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# La donna anziana fragile: le malattie cardiovascolari

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# Frailty in Older Women

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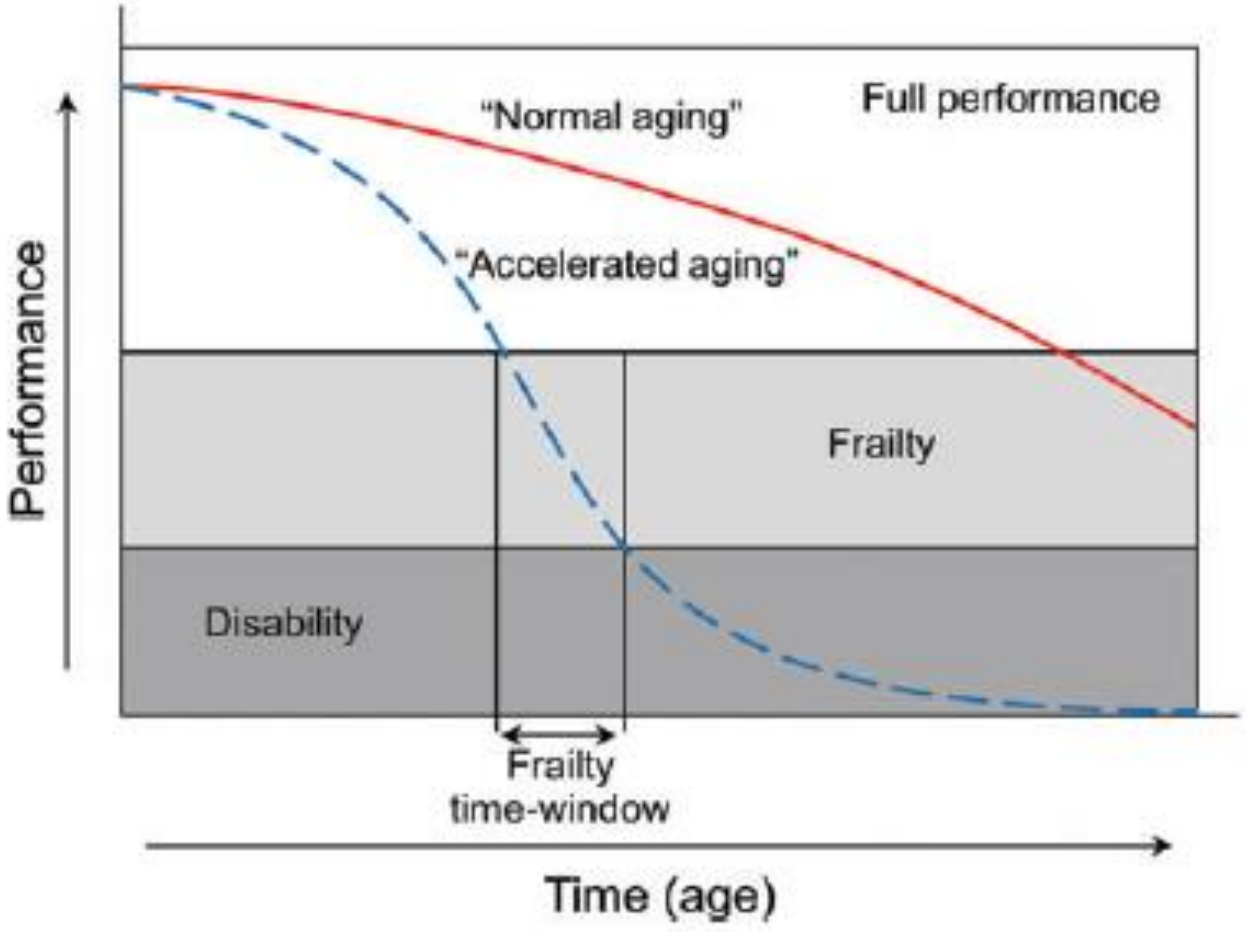
# Frailty: Fried criteria

| | | |
|---|---|---|
| 1 | Unintentional weight loss | >4.5 kg in the past year |
| 2 | Exhaustion | For at least 3 days during the last week 'I felt that everything I did was an effort' or 'I could not get going' |
| 3 | Physical activity | No physical activity, spend most of the time sitting or rarely a short walk during the last year |
| 4 | Walk time | Time to walk 4 m >6 s |
| 5 | Grip strength | Grip strength by dynamometer |

