

MUSIC, MOTION, AND PARKINSON'S DISEASE



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Associate Professor
Physical Therapy

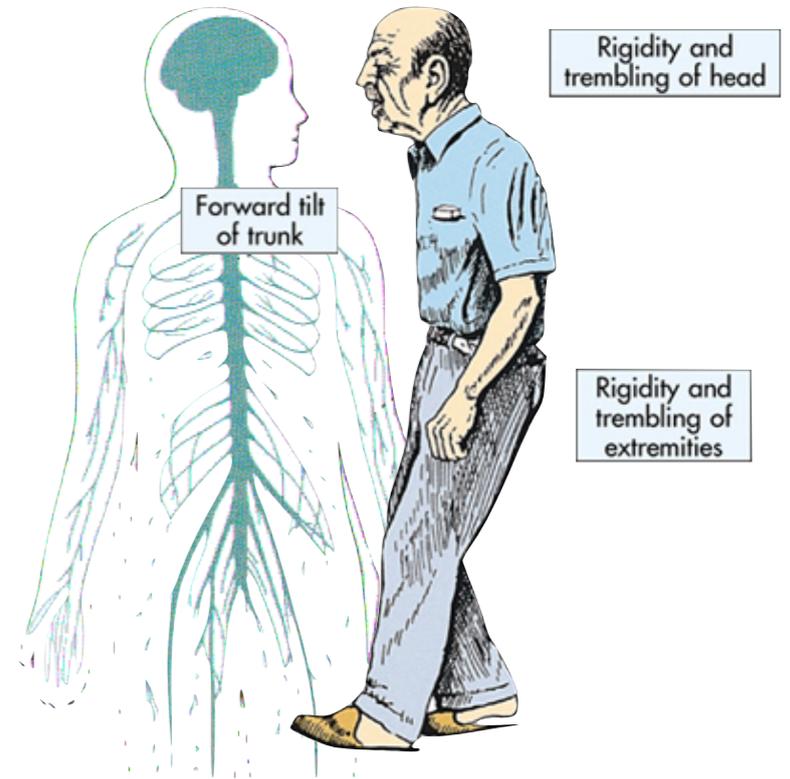
University of Alabama at Birmingham
Research Associate - Lakeshore Foundation

MUSIC



MOVEMENT

PD



BLACK DOG

Words and Music by
JIMMY PAGE, ROBERT PLANT
and JOHN PAUL JONES

Medium beat

N.C.

Hey, hey, ma - ma, said the way you move... gon - na make you sweat, ... gon - na

make you groove...

Oh, oh, child, ... way you shake that thing ... gon - na

make you burn, ... gon - na make you sting ...

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MUSIC & ENDORPHINS

“ . . . Endorphins and Dopamine play a role in the musical experience . . . ”

Boso M, Politi P, Barale F, Enzo E. Neurophysiology and Neurobiology of the Musical Experience. *Funct Neurol.* 2006 Oct-Dec;21(4):187-91.

- Endorphin release from music can create a stronger social cohesion

. Dunbar, R. Evolution of the social brain. *Science.* 2003 Nov 14:1160-61.



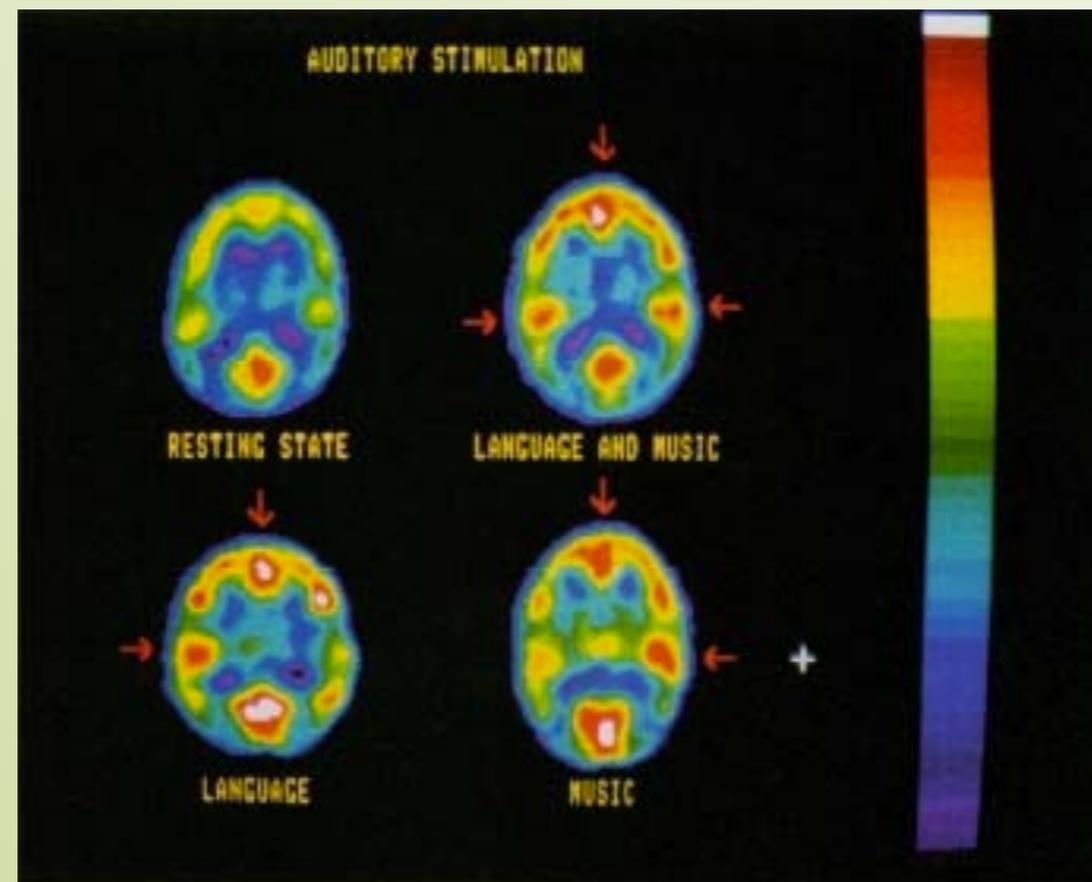


Blood vessels can expand ~25% when listening to “enjoyable” music, while they can shrink ~6% when listening to music

