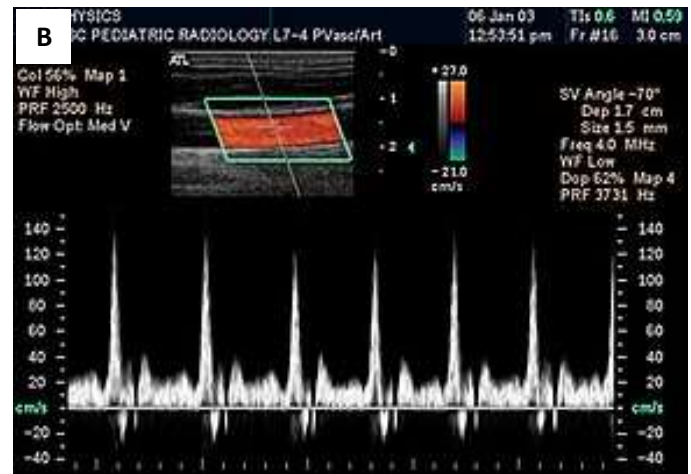
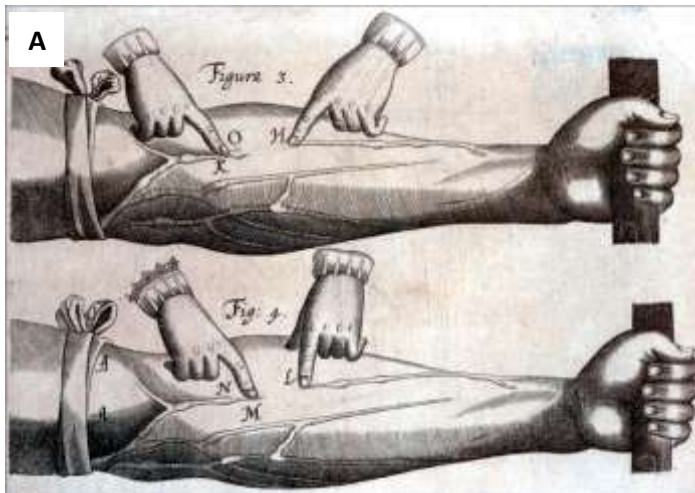


# SAAP Bulletin

The newsletter of the South Asian Association of Physiologists

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From observation to physics in assessing blood flow in physiology; (A) William Harvey's *Exercitatio anatomica de motu cordis et sanguinis in animalibus* (1628), (B) Non invasive Doppler ultrasonography

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**From Editor's Desk**



This issue of the SAAP Bulletin showcases how the SAAP community actively promotes the advances in physiology in the post-pandemic South Asia. In the feature article Professor HR Ahmad, a renowned physiologist together with Professor Mohammed Anis Alam, Professor of Environmental Sciences and PhD in Physics aptly describe how physiology learning has advanced from observations and early experimentations to molecular sciences, genetics, nuclear radiology and quantum mechanics.

Here you will see that SAAP community is extremely dynamic, and is keen to share knowledge and skills through varied methods, from hands-on workshops to collaborative conferences, launch of journals to poster competitions for undergraduates and awareness programmes for school children.

The 8th Biennial conference of the SAAP with the Annual Academic Sessions of the Physiological Society of Sri Lanka scheduled for November this year, will enable further dissemination of current advances in physiology as well as regional and global collaborations, and promote physiology researchers and educators to come together to promote future developments in the field.

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# Feature article: The Axis of Physics, Physiology and Physiological Sciences



**Prof HR Ahmad**  
**Physiologist**  
**Aga Khan University**  
**Karachi , Pakistan**

**&**

**Prof Mohammad Anis Alam**  
**Professor of Environmental**  
**Sciences**  
**Lahore School of Economics**  
**Pakistan**

Ibne Khaldun described in his book Muqadama, the field of Physiology to be a branch of Physics. Upon this classical foundation, the knowledge of physiology started to be derived from the means of a concept and a methodology as an off shoot of laboratory science by German scientists. The German Philosopher Heidegger pointed out that if there was a gap between thinking and science it could be bridged by development of a new methodology like acquiring new eyes.

