

Head of Department: Dr Rajani Bala Jasrotia, Professor (Junior Grade) , MBBS, MD

About the department: Human physiology is the core branch of medical science which deals with the functions and processes that creates life. It explains about the internal workings of body organs and how they interact with the world around them. It deals with the general concepts, biophysical and biochemical principles that are basic to the function of all the body systems. Study in physiology considers growth and development, vascular control, haematological basics, respiratory function, gut and kidney function, endocrinology, neuroscience, as well as sensory and motor functions.

Main objectives of Department of Physiology in Dr RMLIMS, Lucknow is to create an excellent academic and research environment in the institute, and thus providing a platform for development of quality medical services with different laboratory set ups e.g. Autonomic functions lab, Pulmonary functions lab, Neurophysiology lab, Cardiovascular physiology lab, Sleep physiology lab, Exercise physiology lab and Yoga center. Undergraduate and Postgraduate students as well as research scholars will have the opportunity of developing their research skills and practical experience with advanced physiological platforms interfacing with the living organism and its integrations with other speciality and super speciality departments in the institute.

Facilities:

Lecture theatre with sitting capacity of 350 with interactive audio-visual system.

Haematology lab.

Clinical physiology lab.

Pulmonary function lab.

Autonomic function labs

Amphibian lab.

Mammalian lab.

Demonstration rooms with interactive audio-visual system.

Departmental library.

Seminar room- post graduate research lab.

Museum

Plethysmography lab

Courses Offered: MBBS

Activities in Research

Principal Investigator	Research Project	Type of Project
Dr Nitin Ashok John	“Effect of imagery, auditory stimuli & tactile stimuli on autonomic function tests”	Non funded intra-mural project
	1. To study the effect of various phases of menstrual cycle on pulmonary function tests 2. The study of blood pressure and hearing loss in bus drivers Dissertation 1. Review of the functioning of Medical Council of India	ICMR STS project ICMR STS project Completed Dissertation: National Law School University Bangalore: Publication Stage
Dr Rajani Bala Jasrotia	Impact of therapeutic Neck Irradiation on Postural Cardiovascular reflexes and Heart rate variability in patients of thyroid malignancy.	ICMR STS project
	Impact of quality of sleep on body composition, autonomic functions and heart rate variability in adult population	Non funded intra-mural project
	Effect of menstrual cycle on Pulmonary function test and respiratory efficiency.	Non funded intra-mural project
	Effect of progressive exercise on cardiopulmonary dynamic during different phases of menstrual cycle.	PhD Thesis
	Effect of yoga on Exercise induced bronchial lability in asthmatic children	ICMR funded
	Effect of Tibetan Meditational music therapy on perceived stress and cardiovascular autonomic functions in shift workers	Non funded intra-mural
Dr Manish Kumar Verma	“Pattern of inter-arm difference in blood pressure and ankle-brachial index in building construction workers”	Non funded intra-mural project
	Actigraphic evaluation of circadian rhythm and sleep pattern and quality in medical professionals doing night shift duty.	Non funded intra-mural
Dr Vibha Gangwar	“Pilot study of the effect of intensity of exercise on lung functions, pulmonary diffusing capacity and autonomic functions	Non funded intra-mural project

	in sedentary office workers”	
	“To study the autonomic functions and pulmonary functions in tiles cutting workers at construction site”	Non funded intra-mural project
	Impact of COVID-19 pandemic and lockdown on higher mental function of general population in India.”	Non- funded intra-mural project
	Student’s perception on utility and application of skills acquired during foundation course”	Non- funded intra-mural project
	The impact of call with mobile phone on cardiac autonomic activity in healthy subjects	Non- funded intra-mural project

Area of Expertise:

Autonomic function lab.

Cardiovascular lab.

Pulmonary function test.

Sleep lab.

Exercise physiology lab.

Publications:

Dr Nitin Ashok John:

1. Books: 6 No.

2. Research Publication: 51 No

3. Editor: Medical Journal: 1

4. Editor: Medical Bulletin 1

a. Books

Theory Book in Physiology: One as an Editor

1. CC Chaterjee. Volume I and II XIII th Edition: 2019.

Previous Edition as Editor: CC Chaterjee. Volume I and II XII th Edition: 2018.

