



**Department of Sports Science & Yoga
Ramakrishna Mission Vivekananda Educational and
Research Institute (RKMVERI), Belur**

**Report of the
APPICON 2022 pre-conference workshop on
Assessing exercise-induced stress on cardio-respiratory &
neuro-cognitive responses**

12 December 2022

Sponsored by -



**68th Annual National Conference of Association of Physiologists
and Pharmacologists of India**

TRANSLATIONAL MEDICINE: FROM MOLECULES TO INDIVIDUAL

Preconference Workshop 18

**Assessing exercise-induced stress on cardio-respiratory & neuro-cognitive
responses**

**JOINTLY ORGANIZED BY
DEPARTMENT OF PHYSIOLOGY & PHARMACOLOGY, GMCH, CHANDIGARH
DEPARTMENT OF PHARMACOLOGY, PGIMER, CHANDIGARH**



Workshop Venue:

**Department of Sports Science and Yoga,
Ramakrishna Mission Vivekananda Educational & Research Institute, Belur Math**

12 DECEMBER 2022



Overview

Motivation, effective training, 360-degree scientific support, nutrition, tactical planning, and other aspects play a role in sporting success. India's performance in the recently concluded Birmingham Commonwealth Games 2022 where India won 61 medals, Tokyo 2020 Summer Olympics where India won 7 medals including one precious gold medal in the Javelin throw, and an incredible 19 medals achievement in Paralympics, signifies India's progress towards a leading country in sports. This is inevitable that this journey could not be possible without sports science support, proper training, and recovery management. To compete and level with the internationally leading countries in the sports arena, it is necessary for Indian support staff, aspiring professionals, and students to develop skills by using the latest technologies and advanced tools to analyze athletes and provide necessary suggestions to improve performance. To cater to this modern era of a scientific approach to sports, the Department of Sports Science and Yoga of Ramakrishna Mission Vivekananda Educational and Research Institute (RKMVERI), Belur Math, West Bengal which is equipped with modern laboratories and classrooms, state-of-the-art conference room, a fully functional fitness centre and huge Yoga halls had organized a pre-conference workshop (PCW) on 'Assessing exercise-induced stress on cardio-respiratory & neuro-cognitive responses' under the aegis of APPICON 2022 on 12th December 2022.

Workshop program details

The workshop started with a brief introduction and orientation to various sports science labs, instruments, and modern methodologies that sports fraternity is using by Dr. Arnab Das, Coordinator of PCW18 and Assistant Professor, Department of Sports Science & Yoga, RKMVERI. After that a cardio-respiratory stress test was conducted on a treadmill using metabolic gas analyzer Cosmed Quark CPET (Germany) and the participants monitored the real-time breath-by-breath cardio-respiratory responses till exhaustion. Changes in the key parameters like the volume of oxygen consumption (VO_2), volume of carbon dioxide production (VCO_2), minute ventilation (VE), respiratory frequency (Rf), substrate utilization parameters and etc. during a graded exercise task were monitored, analyzed and explained. The candidates also monitored the post-exercise recovery responses and learnt how to interpret those data. This part was organized in the ***Exercise physiology & Clinical evaluation laboratory*** at the Department of Sports Science and Yoga, RKMVERI.

The next part of the workshop was on the acquisition of electroencephalographic (EEG) recording in a subject performing a cognitive task and on biofeedback training. Biofeedback training is a new way to monitor and control the subtle changes happening in our

body, and often to improve physical performance and health conditions. This training is very popular nowadays in sports which inculcates the athlete's arousal regulation skill, maintaining focus and staying relaxed throughout the competition. In this part, the candidates saw the changes happening in the brain waves during a task, how to acquire EEG waves, and also monitored a biofeedback training session. This part was organized in the ***Neurophysiology and cognition laboratory*** at the Department of Sports Science and Yoga, RKMVERI. Our HOD Br. Mrinmay Maharaj gave valuable remarks at the end and the workshop came to an end after the lunch.

