

# Madurai Kamaraj University

(University with Potential for Excellence)

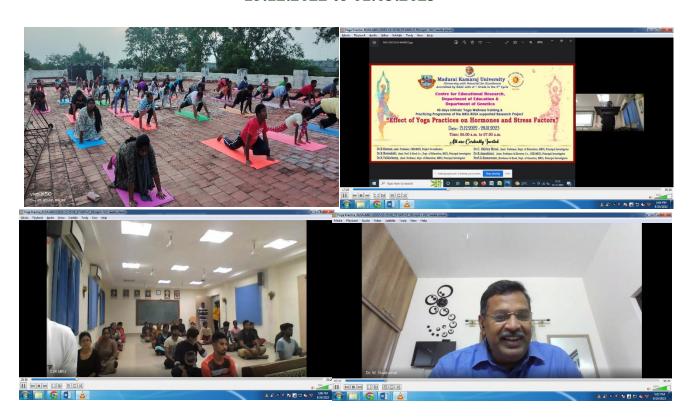
### **Centre for Educational Research**



## **Report of the 45 Day Intrinsic Yoga Programme**

on

"Effect of Yoga Practices on Hormones and Stress Factors" 15.12.2022 to 01.03.2023



Organizing Secretaries
Dr. R. Annadurai & Dr. B. Kannan



Organized by

Centre for Educational Research & Department of Education & Department of Genetics

Madurai Kamaraj University

# Report of the 45 Day Intrinsic Yoga Programme on "Effect of Yoga Practices on Hormones and Stress Factors"

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**Funded by RUSA-MKU** 

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#### **Report of the Special Lecture**

Yoga is a mind-body practice that has been shown to have numerous health benefits, including reducing stress and anxiety. Stress hormones play a significant role in the body's response to stress, and yoga has been found to influence the production of these hormones in several ways. Yoga has been shown to have a positive impact on stress hormones and the body's stress response system. The practice of yoga involves physical postures, breathing techniques, and meditation, which can help to reduce stress and promote overall well-being. In this chapter, we will explore the science behind how yoga affects stress hormones and the body's stress response system.

One of the primary stress hormones is cortisol, which is produced by the adrenal glands in response to stress. High levels of cortisol can have negative effects on our health, including increasing the risk of depression, anxiety, and other health problems. Studies have shown that practicing yoga can reduce the production of cortisol, which can help to reduce the negative effects of chronic stress.

Research has also shown that yoga can reduce the levels of other stress hormones, including adrenaline and norepinephrine. These hormones are released during times of stress and can lead to anxiety, panic attacks, and high blood pressure. By reducing the production of these hormones, yoga can help to reduce the negative effects of stress on the body. Many Researches has shown that the practice of yoga can help to reduce the production of stress hormones and promote relaxation. One study found that regular yoga practice was associated with lower cortisol levels in the body, indicating a reduction in stress levels. Other studies have shown that yoga can help to reduce sympathetic nervous system activity, which is responsible for the fight-or-flight response

that is triggered during times of stress.

In addition to reducing the production of stress hormones, yoga has also been found to stimulate the production of oxytocin, a hormone that promotes feelings of calm and relaxation. Oxytocin is released during times of stress to help us cope with stress, and regular yoga practice can help to increase the production of this hormone in the body.

Another way that yoga can influence the production of stress hormones is through its effect on the HPA axis. The HPA axis is a complex set of interactions between the hypothalamus, pituitary gland, and adrenal glands that controls the production of cortisol and other stress hormones. Chronic stress can lead to an overactive HPA axis, which can result in the overproduction of cortisol and other stress hormones. Research has shown that yoga can help to regulate the HPA axis, leading to a reduction in the production of stress hormones. This is achieved through a combination of physical postures, deep breathing, and meditation, all of which have been found to influence the HPA axis and reduce the negative effects of chronic stress.