Eur Heart J 2014; 35, 1726–1731

# Frailty and Age



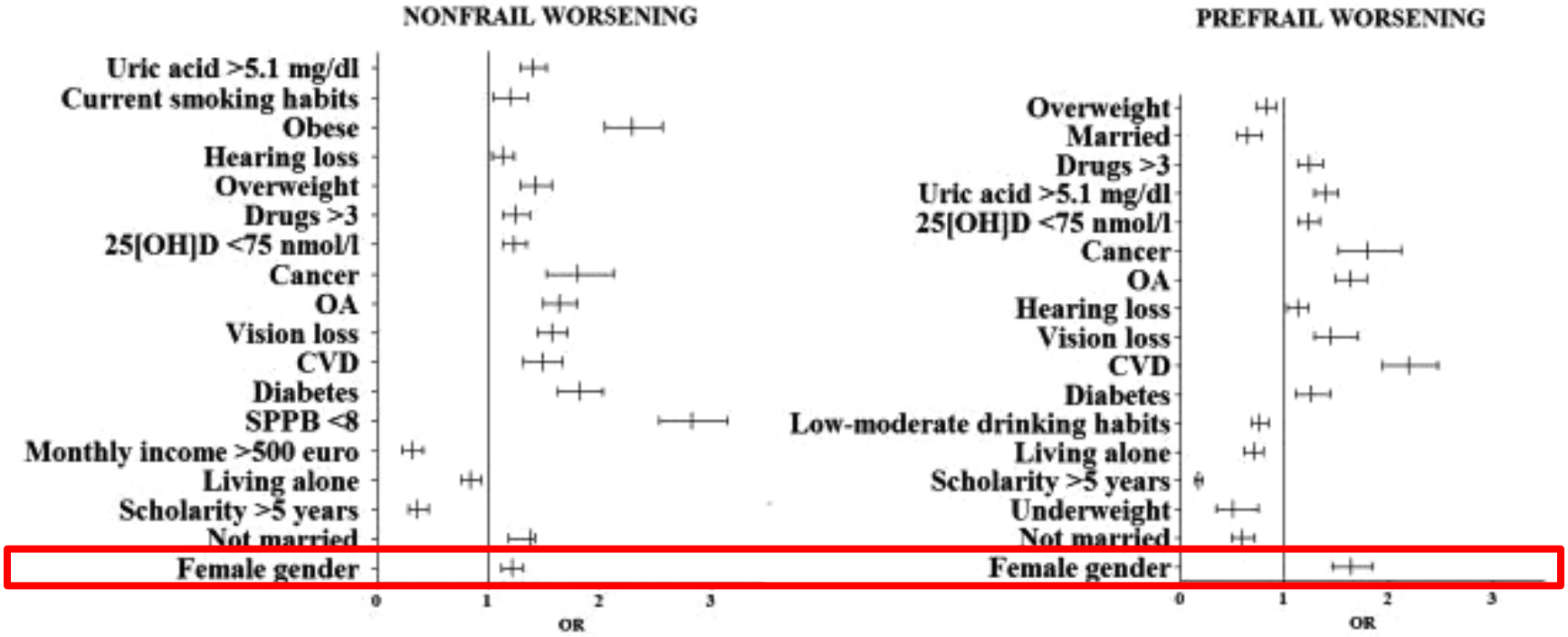

Eur Heart J 2014; 35, 1726–1731

# Physical Performance in Men and Women

| | Men | Women |
|---|---|---|
| Grip strength, *M* (SEM), kg | 33.0 (0.6)* | 19.1 (0.2)* |
| Gait speed, *M* (SEM), m/s | 0.86 (0.01)* | 0.77 (0.01)* |

