

Contents

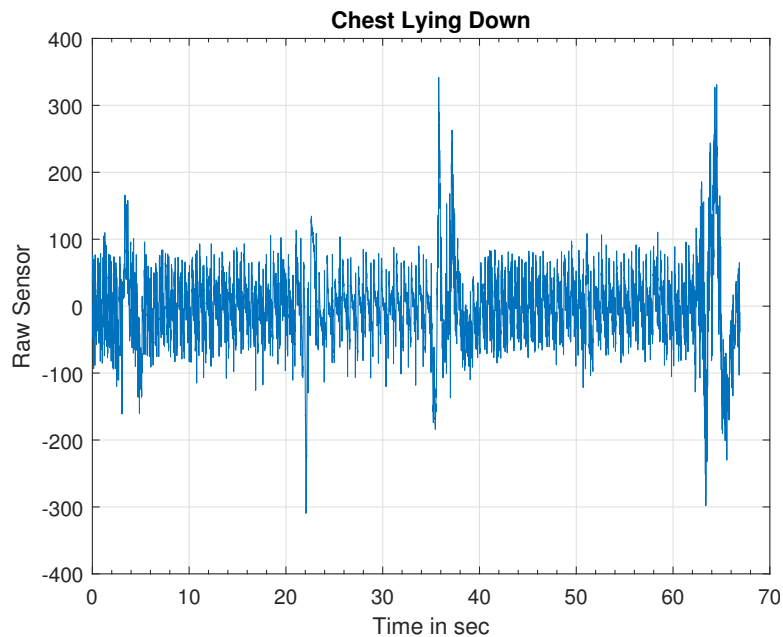
- Experiment 01: Plot Raw Data vs Time
- 01 Questions and Answers
- Experiment 02: Plot Raw Data vs Time
- Experiment 02: Plot LowPass Filtered Data vs Time
- 02 Questions and Answers

Experiment 01: Plot Raw Data vs Time

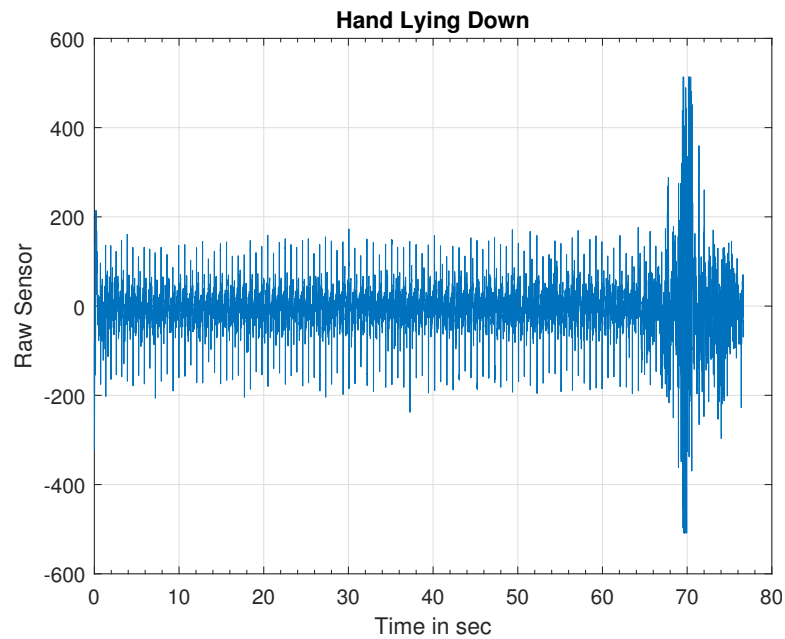
Chest Lying Down Heart Rate: 72

Hand Lying Down Heart Rate: 62

The previous heartrates were calculated by using the ismax function and plotting the R wave from the depolarization of the heart beating. This was fine tuned until a reasonable accounting of the heart beat could be used.



```
ismax = islocalmax(rawData(k).ecg,'MinProminence',35);  
maxIndices = find(ismax);  
msPerBeat = mean(diff(maxIndices));  
heartRate = 60*(100/msPerBeat);
```



