



Contrasting vulnerability among the elderly by primary prevention policies: An experimental evaluation of a physical activity programme

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SKETCH OF THE PRESENTATION



- ✓ Idea & motivation: **ageing & physical activity**
- ✓ The policy: **Adaptive Physical Activity (APA)**, definition
- ✓ A good practice: The case of ASLTO4 – a **local health authority** in the Northern province of Turin, Piedmont, Italy
- ✓ Assessing **APA impacts** by an experiment: RIMA project
- ✓ A long stop due to Covid pandemics: (Quantitative) data collection is just finished ... results next year! (hopefully)

- ✓ **Health care systems** are increasingly stressed by population **ageing**
 - Rising *life expectancy* is a goal of modern societies
 - But the elderly are *vulnerable* and frequently need costly health care treatments
 - Vicious circle: **physical inactivity and sedentarism** can worsen disability in chronic conditions (Buchner 1997, 1992; Fiatarone 1993; Guralnik 1994)
- ✓ **Health literacy** and **active ageing** can determine effective *cost savings*: they become fundamental pillars for the **sustainability** of health care systems
- ✓ Literature clearly highlights the **beneficial effects of physical activity in contrasting or mitigating ageing** processes and chronic diseases (Ney 2005; Nelson 2007; Bembom et al., 2009; Vitulli et al., 2012; Ekelud et al., 2015 ...)
- ✓ A **pro-active approach**: preventative measures (primary prevention) before some vulnerability appears (Swan et al., 2008; Zhaokang et al., 2012; Ippoliti et al., 2018b)
- ✓ Many **public and collective initiatives** are increasingly promoted to foster active ageing (Bassuk and Manson, 2005; GAPA, Toronto Charter for Physical Activity, 2010)
- ✓ Among tools for active ageing: **Adaptive Physical Activity** (APA) programmes
- ✓ There is the need for a **clear assessment of APA's benefits**, on individuals and the health care system

PROS OF PHYSICAL ACTIVITY (PA)

PHYSICAL ACTIVITY: SOME OF THE POTENTIAL BENEFITS

30% lower all-cause mortality comparing most active individuals with least active.
Even 10 minutes of brisk walking a day is likely to reduce mortality by up to 15%, irrespective of baseline fitness

30-40% lower risk of metabolic syndrome and type 2 diabetes

20% lower risk of breast cancer

20-35% lower risk of cardiovascular disease

Walking is strongly associated with lower body fat, more so than playing sports

Reduction in incident osteoarthritis by 22-83%

20-30% lower risk of depression & dementia

Walking gives better relief from low back pain than specific exercises

30% lower risk of colon cancer

30% reduction in falls for older adults



Source: Haseler et al., 2019

- ✓ **Sedentarism:** A set of activities that do not significantly increase energy expenditure above the waking level, e.g., sleeping, sitting, lying down, watching TV (Pate et al., 2008)
- ✓ **Physically active** person: doing at least 150 minutes of moderate/intense PA per week or regular and continuous work requiring considerable physical exertion (WHO, 2020)
- ✓ **No age limit** for beneficial effects of PA (WHO, 2020)
- ✓ Benefits of physical exercise often **similar to drugs** on: mortality, secondary prevention of coronary artery disease, rehabilitation after stroke, treatment of heart failure, prevention of diabetes (meta-analysis by Naci and Ioannidis, 2013)
- ✓ Fundamental in old age: *maintenance of muscular strength, equilibrium, flexibility, general fitness* (McNally et al., 2017; Cooper et al., 2010)

