VINAYAKA MISSION'S
RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)

AVMC
AARUPADAI VEEDU MEDICAL COLLEGE

CENTER FOR CLINICAL PHYSIOLOGY

Center for Clinical Physiology

The Center for Clinical Physiology has been established at Aarupadai veedu medical college& hospital, Vinayaka Missions Research foundation-Deemed to be University (VMRF-DU). This facility is enabled to serve research opportunities to Undergraduates, Post graduates, faculty and patient care to the needy community and to perpetuate teaching learning abilities using best practices in a profound manner .

Vision

- Center for Research at its excellence, Patient care to the maximum and Teaching learning to meet the expected needs .

Mission

- To promote and create interest in the field of research in Physiology
- To apply the basic science concepts in clinical implications
- To facilitate learning to undergraduate students in a profound and efficient manner
- To impart contribution in Patient care investigations.

Trust areas

1. **Respiratory Physiology:**
   Pulmonary function tests (PFTs)

2. **Cardiovascular Autonomic Physiology:**
   Heart rate variability(HRV), AFTs, Baro-receptor sensitivity(BRS) Assessment, Digital Arterial Pulse tracing & BP Postural Variability

3. **Neurophysiology:**
   Nerve Conduction Studies ,Surface EMG, BERA and Evoked potentials (Visual and auditory)

4. **Integrative physiology:**
   Yoga studies integrated with Physiology

Facilities available at the center

a) Space: Center for Clinical Physiology is functioning in Electro physiology laboratory, Department of Physiology, AVMC.

b) Available Equipments:

1. NDD EASY ON-PC Spirometer without Computer & Printer
2. Biopac 2 Channel digital polygraph with ECG and respiration transducers & Software for cyclical measurements
3. RMS EP/EMG/NCS Mark II machine with computer and printer
4. Computer system with multimedia: Available (No new CS required) Analogue to Digital Convertor

Resource persons team

- Dr. Lakshmi Jatiya, MBBS (MAMC) , MD., (JIPMER), Professor , Physiology
- Dr. M. Gopinath, MBBS., MD., (JIPMER), Associate Professor , Physiology
- The resource persons have number of publications in cardiovascular autonomic, exercise, respiratory and Neurophysiology, .

- Have been a part of ongoing research projects of the institution and have published in discipline related reputed journals. Done all technical related work in the listed equipments
- Have hands on experience in research designing, project conceptualization, technology related to clinical physiology investigations and basic trouble shooting.

Work done by resource persons

- Instrumental in setting up of Electrophysiology laboratory, Physiology. Done more than 200 Nerve conduction studies on different patients with different clinical entities as a part of research activity and patient care.
- Handled system defaults and technological challenges during the project.
- Expert in handling the autonomic physiology related softwares and hardwares.
- Published papers in many reputed indexed International and national journals.

Research opportunities

1: Biopac 2 Channel digital polygraph with ECG and respiration transducers

Hardware

I. Channel: Minumum 2 channel

II. Sampling rate: Atleast 1000 samples / sec

III. Bit rate resolution: 12 bit or more

IV. Preamplifier: Suitable preamplifiers for electrocardiogram, respiration and pulse.

V. Transducers: ECG, Respiration and Pulse.

Software

I. Operating system: Win 7 (32 & 64 bit)

II. Hassle free device driver installation with no issues on compatibility and driver signatures.

III. Interface with clear channel setups, online digital filters and wave calculations.

IV. Interface with ability to do cyclical measurements. (RR interval) and export it to ASCII format or CSV.

V. Interface with facility to export wave data in ASCII format.

VI. Interface with ability to integerate with MATLAB is preferred.

MP45 - Biopac 2 channel Polygraph

On the successful installation of the aforementioned equipments the clinical physiology research center shall be able to do,