The physical postures, or asanas, practiced in yoga can help to reduce stress by promoting relaxation and reducing muscle tension. Many yoga postures involve stretching and releasing tension in the muscles, which can help to release stored tension in the body. The physical postures can also help to improve circulation and promote the release of endorphins, which are natural painkillers that can promote feelings of well-being and relaxation. Breathing techniques, or pranayama, are a key component of yoga practice and can help to reduce stress by promoting relaxation and reducing tension in the body. Deep breathing exercises, such as diaphragmatic breathing, have been shown to reduce cortisol levels in the body and promote feelings of relaxation. The practice of pranayama can also help to improve respiratory function and promote relaxation by slowing down the heart rate.

Meditation is a key component of yoga practice and can help to reduce stress by promoting relaxation and reducing mental tension. Research has shown that regular meditation practice can help to reduce cortisol levels in the body and promote feelings of well-being and relaxation. Meditation can also help to improve concentration and mental clarity, which can help to reduce stress and promote overall well-being.

Yoga has been shown to have a positive impact on stress hormones and the body's stress response system. The physical postures, breathing techniques, and meditation practices involved in yoga can help to reduce stress and promote relaxation by reducing muscle tension, promoting circulation, and improving respiratory function. By

incorporating yoga into a regular self-care routine, individuals can help to reduce stress levels, promote relaxation, and improve overall well-being. In addition to its effects on stress hormones, yoga has also been found to have numerous other health benefits, including improving flexibility, strength, and balance, reducing inflammation, and improving immune function. Regular yoga practice has also been found to improve mental health, reducing symptoms of depression and anxiety and promoting feelings of well-being and relaxation. Stress is an unavoidable part of life, and the body's response to stress can have both positive and negative effects on our health and well-being. Stress hormones are a crucial part of the body's response to stress and play an essential role in our ability to cope with and adapt to challenging situations.

Stress is a natural response to challenging situations. When we encounter stress, our body releases a series of hormones that prepare us to respond to the perceived threat. These hormones are part of the body's stress response system, which is designed to protect us in times of danger. However, prolonged or chronic stress can lead to the overproduction of these hormones, which can have negative effects on our physical and mental health. In this chapter, we will explore the role of stress hormones in the body and their impact on health and well- being.

The stress response system is a complex network of hormones and physiological responses that prepares the body to respond to stress. When we encounter a stressful situation, the hypothalamus in the brain signals the adrenal glands to release a hormone called cortisol. Cortisol is known as the primary stress hormone and plays a critical role in the body's stress response. Cortisol is released in response to stress and helps the body to mobilize energy and respond to the perceived threat. It increases heart rate, blood pressure, and blood sugar levels, which can provide the body with the energy it needs to respond to the stressor. Cortisol also suppresses the immune system and can have negative effects on metabolism, digestion, and other bodily functions when produced in excess.

In addition to cortisol, the body releases other hormones in response to stress, including adrenaline and noradrenaline. These hormones increase heart rate and blood pressure, which can help the body respond to the perceived threat. However, like cortisol, excessive or chronic production of these hormones can have negative effects on health and well-being. Another stress hormone is adrenaline, also known as epinephrine, which is produced by the adrenal glands and the nervous system. Adrenaline is released during times of stress and causes the heart rate to increase, the muscles to tense up, and the

breathing rate to increase. This response helps the body to prepare for physical activity and is also part of the fight or flight response. Like cortisol, adrenaline is essential for our ability to cope with stress, but chronic stress can lead to an overproduction of adrenaline, which can have negative effects on our health. High levels of adrenaline have been linked to anxiety, panic attacks, and high blood pressure. In addition to cortisol and adrenaline, there are other stress hormones that play a role in our body's response to stress, including norepinephrine, which is involved in the fight or flight response, and oxytocin, which is released during times of stress to help us cope with stress by promoting feelings of calm and relaxation. While the stress response system is designed to protect us in times of danger, chronic or prolonged stress can lead to overproduction of stress hormones, which can have negative effects on health and well-being. Excessive cortisol production, for example, has been linked to a range of health problems, including:

**Impaired immune function:** Chronic cortisol production can suppress the immune system, making us more susceptible to infections and diseases.