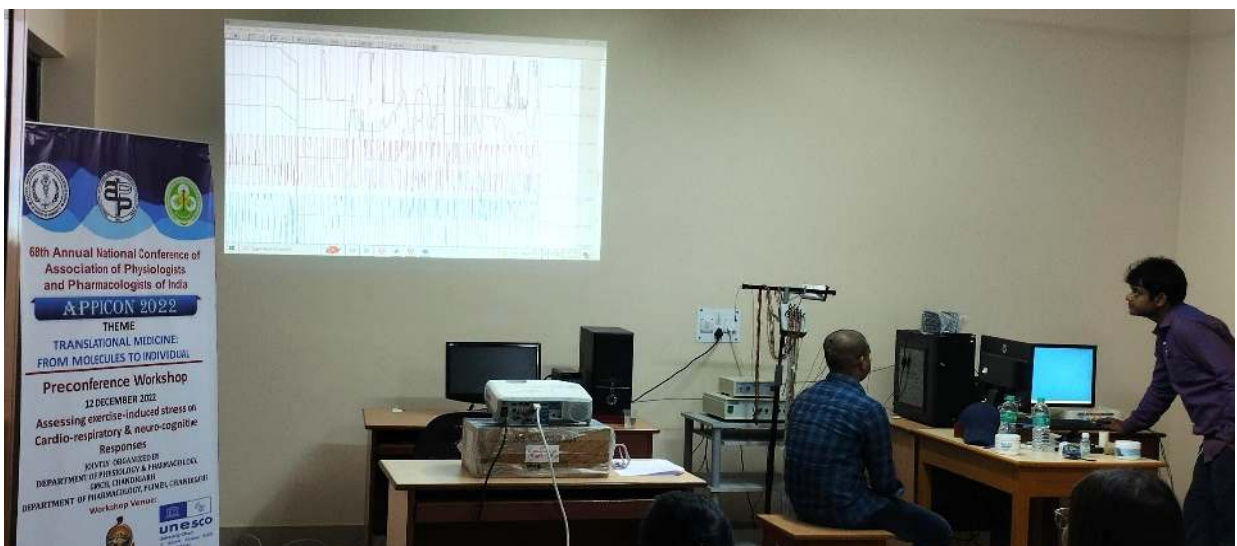
Please see the schedule below for more information –

Sl. no	Time	Event	Resource person
1	9:00 am – 9:30 am	Registration	
2	9:30 am – 10:00 am	Introduction and orientation to various labs of sports sciences, tools and modern techniques	Dr. Arnab Das
3	10:00 am – 11:30 am	Assessment of cardio-respiratory fitness using Metabolic Gas Analyzer Cosmed Quark CPET and Polar Heart Rate Sensor Assessment of post-exercise recovery response	Dr. Arnab Das, Dr. Kunal Sikder
4	11:30 am – 12:15 pm	Acquisition of electroencephalographic (EEG) recording in a subject performing a cognitive task and understanding the EEG wave pattern	Dr. Arkadeb Dutta, Dr. Subhadip Paul
5	12:15 pm – 1:00 pm	Biofeedback training	Dr. Manohar Kr. Pahan
6	1:00 pm - 1:15 pm	Concluding remarks	Br. Mrinmay Maharaj
7	1:30 pm – 2:30 pm	Lunch Break & Interaction	

Cardio-pulmonary fitness testing



Acquisition of Electroencephalographic (EEG) recording



Biofeedback training



Concluding remarks



Workshop banner

Three workshop standees were placed at relevant places in our university campus.



Workshop kit

The workshop kit given to participants consisted of one pad, one pen, and one printed badge.

Workshop food

Veg and non-veg lunch based on participant's preference were arranged at 'Rangoli Mall' Food Court, which is just 800m far from the department.



Workshop attendance

The entire workshop was conducted in offline mode. Registered participants along with our department faculties, Ph.D. scholars, and post-graduate students took part in the workshop in offline mode. Please find the attendance below –

68th APPICON 2022, Chandigarh
PCW18: Assessing exercise-induced stress on cardio-respiratory & neuro-cognitive responses
Venue: Ramakrishna Mission Vivekananda Educational & Research Institute, Belur
Timings: 09:00AM to 12:30PM