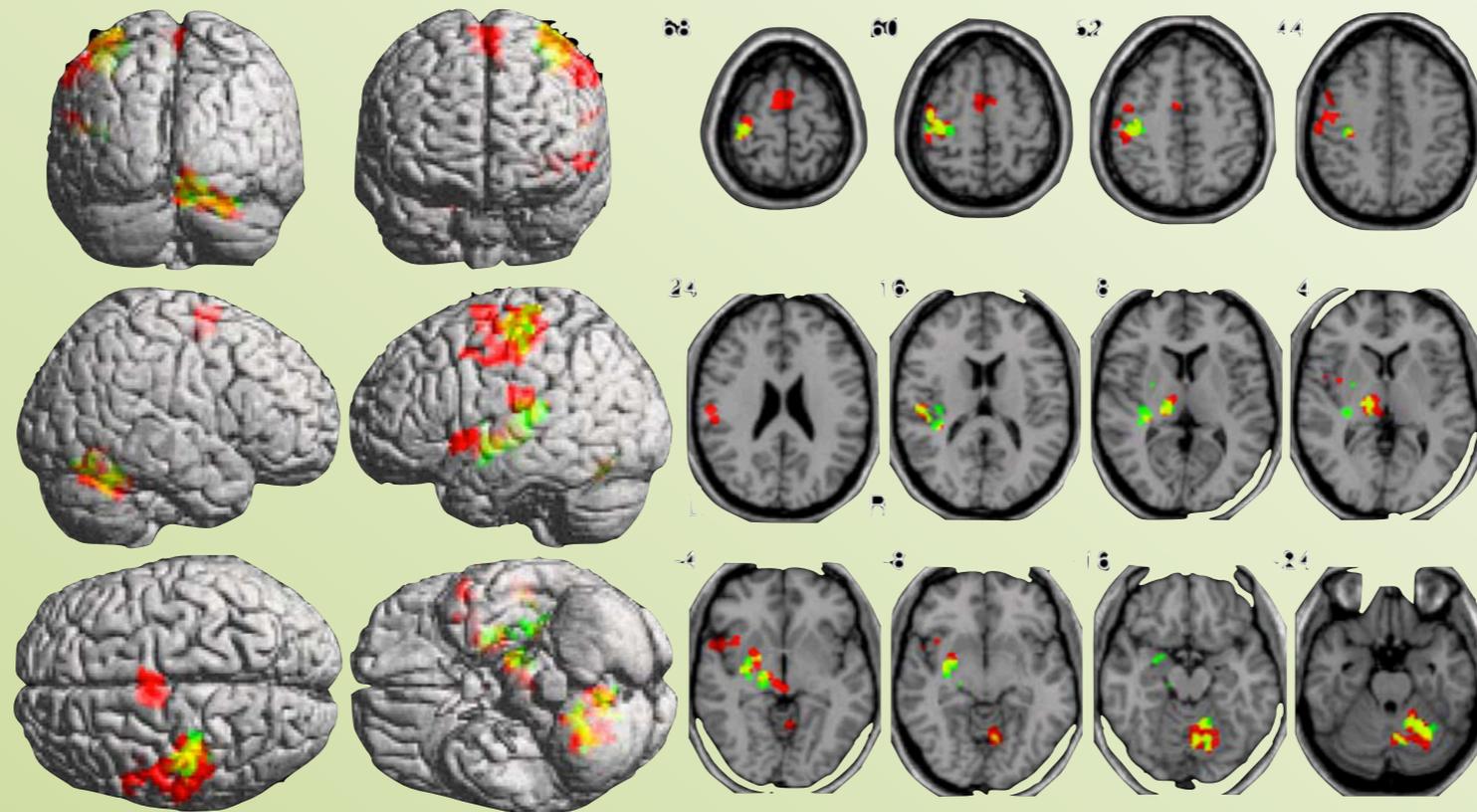
American Heart Association

MUSIC & BRAIN ACTIVITY

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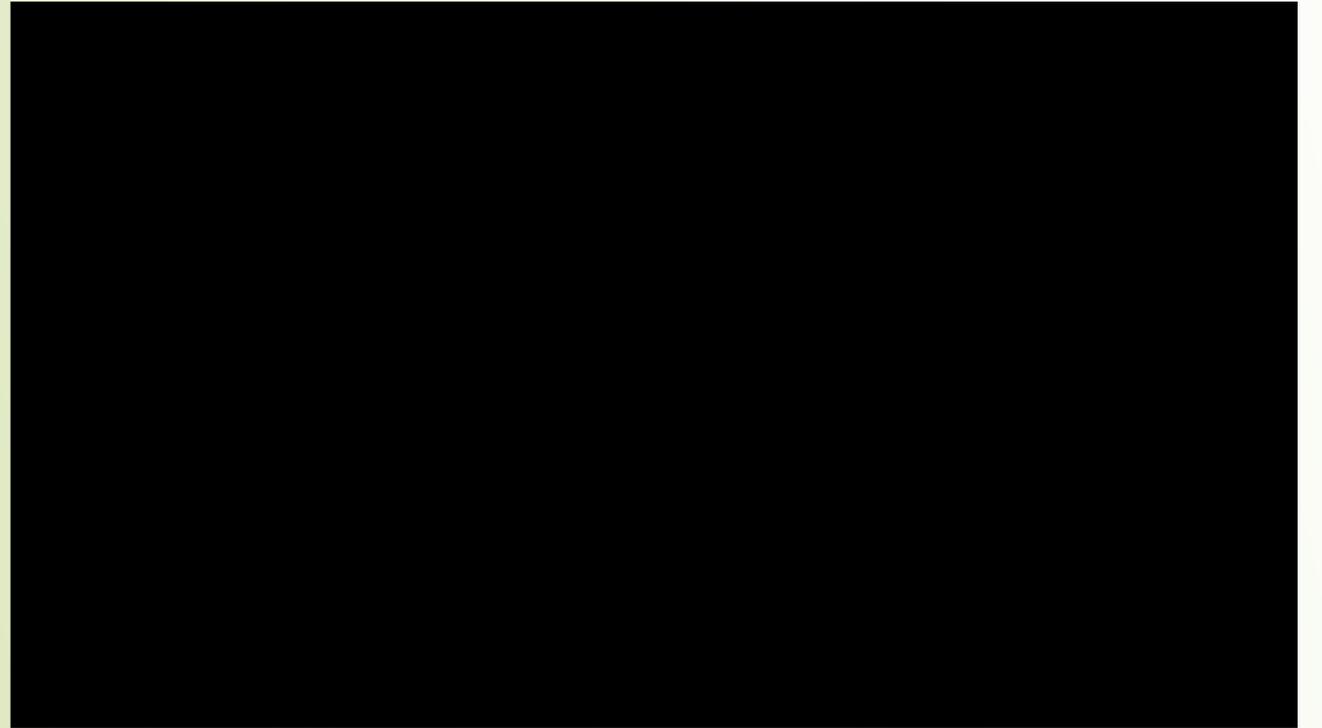


PLAYING MUSIC HELPS PD

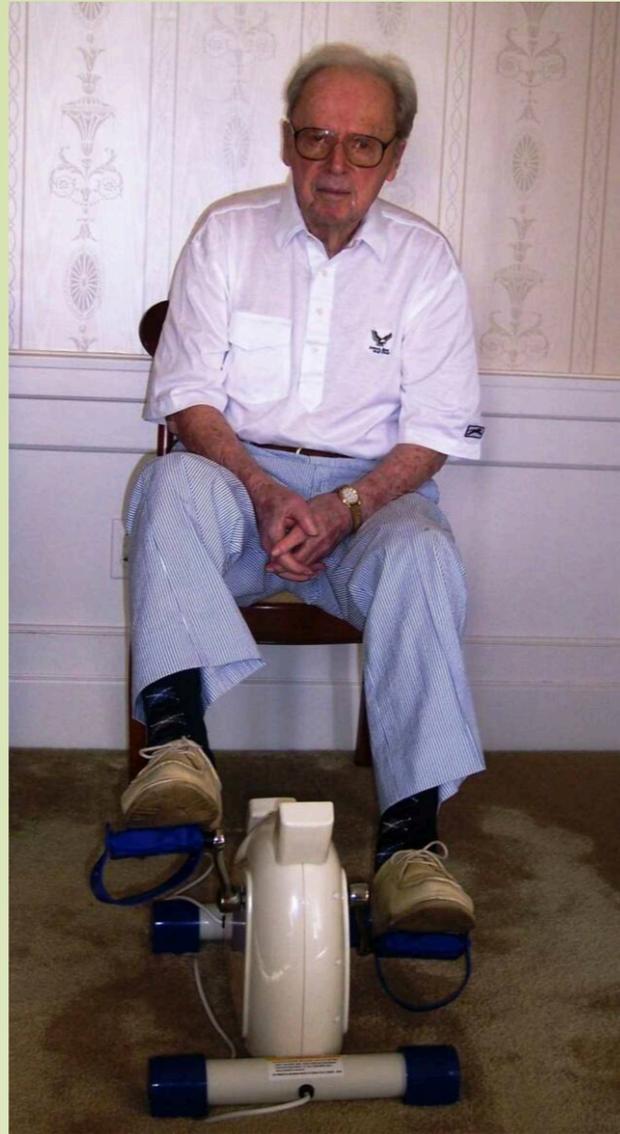


**MUSIC CAN
CHANGE THE
PD BRAIN**

“Dr. Jekyll and Mr. Hyde”

