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# The Value of Oral Nutritional Supplements: Links to Strength and Functionality

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Zurich, 18 January 2010



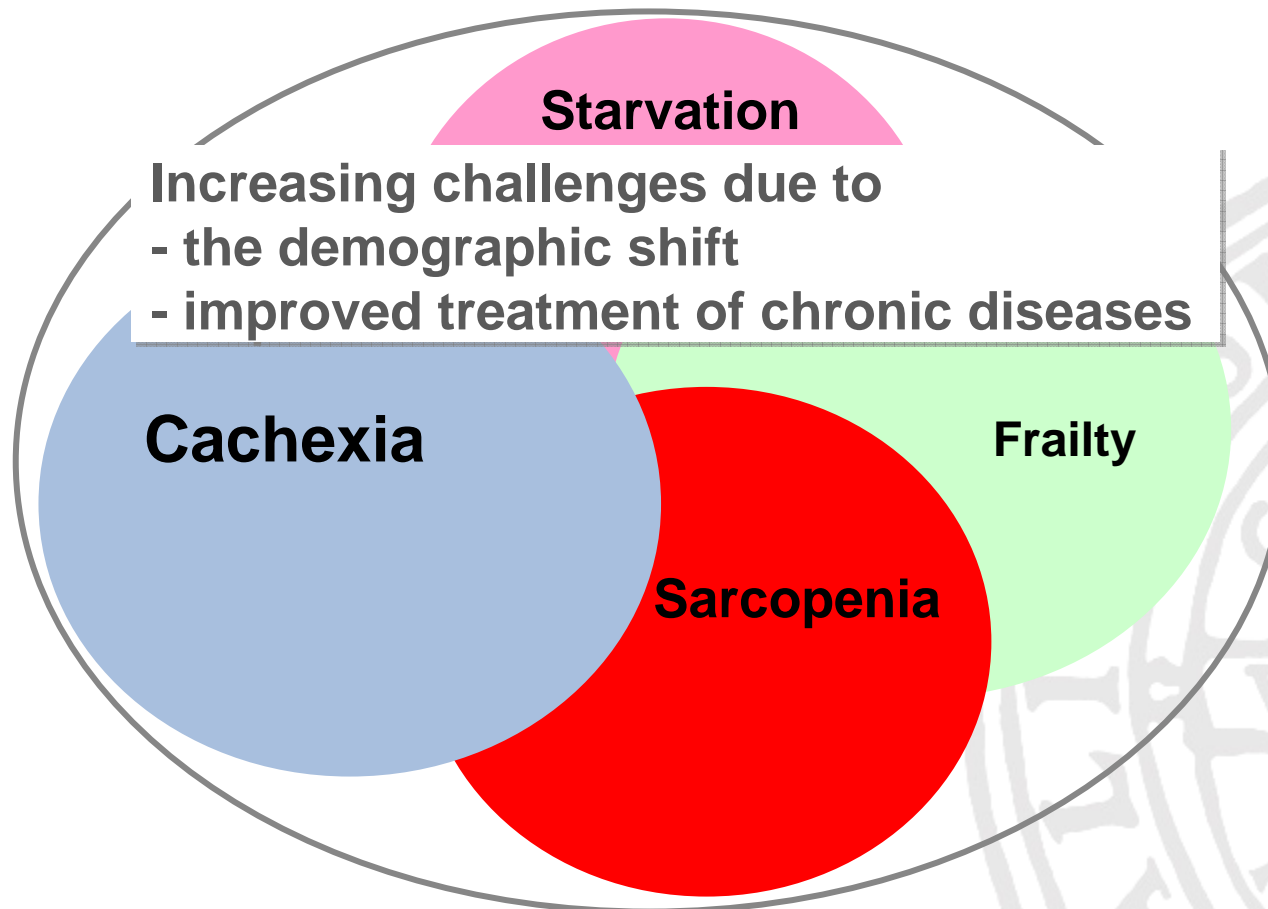
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# “The Paradox of the Affluent Society”

