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JRF

Dept. Of Neurology

NIMHANS

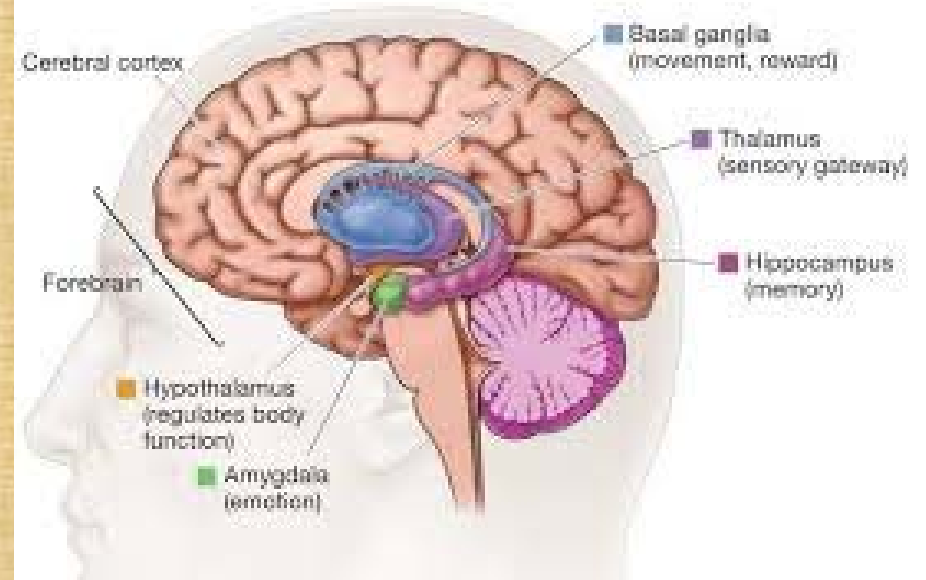
Chair person: Dr. Pooja M

Associate Professor

Dept. Of Neurology

NIMHANS

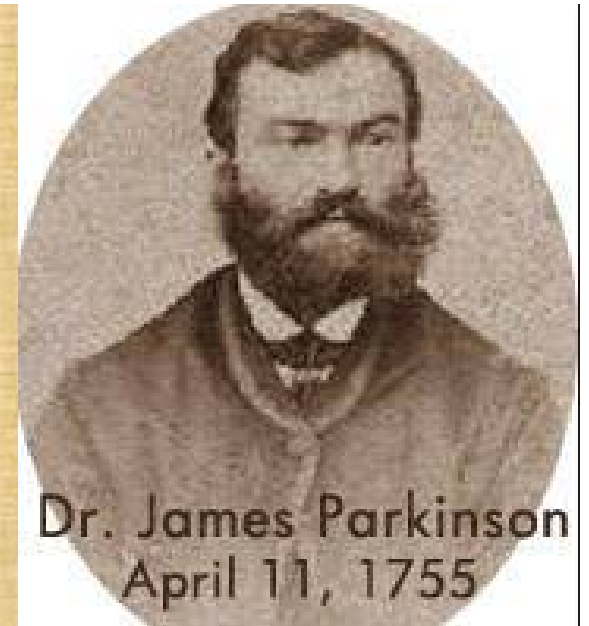
INTRODUCTION



- Parkinson's disease is a slowly progressive, chronic neurological disease.
- Due to deficiency of mainly dopamine a neurotransmitter, a chemical in the brain.

History of PD

- In 1817: Dr. James Parkinson.
- Jean Martin Charcot was first to recognize the importance of Dr. James Parkinson's and renamed the disease after him as “Parkinson's Disease”.



