Summary and Conclusion

With the development of the civilization, the importance of being physically fit and having a good physique began to be appreciated by all and sundry. Present day society has become more concerned about being physically fit, so as to remain healthy along with having a slim, trim and athletic figure. Various studies have proved beyond doubt that physical fitness in individuals depends on routine physical work out done on a regular basis. This can be performed individually, or in a group. The importance of group activity has been appreciated all over the world. Many youth organizations engage in regular physical work out as part of their schedule. Scouts and Guides is one of the pioneer institutions all over the world which entails to produce self reliant physically fit individuals who can work for the betterment of society. But, till date, little, or no scientific study has been done to find out, whether these training schedules are appropriately formulated for the improvement of the physical, as well as, the physiological status of the young boys and girls of Bharat Scouts and Guides, i.e., whether these training schedule is really beneficial or not, for the growing boys and girls.

This study aims to assess whether regular exercise schedule of playful type, as done by the scouts and guides, is beneficial for growth and development of young boys and girls in comparison to their sedentary counterparts. The study was conducted to observe the beneficial effect, if any, of organized physical exercise, like scouts and guides, on the physical and physiological conditions and compare them with exercise induced and sedentary counter parts. This study was also aimed to evaluate the
physical, as well as, physiological status of the growing boys and girls, and also to evaluate the energy intake and the physical efficiency level, by studying their nutritional status and physical performance.

For this study, healthy, Indian boys and girls of age 13-15 years, free from any disease or history of cardio respiratory and hormonal abnormalities, limb injuries or any sorts of sustained illness and taking no medicine for sustained period, and also taking no medicine affecting muscle or bone growth, as well as, physical efficiency were included in the study from the populace of Staff Colony of Eastern Railway Workshop, Kanchrapara, Nadia, West Bengal, India. Besides, a group of Scouts and Guides, from Bharat Scouts & Guides, Eastern Railway State, Kanchrapara, Nadia, West Bengal, India, were also included in the study. The volunteers were divided into 3 (three) major groups –

1) Sedentary Control (without imposing any exercise schedule).

2) Scouts & Guides doing their scheduled work out regularly for last 5 years and

3) Sedentary Experimental Groups (on whom the exercise protocol of Scouts and Guides were imposed).

The Sedentary Experimental Group was subjected to the same exercise protocol as that of the Scouts and Guides. The Scouts and Guides continued with the same protocol for the entire study period. This procedure was followed for six months for evaluating the effect of organized regular physical exercise imposed on the initially unorganised experimental group in comparison to their sedentary counter parts.
Results which were shown here as line graphs (Fig. 7.1) revealed that weight gains for Control Sedentary Boys and the Scouts are not significant. The weight gain for the group Sedentary Experimental Boys is 2.78, which is statistically significant. Same feature was observed in the cases of Body Surface Area (BSA) and Body Mass Index (BMI) (Fig. 7.1), out of which the increase in BMI in the sedentary experimental boys groups is statistically significant. The same fact has been observed in %fat, LBM & FM. It has also been observed that, a strong correlation is present between the BSA & BMI in the control Sedentary Boys and Scouts. This correlation in the Sedentary Experimental Boys is weak. Energy Intake and Weight has a very strong correlation in the Sedentary Experimental Boys and in Scouts. There is a weak correlation between these parameters in the Control Sedentary Boys group.
When we consider the physiological parameters, like Haemoglobin (Hb), we can observe a non-significant increase in all the groups of boys, excepting in the Scouts where the increase is statistically significant. Haemoglobin does not have any good correlation with any of the body composition parameters or cardiovascular parameters or physical fitness index. The control groups, as well as, the Scouts, had shown an increase in Physical Fitness Index which were non-significant. But when we consider the sedentary experimental boys, we have observed a significant increase in their PFI scores (Fig. 7.3). The increase in physical fitness index in the sedentary experimental boys is 2.73% which is statistically significant. It has also been seen that, in Sedentary Experimental Boys, PFI has a very strong correlation with LBM, HR_{Rest} and Energy Intake.