## Protein-Energy Malnutrition

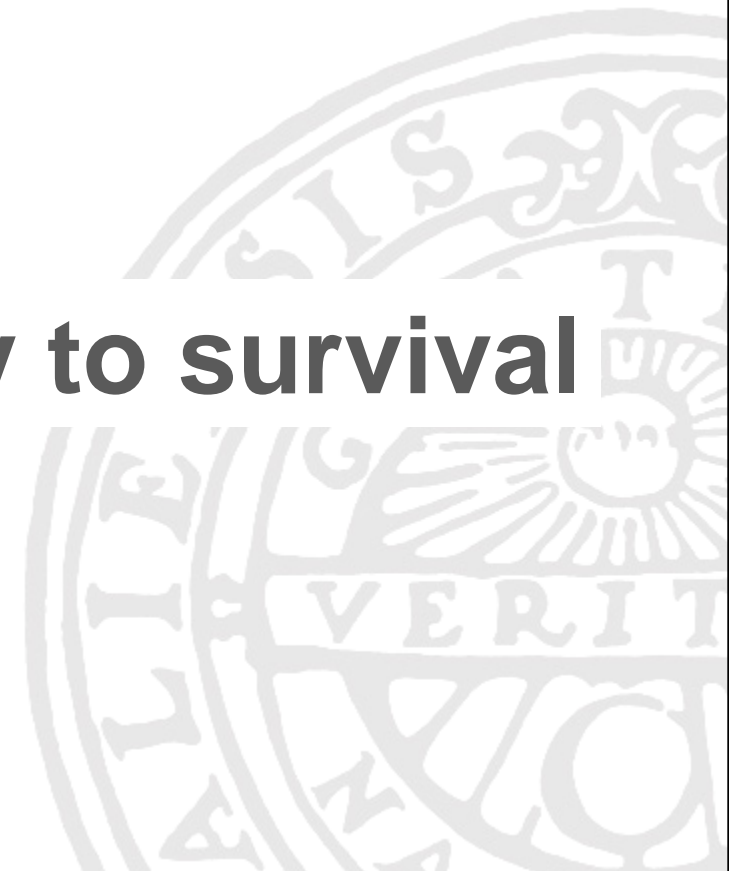




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**FOOD**

**...is the key to survival**

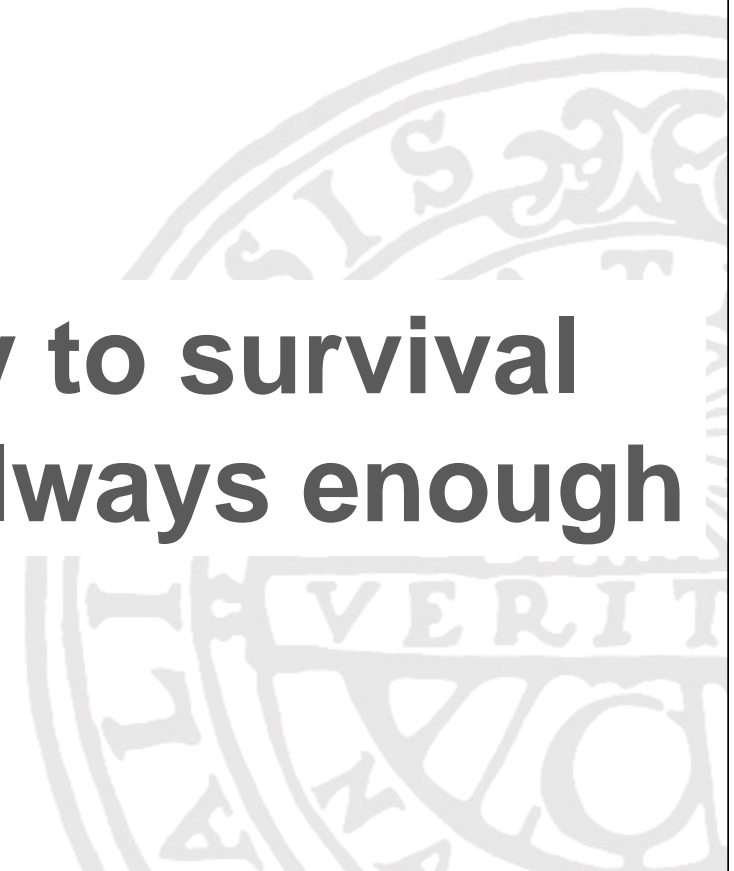




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**FOOD**

**...is the key to survival  
...but not always enough**





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# Treatment Options



- **Nutrition support**
- **Reduce inflammation/catabolism**
- **Stimulate anabolism/growth**

