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# FLARE Findings: Functional performance among the oldest old men and women

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# Inflammation, muscle weakness and disability in older people

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# Inflammatory Markers and Physical Performance Among Nonagenarians

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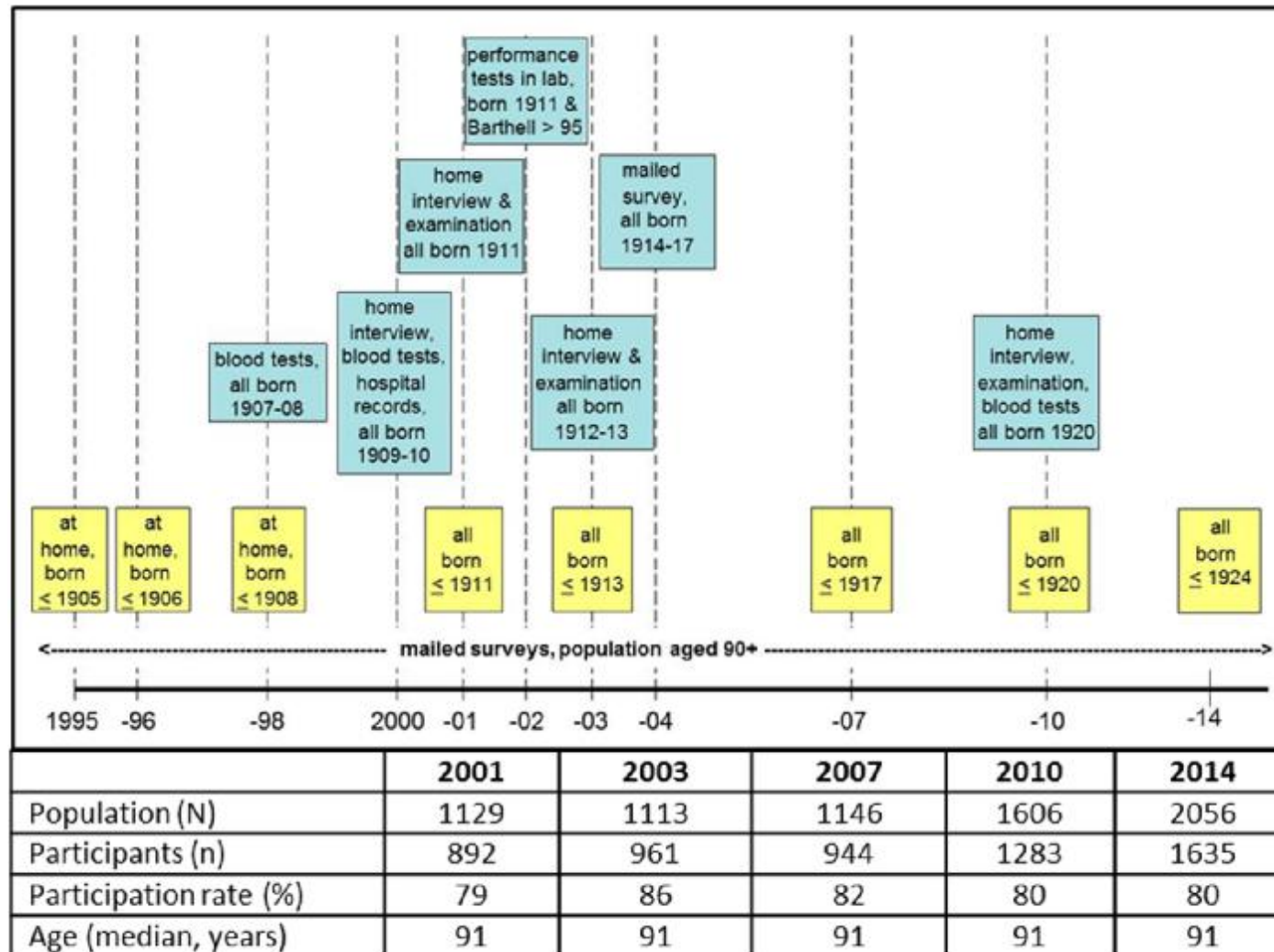
## Predictors of mortality in men and women aged 90 and older: a nine-year follow-up study in the Vitality 90+ study

