

**Building autonomy for maintaining active healthy ageing behaviours in the adult population.**

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### **Abstract**

An active healthy ageing is known to be one of the most important challenges for healthcare systems in next years, and promoting physical activity is one action to address for maintaining positive functional and cognitive status. Several factors act in adults' decision to practice physical activities and behave over time. How effectively promote physical activity is still not clear; several strategies have been implemented, but a few of studies demonstrated that, for example, some strategies may not obtain the attention of the target population.

In this work we focus on the importance of motivational influence on individuals who join interventions promoting physical activity. In details, we want to present a preliminary analysis that investigate a) whether and how the relationship between motivation (independent variable) and doing physical activity (dependent variable) works and b) whether and how the characteristics of these interventions mediate the relationship between motivation and physical activity. A longitudinal study design was defined to evaluate the benefits produced by 8 interventions (each for specific geographical areas) financed by an Italian Regional Health System to engage the adult population to be physically active. Both the analyses we propose consider the data collected at the baseline monitoring (when individuals accept to join the intervention).

The data collection started at the end of October 2019, thus -in this version- our work cannot include results from the empirical analysis. However, at the conference time we expected to observe from the early data that the products offer by the interventions (e.g. technology, social and playful factors, expertise, etc) can positively mediate the relationship between External Perceived Locus of Causality and physical activity when the physical activity starting level is mild or absent; while these products do not positively mediate the relationship between Internal Perceived Locus of Causality and physical activity when the physical activity starting level is intense.

Results will highlight whether and to what extend the interventions' characteristics act to build/strengthen or, in reverse, undermine the autonomy (measured as Internal Perceived Locus of Causality) to do physical activity within an adult population. Providers and policy makers will obtain evidence about the strategies to apply in designing policy and implement actions that are more target-oriented and, in turns, more effective.

Key words: physical activity, motivation, autonomy, active ageing

## **Building autonomy for maintaining active healthy ageing behaviours in the adult population.**

### **Introduction and literature review**

Population aged 60 and more is rapidly increasing in the world, more than in other age groups. This segment of the population is estimated to triple by 2050, compared to what was recorded in 2005. It will constitute 22% of the world population. This is why a “silver economy” has been developing and scholars are focusing their attention on elderly-oriented researches in order to identify effective strategies (e.g. in terms of communication) to satisfy the needs of this specific segment (Pilarczyk and Stefańska, 2017).

The design of strategies and, in turns, how they are implemented in interventions promoting healthy and active ageing can result in improvements or maintenance of the population’s life quality, reducing the spread and impact of the major risk factors for chronic diseases (sedentariness and obesity) (1). An active healthy ageing is known to be one of the most important challenges for healthcare systems in next years, and promoting physical activity is one action to address for maintaining positive functional and cognitive status. How effectively promote physical activity is still not clear; several strategies have been implemented, but a few of them may not obtain the attention of the overall population (Droulers & Minvielle, 2016).

Although doing physical activity is a protective behaviour to spread within the adult populations, it is not obvious that individuals accept to move from a sedentary to an active physical status. Barriers and motivation could play an important role in adopting physical activity through adult and elderly population. Different studies revealed how “support from others” and “enjoyment” are some of the most important positive factors for elderly population (Hoare et al, 2017; Booth et al, 2000) as well as a favourable “environment” and “easy access to sport facilities and infrastructures” (Schutzer and Graves, 2004). On the opposite side, personal health perception, lack of time and feeling tired are common barriers for doing physical activity among older adults (Lim & Taylor, 2005). Additionally, studies report as motivation to do physical activity varies across age classes and demonstrate correlation between personal motivation and physical activity in adult population (Miller and Iris, 2002; Brunet and Sabiston, 2011). A few of these studies base their research frameworks on the Self-Determination Theory (SDT) (Deci and Ryan, 1985; Hagger and Chatzisarantis, 2008; Mullan et al, 1997).