As we move from the classical era of science to modern era of twentieth-century physics, we moved from the age of thinking to the age of measurement. David Griffiths described lucidly how we are enlightened by the revolutions in 20<sup>th</sup> century physics of relativity, quantum mechanics, elementary particles, and cosmology. Classical physics, while comforting to our intuitions, was transformed by the modern physics being counterintuitive in nature. What a challenge to contradict everything, we thought we understood. It means we need to keep a skeptical eye on the matter, as we go along.

Now the knowledge is harvested from the interaction of observations and experimentations. Therefore, the limit of classical physiology has significantly extended to physiological sciences grounded in an array of methodologies of cell, molecular and genetics. On the

other hand, the new noninvasive methodologies of nuclear radiology have opened the gateways to investigate the human bodies. What we used to feel and now we can see. In the last fifty years, the world of measurement has changed the paradigm from death warrants to extension of life by ingenuity of mankind. It means the extended limit of the 20<sup>th</sup> century physics has provided means to see what we cannot see only through our eyes and intuitions. New methodology upon new methodology is emerging like a fountain of spring water. What are the sources? These are the new branches of physics: relativity, quantum mechanics, elementary particles, and cosmology. How the universe has been discovered dialectically through these four schools of physics, we have not noticed. This in turn has also changed the classical physiology into physiological sciences like morphology is a stage, molecules are dancing, and the function is called physiological sciences. This shows the extension of the limit of thinking like rippling waves of water.

Now the question arises, how we could be seen through the lens of evolution of universe. The Big Bang released energy leading to matter and its property space-time under the governance of four forces. Energy and matter gave birth to a universe of atoms. Interplay of atoms generated molecules. The Goldilocks condition of molecules, fluid and energy resulted surprisingly in a self - organising and regenerating molecular structure known as DNA. It started encoding proteins of life. This process formed an ancestral cell. The cell triggered dialectically an evolutionary journey from the deep sea to human consciousness on the land.

Humans learnt to respond to the environmental challenges by making stone tools and developing language but with greater facilitation after the era of fire. The language as an expression of thought

processes that shaped the culture leading to history of energy-matter and mankind. Richard Feynman [1918 -1988] has lucidly penned down this story from atoms to consciousness as:

*Ages on ages*

*Before any eyes could see*

*Year after year*

*Thunderously pounding the shore as now*

*For whom? For what?*

*On a dead planet*

*With no life to entertain.*

*Never at rest*

*Tortured by energy*

*Wasted prodigiously by the sun*

*Poured into space*

*A mite makes the sea roar.*

*Deep in the sea*

*All molecules repeat*

*The patterns of another*

*Till complex new ones are formed.*

*They make others like themselves*

*And a new dance start.*

*Growing in size and complexity*

*Living things*

*Masses of atoms*

*DNA, protein*

*Dancing a pattern ever more intricate.*

*Out of the cradle*

*Onto dry land*

*Here it is*

*Standing*

*Atoms with consciousness*

*Matter with curiosity.*

In sum, the Big Bang provided the curriculum of physics, chemistry, biology, culture, and history

through four revolutions in modern physics of relativity, quantum mechanics, elementary particles, and cosmology. The materialism response of Big Bang could then lead to from atoms to human consciousness.

The transition from myth to science is now well demonstrated by Hubble's observations in 1929. He showed that the universe was expanding. Penzias and Wilson in 1965 discovered the cosmic microwave background radiation. Both findings confirmed the empirical evidence of the Big Bang of the universe to have occurred 13.7 billion years ago.

