



**Central Council for Research  
in Yoga & Naturopathy**



सत्यमेव जयते  
Ministry of Ayush  
Government of India

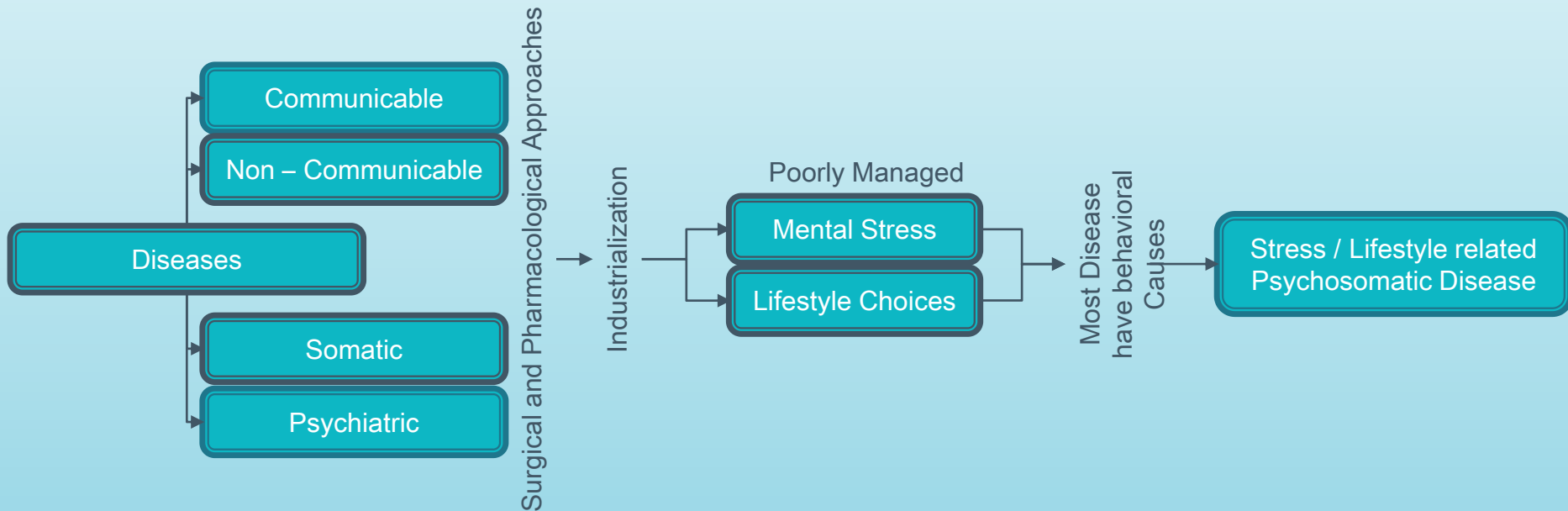
# Technological Innovations in the Yoga Sector

**Dr Raghavendra Rao M, BNYS, PhD (Yoga Life  
sciences)**

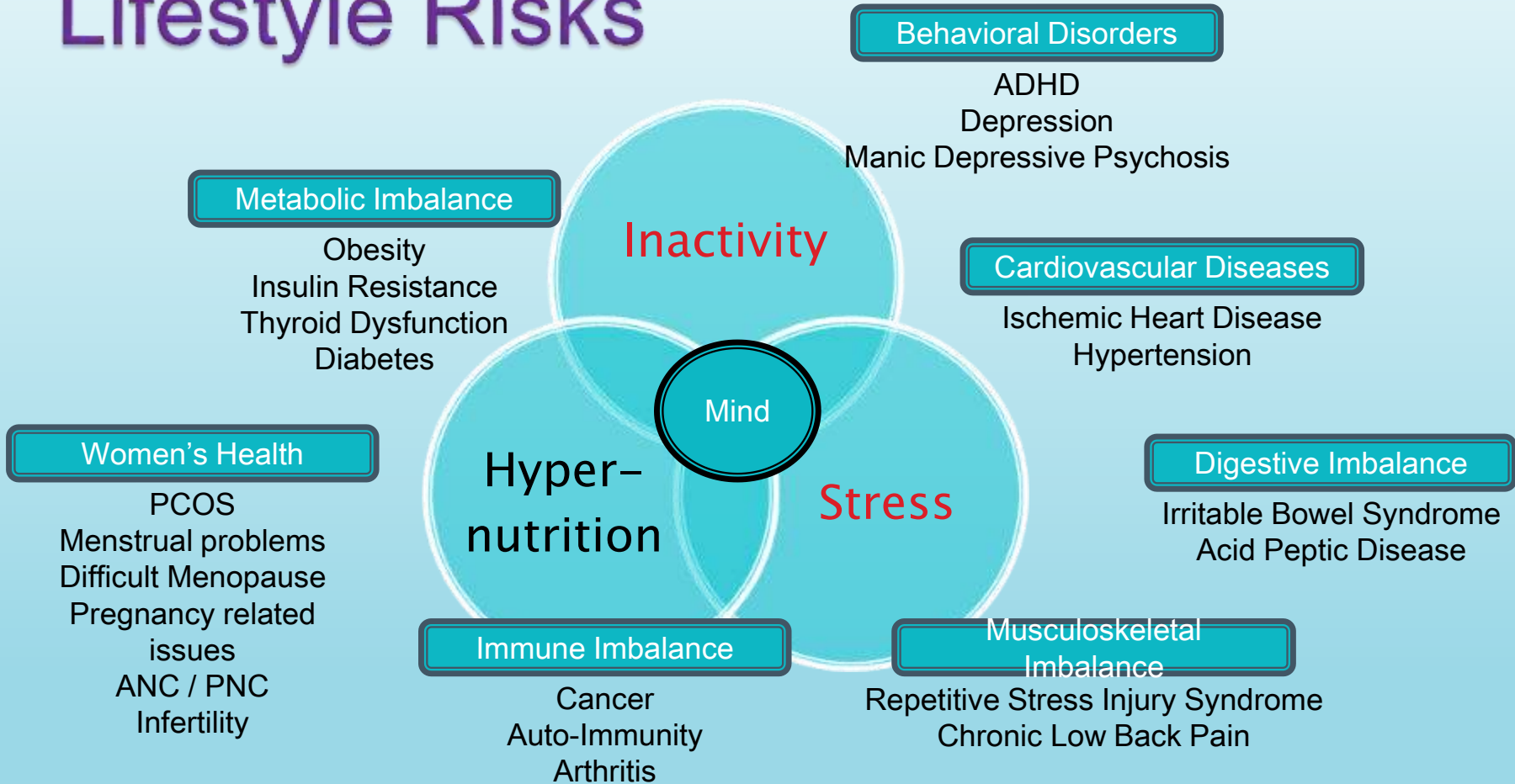
Former OSHER NIH Fellow, UCSF School of Medicine  
Director, CCRYN, Ministry of Ayush, Govt of India

