

## We will get started shortly!

**WEBINAR:** The Role of Protein in Healthy Aging

May 15, 2025: 1:00 – 2:00 pm CST 2:00 – 3:00 pm EST

### Moderator





#### **Brigitta Reinhardt** General Mills Foodservice, Marketing

### Today's Speaker



### Heather Leidy, PhD

Associate Professor Dept. Nutritional Sciences & Dept of Pediatrics – Dell Med University of Texas at Austin <u>Heather.Leidy@Austin.utexas.edu</u>



# The Role of Protein Intake in Healthy Aging



Associate Professor Dept. Nutritional Sciences & Dept of Pediatrics – Dell Med University of Texas at Austin <u>Heather.Leidy@Austin.utexas.edu</u>



### Health Across the Lifespan



Despite an on-going emphasis on physical & mental strength, needs change as we age & require unique life-stage-specific strategies

### Aging in America

In 2025: 17% of current population at 65+
By 2060: 25% will be over 65+

#### U.S. Population by Age Group (millions), 1900 to 2060



Source: U.S. Census Bureau, decennial censuses and vintage 2017 population projections (2020-2060).

## Instapoll

### What type of 'loss' do older adults fear the most?

- O Life
- O Independence
- o Finances
- O Loneliness
- O Being Safe





## Instapoll – Motivating Goals of Older Adults

### o Remain Independent (physically & mentally)

- Slow aging (decrease 'aches & pains')
- O Reverse chronic disease
- O Promote health & well-being



### Aging & Health



## THE IMPACT OF

Age-related involuntary loss of skeletal muscle mass & strength



### Aging & Loss of Function



- Sarcopenia = decline in functionality
  - Sarcopenic obesity is more severe

#### Maintaining muscle health is critical



### Aging in Women

### Menopause & Increase Health Risks



### How Healthy is the American Diet in Older Adults?

### Healthy Eating Index (HEI)



#### **Overconsumption**:

- Saturated Fats
- Sodium
- Added Sugars

#### **Underconsumption**:

- Energy
- Fruits
- Vegetables
- Whole Grains
- Dairy
- Protein

### How Healthy is the American Diet in Older Adults?

### **Risk of Nutrient Inadequacies**



#### **Overconsumption**:

- Saturated Fats
- Sodium
- Added Sugars

#### **Underconsumption**:

- Energy
- Fruits
- Vegetables
- Whole Grains
- Dairy
- Protein

## Role of Dietary Protein to Promote Healthy Aging



# Benefits of Increased Protein Intake



https://pubmed.ncbi.nlm.nih.gov/38350303/: https://

#### Meta-analyses of RCTs assessing increased Protein Intake on muscle mass, strength, & function



Increased dietary protein via protein supplementation increases lean mass and (some) markers of strength and mobility in older adults as long as ......

## Things to Consider

### **Resistance Training**



#### **Resistance Training Improves:**

- Body Composition (Lean Mass)
- Muscle Strength
  - Upper Body
  - Lower Body
  - Hand-grip
- Body Pain
- Mental Health (including Depression)
- Social Function
- General Health

### **Health Status**



#### Prevention vs. Treatment:

- Maintaining Health
- Catabolic Crisis Model



### **Protein**



#### **Dietary Factors:**

- Quantity
  - Per eating occasion
  - Daily intake
- Supplementation vs. Dietary Pattern
  - Powders/Beverages
  - Whole Food
- Quality
  - Animal Proteins
  - Plant Proteins
- Distribution/Timing

### Things to Consider: Protein Quantity

<u>Moore DR, et al. (2015)</u> assessing protein synthesis in young vs. older adults when varying protein intake (0 - 40 g)



Older adults require more protein to maximally stimulate muscle protein synthesis

Meta-analysis of RCTs assessing increased Protein Intake

on lean mass, muscle strength, and physical function with sub-group analyses on: Resistance Training (RT), Age, & Protein Quantity

Lean Mass							
Groups/Subgroups	SMD	95% Cl	# Trials	P-value			
All RCTs	0.22	0.15, 0.29	66	<0.01			
CON: +0.5 - 0.7	kg PRO	: +1.3 - 1.4 kg					

All RCTs Favors Contro Favors Protein

Meta-analysis of RCTs assessing increased Protein Intake

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Lean Mass							
Groups/Subgroups	SMD	95% Cl	# Trials	P-value			
All RCTs	0.22	0.15, 0.29	66	<0.01			
Without RE	0.21	0.15, 0.58	6	NS			
With RE	0.22	0.14, 0.30	62	<0.01			



Favors Control Favors

Meta-analysis of RCTs assessing increased Protein Intake

on lean mass, muscle strength, and physical function with sub-group analyses on: Resistance Training (RT), Age, & Protein Quantity