The Big History by David Christian from the Big Bang to human consciousness is a fascinating journey from ancient atom to a universe of atoms. This is the result of work on the microworld research by a caravan of scientists from the 15<sup>th</sup> century onwards to Albert Einstein, Max Planck, Erwin Schrodinger, Enrico Fermi, Richard Feynman inter alia.

Dedicated to Tasneem Ahmad Siddiqui for his unique model known as Khuda-ki-Basti to house the poor in Pakistan and Abdus Salam for the enlightenment of the humanity.

*Authors are HR Ahmad, a disciple of HH Loeschke from Ruhr University Bochum Germany and Anis Alam, a disciple of Abdus Salam from Imperial College London. They can be reached at [hrahmad.alrazi@aku.edu](mailto:hrahmad.alrazi@aku.edu) and [anisalam@lahoreschool.edu.pk](mailto:anisalam@lahoreschool.edu.pk)*

## News and Events

### Poster competition for Undergraduates of BS-part 3 Department of Physiology University of Sindh, Jamshoro

To unleash the potential of students of Department of Physiology, University of Sindh, Jamshoro, Sindh with collaboration of Pakistan Physiological Society organized a 2-day poster presentation competition from 29 October 2021.

Undergraduate students of BS-part 3 of the Department of Physiology, University of Sindh, Jamshoro, were assigned theme of “How we sense the world around us: groundbreaking experiments offer Nobel laureates in neurosensory Physiology.” Students prepared and presented posters on various experiments of Nobel Laureates.

Professor Iqbal Memon Chief Executive Officer of Bhitai Medical and Dental College, Professor Dr Khalida Shaikh and Dr Arsalan Uqeli from Department of Physiology Liaquat University of Medical and Health Sciences, Jamshoro, served as Jury members to evaluate the student’s posters. In this poster competition groups. Aisha et al stood first, Mubeeba et al stood second and Mibah et al, stood third. Shields were distributed among students.

Undergraduate students of BS-part 2 of Department of Physiology, University of Sindh, Jamshoro were assigned theme of “Bioinformatics as a tool to discover our genome.” Students prepared and presented posters on various genes. In posters they used techniques like Basic Local Alignment Search Tool, Clustal W, String pathway analysis and 3D Structure of proteins. Dr Zulfiqar Ali Laghari, Chairman, Department of Physiology, University of Sindh, Jamshoro, Dr Ayaz Ali Samo, Dr Aftab Ahmed

Khand were the jury members for evaluating the posters. Bisma et al stood first, Laiba et al stood second and Pertab et al third. Shields were distributed among students.

Event was presided by Dean Faculty of Natural Sciences, University of Sindh, Jamshoro, Professor Dr Wazir Baloch and Chief Guest was Professor Dr Mumtaz Ali Memon, from Modern University of Sciences who represented Pakistan Physiological Society.

Taking on the occasion speakers appreciated the collective efforts of Professor Zulfiqar Laghari and Dr Ayaz Samo for providing opportunity to students to show their talent through scientific activities. Poster competition gave them confidence to defend their knowledge. Speakers said that Physiology is extremely important field for medical sciences. Government of Pakistan should create more job opportunities for graduates of Physiology. Graduates of Physiology will promote the health awareness in society. Dr Zulfiqar Laghari thanked all the guests and said awareness about diseases will lead to prevention which is better than cure.



**Dr Ayaz Ali Samo**  
**Assistant Professor (TTS)**  
**Department of**  
**Physiology**  
**University of Sindh**  
**Pakistan**

# Activities of Physiological Society of Nepal

Activities of Physiological Society of Nepal were hampered during 2020-2021 because of COVID-19 pandemic situation. We became able to start publishing journal despite of tough situation created by COVID-19 pandemic. We conducted regular PSN meeting. Either Zoom meeting or contacted members on phone. The first issue of the Journal was published in June 2020.