Epidemiology

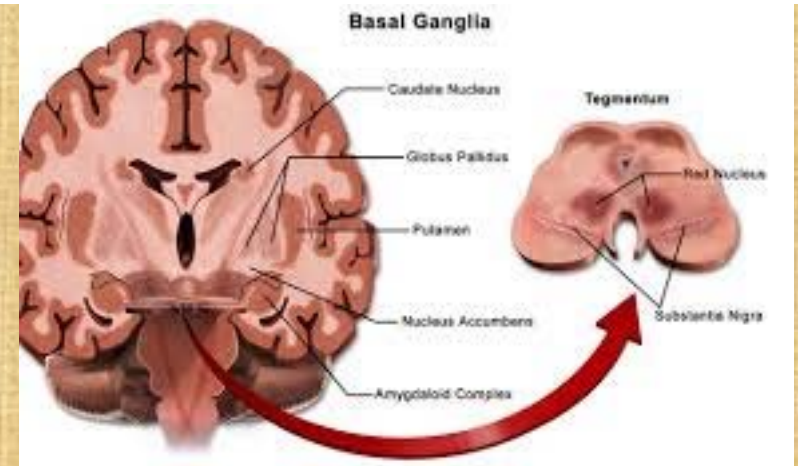
- PD Occurs world wide and is present in all races
- Males > females
- Prevalence of PD Increase with increasing age of 1% of person from age 60.
- Young Onset Parkinson's Disease starts between 21-40 years affecting 5 to 10% of PD patients.
- The incidence and prevalence of PD in India is lesser as compared to other country.
- Rural population had a higher prevalence than urban population.



Definition

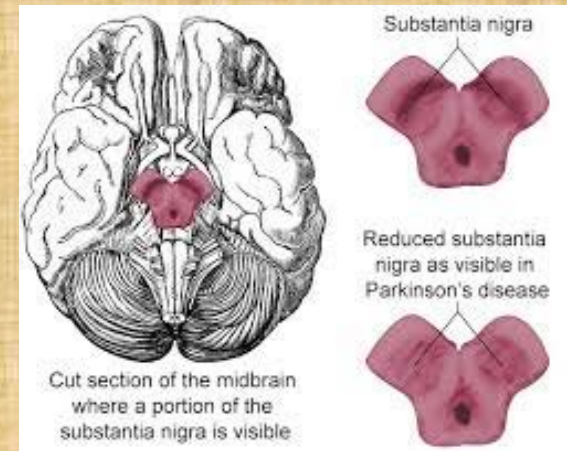
- Characterized by tremor at rest, rigidity, slowness of movements and postural instability.
- Parkinsonism is a syndrome with numerous causes of which the Parkinson's disease is the most common.

Anatomy



- Basal ganglia are the collection of grey matter within the brain. This area is affected in Parkinson's disease.
- Many parts of the brain are affected but mostly the Basal ganglia.

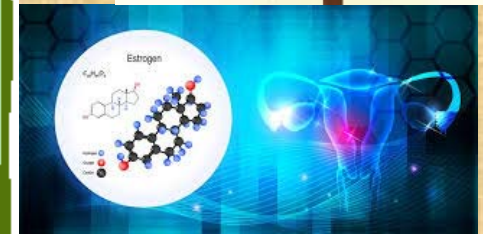
Clinical Significance

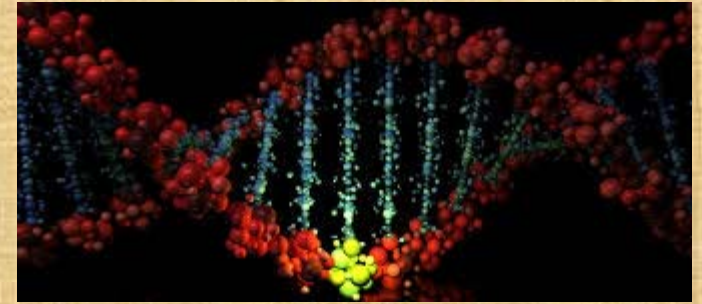


- Parkinson's Disease is associated with the death of dopamine neuron in the substantia nigra pars compacta which is due to neuro- degeneration.
- When a significant number of neurons have died, the individual will likely to start to experience movement-related problems like tremors, rigidity, slowness of movements and postural instability.