Practical Book in Physiology: Five

1. Practical Physiology for Dental Students: CBS Publishers, New Delhi. 2016

2. Practical Anatomy and Physiology for Pharmacy Students: CBS Publishers, New Delhi. 2016

3. Practical Physiology for Medical Students: CBS Publishers, New Delhi. 2016

4. Practical Physiology for Paramedical Students: CBS Publishers, New Delhi. 2016

5. Practical Manual in Physiology: 2019

b. Research Publication: 51

1. Pro-oxidant and anti oxidant status in patients of sickle Cell anemia. Indian Journal of Clinical Biochemistry. 2004; 19(2): 168-172.

2. The study of auditory and visual reaction time in healthy control, patients of Diabetes Mellitus on modern allopathic regime, and healthy exercisers. Journal, Indian Academy of Clinical Medicine. June-July 2004; 239-243.

3. Analysis of pulmonary function profile in Koradi Thermal Power Station Workers. Indian Medical Gazette. February 2004; 78 - 83.

4. Compromised lung functions in a patient of sickle cell disease. Indian Medical Gazette. March 2004; 142-143.

5. Role of serum uric acid as an anti-oxidant in sickle cell anaemia. Indian Medical Gazette. March 2005; 97-99.

6. Noise induced change in some physiological parameters. Bulletin of Society of Free Radical Research. 2005; Vol 4 - No 1: 10-12.

7. The study of prolonged use of Pyrethrum fumes on pulmonary function. The Anti-Septic Journal. April 2010; 183-185.

8. The study of effect of prolonged use of pyrethrum mosquito coils on autonomic functions. The Antiseptic Journal. March 2011; 120-122.

9. The study of hair line recession in central Indian adolescent population., Biomedicine: 2011; 31(4): 501 – 505

10. Central Research Lab in Medical College. J Bangladesh Physiological Society; 6(2): 140: 2011.

11. Estimation of total length of bones from ulna fragments, Journal of Anatomical Society of India. Dec 2010: 67,68

12. Mean Blood Glucose Level and Glycated Hemoglobin Level in Patients of Non-Insulin Dependent Diabetes Mellitus and its Correlation with serum Ferritin Level. International Journal of Medical Sciences, 2011; Volume 4, Issue: 1 & 2:13-17.

13. Oxidative stress, anaemia and compromised lung functions in patient of sickle cell disease. *Journal of Basic Medical and Allied Sciences* 2011; 1:51-54.
14. Sex counselling and social health workers. Review Article: *African Journal of Public Health* Jan 2011.
15. Neuro-physiological correlates of yoga. *Journal of Anatomical Society of India*, Dec 2011.
16. A Review based on our research of health profile in patients of sickle cell disease and sickle cell traits. *Oman Medical Journal*; Jan 2010.
17. Effect of dual task performance on reaction time in cell phone users. *Biomedicine*. 2014; 34(1): 026-030.
18. Platelet Count, Mean Platelet Volume, Serum Creatinine and Delayed Clotting Time as Surrogate Markers of type 2 Diabetes Mellitus. *Int J Biol Med Res*. 2014; 5(2): 3970-3974.
19. Lung functions and oxidative status in sickle disease and sickle cell trait. *Int J Clin Exp Physiol* 2014; 1: 273-6.
20. Fasting and post prandial hyperglycemia in type 1 and type 2 diabetic patients on anti-diabetic therapy. *Biomedicine* 2014; 34(3):378-383
21. Gamma Glutamyl transferase – a novel biomarker for type 2 diabetes mellitus. *Biomedicine* 2014; 34(3): 334-38.
22. Hydration status and altered physiological homeostatic response of heart rate and fluid intake in indoor office workers during hot summer environment. *Biomedicine*. 2015 Vol 35 No 2: 136-140.
23. Neonatal outcome of pre-eclamptic/eclamptic mothers treated with magnesium sulphate. *The Antiseptic* 2015; 112(1): 24-6.
24. Comparison of Peak Expiratory Flow Rate and Forced Vital Capacity between Petrol Pump Workers and Automobile Repair Workers. *Int J Biol Med Res*. 2014; 5(2): 4084-4088.
25. Effect of smoking on peak expiratory flow rate in building construction workers. *Biomedicine* 2014; 34(4):480-486.
26. Hearing Impairment and High Blood Pressure among Bus Drivers in Puducherry. *Journal of Clinical and Diagnostic Research* 2016; 10:CC08- CC10.
27. Effect of Exercise Intensity on Lipid Profile in Sedentary Obese Adults. *Journal of Clinical and Diagnostic Research*: July Vol 8: Issue 7: 2014: BC 08-BC10.
28. Review of health implications of hot humid environment on indoor and outdoor workers. *International Journal Of Current Research* 2016; 8(1): 22-25.