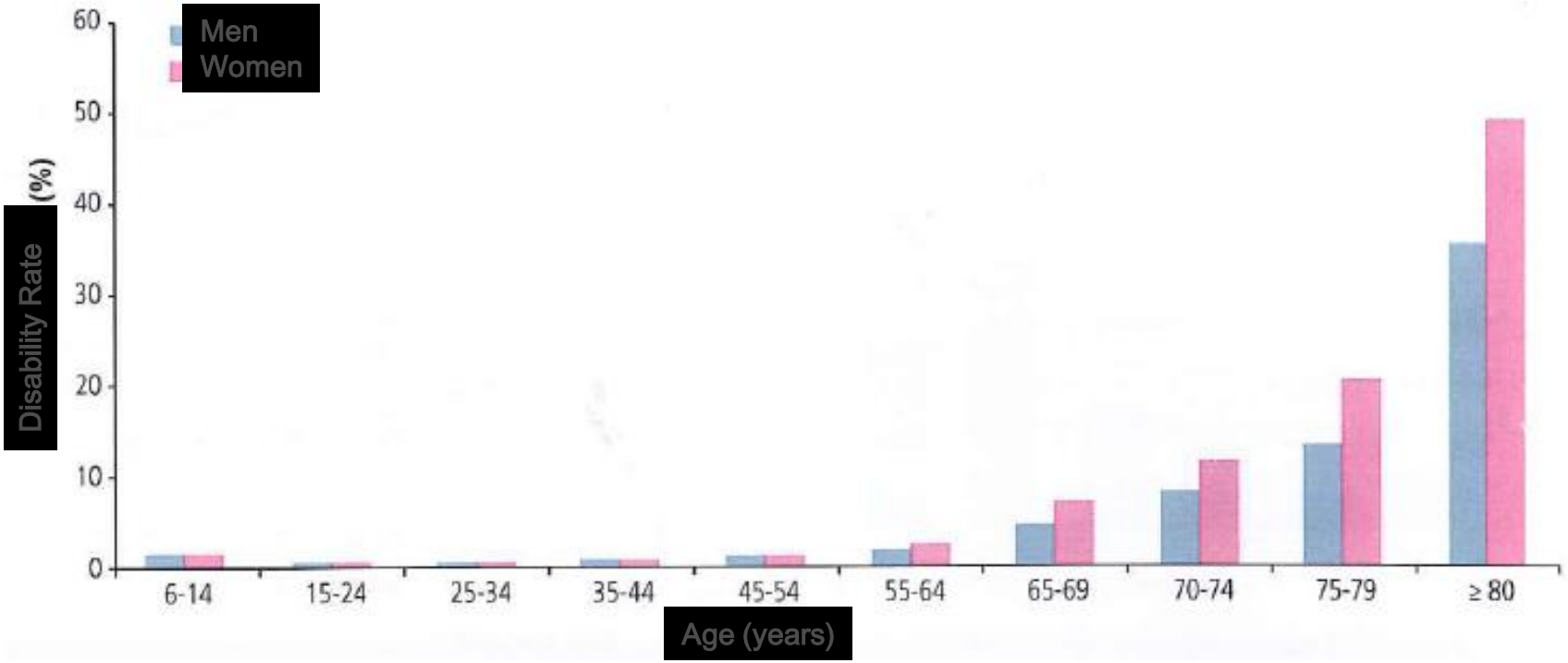
Journal of Aging and Health 2016:1–23

# Factors Associated with Frailty Development




J Am Geriatr Soc 2016, on line

# Disability in Men and Women




Quaderni del Ministero della Salute 2010; 6:1-17

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# Gender Differences in the Incidence and Determinants of Components of the Frailty Phenotype Among Older Adults: Findings From the SABE Study