**CMBIY Workshop, PGI Chandigarh 2024**

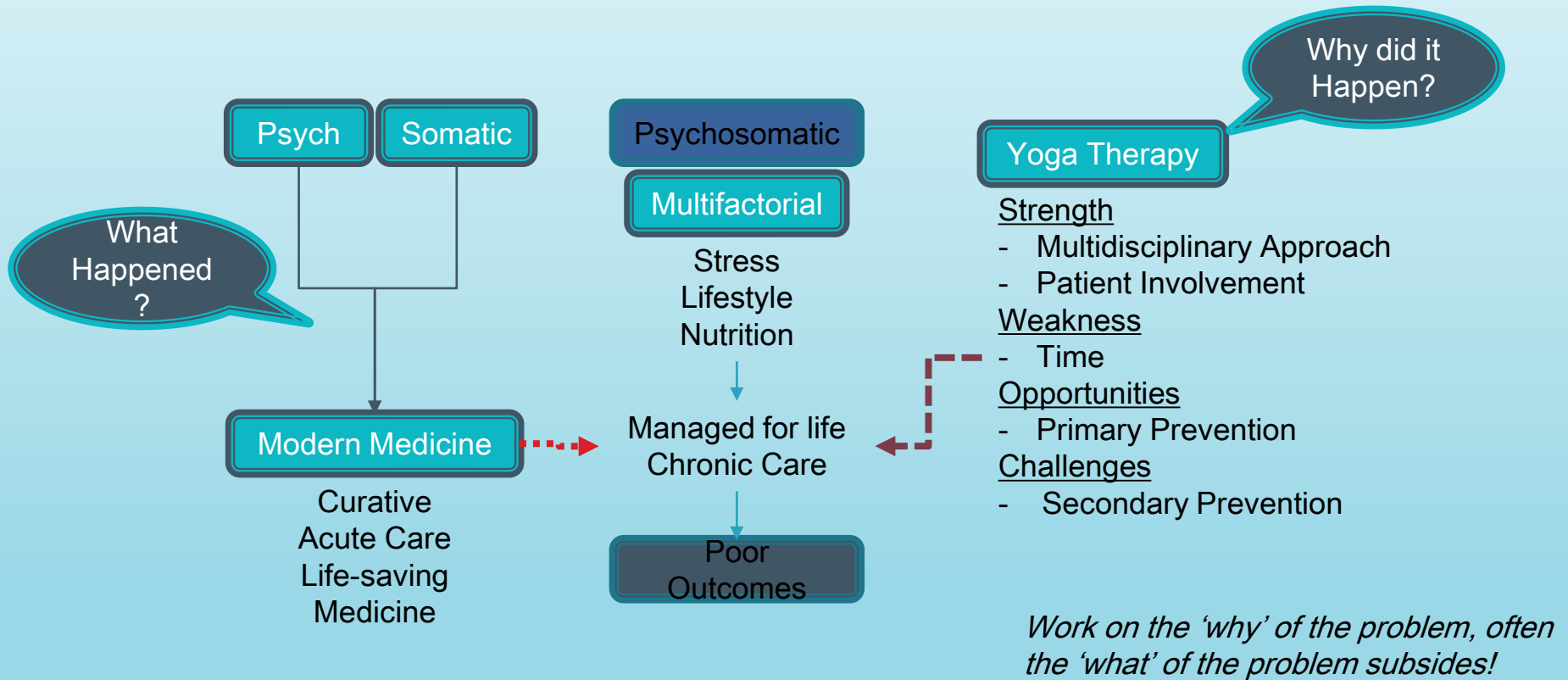
# Disease Demography



# Lifestyle Risks



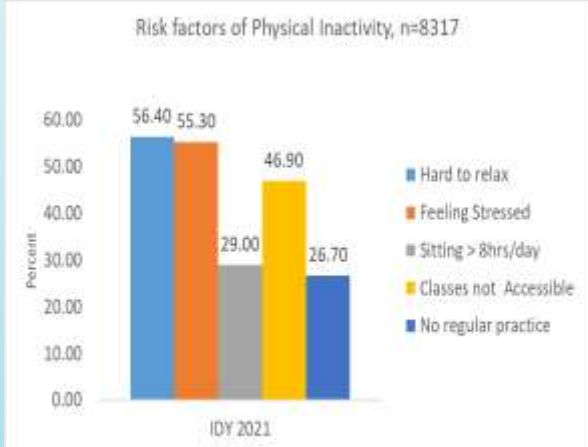
# Traditional Yoga complements Western Medicine



Share your ideas to celebrate the  
**7th International Day of Yoga at home**



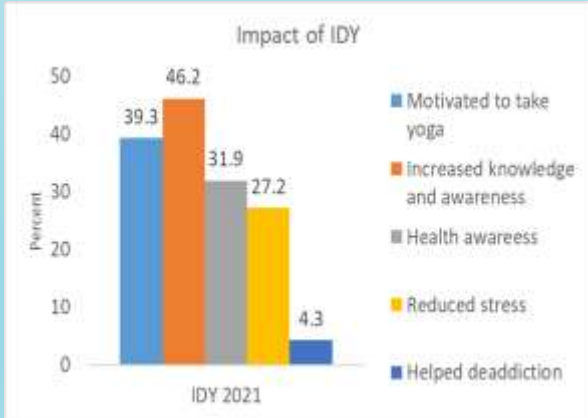
# IDY Impact Assessment n=8317



33%



36%



34.1%



30.9%

# Definition of YOGA

## Popular Understanding

- Contortionism
- Religious practice
- Workout Regimen
- Exercise / Acrobatics

## Textual Definition

- Mastery over the mind
- Silencing the mind
- Equanimity in approach
- Skilled control of activity



# Barriers

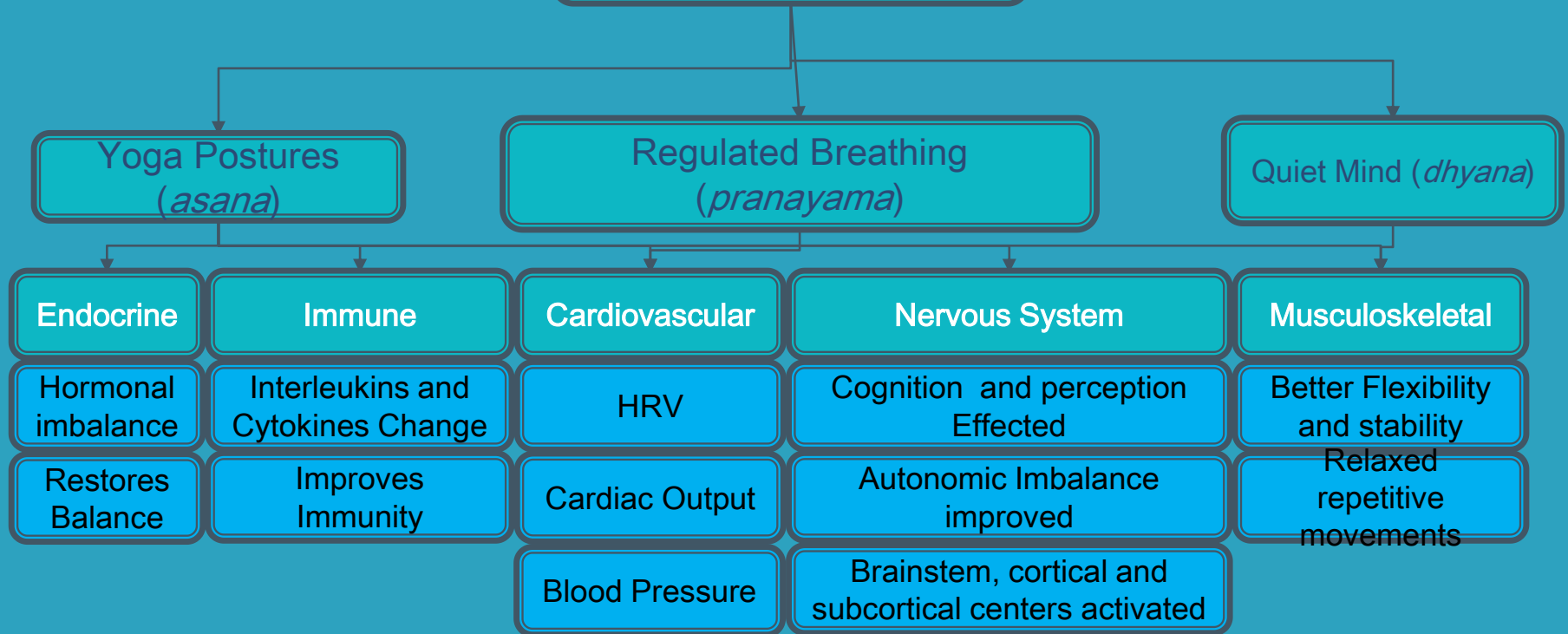
I don't have the **time** to do yoga. I've never been active. I'm **too tired** after work. I don't have the **right clothes** to do yoga. I'm **too shy** to do yoga in a group. I don't want to have **sore muscles**. I'm afraid I'll make my **condition worse**.  
 My body is too **stiff**, It's too hot outside. It's not my **religion**. I'm afraid I'll make my **condition worse**.  
 I **can't afford** to join a fitness center or buy equipment. Yoga is **boring**. I don't really **know how** to do yoga.  
 I don't have the **motivation** to do yoga. How do I know if it **will work?**

SMALL & EFFECTIVE  
MODULES



# How it Works?

## Physiology of Yoga

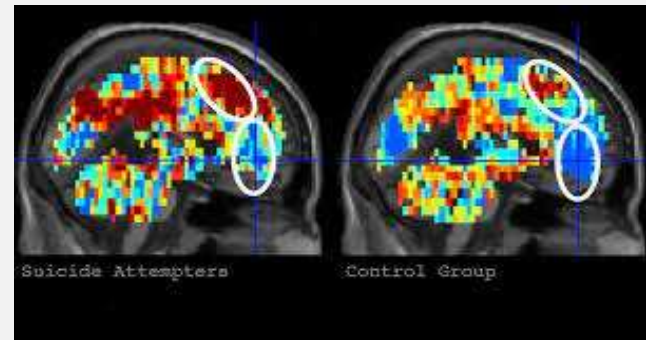




# SIGNALS/ DATA – BIGDATA ANALYTICS



**GROSS TO SUBTLE – HUGE  
DATA**



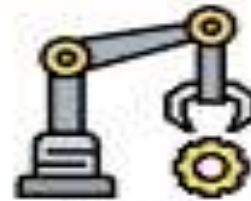
# ARTIFICIAL INTELLIGENCE



Machine Learning



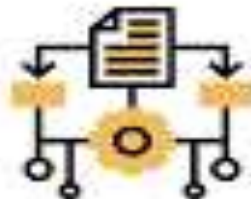
Neural Networks



Robotics



Expert Systems



Fuzzy Logic



Natural Language  
Processing

# Available Evidence for Yoga

NCBI Resources How To

PubMed.gov  
US National Library of Medicine  
National Institutes of Health

PubMed

RSS Save search Advanced

Show additional filters Display Settings:  Summary, 20 per page, Sorted by Recently Added