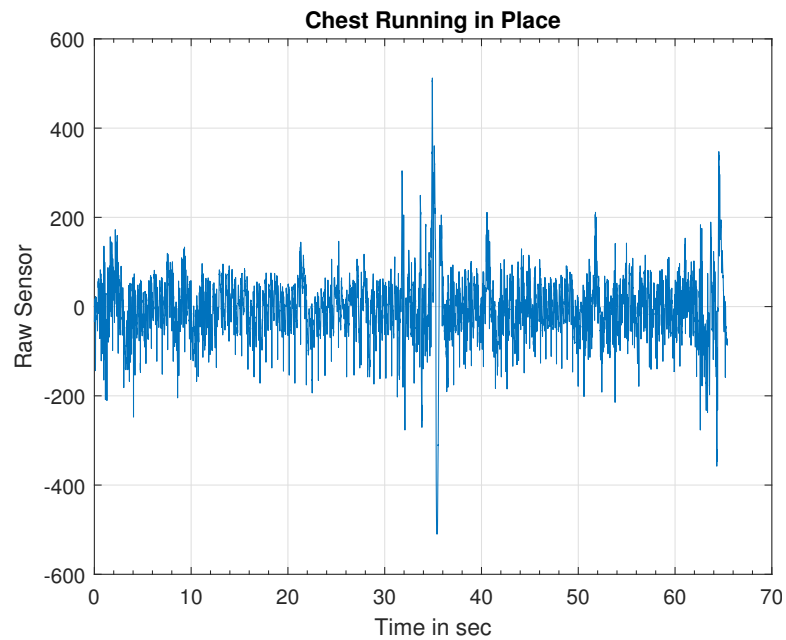
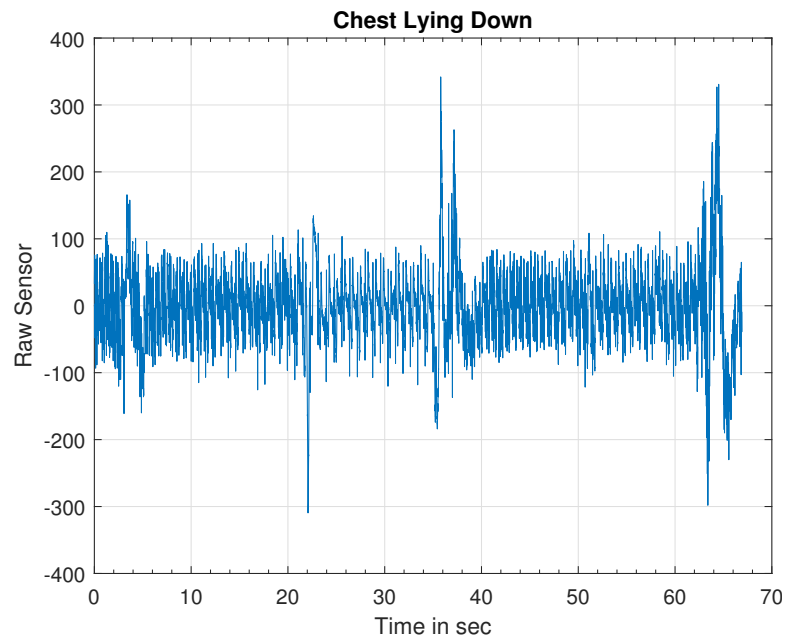
```
ismax = islocalmax(rawData(k).ecg,'MinProminence',65);
maxIndices = find(ismax);
msPerBeat = mean(diff(maxIndices));
heartRate = 60*(100/msPerBeat);
```

