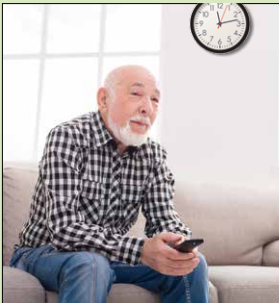


aging news

NEWSLETTER OF THE INSTITUTE ON AGING (IOA)

| UNIVERSITY OF WISCONSIN-MADISON

| WINTER/SPRING 2018



Shifting focus to reducing sitting time, rather than increasing exercise, is emerging as a new intervention to maintain independence in later life.

Stand Up & Move More

New Strategies to Prevent Declines in Physical Functioning as We Age

Preventing physical limitations that impair functioning and interfere with independence as we age has emerged as an important public health goal. The functional decline that is associated with aging can lead to a reduction in ability to complete important tasks of daily living, such as carrying groceries in from the car or walking upstairs to the bedroom.

Despite many efforts to increase physical activity to counter such functional loss, only a small percentage of older adults meet physical activity guidelines. Research has shown that sedentary behavior such as prolonged sitting is also associated with functional decline, suggesting new intervention possibilities.

With community support and funding, IOA Affiliates Kelli Koltyn (Prof., Dept. of Kinesiology, UW-Madison) & Jane Mahoney (Prof., Dept. of Medicine, UW-Madison) developed and pilot tested a *Stand Up & Move More* intervention that significantly decreased sedentary behavior and improved mobility and vitality in a small sample of older adults.

Strategies to Reduce Sitting

used by pilot study participants included:

- standing up during TV commercials
- spreading out household chores across the day
- getting up to get a drink of water
- setting a timer as a reminder to stand up



The Stand Up & Move More Intervention

includes four weekly sessions plus a refresher session at eight weeks. Based on self-regulation theory, the sessions:

- elicit ideas from older adults regarding how they can reduce their sitting time
 - help them set practical goals
 - develop action plans to reach their goals
- refine their plans across sessions to promote behavioral change.

A New Study Funded by the NIA

The National Institute on Aging has provided new funding to expand upon these promising results. Another study is underway to examine the effectiveness of the intervention for older adults from underserved communities.

Eighty older adults from four Wisconsin counties of predominantly rural or African American adults will be randomly divided to participate in either five intervention sessions delivered by community partners, or to be part of a control group receiving no intervention.

Sedentary behavior, physical activity levels, functional performance, and health-related quality of life will be assessed before and after the intervention to examine the effectiveness of the program. Feasibility of community partners implementing the program will be assessed via semi-structured interviews.

As Americans continue to live longer, finding successful interventions to maintain quality of life will become increasingly important so that more people can thrive in their later years.



Source:

Cortese, G.P., et al. (2017). *Environmental enrichment improves hippocampal function in aged rats by enhancing learning and memory, LTP and mGluR5-Homer1c activity. Neurobiology of Aging*. Advance online publication.

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It's Never Too Late to Improve Your Brain

IOA Affiliate Corinna Burger (Assoc. Prof., Dept. of Neurology, UW-Madison) uses rodent models to study the aging brain. Her research focuses on whether environmental enrichment can improve memory during normal aging, as well as lower risk of Alzheimer's disease. Previous studies have shown that rats benefit from environmental enrichment if they are exposed at an early age. Dr. Burger's most recent work sought to determine if the same is true of older rats, and whether environmental enrichment is more beneficial to memory than social enrichment alone.

Older rats aged 23-24 months were housed for one month in cages with either environmental enrichment (6 rats and objects to play with), social enrichment (6 rats with no objects), or controls (2 rats, no objects). Memory and learning was then assessed through behavioral tasks including water mazes and object recognition.

Results showed that one month of environmental enrichment was sufficient to improve learning and memory even in aged rats. Similar to findings in young rats, this improvement in hippocampal function (a part of the brain involved in memory acquisition & often the first area to be damaged in Alzheimer's disease) occurred only with environmental enrichment, and not with social enrichment.

Researchers also discovered the molecular targets involved. Increased plasticity in the nerve cells of the hippocampus relied on mGluR5-Homer 1 activity, as well as phosphorylation of p70S6K. Identifying these molecular targets could lead to the development of drugs to help treat age-related memory disorders, including Alzheimer's.

Environmental Enrichment Improves Memory More than Social Enrichment

Environmental Enrichment involves both intellectual & social stimulation:

- For rats, this meant living with five others in a cage with toys (plastic pipes & huts) that were changed regularly to maintain novelty.
- Human examples include **playing games with your friends.**



Social Enrichment involves just being with your friends:

- For rats, this meant living with five others in a cage with no toys.
- Human examples include **having a drink with a group of friends.**



No Enrichment involves neither social nor intellectual stimulus:

- For rats, this meant living in pairs in cages with no toys.
- Human examples include **watching TV.**



Colloquium News:

• The 30th Annual Colloquium on Aging will be held Oct. 25, 2018

• Videos of speakers from the 2017 event (including a presentation by Prof. Burger) are at:
aging.wisc.edu/outreach/colloquium.php



Sleep Contributes to Racial Differences in Health

African Americans, when compared to European Americans, are known to have higher rates of diabetes, stroke, high blood pressure, and other “cardiometabolic diseases.” Reasons for these differences are not well understood. Behaviors such as diet, smoking & exercise likely play a role, but explain only part of the disparity.