Journal of Aging and Health
1–23

DOI: 10.1177/0898264316671228
jah.sagepub.com
SAGE

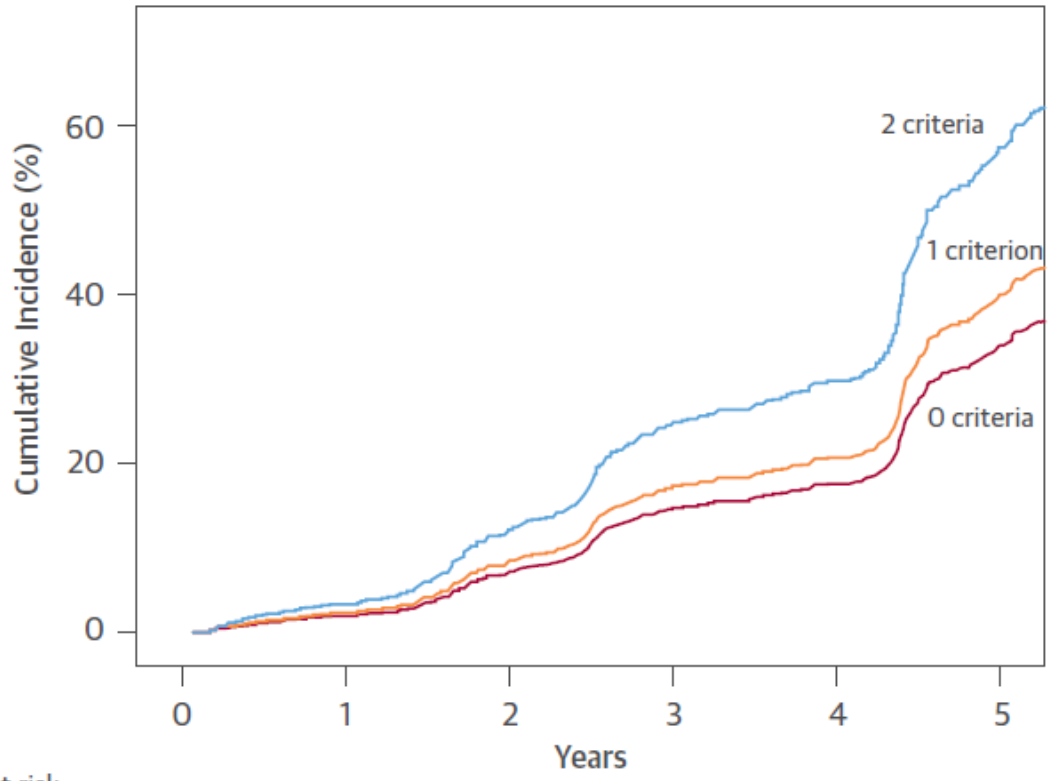
Journal of Aging and Health 2016:1–23

# Frailty Components in Men and Women

| | Men | | Women | | Women/men |
|---|---|---|---|---|---|
| | Incidence density | Person-years[a] | Incidence density | Person-years[a] | Incidence rate ratio |
| Unintentional weight loss | | | | | |
| Unadjusted | 15.5 (9.5-26.9) | 1,558.6 | 11.6 (8.1-17.2) | 2,516.8 | 0.75 (0.73-0.76) |
| Adjusted by age | | | | | |
| 60-74 years | 14.8 (8.2-29.4) | 921.2 | 9.3 (5.7-16.5) | 1,484.0 | 0.63 (0.62-0.64) |
| 75 years or more | 18.6 (9.0-44.8) | 637.4 | 20.3 (13.0-33.6) | 1,032.8 | 1.09 (1.05-1.13) |
| Exhaustion | | | | | |
| Unadjusted | 12.5 (7.7-21.6) | 1,467.6 | 19.6 (14.6-26.9) | 2,285.1 | 1.57 (1.54-1.60) |
| Adjusted by age | | | | | |
| 60-74 years | 12.3 (7.1-23.6) | 892.4 | 16.4 (11.2-25.2) | 1,409.7 | 1.33 (1.30-1.36) |
| 75 years or more | 13.3 (5.7-38.0) | 575.2 | 33.2 (22.5-50.9) | 875.4 | 2.50 (2.40-2.60) |
| Low physical activity level | | | | | |
| Unadjusted | 64.8 (50.0-85.1) | 1,031.9 | 100.3 (85.4-118.2) | 1,665.4 | 1.55 (1.53-1.56) |
| Adjusted by age | | | | | |
| 60-74 years | 58.3 (42.5-81.7) | 658.7 | 98.2 (81.6-118.8) | 1,140.8 | 1.68 (1.66-1.70) |
| 75 years or more | 100.5 (70.2-147.9) | 373.2 | 111.8 (86.9-145.5) | 524.6 | 1.11 (1.09-1.13) |
| Weakness | | | | | |
| Unadjusted | 31.5 (22.3-45.8) | 1,032.7 | 40.1 (31.3-51.9) | 1,811.2 | 1.27 (1.26-1.28) |
| Adjusted by age | | | | | |
| 60-74 years | 25.1 (16.0-41.6) | 715.8 | 33.6 (24.4-47.4) | 1,230.6 | 1.33 (1.31-1.36) |
| 75 years or more | 74.9 (48.3-120.0) | 316.9 | 74.5 (54.9-103.1) | 580.6 | 0.99 (0.97-1.02) |
| Slowness | | | | | |
| Unadjusted | 29.5 (21.3-42.0) | 1,198.6 | 30.7 (24.0-39.9) | 2,004.9 | 1.04 (1.03-1.05) |
| Adjusted by age | | | | | |
| 60-74 years | 24.0 (15.6-38.5) | 790.5 | 22.5 (15.8-33.0) | 1,381.3 | 0.94 (0.92-0.95) |
| 75 years or more | 60.6 (39.6-96.4) | 408.1 | 75.3 (56.8-101.2) | 623.6 | 1.24 (1.21-1.27) |