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# VITALITY 90 + STUDY



# Inflammatory Markers and Physical Performance Among Nonagenarians

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- Purpose  
to examine the association between inflammatory markers (CRP, IL-6, IL-1Ra) and physical performance (hand grip strength, chair stand time, Barthel Index) among men and women aged 90 years.
- The sample (n=262) , 197 women and 65 men aged 90 years
- Physical performance: Hand grip strength , Chair stand five times, Barthel Index
- Plasma levels of C-reactive protein (CRP), interleukin-6 (IL-6) and interleukin-1 receptor antagonist (IL-1Ra)

## Correlations between inflammatory markers and physical performance among 90-year-old men and women

	Inflammatory markers					
	CRP		IL-6		IL-1Ra	
	Men	Women	Men	Women	Men	Women
Hand grip strength	0.019	-0.203**	0.003	-0.175*	-0.033	-0.280**
Chair stand	-0.091	0.081	0.045	0.040	-0.075	-0.002
Barthel Index	-0.327**	-0.188**	0.024	-0.207**	0.029	-0.183**

Notes: \*p < 0.05, \*\*p < 0.01

## Associations between inflammatory markers and physical performance among 90-year-old men and women

	Model 3 (adjusted for gender, diseases, smoking and physical exercise)	
	$\beta$	p
Hand grip		
CRP	-0.093	0.101
IL-6	-0.110	0.048
IL-1Ra	-0.163	0.004
Barthel Index		
CRP	-0.166	0.034
IL-6	-0.159	0.041
IL-1Ra	-0.144	0.067
Chair stand		
CRP	0.010	0.903
IL-6	-0.058	0.462
IL-1Ra	0.037	0.646

# Conclusions

- High levels of inflammatory markers had associated with poor hand grip strength and poor Barthel Index among the oldest-old.
- The association may not be as strong as in younger age groups



## **Predictors of mortality in men and women aged 90 and older: a nine-year follow-up study in the Vitality 90+ study**

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### Purpose

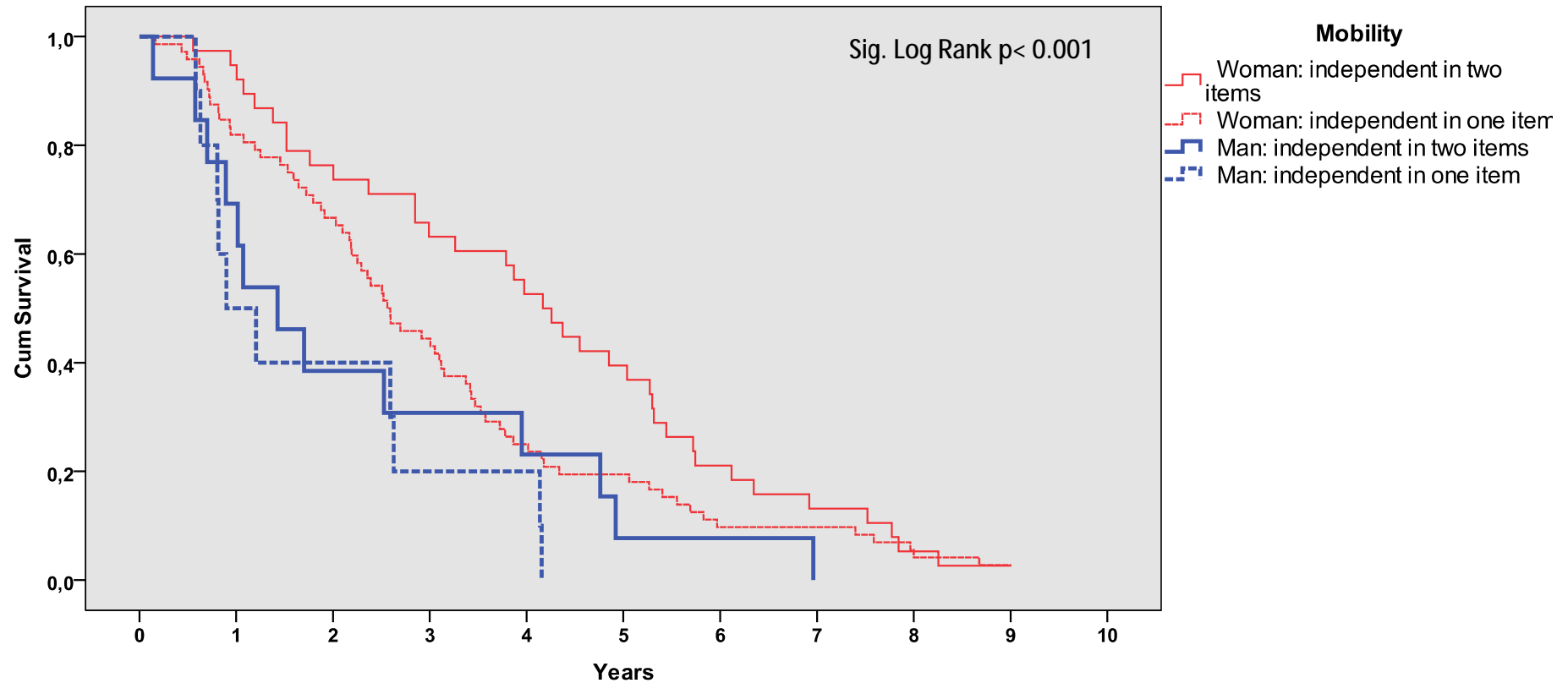
- to examine the predictors of mortality among individuals aged 90 and older, focusing on differences between men and women
- to examine gender differences in survival at different levels of mobility and activities in daily living
  
