5.1 Strengths of our Study:

This is the first study to recruit native Indians and investigate the effect of exercise training on hsCRP. The biggest strength of this study is, it is a rigorously controlled, outcome assessor blind trial. Computer generated sequence and SNOSE method of allocation concealment ensures that selection and detection bias is eliminated. By using the intention to treat principle for dealing with loss to follow-up, we have eliminated the attrition bias too. All outcome measures mentioned in the study proposal are reported and this can be tracked in the clinical trial registry of India (CTRI/2009/091/001005). This eliminates the bias of selective reporting.

The other strength of this trial is, the participants were administered a supervised exercise intensity with continuous monitoring of the heart rate. Heart rate was monitored every week to ensure that the participants were in the designated training zone. This improves the reproducibility of the results in a similar population.

The eligibility criteria that we set to assess the candidacy of participants were quite comprehensive to include only those who have chronically elevated hsCRP. All other confounding factors which could influence the concentration were checked before enrolling the participants in the trial.

Immuno-turbidimetry, the method used to measure hsCRP in this trial is a very robust technique that provides accurate and reliable results. The concentration of hsCRP measured by this method has excellent reproducibility.
5.2 Limitations of our Study:

The results of this trial are applicable only to people similar to sample recruited for this trial. As comorbidities and medications consumed could influence the outcome of exercise training.

When the research question was conceived we did not realize the importance of weight loss on changes in hsCRP concentration. It is only recently recognized that weight loss is necessary to expect reduction in hsCRP. Caloric expenditure from exercise training was below the recommended guidelines for weight loss.

No behavioral strategies were adopted to improve exercise adherence.
5.3 Conclusion:

Short term aerobic training (eight weeks) at moderate and high intensity has a role in reducing subclinical inflammation as measured by a clinically significant change in hsCRP. This finding is statistically supported only after removing the outliers in the data. However, there is no convincing evidence for dose response relationship between exercise intensity and hsCRP.

The threshold exercise intensity for reducing hsCRP is 60 – 70% HRR. The optimal intensity for reducing hsCRP could not be commented with certainty as the loss to follow up in the high intensity group was substantially high when compared to other exercise groups.

BMI and fat percentage were found to have a direct relationship with hsCRP. Median concentration of hsCRP was found to higher at BMI. BMI was found to have the capability to independently predict hsCRP by explaining about 18% variance in hsCRP.

Baseline concentration of hsCRP was found to be very high in these young Indian participants. Fat percentage and waist circumference were also found to be high and this was independent of BMI. Aerobic capacity was also found to be low as compared to age matched norms.
5.4 What this study adds:

Exercise training has the potential to reduce hsCRP only with intensity of exercise at or above 60% HRR. This reduction in hsCRP translates to reduced subclinical inflammation and lowered risk of CHD in young healthy individuals.

5.5 Notable Observations and Scope for Future Research:

- We observed high levels of hsCRP (mean = 3.39 mg/L) overall in our participants. This concentration is higher than what is reported by a few cross sectional studies recruiting Indians. It is interesting to note that this high concentration of hsCRP was present in the absence of other established risk factors like diabetes, hypertension, dyslipidemia and smoking.

- It would be clinically very important to investigate the magnitude of subclinical inflammation in these individuals when they become older adults and contract other risk factors of CHD.

- Older adults with and without comorbid illness can be recruited for a similar study as the influence of age on exercise induced changes in hsCRP is not known.

- Effects of long term exercise training and the influence of habitual exercises on sub-clinical inflammation could be performed.
• Combined influence of exercise training and statin therapy on hsCRP can be investigated to determine if the additive effects reduces the risk for CHD to a greater extent.

• Additive effects of resistance training and aerobic training can be investigated as the recent trials have reported positive outcomes with this intervention.

• Dietary strategies along with exercise training, directed to induce weight loss by creating a negative energy balance could be investigated, as emerging evidence suggest greater reduction in hsCRP with this approach.