Journal of Aging and Health 2016:1–23

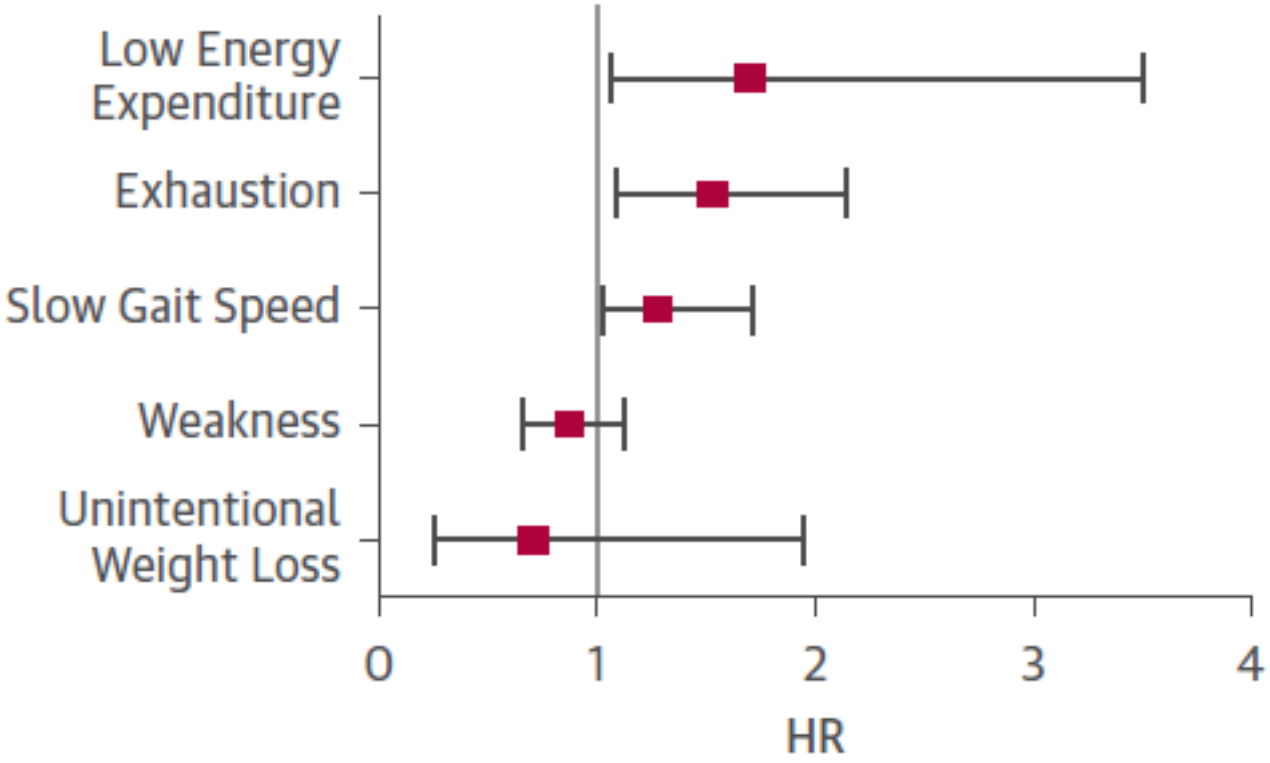
# Frailty and Cardiovascular Risk




| Number at risk<br>Modified Fried criteria | | | | | | |
|---|---|---|---|---|---|---|
| 0 | 867 | 846 | 790 | 731 | 701 | 637 |
| 1 | 491 | 476 | 432 | 371 | 341 | 302 |
| 2 | 209 | 191 | 162 | 123 | 104 | 85 |