## Journal of the Physiological Society of Nepal

The Journal of the Physiological Society of Nepal is an official journal of Physiological Society of Nepal (PSN). The abbreviation of the journal is JPSN. The aim of JPSN is to provide a platform for sharing research outcomes in the fields of physiology and allied health sciences, thereby promoting shared information and ideas to the scientific community. Being the means of imparting knowledge and skills in physiology and allied health sciences, Medical Education is also included in the scope of the journal.

The JPSN is published twice a year in June and December months. It has obtained ISSN number: 2773-7853 (online) through the Nepal National Library (NNL), and it is indexed in NepJOL.

**Manuscript Submission:** manuscripts are to be submitted via email to psn.journal@gmail.com OR amatyam01@gmail.com. We accept quality manuscripts under the categories of Original Research, Case Report, and Review. Submissions are duly acknowledged by the Editorial team at the earliest.

**Publishing Process:** All submissions undergo extensive peer review (blinded). There may be extensive interaction between Reviewers/Editors and corresponding Author before the final draft is prepared. Our policy is to encourage our

contributors. Currently, there is no publication charge. Three issues have been published to date.

We want to improve our quality of publication further and further. We want to expand our editorial team, including international editorial board.

## Editorial team:

Chief Editor - Prof Dr Bishnu Hari Paudel

Deputy Chief Editor – Dr Rita Khadka

Executive Editor – Prof Dr Mrigendra Amatya

Other editors; Dr Ojashwi Nepal

Dr Sushil Kharel

Ms Grishma Baskota Nepal

Dr Lava Shrestha

Mr Rajan Pandit

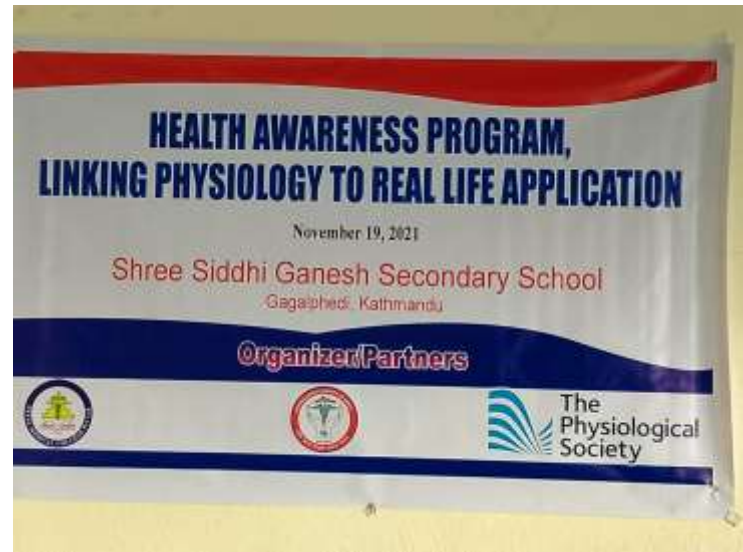
We invite our SAAP members and colleagues working in the physiological fields to submit their research articles to our journal, JPSN.

## Proposed activity

Physiological Society of Nepal is going to organize a conference and pre-conference workshop in 2022 at B. P. Koirala Institute of Health Sciences, Dharan, Nepal. Date is to be finalized

## Other activities

Members of PSN conducted a Health awareness program linking physiology to real life application on November 19, 2021 at Shree Siddhi Ganesh Secondary School, Gagalphedi, Kathmandu for secondary school level students. It was supported by The Physiological Society, UK.



**Dr Rita Khadka**  
Additional Professor,  
Department of Basic and  
Clinical Physiology,  
B.P. Koirala Institute of  
Health Sciences (BPKIHS),  
Dharan, Nepal  
President, Physiological  
Society of Nepal



# Workshop on behavioral tests of pain and memory in rat model

## Department of Physiology

### Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh

Animals are biologically very similar to humans. Knowledge emerged from laboratory animal experiment involving various model is critical in understanding of disease processes and in developing new treatment modalities for it.