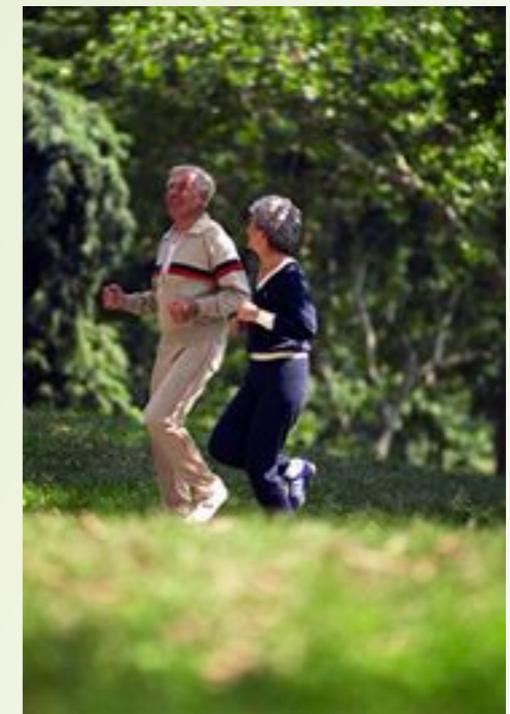


MUSIC & MOVEMENT



MUSIC & MOVEMENT

- ✦ Music or auditory rhythms can **improve movement efficiency**
 - ✦ smooth
 - ✦ coordinated/faster walking
- ✦ Music or auditory rhythms can **facilitate movement to become exercise/training**
 - ✦ dance
 - ✦ coordinated/faster walking





