Analysis of the Biophysical Factors Affecting Cardiovascular Disease SHEAMIN KHYEAM, RICHARD KYUNG, CRG — The object of this research is to find the biomechanical effects of aortic valve stenosis on the heart disease using biophysical and computational analysis. Observations are carried out for significant factors, such as blood pressure changes, aortic valve area changes, and possible correlations with blood velocity and other fluid dynamic-related properties. The Gorlin equation is expressed as a formula that directly links cardiovascular and geometric properties central to our purpose of establishing a malicious link between pressure and aortic valve stenosis. Based on Bernoulli's principle, Gorlin Equation differs only in that it is an application of the principle to cardiovascular analysis and combines cardiovascular properties to determine heart valve area. To determine the area of the aortic valve, hemodynamic parameters are set: heart rate is set at 80 beats/minute, systolic ejection period at 0.33 seconds, cardiac output at 6400 mL/minute, and the "standard Gorlin constant" at 44.3. Additionally, computer program MATLAB is used to support and help with the calculation of results respectively.

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