Article types  
Clinical Trial

**Results: 1 to 20 of 2563**

<< First

*Search Done in  
2014*

NIH National Library of Medicine  
National Center for Biotechnology Information

Log in

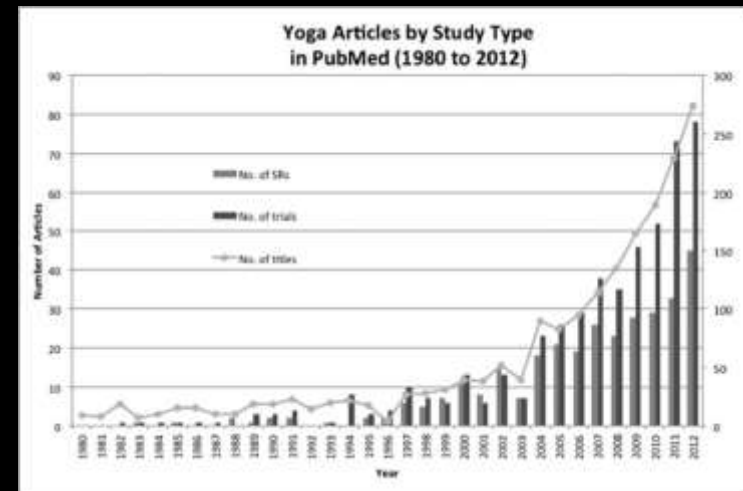
PubMed

yoga

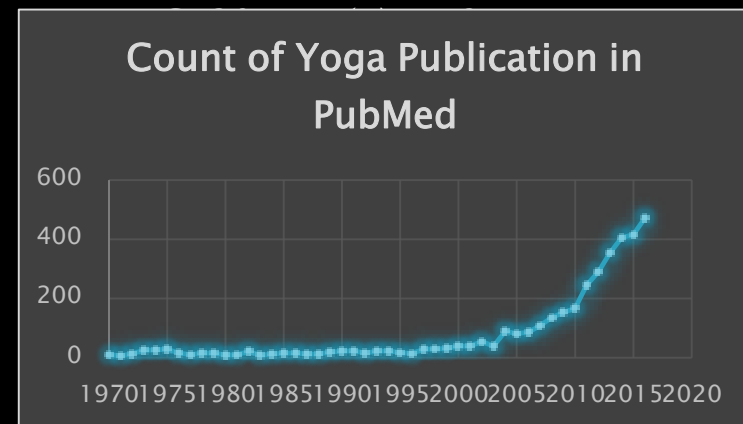
Advanced Create alert Create RSS User Guide

**7813**

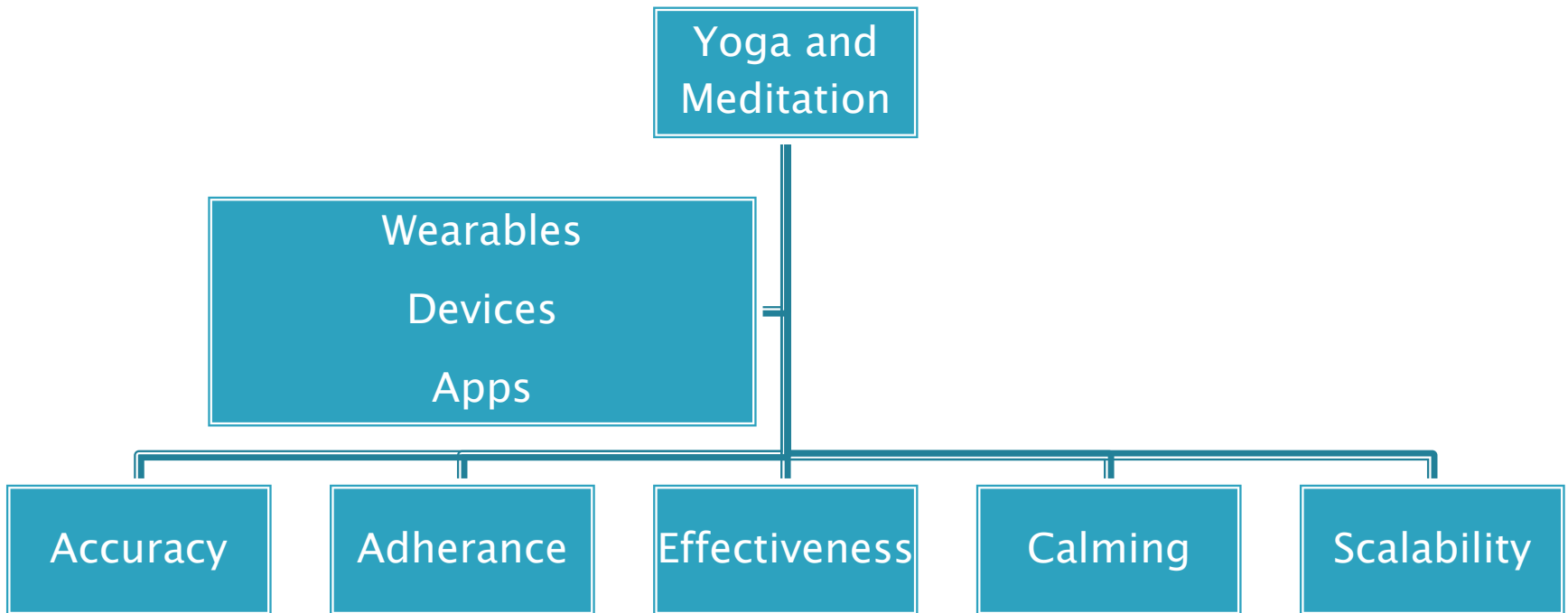
*Search Done in 2023*



*In search of yoga: Research trends in a western medical Database. McCall*



# Innovations in the yoga sector



POSITION

REGULARITY

BCG  
EEG  
O2SAT  
HRV  
BP

GSR  
HR

ONLINE  
REMOTE



**SCOPE  
IMMENSE**

## Business Potential

### Smart & Connected Fitness



### Global Yoga Market



TAM 62.1B  
SAM 5.82B  
SOM 1.23B

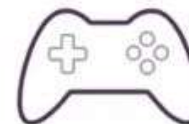
### Technology Disruptors



On-Demand Streaming



AI driven Personalization



Gamification | Web3 Experiences

### Growth Drivers



Post-pandemic awareness around preventive healthcare, immunity and wellbeing.

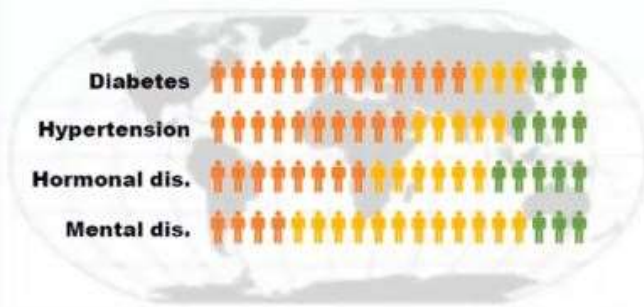


Rising adoption of Yoga across the world ~300Mn users

Global Smart Yoga Market poised to grow by \$164.18Mn during 2022-26

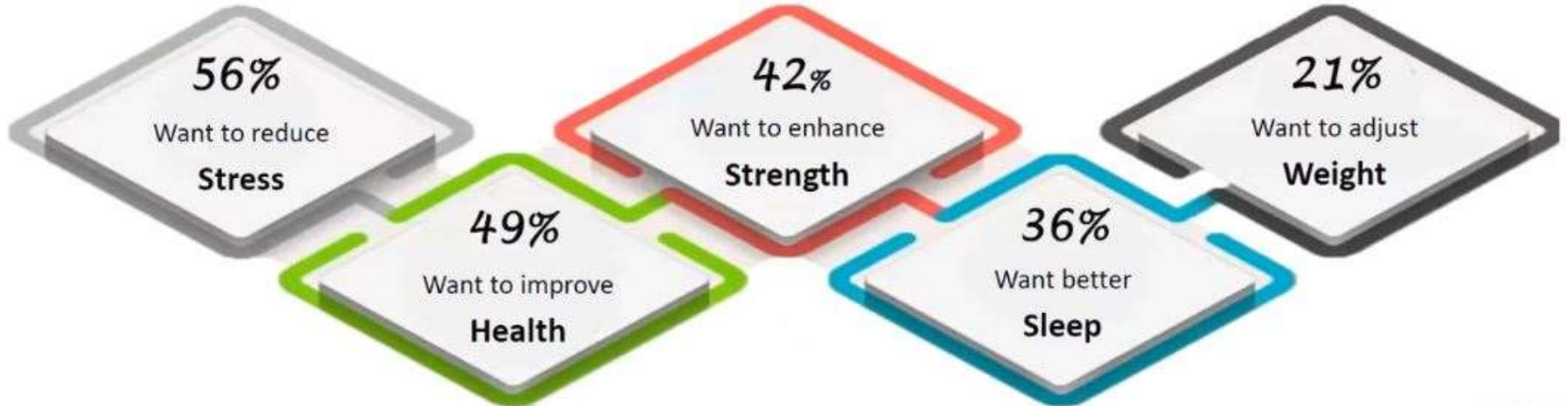


## Need of the Decade: Solve imbalance in body & mind.



It's 2023

70% of deaths across the world happen from non-communicable disorders.  
Depression & mental disorders are going to be the next cancer.  
Root cause in 90% of the cases is the **incorrect lifestyle**.