Etiology/ Risk factors

- Above age 60 years mostly seen
- YOPD 21-40 years
- Gender: Males > Female
- Family History
- Low Estrogen level
- Agricultural work
- Low level of vitamins
- Head trauma





- Genetic mutation:
 - Alpha Synuclein: Autosomal dominant
 - LRRK2(leucine rich repeat kinesis2): Autosomal
 - PINK1/PARKIN/DJ-1: Autosomal recessive
 - GBA(Glucoerebrocidase):Autosomal recessive
 - Alpha Synuclein and LRRK2 gene mutation is linked with YOPD.

- Other Causes:

- Multiple system atrophy(MSA), Progressive supranuclear palsy.

- Secondary Parkinsonism.

Drug induced Parkinsonism.

Pathophysiology

Etiological Factors:

- Environmental factors
- Gene Mutation
- Degenerative diseases

Destruction of Dopaminergic neuronal cells in the substantia nigra of Basal ganglia

Neuronal cells loss and depigmentation

Degeneration of dopaminergic activity particularly in the nigro-striatal pathway

Depletion of dopamine store

Imbalance between excitatory (Acetylcholine) & inhibitory (dopamine) neurotransmitter in the corpus striatum

Impairment of extrapyramidal tract controlling complex body movement

Tremors
Rigidity
Akinesia
Postural instability

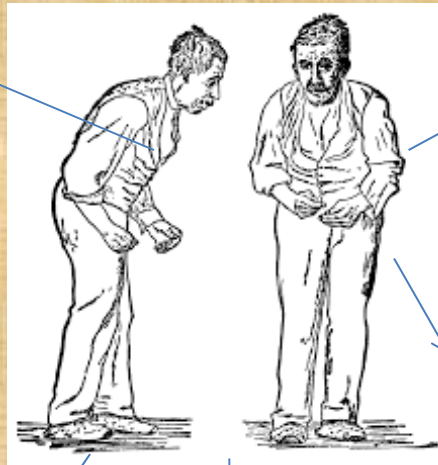
Signs and Symptoms

Four cardinal signs:

- Resting tremor
- Rigidity
- Akinesia
- Postural Instability

Akinesia:

- Bradykinesia
- Hypokinesia
- Hypophonia
- Micrographia



Dysautonomia: includes

- Sweats, facial flushing
- Urinary frequency, urgency
- GI dysfunction- constipation
- Orthostatic hypotension and sexual dysfunction

Cogwheeling



Cog -Wheeling

Postural Disturbance:

Stooped or fixed positive

- Disequilibrium or postural instability
- Retropulsion- backward motion
- Propulsion- Forward motion

Sleep disturbance:

Frequent awakening

Day times sleeping

Sensory impairment:

Pain, restlessness

Cognitive and psychiatric disturbance:

Anxiety, Apathy, mental irritability, impaired executive function, Depression, psychosis, dementia

Diagnostic Evaluation

- Laboratory test and Imaging studies are not helpful in the diagnosis of Parkinson's disease.
- Criteria for making the diagnosis of Parkinson's disease include the following:
 - ✓ Any 2 of 4 cardinal features(Resting tremors, rigidity, postural instability, Akinesia).
 - ✓ Through patients history and performed complete neurological examination.
 - ✓ CT Scan or MRI of head to rule out the secondary cause.

Management

- Treatment is directed at controlling symptoms and maintaining functional independence.
- There are no medical or surgical approaches that prevent disease progression.
- Pharmacological management is the main stay of treatment.
- Alternative medicine: Massage, Tai chi, Yoga, Meditation.