**Weight gain:** Cortisol can increase appetite and promote the storage of fat, leading to weight gain.

**Cardiovascular disease:** Excessive cortisol production can increase blood pressure and promote the build-up of plaque in arteries, increasing the risk of cardiovascular disease.

**Mood disorders:** High cortisol levels have been linked to depression and anxiety disorders. In addition to these physical health problems, chronic stress and overproduction of stress hormones can also have negative effects on mental health and well-being, including:

- Increased anxiety and irritability
- Difficulty concentrating and making decisions
- Sleep disturbances
- Fatigue and burnout

Stress hormones play a critical role in the body's stress response system, helping us to respond to perceived threats and protect ourselves. However, chronic or prolonged stress can lead to overproduction of these hormones, which can have negative effects on our physical and mental health. By understanding the role of stress hormones in the body, we can better understand the impact of stress on our health and take steps to manage stress and promote overall well-being.

In this context, the Centre for Educational Research. Department of Education and Department of Genetics has applied and get the project from RUSA-MKU Phase-II to find out the effectiveness for the Yoga on Hormones and Stress Factors on the topic of "Effect of Yoga Practices on Hormones and Stress Factors".

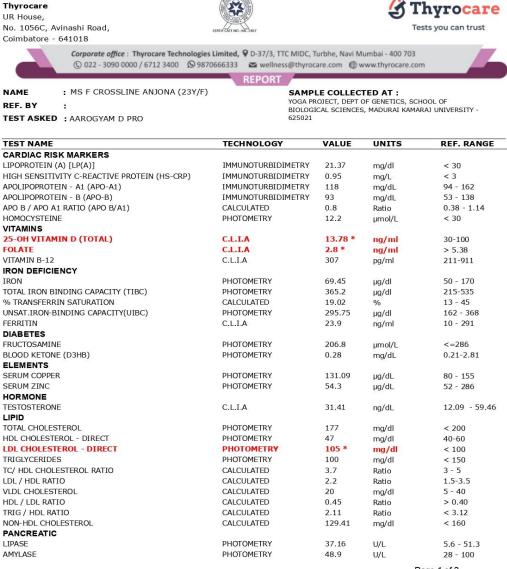
For this project, the Flyer for this programme prepared and posted in the website of the University and spread through social media platforms. While the program is open to all, the interested individuals may volunteer to enroll in this academic research study. The study aims to understand the molecular, cellular, metabolic, and genomic impact of yoga practices in human system. The study is designed to understand the impact of yoga practices on various biological parameters including hormones and stress factors before and after the 45 days session of yoga practice. The interested volunteers need to give 5ml blood on day 1 and day 45. This study is conducted following human ethical norms and individual information would never be revealed. It is informed that, those interested in yoga practice session without volunteering for the study also can join.



There were 175 volunteers registered for this programme through the Google Form Link (for online as well as offline mode)

The Ethical Committee Clearance was got from the Meenakshi Mission Hospitals and Research Centre, Madurai for Collecting the blood sample from the volunteers. From the 136 Registered volunteers Blood samples were collected by the Thyrocare Technologies Limited with the help of **Project Assistants Mr. M. Naveenkumar and Mr.Krishnakumar** for Pretest and the results were obtained from the same for analysis purpose.

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Page 1 of 2

### PROCESSED AT :

Thyrocare

UR House, No. 1056C, Avinashi Road, Coimbatore - 641018







REPORT

NAME : MS F CROSSLINE ANJONA (23Y/F)