SDT states that we can observe six different motivation types (intrinsic, integrated, identified, introjected, external, and amotivation) within population, where intrinsic motivation occurs when individuals feel pleasure, fun and satisfaction in doing something, while integrated, identified, introjected, external stay in a continuum line between intrinsic motivation and amotivation (Deci & Ryan, 2002; Deci & Ryan, 1985). It is shared that reasons to be somethings are either related to the autonomy regulation - as an internal perceived locus of causality (*intrinsic, integrated and identified motivation*) or related to the controlled regulation - as an external perceived locus of causality (*introjected and external motivation*); while *amotivation* is characterized by a total lack of any motivation (Interpersonal Perceived Locus of Causality) (Deci & Ryan, 2000; Deci & Ryan, 2002; Brunet and Sabiston, 2011). It has been shown how higher levels of autonomous regulation can bring to higher level of well-being and healthy behaviours such as physical activity (Chatzisarantis et al, 2003). The importance of intrinsic motivation is positively associated with a higher level of physical activity in older adults while extrinsic motivation, as appearance and weight management, is relevant for increasing behavioural changes in the young adult population (Brunet and Sabiston, 2011). Coherently with the definition of intrinsic motivation, working on competences and perception

of competences is highly suggested to lead positive individual standard of physical activity and to motivate individuals to move into action (Brunet and Sabiston, 2011). Hence strengthening the autonomy sphere of individuals can produce positive effect on being physically active and maintaining this behaviour over time.

## **Objectives and research questions**

Our study aims to explore the relationship between the motivation and doing physical activity within an adult population to highlight the processes that lead this population segment to have an active healthy ageing. Aware of the positive effect of strengthening the autonomy sphere of individuals, in details, our work would like to answer the following research questions:

RQ1: Can specific promotional interventions addressed to an adult population act on moving motivation to do physical activity from External Perceived Locus of Causality to an Internal Perceived Locus of Causality?

RQ2: How do the elements that characterized the interventions act on the relationship between motivation and doing physical activity?

As explained later, this work focuses on a part of the analyses we will perform to answer the above questions.

## **Method**

The analyses we propose are based on longitudinal data, that we are collecting within a study evaluating the benefits produced by 8 interventions which promote physical activity among an adult population of 32 Italian municipalities. The study is financed by the Tuscany Regional Health System (Italy).

*Interventions* - All the 8 interventions aim at engaging the adult population to be physically active by promoting walking activities. Each intervention uses different levers and nudges to obtain an higher participation and to be more effective in achieving the goal of an active healthy ageing for their target population. They mix ingredients as technology (APP), social (walking group) or playful (gamification) factors, expertise (walking leader), etc..

*Benefits' Evaluation* - The evaluation of the benefits has been conducting for each intervention by following the method of a pre-post single harm quasi-experimental study (see NOTE 1). Both at baseline and 6 months later, individuals who accept to join each intervention are asked to fill in a web-based questionnaire that explores both the motivation to do exercise, their level of physical activity, their psychological wellbeing and their positive relationships with other individuals.

*Measures* - In order to answer to the above research questions, three sub-groups of variables have been used from the study's database. They are: motivations to do physical activity; physical activity levels; interventions' products (e.g. personal trainer, APP, games, walking groups, etc.).

The motivation and physical activity variables were collected through specific and validated scales (Stel et al., 2004; Mullan, et al,1997). We are using the BREQ scale to catch out the types of motivation that move individuals to do physical exercise; in details, the scale is able to measure if individuals' motivation is *intrinsic*, *identified*, *introjected* or *external* (Mullan, et al,1997; Costa et al, 2013). Additionally the LASA questionnaire is used to collect information

on which activities individuals perform to be physically active and time they spend on those activities (Stel et al., 2004). This questionnaire allows to calculate for each individual if they are no active or if they have a mild, moderate or intense physical activity.

*Analyses:* Using data collected at baseline and 6 months after individuals joined the interventions, in our study we will analyze whether at 6 month indicators on physical activity level improves and whether there are any changes in the motivation that moves individuals in doing exercise (to address RQ1).

In order to understand whether the intervention's specific characteristics, that are technology (APP), social (walking group) or playful (gamification) factors, expertise (walking leader), influenced the changes in physical activity and motivation, we analyze:

- a. firstly, whether and how the characteristics of the interventions act (as moderators or mediators) in transforming the Perceived Locus of Causality from external to internal (or vice versa) by comparing data at baseline (before the interventions start) and 6 months later.

Secondly, we want to analyze the relationship between types of motivation and level of physical activity and how the “ingredients” mixed in each intervention – and introduced to obtain a high participation of the target population and effective changes in individuals' behaviors - act on this relationship (to address RQ2). To this end, we analyze;

- b. secondly, whether and how the characteristics of the intervention act (as moderators or mediators) on the relationship between motivation and experience in physical activity both at baseline (for the population that accept to join the interventions) and at 6 month later.