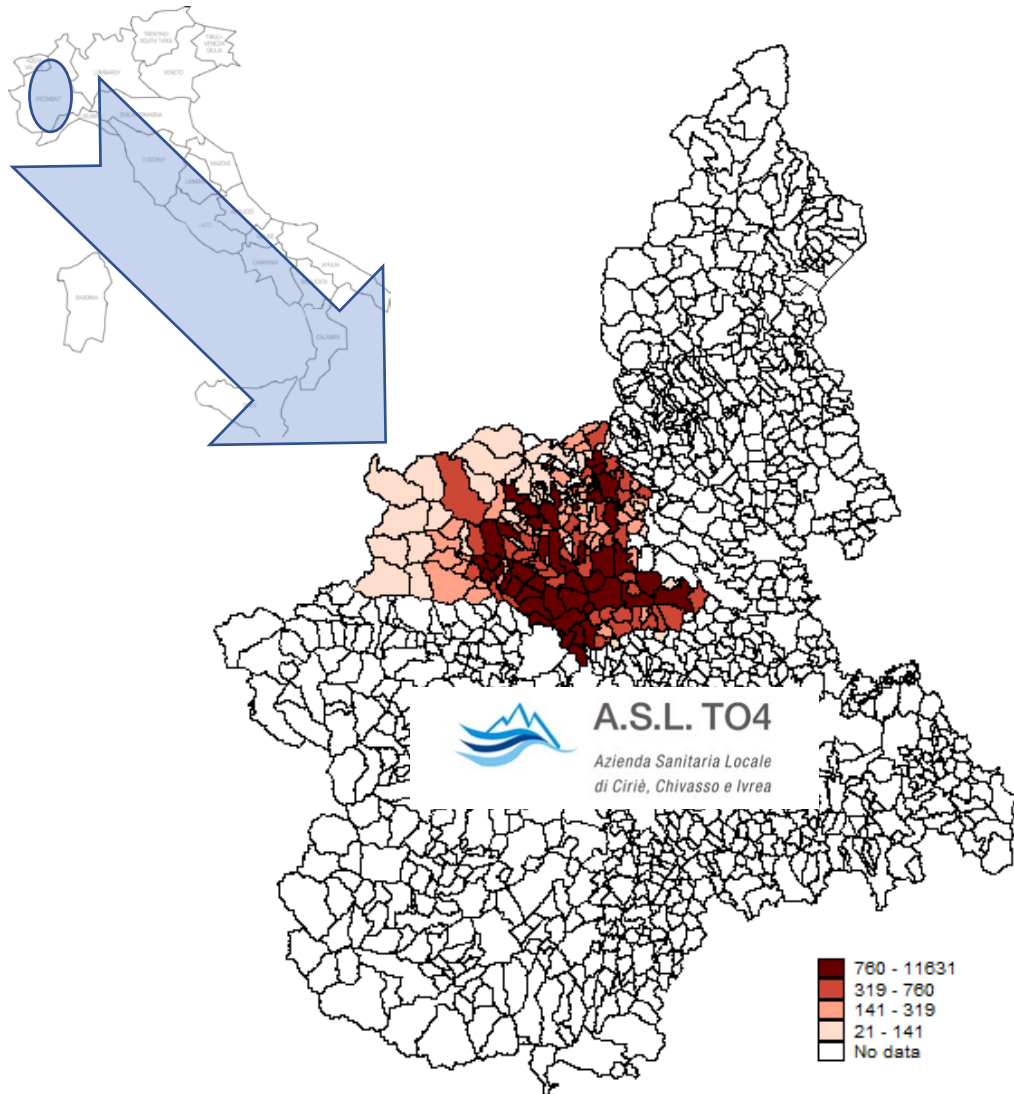
ADAPTIVE PHYSICAL ACTIVITY (APA): WHAT IS IT?




- ✓ **Adaptive Physical Activity** programmes are *group exercise* procedures, designed for individuals with chronic conditions, aimed at *correcting sedentary life style* and at *preventing or mitigating frailty and disability*
- ✓ A branch of APA is specifically **addressed to elderly, sedentary people**: a **community-based**, progressive, supervised group exercise approach as an alternative to over-subscribed clinic-based rehabilitation programmes
- ✓ These individuals can suffer from **relational isolation**
- ✓ Experts' point of view: APA can produce beneficial effects on
 - musculo-skeletal complaints and other chronic conditions
 - well-being (auto-perceived and hetero-measured)
 - social integration
- ✓ APA aims to increase the quality of life by *teaching cooperation, improving physical fitness, promoting physical independence, facilitating socialization, promoting personal empowerment, ensuring individual satisfaction, helping to understand one's body, and alleviating behavioral disorders such as anxiety and depression* (Panella, 2011)
- ✓ Multidimensional effects: an important **evaluation challenge**



APA: A GOOD PRACTICE IN ASLTO4, ITALY



Over 64 population, ASLTO4, 2019 (ISTAT data)