A workshop on some behavioral tests of pain and memory in rat model was held on 1st November 2021 at Department of Physiology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh. A total of four faculties and 34 residents participated in this workshop. The Chair of this workshop was Prof. Dr. Sultana Ferdousi, the senior most faculty of the department. The welcome speech was delivered by Dr. Shamima Sultana, Associate Professor, Department of Physiology. In her speech, she emphasized the importance of exposure of new researchers to the experimental research in animal model and highlighted the difference between animal experimental study and research involving human. In this session Dr. Masuma Akhter presented a brief history of animal research, talked about its importance and the cutting edge animal researches in the world

and highlighted the two animal model studies carried out in this Department.

The tests used to demonstrate pain response of animals included Von Frey test, Hot plate test, Acetone test, Walking tract analysis.



*Fig: Demonstration of Walking tract analysis*

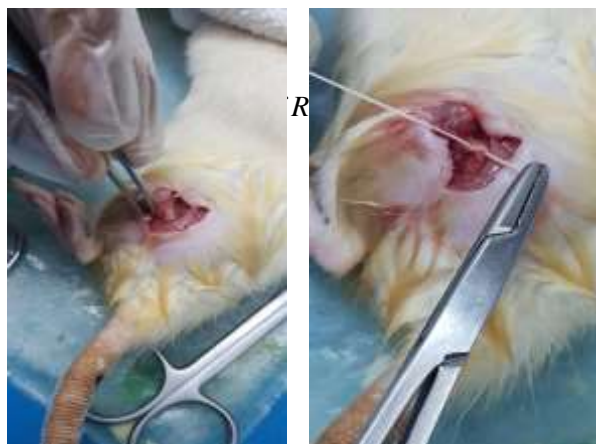


*Fig: Demonstration of Hot plate test*



For this purpose, pain model was prepared by chronic constrictive injury (CCI), injecting formalin & using hot water. Paw edema test, Writthing test are part of formalin test. Moreover, Tail immersion test, was also used.

Memory tests included Radial arm maze and Morris water maze test. These tests demonstrated the effect of herbal agent on memory impairment of experimental animal pretreated with herbal agents.



*Fig: Demonstration of the procedure of CCI model*

The CCI model exhibits the symptoms similar to neuropathic pain in human. The preparation of CCI model was demonstrated at Pain laboratory and was shown to the participants of workshop live by using zoom and multimedia projector. The total surgical process was demonstrated step by step by Dr. Masuma Akhter, Dr. Jannatul Mawa Tasnim, Dr. Debashish Chakraborty, Dr. Mahbuba Sharmin Khan.



*Fig: Demonstration of Radial arm maze test*

In this workshop ten behavioral tests of rat model were demonstrated at four stations. All participants were divided into 4 groups. Each group visited each station for demonstration of individual behavioral tests.

At the ending of workshop, a feedback session regarding the model and behavioral tests was conducted. This session was conducted by the demonstrators of the stations. It was a very interactive and vibrant session. After that, the President, workshop committee, distributed certificates among participants.



*Fig: Distribution of certificates by Prof. Dr. Sultana Ferdousi*



**Dr. Sharmin Afroz**  
**Assistant Professor**  
**Bangabandhu Sheikh Mujib**  
**Medical University**  
**Dhaka, Bangladesh**

# 7<sup>th</sup> International Conference of Psychophysiology- ICOP

## 4th December, 2021 (VIRTUAL)

Advance Educational Institute & Research Centre (AEIRC) completed its 7th year of International Conference on Psychophysiology (ICOP) with the aim to encourage potential researchers and learners with their exclusive interest in Psychophysiology with the theme "Psychophysiological augmented mental health care for all: let's make it a reality."

AEIRC has made continuous progress in working and providing a forum on all leading aspects of mental health, neuroscience, and psychophysiology. Our aim is to educate psychophysiologicals, psychologists, researchers, behavioral neuroscientists, mental health workers, clinicians, and other related health professionals about the importance of studying brain health and mental wellbeing. This conference is designed to build a network of scientific communities that can work together to make a real difference to society towards mental wellbeing.