- n=888; 171 men and 717 women
- The age-range at baseline, 90-106 years, the mean age 92.3 years (SD 2.5)
- Follow-up time 9 years
- Functional performance, a mailed questionnaire :
  - 1) ADL score
  - 2) Mobility score
- Self-rated health
- Medical diagnoses
- Main lifetime occupation
- The type of residence

## Factors associated with 9 year mortality

Cox hazard ratios (HR) and 95% confidence intervals (CI)

	MEN	WOMEN	ALL
	HR (95%CI)	HR (95%CI)	HR (95%CI)
Gender			
Female			1.00
Male	1.13 (1.05-1.21)	1.05 (1.02-1.09)	1.73 (1.43-2.09)
Age			1.07 (1.04-1.10)
ADL score			
Independent in both	1.00	1.00	1.00
Independent in one	2.73 (1.31-5.67)	1.33 (0.98-1.80)	1.47 (1.12-1.94)
Dependent	1.96 (0.71-5.39)	1.42 (0.97-2.09)	1.49 (1.05-2.12)
Mobility score			
Independent in all	1.00	1.00	1.00
Independent in two	2.15 (1.32-3.49)	1.17 (0.92-1.50)	1.30 (1.04-1.61)
Independent in one	2.62 (1.38-4.97)	1.21 (0.96-1.52)	1.39 (1.12-1.72)
Dependent	2.75 (0.96-7.89)	1.42 (0.96-2.09)	1.57 (1.10-2.24)
Self-rated health			
Good	1.00	1.00	1.00
Average	1.01 (0.68-1.49)	1.12 (0.92-1.38)	1.11 (0.93-1.32)
Poor	1.43 (0.86-2.40)	1.42 (1.10-1.82)	1.36 (1.09-1.70)
Number of chronic conditions			
0-1	1.00	1.00	1.00
2-7	0.95 (0.67-1.34)	1.22 (1.03-1.45)	1.14 (0.98-1.33)
Occupation			
Upper non-manual	1.00	1.00	1.00
Lower non-manual	1.11 (0.64-1.90)	0.84 (0.60-1.18)	1.02 (0.77-1.35)
Skilled worker	0.89 (0.55-1.44)	0.69 (0.50-0.94)	0.82 (0.63-1.06)
Unskilled worker	1.54 (0.20-11.70)	0.68 (0.47-1.00)	0.82 (0.58-1.17)
Housewife	-	0.69 (0.49-0.99)	0.84 (0.61-1.15)
Unknown	1.84 (0.99-3.43)	0.85 (0.60-1.20)	1.06 (0.79-1.42)
Residence			
Ordinary home	1.00	1.00	1.00
Service housing	2.20 (1.08-4.48)	1.12 (0.82-1.54)	1.24 (0.93-1.64)
Nursing home, hospital	1.06 (0.62-1.83)	1.45 (1.16-1.81)	1.43 (1.17-1.75)

## Survival at the different levels of mobility for men and women aged 90-91 (Kaplan-Meier analysis)



Survival time: Independent in two items

Women 4.2 years (95% CI 3.4 - 4.9)

