



Original Article

Life-Course and Physical Activity in Self-Perceived Health in Aging

Carmine Clemente ^{a*} , Paolo Contini ^b 

^a *University of Bari “Aldo Moro”, Italy*

^b *IUL University, Florence, Italy*

Abstract

Lifestyle is a determinant of health and promotes the perception, and more, of improved subjective condition. It is a determinant that can be usefully considered with the life course approach since it is well known that health risk factors sometimes originate and accumulate in a time before its manifestation. Analysis of SHARE data-with the use of some variables that take into account socioeconomic status-will be conducted to capture whether increased physical activity (and the timing of this change) is correlated with better perceived health among subjects of different age groups, with reference to the elderly.

Keywords: *Aging; lifestyles; life course; physical activity; SHARE.*

1. Introduction

Improving the quality of life and physical and mental well-being of older adults represent some of the most significant social and cultural challenges of our time, just as it is important for each individual to increase their life expectancy and quality of life.

Achieving these goals requires both subjective and objective factors that, in an interdependent manner, involve individual choices, environmental quality, and public policies that promote and protect health (Narimatsu and Feng, 2024).

Individuals are called upon to take greater responsibility for their life stages and biographical experiences (Fong and Chiu, 2024), as public policies and medicine alone cannot promote the achievement of the aforementioned goals.

This study aims to analyze, using SHARE data and through a life-course perspective, the relationship between physical activity and perceived health among subjects of different age groups, with particular reference to older adults. The analysis will also focus on the importance of when lifestyle changes are implemented as a factor in the success or failure of improvement and will be conducted using a model that considers various indicators such as age, socioeconomic status (SES), gender, and so on, which will

*Corresponding author. Carmine Clemente. E-mail address: carmine.clemente@uniba.it

allow for a greater understanding of the relevance or otherwise of physical activity for achieving well-being and good health.

2. Determinants of health: lifestyle and physical activity

Increased public interest in health justifies the attention social actors pay to social practices aimed at achieving well-being. Among those that promote health is physical activity. Indeed, the consensus among scientists is that among the various interventions aimed at optimizing well-being—for all age groups—the role and opportunities offered by physical activity represent an essential component of a healthy lifestyle (Grignoli and Șerban, 2018).

A wealth of international scientific literature has highlighted the positive correlation between physical activity and the benefits of individual and community health. For example, for older adults, it has been highlighted: increased life expectancy and a reduction in cardiovascular disease (Cockerham, 2017); improved anxiety management (Paluska and Schwenk, 2000); the development of immune function and the prevention of chronic disease (Gronek et al., 2020); improved self-esteem, cognitive function, and mood (Biddle, 2016); improved clinical outcomes in the treatment of somatic and mental illnesses caused by emotional stress (Ghosh and Datta, 2012); reduced institutionalization and hospitalization, both of which are a result of worsening health conditions due to a sedentary lifestyle (Scheerman et al., 2018); and others.

The case studies reported represent only a partial sample of the much broader and more varied scientific evidence demonstrating this positive correlation, which, however, needs to be better analyzed when distinguishing the population based on the different characteristics of social groups.

According to Weber (1974), socioeconomic status (SES), derived from material wealth, occupation, and education, determines lifestyle behaviors (*Lebensführung*) that can be conducive to a healthy lifestyle (*Lebensstil*) (Weber, 1974; Cockerham, 2017). The relationship between social class and lifestyle is well-known, as French sociologist Bourdieu (1983) proposed a new definition of *habitus*, understood as a system of dispositions that indicates a way of being, a habitual state, and a predisposition, tendency, propensity, or inclination that endures over time.

Other scholars, more recently, have analyzed the influence of certain variables—age, gender, health practices, ethnicity, employment status, and so on—on lifestyle choices (Petev, 2013; Missinne et al., 2015; Cockerham, 2017). Finally, it should also be remembered that a healthy lifestyle may depend on the cultural and institutional environment of the historical period in which one lives (Lakomy, 2021); on the micro-macro interaction of subjective and structural limitations (Depedri and Gubert, 2019); on inclusion/participation in social and relational activities (Sapranaviciute et al., 2022).

3. Life courses, health determinants, and health trajectories

As mentioned in the Introduction, the empirical analysis will utilize the static approach of the life course perspective (see below, section 5). From a conceptual and theoretical perspective, it should be noted that the life course perspective posits that risk factors are significant not only in late life or adulthood (Lynch and Smith, 2005; Braveman et al., 2011; Clemente and Pereiro, 2020), but may have begun to exert a negative influence on health even earlier and may have accumulated over time. For the authors of the Marmot Review of social determinants and the health divide in the European region (Marmot et al., 2012), the life course is a very useful approach for planning actions on the social

determinants of health throughout the lifespan, in broader social and economic contexts, and could help identify when interventions should occur in people's lives (Elder, 1985, p. 5).