TYPICAL ADULT WALKING PACE 80 - 120 BPM

**RESEARCH
EVIDENCE . . . PD**

**WOULD YOU TAKE A PILL, DAILY, THAT CURED
ALL SYMPTOMS OF PD?**

**WOULD YOU TAKE A PILL, DAILY, THAT CURED
ALL SYMPTOMS OF PD?**

YES

**DAILY EXERCISE
FOR PERSONS
WITH PD IS THE
BEST MEDICINE
FOR PD.**

WOULD YOU TAKE A PILL, DAILY, THAT PROVIDED ALL THE BENEFITS OF EXERCISE?



**WOULD YOU TAKE A PILL, DAILY, THAT
PROVIDED ALL THE BENEFITS OF EXERCISE?**

YES???

**SO, . . . YOU WANT THE
BENEFITS OF EXERCISE?**

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If I paid you, gave you transportation, a personal trainer, would you go to fitness center 5 days/week to exercise?

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If I gave you a personal trainer, would you go to fitness center 5 days/week to exercise?

If it was reimbursed (FREE) would you go to fitness center 5 days/week to exercise?

MOVEMENT & PD

Cueing at Home/Community - RCT

Methods

- ♦ 153 persons w/PD
- ♦ Cueing was provided a PT
- ♦ Used to facilitate daily functional tasks

Group 1

Group 2

Cueing

NO Cueing

3 wks

NO Cueing

Cueing

3 wks

6 wks

Final Outcome Measures

Neuwboer, A, et al. Cueing training in the home improves gait related mobility in Parkinson's disease: The RESCUE trial . J Neurol Neurosurg Psychiatry. 2007; (78):134-40.

MOVEMENT & PD

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MOVEMENT & PD

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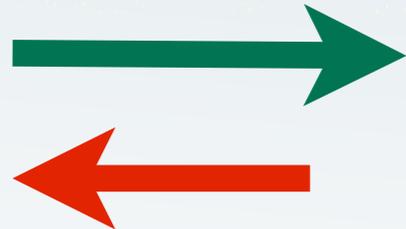
6 wks

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MOVEMENT & PD

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Group 2

Cueing

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NO Cueing

Cueing

3 wks

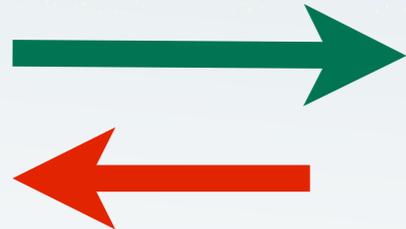
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MOVEMENT & PD

Cueing at Home/Community - RCT



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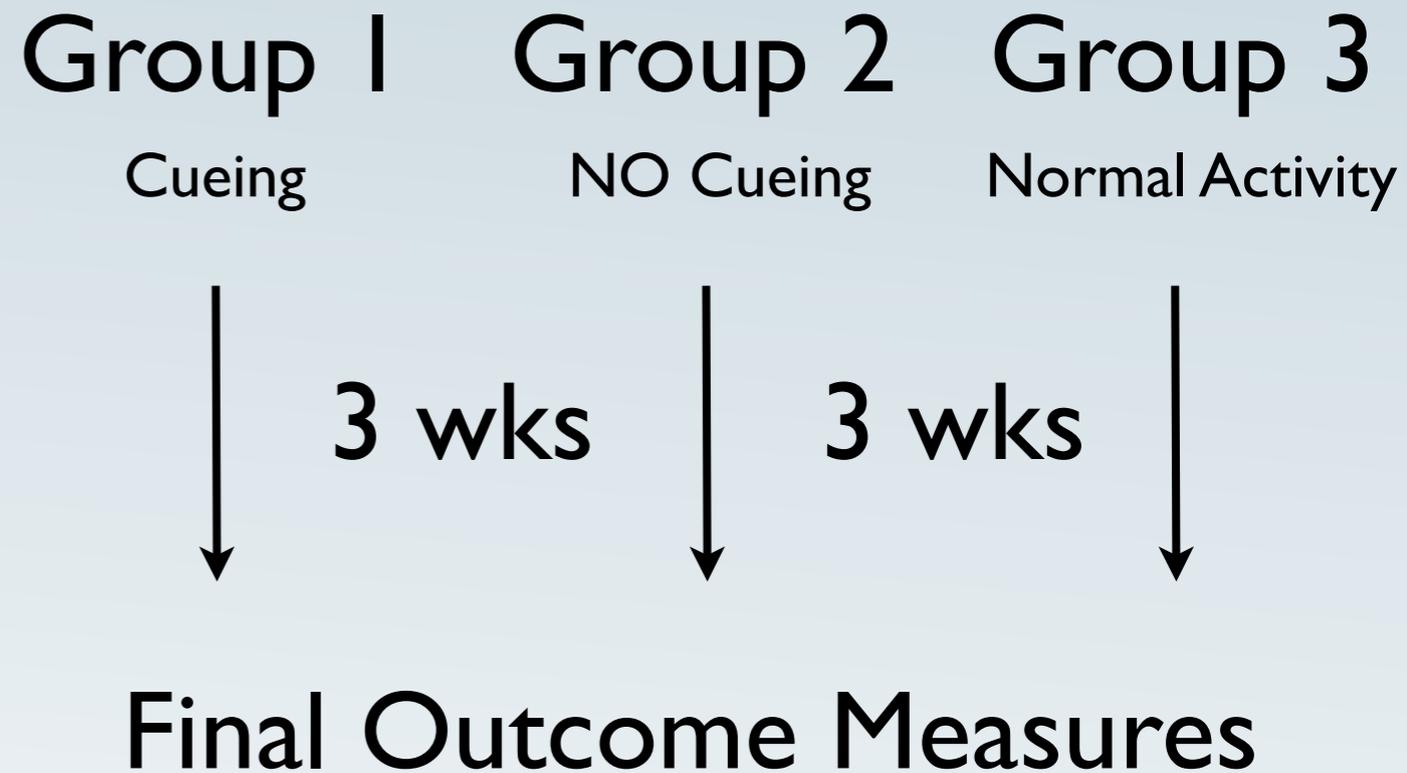
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MOVEMENT & PD