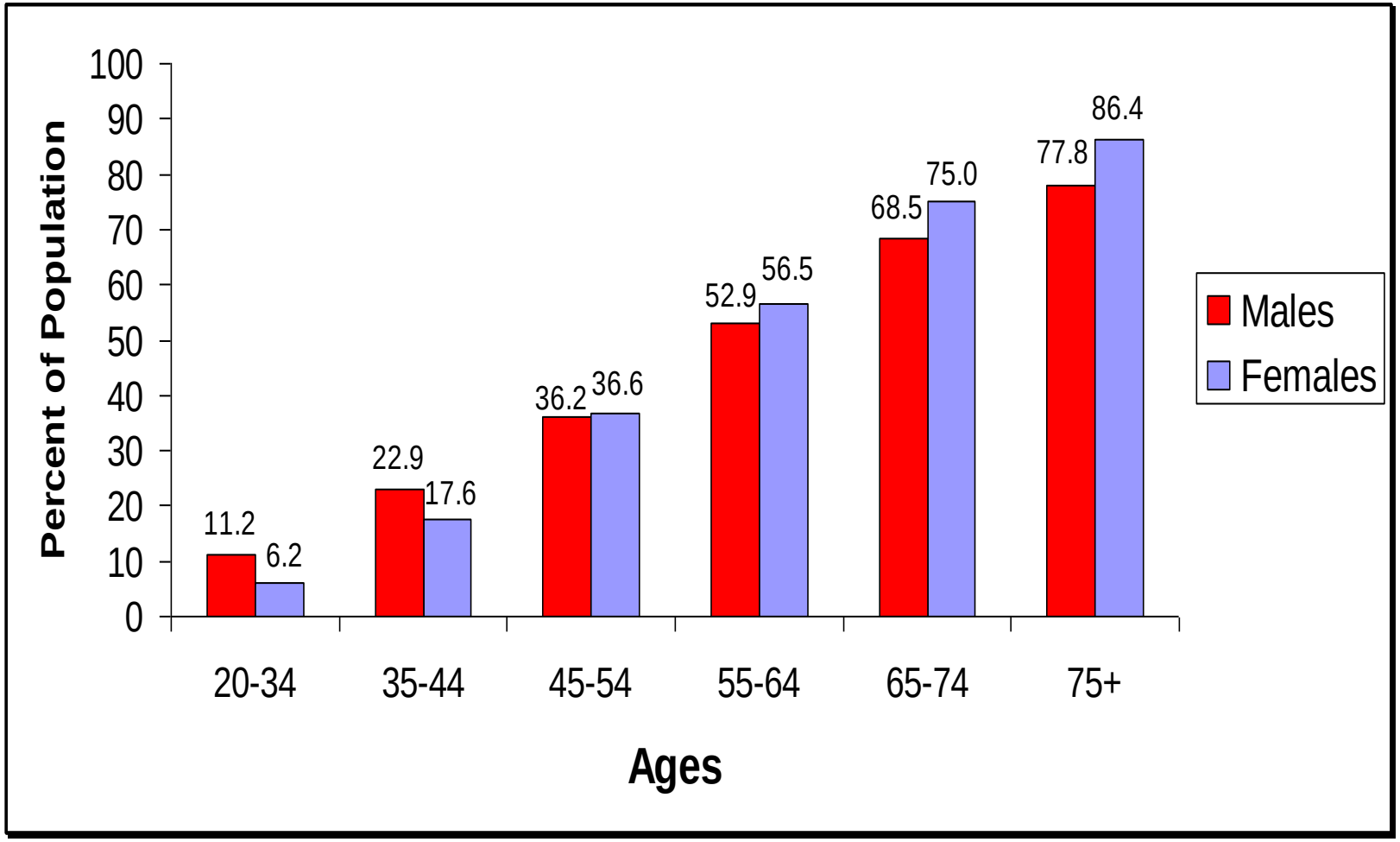
Am Coll Cardiol 2015;65:976–83

# Frailty Components and Cardiovascular Risk




Am Coll Cardiol 2015;65:976–83

# Prevalenza delle malattie cardiovascolari in base ad età e genere




CDC/NCHS and NHLBI 2008

European Heart Journal
doi: 10.1093/eurheartj/ehi819

ESC Report

# Cardiovascular diseases in women: a statement from the policy conference of the European Society of Cardiology

Marco Stramba-Badiale* (Chairperson of the Policy Conference), Kim M. Fox (Chairperson of the Policy Conference), Silvia G. Priori (Chairperson of Women at Heart), Peter Collins, Caroline Daly, Ian Graham, Benct Jonsson, Karin Schenck-Gustafsson, and Michal Tendera

