

## MEETING REPORTS AND ANNOUNCEMENTS

## Joint EASPS-AAPS conference in Tanzania 2023: a beginning of the pragmatic efforts to promote physiology education, research, and practice in East Africa

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## Abstract

The East African Society of Physiological Sciences (EASPS) identified many problems associated with the practice and impact of physiology training and graduates within the region. The EASPS, in conjunction with the African Association of Physiological Sciences (AAPS), resolved to tackle those identified problems in the region by organizing a regional conference in Tanzania between November 29, 2023, and December 1, 2023. The conference was successful with remarkable achievements, including production of Physiology Curriculum for African Universities (PhysioCAFUN); launching of the International Union of Physiological Sciences (IUPS) African Physiology Mentoring Program; educational workshops on physiology teaching and skills acquisition; plenary sessions on various inspiring scientific topics for advancement of research capacities and current trends in physiological sciences; presentation of abstracts by authors and publishing of the abstracts as edited conference proceedings in the *Journal of African Association of Physiological Sciences*; presentation of awards to the top 10 abstracts and 7 other key Local Organizing Committee members and partners; first annual general meeting of the EASPS members; networking of participants within and beyond Africa; and recognition of the formation processes of national physiological societies in Rwanda, Kenya, Uganda, and Tanzania.

**NEW & NOTEWORTHY** The joint East African Society of Physiological Sciences (EASPS)-African Association of Physiological Sciences (AAPS) conference in Tanzania was a successful event where we launched the Physiology Curriculum for African Universities (PhysioCAFUN) and the International Union of Physiological Sciences (IUPS) Physiology Mentoring Program in Africa. We also organized educational workshops on physiology functional tests that equipped participants with practical skills. Authors presented their peer-reviewed abstracts, which have now been published in the *Journal of African Association of Physiological Sciences*. Participants attended from 24 countries across Africa, Europe, Asia, and United States.

curriculum; EASPS conference; mentorship; physiology education; workshop

## INTRODUCTION

The East African Society of Physiological Sciences (EASPS) was formed in February 2022 as an affiliate of the African

Association of Physiological Sciences (AAPS) and with strong collaboration with the International Union of Physiological Sciences (IUPS). The EASPS identified many problems associated with the practice and impact of physiology training

and graduates within the region. Some of these problems include 1) underdevelopment of physiology education and research; 2) very low number of physiology-training institutions (e.g., 0 in Rwanda, 1 in Tanzania, 3 in Kenya, 3 in Uganda, and 5 in Ethiopia); 3) very low number of East African physiologists compared to their regional need for teaching, research, and practice, leading to contract employment of physiologists (expatriates) from outside of the East African region; 4) inadequate physiological testing skills by faculty members in physiological sciences in East Africa, thereby resulting in a negative impact on the quality of training provided to students pursuing varying interests that require physiological training in Medical and Health Sciences; 5) low practice and application of physiology due to the regional deficiency in physiology education; and 6) lack of secured future of physiology education and practice in the region if there is no change in terms of the status quo. The EASPS, in conjunction with the AAPS, resolved to tackle those identified problems in the region by organizing a regional conference.

## ABOUT THE MEETING/EVENT

The conference theme was “Advancing Physiological Training, Research, and Practice in Africa.” It was hosted by the Muhimbili University of Health and Allied Sciences (MUHAS) and held between November 29, 2023, and December 1, 2023, at Dar es Salaam, Tanzania. *Days 1* and *2* were allocated for the plenary lectures and scientific sessions that took place at the AURA Suites, while *day 3* was set aside for a teaching workshop at the laboratories of MUHAS, which was generously conducted by ADInstruments. The conference was organized by EASPS in collaboration with AAPS. The EASPS Council was commendably supported by the local organizing committee (LOC), which consisted of members drawn from various universities in Tanzania. The conference organizers also established an excellent Advisory Board that was made up of eminent physiologists from prominent physiological societies across the globe whose guidance and resource mobilization led to the huge success of the conference.

The conference aimed to achieve several goals. First, the aim was to transform physiology teaching through competence-based curricula. Second, the aim was to launch the IUPS new physiology mentorship program in Africa, thus making Africa the first beneficiary of this exciting venture. Third, the intention was to enhance multidisciplinary and interinstitutional collaborative physiology research in Africa. Fourth, there was a strong desire to promote the application of physiological sciences in clinical practice. Fifth, a major goal was to put mechanisms in place to establish national physiological societies in East African countries, including Rwanda, Uganda, Kenya, and Tanzania. Finally, the first annual general meeting (AGM) of the EASPS members (since its formation) was organized for this period.

