



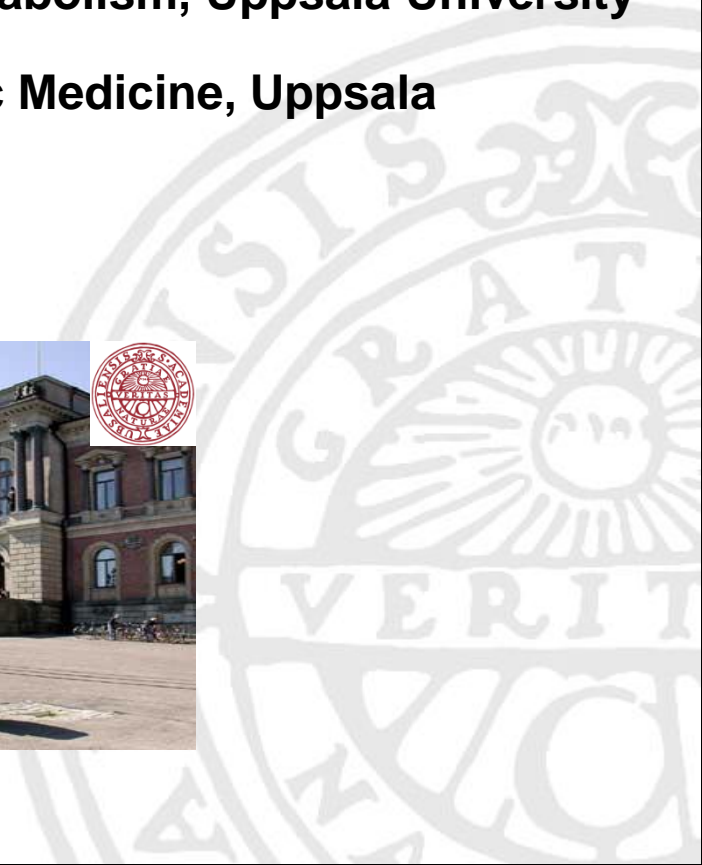
THE EUROPEAN  
SOCIETY FOR  
CLINICAL  
NUTRITION AND  
METABOLISM

# Secondary sarcopenia: Medical conditions increase muscle loss and need for specialized nutrition

***Tommy Cederholm***

**PhD, Professor, Clinical Nutrition & Metabolism, Uppsala University**

**MD, Senior consultant, Dept of Geriatric Medicine, Uppsala University Hospital, Sweden**





THE EUROPEAN  
SOCIETY FOR  
CLINICAL  
NUTRITION AND  
METABOLISM

# Sarcopenia – a novel concept for an old problem

**"Muscle loss steals the freedom of the old,,  
Irvin Rosenberg 1989**

**Initially focus on ageing and older people**

- **Muscle mass decreases by**
  - 30-50% from 20 to 80 y
  - 1-2%/y after 50 y
- **Selective typ II fibre atrophy**
- **Muscle strength ↓ by**
  - 15% / 10 y between 50 and 70 y
  - 30% / 10 y thereafter

**Sarcopenia is a syndrome  
characterized by  
progressive loss of muscle  
mass and strength with a  
risk of adverse outcomes**

Cruz-Jentoft et al. Age Aging 2010;39:412-23



Young, active



Old, sedentary



# What is sarcopenia?

## 3.2.2. Sarcopenia

Sarcopenia is a syndrome of its own characterized by the progressive and generalised loss of skeletal muscle mass, strength and function (performance) with a consequent risk of adverse outcomes [20–22]. Whilst often a phenomenon of the ageing processes (primary sarcopenia) preceding the onset of frailty (see below), it may also result from pathogenic mechanisms (secondary sarcopenia) [20] that are disease-related, activity-related (e.g. disuse) or nutrition-related (e.g. protein deficiency).

# Classification of sarcopenia - EWGSOP

**Primary sarcopenia** (or age-related) when there is no evident cause but ageing itself

**Secondary sarcopenia** when one or more causes are identified:

- **Activity-related sarcopenia**
  - bed rest, sedentarism, deconditioning, non-gravity
- **Disease-related sarcopenia**
  - advanced organ failure (heart, respiratory, liver, renal, brain, intestinal), inflammatory disease, malignancy, endocrine disease
- **Nutrition-related sarcopenia**