REF. BY

TEST ASKED : AAROGYAM D PRO

SAMPLE COLLECTED AT:
YOGA PROJECT, DEPT OF GENETICS, SCHOOL OF
BIOLOGICAL SCIENCES, MADURAI KAMARAJ UNIVERSITY 625021

TEST NAME	TECHNOLOGY	VALUE	UNITS	REF. RANGE
LIVER				
ALKALINE PHOSPHATASE	PHOTOMETRY	55.74	U/L	45 - 129
BILIRUBIN - TOTAL	PHOTOMETRY	0.56	mg/dl	0.3-1.2
BILIRUBIN -DIRECT	PHOTOMETRY	0.17	mg/dl	< 0.3
BILIRUBIN (INDIRECT)	CALCULATED	0.39	mg/dl	0-0.9
GAMMA GLUTAMYL TRANSFERASE (GGT)	PHOTOMETRY	10.53	U/I	< 38
ASPARTATE AMINOTRANSFERASE (SGOT )	PHOTOMETRY	19.35	U/I	< 31
ALANINE TRANSAMINASE (SGPT)	PHOTOMETRY	10.31	U/I	< 34
SGOT / SGPT RATIO	CALCULATED	1.88	Ratio	< 2
PROTEIN - TOTAL	PHOTOMETRY	7.57	gm/dl	5.7-8.2
ALBUMIN - SERUM	PHOTOMETRY	4.63	gm/dl	3.2-4.8
SERUM GLOBULIN	CALCULATED	2.94	gm/dL	2.5-3.4
SERUM ALB/GLOBULIN RATIO	CALCULATED	1.57	Ratio	0.9 - 2
METABOLIC				
MAGNESIUM	PHOTOMETRY	2.58	mg/dL	1.90 - 3.10
ELECTROLYTES				
SODIUM	I.S.E	138	mmol/l	136 - 145
CHLORIDE	I.S.E	101.9	mmol/l	98 - 107
RENAL				
BLOOD UREA NITROGEN (BUN)	PHOTOMETRY	7.2	mg/dL	7.04-20.07
EST. GLOMERULAR FILTRATION RATE (eGFR)	CALCULATED	123	mL/min/1.73 m2	>= 90
CREATININE - SERUM	PHOTOMETRY	0.69	mg/dl	0.55-1.02
BUN / SR.CREATININE RATIO	CALCULATED	10.43	Ratio	9:1-23:1
CALCIUM	PHOTOMETRY	9.46	mg/dl	8.8-10.6
URIC ACID	PHOTOMETRY	3.9	mg/dl	3.2 - 6.1
UREA (CALCULATED)	CALCULATED	15.41 *	mg/dL	Adult: 17-43
UREA / SR.CREATININE RATIO	CALCULATED	22.33	Ratio	< 52
THYROID				
TOTAL TRIIODOTHYRONINE (T3)	C.L.I.A	100	ng/dl	60-200
TOTAL THYROXINE (T4)	C.L.I.A	7	μg/dl	4.5-12
THYROID STIMULATING HORMONE (TSH)	C.L.I.A	2.33	μIU/ml	0.3-5.5
	~~ End of report ~~			

Sample Collected on (SCT) Sample Received on (SRT) Report Released on (RRT)

Sample Type

Labcode Barcode : 14 Dec 2022 09:00 : 15 Dec 2022 00:48

: 15 Dec 2022 03:57

: SERUM

: 1412042354/TAM03

: AL920767

Dr T T Sreeja MD(Path)

NO IMAGE

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REPORT

SAMPLE COLLECTED AT:
YOGA PROJECT, DEPT OF GENETICS, SCHOOL OF
BIOLOGICAL SCIENCES, MADURAI KAMARAJ UNIVERSITY 625021 NAME : MS F CROSSLINE ANJONA (23Y/F) REF. BY TEST ASKED : HbA1c,HEMOGRAM

