Chapter -V
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Sickle cell trait, the condition characterized by the presence of HbAS, was witnessed in approximately 10.9% (109) out of 1000 samples of the present study. In India, most of the individuals affected are unaware of their status.

In the present study pulmonary (cardio-respiratory) variables, such as Heat Rate (HR), Respiratory Rate (RR), peak expiratory flow rate (PEFR), Hemoglobin (Hb), 12 – minute Run and Walk, VO\textsubscript{2max}, and Body Composition variables such as Body Fat Percentage, Absolute Body Fat Mass, Essential & Non Essential Fat Mass, Lean Body mass etc. were calculated with Anthropology Measurement viz Weight, Height, Sitting Height, Length of Upper Extremity, Biceps, Calf Girth, Thigh Girth were examined.

The result of the study documented no difference between sports persons SCT and control group in most of the Body composition variables measured. In case of pulmonary ie cardiopulmonary variable it was interesting to know that Peak flow rate, was significantly lower in all SCT group under study. In contrast the hemoglobin content was found to be higher in Sports person with SCT in pooled data of male and female and also in as compare to control.
In line with the result of the present study Kramer et.al., (1978) and Eichner,(1986) reported that individuals with SCT have no deficiencies in growth or development, no risk for cerebrovascular accident, no evidence of low physical performance or higher risk for perioperative complication, and have normal life expectancy.

In spite of lower pulmonary volume of PEFR , sportsperson with SCT have shown significantly higher performances in 12 minute run and walk test, SCT groups score was in good performance category whereas control group fell in average category. This result clearly indicates indicates better cardio-respiratory efficiency of sports person with SCT. This part of result must be given cognizance, and it should be realized that participation in physical activities is of vital importance for persons with SCT. Digs (1984) demonstrated Haemoglobinopathy concerned with risk factor during physical activities, with sickle cell formation compromising O₂ delivery particularly in extreme conditions for example strenuous exercise carried out at an altitude, that pursue a low level of O₂ and severe lactic acidosis in the arterial blood. Predominantly, however, clinical symptoms are moderate or absent (Alpert et.al. 1982) and several studies failed to confirm that SCT is a risk factor or even a disadvantage for sports activities (Gallais et.al, 1987; Boutros, 1980). Chirico et.al.(2012) have reported improved oxidative stress and nitric oxide response is improved in exercise trained SCT subjects, and suggested that physical activity could be a viable method of controlling the oxidative stress,
which could have a beneficial effect because its involvement in endothelial
dysfunction and subsequent vascular impairment in hemoglobin S carriers.
Martineaud et al (2002) also supported the concept of positive effect of exercise
for individual with SCT, they reported no difference in the performance
capabilities of well trained subjects with SCT and those without it. SCT
subjects had no effect on the subject’s performance during exhausting exercise,
at least when its duration did not exceed half an hour. In conclusion, the result of
their study suggests that certain adaptation processes developed by regular
participation in training may operate in sportsmen SCT during high-intensity exercise.
Further Aufradet et al (2010) in a study concluded that physically active life style in
SCT carriers may decrease endothelial activation and may limit the risk of vascular
adhesion events in the microcirculation of SCT subjects. Similarly Messonnier et al
(2013) reported moderate sub-maximal exercise is not unsafe from biochemical point
of view for sportsman with SCT.

Controversial results in many research could be explained by the facts
that the group of subjects studied was non-homogeneous, that there were
differences in Hb and HbS levels among the SCT subjects.

Furthermore, Cozal et.al. (1992) suggested that SCT could affect
exercise performance as well as recovery which results in disadvantage to
certain competitive athletes. On the contrary, no medical complications were
reported with Hb AS subjects in many supervised sporting events in athletes, it
was especially seen during the Mexico-City Olympic Games (Green et.al.
1971).
We can state that subjects with SCT may participate in sports competitions similarly to subjects with normal Hb AA. Therefore, the persons with SCT should be encouraged for usual physical activities and competitions, eventual successes or failures will depend all other factors which are true for apparently healthy persons also. There are still scope to understand various aspects of effect of training in person with SCT, for which continuous research is needed in this area.