The plenary talk was given by Prof. Dr. Richard A. Sherman from Behavioral Medicine Research and Training Foundation, California) on Psychophysiological Assessment and Psychophysiology Training programs. The thematic talk was given by Prof. Dr. Jerry Devore (Dept. of Psychophysiology, Saybrook University, USA) on An overview of the domains of Applied Psychophysiology. Both the experts' extensively discussed about domains of Psychophysiology and address the prospects for future applications in complex disorders such as schizophrenia, Bipolar disorder, Autism and Asperger's syndromes, age-related cognitive decline and dementias. Moreover, Prof. Sherman also share the unique information about psychophysiological assessments can provide to people from many professions as well as

the crucial need for psychophysiology diploma and doctoral programs affordable to people from all over the world. He also informed how he is leading [Pakistan's first on going diploma program in Clinical psychophysiology facilitated by AEIRC.

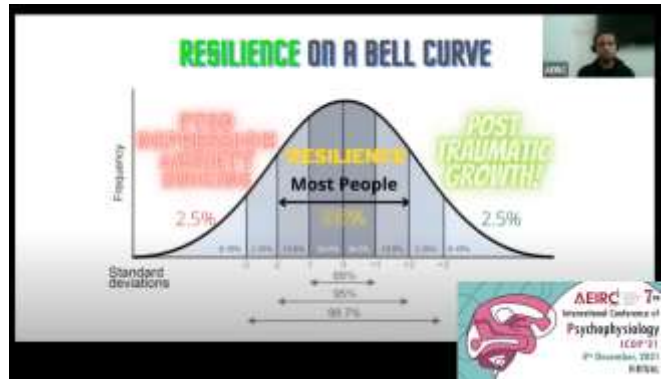
Session 2 covered Featured Talks on Psychophysiology Chaired by Prof. Dr. Samina Malik (University of Lahore) and Dr. Zafar I. Abbasi, (Baqai Institute of Diabetology). First featured Talk was delivered by Dr. Faizan Mirza (University of Karachi) emphasizing Psychophysiological Indicators of Healthy Aging. Featured Talk 2 given by Dr. Shamooun Noushad (AEIRC) on Role of Nature-Based Therapies on Trauma. The last featured talk was given by Dr. Sadaf Ahmed on Psychophysiological Underpinnings of Mental Health & Wellbeing. The 3rd session was loaded with the scientific paper presentations by selected presenters in the field of psychophysiology Chaired by Prof. Dr. Zia Mohiyuddin (Air University) & Co-chair was Dr. Bilal Siddiqui (sZabist).

The session was closed with the hope that as there is a low ratio of scholars pursuing their career in research specifically research related to brain and body connections in developing countries like Pakistan, this conference is key platform to educate and familiarize researchers, practitioners and academicians who have common interest in psychophysiology and to help them in exploring the future dimensions. Moreover, to bring experts working under umbrella of mental health, neuroscience and psychophysiology presents emerging sciences, forge collaborations with peers, explore new tools and technologies, and advance careers.



# 7<sup>TH</sup> International Conference of Psychophysiology- ICOP

4<sup>th</sup> December, 2021 (VIRTUAL)



**Dr. Sadaf Ahmed (Ph.D.)**  
 President I AEIRC  
 Director, CHWB  
 Asst. Prof.  
 University of Karachi, Pakistan

# Letters to the Editor

## Sifting Truth from fiction in Scientific Literature

Dear Editor,

**Problem:** It is increasingly true for most basic/molecular research that if one skims through literature, one often finds a lot of different, often conflicting, strands of evidence. This may have to do with bias or due to chance as different studies look at different aspects of the same system. In such cases, it would be useful to consider conducting a systematic review or meta-analysis of the existing literature to comb through the existing literature in a systematic way. Systematic reviews and meta-analyses are relatively well-defined processes for clinical evidence as most clinical studies follow quite similar methodologies. As far as basic scientific and molecular studies are concerned, the methodologies can be quite heterogeneous and the process of statistical analysis quite challenging.