29. Prolonged use of mosquito coil, mats, and liquidators: A review of its health implications. *Int J Clin Exp Physiol* 2015;2:209-13.
30. Assessment of serum uric acid in type 2 diabetes mellitus in a middle-aged south Indian population. *Biomedicine*: 2016; 36(1): 083-089.
31. Effect's of formaldehyde exposure on visual and auditory choice reaction time. *International Journal of Current Research*. 2016; 8 (05), 30529-30531.
32. Peak expiratory flow rate and reaction time analysis in formaldehyde exposed medical technicians and attendants. *Int J Med Sci Public Health* 2016; 5
33. Review on noise pollution and its associated health hazards. *Scholars Journal of Applied Medical Sciences*, 2016; 4(2A):291-294
34. Aging-mediated neuromuscular instability and delayed choice reaction time. *Int J Med Sci Public Health*. 2016; 5(11): 2269-2273.
35. Refractive error and associated risk factors in 6-12 years school children. *Natl J Physiol Pharm Pharmacol*. 2016; 6(6): 554-558
36. Auditory and visual time and peripheral field of vision in helmet users; *J Bangladesh Soc Physiol* 2016; Dec 11(92): 43-46
37. Assessment of heart rate variability and reaction time in traffic policemen. *Int J Med Res Rev* 2016;4(11):1958-1964. doi:10.17511/ijmr
38. Effect of Exercise Intensity on Body Composition in Overweight and Obese Individual. *Indian J Physiol Pharmacol* 2017; 61(1): 58–64.
39. Autonomic functions in tiles cutting workers at construction site: Case Study. *Sch. J. Med. Sci.* 2018;6(4F): 1758-1759
40. Acute Effect of Tibetan Meditational Music on Autonomic Functions. *Sch. J. App. Med. Sci.* Apr 2018; 6(4): 1826-1828.
41. Gastro Renal Interface in Pathophysiology of Hypertension. *International Journal of Current Research*, 2018;10(4)
42. Study of overweight and obesity and associated factors among undergraduate medical students in North India. *International Journal of Physiology*. March 2018
43. Inter-arm blood pressure difference, pulse pressure and mean arterial pressure as predictors of cardiovascular disease risk in young adults. *International journal of clinical and experimental physiology*. Jan-Mar 2018, Vol 5, iss1, 44-47
44. Sympatho-vagal activity and Cognition in Hemophilia. *Indian J Physiol Pharmacol*: 2018 61 (3), 262-270

45. Exercise prescriptions in Obesity, Diabetes and Hypothyroidism: A Review. Annals of International Medical and Dental Research, Vol (4), Issue (3): 1-3

46. "Pathophysiology of MODY" Review Article. IJCR 2019;11(3): 1-3

Publications-Others: Medical Education and Technology

47. „MEDICAL EDUCATION AND TECHNOLOGY UNDER GUIDANCE OF EXCEPTION TEACHERS“ published in Medical Education and Bulletin State Regional Centre Medical Education Unit, IGMC: 2001.

48. „Majesty of integration of medical education“ published in Medical Education and Bulletin State Regional Centre Medical Education Unit, IGMC. 2001

49. Revamping the physiology curriculum: A brief review. Bulletin of Association of Physiologist of Tamil Nadu: 2011: 5-6.