- Heart rate variability studies for quantifying sympathovagal balance.
- Entire battery of Ewings classical cardiovascular reactivity tests,

a. HR and BP response to standing

b. HR and BP response to deep breathing

c. HR and BP response to isometric handgrip

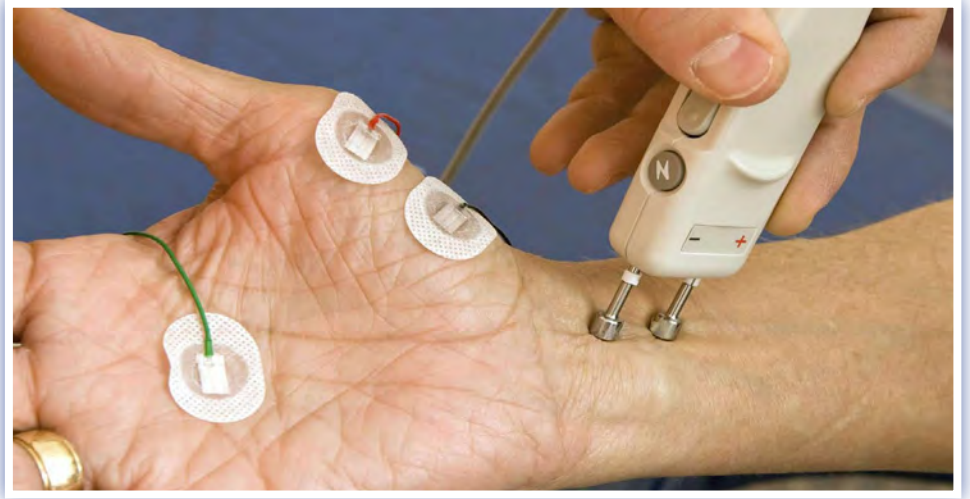
d. HR and BP response to valsalva maneuver

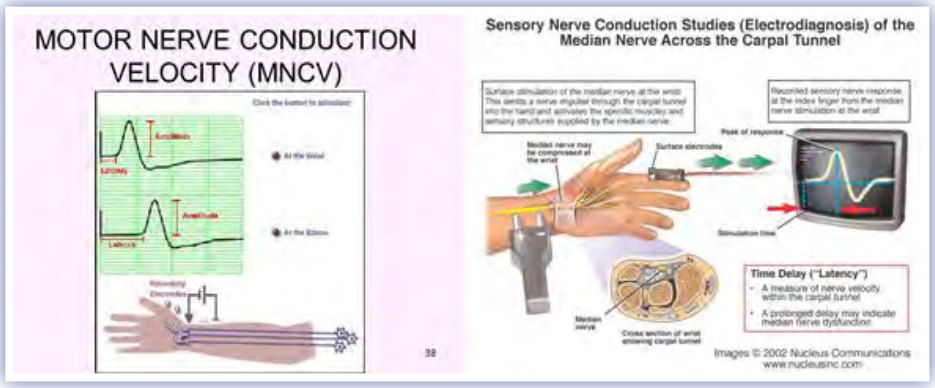
e. HR and BP response to cold pressor.

3. NDD Easy on PC based spirometer

- Pulmonary function testing parameters

4. Nerve conduction studies: Parameters which can be recorded are Nerve conduction velocities , amplitudes and latencies , H reflex





Therefore these facilities will be used for the following purposes

I. Research: All studies pertaining to cardiovascular autonomic, respiratory and neuro- physiology

II. Patient Care:

a. Cardiovascular autonomic studies can be performed in following diseases

- Diabetes Mellitus
- Hypertension
- Parkinsonism,
- chronic alcoholism
- Acute withdrawal syndrome,
- Obesity ,
- Pure dysautonomia,
- Shydrager syndrome etc.

b. Nerve conduction studies in traumatic lesions which can involve both UMN and LMN lesions.

- Compressive neuropathy
- Diabetic peripheral neuropathy and other degenerative disorders

c. Part of syncope evaluation and testing Orthostatic hypotension . (Tilt table either manual or automatic is must).

d. As a routine pulmonary function testing for patients and normal health check up in industry workers in large scale

III. Teaching:

a. Cardiovascular system and its regulation,

b. Various lung volumes & capacities

c. Autonomic physiology and its regulation and various tests

d. Integration of yoga and autonomic control

The focused areas of topics for research are

1. Respiratory physiology : Pulmonary function testing parameters can be assessed and correlated with yoga and postural techniques which has wide variety of clinical applications

2. Cardiovascular autonomic Physiology: Cardiovascular autonomic function testing(CAFTs) and heart rate variability parameters are early and sensitive marker to assess all Non communicable diseases . the studies on the thrust areas will be very helpful in future and prospective era of medicine