There were over 100 physical participants and several online participants from 24 countries, including 16 from Africa, 5 from Europe, 2 from Asia, and 1 from the United States. Being the first of its kind to be organized by EASPS, we identified a strong need to support junior faculty and students from various countries to physically attend the

conference in Tanzania. Thus travel grants were awarded that covered accommodation and meals throughout the conference period. A total of 32 participants received such awards. The travel grant awardees represented nine African countries and gender parity was also considered in terms of the final selections.

The conference program (Table 1) was a mix of plenary sessions by renowned speakers, abstract presentations (oral and e-posters) by authors, and educational workshops facilitated by ADInstruments. There were 13 plenary sessions, including 6 on *days 1* and *2* each, and 1 on *day 3*. The educational workshops focused on physiology functional tests [electrocardiogram (ECG), electroencephalogram (EEG), and spirometry]. A total of 86 abstracts (out of the 103 received) were eventually presented (including 16 orals and 70 e-posters). The presented abstracts have since been published as an edited conference proceeding in the *Journal of African Association of Physiological Sciences (JAAPS)* (1).

Before the conference date, a total of 103 abstracts were received and reviewed by our scientific committee (judges), who are professors from various universities in Africa. The top 10 ranked abstracts were identified based on the average score (Table 2), and their authors were presented with merit awards during the networking dinner and award night.

## OUTCOMES

To achieve the first goal, which we believe is a game changer for physiology education in Africa, we constituted a technical team and tasked them to produce a draft of the Undergraduate Physiology Curriculum for African Universities (PhysioCAFUN). The draft was presented during the conference for input and ratification by the participants. The final version of PhysioCAFUN has since become an official resource document and can be accessed on the website of AAPS (2).

To achieve the second goal, which is to build the capacity of young physiologists in terms of their future career development, the IUPS constituted a task force for such a mentoring program. During the conference, this venture was launched, and the potential mentees were highly excited to learn about the program, as recruitment would start after the conference. Details about this program can be found on the IUPS website (3).

Concerning the third and the fourth goals, plenary sessions were delivered by prominent speakers to stimulate participants on approaches to achieve them. This was strengthened by education workshops on physiological testing (ECG, EEG, and spirometry), which were facilitated by ADInstruments. Moreover, the ongoing efforts of AAPS to establish a database of African Physiologists should significantly help to achieve the third goal, in addition to various forms of networking achieved by participants during the conference. Furthermore, the strategic plan of the EASPS to promote the marketing of physiology and strengthen collaborations with government bodies and stakeholders in the health sector is the ideal solution to achieve the fourth goal. The fifth objective was partly achieved as some countries like Rwanda and Kenya provided updates during the AGM about the level of progress made toward the formation of their national societies. Finally, the