# XAANT

We are TerraBlue XT

---

We build medical-grade, AI-powered,  
non-invasive systems to provide clinically  
relevant insights from the human brain

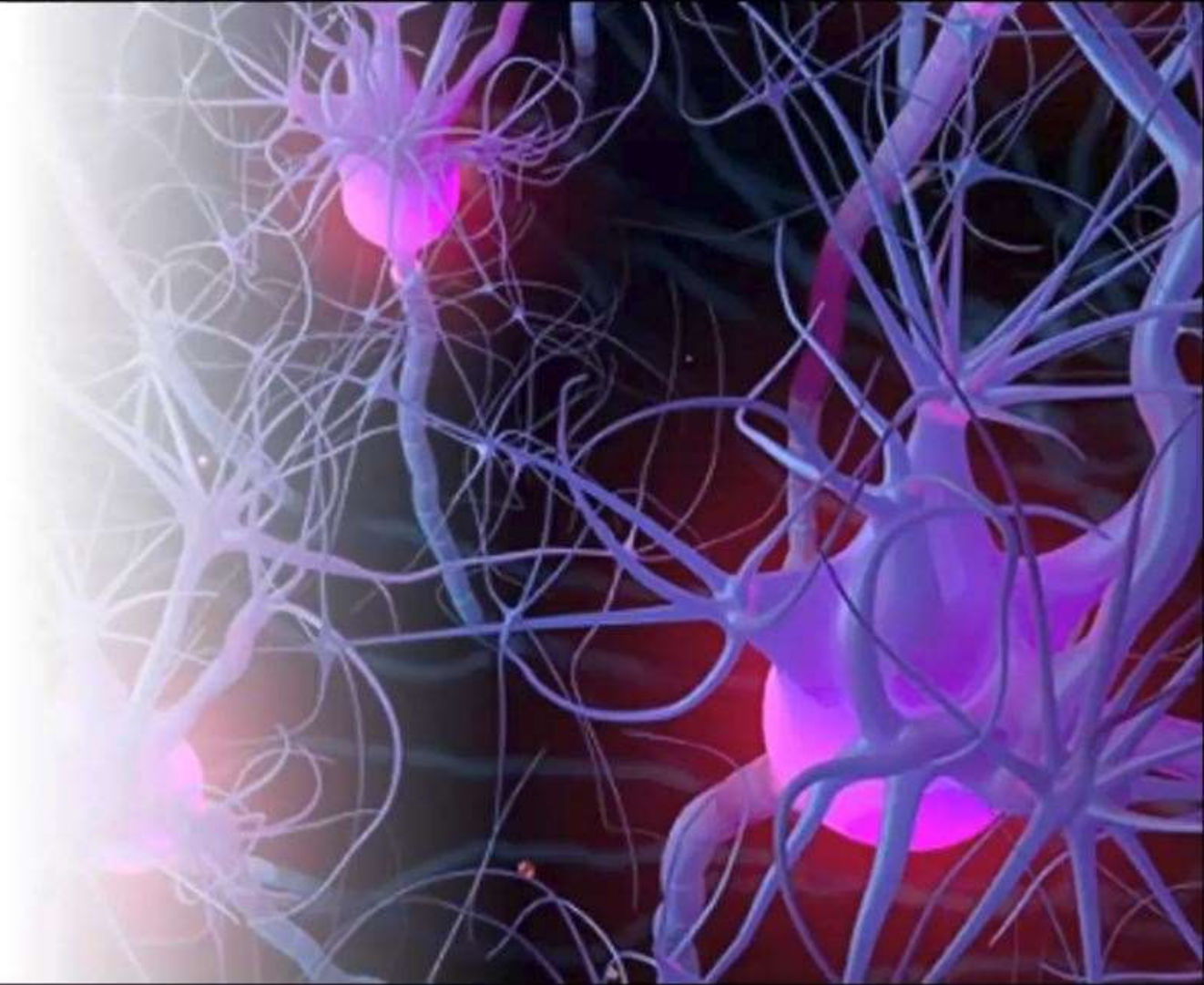




We are pioneers in the  
tracking of the  
Autonomic Nervous  
System using small form  
factor devices



## **THE XAANT BRACELET**





# Xaant production versions





# Photos from the field



Tech-enabled instant screening



Realtime monitoring of mental state



Recovery mgmt. at scale



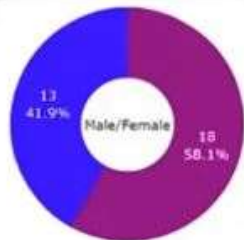
## Traction – Indian Defence

- Multiple trials completed with fighter pilots and jawans
- Requirement of customized Xaant devices for (a) go-no decisions (b) recruitment & training (c) fatigue and readiness monitoring (d) psychological reports
- Revenue: (a) Sale of devices (b) Sale of reports (c) Interventional programs (d) Analytics (e) Maintenance
- Next step: Commercial launch with Indian Defence Forces





Xaant Lounge Dashboard Location: Kanha Shanti Vanam Date: 26 Oct, 22



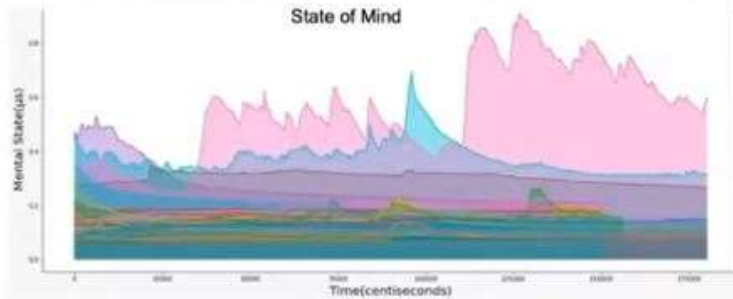
Distribution



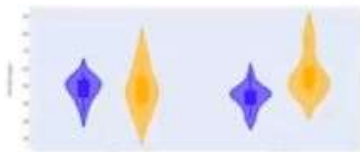
Optimal Mental Health



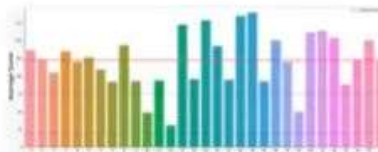
Optimal Physical Health



State of Mind



Relaxed vs. Stressed



Fatigue & Readiness



Emotions



Low Positive



High Positive



Low Negative



High Negative

# Ayurhythm



Central Council for Research  
in Yoga & Naturopathy

Solution:

Digital mind-body balance assessment\*

\*4 patents filed in India and PCT



Prakriti

Digital questionnaire

30 questions



Vikriti

Digital naadi pariksha

30 seconds

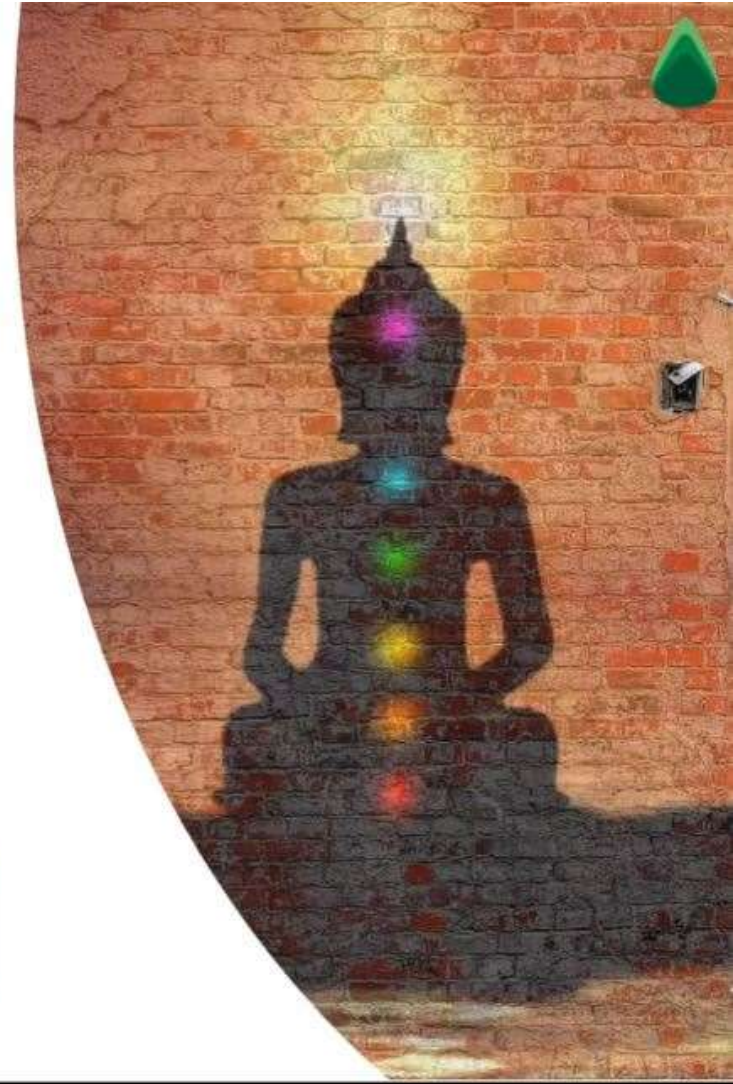
Certified by Industry and Institutions

[HCG](#)

[MSRA](#)

[NIRAAMAYA](#)

[DR. VAIDYA'S](#)





# PULSE OXIMETER & MOBILE APP FOR MEASURING PRAKRITI AND VIKRITI USING PULSE DIAGNOSIS

## Solution: AyuRythm's offering



1500+ Home remedies for ~150 ailments, just-in-time suggestions

# Āyū Yoga App



Central Council for Research  
in Yoga & Naturopathy





# Personalised yoga therapy modules using Aayu App



Central Council for Research  
in Yoga & Naturopathy



Regenerative healing

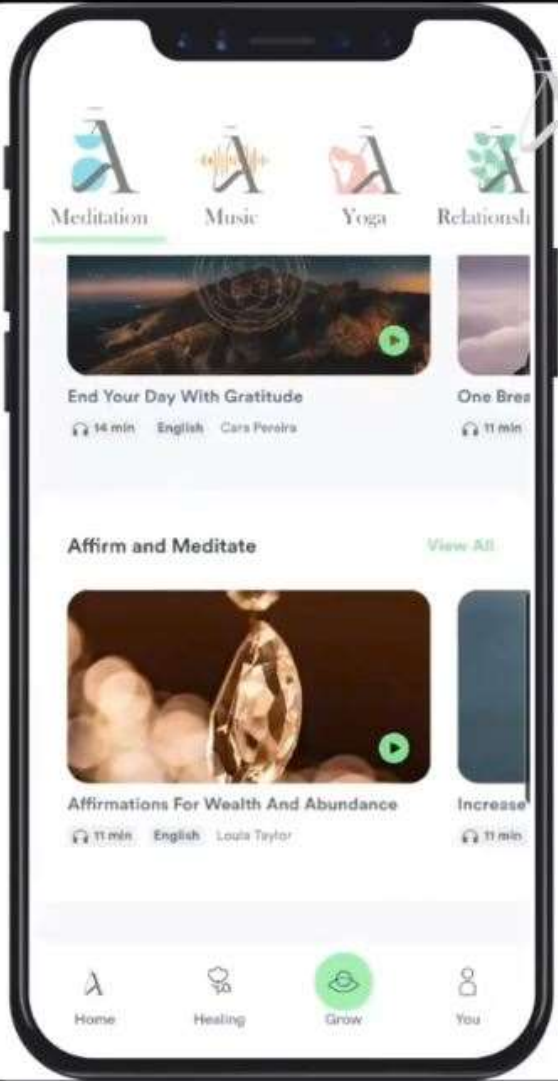
"For me  
For you  
For everyone"

