

Clinical Validation of a Smartphone-Compatible 6L Electrocardiogram Device in Ambulatory Patients



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Introduction

Novel ECG devices seek to facilitate easier obtainment of ECG recordings, while not compromising accuracy, compared to a standard clinical 12-L ECG. We aimed to compare the accuracy of the AliveCor Kardia 6L device with simultaneously recorded 12-L ECG recording with the patient in the same position.

Hypothesis

The AliveCor 6L Kardia ECG device will demonstrate data highly correlated with a standard 12-L ECG.

Methods

We included patients seen in an outpatient cardiology clinic. ECG data using the Kardia 6L and a standard 12-L were obtained simultaneously in the seated position. Median beats for each method were compared using Pearson's correlation.

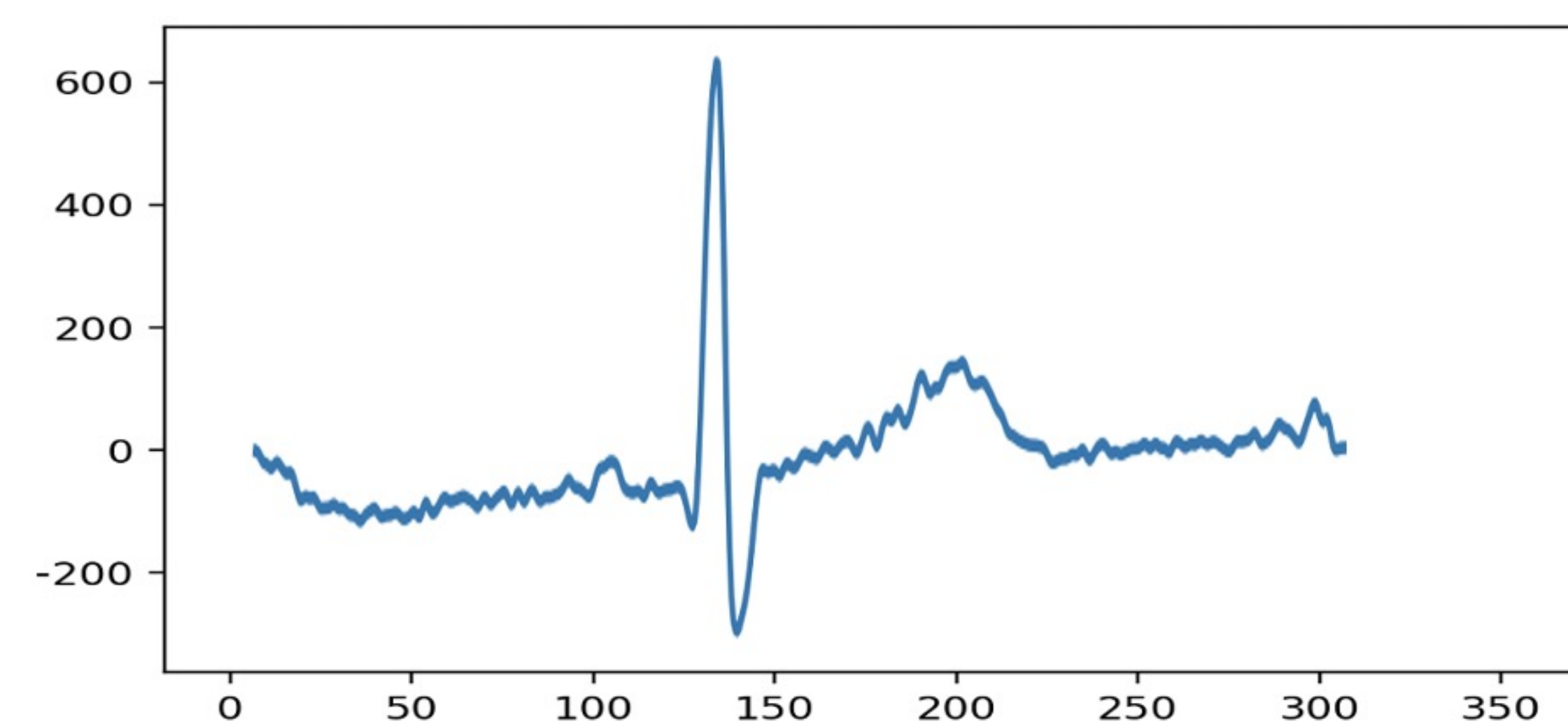
Results

One hundred patients (mean age 57 ± 18 , 55% female) were included. Lead aVL R wave amplitude ($r = 0.99$), T wave amplitude ($r = 0.99$), T wave axis ($r = 0.96$) QRS axis ($r = 1.00$), QRS duration ($r = 0.94$), and QT duration ($r = 0.96$) demonstrated excellent correlation between the two methods (Figure).

