



# The Physiological Society of Sri Lanka

## NEWSLETTER

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### Message from the President

I am privileged and honored to write this message when the Physiological Society of Sri Lanka (PSSL) is celebrating its 25th anniversary. The PSSL was formed in 1987 to encourage and support research in physiology, to help dissemination of knowledge in various aspects of physiology, to promote involvement of physiologists in community development and to promote fellowship among the physiologists in all fields of science. Over the past 25 years the members of our society have strived to achieve these objectives through the many activities that were conducted. In 2008, the PSSL joined with the other sister societies in the South Asian region to form South Asian Association of Physiologists (SAAP) with a view to broaden the horizons of the society. The first biennial conference of SAAP was held in Pakistan in 2008 followed by India in 2010.

This year Sri Lanka takes pride in hosting the 3rd biennial conference of South Asian Association of Physiologists (SAAP-3) from the 7th to the 10th of November 2012 under the theme "Advances in Physiology: trends and opportunities". It will be a unique event hosted by the PSSL in its 25th anniversary year with academics of eight universities contributing to organize this conference. The main conference will include plenary and symposia sessions presented by identified speakers from the SAARC region and a few eminent speakers from other parts of the world. The free communication sessions will be a wonderful opportunity for the postgraduate students and the young scientists to present and discuss their research with other researchers and experts in the relevant fields.

The pre congress workshop on "Physiology education" is organized by Prof. Arif Sidiqqi, the General Secretary of SAAP who is also a member of the education committee of International Union of Physiological Sciences (IUPS). This will be a full day program held at the Faculty of Medicine, University of Colombo with world renowned medical educationists contributing as resource personnel. A symposium on Physiology education and research will also be extended in to the main conference.

Two post congress workshops will be held in two faculties of medicine in the scenic hill capital and in the southern coastal city of Sri Lanka. They are on nerve conduction and evoked potentials, basic techniques and clinical applications and on assessment of bone mineral density research and

clinical applications organized by the University of Peradeniya and University of Ruhuna respectively.

This year, we plan to have the two prestigious orations of the society namely, KN Seneviratne and ACE Koch memorial orations during the conference.

An event of this nature will not be successful without the support and guidance of the members. I appeal to all the members of the PSSL to join hands with the organizing committee in making this event a success. I strongly believe that it is our obligation and responsibility to make the society grow in the next 25 years so that all our endeavors to “search teach and serve” will reach a wider spectrum of the society.

**Prof. Sharaine Fernando MBBS, PhD**  
**President, Physiological society of Sri Lanka**

## Brief History of the Physiological Society of Sri Lanka (PSSL)

**Prof. Vajira Weerasinghe, Professor of Physiology, Faculty of Medicine, University of Peradeniya**

The idea of forming the Physiological Society of Sri Lanka was conceived by the then Professor of Physiology, Faculty of Medicine, University of Peradeniya and the Physiological icon of Sri Lanka, Prof Valentine Basnayake. He then conveyed this idea to Prof. Carlo Fonseka, Emeritus Professor of Physiology. Prof. Fonseka requested the late Prof. M.T.M. Jiffry to do the preliminary organizational work and the physiological community in Sri Lanka was informed about this. The inaugural meeting of the PSSL was held on 29 May 1987 at the New Lecture Theatre at the Faculty of Medicine, Colombo. Prof. Basnayake's inaugural address revealed his dream. Prof. Basnayake was elected as the Founder President of the Society, Late Prof. Jiffry was elected as the Founder Secretary of the Society and Prof. Fonseka was elected as the Founder Vice President of the Society. This meeting was chaired by Prof. Earle De Fonseka, then Dean of the Faculty of Medicine, Colombo. There were many distinguished personalities in different fields of Medicine in the audience at the first meeting. Thirty three people were present at this meeting. A decision was taken to include all those who attended the inaugural meeting as founder members of the society. Since its inception the Society was able to organize orations in memory of the pioneer Ceylonese Professors of Physiology, viz. Prof. A.C.E. Koch and Prof. K.N. Seneviratne. This tradition has continued to date without a break.

Following the inaugural meeting, every year the Society has held its Annual Scientific Sessions which included guest lectures, symposia, free papers and student

presentations in topics covering various areas of physiology and medicine. In addition, regional meetings have been held in Physiology Departments in different Medical Faculties to promote fellowship among physiologists working throughout the country. Prof. Basnayake Endowment lectures were held annually on the topics covering “Everyday Physiology” and “Student Physiology Research”.