Cueing at Home/Community - RCT

Methods

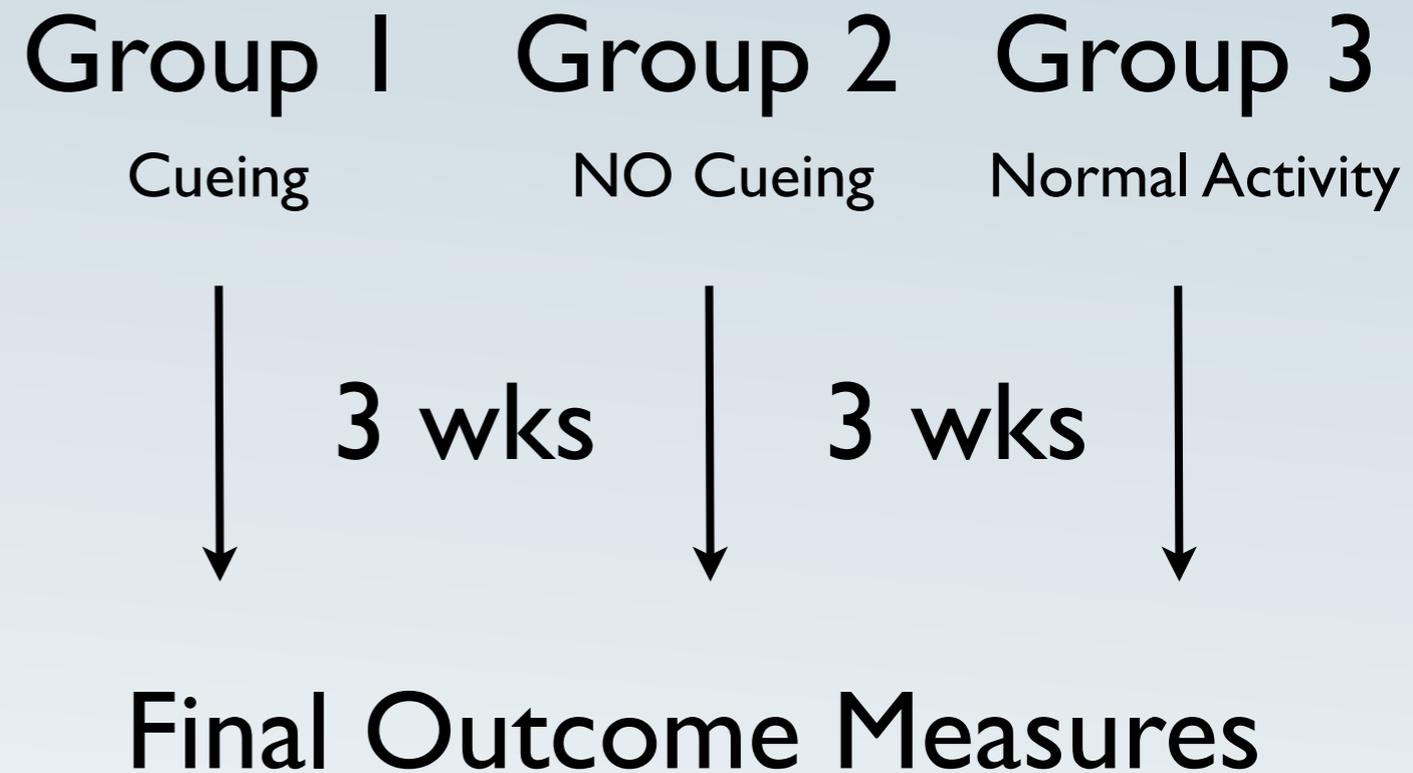
- ♦ 37 persons w/PD
- ♦ Used music (different genres) with accentuated rhythmic beats
- ♦ Divided training time in 1/3; comfort pace, fast pace, fastest pace
- ♦ Increased in increments of 5 -10% each week
- ♦ Used to facilitate daily functional tasks



Neuwboer, A, et al. Cueing training in the home improves gait related mobility in Parkinson's disease: The RESCUE trial . J Neurol Neurosurg Psychiatry. 2007; (78):134-40.