African Americans Sleep Less

A recent MIDUS (Midlife in the United States) study found that sleep is an important factor. Sleep patterns of over 400 adults were measured using an activity monitor worn on the wrist. When compared to European Americans, African Americans got:

- nearly 40 fewer minutes of sleep a night
- had 10% lower sleep efficiency (they spent less time in bed actually asleep).

Further, time sleeping explained 41% & sleep efficiency explained 58% of the racial difference in risk of cardiometabolic disease. This was true even after adjusting for factors such as age, education, and health behaviors.



When gender was taken into account, sleep explained only differences in disease risk among African American females. However, researchers point out this could be because the sample included only a small percentage of African American males.

Bad Neighborhoods Affect Sleep

Why do African Americans sleep less? One reason seems to be where they live. Studies have shown that on the whole African Americans live in worse neighborhoods than European Americans, and that this is true even among African Americans who have higher incomes.

MIDUS researchers showed that African Americans had 15 more minutes of wakefulness during the night and that neighborhood

disadvantage accounted for a significant portion of this difference. Disadvantage was measured by neighborhood economic characteristics taken from census data, such as household incomes, and percentage of residents on public assistance.

How do Neighborhoods Affect Sleep?

Researchers suggest that economically disadvantaged neighborhoods have:

- more noise, crime, and exposure to toxins
- less access to healthy food
- fewer health promoting resources (such as neighborhood centers and safe areas to exercise).

Any of these could contribute to increased stress, poor health, and less sleep.

Discrimination Affects Sleep

Studies have shown that African Americans experience more discrimination, which also seems to contribute to poor sleep. MIDUS participants reported how often they experienced discrimination, such as being treated with less courtesy & respect, receiving poorer service, or being called names. Data showed that those

who reported more discrimination were significantly more likely to experience poor sleep efficiency & more wakefulness during the night, as assessed by activity monitors, as well as report poor sleep quality & more difficulty sleeping, assessed via questionnaires.

Implications for National Health Policy

Each decade the US Dept. of Health & Human Services releases a set of public health objectives known as *Healthy People*. One of the four over arching goals for this decade is to eliminate health disparities and improve the health of all groups, including racial minorities. These MIDUS studies suggest that our national health strategy could address sleep problems to help achieve this goal & improve the health of many African Americans.



Poor Sleep is Associated with:

- high blood pressure
- heart disease
- stroke
- diabetes
- cancer
- higher BMI
- inflammation
- difficulty regulating thoughts & behaviors
- shorter life expectancy

Sources:

- Curtis, D.S., et al. (2017). *Habitual sleep as a contributor to racial differences in cardiometabolic risk. Proceedings of the National Academy of Sciences*, 114(33), 8889-8894.
- Fuller-Rowell, T.E. et al. (2016). *Racial disparities in sleep: The role of neighborhood disadvantage. Sleep Medicine*, 27-28, 1-8.
- Owens, S.L., et al. (2017). *Association between discrimination & objective & subjective sleep measures in the Midlife in the United States study adult sample. Psychosomatic Medicine*, 79(4), 469-478.

For more on the Midlife in the United States study, see:



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*An early morning walk
is a blessing for the whole day.*

~ Henry David Thoreau

Inflammation is Associated with Chronic Disease and May Increase with Age



A new MIDUS newsletter focuses on inflammation and its effect on health.

Inflammation is the body's natural protective response to injury or disease: It increases blood flow to the injured area, causing redness & swelling, but promotes healing by removing damaged tissue.

- ▶ **Localized inflammation is short-lived** and confined to the injured area.
- ▶ **Systemic inflammation** can affect the entire body, lasting for years, and **is associated with many chronic diseases such as cancer, heart disease, & diabetes.** It usually increases with age.

What Puts Us at Risk for Higher Inflammation?

Increased inflammation is associated with:

- ▶ poor sleep
- ▶ being female or African American
- ▶ experiencing trauma in childhood
- ▶ expressing anger outwardly (slamming doors, yelling)
- ▶ responding poorly to stressful events (not how frequently they occur)

What Protects Us from Inflammation?

- ▶ **Uplifting Daily Events:** those who experienced minor positive events on more days (taking a leisurely walk, having a good conversation) had less inflammation.
- ▶ **Exercise:** overweight adults (BMI of 25-29) usually have more inflammation, but those who reported regular exercise had inflammatory levels similar to normal weight adults.
- ▶ **Well-Being:** Those with less education usually have higher inflammation, however those with a high school degree or less who *also* had high levels of well-being showed the same *lower* levels of inflammation as those with college degrees. Well-being refers to people who are satisfied with their lives and feel their talents are being used toward something meaningful.



Read the rest of the newsletter at:
www.midus.wisc.edu/newsletter