Eur Heart J 2006;27:994-1005

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# Red Alert for Women's Hearts

## Women and Cardiovascular Research in Europe

November 2009

EUROPEAN SOCIETY OF CARDIOLOGY®

## Red Alert on Women's Hearts

### Women and Cardiovascular Research in Europe

November 2009

European Heart Health Strategy
EuroHeart Project, Work Package 6
Women and Cardiovascular Diseases

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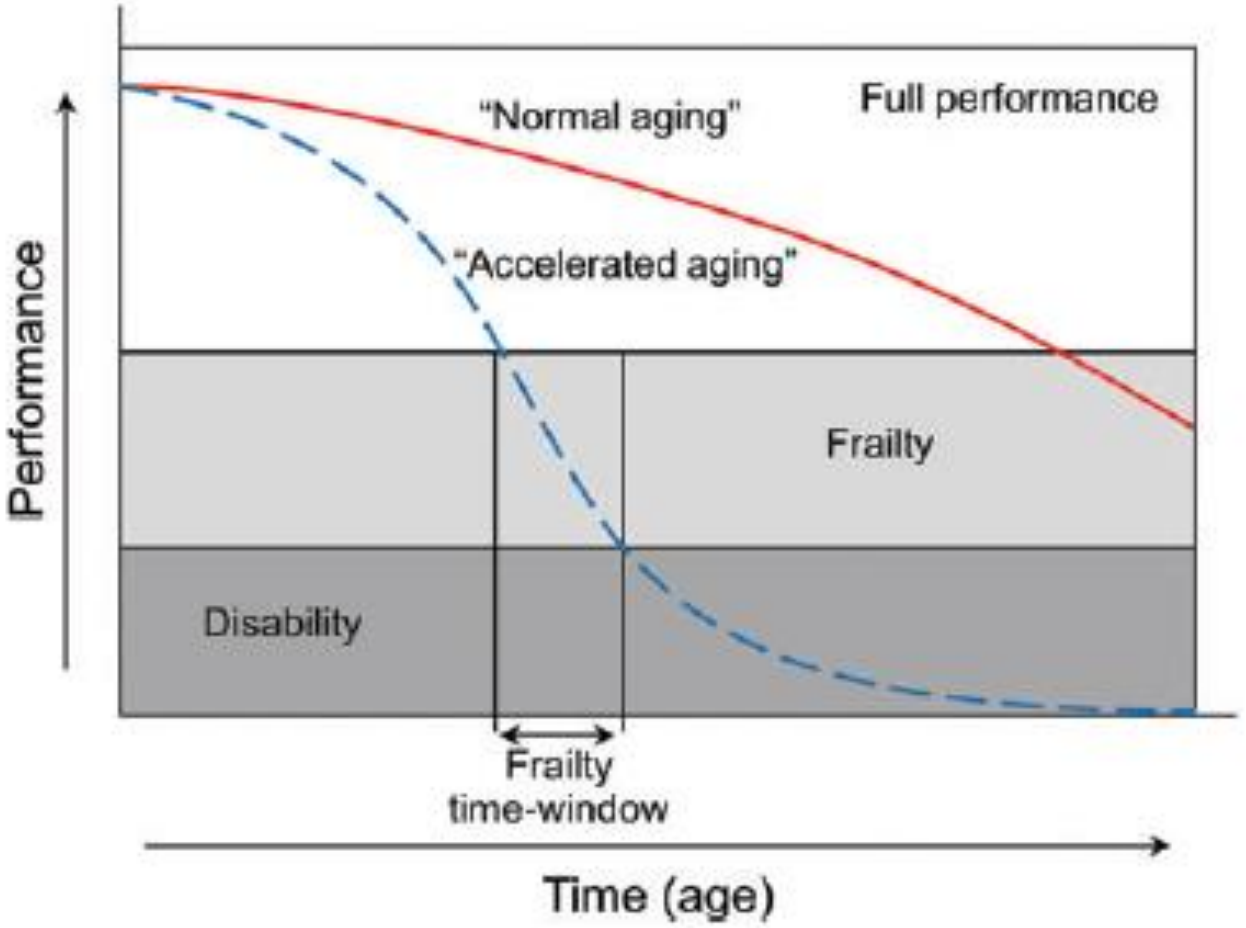
https://www.escardio.org/static_file/Escardio/EU-Affairs/WomensHearts-RedAlert.pdf