## Nutrition

### ✓ Oral nutrition

**Energy**

**Protein/Amino acids**

**n-3 Fatty acids**

**Vitamin D**

### ✓ Artificial nutrition

## Pharmacotherapy

### ✓ Anti-inflammation

Megestrol acetate?

Proteasom inhibitors?

ACEi?

### ✓ Anabolic treatment

Nandrolone, testosterone?

Myostatin inhibitors?

Selective Androgen Receptor  
Modulators (SARM)?

## Exercise training



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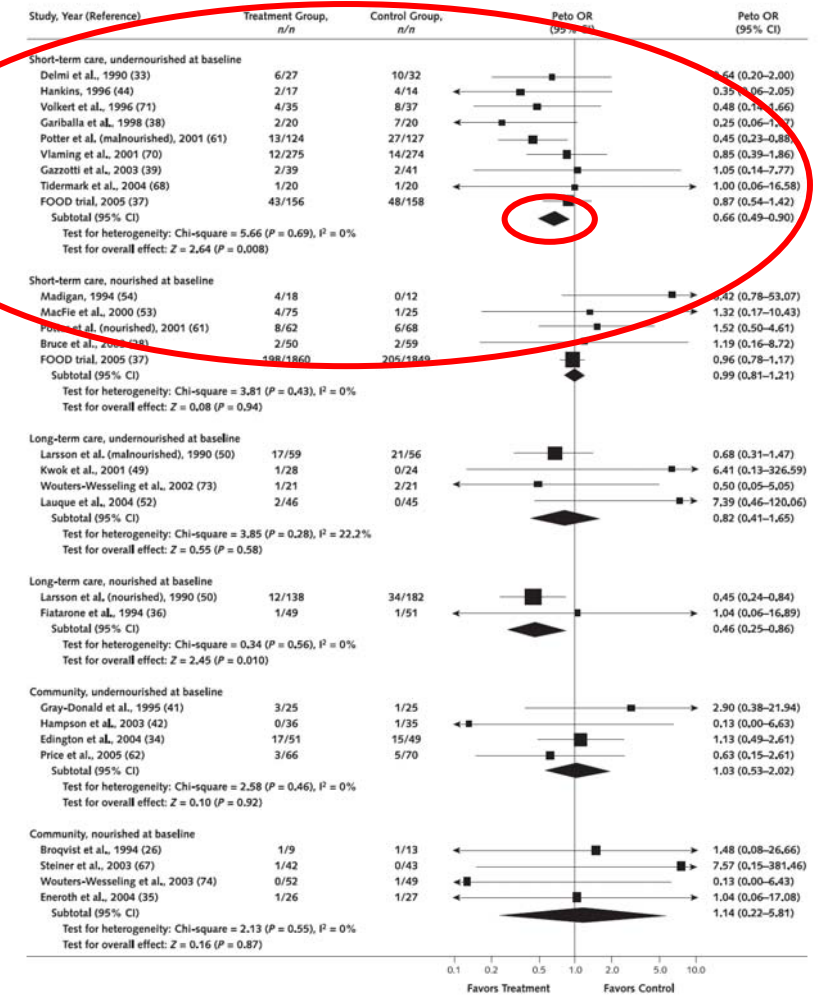
# Oral Nutritional Supplementation to Older Subjects Is Effective

**Meta-analysis:  
(55 studies; 9187 patients)**

- Mortality ↓ 34%
- Complications ↓ 28%

Milne A et al. Ann Intern Med 2006

Figure 3. Analysis of mortality data by nutritional status.