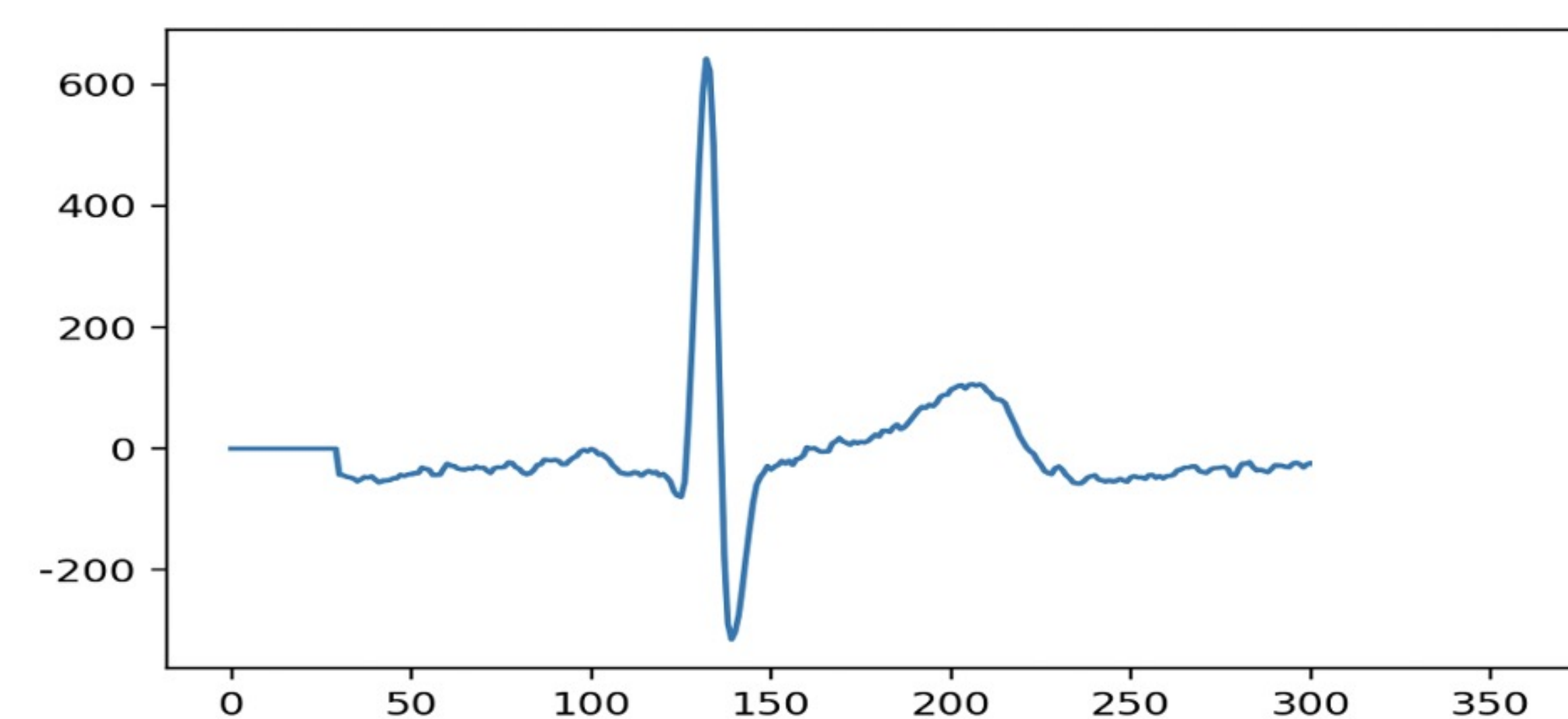
6L AliveCor Kardia



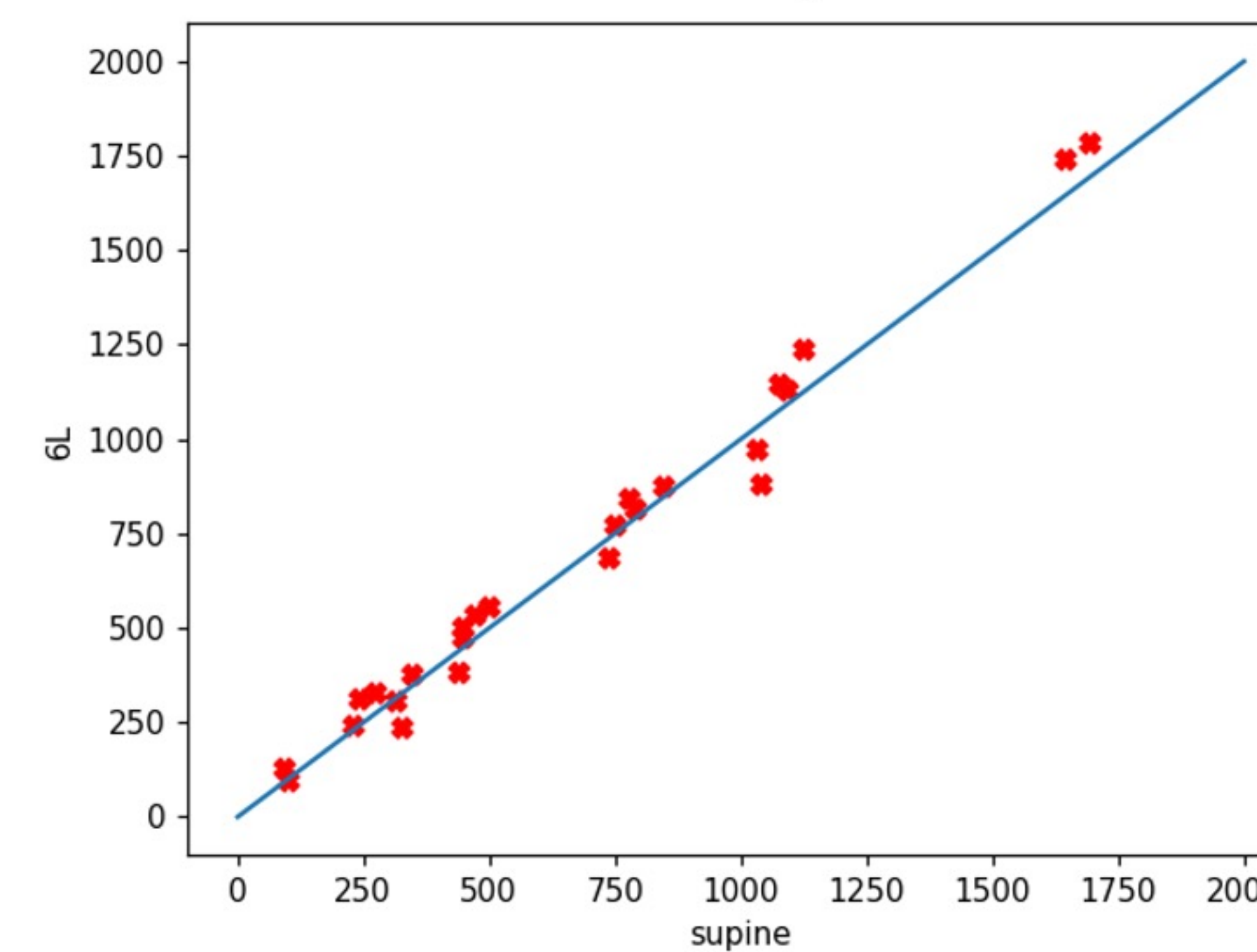
Median Beat Kardia 6L ECG