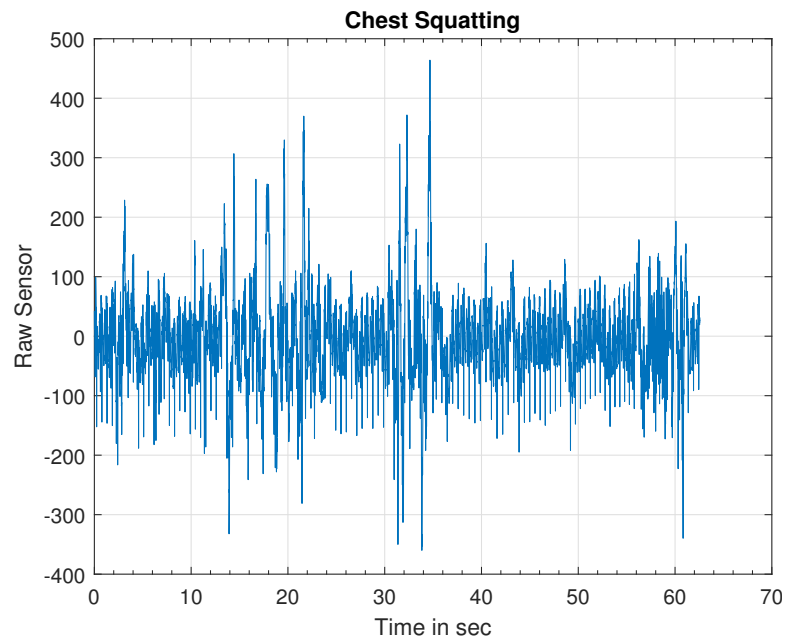
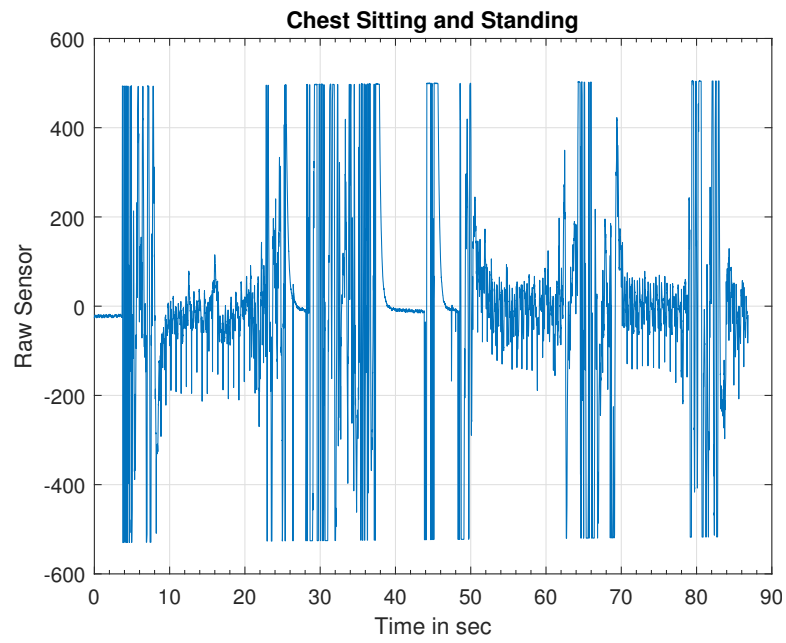
01 Questions and Answers