19/10/22

List of Participants

SL. No.	Name	Registration no.	Signature
1	Dr. Arnab Das	C2_PE_14245	Dr. Arnab Das
2	Avany Sathyan	C3_PE_12207	-
3	Tiyasha Bhowmick	W2_PL_15423	Tiyasha Bhowmick
4	Ratna Sarkar	W2_PL_15478	Ratna Sarkar
5	Minu Sen	W2_PL_15431	Minu Sen
6	Suparna Sanfui	W2_PL_15432	Suparna Sanfui
7	Avantika Ray	W2_PL_15476	Avantika Ray
8	CHITRALEKHA LAHIRY	W2_PL_15458	Chitralekha Lahiry
9	Saswati Naskar	W2_PL_15464	Saswati Naskar
10	Meghna Basu	W2_PL_16454	Meghna Basu
11	Soumik Bera	W2_PL_15482	Soumik Bera
12	Soumili Datta	W2_PL_16451	Soumili Datta
13	Ananya Chowdhury	W2_PL_16452	Ananya Chowdhury
14	AVAN DAS	W2_PL_15485	Avan Das
15	Sanchaita Das	W2_PL_15480	Sanchaita Das
16	Kinza Sarkar	W2_PL_15424	Kinza Sarkar
17	Sajmerul sk	W2_PL_15422	Sajmerul sk
18	Manisha Das	W2_PL_16457	Manisha Das
19	Prithwish Kar	W2_PL_15419	Prithwish Kar
20	RICHA GANGULY	W2_PL_15448	Richa Ganguly
21	ANKITA BAKULI	W2_PL_15425	Ankita Bakuli
22	Pubali Roy	W2_PL_16465	Pubali Roy
23	SUSRITA PAL	W2_PL_15483	Susrita Pal
24	Madhuparna Chatterjee	W1_PL_15455	Madhuparna Chatterjee
25	Nibhanika Chakraborty		Nibhanika Chakraborty

68th APPICON 2022, Chandigarh
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19/10/22

List of Participants

SL. No.	Resource Person	Designation	Signature
	Arkadeh Dutta	Assistant Professor	Arkadeh Dutta
	Kunal Sikdar	Assistant Professor	Kunal Sikdar
	Rupayan Bhattacharya	Professor	Rupayan Bhattacharya
	Subhadip Paul	Assistant Professor	Subhadip Paul
	Manohar Kr. Pahan	Assistant Professor	Manohar Kr. Pahan
	Dr. Kalipada Pal	Professor	Kalipada Pal
	Dipankar pal	Professor	Dipankar pal
	Subhashis Biswas	Ph.D Scholar	Subhashis Biswas
	Sarjoy Majhi	Ph.D Scholar	Sarjoy Majhi
	Debabrata Chatterjee	Ph.D Scholar	Debabrata Chatterjee
	Rangan Pan	MSC. Sports Sci.	Rangan Pan
	Malay Kumar Hait	MSC. Sports Sci.	Malay Kumar Hait
	Niladri Chowdhury	MSC. Sports Sci.	Niladri Chowdhury
	Chayan Kundu	MSC. Sports Sci.	Chayan Kundu
	Injamul Haque	MSC. Sports Sci.	Injamul Haque
	Mokaddam Hossain	MSC. Sports Sci.	Mokaddam Hossain
	Tiyash Biswas	MSC. Sports Sci.	Tiyash Biswas
	C Hari Vishnu	MSC. Sports Sci.	C Hari Vishnu
	Ge Chandru	MSC. Sports Sci.	Ge Chandru
	Sudesh Kumar K	MSC. Sports Sci.	Sudesh Kumar K

Advertisement of the workshop:

The advertisement was put on the departmental website for wider publicity and the reach of the APPICON 2022 PCW18 (<https://sy.rkmvu.ac.in/appicon-2022-workshop/>)



The following workshop template shared by the Organizing Chairperson Dr. Anita Singh has also been circulated widely at the local level.



APPICON 2022

68th Annual National Conference of Association Physiologists & Pharmacologists of India

PCW 18: Assessing exercise-induced stress on cardio-respiratory & neuro-cognitive responses
Date: 12.12.2022 **Venue: Ramakrishna Mission Vivekananda Educational & Research Institute, Belur Math, Howrah, West Bengal**
Timings: 09:00AM to 12:30 PM

				
Dr. Anub Das Assistant Professor, Department of Sports Science & Yoga, RKMVERI, Belur	Dr. Kunal Sikder Assistant Professor, Department of Sports Science & Yoga, RKMVERI, Belur	Dr. Arkadeb Dutta Assistant Professor, Department of Sports Science & Yoga, RKMVERI, Belur	Dr. Subhadip Paul Assistant Professor, Department of Sports Science & Yoga, RKMVERI, Belur	Prof. Manohar Kumar Pahan Assistant Professor, Department of Sports Science & Yoga, RKMVERI, Belur

Overview/enumeration of the techniques to be shown

- ❖ Assessment of cardio-respiratory fitness using Metabolic Gas Analyzer Cosmed Quark CPET and Polar Heart Rate Sensor
- ❖ Assessment of post-exercise recovery response
- ❖ Acquisition and interpretation of electroencephalographic (EEG) in a subject performing a cognitive task
- ❖ Biofeedback training
- ❖ Analysis & interpretation of the data

**Last date extended till
30.11.2022**

Please use this link to initiate registration
<https://appi.org.in/APPICONRegistration>

Thank you.
