Acknowledgement

I had the privilege of being guided by a dedicated teacher who not only provided the beacon, but also supported with immense encouragement during crisis. His enthusiasm and deep love for the subject, has been a source of inspiration to me. I sincerely thank my respected teacher and supervisor, Professor (Dr.) Subrata Pal, Emeritus Professor, Founder-Director of School of Bioscience & Engineering, Jadavpur University, Kolkata, who guided me throughout the course of this work and used his good office to introduce me to various institutions to carry out this multidisciplinary work. His moral support and inspiration was continued during holidays and even when he was admitted in Hospital in serious condition in Kolkata.

With great pleasure, I express my deep sense of gratitude to my joint supervisor Dr. Santanu Majumder, Associate Professor, Dept. of Aerospace Engineering & Applied Mechanics, Bengal Engineering and Science University, Shibpur, Howrah, whose enthusiasm, encouragement and thorough correction of this present work made me ambitious. I am thankful to him for his support, valuable guidance, and infectious enthusiasm in conducting and compiling the research report which had made me to survive through many difficult situations.

I offer my sincere thanks to Dr. S.K. Dey, Sr. Scientific officer (Exercise Physiology), Human Performance Laboratory, Netaji Subhas Eastern Center, Calcutta, for his valuable and constructive suggestions and also for extending all possible technical assistance. I also would like to express my appreciation to my teacher Dr. D.N. Tibarewala, Professor & Ex-Director, School of Bioscience & Engineering, Jadavpur University, Kolkata for his assistance and help.

I express my gratefulness to Dr. (Mrs.) Anjana Pal, for her silent inspiration and moral support. In addition I am grateful for her persistent encouragement to take up and complete such an extensive study.

I wish to express my sincere appreciation and gratitude to Dr. Sheba Rani N.D and Dr. Sandip Bag, Dr. Ujjal Bhanu Ghosh, Ex-Doctoral Research Scholars of the School of Bioscience & Engineering, Jadavpur University, Kolkata and Mr. Saibal Mondal of KPC Medical College and Hospital, Jadavpur for encouraging and extending all possible assistance.

With great satisfaction I offer My heart full thanks and express my gratitude to administrative officials, Specially Mr. S. Chowdhury, Ex Director, and Mr. Suresh Harmilapi, Director, SAI, and Mr. Sujoy Guha, Boxing Coach, Kolkata, Mr. Chandan Chandra, Ex. Centre–In–Charge SAI, Siliguri and Mr. Wasim Ahmad, Centre–In–Charge SAI, Siliguri and Medical Officers and to all the coaches of SAI,
Acknowledgement

Kolkata and Siliguri for age verification and for conducting various tests and measurements on the field and of the field and providing great number of subjects.

I will remain great full to Dr. Parijat De, Directorate of Technical Education and Training, Govt. of West Bengal, who allowed me to work.

I extend my sincere gratitude and appreciation to Mr. Subir Sen, Technical Staff, School of BioSc. & Engineering, Jadavpur University, Kolkata, Mr. Sathis Mathues and Mr. Birendra Singh, C.T Technicians, Anandaloke Nursing Home, Siliguri and North Bengal Clinic, Siliguri, West Bengal who direct and indirect ways has contributed in completing the research report.

I am especially thankful to all the staffs of Dept. of BioSc & Engg., J.U., Kol-32 for extending their best possible assistance, India. Mr. Tapas Pal, Section Engineer, N.F. Railway, and coaches of Eastern Railway. Finally, I offer my heartiest thanks to my respected parents (Sri H. Ghosh and Smt. M. Ghosh) and also Sri Uttam Ghosh, Lab Technician, Reliance Laboratory Kanchrapara including Smt. U. Brahma (awardee of Great Achiever of India), Principal, IKG School, Kanchrapara for their immense and unlimited moral support and encouragement which helped me keep up my stamina. I like to pay my tribute to Mr. S.Sarkar, Ex. Military Officer and Govt. Registered Valuer-in the Panel of Govt. of India (awardee of “Best Citizen of India”), Mr. S.K. Das, Assistant Executive Engineer, Brahmaputra Board, Assam for their blessings, encouragement and motivation throughout my thesis.

I would like to express my sincere gratitude to Dr. Subhabrata Sarkar, Sr. Lecturer, R.B.C College, West Bengal, and Dr. Amit Roy Chowdhury, Associate Professor, Dept. of Aerospace Engineering & Applied Mechanics, Bengal Engineering and Science University, Shibpur, Howrah, deserve special mention in this acknowledgement.

I do hereby take this opportunity to express my sincere gratitude to the Mr. Debabrata Ghosh, Ex-HOD, Department of Pharmacy, Siliguri Govt. Polytechnic, Siliguri, his enthusiastic and selfless cooperation was always available to me.

I am also thankful to Mr. Abhijt Ghosh, Senior Drug Inspector, Delhi, Mrs. Rita Das, Advocate, Mrs. Santa Chowdhury, Ex. Army officer and Dr. Monisha Sarkar, Lecurer, Womens’ College, Kolkata for their unbelievable inspiration.
So far I have reconciled and acknowledged all kinds of help received from the academic and institutional front in various ways towards achieving this milestone. Now I would like to acknowledge all those who were not involved academically but still assisted me.

I extend my sincere gratitude and appreciation to all my well wishers and students of Jadavpur University, Jadavpur and Siliguri Govt. Polytechnic, Siliguri, who in directly or indirectly contributed in completing the research work.

If I had to pinpoint two persons, who were instrumental in completing the dissertation, those were my dearest wife Mrs. Sumita Ghosh and loving daughter Souravi, of course with the mighty hand of the omnipotent.

Finally, I offer my heartfelt thanks to them who cheerfully and ungrudgingly took care of themselves during my long hours of absence during the execution of this work.

Though I couldn’t find eulogistic words to express my gratefulness, I shall ever remain grateful to the Almighty God, whose unconditional love and mercies had never failed me, not only during this period but also throughout my life.

Date:                             (Soudip Ghosh)