Health Related Publications

50. Optogenetics: Skill in conflict management prevents premature death; Iron deficiency plays a crucial role in ischemic stroke: Antihypertensive drugs are best taken before bedtime: Fracture risk inherited across two generations: Energy drink augments cardiac risk: Caffeine in coffee reduces birth weight International Journal of Experimental Physiology. April-June 2014 Volume 1 | Issue 2: 168-170.

51. Health, poverty and human development John and Tigani. Sudanese Journal of Public Health: October 2007, Vol.2 (4). 207. Review Article .

1. Editor of Journal / Bulletin: 3 volumes

2. Scientific and Academic Publications

1. Associate Editor: PANACEA Journal of Medical Sciences: Two Years: 2006 and 2007.

2. Chief Editor: Bulletin of Indira Gandhi Medical College and Research Institute, Government of Puducherry: 2010-2015

2. Scientific and Academic Publications: Articles Published in National Newspapers and magazines: 50+

Dr Rajani Bala Jasrotia:

1. **Jasrotia RB**, Kanchan A, John NA, Gangwar V, Verma MK. Acute Effect of Tibetan Meditational Music on Autonomic Functions. Sch. J. App. Med. Sci. Apr 2018; 6(4): 1826-1828.

2. **Jasrotia RB**, Kanchan A, Harsoda JM, Saini R, Agarwal M. Pain sensitivity and cardiovascular reactivity to the experimental induced cold pressor pain during different phases of menstrual cycle in young Indian females. Natl. J. Physiol. Pharm. Pharmacol. 2018; 8(2):273-277.

3. Gangwar V, Verma M K, John N K & Jasrotia R J. Autonomic functions in tiles cutting workers at construction site: Case Study. Sch. J. Med. Sci. 2018;6(4F): 1758-1759
4. Jasrotia RB, Kanchan A, Harsoda JM. Effect of menstrual cycle on pulmonary functions and respiratory efficiency. International Archives of Integrated Medicine 2016; 3 (7), 233-238
5. Jasrotia RB, Kanchan A. Exercise induced asthma (EIA), Exercise induced bronchospasm (EIB), Airway Hyper-responsiveness (AHR) and Exercise induced bronchial lability (EIBL): are they same? Int Journal Current Research and Reviews. 2013; 5(20): 89-93.
6. Jasrotia RB, Kanchan A. Effect of yoga on pulmonary functions in asthmatic children. Int. journal for Life Sciences and Educational Research.2013; 1(3),110 - 114
7. Jasrotia RB, Kanchan A, Hathi GK, Harsoda JM. Knowledge, attitude and practices of Indian girls on various aspects of menstruation. Transworld Medical Journal. 2013.1(2):7-14.
8. Kanchan A, Jasrotia RB, Gosai H, Harsoda JM, Hathi GK. Leptin in Obesity: An Example of altered Homeostasis. SEAJCRR. 2013; 2(6): 531-538.
9. Kanchan A, Jasrotia RB, Hathi GK, Harsoda JM. Autonomic reactivity to stress induced by cold pressor test in normotensive offspring of hypertensive parents. Transworld Medical Journal. 2013; 1(2):42-45.
10. Kanchan A, Jasrotia RB. Evidence Based Medicine: Need of the hour. Indian Journal of Research and Reports in Medical Sciences. 2015; 5 (2), 17-18
11. Gosai H, Akhani P, Kanchan A, Jasrotia RB, Palan BM, Harsoda JM. Neutrophil to lymphocyte ratio and platelet count in anaemic female medical students. Int. Jour Res Med. 2013; 2(2): 41-44
12. Jasrotia RB, Mondal S, Gandhi A, Kumar V, Gandhi S. Effect of yoga on pulmonary function in healthy school children. Yoga Vignana. 2009; 2(3): 29-31.