**Table 1.** Schedule of activities during the EASPS Conference in Tanzania

YouTube Links	Activities	Responsible Persons
<i>Day 1 (November 29, 2023) at Aura Suites, Dar es Salaam, Tanzania</i>		
<a href="https://youtu.be/J5X9qa6A5ql">https://youtu.be/J5X9qa6A5ql</a>	Introduction of guests	EASPS Vice-President, Dr. Marina Njelekela, MUHAS, Tanzania
<a href="https://youtu.be/cQc7ZdO60gs">https://youtu.be/cQc7ZdO60gs</a>	Welcoming remarks and speech by the guest of honor	MUHAS Vice-Chancellor, Tanzania (Prof. Appolinary Kamuhabwa)
<a href="https://youtu.be/S-235tUjiU0">https://youtu.be/S-235tUjiU0</a>	Group photographs	Master of Ceremony
<a href="https://youtu.be/3TxW-YD_AV8">https://youtu.be/3TxW-YD_AV8</a>	Opening address	AAPS President, Prof. Faadiel Essop, Stellenbosch University, South Africa
<a href="https://youtu.be/sXiei2AFF3Q">https://youtu.be/sXiei2AFF3Q</a>	Plenary 1: strengthening physiology education and practice in africa	EASPS President, Prof. Abdullateef Alagbonsi, University of Rwanda
<a href="https://youtu.be/5KbTdVpOs8g">https://youtu.be/5KbTdVpOs8g</a>	Plenary 2: myometrial research and translation to help childbirth	IUPS President, Emeritus Professor Susan Wray, University of Liverpool, United Kingdom
<a href="https://youtu.be/zM0m-wY221l">https://youtu.be/zM0m-wY221l</a>	Plenary 3: structure-function relationship study of ion channels: looking back and seeing ahead	IUPS 2nd Vice President, Prof. Yoshihiro Kubo, NIPS, Japan
<a href="https://youtu.be/-6ghYOSxTFk">https://youtu.be/-6ghYOSxTFk</a>	Plenary 4: taste of fat: the 6th gustatory quality and its implication in obesity in some African countries	Fellow of IUPS Academy of Physiology, Prof. Naim A. Khan, University of Burgundy, France
<a href="https://youtu.be/a_H_Simb1aA">https://youtu.be/a_H_Simb1aA</a>	Plenary 5: promoting collaborative physiology research within and beyond Africa	Prof. Anna Krook, Karolinska Institute, Sweden
<a href="https://youtu.be/b4pVto-iVzw">https://youtu.be/b4pVto-iVzw</a>	Plenary 6: beneficial effects of medicinal plants in diabetes: immunological aspects	Member of IUPS Education Committee/SA2P; Prof. Akadiri Yessoufou, University of Abomey-Calavi, Benin Republic
<a href="https://youtu.be/J8hMmcJGTuw">https://youtu.be/J8hMmcJGTuw</a> (for Prof. Alagbonsi and Wray)	Questions and answers for speakers by the participants	Plenary speakers/participants
<a href="https://youtu.be/GPLXT3Pdck4">https://youtu.be/GPLXT3Pdck4</a> (for Profs. Kubo, Khan, Krook, and Yessoufou)		
	Presentation of abstracts as scheduled for authors	Authors/Scientific Committee/All Participants
	City tours	All (optional, based on interest)
<i>Day 2 (November 30, 2023) at Aura Suites, Dar es Salaam, Tanzania</i>		
<a href="https://youtu.be/h9h9rjhzYAU">https://youtu.be/h9h9rjhzYAU</a>	Recap of day 1 activities	Kenya Rep in EASPS Council, Dr. Faraj Alkizim, JKUAT, Kenya
<a href="https://youtu.be/7uxiA43clzo">https://youtu.be/7uxiA43clzo</a> (plenary)	Plenary 1: launching of the IUPS' African Physiology Mentorship Program	IUPS 1st Vice President, Prof. Susan Barman, Michigan State University, USA/Co-Chair of IUPS BGA, Prof. Simiat Elias, AKU, Kenya
<a href="https://youtu.be/ID4lt5sYZgY">https://youtu.be/ID4lt5sYZgY</a> (symbolic ceremony)		
<a href="https://youtu.be/as0tXM5taQM">https://youtu.be/as0tXM5taQM</a>	Plenary 2: prospects of biomedical sciences in the East African regional integration	Prof. Mainen Moshi, Hubert Kairuki Memorial University (HKMU), Tanzania
<a href="https://youtu.be/OWsAIWAEHEk">https://youtu.be/OWsAIWAEHEk</a>	Plenary 3: gut-bone marrow axis: implication and future perspectives	Prof. Lamis Kaddam, AlNeelain University, Sudan/ King AbdulAziz University, Saudi Arabia
<a href="https://youtu.be/Ah-ljg7qRtA">https://youtu.be/Ah-ljg7qRtA</a>	Plenary 4: regulation of blood flow in the microcirculation	IUPS Gen. Sec; Emer. Prof. Ulrich Pohl, Ludwig Maximilian University of Munich, Germany
<a href="https://youtu.be/f7FXEUDTc-g">https://youtu.be/f7FXEUDTc-g</a>	Plenary 5: incorporating active learning into the teaching of physiology	Co-Chair of IUPS BGA, Prof. Simiat Elias, AKU, Kenya
<a href="https://youtu.be/9Gr1k16L_Ls">https://youtu.be/9Gr1k16L_Ls</a>	Question and answer for speakers by the participants	Plenary speakers/participants
<a href="https://youtu.be/OudkRP8XEDk">https://youtu.be/OudkRP8XEDk</a> (presentation)	Plenary 6: eeliberation on draft physiology curriculum for Africa Universities (PhysioCAFUN)	AAPS President (Prof. Faadiel Essop)/EASPS President (Prof. Abdullateef Alagbonsi)/All participants
<a href="https://youtu.be/zncq00cp3ow">https://youtu.be/zncq00cp3ow</a> (deliberation)		
	Presentation of Abstracts as Scheduled for Authors	Authors/scientific committee/all participants
<a href="https://youtu.be/ZhfDqzgV9bE">https://youtu.be/ZhfDqzgV9bE</a>	Annual General Meeting of EASPS Congress	EASPS members
	Networking Dinner and Award presentations	IUPS/AAPS/EASPS/all participants
<i>Day 3 (December 1, 2023) at MUHAS, Dar es Salaam, Tanzania</i>		
<a href="https://youtu.be/mH9gemAu5dl">https://youtu.be/mH9gemAu5dl</a>	Physiology Practice in Tanzania: Bridging the Healthcare Gap through Expert Skills in Wellness, Disease Prevention, and Sports Performance	Chair of Physiology Department, MUHAS, Tanzania (Dr. Fredrick Mashili)
<a href="https://youtu.be/ea6es-AuVNY">https://youtu.be/ea6es-AuVNY</a> (for electroencephalogram)	Workshops on physiological (functional) tests	ADInstruments/all participants
<a href="https://youtu.be/0Q5UBLCF7y4">https://youtu.be/0Q5UBLCF7y4</a> (for spirometry)		
<a href="https://youtu.be/LlyF05QGdjQ">https://youtu.be/LlyF05QGdjQ</a> (for electrocardiogram)		
<a href="https://youtu.be/zmFVyhM-5k">https://youtu.be/zmFVyhM-5k</a>	Highlighting the next action plans and timeline for implementation	EASPS President, Prof. Abdullateef Alagbonsi, University of Rwanda