ABETES  NA1c  FERAGE BLOOD GLUCOSE (ABG)  DMPLETE HEMOGRAM  NTAL LEUCOCYTES COUNT (WBC)	H.P.L.C CALCULATED	5.1	%	
/ERAGE BLOOD GLUCOSE (ABG) DMPLETE HEMOGRAM			0/	
OMPLETE HEMOGRAM	CALCULATED		70	< 5.7
		100	mg/dl	90-120
TAL LEUCOCYTES COUNT (WBC)				
	HEMATOLOGY	7.63	X 10 <sup>3</sup> / μL	4.0-10.0
EUTROPHILS	HEMATOLOGY	71.2	%	40-80
MPHOCYTE PERCENTAGE	HEMATOLOGY	18.6 *	%	20.0-40.0
DNOCYTES	HEMATOLOGY	6.6	%	0.0-10.0
OSINOPHILS	HEMATOLOGY	2.8	%	0.0-6.0
ASOPHILS	HEMATOLOGY	0.5	%	<2
MATURE GRANULOCYTE PERCENTAGE(IG%)	HEMATOLOGY	0.3	%	0.0-0.4
EUTROPHILS - ABSOLUTE COUNT	HEMATOLOGY	5.43	X 10 <sup>3</sup> / μL	2.0-7.0
MPHOCYTES - ABSOLUTE COUNT	HEMATOLOGY	1.42	X 10 <sup>3</sup> / μL	1.0-3.0
DNOCYTES - ABSOLUTE COUNT	HEMATOLOGY	0.5	X 10 <sup>3</sup> / μL	0.2-1.0
SOPHILS - ABSOLUTE COUNT	HEMATOLOGY	0.04	X 10 <sup>3</sup> / μL	0.02-0.1
OSINOPHILS - ABSOLUTE COUNT	HEMATOLOGY	0.21	X 10 <sup>3</sup> / μL	0.02-0.5
MATURE GRANULOCYTES(IG)	HEMATOLOGY	0.02	X 10 <sup>3</sup> / μL	0.0-0.3
OTAL RBC	HEMATOLOGY	4.65	X 10^6/μL	3.9-4.8
JCLEATED RED BLOOD CELLS	HEMATOLOGY	Nil	X 10 <sup>3</sup> / μL	< 0.01
JCLEATED RED BLOOD CELLS %	HEMATOLOGY	Nil	%	< 0.01
MOGLOBIN	HEMATOLOGY	12.5	g/dL	12.0-15.0
MATOCRIT(PCV)	HEMATOLOGY	42.6	%	36.0-46.0
EAN CORPUSCULAR VOLUME(MCV)	HEMATOLOGY	91.6	fL	83.0-101.0
EAN CORPUSCULAR HEMOGLOBIN(MCH)	HEMATOLOGY	26.9 *	pq	27.0-32.0
EAN CORP.HEMO.CONC(MCHC)	HEMATOLOGY	29.3 *	g/dL	31.5-34.5
D CELL DISTRIBUTION WIDTH - SD(RDW-SD)	HEMATOLOGY	49 *	fL	39.0-46.0
D CELL DISTRIBUTION WIDTH (RDW-CV)	HEMATOLOGY	14.7 *	%	11.6-14.0
ATELET DISTRIBUTION WIDTH(PDW)	HEMATOLOGY	11.3	fL	9.6-15.2
EAN PLATELET VOLUME(MPV)	HEMATOLOGY	10	fL	6.5-12
ATELET COUNT	HEMATOLOGY	360	$X 10^3 / \mu L$	150-400
ATELET TO LARGE CELL RATIO(PLCR)	HEMATOLOGY	25.1	%	19.7-42.4
ATELETCRIT(PCT)	HEMATOLOGY	0.36	%	0.19-0.39

Sample Collected on (SCT)

Sample Received on (SRT)

Report Released on (RRT)