MOVEMENT & PD

Cueing at Home/Community - RCT

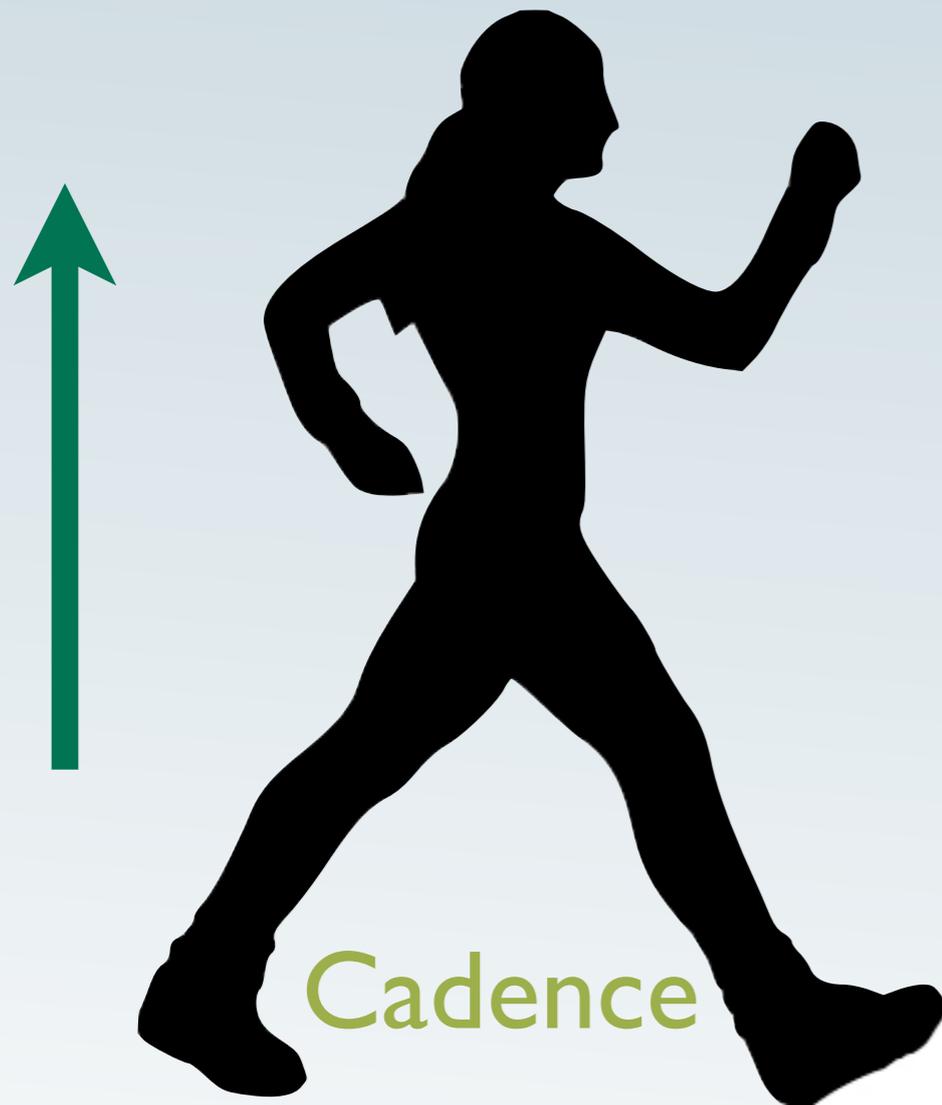


Neiuwboer, A, et al. Cueing training in the home improves gait related mobility in Parkinson's disease: The RESCUE trial . J Neurol Neurosurg Psychiatry. 2007; (78):134-40.

MOVEMENT & PD

Cueing at Home/Community - RCT

Walking Speed



Cadence

Stride Length

Group 1
Cueing

Group 2
NO Cueing

Group 3
Normal Activity

3 wks

3 wks

Final Outcome Measures

Neuwboer, A, et al. Cueing training in the home improves gait related mobility in Parkinson's disease: The RESCUE trial . J Neurol Neurosurg Psychiatry. 2007; (78):134-40.

EXERCISE & PD

Dance the tango . . . as exercise

Study 1

Study 2

Study 3

Methods

- ✦ 58 individuals with PD
- ✦ randomly assigned to:

- ✦ Tango
- ✦ Waltz/foxtrot
- ✦ No intervention

- ✦ 1 hr class; 2x/week
- ✦ 20 lessons in 13 weeks

Hackney ME, Earhart GM Effects of dance on movement control in Parkinson's disease: a comparison of Argentine tango and American ballroom. J Rehabil Med. 2009 May;41(6):475-81.

Methods

- ✦ 19 individuals with PD
- ✦ randomly assigned to:

- ✦ Tango
- ✦ Group exercise

- ✦ 20 classes per group

Hackney ME, Kantorovich, Levin, Earhart GM Effects of tango on functional mobility in Parkinson's disease: a preliminary study. J Neurol Phys Ther. 2007 Dec;31(4):173-9.

Methods

- ✦ ? individuals with PD
- ✦ randomly assigned to:

- ✦ Tango
- ✦ NO exercise

- ✦ 1 yr of training
- ✦ 2x/wk, 1hr/session

Look for this data/publications in the future . . . important study

EXERCISE & PD

Is the tango better than traditional exercise?

EXERCISE & PD

Is the tango better than traditional exercise?