Loan Mass

Groups/Subgroups	SMD	95% Cl	# Trials	P-value				
All RCTs	0.22	0.15, 0.29	66	<0.01				
Without RE	0.21	0.15, 0.58	6	NS				
With RE	0.22	0.14, 0.30	62	<0.01				
< 65 уо	0.25	0.16, 0.35	48	<0.01				
≥ 65 yo	0.13	-0.00, 0.28	14	0.06				





Meta-analysis of RCTs assessing increased Protein Intake

on lean mass, muscle strength, and physical function with sub-group analyses on: Resistance Training (RT), Age, & Protein Quantity

Lean Mass								
Groups/Subgroups	SMD	95% CI	# Trials	P-value				
All RCTs	0.22	0.15, 0.29	66	<0.01				
Without RE	0.21	0.15, 0.58	6	NS				
With RE	0.22	0.14, 0.30	62	<0.01				
< 65 yo	0.25	0.16, 0.35	48	<0.01				
≥ 65 yo	0.13	-0.00, 0.28	14	0.06				
With RE & PRO (<1.2 g/g/d)	-0.14	-0.56, 0.27	4	NS				
With RE & PRO (1.2-1.6 $g/g/d$ )	0.17	0.06, 0.28	24	<0.01				
< 65 уо	0.15	-0.02, 0.31	15	0.07				
≥ 65 уо	0.20	0.02, 0.37	9	0.03				

With RE + 1.2-1.6 g PRO/kg/d



#### Meta-analysis of RCTs assessing increased Protein Intake

on lean mass, muscle strength, and physical function with sub-group analyses on: Resistance Training (RT), Age, & Protein Quantity

Groups/Subgroups	SMD	95% CI	# Trials	P-value	
All RCTs	0.20	0.08, 0.33	50	<0.01	
Without RE	0.14	-0.36, 0.64	4	NS	
With RE	0.21	0.08, 0.34	47	<0.01	
< 65 уо	0.19	0.03, 0.36	35	0.02	
≥ 65 yo	0.25	0.01, 0.48	12	0.04	
With RE & PRO (<1.2 g/g/d)	-0.01	-1.85, 1.83	2	NS	
With RE & PRO (1.2-1.6 $g/g/d$ )	0.08	-0.10, 0.27	20	NS	-

#### Muscle Strength: Lower-Body

Little to no effect of protein supplementation on upper-body or hand-grip strength

#### Meta-analysis of RCTs assessing increased Protein Intake

on lean mass, muscle strength, and physical function with sub-group analyses on: Resistance Training (RT), Age, & Protein Quantity

Functional Tests							
Groups/Subgroups	SMD	95% Cl	# Trials	P-value			
All RCTs	0.15	0.00, 0.29	15	0.04			
Without RE	0.09	-0.08, 0.25	5	NS			
With RE	0.17	-0.03, 0.37	11	NS			

#### **Functional Tests**

Nutrition	Groups/Subgroups	SMD	95% CI	# Trials	P-value
JOURNAL ces.nutrition.org/	All RCTs	0.561	0.256, 0.865	16	<0.001
hout Vitamin D on Review and Meta-Analysis <sup>Erfan</sup> Sadeghi <sup>5</sup> , Sanaz Jamshidi <sup>6</sup> , <sup>6</sup> , Masoumeh Akhlaghi <sup>1,2</sup> ,	Healthy	0.113	-0.043, 0.269	9	NS
	Sarcopenia/Frailty	1.211	0.588, 1.834	7	<0.001

AN INTERNATIONAL REVIEW journal homepage: https://advan

Review

Whey Protein Supplementation with or without Vitamin D on Sarcopenia-Related Measures: A Systematic Review and Meta-Analysis

Advances in

Nasrin Nasimi <sup>1,2</sup>, Zahra Sohrabi <sup>1,2</sup>, Everson A. Nunes <sup>3,4</sup>, Erfan Sadeghi <sup>5</sup>, Sanaz Jamshidi <sup>6</sup>, Zohreh Gholami <sup>1</sup>, Marzieh Akbarzadeh <sup>1,2</sup>, Shiva Faghih <sup>1,2</sup>, Masoumeh Akhlaghi <sup>1,2</sup>, Stuart M. Phillips <sup>3,\*</sup>

## Role of Dietary Protein to Promote Healthy Aging



Protein supplementation is effective as a treatment strategy in older adults with sarcopenia or frailty but must be used in combination with resistance exercise



### Dietary Protein in Older Adults: Weight Management

<u>Campbell W (2016) Systematic Review & Meta-analysis of 24 Energy Restriction-RCTs</u> Normal vs. High Protein (<1 vs.  $\geq$  1 g/kg/d) Diets in **Older adults** 

#### Weight Loss

#### **Fat Mass Loss**

Lean Mass Loss



Increased dietary protein promotes greater fat loss & greater lean mass preservation

## Instapoll

Are older adults meeting their actual requirements for protein?