Dr Manish Kumar Verma:

1. Verma M, Biswas DA. Effect of pre-exercise energy drink on the exercise endurance in young active adults.. Indian Journal of Basic and Applied Medical Research; June 2014: Vol.-3, Issue- 3, P. 216-225
2. Bhardwaj K, Verma M K, Verma NS. Effect of long-term supplementation of active garlic Allicin in reducing blood pressure in hypertensive subjects. International journal of advances in medicine. 2015 Aug;2(3):231-234.
3. R Verma MK, Biswas DA, Tripathi S, Verma NS. Role of autogenic relaxation in management of diabetic cardiovascular autonomic neuropathy in type II diabetes mellitus patients. International journal of research in medical sciences.2016 Apr; 4(4):1193-1199.
4. Role of Rajyoga meditation on intelligent quotient of attention deficit hyperactivity disorder. A Naik, S Patel, DA Biswas, M Verma. J YogaPhys Ther 2016; 6(2)
4. Verma MK, Tripathi S, John NA. John JE. Inter-arm blood pressure difference, pulse pressure and mean arterial pressure as predictors of cardiovascular disease risk in young

- adults. *International journal of clinical and experimental physiology*. Jan-Mar 2018, Vol 5, iss1, 44-47
5. Gangwar V, Verma M K, John N K & Jasrotia R J. Autonomic functions in tiles cutting workers at construction site: Case Study. *Sch. J. Med. Sci.* 2018;6(4F): 1758-1759
 6. Gangwar V, Gahlot A & Gahlot S K & Verma MK. Study of overweight and obesity and associated factors among undergraduate medical students in North India. *International Journal of Physiology*. March 2018
 7. Gangwar V, Verma MK, John NA, Gangwar RS, Singh AK, Jasrotia RB. Correlation of autonomic function tests with age, sex, anthropometry, and body composition in sedentary office workers. *National journal of physiology, pharmacy and pharmacology*. 2019, Vol 9, issue 7
 8. Tripathi S, Verma MK, Gaur DS. Association of lifestyle factors like alcohol and tobacco consumption with semen abnormalities. *Journal of Medical Science and Clinical Research*. Volume 07 Issue 09 September 2019
 9. Tripathi S, Verma M. Frequency of occurrence of hematological abnormalities among rheumatoid arthritis patients. *International journal of clinical and diagnostic pathology* 2019;2(2):405-407.
 10. Mohd. Nawaz, Verma MK. Evaluation of differential levels of serum interleukin-6 in Pre-eclamptic and normal pregnancy women. *International journal of Physiology*. Jan-Mar 2020; 8(1):58-61
 11. Dubey P, Verma M, John NA, Gutch M. Nonlinear parameter of heart rate variability can diagnose early cardiac autonomic neuropathy. *J Arrhythmia*. 2020;36:534–536.
 12. Gangwar V, Verma MK, Gangwar RS, John NA, Jasrotia RB. The effect of moderate vs high intensity exercise on heart rate variability in sedentary office workers. *Journal of Bangladesh society of Physiologists* 2021; 16(1):
 13. Gangwar V, John NA, Verma MK, John J, Jasrotia RB, Gangwar RS. Impact of moderate and high intensity exercise on lung volumes, lung capacities and breath holding time. *IJHCR* 2020; 3(10): 67-73.
 14. Gupta S, John NA, Gangwar V, Verma M. Physiology Autonomic Function Test in Tuberculous Meningitis with Erectile Dysfunction : A Case Report. *Annals of International Medical and Dental Research*, 2020; Vol (6), Issue (1)
 15. Gangwar V, Singh A, Verma M, John NA, Gangwar R, John J, Jasrotia RB. Mental health indicators in the later pahse of lockdown due to covid-19 pandemic in healthy youth combined elderly people: a web-based cross-sectional survey. *Int J Physiol Pathophysiol Pharmacol* 2021;13(4):117-125

Dr Vibha Gangwar:

1. Gangwar V, Verma MK, Gangwar RS, John NA, Jasrotia RB. The effect of moderate vs high intensity exercise on heart rate variability in sedentary office workers. *Journal of Bangladesh society of Physiologists* 2021; 16(1):
2. Gangwar V, John NA, Verma MK, John J, Jasrotia RB, Gangwar RS. Impact of moderate and high intensity exercise on lung volumes, lung capacities and breath holding time. *IJHCR* 2020; 3(10): 67-73.
3. Shaheen S, Gangwar V*, John NA, Gupta S. Pulmonary Functions in various phases of menstrual cycle and their correlation with age. *Int J Clin Exp Physiol*. 2020;7(1):22-26.
4. Gupta S, John NA, Gangwar V*, Verma Manish. Autonomic function test in tubercular meningitis with erectile dysfunction: a case report. *Ann Int Med Den Res* 2020; 6(1): 10-12.