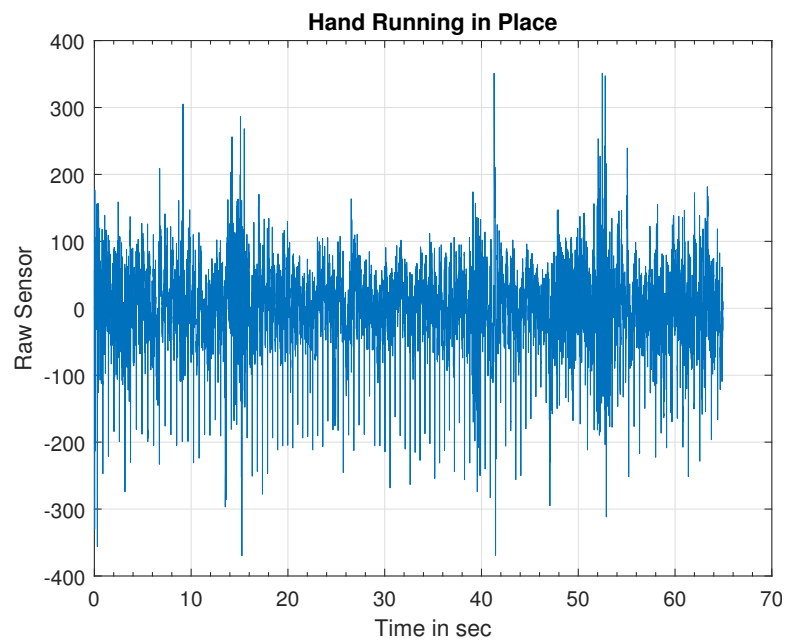
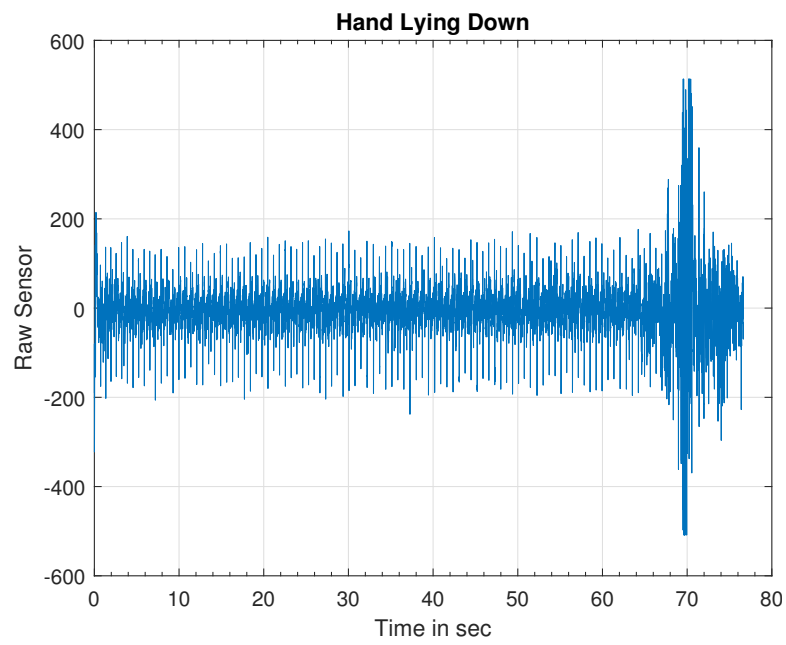
Was there variability between the beats? Would you expect the interval between beats to be identical? Why or why not?