3. Nerve physiology: Nerve conduction and EMG studies can be done and focussed on anatomical and clinical correlation. Peripheral neuropathy is a common complication in Diabetes Mellitus. NCS are used for assessment in these areas
4. Assessment of autonomic imbalance in alcoholic patients as pre and post withdrawal phases
5. Post changes after behavioural therapies can assessed by using CAFTs in some psychiatric illness and neuro degenerative conditions
6. Studies on integration of Autonomic function and Yoga studies

Proposed studies

1. Role of academic stress on pulmonary function tests during university examination.
2. Role of Cardiovascular Autonomic Function Tests (CAFTs) as an screening tool during acute withdrawal phase and its Correlation with various factors among chronic alcoholic patients attending a tertiary care centre, Pondicherry
3. Introducing Yoga in Ist year MBBS undergraduate medical students to relieve stress induced anxiety –assessment of AFT– Pre and post studies
4. Role of Yoga in improving autonomic dysfunction in chronic alcoholics during de-addiction procedures
5. Assessment of HRV and Pulmonary function parameters during stress and after behavioral therapies (music, dance , exercise and yoga)
6. Screening of childhood obesity in community based approach and impact on Cardiovascular autonomic dysfunction
7. Can HRV be used as an early assessment tool in predicting dysautonomia in adolescent young females
8. Role of PFT parameters in identifying different thoracic dimensions in south Indian population – A correlation study

Ongoing projects

1. Chronobiological analysis of Cardiovascular autonomic milieu in relation to menstrual cycle by quotidian recordings. (AVIRC/2017/083)

2. Effect of menstrual cycle on Cardiovascular autonomic milieu ascertained by daily heart rate variability recordings in young healthy females correlated with anthropometry, reaction time and hormonal profile. (AV/IRC/2018/026)

3. Assessment of pulmonary function and its effects on sleep pattern among adolescent obese and non-obese students in a private medical college, Puducherry- a comparative study. (AV/IRC/2018/084)

4. Role of Cardiovascular Autonomic Function Tests (CAFTs) as an screening tool during acute withdrawal phase and its Correlation with various factors among chronic alcoholic patients attending a tertiary care centre, Pondicherry. (AV/IRC/2018/083)

5. Cardiopulmonary Fitness in Healthy Young Untrained Offsprings of Hypertensive Parents – Correlation with Cardiovascular Autonomic Indices. (AV/IRC/2017/015)

VINAYAKA MISSION'S RESEARCH FOUNDATION

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VISION

To achieve excellence in education and make education as a tool for social change for the betterment of the society.

MISSION

To spread education globally in the fields of Medicine, Dental, Paramedical, Homeopathy, Engineering, Management and Basic Sciences.

QUALITY POLICY

- Prepare the students with knowledge, skill and competence to stand up to any challenges in the spheres of Medicine and its allied fields, Dentistry, Engineering and Technology, Management, Basic Sciences and Humanities and expose them to the changing global trends of knowledge and technology.
- Grow as an institution of Excellence internationally and improve continually to match the needs of global challenges and trends in all spheres.

AVMC

AARUPADAI VEEDU MEDICAL COLLEGE

VISION

Imparting quality Medical education for the betterment of the society.

MISSION

A Centre of Excellence offering Medical education for the students & Contributing to the Society, Nation & the World.

