Global Future Directions in Brain Aging Research

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Normal Aging and Cognitive Behavior

I know I came into this room for a reason.

At my age
I've seen it all;
I've heard it all;
I've done it all;
I just can't remember it all.
Dementia

How many of you know someone who is suffering from dementia?

What are some of the symptoms?
Alzheimer’s Disease (AD) and its Risk Factors

- Age
- Genetics
- Diabetes/Excess body weight
- Immune problems
- Coronary artery disease
- High blood pressure
- Down’s syndrome
- Diet??
Ways to Counter the Effects of Aging

- Regular exercise
- Stay social
- Healthy diet
- Plenty of sleep
- Intellectual Activities
Nutrition and Cognitive Function in the Elderly
Nutrition and Cognition, AD

- B Vitamins
- Vitamin E
- Phytochemicals
- Omega-3-fatty acids
Alzheimer’s and Diet New Book – February 2013

http://www.cbsnews.com/video/watch/?id=50141313n
Dietary Patterns and Cognitive Function

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Dietary patterns: a novel approach to examine the link between nutrition and cognitive function in older individuals

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Prospective study of Dietary Approaches to Stop Hypertension— and Mediterranean-style dietary patterns and age-related cognitive change: the Cache County Study on Memory, Health and Aging

Heidi Wengreen, Ronald G Munger, Adele Cutler, Anna Quach, Austin Bowles, Christopher Corcoran, JoAnn T Tschanz, Maria C Norton, and Kathleen A Welsh-Bohmer

Long-Term Adherence to the Mediterranean Diet Is Associated with Overall Cognitive Status, but Not Cognitive Decline, in Women

Cécilia Samieri, Olivia I. Okereke, Elizabeth E. Devore, and Francine Grodstein
Physical Activity and Cognitive Function in the Elderly
Advancing age is a nonmodifiable risk factor, but changing an older person’s lifestyle with PA will result in a markedly enhanced “younger” vascular health profile.


Human studies have provided intriguing evidence for positive effects of exercise on neurocognitive function in older adults.

Animal model studies reduce the impact of some confounding variables.

Aging and PA

But we don’t know:

- How much and what types of PA training produce the most rapid and robust effect on cognition and brain.
- How long exercise effects last after cessation of training.

More, we don’t know:

- How much exercise is needed to reinstate previously observed benefits
- The extent to which the same or different biological mechanisms subserve exercise training, social intervention, and nutritional programs in reducing age-related declines in cognition.

Little is known:

- On the moderating influences of specific genotypes on the magnitude of cognitive and brain effects of interventions such as aerobic exercise training.

Kramer. et al. J. Appl. Physiol. 101: 1237-42, 2006; Parasuraman & Greenwood
Future Directions in Brain Aging Research
What do you see as future research directions to better support a role of nutrition in brain aging?
Which techniques or approaches are emerging in the field of nutritional brain research?
Is an integrative approach requested to integrate nutrition and PA as a combined solution of brain aging.
Basic Science

- Molecular biology studies
- Animal studies

Population based studies

- Epidemiological studies
- Longitudinal studies
- Randomized control trial
it is key to understand more on which nutrients needed to be boosted, especially during aging when nutrient absorption goes down.
Omics will give new insight into the potential metabolic pathways involved in the link between nutrition and brain functioning and provide new integrative biomarkers that will help understand their effects.

Also, a better understanding of gene-diet interactions is needed before considering genetic characteristics as inclusion criteria in RCTs with nutritional supplements.
Besides this, as most previous epidemiological studies and RTCs have focused on single nutrients, ignoring their potential synergistic effects when they are provided in optimal quantities and proportions as in a balanced diet, considering dietary patterns may lead to a more holistic approach of the diet.
Summary

Molecular genetics + Intervention-based research (Diet and PA)

>>Future directions
Thanks for Your Attention