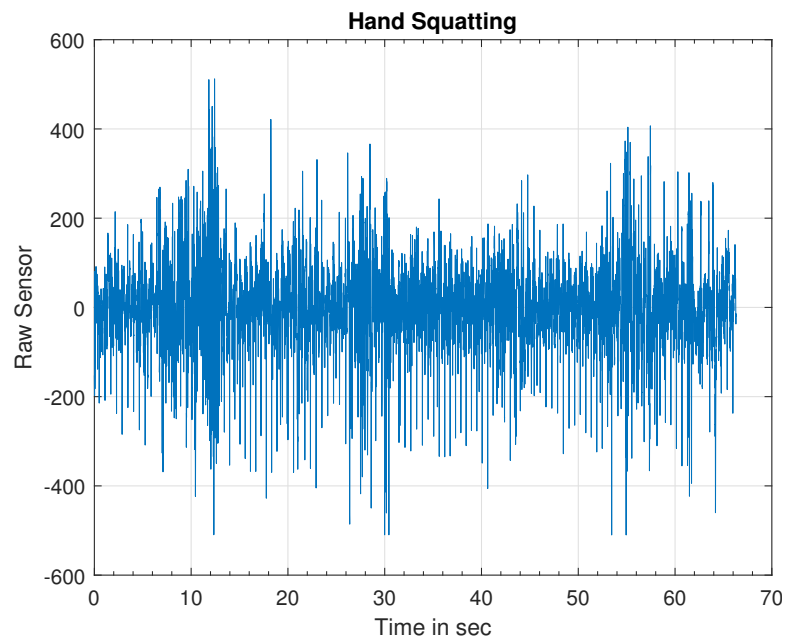
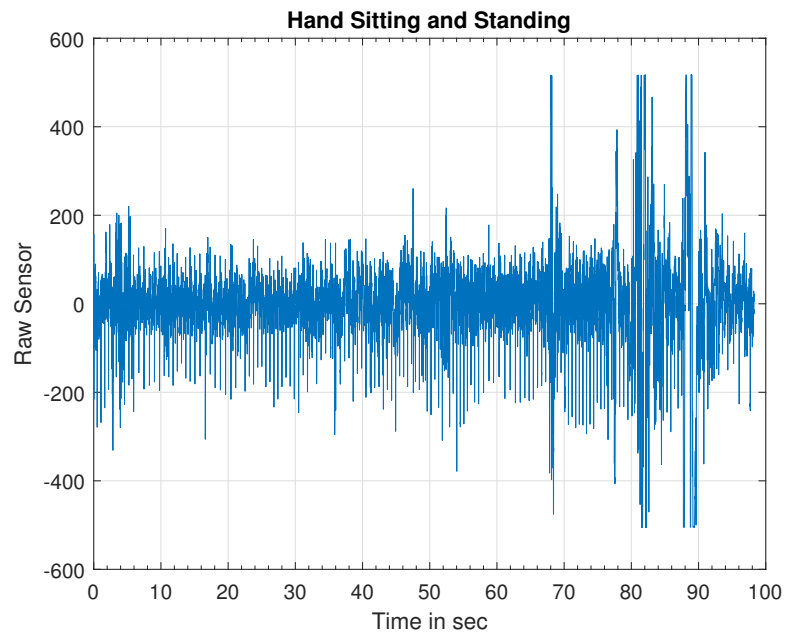
There was variability between the beats. This makes sense as the distance from the heart was different. I would expect the variability between beats to be extremely close however. Assuming a healthy blood vessel system, then I couldn't imagine any issues with the