The Society's Logo was formulated by a medical student following an open competition launched by the Society. The logo contains the motto of the Society “Teach”, “Search” “Serve” which was coined by Prof. Basnayake as the guiding force of the Society.

PSSL Newsletter was started by Late Prof. Jiffry at the beginning of the Society and was revived again in 2004 by myself as the editor of the PSSL. In recent times Dr. Dinithi Fernando as the current editor of the PSSL has been able to continuously publish the newsletter to keep the membership updated about the activities of the Society. In 2003, the birth anniversary of Prof. A.C.E. Koch was commemorated by having a special session by a number of speakers and presentation of a book by selected authors.

From the beginning, our society has been in contact with the International Physiological Societies. Many of our members have participated in the IUPS (International Union of Physiological Societies) and in FAOPS (Federation of Asian Oceanian Physiological Societies) congresses and most recently we have been able to actively contribute to the formulation of the SAAP (South Asian Association of Physiologists).

As a concluding remark I wish to state that because of the inspiration, guidance and untiring efforts of our forefathers a society has been gifted to us, the Physiologists of Sri Lanka. This society has been able to sustain for 25 years to reach the Silver Jubilee. It is the utmost responsibility of our generation to make sure that this society will flourish and grow from strength to strength with the challenges that we face today so that we will be able to hand this over to the next generation *for the benefit of continuing the thread of “Physiology” in Sri Lanka.*

## Our Recent Activities

A.C. E. Koch memorial oration, 2011, titled 'Kidney function tests in clinical practice and research quantitative fallacy?' was delivered by Vidyajyothi Professor Rezvi Sheriff, Senior Professor of Medicine, Department of Clinical Medicine, Faculty of Medicine, Colombo.

## About SAAP

### *Professor Sharaine Fernando President, Physiological society of Sri Lanka*

South Asian Association of Physiologists(SAAP) is a professional organization committed to the advancement of physiology from basic research to clinical applications. It consists of more than 1000 members coming from India, Pakistan, Bangladesh, Sri Lanka and Nepal. Founded on the 16th of November, 2008 in Islamabad, the association provides a forum for the exchange of information to stimulate discussion and collaboration amongst physiologists. Although relatively young, SAAP is now considered as an active and productive scientific society which has one of the largest memberships as a scientific association in the region. Further, it liaises with international and regional bodies like the IUPS and FAOPS in organizing scientific and educational programmes.

SAAP is governed by an executive council consisting of President, Past President, Vice Presidents (8), Secretary General, Treasurer and Joint Secretary. The executive council is elected by the General Council for a term of two years.

SAAP organizes conferences biennially to promote the study and dissemination of knowledge of physiology and to foster closer personal and professional contacts among those interested and working in the field of physiology, especially in South Asia. The first conference was held at Shifa College of Medicine in Islamabad in November 2008. The second conference was held at St. John's Medical College Bangalore in December 2010. This year Sri Lanka takes pride in organizing the 3rd SAAP conference in Colombo from the 7th to the 10th of November.

## 25th anniversary of the Physiological Society of Sri Lanka (PSSL)

*Dr. Dinithi Fernando, Editor, PSSL 2012*

25th anniversary of the PSSL will be celebrated in parallel to SAAP (South Asian Association of Physiologists) 3rd conference in November 2012. The PSSL has come a long way since its inception and a multitude of events are planned for the PSSL silver jubilee.

In order to celebrate the 25th anniversary the PSSL plans to organize A.C.E Koch and K.N. Seneviratne memorial orations to be delivered by distinguished Sri Lankan scientists who have made significant contributions to uplift physiology in this country. K.N. Seneviratne memorial oration will be held on the 7th of November at the inauguration ceremony of SAAP 3 conference. A.C. E. Koch memorial oration will be held on the 8th of November, the 2nd day of the SAAP 3

conference.

Several eminent Sri Lankan Physiologists who have made great contributions to teaching and research in physiology will be felicitated as part of PSSL 25th anniversary celebrations. This event is much looked forward to by the physiologists of Sri Lanka as it gives them an opportunity to honor and pay tribute to their former teachers and mentors.

Plans are also underway to publish a newspaper supplement in October which will include the history of the PSSL, its current role in disseminating knowledge on recent advances in physiology and articles to increase the awareness of the general public about this 'science of life'. A souvenir will be printed in commemoration of the silver jubilee of the PSSL. Messages for the souvenir are invited from the scientific and professional colleges, institutes and associations, and the Post Graduate Institute of Medicine of Sri Lanka (PGIM) with which the PSSL has maintained close ties for the last 25 years.

