

Abstract :

Extracting useful frequency content information from noisy signals can be carried out by classical Fourier based methods. Unfortunately, these methods cannot be applied to nonstationary signals without distorting them therefore more robust techniques have been proposed in research literature. Although, these recent methods show good performances such as high signal to noise ratio (SNR), their influence on heart rate variability (HRV) analysis is still unstudied. The paper aims to investigate the effects of some denoising heart rate variability techniques on their nonlinear parameters. First, these parameters are estimated using HRV signals. Then, noise is added to generate noisy HRV. The resulting HRV signals are filtered using three different denoising methods. The nonlinear parameters are then calculated from the filtered HRV signals and compared with those obtained from the first HRV records. Obtained results show that some HRV filtering techniques can extremely alter these indices. Thus, denoising method should be appropriately chosen when HRV signals are required to be filtered.