Experiment 02: Plot Raw Data vs Time

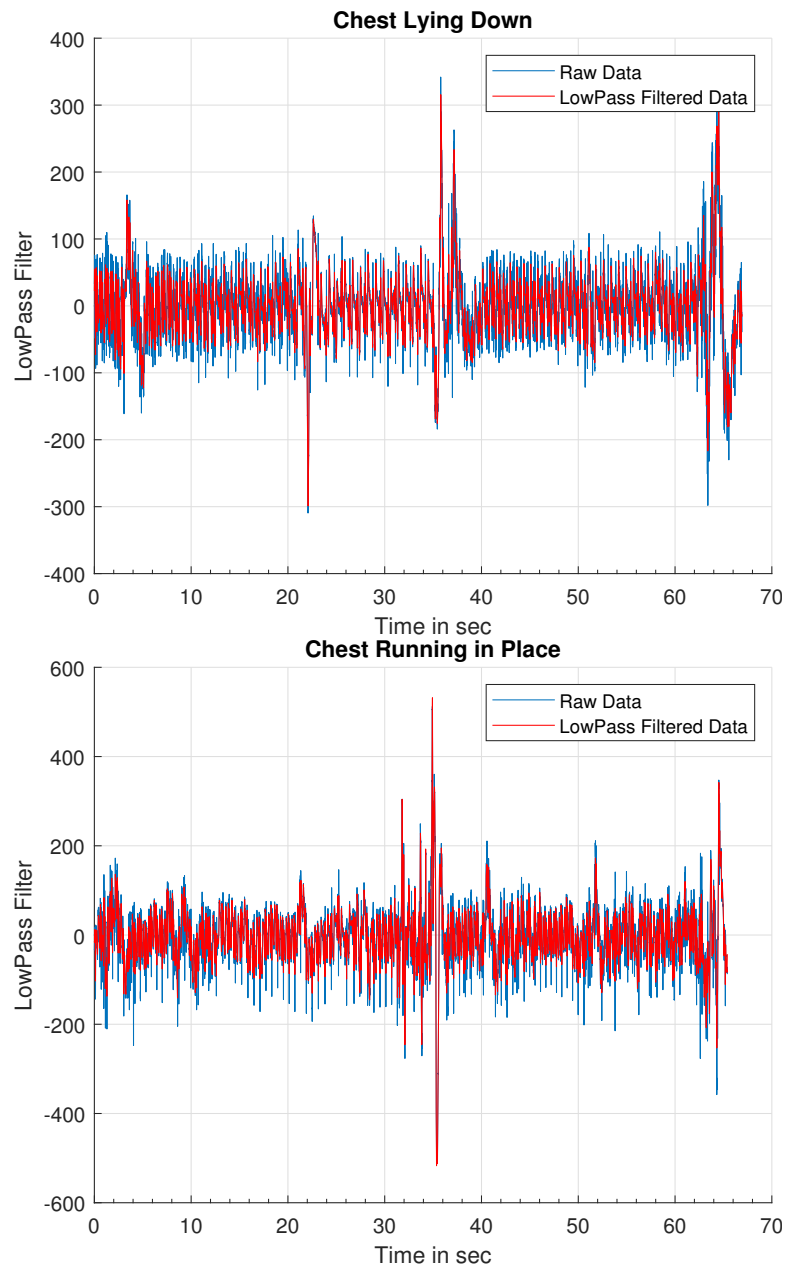


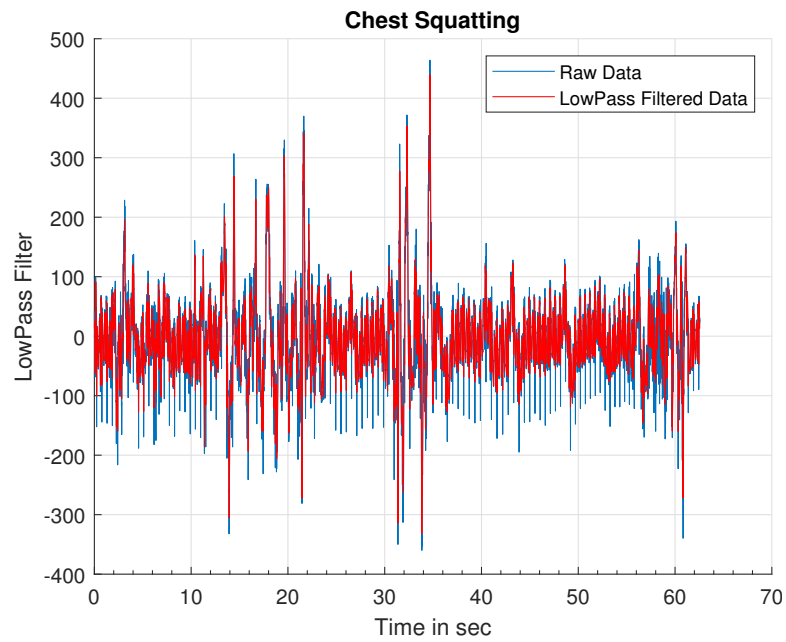
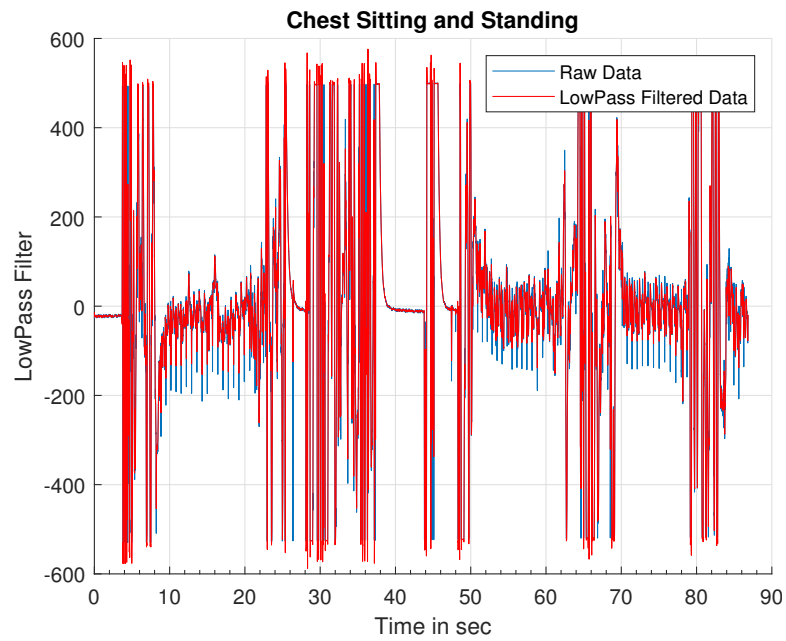