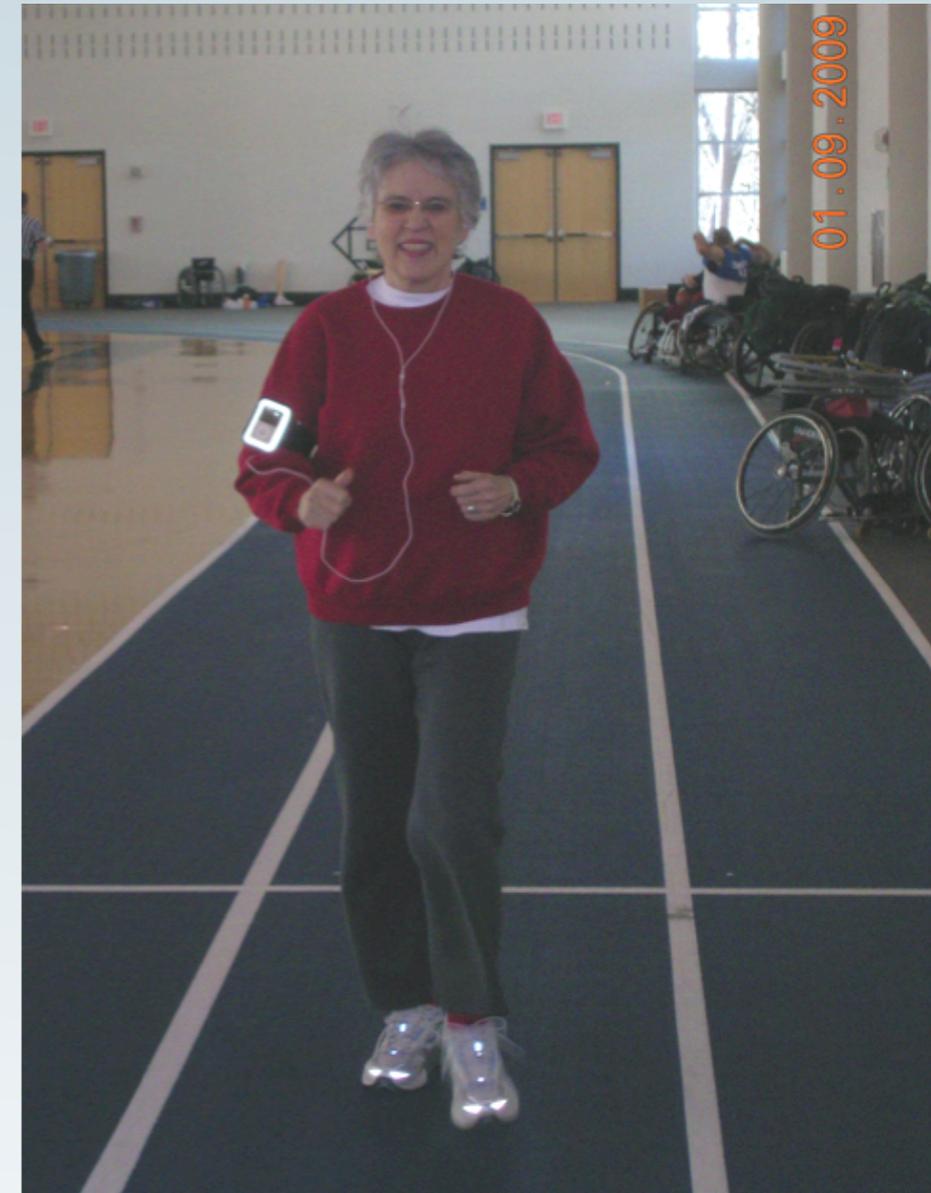


EXERCISE & PD

Turning cueing/movement into exercise

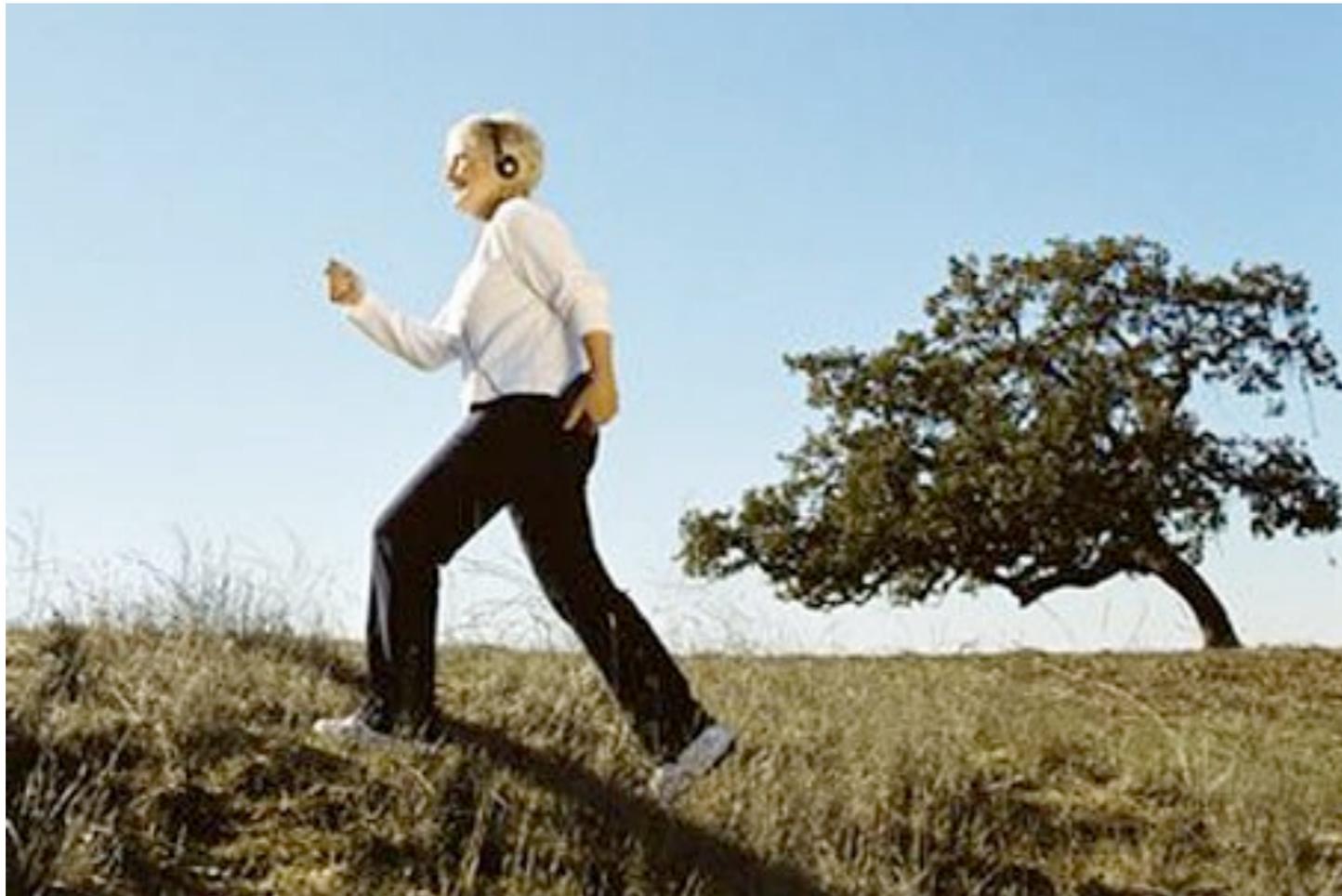
Methods

- ♦ 12 persons w/PD
- ♦ Training
 - ♦ 8 weeks
 - ♦ 3 x/week
 - ♦ 30 minute session
 - ♦ Allowed as many rest breaks as needed/requested
 - ♦ 200 meter track
- ♦ Music (auditory cueing)
 - ♦ Produced at CSU – CBRM
 - ♦ 60 – 165 bpm – 5 bpm increments

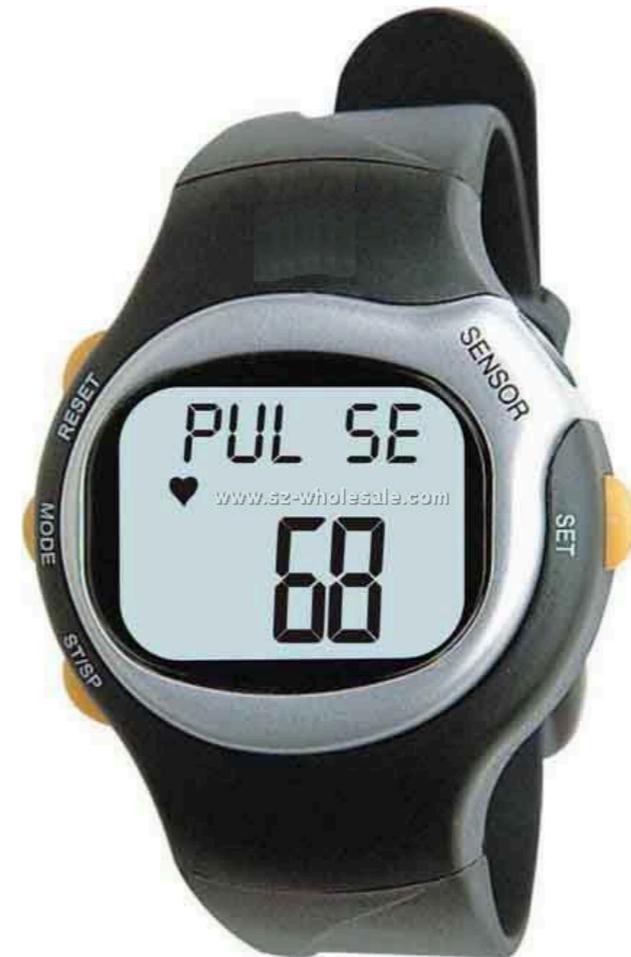


EXERCISE & PD

What is the best music rate for you?



Getty Images

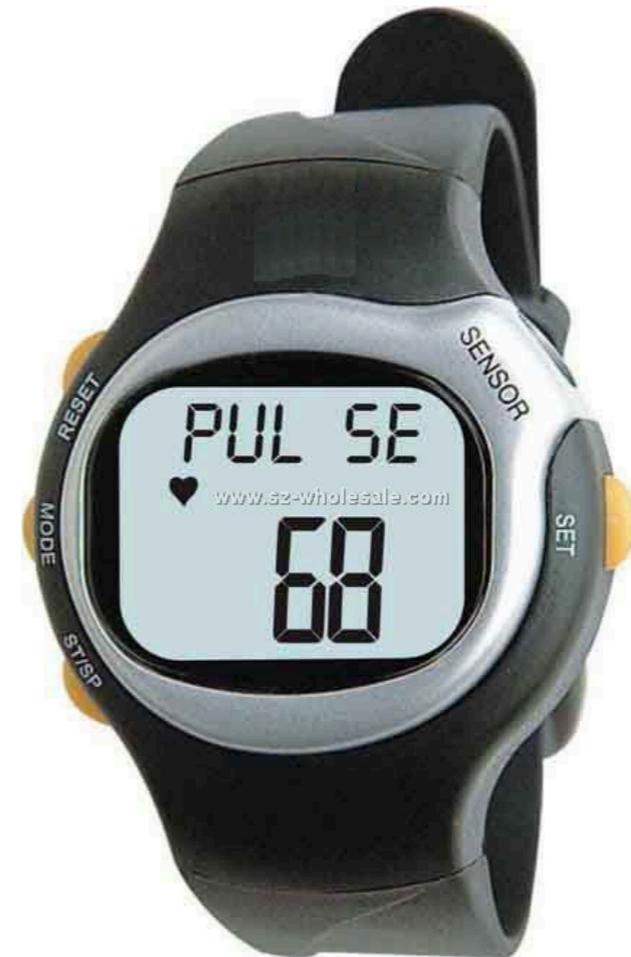


EXERCISE & PD

What is the best music rate for you?



Getty Images



CONCLUSIONS

How do you move/exercise with music while living with PD?

Step 1: What do I like to do (physical activity)?

or

Step 1: What new physical activity am I willing to try?

Step 2: Identify music you enjoy

or

Step 2: Identify the music rate that makes you move better

Step 3: Incorporate the music and activity together (example: walking to the beat of music/metronome)

Step 4: Seek out the assistance of a health care professional . . .

INTENSITY & FREQUENCY

ACKNOWLEDGEMENTS



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THANK YOU