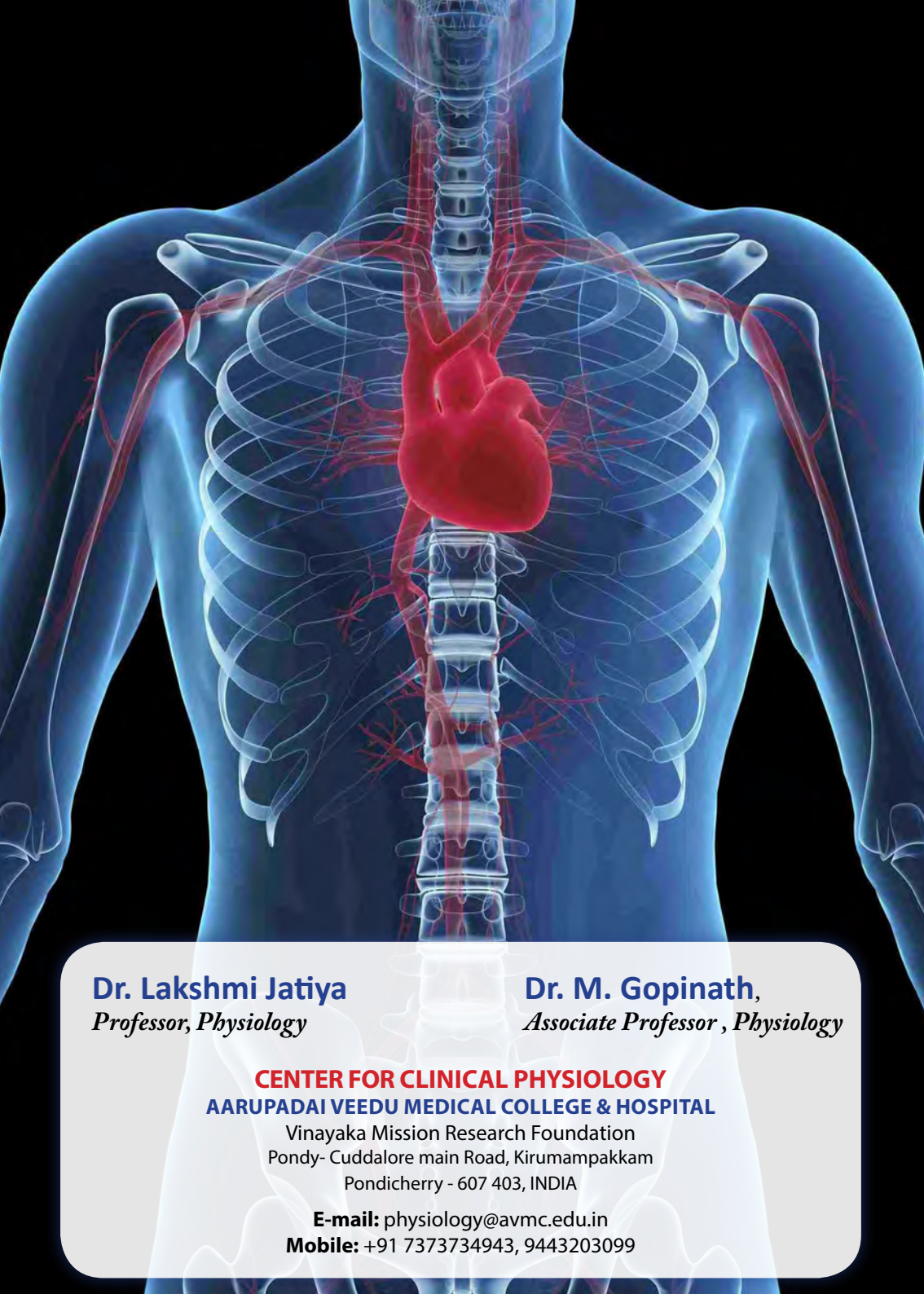
DEPARTMENT OF PHYSIOLOGY

VISION

- To be recognized as India's foremost educational department in Physiology.
- Preparing undergraduate and postgraduate students to take their places as leaders in the Medical and Allied Health professions.
- To be an intellectual home for a rich diversity of academic talent.

MISSION

- To provide excellence in education to a wide spectrum of academic disciplines
- To promote Physiology through the creation and application of knowledge and the stimulation of critical and independent thinking.
- To carry out world-class scientific research and evidence-based teaching, through expanding of innovation and excellence in both research and teaching.
- To create an intellectually stimulating and pleasant environment in which students, faculty and staff can flourish.



Dr. Lakshmi Jatiya
Professor, Physiology

Dr. M. Gopinath,
Associate Professor , Physiology

CENTER FOR CLINICAL PHYSIOLOGY
AARUPADAI VEEDU MEDICAL COLLEGE & HOSPITAL
Vinayaka Mission Research Foundation
Pondy- Cuddalore main Road, Kirumampakkam
Pondicherry - 607 403, INDIA

E-mail: physiology@avmc.edu.in
Mobile: +91 7373734943, 9443203099