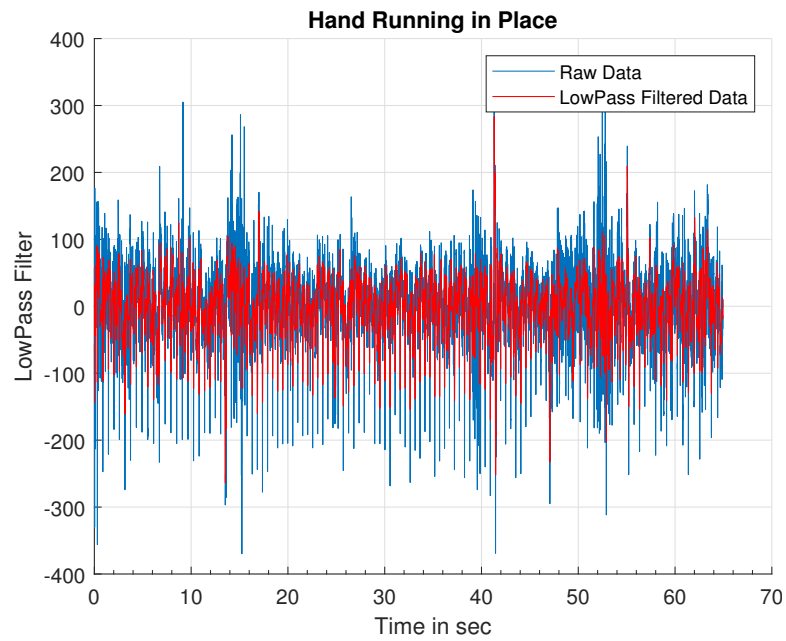
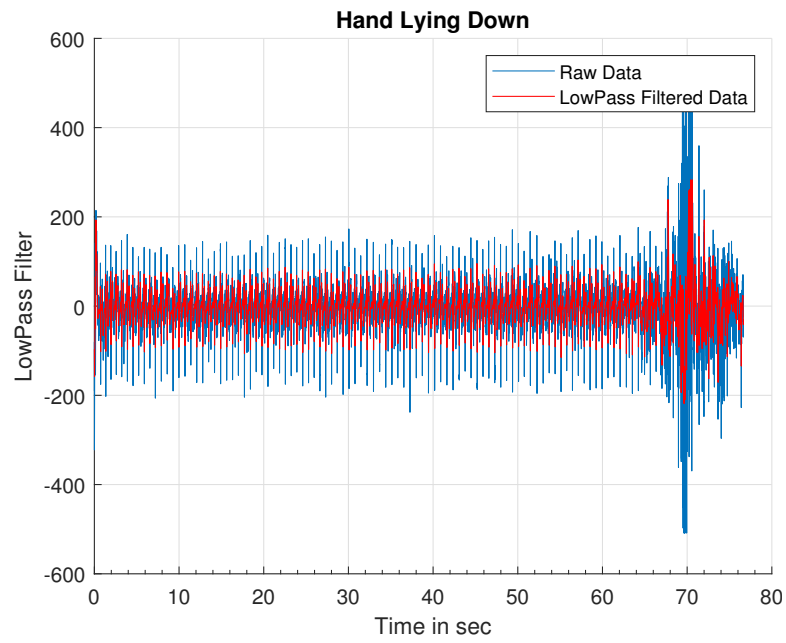


