

EDITORIAL

MEDICAL PHYSIOLOGY HAS ITS OWN IDENTITY AS A SEPARATE SUBJECT

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Medicine is the art and science of healing human diseases. Any branch of biological sciences when comes to help and is related to understanding, preventing, alleviating and curing human diseases becomes 'Medical'. Medical Physiology deals with how the human body works, depending upon how the individual body systems function, which in turn depend on how the component cells function, depending upon the interactions among subcellular organelles and countless molecules. Graduating medical students believe that physiology is highly relevant and important to their clinical training. About 150 years ago, many authors started writing important Physiology books keeping in view the special needs of medical students, and that established medical physiology as a separate subject.

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Medicine is the art and science of healing human disease. Any branch of biological sciences when comes to help and is related to understanding, preventing, alleviating and curing human disease becomes 'Medical' and because of this fact there are books having titles like Medical Biochemistry, Medical Pharmacology, Medical Microbiology, Medical Parasitology, Medical Embryology, Clinically Oriented Anatomy etc. present in the market. So comes the Medical Physiology which is now the most important and the most robust branch of Human Physiology. The great beauty of physiology is that it seeks to integrate the individual functions of the cells, tissues and organs into an understanding of the function of the entire human body, which is much more than the sum of its parts.¹ Medical Physiology deals with how the human body functions, which depends on how the individual body systems function, which depends on how the component cells function, which in turn depends on the interactions among subcellular organelles and countless molecules. Thus, medical physiology takes a global view of human body, but in doing so, requires the integrated understanding of events at the level of molecules, cells and organs.² Every year the American Association of Medical Colleges asks graduating medical students about how well the basic sciences have prepared them for clinical training, and every year physiology is at the top. Therefore, graduating medical students believe that physiology is highly relevant and important to their clinical training.^{3,4}

Association of Physiology and Medicine was known since the time of Hippocrates around 420 BC. Only about 150 years ago, it was appreciated that the need of medical students and physicians, as regards the physiology concepts, is different from the physiologists. So, many authors wrote important Physiology books keeping in view the special needs of medical students. In the modern era, to quote a few examples, possibly the first known book of Physiology written for the medical

students was '*A Compend of Human Physiology: Especially Adapted for use of Medical Students*' written by Albert P Brubaker in around 1880 published by P. BLAKISTON, SON & CO., 1012 Walnut Street Philadelphia. '*A Text-Book of Physiology for Medical Students and Physicians*' was written by William H Howell of Johns Hopkins University Baltimore in 1905. '*Applied Physiology: A Handbook for Students of Medicine*' was written in England by Robert Hutchison published by EDWARD ARNOLD, London in 1908. In 1926, physician Samson Wright published a textbook entitled '*Applied Physiology*' that was intended for both medical students and the medical profession. Eleven years after the publication of Wright's textbook (1937), two physicians and professors of physiology located at the University of Toronto, Charles Herbert Best (1899–1978), and Norman Burke Taylor (1885–1972), published '*The Physiological Basis of Medical Practice*', a University of Toronto text in Applied Physiology'.⁵ The book which remained teachers' and students' favourite for decades. '*Textbook of Medical Physiology*' by Arthur C Guyton was written in 1956. In Pakistan, Mushtaq Ahmad wrote '*Essentials of Medical Physiology*' which was first published in 1980. Now-a-days, '*Medical Physiology*' written by Walter F Boron and Emile L Boulpaep (1st ed. 2002, and 3rd ed. 2017) is important textbook for medical students. These books are sufficient proof of the fact that Medical Physiology has a separate identity as a subject!

Physiology is the stem from which many branches sprout and flourish, each having its own jurisdiction and scope. Plant Physiology, Microbial Physiology, Molecular Physiology, Animal Physiology, Space Physiology, Sports Physiology, Comparative Physiology, Neurophysiology, Electrophysiology, all have their specific identity. Likewise, Medical Physiology is a branch of Human Physiology which is related to the understanding and treatment of human diseases. Saying that Human Physiology and Medical

Physiology are one and the same subject is not true because till about 30 years ago, in Pakistan, Physiology and Biochemistry were a single subject and were taught by Physiologists or Biochemists. Now Medical Physiology and Medical Biochemistry are accepted as separate subjects and Medical Biochemistry is having equal importance as Physiology and Anatomy in medical curricula in Pakistan.

Medical Physiology nurtures upon many branches of biological sciences and uses this knowledge to the understanding and treatment of human diseases. Most of the times doctors treat diseases in a way that they are converting the pathological states into physiological states. For example, treating fever, hypertension or hyperglycaemia is just to bring these parameters into physiological limits. Comparison of diseased condition with the normal, healthy condition (the physiological condition) is one of the best tool for diagnostic process for doctors. So, Medical Physiology provides a deeper understanding of human physiology at a level required for clinical medicine.⁶

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REFERENCES

1. Guyton AC and Hall JE. Preface. In: Textbook of Medical Physiology, (9th ed). Philadelphia, USA: WB Saunders Company; 1996; pp. v–vi.
2. Boron WF and Boulpaep EL. Foundations of Physiology. In: Medical Physiology (3rd ed.) Elsevier; 2017. p 2.
3. Ahmad H Adil, Hani J Alturkmani. Physiologically lucky: the role of medical physiology in modern medical education. An interview with Dr. John E. Hall. *Perspect Med Educ* 2013;2(2):99–103. URL: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3656172/> [Accessed: 17 Apr 2019]
4. Awaatif Alam. How do medical students in their clinical years perceive basic sciences courses at King Saud University? *Ann Saudi Med* 2011;31(1):58–61. doi: 10.4103/0256-4947.75780
5. Tipton CM. The emergence of Applied Physiology within the discipline of Physiology. *J Appl Physiol* 2016;121(2):401–14. <https://www.ncbi.nlm.nih.gov/pubmed/27125848>. [Accessed 17 Apr 2019]
6. Lemoine M and Pradeu T. Dissecting the meanings of “Physiology” to assess the vitality of the discipline. <https://www.physiology.org/doi/full/10.1152/physiol.00015.2018>