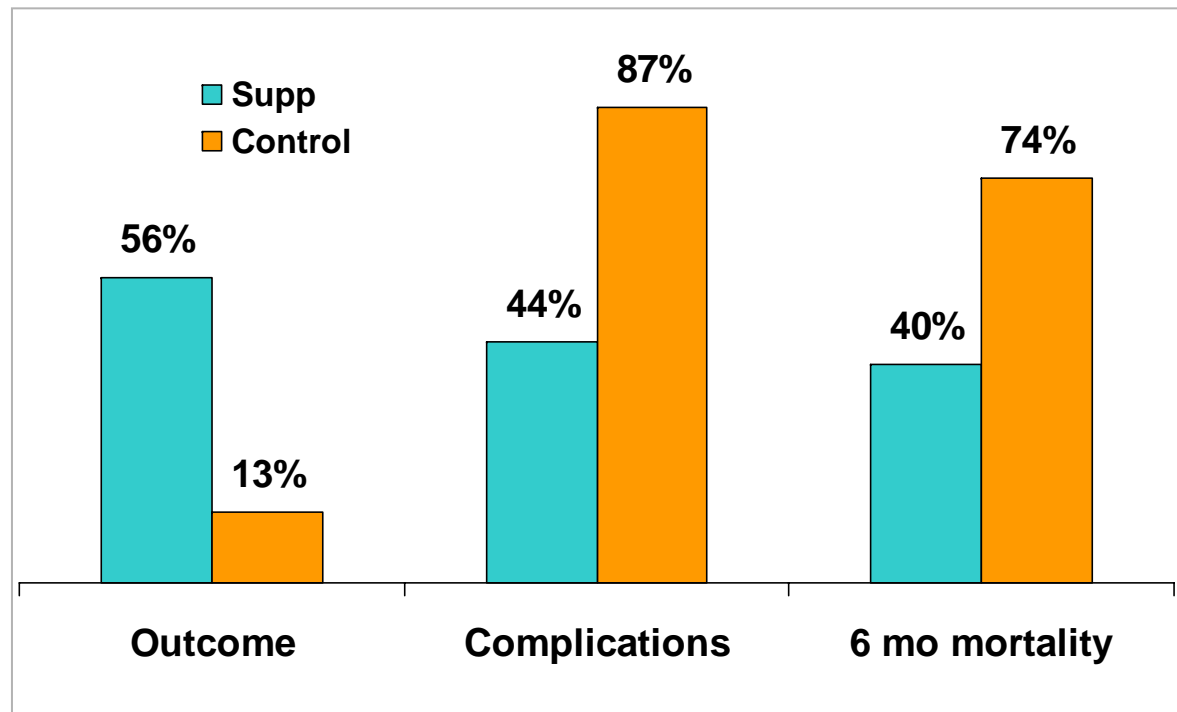


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# ONS in Elderly Patients with Fractured Hip