Sample Type

Labcode Barcode : 14 Dec 2022 09:00

: 15 Dec 2022 00:47

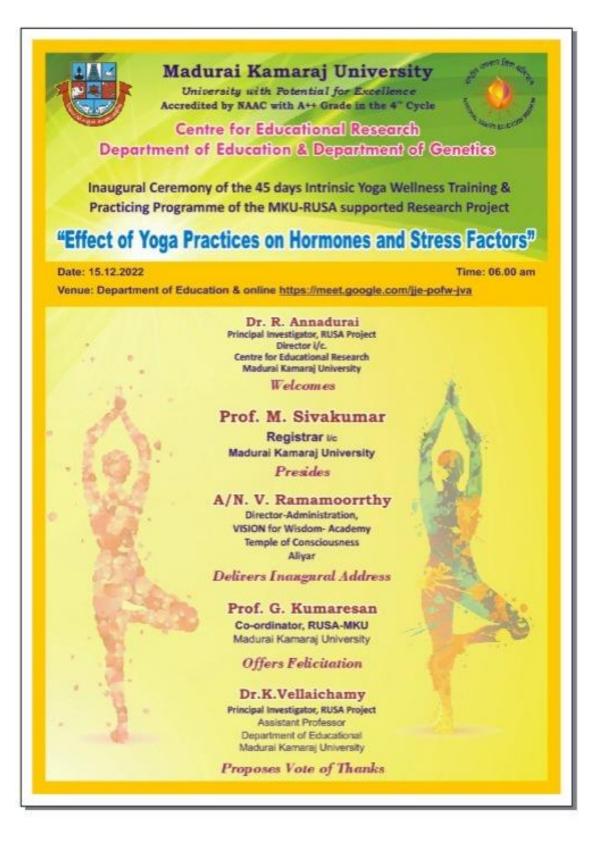
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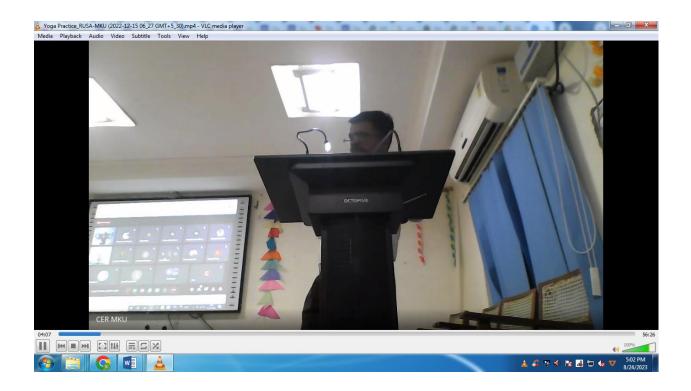
: Z8984667

Dr T T Sreeja MD(Path)

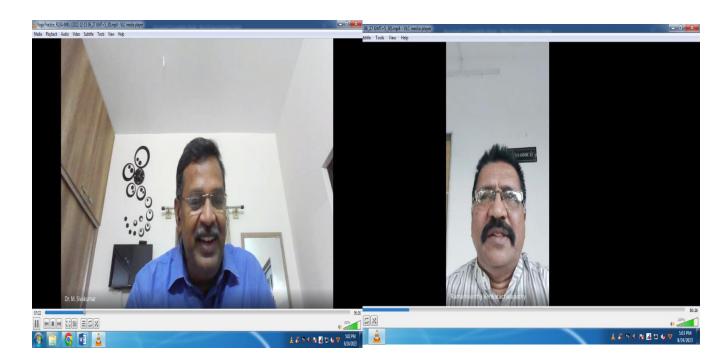
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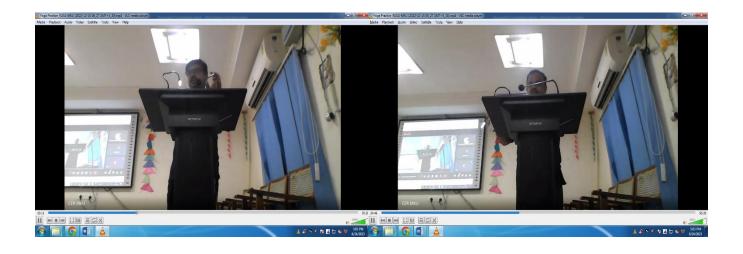
The Inaugural function of the 45 days intrinsic Yoga Programme to find out the effectiveness for the Yoga on Hormones and Stress Factors on the topic of "Effect of Yoga Practices on Hormones and Stress Factors" was held on 15.12.2022 by 06.00 am with Tamilthai Vazhthu followed by welcome address by Dr. R.Annadurai, Director i/c., Centre for Educational Research & Principal Investigator of Yoga Project. Sir welcomed the gathering and gave brief introduction about the need for conduction this Programme. He also pointed out the importance of Yoga for healthy life of human beings.