A joint symposium with the SLMA titled 'Future brains: the impact of psychosocial, environmental and biological factors' will be held in June 2012 at the SLMA annual session.

All the members of the PSSL are invited to take part in this landmark event of the PSSL.

## Obesity and Women's Health: A joint symposium organized by the Women's health sub-committee of the SLMA and the PSSL, September 2011

### Pathophysiology of Obesity

*Piyusha Atapattu MBBS, MSc, MD, FRCP(Edin)*

Fat stores, which act as energy reserves by storing triglycerides, are necessary for survival during nutritionally depleted states such as starvation. Adipocytes, especially in the visceral fat depots, form the largest endocrine tissue in the body. They release both pro-inflammatory and anti-inflammatory cytokines. White adipose tissue releases free fatty acids (FFA) and inflammatory adipokines including tumour necrosis factor (TNF $\alpha$ ), interleukin (IL)-1 and IL-6. Anti-inflammatory and anti-atherogenic adipocyte hormones such as adiponectin, visfatin and acetylation-stimulating protein seem to counterbalance the effects of inflammatory adipokines. However, excess storage of fat leads to an

imbalance of such mechanisms, and bring about the detrimental effects affecting many organ systems.

Obesity is a chronic low-grade inflammatory and prothrombotic state, which appears to play a central role in the pathophysiology of diabetes mellitus, insulin resistance, dyslipidaemia, hypertension, atherosclerosis, non-alcoholic steatohepatitis and many other co-morbidities. Different fat depots make different contribution to proinflammatory and clinical consequences of obesity, with visceral fat having the strongest association with obesity related disorders. Even thin people with relatively more visceral fat are at increased risk for diabetes and mortality. Three major factors modulate body weight: metabolic factors, diet, and physical activity, each influenced by genetic traits. Obesogenic environment and social determinants (social class, attitudes and expectations) play a significant role in causing obesity. Other factors such as insufficient sleep, medical disorders and drugs, pregnancy and possibly infectious agents may be contributory. It is essential to identify the pathophysiology of obesity and its clinical manifestations, in planning and implementing measures to minimize the adverse consequences seen in this globally ever-increasing health problem.

### Obesity and other Non Communicable Diseases (NCDs)

*Dinithi Fernando, MBBS, MD, MRCP*

It is no secret that Sri Lanka too has fallen victim to the current global epidemic of obesity and other related non communicable diseases. According to the data from the Sri Lanka diabetes and cardiovascular study, 50 % of the urban Sri Lankan adults are obese with central obesity prevailing in 40 % of them. Data are not very different in the rural Sri Lankan population. South Asians have poorer outcomes in obesity and related NCDs in comparison to Caucasians. In addition to the genetic, anatomical and physiological differences, rapidity of the transition of diet and physical activity levels, other social determinants and the poor health seeking behavior of the South Asians contribute to the poor outcomes.

Obesity-related NCDs spare no organ system of the body. Among the most well known examples are type 2 diabetes mellitus, hypertension, atherosclerosis, metabolic syndrome, non alcoholic fatty liver disease, osteoarthritis, cancer and polycystic ovarian syndrome. Obesity influences the other related NCDs in many ways. Firstly, obesity plays a pathogenic role in most of the related NCDs. Obesity also influences the therapeutic interventions of other NCDs and their prognosis. Obesity alters normal anatomy, physiology and cellular metabolic pathways. Many mechano-biological models have been proposed to

explain the pathogenic role of adiposity in causing other NCDs. Most of the proposed models agree on the role of visceral adipose tissue in producing an insulin resistant, pro inflammatory and pro thrombotic state. The most feared consequence of the pathogenic mechanisms is atherosclerotic cardiovascular disease. Obesity does not kill by itself.

Obesity makes therapeutic interventions to other NCDs difficult. Differences in pharmacokinetics and pharmacodynamics may cause sub-optimal therapeutic responses. Low self esteem, lack of motivation and obstacles to physical exercise such as arthritis, are the other challenges faced during treating an obese patient with other diseases. Obese patients are at an increased risk during surgical interventions because of haemodynamic and respiratory compromise. Successful treatment of an NCD in an obese patient lies heavily on losing weight. Scientific evidence shows that weight loss improves the morbidity and mortality outcomes of obesity related NCDs. Aspects of a holistic management approach include life style modifications directed at losing weight, pharmacotherapy and surgical interventions when life style modifications fail to produce the required response and assessment and treatment of other cardiovascular risk factors.