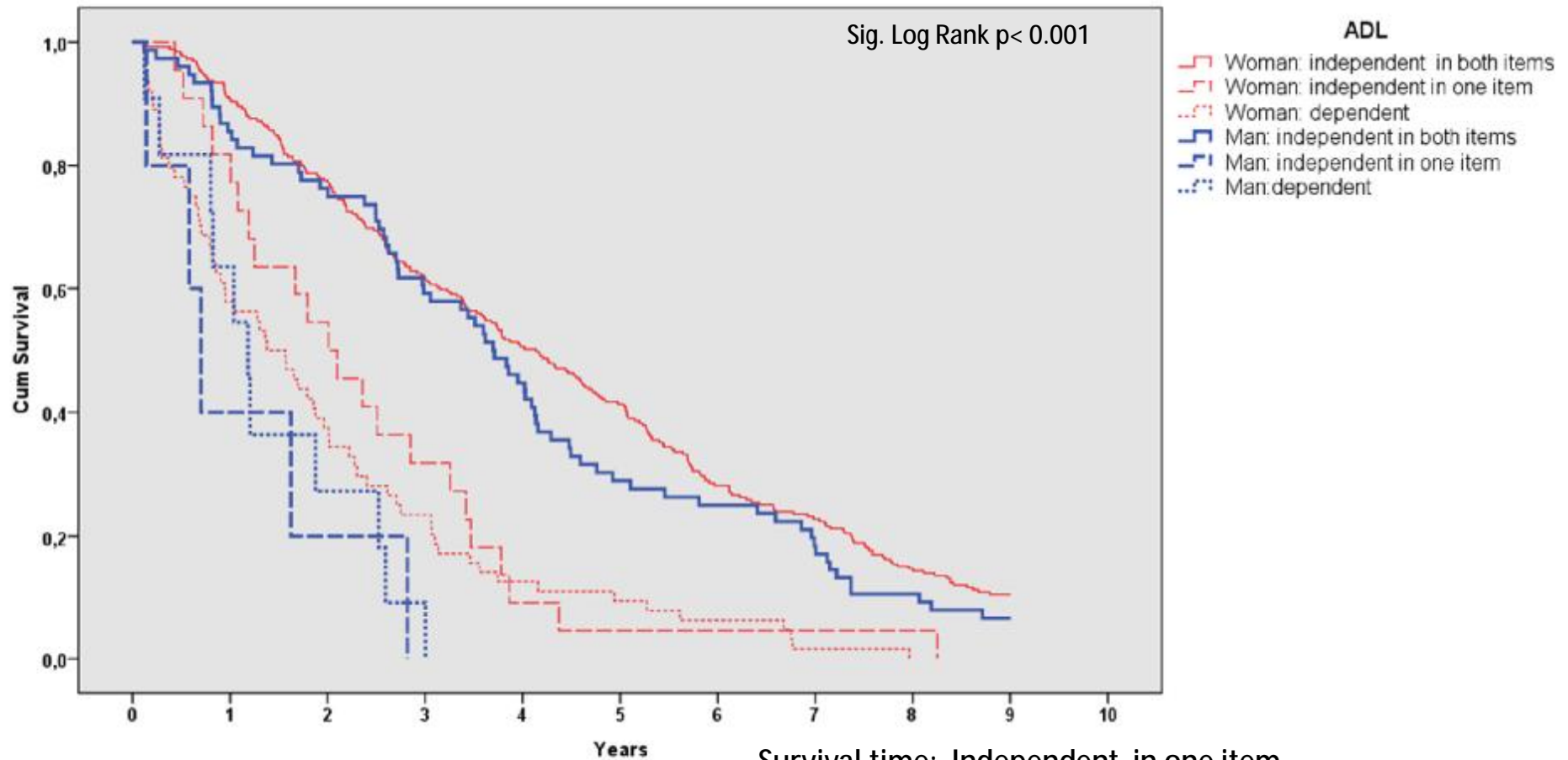
Men 1.4 years (95% CI 0.6 - 2.2)

Independent in one item

Women 2.6 years (95% CI 2.0 - 3.1)

Men 0.9 years (95% CI 0.3 - 1.5)

## Survival at the different levels of Activities of Daily Living (ADL) for men and women aged 90-91 (Kaplan-Meier analysis)



Survival time: Independent in one item

Women 2.0 years (95% CI 1.2 - 2.8)

Men 0.7 years (95% CI 0.4 - 1.0)

# Conclusions

- Health indicators similar to younger old age predict mortality also in the oldest-old, but predictors differ between genders:
  - Men: the difficulties in ADL and mobility
  - Women: the number of chronic conditions and poor self-rated health
- At a very old age, women survive longer with disability than men
- This study points out the role of functional status as primary indicators of health and as the most important target for interventions at very old age

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# Thank you!



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