Visit us:

[Aayu.live](http://Aayu.live)

[/AayuRegeneration](https://www.facebook.com/AayuRegeneration)

[@aayuregeneration](https://www.instagram.com/aayuregeneration)







# Yogifi the smart mat

## Motivation



Lack of Self-Motivation to Exercise Regularly



Lack of Guidance on Posture can Cause Injury



Yoga in Dr's Prescription to prevent Lifestyle Disease



Missing Personalization during Online Sessions



Need for Evidence based Yoga for Therapy



Pandemic Shift | Immunity is Necessity

**Lifestyle Disease (NCDs) kill 41 million people every year, 71% of all deaths globally, higher than pandemic deaths, timely intervention could avoid 48% of deaths.**



# Solution: YogiFi Smart Mat with App

YogiFi  
aiMat

Patented Sensor Technology



YogiFi  
aiTrainer

Real-Time Posture Analysis and Insights



YogiFi  
App

Not a regular Yoga App with just content

GUIDED  
INSTRUCTIONS  
FROM EXPERT  
TRAINERS



REAL-TIME  
FEEDBACK AND  
CORRECTIONS



CONTENT | COACH CONNECT  
COMMUNITY LEADERBOARD



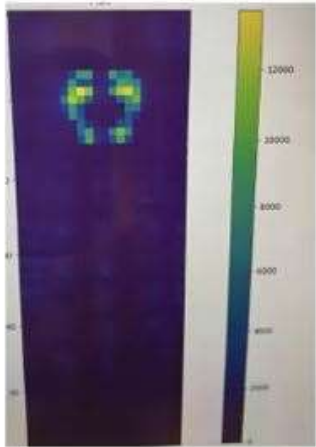
9 Patents Filed

4 Patents Granted

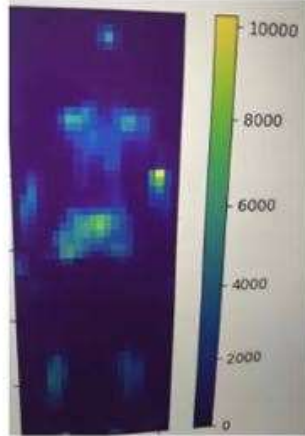
3 PCT + US Patents



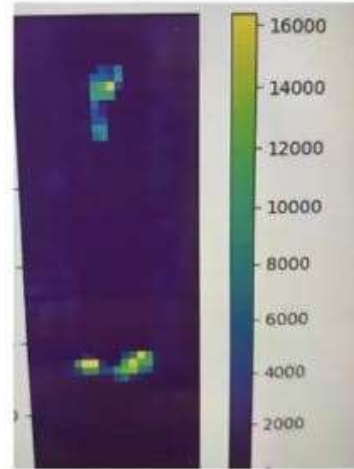
# RAW DATA FOR DEEP-DIVE ANALYSIS



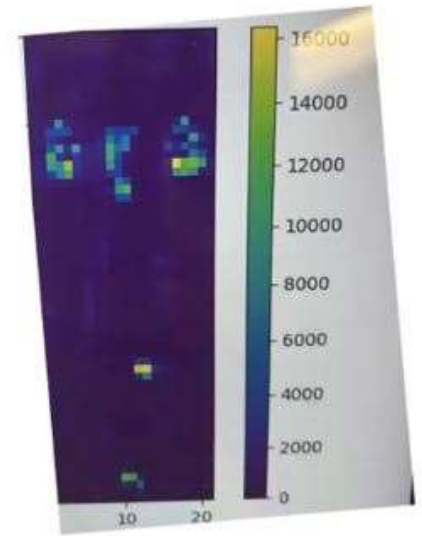
Tadasana



Shavasana



Veerabhadrasana Type-2



Ashwasanchalāsana

REAL\_TIME HEAMAP IMAGES FROM YOGIFI SMART MAT



# YogiFi App – Asana, Pranayama, Dhyana | Therapy Programs



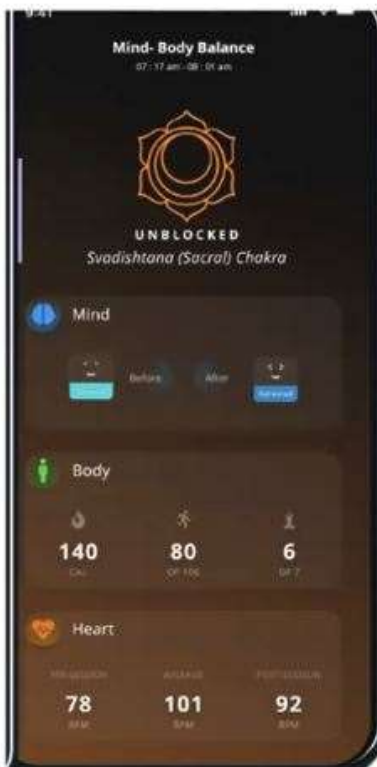
*“The lighthouse Yoga app with AI from India” - as quoted by Apple in their press release*



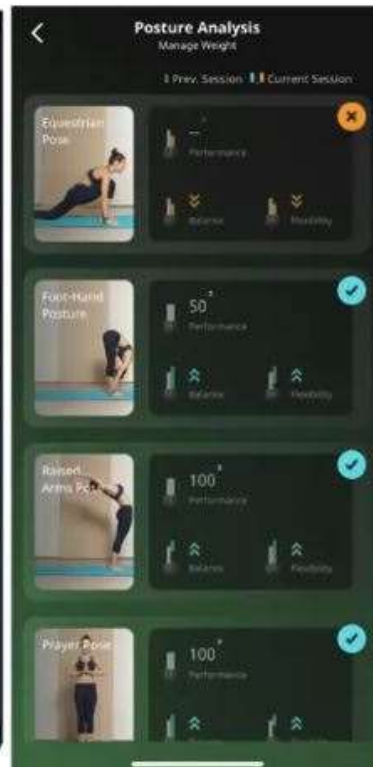
# USER'S ACTIVITY REPORTS



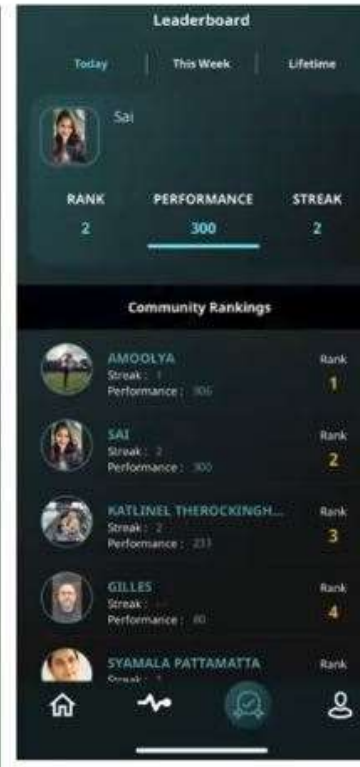
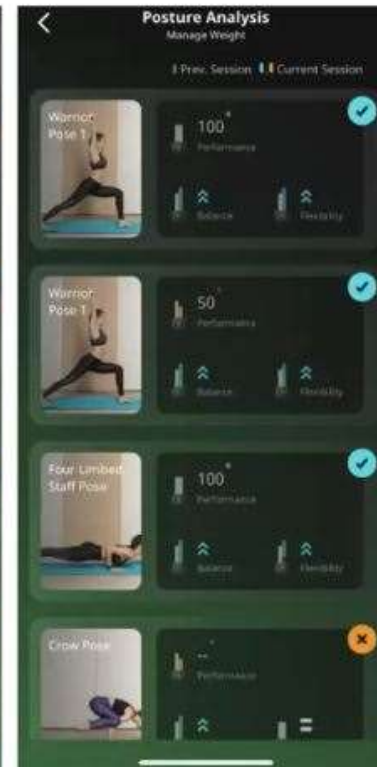
Daily Activity Tracker



Session Analysis



Posture-by-Posture Analysis



Leaderboard



# INSIGHTS FOR PERSONALIZATION

**Data driven insights for effective treatment and administration of lifestyle disease prevention/management.**

## SMART MAT

### PHYSICAL POSTURE ANALYTICS

- Activity Tracker [Mat exercises], Calories
- Asana Detection (60 asana library – Supine, Prone, Seated, Standing)
- Asana Correction (RT Feedback with only Mat)
- Calibration (COP Displacement, COP Velocity)
- Performance | Balance | Flexibility Metrics
- Raw Data (Heatmap Images)

## WEARABLES | DEVICES

### VITALS ANALYTICS

- Brahmari Time
- Heart Rate Variability [AHR | HRV]
- Blood Pressure
- FBS | PPBS
- VO2 MAX