- 59 pts, RCT
- ONS for 32 days;  
254 kcal + 20 g protein

*Delmi Lancet 1990;335:1013*

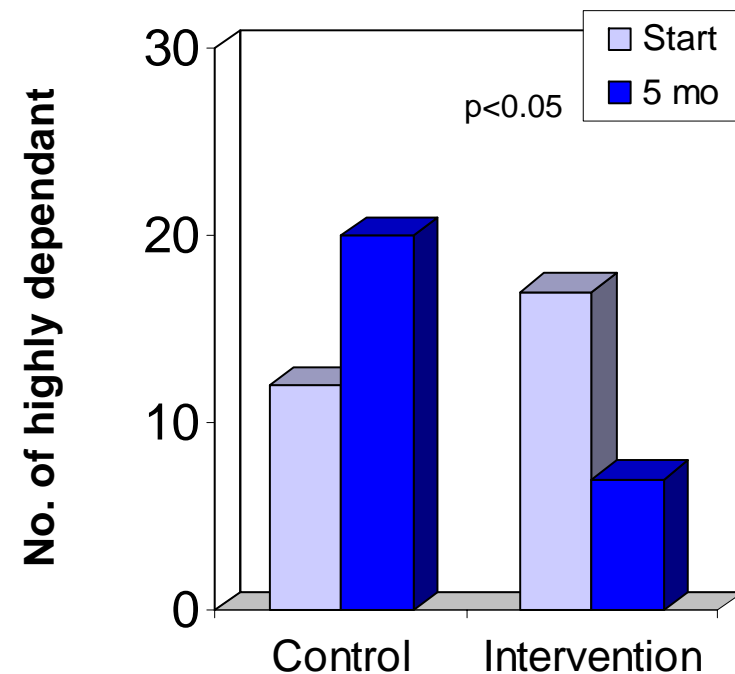




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# Improvement of ADLs with Nutritional Supplementation in Older Subjects after Discharge from Geriatric Wards

- **54 patients ( $86 \pm 5$  y)**
  - $\uparrow$  Fat intake
  - Protein supplementation
  - Vitamin supplementation
- **5 mo follow-up**
- **Weight stability vs decrease**
- **Improved ADL function**



Persson M et al. Clin Nutr 2007;26:216





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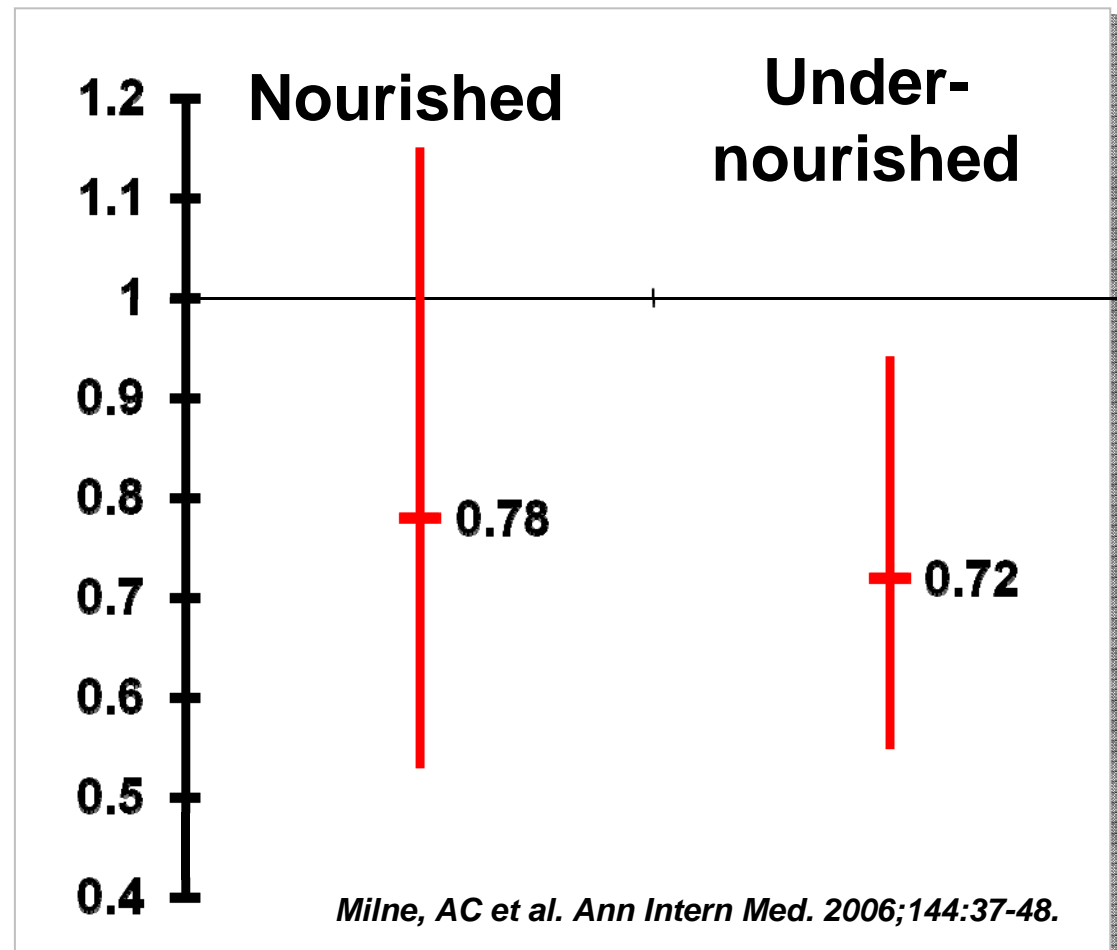
# Protein & Energy Supplementation in Older People Mortality by Nutritional Status

