The Modelling of Cardiovascular Diseases Using Differential Equations

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The current study presents the modelling of cardiovascular diseases with the help of differential equations. In order to accomplish this, we worked together with the Cardiovascular Medical Centre in Trgu Mureș.

Our main goal is to create a mathematical formula in order to predict the patient's pulse under load. The mainstay of our research lies in the fact that in order to define the system's parameters the patient's accurate condition was taken into account. Our final purpose is to create a model which is able to prognosticate when the pacemaker should be replaced.

Our aim is to create a survey which gets real information about patients' cardiovascular condition. By using this data, we can give professional diagnosis and we can develop our differential equation model.

The goal of our application is to create a platform which is available for anybody and can be used both by doctors and patients. With this reason in mind, a web application using .NET framework was created. We wanted to visualize the data which was calculated with differential equations to ease the understanding of it, so we used HighCharts JavaScript library.

We applied the Runge-Kutta 4th Order Method to solve differential equations.

Our main motivation is to create a research while we can cooperate in improvement of living condition for patients who are living with pacemakers.