging Vitruvian Man and the Modern Practice of Medicine

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HANGING ON THE

wall behind my office desk is a poster of the famous Vitruvian Man by Leonardo DaVinci. It is sometimes explained as a diagram of human perfection. Living during the Renaissance, Leonardo sketched it in 1490 according to idealized ratios of anatomy that echoed back to Greek and Roman concepts of geometric

proportion in nature, architecture, and engineering. In his own notes on the drawing, Leonardo proposed many such ratios: "The length of a man's outstretched arms is equal to his height"; "from the elbow to the armpit is the eighth part of the human being"; and "from the bottom of the chin to the top of the head is one-eighth of the height of the person." We know that in real human beings, the ones that come into our offices and clinics, such ratios hold true only as approximations, not hard-and-fast rules. Yet the concept of ideal values (of weight, blood pressure, hemoglobin A1C and other parameters) persists as targets for our patients and for the treatments we offer them.

Leonardo's Vitruvian Man is young. Based on his face and musculature I'd estimate him to be between 25 and 35, the same age at which most professional athletes peak. This makes sense if one is trying to depict human perfection. Besides the ratios set out by Leonardo in his notes on the work, we might imagine a modern Vitruvian Man would have a blood pressure of 110/70, a body mass index of 25, and an average blood sugar of 80. He would be on no medications and his review of systems would be, as we say, "negative in detail."

But what happens as VM ages? We know that his muscle mass decreases and his visceral fat increases. His testosterone declines, his lenses stiffen and opacify, his ejection fraction declines, his red blood cell mass dwindles, his prostate enlarges and his hairline recedes. His sister, The Vitruvian Woman, suffers a similar fate with some differences based on the comparatively dramatic decline in her estrogen at menopause. Her skin thins faster than her brother's, she develops atherosclerosis less quickly and osteoporosis more quickly than he.

Normal aging (one might say that "optimal aging"), even for "The Vitruvians," is a process of decline. This is the tragic

truth we rarely say out loud to ourselves and to others. The graph of physiologic function over time has a negative slope. The difference between the healthiest and unhealthiest of an aging cohort (your high school graduating class, for example) is simply the angle of that slope. As I tell patients to help persuade them to take steps to control their dyslipidemia or hypertension: "Success means getting your MI at age 95 rather than at age 65." As part of our understanding of that decline, we have to be mindful that Vitruvian ideals change with age. A PSA of 4.5 is normal for an 80-year-old man but would be the sign of a problem for a 40-year-old. A cataract means something very different in an octogenarian than in a millennial. The systolic blood pressure of 110 in the 25-year-old with a supple vascular system wouldn't be sufficient to feed the afferent arterioles of the 70-year-old diabetic.

We meet our patients where they are. Rarely do they come to us as a blank slate at the very start of their lives waiting to be instructed and guided as to lifestyle and medical therapies. They come with a host of histories: a "family history," a "surgical history," a "social history," etc. They come with a set of beliefs and habits about diet, exercise, sleep, work, alcohol, and sex. When I first meet a new patient I create in my mind a starting place for our work together by imagining a Vitruvian poster of them (modified for modesty) that becomes the symbolic potential ideal for the medical journey they take under my care. Then we work together to find out how close he or she can come to that ideal using the tools of lifestyle and medical interventions. We personalize their treatment based on their biological, mental, and social idiosyncrasies. And we adapt the treatment and even the goals of treatment as they age. As they change, so too do the targets and objects of our therapies. The annual physical exam is, among other things, the updated imagining of the latest version of their Vitruvian Selves.

There is always an ideal of health toward which we can point our patients. An imaginative appreciation of the Vitruvian Man and Woman reminds us that the ideal can and must evolve as our patients age and change. +

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