Medications



1. LEVODOPA

2. DOPAMINE RECEPTOR AGONISTS

- Ropinirol,
- Pramipexole

3. MONOAMINE OXIDASE INHIBITORS

- Selegiline
- Rasagiline

4. AMANTADINE

5. Anti-Cholinergic

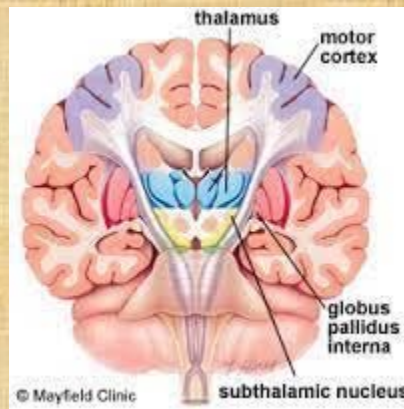
6. Anti-Depressant

Surgical Management

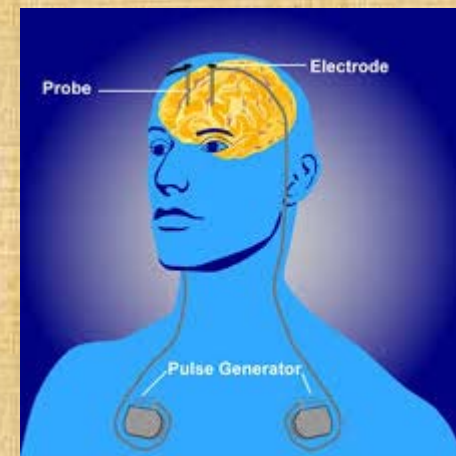
*Thalamotomy



*Pallidotomy



*Deep Brain Stimulation



Yoga



1. A randomized controlled pilot study of the therapeutic effects of yoga in people with Parkinson's disease ; *Neena Sharma et al (2015)(IJOY)*

- 8 patients with PD who underwent Yoga for 12 weeks were compared with 5 patients who did not.
- Significant improvement in UPDRS scores.
- Positive trends of improvement were noted in depression scores.
- Falls decreased by around 25% as a result of Yoga

Yoga



2. Measuring The Effect Of An Eight-Week Adaptive Yoga Program On the Physical And Psychological Status Of Individuals With Parkinson's Disease. A Pilot Study; *Boulgarides et al (2014)(IJYT)*.

- There was significant improvement in depression as well as balance after 8 weeks of Yoga in 10 patients with PD

3. Development and validation of a yoga module for Parkinson disease; Noopur kakde et al 2017.



[JAMA Neurol.](#) 2019 Jul; 76(7): 755–763.

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PMCID: PMC6583059

PMID: [30958514](https://pubmed.ncbi.nlm.nih.gov/30958514/)

