

2008 Pepper OAIC Annual Meeting

Center Hot Topics In Aging

OAIC Annual Meeting, April 15, 2008

OAIC HOT TOPICS 2008

Center / Presenter: Duke University/Harvey Jay Cohen, MD

Topic or Area: Using mass spectrometry-based metabolic profiling to examine age-related interactions between muscle mitochondrial performance and glucose homeostasis

Rationale:

- Chronic lipid exposure and aging result in mitochondrial dysfunction and insulin resistance
- Metabolomic technology uncovers underlying mechanisms of metabolic impairment and promotes the mission of the Duke Pepper – to *Understand and Modify the Multiple Pathways of Functional Decline*

OAIC HOT TOPICS 2008

Presenter: Johns Hopkins OAIC / Jeremy Walston, M.D.

Hot Topics in the Hopkins OAIC:

- *“Physiological systems as dynamical systems”*
- *“Using epigenetic measurements to study frailty”*
- *“When is frailty science ready for translation?”*

Rationale: *Each of these topics represent the logical next steps that connect recent findings or new technology in our OAIC to frailty and late life vulnerability.*

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Pittsburgh OAIC / Stephanie Studenski

Games for Health

<http://www.gamesforhealth.org/index3.html>

Rationale: Physical activity and other health behaviors are effective but adherence over time is abysmal.

Computer and video games are based on psychological principles that promote interest, engagement, reward and persistence. “There is enormous opportunity to apply the power of.. (interactive computer and video games) to pressing health and health care challenges.” Chinwe Onyekere,

M.P.H. RWJF program officer

Rapid growth of interest and novel applications world wide
Little attention to older adults other than “brain games”

Potential for aging research: health promotion, extensions into clinical populations, other health behaviors



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Center / Presenter: UCLA / David Reuben, MD

Topic or Area: UCLA investigators have identified a peptide hormone hepcidin, a key regulator of iron homeostasis, as the main mediator of anemia of inflammation.

Rationale: The OAIC-funded pilot uses high-throughput, high content screen for hepcidin antagonists.

- Relates to mission of UCLA Center: Bench to Clinical
- Brings in new investigators to OAIC.
- Leverages small support of OAIC.
- Potential for clinical studies.

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Center / Presenter: University of Florida / Marco Pahor MD

Area: Phase 3 randomized controlled trials for the prevention of disability – Translation of basic research findings regarding muscle function into clinical practice

Rationale:

- The prevention of disability is a major clinical and public health problem
- Definitive evidence of the efficacy of pharmacological or behavioral preventive strategies is lacking
- Drugs / nutraceuticals: GH secretagogues, SARMs, testosterone, erythropoietin, myostatin inhibitors, Vit D, resveratrol, coenzyme Q10
- Behavioral: physical activity (LIFE), diet
- Muscle mechanisms: Apoptosis, autophagy, oxidative damage



Using Robotics to Restore Gait and Balance after Stroke

University of Maryland



“Anklebot”

- **Visuomotor games**
 - Continuous ankle targeting
- **Progressive control**
 - Assist-as-needed
- **Motor learning**
 - Performance-based massed practice
 - Goal setting & feedback



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Performance-Based Ankle Training

Aim: Determine effects on paretic ankle impairment and gait

Methods:

- 3x weekly; 6-weeks; 560 reps/day of seated visual motor training
- Graduated assistance and progressive target speed or ROM

Results: Reduced impairment, increased gait speed

- Increased paretic active ROM and dorsiflexor strength
- Walking velocity increased 27%
 - ↑ Paretic single support; ↓ double-support

Implications:

- Better gait and balance → potentially reduce fall risk
- Subacute therapy at bedside
- Neuroplasticity years post-stroke

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Center / Presenter: *University of Michigan/Neil Alexander*

Topic or Area: Impact of cognition on aspects of walking

Rationale:

- 1) Cognitive impairment predicts falls in older adults.
- 2) Ability to step accurately is needed to traverse challenging terrain such as uneven or slippery surfaces.
- 3) Unclear how well those with cognitive impairment can step accurately to avoid such hazards
- 4) Unclear which specific aspects of cognition predict stepping ability

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Idiopathic Fatigue of Aging

AGS/NIA Bedside to Bench Conference, September 3-5, 2008,
Marriott Bethesda North Hotel and Conf Center

Rationale:

Fatigue is common and disabling in older adults but difficult to operationalize and assess.

Some cases of fatigue can be attributed to specific diagnoses, but idiopathic fatigue of aging may have multiple potential contributing mechanisms.

Foci of conference:

Relationships between energy production and utilization and fatigue.

How inflammatory factors, muscle physiology, and specific diseases contribute to fatigue.

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Center / Presenter: UTMB / Elena Volpi, MD, PhD

Topic or Area: ACE Unit Research – Improving Outcomes in Hospitalized Older Adults

Aim: To translate our basic muscle biology discoveries into clinical practice in geriatric inpatient population

Rationale:

- We have one of the largest academic ACE Units in the country
- We want to transform it in a clinical research center whereby it is anticipated that every patient will routinely be asked to participate in ongoing clinical research projects.

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Barriers:

Frail Population: Resistance to enrollment from patients/family and clinical staff

Novelty: concerns about impact on unit's clinical activities

Approach:

Attitude Change: talks for staff, brochures, posters in the units, website

ACE Unit Research Office: recruiters, PT, interviewer

Ongoing Research:

- Psychological well-being and recovery (R01 - Ostir)
- Nutritional supplementation (K01 - Dreyer)

Planned Research (submitted):

- Physical function (R01)
- Medical decision-making (R01)
- Improving functional outcomes in hospitalized older patients (P01)

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Center / Presenter: *Wake Forest University / Kritchevsky*

Topic or Area: Integrating adiposity into disability models

Rationale:

- 1) Overall and abdominal obesity prevalence is growing in older populations.
- 2) Adiposity is related to disability pathways at the whole body, regional, organ and cellular levels.
- 3) Observational studies of weight loss suggest potential harm.
- 4) How does intentional weight loss affect disability pathways?
Can management strategies be optimized to maximize potential benefits and minimize potential harms?