**Solution:** The very successful "reductionist" approaches of molecular biology may be coming to an end as we are at the cusp of a new era of more systems-oriented approach to science. Machine learning is one of the approaches in finding patterns in large volumes of varied data. If the philosophical and statistical development of such approaches may be of interest, one can create a zoom group and invite experts from mathematics, philosophy, logic, and statistics to the forum and over a series of talks develop a methodology to sift "truth from fiction" in scientific literature. If there is gap between thinking and science, it can be bridged by development of new method to answer the pending questions of science and stimulate the research conversation as the gateway to science.

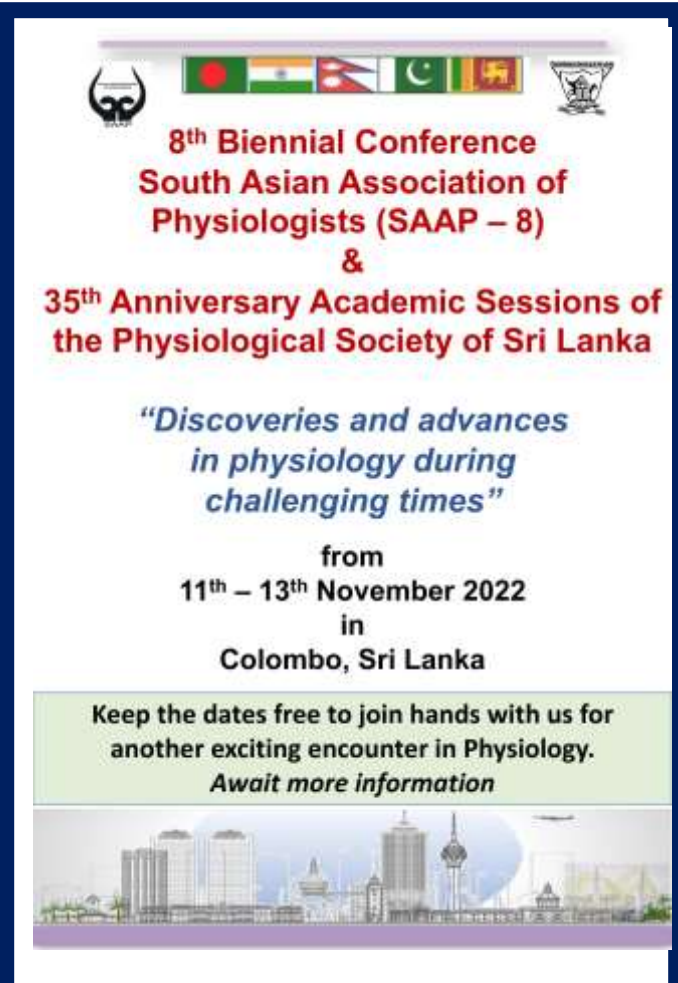
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**Shahzad Amjad and HR Ahmad**

*Authors are a surgeon from Faisalabad and a physiologist from AKU Karachi.*  
220222

## Upcoming Events



**8<sup>th</sup> Biennial Conference  
South Asian Association of  
Physiologists (SAAP – 8)  
&  
35<sup>th</sup> Anniversary Academic Sessions of  
the Physiological Society of Sri Lanka**

*“Discoveries and advances  
in physiology during  
challenging times”*

from  
**11<sup>th</sup> – 13<sup>th</sup> November 2022**  
in  
**Colombo, Sri Lanka**

Keep the dates free to join hands with us for  
another exciting encounter in Physiology.  
*Await more information*

Compiled by Professor Piyusha Atapattu  
Editor-in Chief, SAAP Bulletin



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