## CLOUD

### DATA ANALYTICS (DERIVED)

- Compliance Check [Asanas | Sessions | Programs]
- Activity Time | Mindfulness Minutes
- State-of-Mind Log (Rajas, Tamas, Sattva Guna)
- Habit Streak | Badges | Accomplishments
- Daily | Weekly | Monthly Progress on Programs





# MAKE IN INDIA

Our **Eco-friendly and Sustainable Smart Mat Manufacturing** set-up in Bengaluru  
under **"Make-In-India"** Initiative





# YOGIFI AS PART OF NCD THERAPY KIT



**Therapy Content | Programs**  
**Coach Connect | Live Sessions**  
**Nutrition | Daily Activity Log**



**YogiFi Smart Mat (Asana Tracker)**  
**Smart Band (Vitals Tracker)**  
**Glucometer (Diabetes Tracker)**

# The Sun Salutation App



Central Council for Research  
in Yoga & Naturopathy



## SunUps

Based on the 12 step  
Yoga practice of  
**Surya Namaskar**  
(Sun Salutation)

Available on **iOS** and **Android** as '**SunUps**'



# The SunUps App





# What differentiates our app?

These are our primary focus areas that have set us apart from the competition



Adherence



Accountability



Experience



# Adherence

Making sure users get the maximum benefit from the practice



Trainer personality  
that guides you  
through the steps



Detailed instruction  
videos for every yoga  
practice



Tracking of valid  
repetitions via phone  
sensor



# Accountability

## Making SunUps a daily health habit



Tracking, reminders,  
streaks and  
challenges



Leaderboard for  
country-wise scores to  
motivate users



Unlock badges with  
different milestones  
and achievements

# Yoga for the kids



Central Council for Research  
in Yoga & Naturopathy



**GUNJANAPPS STUDIOS**

Nov 2022



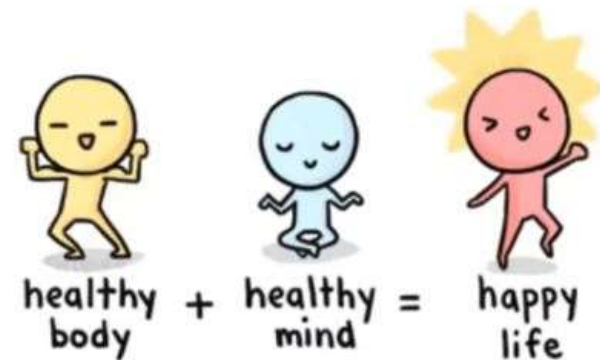


# Need of the Hour

---

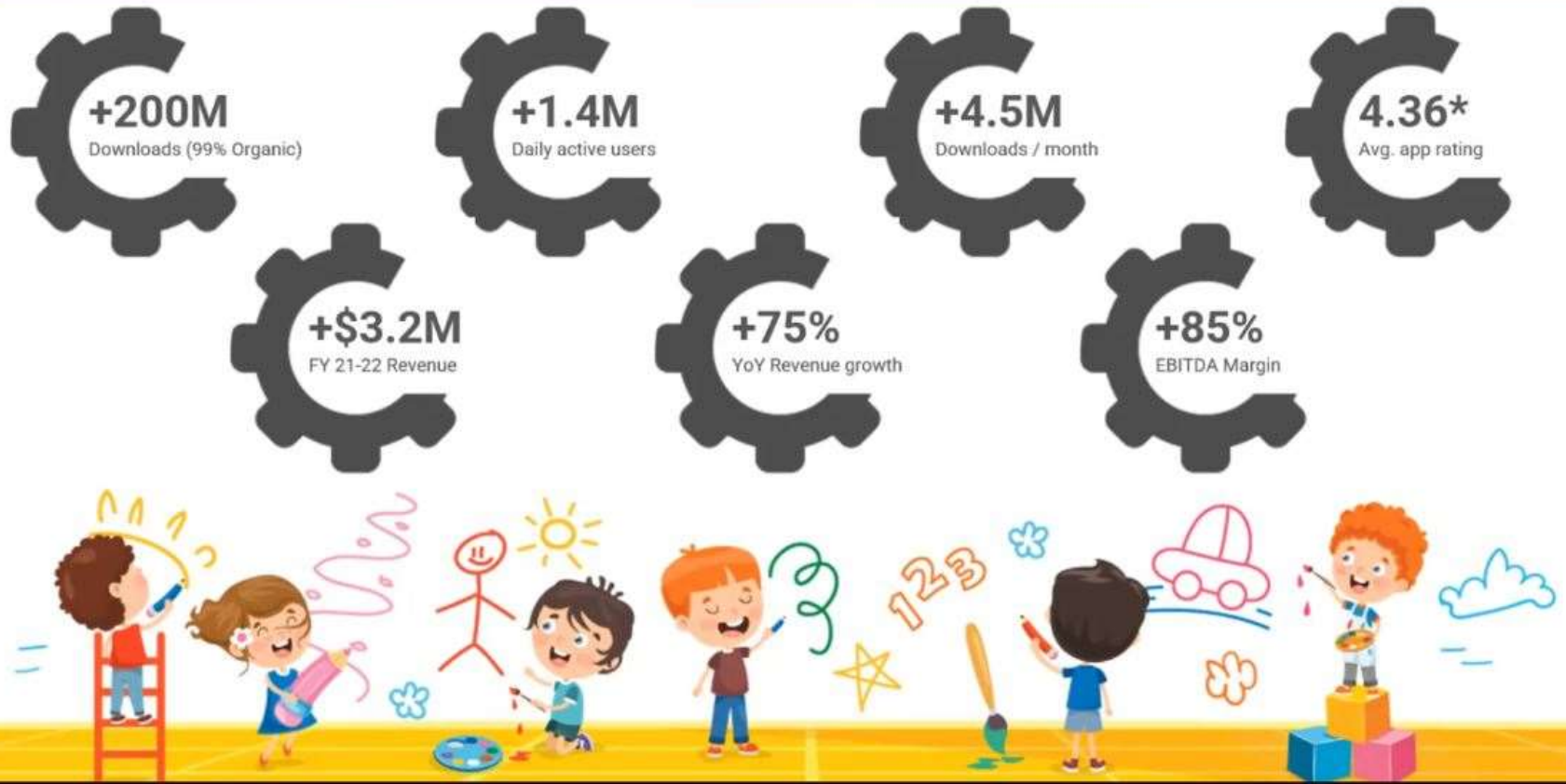
- Mental, Physical and emotional well being
- Healthy habits and healthy diet
- Disease free childhood
- Reduction in anxiety, depression, misery and negativity