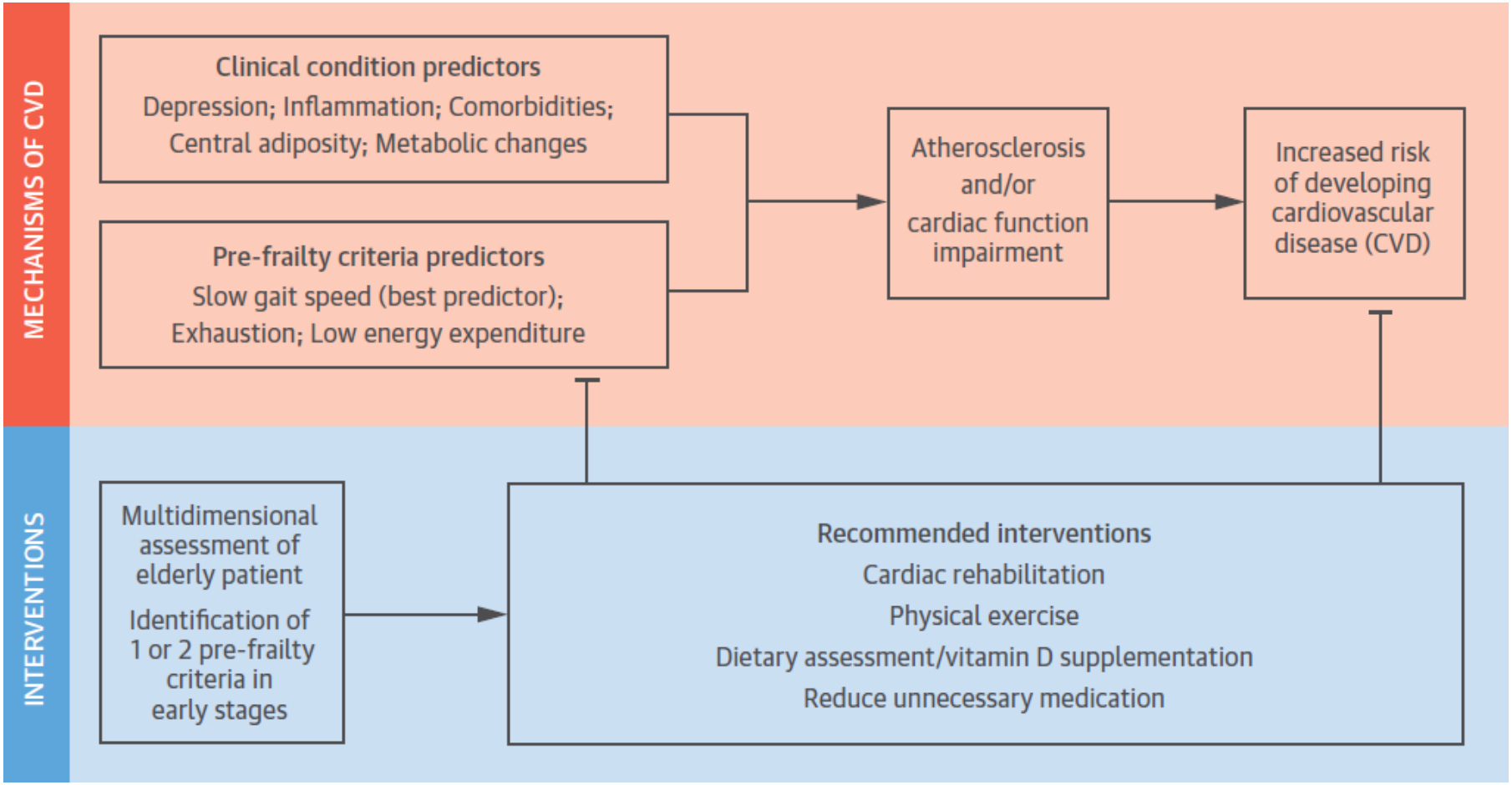
# Frailty and Cardiovascular Diseases

- Increase in the risk of cardiovascular and total mortality
- Increase in complications from medical therapy
- Reduction in benefits of cardiac interventions such as TAVR, PCI and CABG

# Frailty and Age



# Interventions to Reduce Frailty




Am Coll Cardiol 2015;65:976–83

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Ricerca Finalizzata 2013

# High-end and Low-End Virtual Reality Systems for the Rehabilitation of Frailty in the Elderly

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# Virtual Reality for Reducing the Physical Decline in the Elderly

1. **Design, develop and test a VR intervention for reducing the physical decline in the elderly;**

2. **Compare the effects of a virtual reality (VR) protocol with usual care.**

# Virtual Reality in Motor Rehabilitation

**The VR programs offer the possibility to create a realistic home-like environments where the performance can be tested and trained systematically.**

# Virtual Reality in Motor Rehabilitation

**The use of advanced motion tracking tools allows the processing of motion parameters in real-time. With these information it is possible to provide an immediate feedback.**

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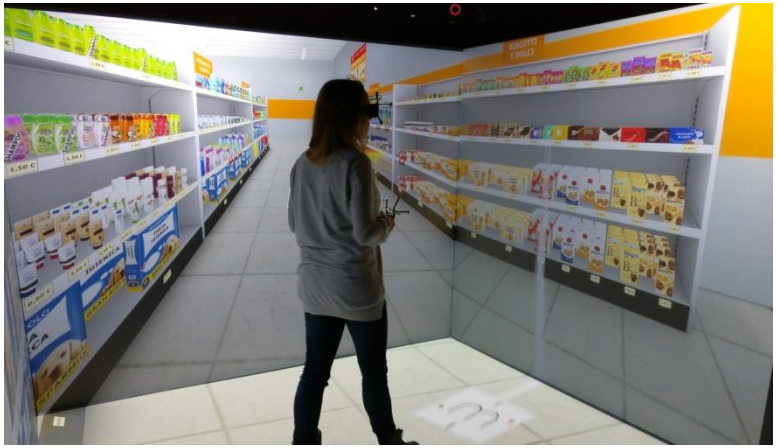
# Computerized Automatic Virtual Environment 4-wall CAVE

# Five-week Rehabilitation Programs

- **10 biweekly inpatients sessions using high-end VR systems in the health care center**



- **10 biweekly outpatients sessions using low-end VR systems at home.**

# The Hypotheses

- **IMPROVE PHYSICAL FUNCTIONING (Timed Up & Go Test, the Timed 10-Meter, Hand grip strength, and the Perdue Pegboard Test);**

- **REDUCE DISABILITY (Modified Barthel Index - MBI);**

- **HAVE A POSITIVE EFFECT on a number of secondary outcome measures including depressive symptoms and health-related quality of life.**

# Aknowledgements

**Karine Goulene, MD, PhD, Head, Outpatients Rehabilitation Unit, Dept of Geriatrics and Cardiovascular Medicine, IRCCS Istituto Auxologico Italiano**

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**Andrea Gaggioli, PhD, Applied Technology for Neuro-Psychology Laboratory, IRCCS Istituto Auxologico Italiano**

**Elisa Pedroli, PhD, Applied Technology for Neuro-Psychology Laboratory , IRCCS Istituto Auxologico Italiano**

# Conclusions

- **Physical performance is worst in older women when compared to older men.**
- **The development of  frailty is more common in women than in men.**
- **The prevalence of disability is higher in older women than in older men.**
- **The components of frailty associated with higher risk of cardiovascular disesases are more  prevalent in older women than in older men.**
- **Traditional interventions such as physical exercise to prevent or reduce frailty are controversial.**
- **New technologies, such as Virtual Reality are currently under investigation in both older women and men.**