- ✓ Azienda Sanitaria Locale Torino 4 (ASLTO4) is the Local Health Authority covering the Northern part of the Turin province (Piedmont, Italy)
- ✓ **Since 2011**, they directly encourage APA programmes for the elderly, in collaboration with *local municipalities* and the *sport promotion association UISP* (good practice network)
 - *Target population*: aged 65+, low disability class (*physiatrists* are the primary referral source)
 - *APA Programme*: they meet in small groups (10-15) twice a week (2h) in municipal gyms supervised by an expert instructor trained by ASLTO4
 - *Price*: very low (€2.25 per hour), people pay for themselves and arrange transportation
- ✓ **No public health system resources used** 
- ✓ Participants: in 2011 they were 200, today about 1500
- ✓ They need a quantification of their programme effects

RIMA PROJECT: RESEARCH QUESTIONS



Research on the move for the elderly Ricerca in Movimento per gli Anziani



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- ✓ **APA effectiveness:** Does the program rise **individual well-being** in the elderly? Which well-being **dimensions** are involved (physical, auto-perceived, hetero-measured ...)? In particular,
 - Are there clear effects in terms of **social integration and personal relations**?
 - Are there **differential impacts** based on sub-groups (women, very old people ...)?
- ✓ Is there an effective **saving in health spending**? Considering both *public and private* costs (drugs consumption, specialistic treatments ...)
- ✓ Methodology: **Counterfactual impact evaluation** methods to measure APA impacts
 - Physiatrists and professionals are sure, but **are these measurable**? Which are the most appropriate indicators?
 - Need for a **complementary qualitative approach** (well-being dimensions, practitioners' perceptions ...)
- ✓ The **Covid pandemics** stopped the project for a long time, requiring many rearrangements

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Research on the Move for the Elderly



- ✓ **APA programme:** strengths and weaknesses
 - Is the technical procedure (still) suitable?
 - Is the *organizational model* suitable? In particular, evaluation of the feasibility of a new organizational model, based on family and community nursing: *effects on sustainability, accessibility, effectiveness*
 - Cost and benefit analysis in ASLTO4
- ✓ **Scenario evaluation:** costs and benefits of expanding APA to the whole Piedmont
Which results?
 - Public health system decongestion



RIMA FIELD EXPERIMENT (ONGOING)



- ✓ **120 sedentary individuals** (65+, low disability) selected by the ASLTO4 Family and Community Nursing service
- ✓ Involvement of **residents from inner areas** as LHA specific objective
- ✓ **Randomization** into a treatment (60) and a control (60) group
 - *Treatment*: APA course during 9 months by UISP
 - *Control*: placebo health literacy by ASLTO4; 9 months APA at the end of the project
- ✓ APA impact measured on selected **outcome variables** (drug consumption, clinic treatments, accidental falls, physical muscolo-skeletal functioning ...)
 - Pre- and post-treatment measurement
 - Possibly randomization inference (small sample bias)

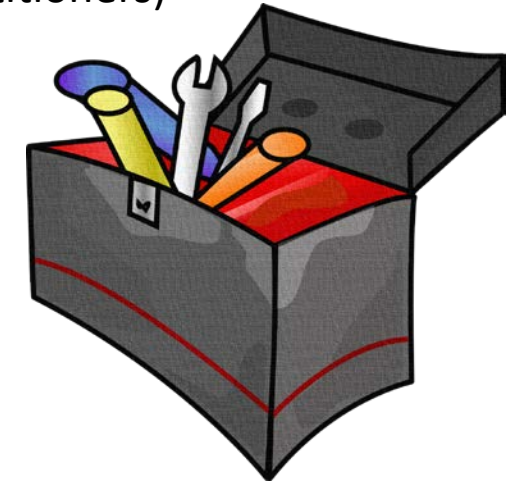
RIMA TOOLBOX (1): PHYSICAL FITNESS



✓ The measurement toolbox has been selected by a team of experts (researchers, MDs, practitioners)

✓ According to Panella (2004), the main physical abilities targeted by APA are

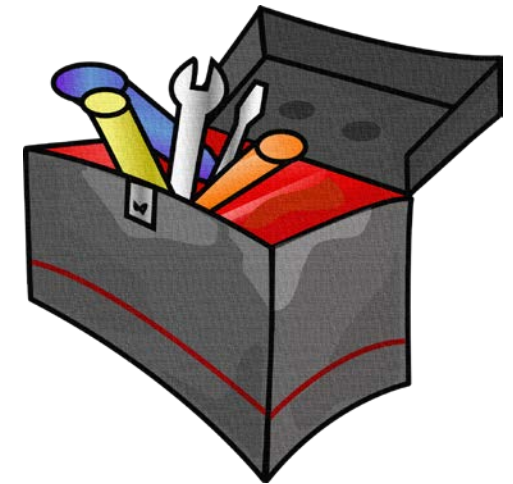
- **Aerobic:** major muscle groups move rhythmically for extended periods;
- **Resistance:** muscles work against applied force or weight;
- **Flexibility:** maintain or increase the range of motion (ROM) of joints;
- **Balance:** strengthen lower body parts and reduce fall risk



