Nutrition, Aging and Physical Function

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Zurich, 18 January 2010

Acute Geriatrics
Physical Functional Performance in older adults (CS-PFP 10)

1. Pot Carry
2. Jacket On/Off
3. Scarf Pick-up
4. Maximal Reach
5. Floor Sweep
6. Laundry
7. Floor Down/Up
8. Stair Climb
9. Groceries
10. Six-Minute Walk

- Upper body strength
- Lower body strength
- Upper body flexibility
- Cardio-respiratory fitness
- Balance and coordination

Mobility assessment in older adults

Timed Up & Go Test

< 20 sec  good mobility
Importance of muscle strength

Get Up

Go

Turn


Age-related Muscle Loss

Between the age 30 – 80 years:

- 30% loss of total muscle mass
  (loss of lean body mass)
- Loss of type II (fast) muscle fibers

Sarcopenia

## Sarcopenia: risk for falls

<table>
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<th>Risk factors for falls</th>
<th>Relative Risk</th>
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<td>Muscle weakness</td>
<td>4.4</td>
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<td>Gait disorders</td>
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<td>Balance disorders</td>
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Nutrition: what changes with advancing age?

Decreased energy need (-25% Calories)

Maintained or increased need of nutrients such as: **Protein**, Calcium, Vitamins D, B6, B12, C

Meals with enhanced „nutrients’ density“ needed
Link between mobility and nutrition at old age
Importance of proteins and Vitamin D

In community-dwelling Japanese seniors:

Low serum albumin and Vitamin D levels associated with bad Timed Up & Go performance

Vitamin D
Daily need: at least 800 IU/d

Major source – sunlight

Conversion to Vit D from sunlight ↓ by 4 with old age

Minor source – dietary intake
Vitamin D₃ (fish, meat)
Vitamin D₂ (vitamin supplements)

2 portions / day

↑Calcium absorption (small intestine)
↑Urinary calcium re-absorption (kidney)
↑Bone mineralisation

Maintains calcium balance in the body via the action of parathyroid hormone
Vitamin D reduces falls by 23%

Vitamin D reduces hip fractures

Nursing home: - 28 %

At home: - 21 %

Increase of muscle strength with resistance training and nutritional supplements

Increase of muscle strength with resistance training and nutritional supplements

Summary

Aging: Role of Nutrition and Functionality

- Need of higher nutrient density due to body muscle changes
- Close link between physical function and nutrition at old age (particular importance of proteins and vitamin D)
- Improved physical function only when combining exercise and nutrition