**YOGA se hi HOGA.**





# We have achieved huge scale





# Gamifying Yoga For Kids and Family

## Yoga for Kids & Family fitness

GunjanApps Studios

Contains ads · In-app purchases

4.5★

57.5K reviews

5M+

Downloads

3+

Rated for 3+ ⓘ



Install



📱 This app is available for your device

# The Holomat and Holo Chakra suit



Central Council for Research  
in Yoga & Naturopathy

# HOLOWORLD



HoloWorld  
Yoga



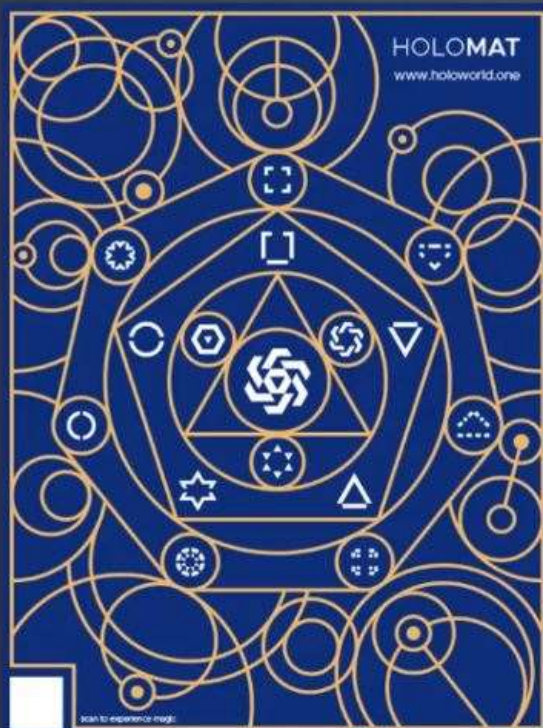
HoloWorld  
Meditation

# HOLOMAT & CHAKRA SUIT



Central Council for Research  
in Yoga & Naturopathy

## Our Technologies



HoloMat



Chakra Suit

# Holomat– Get the avatar of your teacher practice next to you

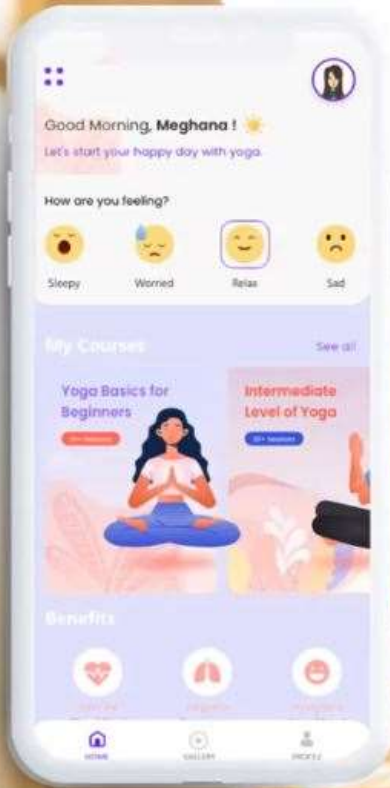


Central Council for Research  
in Yoga & Naturopathy

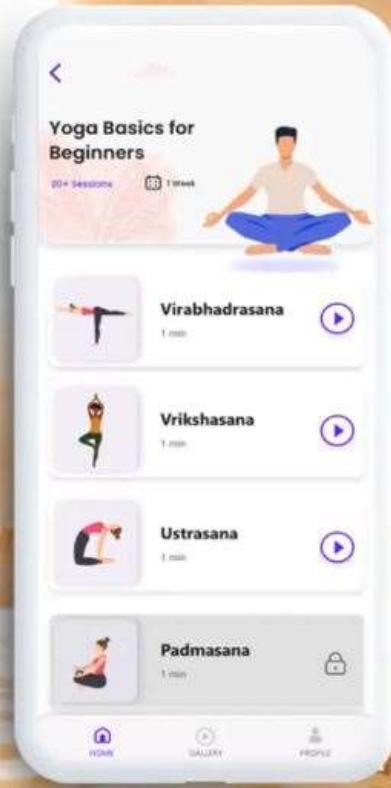




Home Screen



Asana Select



Analytics





Representation of how the meditation VR app will work



# Virtual reality guided meditation







## Advantages of AR Yoga/Meditation



**Immersive and interactive** –  
experience based



**360-degree realization,**  
perception and recognition



**Visual, audio and haptic feedback**  
enhances understanding



**Full body motion tracking technology**  
using **HoloSuit** provides Virtual Reality  
Practical Experience



**Embodied Artificial Intelligence**



**A billion AR mobile phones provide**  
instant scalability



Repeatable, remotizable and **high business**  
**potential**



**Real-time AI** providing effective guidance  
and supervision



**Phygital solutions** results in **10-100x reduction** in cost  
for customer



**Multi-user system** support with **1:1 real**  
world motion mapping

# THE SMART MAT- STRESS, SLEEP AND HEART & RESPIRATORY HEALTH



**BASED ON BALLISTOCARDIOGRAPHY**

# SOLUTION- SMART YOGA MAT + APP



- **DOZEE- AAYU WELLNESS PLATFORM**

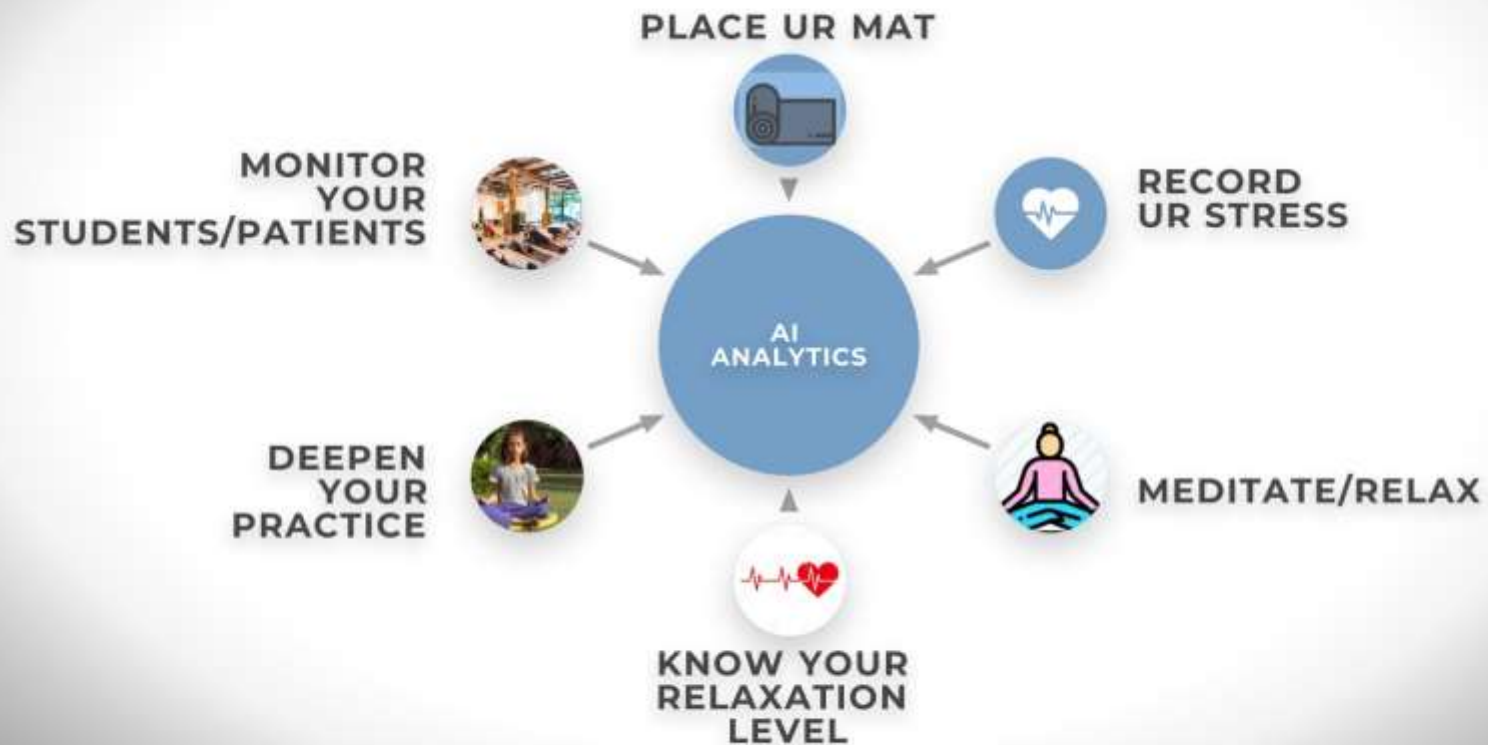
- Real time assessment of relaxation and awareness
- Biofeedback approach which shows level of relaxation
- 98.4% ACCURACY with HRV

- **AAYU-CURATED YOGA MODULES**

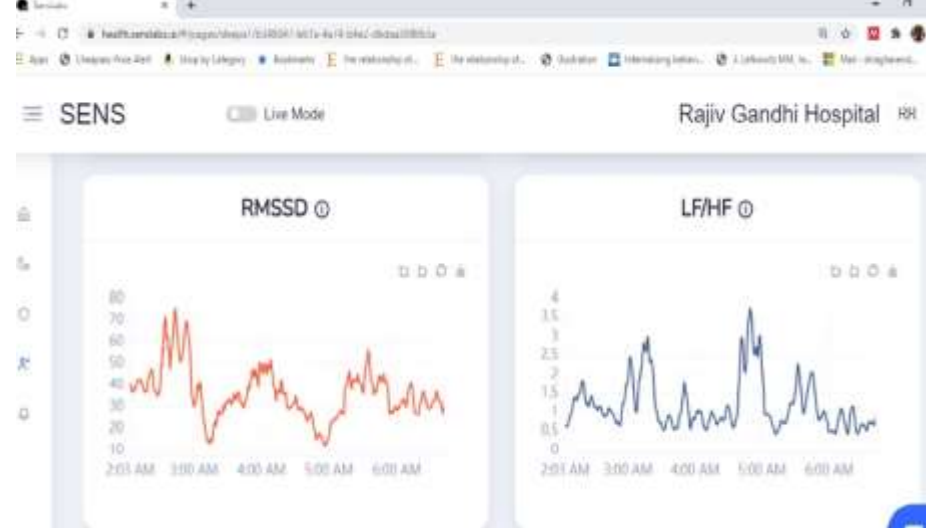
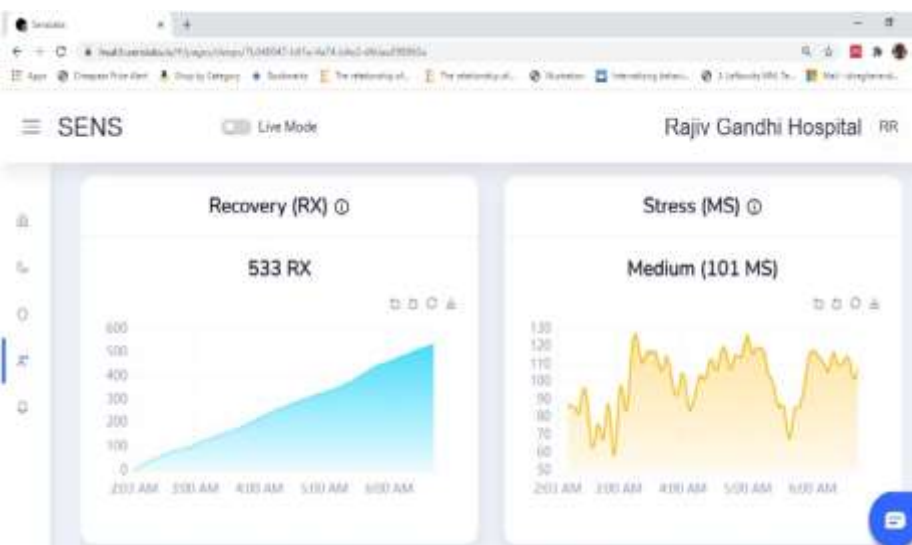
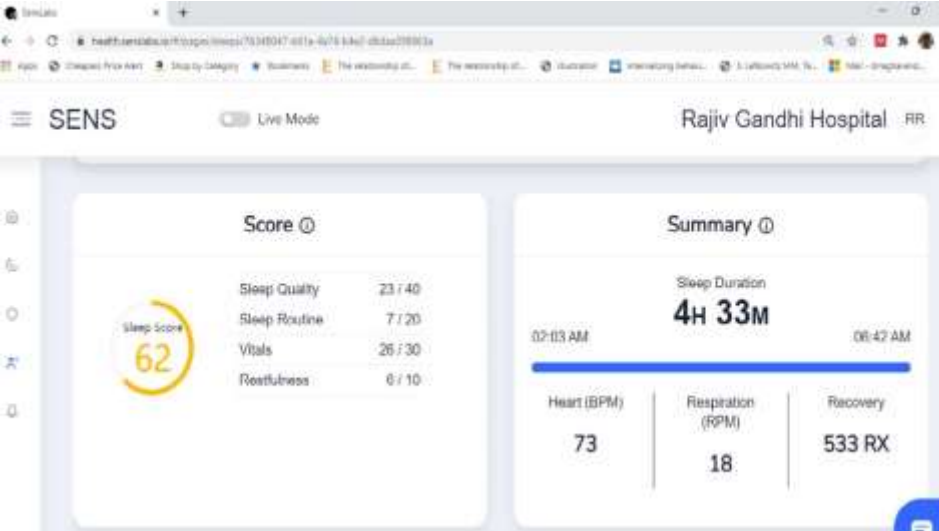
- Wellness and therapy modules by AAYU
- Evidenced for efficacy through Research



