

Using stochastic optimization to fit nonlinear models to raw physiological data

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The physiological response to exercise is very complicated due to the presence of nonlinearities and coupling between the variables in the body. As a result there is very little basic physiological knowledge in this area. Recently models have been proposed [1, 2] consisting of a set of coupled nonlinear ordinary differential equations. When the model is fit to raw data time series of physiological data of a particular subject, the values of the model parameters are very important as they characterize the subject's current condition, across the continuum of possible exercise intensities. The task of fitting the models, however, is not trivial. A stochastic optimization routine was used [2] (based on that developed by [3] for use in adaptive optics) to obtain optimal model parameter values for a particular subject. This study focuses on the simplest case of steady state exercise.

Referencias

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