5. Jasrotia RB, Kanchan A, John NA, Verma MK, Gangwar V. A cross-sectional study to evaluate the effect of subjective sleep quality on autonomic functions in different age groups of adults. *Int J Res Med Sci* 2019;7:4038-43.
6. Gangwar V, Verma MK, John NA, Gangwar RS, Singh AK, Jasrotia RB. Correlation of autonomic function tests with age, sex, anthropometry and body composition in sedentary office workers. *Natl J Physiol Pharm Pharmacol*. 2019;9(7):683-688
7. Gangwar V, Gahlot A & Gahlot S K. Study of overweight and obesity and associated factors among undergraduate medical students in North India. *International Journal of Physiology*. 2019; 7(1): 102-107
8. Jasrotia RB, Kanchan A, John NA, Verma MK, Gangwar V. Cross-sectional study of impact of body composition and anthropometry on heart rate variability in different age groups of adults. *Natl J Physiol Pharm Pharmacol* 2019; 9(5): 423-428.
9. Chaudhary R, Yadav P K &Gangwar V. A study on PTSD and associated autonomic dysfunctioning. *Medico Legal update*, 2019; 19(2): 160-164.
10. Verma M, VermaN, John N A, GangwarV& Jasrotia R. A 15480 Pattern of inter-arm difference in blood pressure and ankle-brachial index in building construction workers. *Journal of Hypertension* 2018; 36:e234.
11. Gangwar V, Verma M K, John N K & Jasrotia R J. Autonomic functions in tiles cutting workers at construction site: Case Study. *Sch. J. Med. Sci.* 2018;6(4F): 1758-1759
12. Jasrotia R J, Kanchan A, John N A, Gangwar V& Verma M K. Acute effects of Tibetan meditational Music on Autonomic Functions. *Sch. J. Med. Sci.* 2018;6(4F): 1826-1828
13. Banoo H, Gangwar V, Nabi N. Effect of cold stress and the cold pressor test on blood pressure and heart rate. *Int Arch Biomed Clin Res*. 2016 June; 2(2):65-68. DOI: 10.21276/iabcr.2016.2.2.14
14. Banoo H, Gangwar V, Kumar D, Arya M L, Nabi N. active teaching leads to interest and better understanding of physiology. *The Indian journal of Bio Research*. 2014; 85(4): 41-52
15. Banoo H, Gangwar V, Nabi N. Teaching physiology by various practical experimental lessons. *The Indian Journal of Bio Research*. 2014; 85(3): 71-77
16. Gangwar V, Kumar D, Gangwar R S, Arya M L, Banoo H. Prevalence of primary dysmenorrhea among the undergraduate medical students and its impact on their performance in study. *International Journal of Physiology*. 2014 January-June; 2(1): 14-18. DOI: 10.5958/j.2320-608X.2.1.004
17. Gangwar V, Gangwar R S, Banoo H. Prevalence of cardiac complications in elderly patients of hypertension. *Journal of Advance Researches in Biological Sciences*. 2013 September; 5(3): 234-237. DOI: 10.21276/ijarbs

18. Kumar D, Hasan S N, Puri R, Agarwal V, Gangwar V, Arya M L. Spirometric evaluation of lung functions in obese and non-obese subjects. *Journal of Advance Researches in Biological Sciences*. 2013; 5(3): 229-233. DOI: 10.21276/ijarbs
19. Gangwar V, Kumar D, Khan F A, Gangwar R S, Kumar G, Malik K. Frequency distribution of ABO, Rh blood groups amongst the population of Uttar Pradesh. *Int J A PS BMS*. 2012 Oct-Dec; 1(4): 332-334
20. Gangwar V, Gangwar R S, Bihari M. Serum C-peptide level and insulin resistance in offsprings of diabetic parents. *The Indian Journal of Bio Research*. 2010; 79(2): 178-184.