### Obesity and Reproductive Health

*Sudharshani Wasalathanthri MBBS, PhD*

Obesity is an epidemic causing serious reproductive health issues in women from menarche to menopause. Obesity is known to be associated with early menarche, menstrual irregularities, reduced natural fertility, impaired outcome of assisted reproductive technologies and sexual dysfunction. It also increases the tendency for common gestational medical risks such as diabetes and hypertension leading to poor pregnancy outcome and impaired fetal wellbeing.

Several pathophysiological mechanisms triggered particularly by central obesity have shown to cause perturbations to neuroendocrine reproductive axis and also act directly on reproductive organs to bring about the adverse reproductive health outcomes. The main factor implicated in the association between obesity and reproductive disorders is insulin excess. Hyperinsulinaemia may be directly responsible for the development of androgen excess, through its effects in reducing sex hormone-binding globulin synthesis and circulating concentrations, and in stimulating ovarian androgen production rates. Androgen excess, in turn, represents one of the major factors leading to altered ovarian physiology. In PCOS, hyperinsulinaemia and hyperandrogenism are responsible for the majority of clinical features, and in at least 50% of patients there is associated obesity. Altered adipokine secretion associated with obesity is an additional factor which contributes to adverse effects on reproductive health. Leptin and adiponectin are two principal adipokines

which influence reproductive function. Serum leptin levels are positively correlated with fat mass and very low and very high levels of leptin are associated with impairment of ovarian function. Adiponectin is known to increase tissue sensitivity to insulin and have direct beneficial effects on all levels of HPO axis. However, adiponectin levels are markedly reduced in obesity. The dramatic fall in estrogen production after menopause contributes to weight gain and changes in adipose tissue distribution leading to myriad of complications in postmenopausal women.

Multidisciplinary life style intervention which includes weight management is shown to improve hormonal abnormalities, fertility and other reproductive outcomes.

## Obesity and cancer

### *Sharaine Fernando MBBS, PhD*

Obesity is an increasing health problem not only in developed but in developing countries too. The association between obesity and cancer is complex, however there is conclusive evidence to say that obesity is significantly associated with increased incidence of several cancers. Obesity also increases the mortality and morbidity of cancer.

There are general mechanisms and site specific mechanisms which explain the increase in incidence of cancer in obese people. Possible general mechanisms include hyperinsulinaemia and insulin resistance, production of insulin like growth factors (IGF's) and increased bioavailability of steroid hormones. In addition adipose tissue derived hormones (adipokines) also contribute to tumourgenesis in obesity. While certain adipokines like leptin are increased in obesity, adiponectin is reduced. Adiponectin, has anti-inflammatory activities and has direct anti-carcinogenic activity. Reduction of adiponectin in obesity therefore promotes tumourgenesis. Diabetes mellitus and hypertension which are more prevalent in the obese are other risk factors for cancer. Obesity is a known cause for the malignancies in the breast in postmenopausal women, endometrium, colon, rectum, oesophagus, kidney and haemopoietic cells. In post menopausal women, increased bioavailability of oestrogen leads to increased cell proliferation and decreased apoptosis of malignant cells in the breast. Further, decreased adiponectin induces the development of more aggressive phenotypes. The unopposed action of oestrogen produced in the adipose tissue is mitogenic to the endometrium. Increase in insulin secretion, bio availability of IGF's and leptin promote growth of epithelium while the decreased adiponectin reduces antitumor activities in the colon and rectum. Similar mechanisms promote growth of tumour cells in the oesophagus and kidney.

Estimated proportion of cancer that could have been avoided by reducing body weight is only second to tobacco as a single entity when considering the causes of non-genetic cancer. Therefore prevention of obesity will decrease the incidence of cancer.

## Prevention of obesity

### *Angela de Silva MBBS, BSc, PhD*

Prevalence of obesity is increasing worldwide, across all age groups. In Sri Lanka, a rise in prevalence of overweight and obesity among children has been reported, with a much greater increase in among women. Though obesity is known to be due to the interplay between declining dietary quality or unhealthy diets and inadequate physical activity, prevention strategies have not been successful in many settings. If obesity prevention is simply matter of reducing calorie intake and increasing physical activity, why is the effectiveness of many obesity prevention programmes and strategies limited?

Previously, obesity was thought to be a matter of self indulgence or lifestyle choices. This simplistic viewpoint is no longer acceptable, and obesity has been shown to be a much more complex phenomenon. The pathophysiology of weight gain is a highly complex issue, with interplay between genetic and environmental factors. The obesogenic environment, i.e. sedentary lifestyle caused by increased availability and accessibility to transport, television viewing, accessibility and affordability of prepackaged fast foods which are usually high in fat, salt and refined sugars is partly to be blamed.