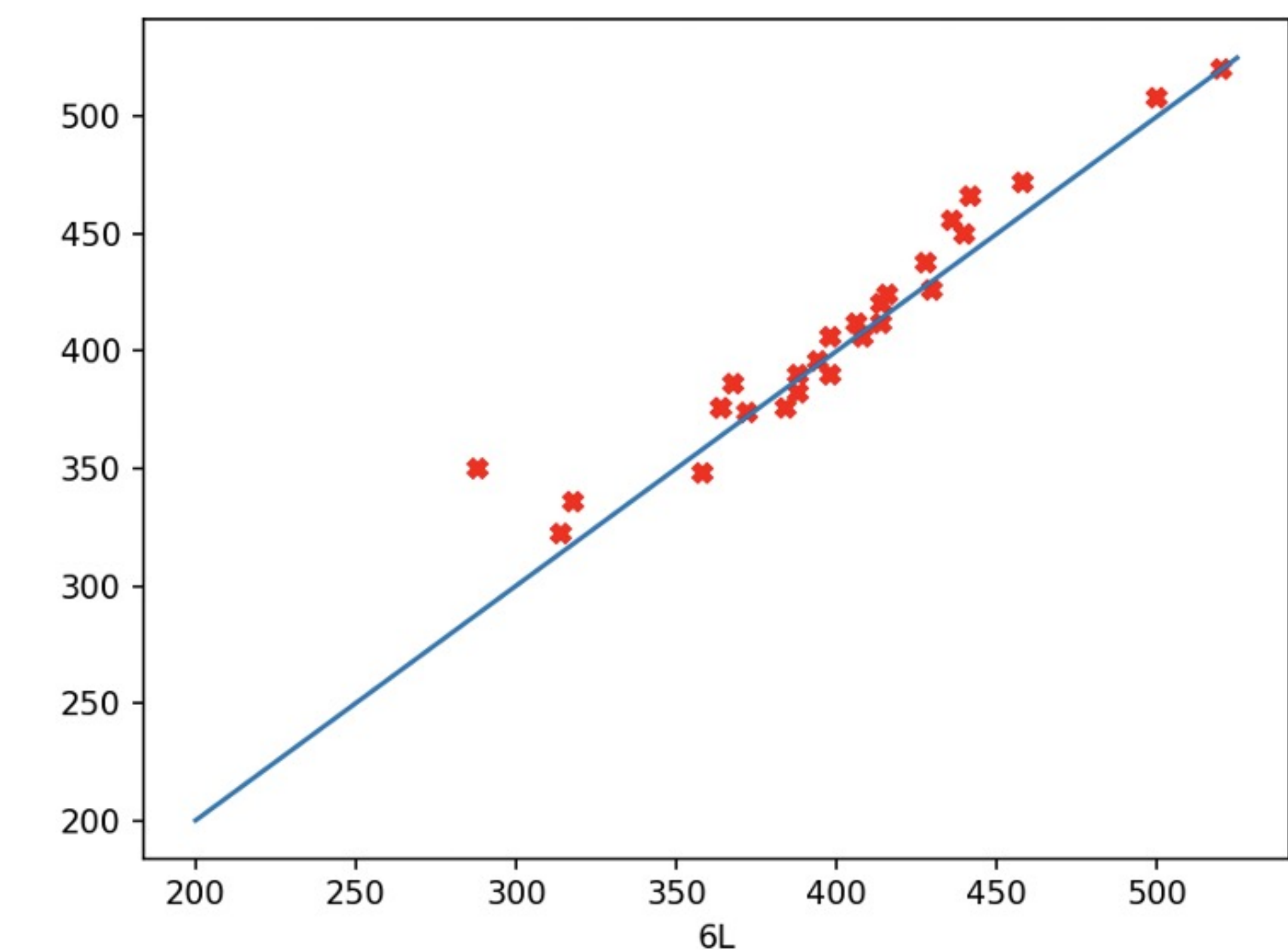
Median Beat Standard 12 Lead ECG



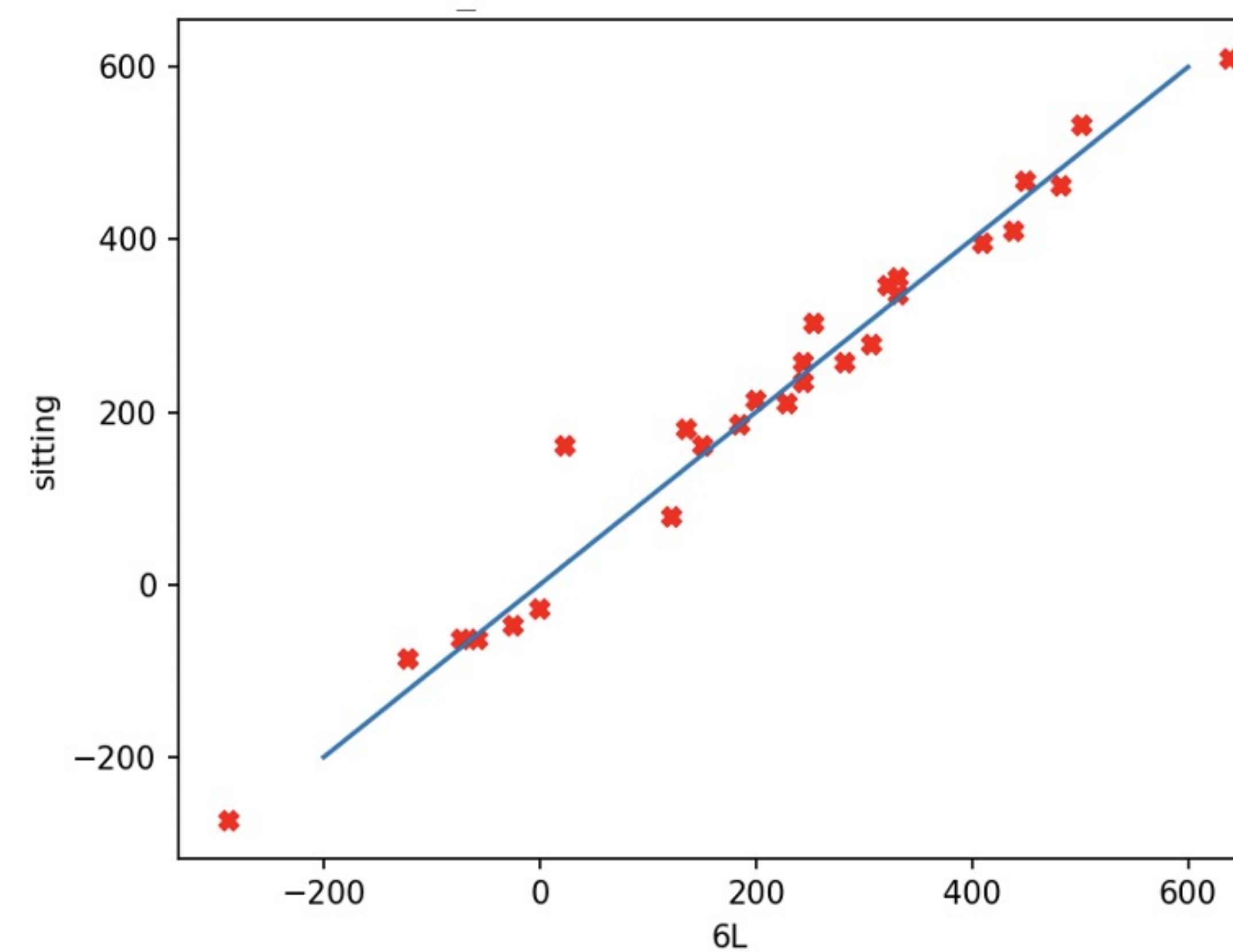
