Chapter 7

Conclusion
The past empirical evidence has lent support to the view that psychophysiological recordings may even provide insight into the skill related aspects of a shooter's psychomotor strategies and determinants of successful shooting performance. Studies examined whether sports capacity or performance of the shooters is related to the alteration in scaling exponents derived from short-term heart rate variability by relaxation trainings. The result further demonstrates that elite athletes have the ability to better control their heart beats positively, which contributes to a desirable score in the game, (Jian et al., 2008). Therefore, our focus in this study was on the alteration in stress behavior of short inter beat interval time series for professional shooting athletes during relaxation therapies by applying music and meditation technique, which reflects the underlying control mechanism of the ANS on the heart beats in such a unique situation. Therefore, professional shooting athletes may have been developing a better autonomic cardiac control due to intensive training and games.

In the present study, we used Meditation and Music interventions as relaxation therapies on pre-competition stress. Mindfulness meditation which is a common meditation practice that does not require any special and long training, as only sustained attention and breath control are needed and Darbari ragas based songs for music therapy. We analyzed changes in neuroendocrine parameters, endocrine parameter such as salivary cortisol and autonomic nervous activity using heart rate variability (HRV) as an index in both time and frequency domains.

Results of this study showed positive correlation in all three groups (i.e. music and meditation alone and combination group) than controlled groups. It has shown improvement in dependent variables such as decrease salivary cortisol, and increase in Heart Rate Variability and Performance score of individual shooter.
Results proved that the combination group has significantly improved as compared to individual interventions in experimental groups. It is also shown that comparatively music is better than meditation alone group in one month duration training. As previous studies the long term training may enhance the further in each group. It is suggested that the intensity of improvement and follow-up effect shall be analyzed and compared in long duration interventional training i.e. more than a month.

To our knowledge, the HRV and salivary cortisol has been little evaluated in young athletes and, in such conditions of pre-competitive stress and post relaxation therapies. This work was made possible to find out the changes on the neuroendocrine (ANS and HPA axis) activity during intervention, or changes induced in pre-competition stress. Although short-term activations of the HPA axis are adaptive and necessary for everyday functioning, extreme, frequent or chronic activation of this system are associated with negative health outcomes. Existing research has implicated the HPA axis in the development of a variety of sub-clinical and clinical conditions including metabolic syndrome (Brunner et al., 2002), depression (Belmaker and Agam, 2008), risk for cardiovascular disease (Smith et al., 2005) and cognitive decline (Seeman et al., 1997).