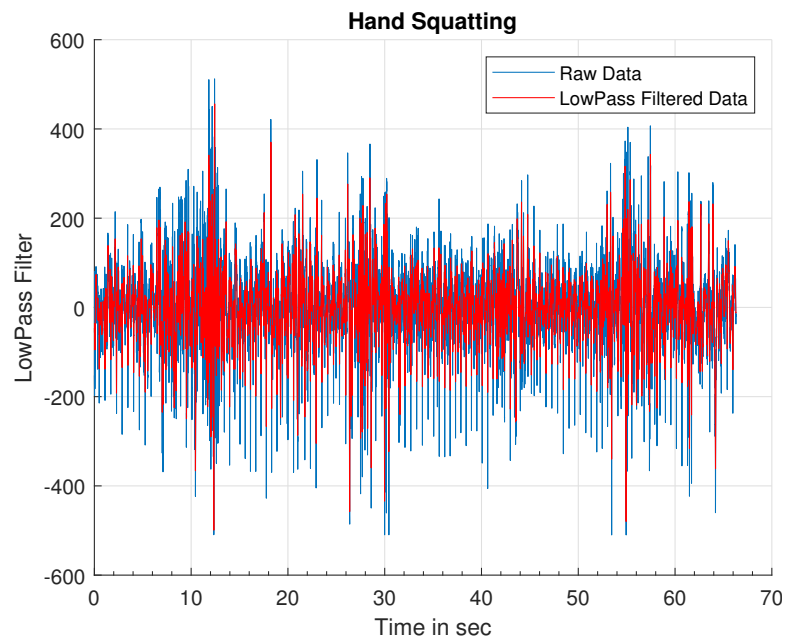
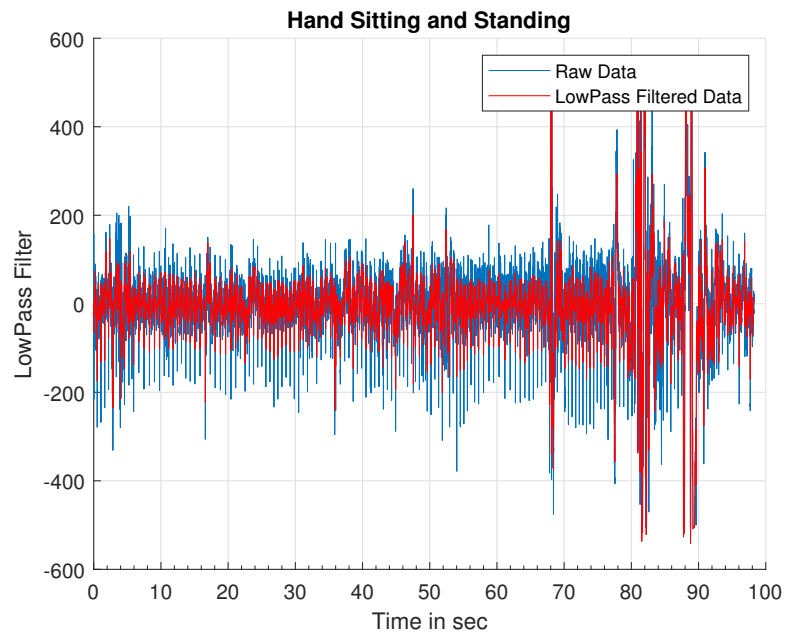


Experiment 02: Plot LowPass Filtered Data vs Time









02 Questions and Answers

What physiological advantage is there in a slower resting heart rate?

A slower resting heart rate means your heart is more efficient at pumping oxygenated blood around your body. Since it is stronger, it pumps less often, causing less wear on the heart over the lifetime of the person. Also it likely means that the heart can recover from high periods of activity faster, returning to a lower rate and easing the workload much faster than a not as healthy heart.