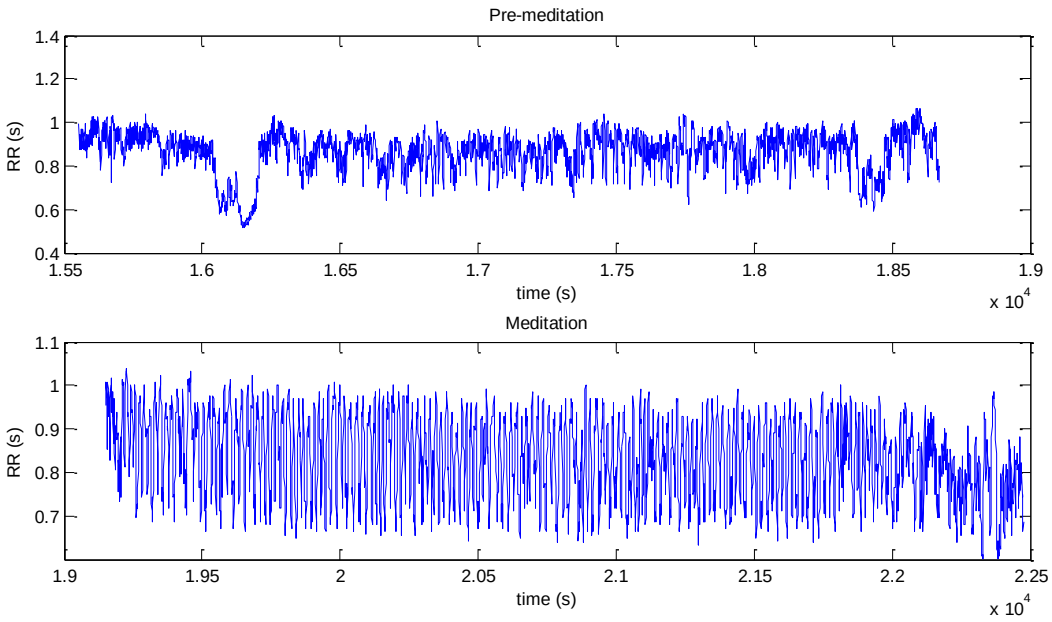
Solutions Lec 8

1.

See the matlab file Lec8.m.

a.

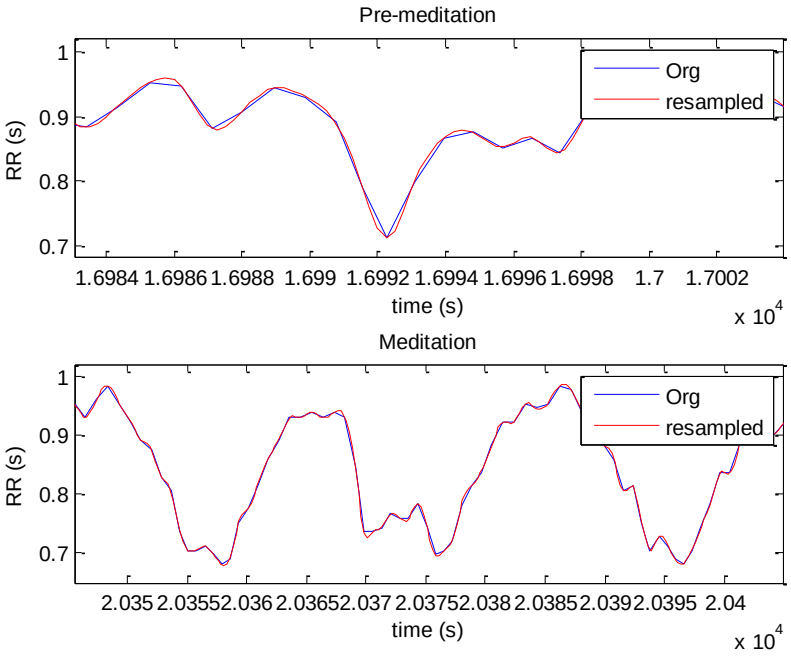


b.

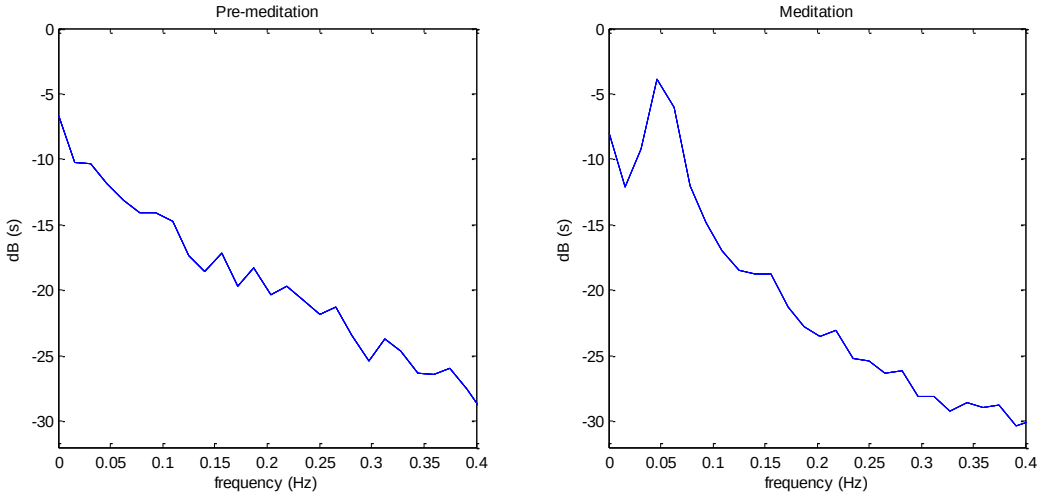
The case about WSS is difficult to prove so we have to rely on assumption. Generally I will assume WSS when the subject is in rest and when the subject is meditating. If we look on the Pre-meditation Tachogram we can see non-stationary in the beginning (15500 to 16500 s) and end of the signal (18400 to 18700). Therefor we can't assume that the whole Pre-meditation Tachogram is stationary, but if we cutout the signal from 16500s to 18400s we assume stationarity. The meditation Tachogram is close to stationary before 22000 s.

c. we cannot assume Ergodicity since the signals are not WSS. If we cutout the signals so we assume stationary we might argue that the heart rate variation in one realization is representing the general process and therefore we might assume Ergodicity.

D



f.



As seen dose meditation increase the energy in the LF band around 0.06 Hz.

g.

The results is depended on if the signals was cutout.

Power ratio premediation =2.4616

Power ratio mediation = 14.4762

Which shows that meditation increases the Parasympathetic activity. Obs this was only one sample.