What does the evidence so far indicate? There are no simple solutions or magical formulae to combat the development of overweight or obesity. Obesity prevention is most effective if started in early childhood since dietary and behavioural habits are established in early childhood, mainly within the first 2 years of life. For older children, adolescents and adults, much greater support in preventing obesity in the form of early surveillance, social marketing, preventing of unhealthy food advertising and promotion of physical activity is essential.

## Our Recent Activities



24<sup>th</sup> Annual Scientific Sessions of the PSSSL was held on 18<sup>th</sup> November 2011, at the Faculty of Medicine, Colombo. The programme included two free paper sessions, guest lectures by Dr Indu Nanayakkara of Faculty of Medicine, Peradeniya, Dr. Dilshani Dissanayaka of Faculty of Medicine, Colombo and Valentine Basnayake endowment lectures by Dr Sudharshani Wasalathanthri and Dr Angela de Silva of Faculty of Medicine, Colombo. A symposium on 'aesthetics as a form of therapy' added colour and variety to the scientific sessions.



## The Physiological Society of Sri Lanka (PSSL)

### *Seneviratne Memorial Research Award*

The Physiological Society of Sri Lanka makes an annual award for original investigational work done in physiology by undergraduates or postgraduates.

The award arises from an endowment made by Mrs. Alison Seneviratne in memory of her husband Dr. K. N. Seneviratne a former Professor in Physiology, Faculty of Medicine, University of Colombo.

The award will consist of a certificate and a cash prize.

Conditions to be fulfilled by applicants for the Award

1. The work for which the Award is made must be of the nature of an original investigation done by the applicant. The work (thesis/ dissertation submitted) should have been done within a period of five years or less preceding the closing date of application for the Award. At the time of study the applicant/s should be student/s at a university or other higher educational institutions at undergraduate level or postgraduate level.
2. The work should have been supervised by an experienced scientist (applicable to undergraduates)
3. The work must be in any one or more of the various fields of physiology, including animal, human, microbial and plant physiology.
4. The applicant must submit his work in the form of a scientific paper. Original and two copies should be submitted. The copies should not have the names of authors. Typical sections in such a paper would be title, author's name and address, abstract, introduction, methods and results, discussion, acknowledgment and references. The length of the paper should be 10 pages or less of double spaced typewritten material on A4-size paper. Longer papers may exceptionally be accepted. A paper that has already been published by a scientific journal may be submitted for the Award. The style in presenting the references should conform to that required when preparing papers and abstract of presentation at the Physiological Society of Sri Lanka.
5. Priority would be for applicants less than 40 years of age at the time of closing applications and for work conducted in Sri Lanka but the award would be open for all ages and would include research work conducted outside Sri Lanka.
6. This award would be open to all citizens of Sri Lanka.
7. The award is a lifetime award.

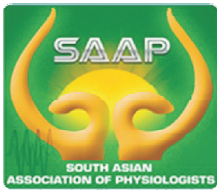
Please send the paper and a copy of CV to:  
Dr. Himansu Waidyasekera, Secretary/PSSL  
Dept of Physiology, Faculty of Medical Sciences,  
University of Sri Jayewardenepura, Gangodawila, Nugegoda.  
Tele: 0112802182, email: himawaidya@yahoo.com

Deadline for sending papers: 30th August 2012

## Our Recent Activities



Professor K.N. Seneviratne Memorial oration, 2011 was delivered by Professor Vajira Weerasinghe, Professor of Physiology, Faculty of Medicine, Peradeniya, titled "Magnetic stimulation of the brain: A new era in human brain studies".



# SAAP 3



## 3rd Biennial Conference of South Asian Association of Physiologists

### Advances in Physiology : Trends and Opportunities

7th - 10th November 2012

**HOTEL TAJ SAMUDRA**

**COLOMBO**

**SRI LANKA**

#### Programme Highlights

- Main conference
- Pre and post congress workshops on medical education, neuro and bone physiology
- Plenaries by international speakers
- Interactive symposia on recent advances in physiology
- Free paper sessions
- Social programme

**Extended abstract submission deadline : 15 July 2012**

Full Registration: Rs. 4000

Day Registration: Rs. 2500

Pre-conference workshop: Rs. 1500

Post-conference workshop: Rs. 1500

Conference secretariat  
Aitken Spence Conventions & Exhibitions  
Aitken Spence Towers, 305, Vauxhall Street  
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