R wave amplitude



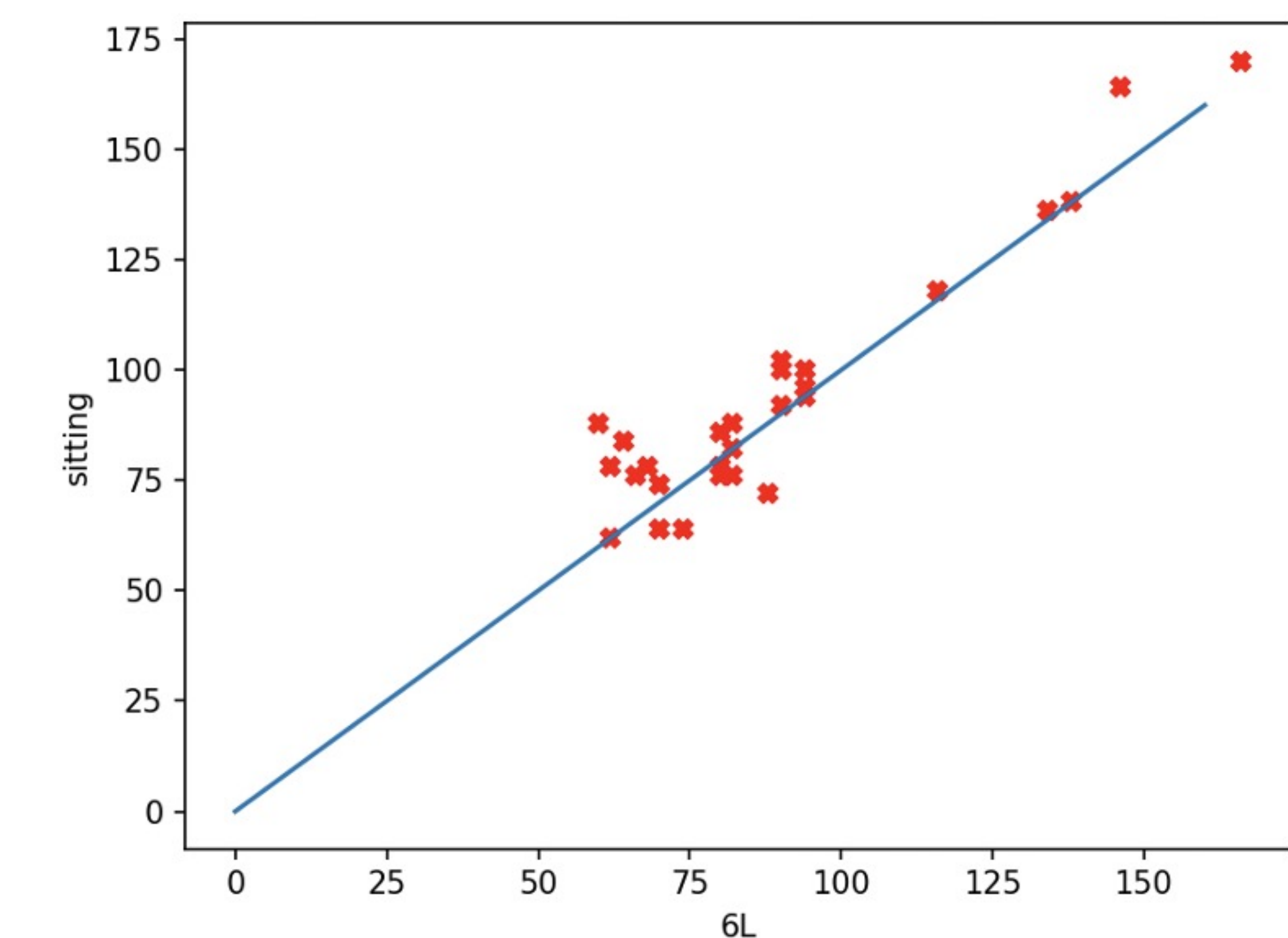
QT duration



T wave amplitude



QRS duration



Conclusion

The 6L Kardia device allows for accurate ECG measurements in ambulatory patients. This illustrates implications for the diagnosis of cardiac diseases, including left ventricular hypertrophy, in both clinical and nonclinical settings.