Meta-analysis:

- 35 reports
- 3021 randomized subjects

## Conclusion:

**28% reduction in mortality when only undernourished subjects included**





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# The Japanese Centenarian Study

- **1907 100-year-olds,**
- **10% were independent**  
*(preserved ADL, intact cognition & high social status)*



## Variables Linked to Successful Aging

- Good vision
- **Protein intake↑**
- No falls
- **Regular training**
- No alcohol
- Good chewing
- Regular sleep
- Male



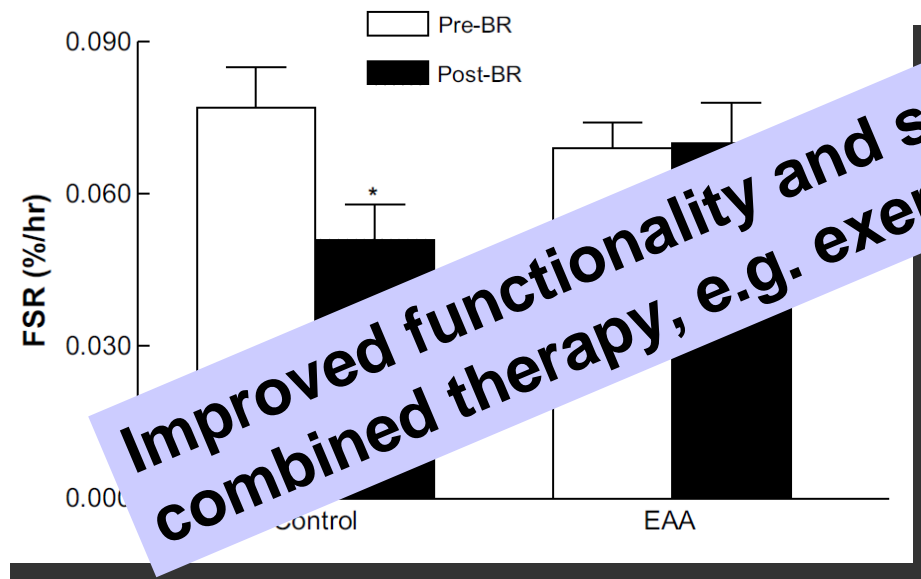
*Ozaki JAGS 2007*



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# High quality protein supplementation prevent muscle wasting and improve function

22 healthy men ~70 y. Bed rest for 10 days. Proteins vs. placebo



**Improved functionality and strength from ONS need combined therapy, e.g. exercise or vitamin D**

... – standing,  
... on the floor,  
standing – maintained  
by protein supplementation

*Ferrando et al. Clin Nutr 2009, in press*



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# Summary & Conclusions

## **Clear benefit of ONS on mortality and complications:**

- Benefit increases when:
  - Undernourished subjects are targeted
  - Subjects are older than 75 years
  - Intake is > 400 Kcal
  - Duration is greater than 35 days
  - Sicker subjects are targeted

## **Clear benefit on weight gain**

## **Clear benefit in hospitalized subjects**

Large benefit vs the relatively small costs of feeding

## **Clear benefit in geriatric conditions**





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# Successful Ageing...

*Jeanne Louise Calment (1875-1997), at the age of 122, was the oldest fully authenticated human being that has ever lived. She attributed her longevity to olive oil, port, and chocolate, although her genes may have contributed to her longevity as her father lived to the age of 94 and her mother to the age of 86. Photo by N'Geen Tien-Gamma Liasion, courtesy of [www.wowzone.com](http://www.wowzone.com).*



## Oldest ever ? 122 y

- "Olive oil, port and chocolate"
- Biking at age 100 y
- Father 94 and mother 86 y.
- "I have always been happy and courageous, acted morally and without repent"