*In this work*, we want to present a preliminary analysis that aims to answer to the RQ2 by performing a mediation analyses on the early baseline data on physical activity and motivation that will be available on December 2019. Specifically, we perform a Structural Equation Model 1) in order to confirm that there is an influence of motivation on physical activity, and 2) to explore whether technology, social factors, playful factors and presence of expertise respectively act as mediator or not in the above relationship.

## **Results**

The data collection started at the end of October 2019, thus -in this version- our work cannot include results from the empirical analysis. However, at the conference time we expect to present early findings dealing with the baseline profile of participants, by using data collected in the first two months.

We expect to observe, for example, that the interventions' characteristics (technology, social and playful factors, expertise, etc) can explain more about the relationship between motivation and physical activity and show that these characteristics can positively mediate the relationship between External Perceived Locus of Causality and physical activity when the physical activity starting level is mild or absent. While, no moderation we expect to observe in the relationship between Internal Perceived Locus of Causality and physical activity when the physical activity starting level is intense.

## **Discussion, Managerial Implications and Conclusion**

Understanding the motivational influence on elderly population in relation to physical activity is important to design and implement effective programs that aim at maintaining the benefits

they produce on the target population over time. With this work the authors would like to discuss within the marketing scholars' community on the role of the characteristics (products) of the interventions that promote healthy behaviors within an adult population. In details, results will highlight whether and how these characteristics act to build/strengthen or, in reverse, undermine the autonomous regulation to do physical activity within an adult population.

The results of this preliminary analysis, based on the data collected at the baseline stage (before the individuals perform physical activity within the intervention), can be helpful for: (i) the intervention providers (local institutions) to know more about their target population and, in turn, to straighten the shot – if it is necessary - in the scale up stage; (ii) the interventions' funders, that in this case coincides with the policy maker, to decide on which assets invest and, first of all, on which elements push (technology, social support, expertise, etc) when design policies and finance actions to act on the population behaviors to make their ageing more active and healthier.

In details, whether the early findings will confirm that the interventions' characteristics have a positive mediation in the relationship between motivation and physical activity only when individuals have an absent or mild level of physical activity and a controlled regulation, the policy makers and the intervention providers can decide to push the use of technology, social support, expertise, ..., only to this sub-group of individuals. On the opposite side, if the interventions' characteristics do not have a mediation role in or undermine the relationship between motivation and physical activity when individuals have an intense or moderate level of physical activity and an autonomous regulation, the intervention providers have necessary to avoid to propose these “products” within their interventions.

To conclude, this work confirms the necessity to clearly know the characteristics of the population selected to benefit of interventions and points out that products like apps, walking group, games, walking leader, etc. can impact in different way (positively or negatively) on individuals' behaviors depending on how their motivational processes work. Personalized interventions are more effective than generalist ones. Offering new products to a population intrinsically motivated to do something like physical activity not necessary satisfies or generates unexpressed needs that positively increase the individuals' performance.

## **Limitations and Further Research**

This work presents a few of limitations, among them: the preliminary analysis will be based on early data and results can be affected by the number of questionnaires are collected in the first months of monitoring. Data put together information from individuals who join 8 different interventions, it means that: a) the interventions are delivered to individuals who could have different characteristics (in terms of age, sex, active behaviours, etc) because the interventions apply different segmentation strategies; b) each intervention can offer none, one or more “products” among apps, walking group, games, walking leader. However, in this stage our (explorative) analysis does not consider the cumulate effect of all the intervention's characteristics on the individuals' behaviour or the cumulate effect of intervention's and individuals' characteristics on the behaviors.

The above limitations may be managed with further analyses performed at the end of the longitudinal observation and supported by an extended framework that also includes the role of antecedents in analysing how technology, relationship, gamification and expertise act in the motivational processes and in the relationship between motivation-healthy behaviours. Additionally, these additional analyses will allow the authors to answer both the research questions they proposed above.

## NOTES:

1. A pre-post single harm quasi-experimental approach was preferred to the randomized controlled trial for several reasons. First of all, for each intervention it is aimed at measuring, among the process outcomes, what is the capacity of the action promoted to involve the largest number of individuals within the target population. In the case of broad participation, it may be difficult to identify a group of control of equal size and characteristics to be compared with the group that benefits from the intervention. Furthermore, the hypothesis that part of the persons who have joined, in a random way, are included in the waiting list to benefit subsequently from the intervention, thus acting as a control group, should also be excluded. The interventions have in fact a limited duration of two years and dedicates to the implementation of the intervention and its monitoring for a maximum of 15 months; there would therefore be no time to allow the control group to benefit from the intervention once the trial has ended. An ethical and equity problem would follow.

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