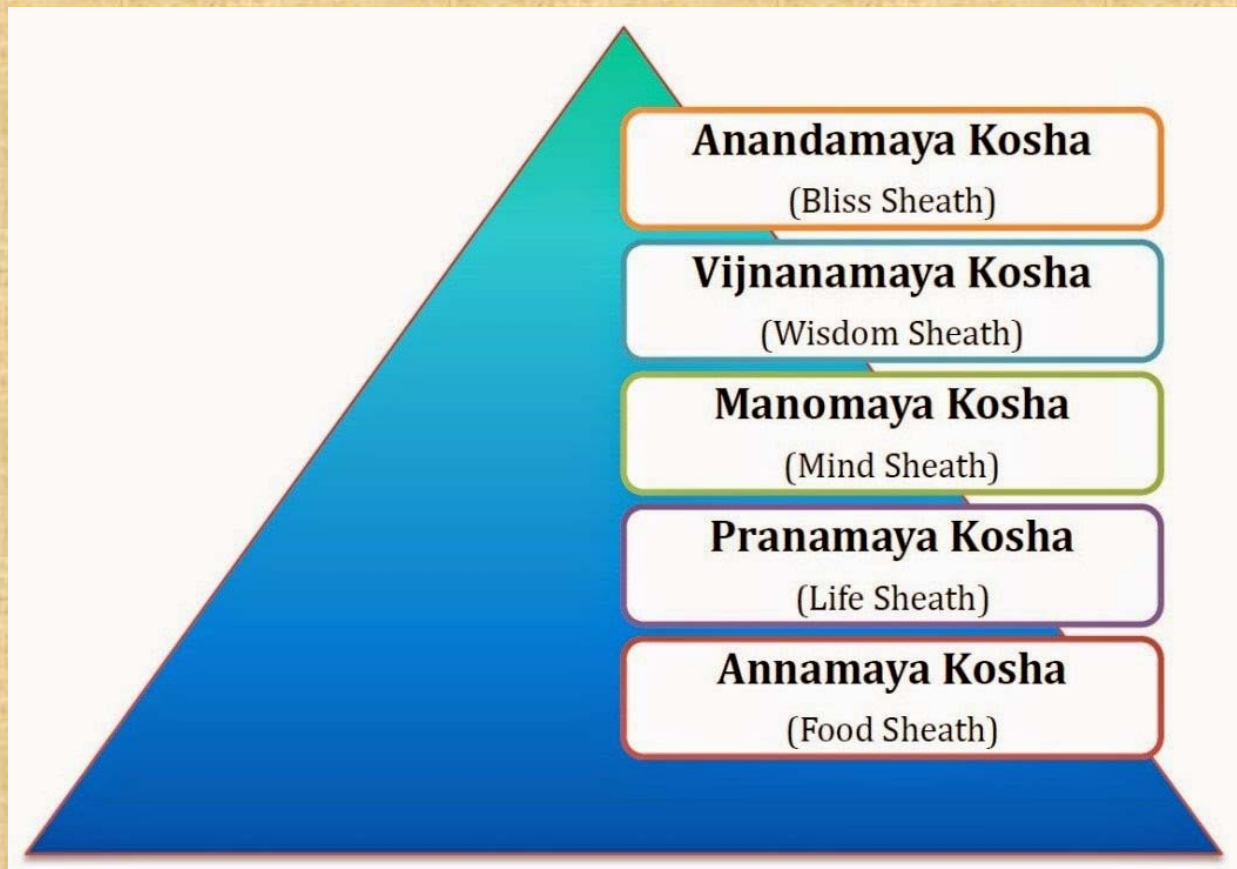
Effects of Mindfulness Yoga vs Stretching and Resistance Training Exercises on Anxiety and Depression for People With Parkinson Disease A Randomized Clinical Trial

[Jojo Y. Y. Kwok](#), PhD, MPH, BN, RN,¹ [Jackie C. Y. Kwan](#), MSocSc, PDMH, BSW, RSW,² [M. Auyeung](#), MBChB,³ [Vincent C. T. Mok](#), MD, MBBS,⁴ [Claire K. Y. Lau](#), MSc, BN, APN,⁵ [K. C. Choi](#), BSc, PhD,⁶ and [Helen Y. L. Chan](#), PhD, BSN, RN⁶

- 187 screened
- 138 recruited
- Yoga: 71 (Mindfulness yoga), Control: 67 (SRTE)
- Mindfulness yoga was found to be as effective as Stretching Resistance Training Exercise with additional benefit of a reduction in anxiety, depression and also increase in spiritual well being and HRQOL.

Yoga concept for Parkinson's Disease

How we might Support and balance the Panchakosha model



Conclusion

- PD is a chronic, progressive neurological disorder where movement is affected.
- The goal of management is to control the manifestation such as motor and non- motor manifestations.

Reference

- Obeso JA, Rodríguez-Oroz MC, Benitez-Temino B, et al. (2008). "Functional organization of the basal ganglia: therapeutic implications for Parkinson's". *Mov. Disord.* 23 (Suppl 3): S548–59. Estrogens and Parkinson Disease; *R Saunders-Pullman et al-2003*.
- Parkinson's disease and exposure to agricultural work and pesticide chemicals; *KM Semchuk et al-1992*.
- A randomized controlled pilot study of the therapeutic effects of yoga in people with Parkinson's disease ; *Neena Sharma et al 2015*.
- Parkinson's UK. The Incidence and Prevalence of Parkinson's in the UK. London, UK. 2018
- Measuring The Effect Of An Eight-Week Adaptive Yoga Program On the Physical And Psychological Status Of Individuals With Parkinson's Disease. A Pilot Study; *Boulgarides et al 2014*

Thank you

