CHAPTER-7

7.1. CONCLUSION

The comparative study of the PPG signal captured during normal breathing and deep breathing clearly shows that deep breathing strengthens both the low frequency rhythm or the relaxation rhythm and the respiratory component. Though the source of this low frequency rhythm is clearly speculative, leaning on the phenomenon of resonation, correctly this rhythm could a result of resonation between the already present rhythm (around 0.12 Hz) and the frequency component that may result from the mixing of the operating frequency of the heart and the lungs. A second possible mechanism would involve the coupling between the already present low frequency rhythm and the blood volumetric changes.

It is also noted that deep breathing leads to increased coupling between the operation of heart and the lungs that will lead to optimum exchange of gases which if very important for maintaining vital status. The control centers for the cardiac and respiratory control located close to each other in the brain. This increased coupling may be attributed to the stimulation of this control center in the brain through the stimulation of the ethmoidal nerve by air touching the upper chamber of the nose during deep breathing.

This analysis believe that practicing deep breathing will improve physical and mental relaxation and in turn improve human well-being and correct various respiratory problems. Besides alternate deep breathing through the two nasal canals, as prescribed by pranayama can lead to the
correction of the various asymmetrical problems pertaining to the human brain.

This analysis believes that the Optical sensor (PPG) is an alternate sensor in Non-invasive Technique which is used as combination analysis of ECG and Respiration signal. So, this research strongly believe from the acquired correlative analysis optical sensor can replace the other conventional methods. Due to this low cost equipments for diagnoses and treatment can develop based on this analysis.

7.2. FUTURE WORK OF THIS RESEARCH

- Different types of Power Spectrum Estimation Techniques models (AR model, MA model, ARMA model and etc.) can be used and can be compared the performance of various Power Spectrum Estimation model.
- Different methods of signal analysis can be used for the information extraction like Wavelet Analysis for better decomposed signal Power Estimation.
- Correlation analysis may be done with other Biosignal with PPG signal. Because, this PPG sensor can used at the time of measuring other Biosignal like EEG and MRI.
- This method of research can be employed to the different condition of situation like sleeping, reading, singing, watching TV and etc. and also can be use different types of mood of subjects like anger, sad, happy and etc. involved with some other activity
- And so on. - Future work can be up to any levels.