O Yes

o No

o l'm not sure

• Depends.....





### Dietary Protein Intakes & Recommendations



#### **Evidence-based Recommendations**

#### • <u>Sarcopenia & Weight Management (P&T)</u>:

- Endurance Exercise: 3-4 x /wk
- Minimum Protein Intake:
  - ✓ 1.2 g⋅kg<sup>-1</sup>⋅d<sup>-1</sup>
  - ✓ 0.3 g·kg<sup>-1</sup>·eating occasion
    - ~30 g pro
    - 3-4 times/d
- Optimal Protein Intake:
  - ✓ 1.6 g·kg<sup>-1</sup>·d<sup>-1</sup>
  - ✓ 0.4 g·kg<sup>-1</sup>·eating occasion
    - ~40 g pro
    - 3-4 times/d

### Things to Consider

### **Resistance Training**



#### **Resistance Training Improves:**

- Body Composition (Lean Mass)
- Muscle Strength
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  - Lower Body
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### **Health Status**



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### **Protein**



#### **Dietary Factors:**

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  - Powders/Beverages
  - Whole Food
- o Quality
  - Animal Protein
  - Plant Proteins
- Distribution/Timing

## Instapoll

### Which protein-factor has the greatest impact on health?

- O Quantity
- OQuality
- o Form
- o Timing/Distribution





## Things to Consider: Protein Quantity (Implications)

<u>Giezenaar C (2016)'s meta-analysis of 59 studies</u> assessing appetite & food intake in young vs. older adults



Compared to Younger Adults, Older Adults:

- 20%  $\downarrow$  daily intake
- $25\% \downarrow$  morning hunger
- $40\%\downarrow$  post-meal hunger
- 40% 1 morning fullness

Older adults may find it difficult to consume recommended protein amounts

#### Leidy HJ, et al. (2017) (in middle-age adults)





## Things to Consider: Protein Quantity (Implications)

<u>Giezenaar C (2016)'s meta-analysis of 59 studies</u> assessing appetite & food intake in young vs. older adults

#### Ben-Harachache S (2021)'s meta-analysis of 22 studies assessing impact of protein on appetite & daily intake

Compared to Younger Adults, Older Adults:

- 20%  $\downarrow$  daily intake
- 25%  $\downarrow$  morning hunger
- $40\% \downarrow$  post-meal hunger
- 40% 1 morning fullness

**Energy Intake** 



.....maybe not,

Older adults may find it difficult to consume recommended protein amounts

## Things to Consider: Protein Quantity (Implications)



### Things to Consider: Protein Distribution

#### **Distribution Patterns**

<u>Phillips S, et al. (2016)</u>

(in older adults)





#### More frequent 'HP' meals is advantageous

### Things to Consider: Protein Quality

 <u>Protein quality</u>, nutrient density, & accompanying micronutrients are vastly different within & between sources

		- A				
	Sirloin	Tofu	Beans	Egg	Nuts/Seeds	РВ
Oz Equivalents	1 ounce	¼ cup	¼ cup	1 Egg	½ oz	1 Tbsp
Energy (kcal)	50	40	60	80	80	90
Pro (g)	9	5	4	6	3	4
EAA Density Score	6.7	4.8	2.7	3.6	1.1	1.1
Serving Size	3 oz cooked	3 oz	½ cup cooked	1 Egg	1 oz	2 Tbsp
Energy (kcal)	150	80	110	80	170	190
Pro (g)	24	8	7	6	6	8

<u>When</u> protein quantity is sufficient, protein source effects are minor

## Protein-rich Foods & Nutrient Adequacy in Older Adults

#### NHANES analyses examining eating habits among older adults that include high quality, protein-rich foods and nutrient adequacy



Nutrient adequacy improves with consuming protein-rich foods in older adults



### Translating the Evidence

- Increased dietary protein can promote healthy aging through preservation of lean mass and improvements in functional strength.
- Protein include >1.2 g protein·kg<sup>-1</sup>·d<sup>-1</sup> with 30-45 g of protein per eating occasion is recommended for older adults:
  - Selecting high-quality proteins included in beverages
  - Promoting breakfast and additional eating occasions
  - Including resistance exercise



## Thanks & Acknowledgements

### Funding:

- National Institutes of Health
- Beef Checkoff
- o National Dairy Council
- Egg Nutrition Center
- o National Pork Board

### "The Leidy Lab"







## General Mills Resources

CELEBRATE *the* BEST PART.

#### Need some menu ideas?

<u>Check out our Senior Living Event</u> <u>Calendar!</u>

#### **Marketing Tools**

- Point of sale danglers and clings
- Social toolkit with imagery



## Check out our rebates page for these and more!

<u>Rebates | Earn and Save Foodservice</u> <u>Products (generalmillscf.com)</u>



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Bulk Cereal Rebate (Non-Commercial Only)



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