# HOW DOES IT WORK



# THE DOZEE DASHBOARD

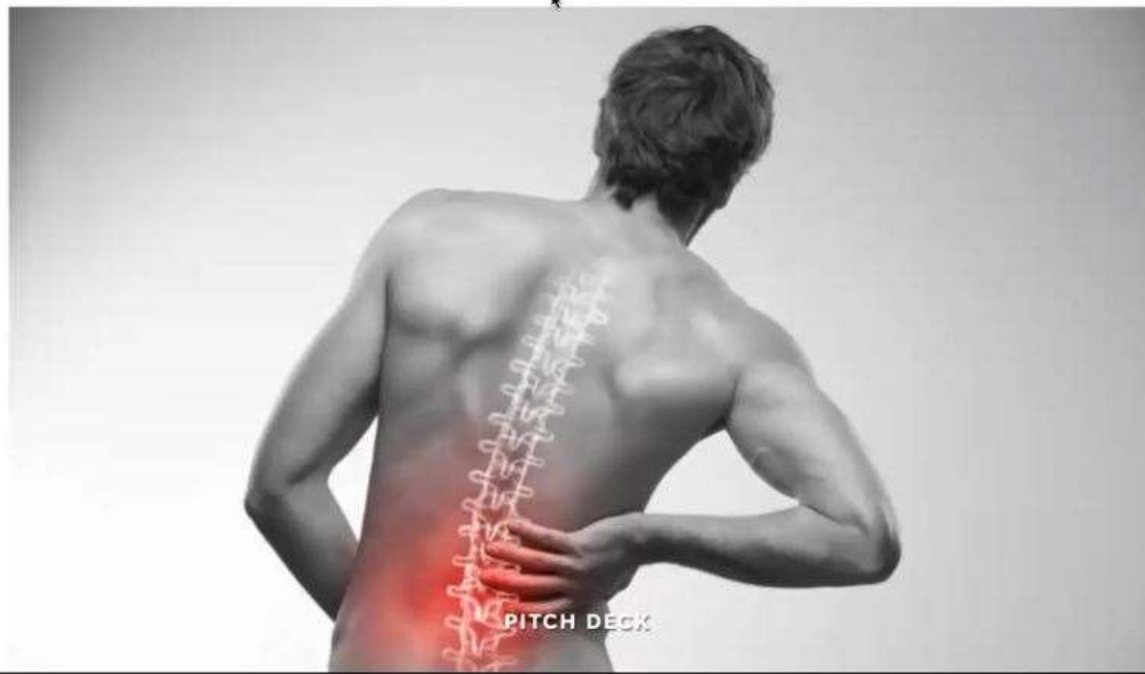


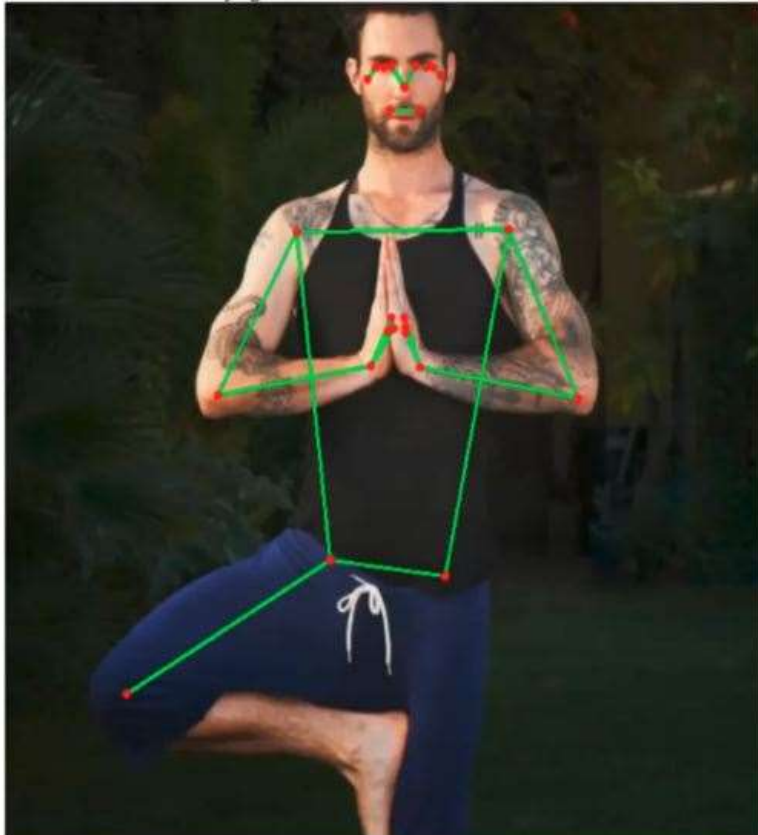


# FIT FRAME TECHNOLOGIES

## THE PROBLEM

**80%** of people quit yoga or exercise prematurely due to lack of motivation, right feedback and correct guidance





SOLUTION

## FITFRAME

is an artificial intelligence based yoga fitness trainer, which maps your postures and tells whether your yoga asanas are correct or not.



## PRODUCT OVERVIEW



20XX



PITCH DECK





## PRODUCT OVERVIEW



20XX



PITCH DECK



# Fitbuddy Virtual Personal Fitness Trainer

87%  
ACCURATE

120 kcal Burn

SET	REP
3	20

27.45 MIN



## Need for affordable and accessible personal training exp. ...anytime anywhere

### Senior citizens



Many degenerative diseases associated with ageing, i.e.

- dementia,
  - Alzheimer
  - Parkinson disease
- can be kept at bay with regular exercises

### Pregnant women



Regular workout activities may prevent

- gestational diabetes (diabetes that develops during pregnancy),
- relieve stress
- build more stamina needed for labor and delivery.

### House wives & working professional



Regular exercise provides a great array of health benefits, i.e.

- lowering blood pressure,
- reducing cholesterol
- cardiovascular disease,
- preventing diabetes,
- improving mood and cognitive function,
- reducing mortality

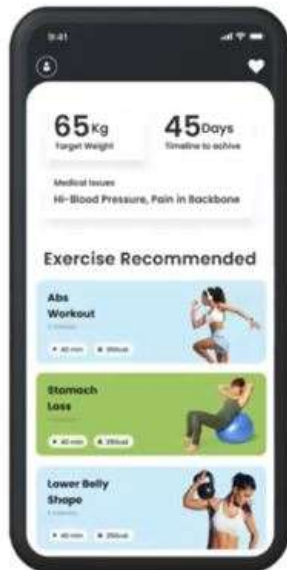


## Fitbuddy AI driven virtual personal trainer

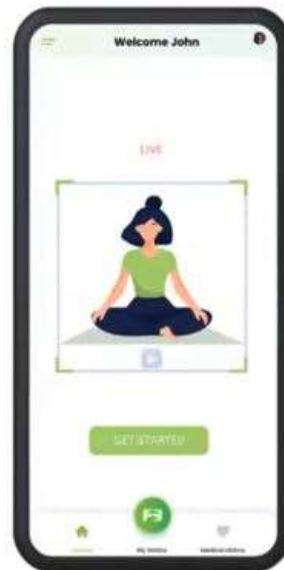
Mobile app where artificial intelligence meets fitness world



Choose fitness session



Get AI recommended fitness regimes  
OR  
Consult empanelled physical trainers



Start your workout  
by aligning to  
camera



Workout with continuous  
monitoring & Posture correction  
feedback



Get real time workout  
analytics & progress



## Fitbuddy demo

Without Fitbuddy



With Fitbuddy





# Fitbuddy Mobile app



<https://drive.google.com/file/d/1JhJQTFZFznZpClu-DzbbXeXqGY7k20iqE/view?usp=sharing>



[https://drive.google.com/file/d/1k2a9Hnr\\_yUu8r\\_JQknRLCfxM\\_ebkutqOa/view?usp=sharing](https://drive.google.com/file/d/1k2a9Hnr_yUu8r_JQknRLCfxM_ebkutqOa/view?usp=sharing)



[https://drive.google.com/file/d/1jq\\_pPXEK1XRal\\_sx3b0d5AcrmLUPbrzCF/view?usp=sharing](https://drive.google.com/file/d/1jq_pPXEK1XRal_sx3b0d5AcrmLUPbrzCF/view?usp=sharing)





# WE HAVE AN OPPORTUNITY TO TAKE YOGA TO THE WORLD

## Opportunity & global impact

---

- Change the way mental health is managed
- Reduce the global treatment gap
- Deploy evidence-based therapies
- Measure impact at scale
- Remove the stigma around mental health

THANK YOU