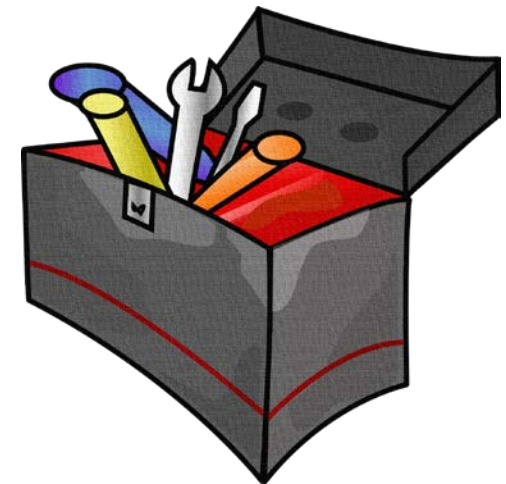
✓ Pre- and post-treatment fitness tests (from Senior Fitness Test, Rikli and Jones 1999a,b):

- **Strength Grip Test:** measures the maximum strength of the hand and forearm muscles using a hand dynamometer (Wang et al., 2018)
- **Six Minutes Walk Test:** measures the distance an individual can walk in six minutes as a test of aerobic capacity and endurance
- **Time Up and Go Test:** measures the time taken to stand up from a chair, walk three meters, turn around, walk back, and sit down (to evaluate mobility, balance, walking ability, and fall risk)
- **Lower Flexibility, Seat and Reach Test:** measures the flexibility of the lower back and hamstrings, sitting on a chair with legs extended and reach forward as far as possible (Milanovic et al., 2013)
- **Upper Flexibility, Back Scratch Test:** measures upper body flexibility, specifically the ability to bring the hands together behind the back, one over the shoulder and the other up the middle of the back (Milanovic et al., 2013)
- Body Mass Index & level of pain (using the Visual Analogue Scale)
- Drug consumption and access to medical treatments

- ✓ Several studies assess the impact of physical exercises on psychological well-being of the elderly (Nuno et al., 2017; Peter et al., 2016; Carrapatoso et al., 2018)
- ✓ According to Panella (2011), APA aims also to increase **psychological well-being**
 - facilitating socialization
 - promoting personal empowerment
 - ensuring individual satisfaction
 - alleviating behavioral disorders such as anxiety and depression
- ✓ Pre- and post-treatment tests:
 - Subjective Vitality Test (Ryan and Frederick, 1997; validation in Italian by Moè et al., 2024)
 - Questions from a national Health Authority survey (Passi d'Argento) about
 - Increased participation in social activities (volunteering or other activities with the elderly)
 - Individual participation in outings with other elderly
 - Contact via chat or phone with other elderly with whom they have relationships
 - Attendance at associations, clubs, parishes, etc.



- ✓ A **mixed methods approach** (Creswell, 2014) is necessary to analyze the complex and multifaceted psycho-social dimensions of well-being
- ✓ *In-depth interviews* to stakeholders and operators
- ✓ *Focus groups* will deepen specific aspects of the intervention. Those techniques are essential to explore the social dynamics arising from the APA program, giving voice to the direct beneficiaries
- ✓ We will focus on the effects of APA in terms of
 - relational networks of elderly people
 - the concept of social support
 - the concept of social capital



RIMA EXPECTED RESULTS ... FROM NEXT YEAR



- ✓ *APA impact evaluation* on elderly well-being indicators
- ✓ *Cost and benefit analysis* based on impact evaluation results
- ✓ Improvement of APA technical and organizational procedures in ASLTO4, in order to increase *accessibility and sustainability*
- ✓ New definition of *regional chronicity plans*, including health literacy and active ageing policies at various levels (local health care systems, hospital systems, local regional national *policy makers* ...), also based on RIMA results
- ✓ General improvement of elderly's well-being due to larger APA territorial diffusion

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