Prof. M.Sivakumar, Registrar, Madurai Kamaraj University has delivered the Presidential address. In his presidential address he pointed out the significant benefits of Yoga in general and the effect on stress hormones in particular. And also he mentioned about different ways to cope with stress. Talking with friends, exercising, and seeing a counselor are just a few. Yoga can help reduce stress because it promotes relaxation, which is the natural opposite of stress. Yoga can benefit three aspects of ourselves that are often affected by stress: our body, mind, and breathing.



Inaugural address was delivered by A/N. V. Ramamoorrthy, Director, Administration, VISION for Wisdom Academy, Temple of Consciousness, Aliyar (through online mode)". In his inaugural address he expressed about the Yoga may be considered as a complementary therapy or alternative method for medical therapy in the treatment of stress, anxiety, depression, and other mood disorders as it has been shown to create a greater sense of well-being, increase feelings of relaxation, improve self-confidence and body image.



Felicitation address was given by Prof. G.Kumaresan, Co-ordinator of RUSA-MKU and the Principal Investigator of Yoga Project, Madurai Kamaraj University. In his felicitation he pointed out a little yoga in the morning, at night, or even during a lunch break can reduce stress. There are multiple ways that yoga works to lower stress levels. Studies show that yoga targets stress by lifting mood, allowing for increased mindfulness, and increasing self-compassion. By improving mood, allowing us to focus on the present moment, and encouraging us to give ourselves a break, yoga is an effective stress reliever. Many popular techniques used to reduce stress are derived from yoga, such as: Controlled breathing, Meditation, Physical movement and Mental imagery.

- Dr. B. Kannan, Assistant Professor, Centre for Educational Research & Project Co-ordinator of Yoga Project explain about 45 days Intrinsic yoga programme.
- Dr. K. Vellaichamy, Assistant Professor Department of Education, Madurai Kamaraj University & Principal Investigator of Yoga Project proposed vote of thanks.

The First day programme starts with the demonstrations of simple asanas and Suryanamaskar by the Yoga trainers appointed for this Project viz., A/N. P. Ravikumar and P.Santhi.



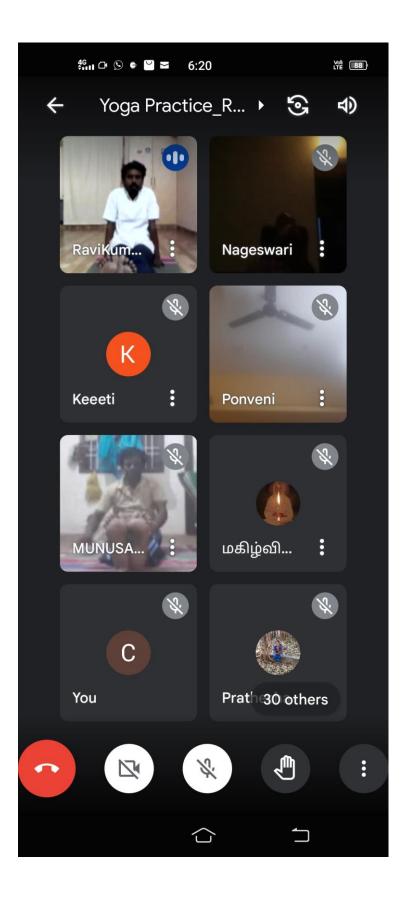




The daily seesion was begins by 06.am daily both offline and online mode. The offline mode (at the Central Instrumentation Centre of University) was facilitated by Ms. P. Shanthi and the online mode was facilitated by A/N. P. Ravikumar for all the 45 days. Based on the request of participants the programme was extended upto 21.03.2023 istead of 28.01.2023.











On 21.03.2023 the blood samples were collected from the volunteers for the Post-test. The results were analysed and prepared the report to submit the RUSA-MKU. From the results some of the interesting findings were got and it helped a lot to reduce the stress hormones also.