Continued

**Table 1.— Continued**

YouTube Links	Activities	Responsible Persons
<a href="https://youtu.be/XWkFUWR1Bx4">https://youtu.be/XWkFUWR1Bx4</a>	Closure of the conference and departure	Principal of College of Medicine, MUHAS, Tanzania (Dr. Enica Richard)
<a href="https://youtu.be/MCI6FcF259k">https://youtu.be/MCI6FcF259k</a> <a href="https://youtu.be/ohqH6vhvhuCY">https://youtu.be/ohqH6vhvhuCY</a>	Supplementary videos of short clips on some conference moments	

AAPS, African Association of Physiological Sciences; AKU, the Aga Khan University Medical College, East Africa; EASPS, East African Society Of Physiological Sciences; IUPS, International Union of Physiological Sciences; JKUAT, Jomo Kenyatta University of Agriculture and Technology; MUHAS, Muhimbili University of Health and Allied Sciences; SA2P, African Society of Physiology and Pathophysiology.

sixth goal was a huge success, marking the first-ever meeting of EASPS members.

existence, with a target to extend to five more countries before the next conference.

## CONCLUSIONS

This exciting conference, which has been tagged by the participants as a model for others to follow, was a highly successful one (4) that made the following remarkable achievements, among others: production of PhysioCAFUN; launching of the IUPS African Physiology Mentoring Program; educational workshops on Physiology teaching and skills acquisition; plenary sessions on various inspiring scientific topics for advancement of research capacities and current trends in physiological sciences; presentation of abstracts by authors and publishing of the abstracts as edited conference proceedings in JAAPS; presentation of awards to the top 10 abstracts and 7 other key LOC members and partners; first AGM of the EASPS members; networking of participants within and beyond Africa; and recognition of the formation processes of national physiological societies in Rwanda, Kenya, Uganda, and Tanzania, in addition to Ethiopia, which were already in

## GRANTS

The EASPS council appreciates the gracious financial support of various partners for the success of the conference, including the International Union of Physiological Sciences, The Physiological Society (UK), The Physiological Society of Japan, The American Physiological Society, The German Physiological Society, ADInstruments, Elsevier, Muhimbili University of Health and Allied Sciences, Catholic University of Health and Allied Sciences, Kilimanjaro Christian Medical University College, Hubert Kairuki Memorial University, Tanzania Health Summit, Bugando Medical Center, Muhimbili National Hospital, and Muhimbili Orthopedic Hospital. The major efforts of all the conference committees are highly appreciated and acknowledged.

## DISCLOSURES

No conflicts of interest, financial or otherwise, are declared by the author.