The intake of nutrient, and as a result the total energy intake, is also increased in almost all the groups. But the increase in nutrient and energy intake is significant in
the sedentary experimental boys, where the exercise has been induced during the course of the study. The increase in energy intake in the sedentary experimental boys is 8.02%. The energy intake has very strong correlation with weight, in Sedentary Experimental Boys and in Scouts. It has got a very strong correlation with LBM in Sedentary Experimental Boys and Control Sedentary Boys. When we compare the cardiovascular parameters of all the groups, we found a very assuring result. In case of some groups the HR_{rest} & Blood Pressure, both were decreased, though the change is not statistically significant.
Results which were shown here as line graphs (Fig. 7.2) revealed that weight gains for Control Sedentary Girls and the Guides are not significant. The weight gain for the group Sedentary Experimental Girls is 2.17%, which is statistically significant. Same feature was observed in the cases of Body Surface Area (BSA) and Body Mass Index (BMI) (Fig. 7.2). In case of Sedentary Experimental girls, the decrease in %fat and FM is significant; whereas, the increase in LBM & FFM is also statistically significant. It has also been observed that, a strong correlation is present between the BSA & BMI in the control Sedentary Girls and Guides. The correlation between the same parameters in the Sedentary Experimental Girls is not so strong. Energy Intake and Weight has a very strong correlation in the Sedentary Experimental Girls and in Guides. The correlation between these parameters is weak in the Control Sedentary Girls group.
In case of the three groups of girls, when we consider the physiological parameters, like Haemoglobin (Hb), we can observe a non-significant increase in all three groups. Haemoglobin has weak correlation with the body composition parameters, cardiovascular parameters, and also with physical fitness index. The control groups, as well as, the Guides, had shown an increase in Physical Fitness Index which were non-significant. But when we consider the sedentary experimental girls, we have observed a significant increase in their PFI scores (Fig. 7.4). The increase in physical fitness index in the sedentary experimental girls is 31.29%, which is statistically significant. The correlation between PFI is weak when considered with of the physical, physiological, cardiovascular parameters and also with PFI.

As in the case of the boys, in the girls, the intake of nutrient, and as a result the total energy intake, is also increased in almost all the groups. But the increase in nutrient
and energy intake is significant, similarly, only in the sedentary experimental girls, where the exercise has been induced during the course of the study. The increase in energy intake in the sedentary experimental girls is 11.59%. The energy intake has very strong correlation with weight, in Sedentary Experimental Girls and Guides. It has got a very strong correlation with LBM in Sedentary Experimental Girls. When we compare the cardiovascular parameters of all the groups, we found a very assuring result. In case of some groups the HR_{rest} & Blood Pressure, both were decreased, though the change is not statistically significant.

From the study, we have seen that, both boys and girls of growing ages have been benefitted from regular bouts of organized systematic exercise. But, if we compare between the boys and girls, from percentage changes in different parameters, it is evident that, the changes in girls are more pronounced. This is probably because, in our Indian Society, the boys are more privileged than the girls, in terms of food supplementation, scope of regular exercising, etc. This kind of study has compelled to support the girls with almost similar kind of nutrition and same scope of exercising.

From this study, we can conclude that the habit of doing regular physical exercise is much more beneficial in modulating the body composition and various other physiological parameters in any individual which is not achievable by doing intermittent exercise. The induction of regular bouts of exercise is also beneficial to improve one’s physical efficiency level. Along with regular exercise, concurrent
support of nutrition helps in the growth and development of young boys and girls to a great extent.

This study also shows that, regular exercise bouts, even of playful type, like the exercise schedule of that of the Scouts and Guides, help to facilitate physical growth and development of young individuals of growing age. Moreover, it is also shown in this study that, induction of regular exercises, even of playful type, can also bring about an improvement in the intake of food and nutrients due to aggravated demand for the same in the body of the exercising individual, which again is beneficial for growth and development. It can also be said that, given a chance, the girls can equal the boys, in rate of growth and development.