**Table 2. Ranking of Top 10 abstracts by the EASPS scientific committee who received awards in the networking dinner and award night**

Abstract Titles	Name and Institution of the Presenting Authors	Abstract Ranks
Ameliorative effects of quail ( <i>Cortunix japonica</i> L.) and chicken eggs on fasting blood glucose, insulin levels and some organ dysfunctions in streptozotocin-induced diabetic male Wistar rats	Agunloye Olaoluwa Mary, Kampala International University, Western Campus, Ishaka, Bushenyi, Uganda	First
<i>Telfairia occidentalis</i> inhibits gluconeogenesis and increases glycolysis in high-fat diet/streptozotocin-induced diabetic rats	Abdul-Rahuf Feyitimi, University of Rwanda, Republic of Rwanda	Second
Effect of natural honey on biochemical markers in STZ-induced diabetic mice	Getahun Dibaba, Addis Ababa University, Ethiopia	Third
Effects of aqueous root extract of <i>Citropsis articulata</i> (willd. ex spreng) on cardiac function in DOCA salt-induced hypertensive male Wistar rats	Ejike Daniel Eze, Kabale University, Kabale, Uganda	Fourth
Transgenerational programming of insulin resistance in offspring of white rice-fed female fruit flies	Kehinde Ahmad Adeshina, Usman Danfodiyo University, P.M.B. 2254, Sokoto, Nigeria	Fifth
The effects of maternal HIV/ART and preeclampsia on the cardiometabolic health and growth of the offspring in Mthatha, South Africa.	Benedicta Ngwenchi Chungag Nee Nkeh, Walter Sisulu University, South Africa	Sixth
Ursolic acid prevents metabolic syndrome-related insulin resistance through decreased expression of PTP-1B gene in male Wistar rats fed a high-carbohydrate high-fat diet	Oluwatosin Omodara, Abubakar Tafawa Balewa University, Bauchi, Nigeria	Seventh
Influence of endothelium-derived nitric oxide and calcium sensitivity on the relaxant action of lauric acid on the corpus cavernosum of male Wistar rats	Makinde Vincent Olubiyi, University of Rwanda, Rwanda	Eight
Is there a relationship between endothelin-1, vascular cell adhesion molecule-1 and the arterial hypotension observed during spinal anesthesia?	Jean Fidèle Nnang essence, University of the Health Sciences, Gabon	Ninth
Investigation into aortic smooth muscle activities of <i>Terminalia glaucescens</i> extract in male Wistar rats	Michael Allen, Lagos State University College of Medicine, Ikeja Lagos State, Nigeria	Tenth

EASPS, East African Society Of Physiological Sciences.

## AUTHOR CONTRIBUTIONS

A.I.A., F.E., M.N., A.A.L., R.O., E.K.M., F.O.A., H.I.N., T.E.K., F.L.M., O.C., A.A.E., I.D., J.J.R., and N.G.O., conceived and designed research; A.I.A. analyzed data; A.I.A. prepared figures; A.I.A. drafted manuscript; A.I.A., F.E., and A.A.L. edited and revised manuscript; A.I.A., F.L.M., O.C., A.A.E., F.E., M.N., A.A.L., R.O., E.K.M., F.O.A., H.I.N., T.E.K., I.D., J.J.R., and N.G.O., approved final version of manuscript.

## REFERENCES

1. **Erlwanger KH.** Abstracts of the 1st East African Society of Physiological Sciences (EASPS) and Special African Association of Physiological Sciences (AAPS) Conference that was held from 29th November to 1st December, 2023 in Dar es Salaam, Tanzania. *J Afr Assoc Physiol Sci* 11: S1–S86, 2023. doi:10.4314/jaaps.v11i2.5.
2. **East African Society of Physiological Sciences (EASPS)-African Association of Physiological Sciences (AAPS).** Undergraduate Physiology Curriculum for African Universities (PhysioCAFUN). <https://aapsnet.org/wp-content/uploads/2024/02/PhysioCAFUN.pdf> [2024 Apr 8].
3. **International Union of Physiological Sciences (IUPS).** IUPS Mentoring Program. <https://www.iups.org/activities/mentoring-program/> [2024 Apr 8].
4. **Wray S.** IUPS: physiology on a global scale. *Physiology (Bethesda)* 39: 126–127, 2024. doi:10.1152/physiol.00005.2024.