The life course connects an individual's biography with its temporal context (Clemente et. al., 2025). This is made possible by identifying the ways in which certain transformations can influence individuals' lives. These effects can be of three types: cohort effect, period effect, or age effect. Elder (1994, p. 8) explains the differences between each of these types: historical effects on the life course take the form of a cohort effect, in which social change differentiates the life patterns of successive cohorts; history also takes the form of a period effect, when the effect of change is relatively uniform across successive birth cohorts; a third type of effect occurs through aging.

The specific and theoretical reference—recalled briefly here for the sake of brevity—to the relationship between individual biography and temporal context with the aforementioned effects (cohort-period-age) is closely linked to the two research questions posed by this study (section 4) and their respective methodological implications. For this same reason, another principle of the life course theoretical perspective of connected lives was also taken into account, which highlights the importance of:

- the direct and indirect relationships of individuals with their social, economic, cultural, and institutional contexts.
- the complex network of social relationships (family ties, friendships, occupational/professional ties) through which individuals' lives unfold.

4 Lifestyle changes and health trajectories

The aim of this study is to assess whether and how health status varies with changes in physical activity levels over the lifespan and when these changes occurred. Using data from the SHARE survey, we analyzed the relationship between self-reported health status and changes in various parameters of physical activity. The main independent variables of interest are:

1. whether respondents increased their level of physical activity to improve their health and whether this increase is associated with better health;
2. at what stage of the lifespan (childhood, youth, adulthood, old age) this change occurred and to identify at which stage of life changes in physical activity have the greatest impact on health.

In addition to the direct effects of physical activity on health, the study aims to control for the influence of sociodemographic (age, gender, marital status), economic (education level, family income), and health variables (presence of chronic diseases, dietary habits, smoking, alcohol consumption) on the association between physical activity and self-perceived health.

5 Data, variables and methods

Data are drawn from the first and third waves of the Survey of Health, Ageing and Retirement in Europe (SHARE-ERIC, 2024a, 2024b). SHARE is a longitudinal study that collects information on various aspects of individuals' biographies, from demographic, social, and economic characteristics to health variables. The questionnaire included retrospective information on various aspects of respondents' life courses, including detailed questions about health and healthcare (Börsch-Supan et al., 2011; Börsch-Supan et al., 2013). Wave three was the only wave of the SHARE survey that included

information on whether and when (over the life course) respondents changed their physical activity levels.

After data cleaning, the final sample includes respondents with information on their self-reported general health ($n=16,597$). The SHARELIFE microdata were merged with the baseline study microdata (Wave 1) to control for other known determinants of health in empirical analyses that were collected only once (Schröder, 2011).

The life-course approach allows us to assess (as per the objective of this study) whether and how respondents' self-reported health status varies based on changes in their physical activity levels and the timing of such changes. The empirical analyses are based on ordered logistic regression models in which the dependent variable is respondents' self-reported health status at the time of the survey (how is your health in general? on a scale of 1 to 5, poor/excellent).

To test the influence of health prevention across the life course, the following questions were used as independent variables of interest: 1) Have you increased your level of physical activity (for at least one year) to improve your health? This was transformed into a binary variable coded 1 if the respondent committed to the change and 0 otherwise. 2) At what stage of the life course did this change occur? This was transformed into a variable with 5 categories: 0 if the respondents did not increase their levels of physical activity, 1 if the increase occurred during childhood (0-15 years), adolescence, or adulthood (16-40 years), 2 during late adulthood (41-65 years), and 3 during old age (after the 65th birthday). Separate models were built for each of these questions, while controlling for other known determinants of health (individual characteristics, social determinants (proxies), current health and habits, and welfare system). To analyze individuals' life paths, it is necessary to collect specific information regarding experienced events and their temporal placement in biographies, thus enabling dynamic interpretation of this data. Furthermore, events must be identified in time (with explicit reference to both start dates) to establish their timing and the possible connections between them and other events (linked events). By considering individuals' prior history, it is possible to study how a future event (following the previous one in chronological order) depends on a past event.

The longitudinal information analyzed was obtained using retrospective observation (a static approach), in which data were collected after the events of interest occurred, and the biographical event under study is reconstructed after their occurrence. The indexed reconstruction procedure was therefore used, in which the identification of events of interest is performed by referring, first, to a specific event and, second, to a specific time point (Clemente and García-Pereiro, 2020). Separate estimates were performed for the three main independent variables of interest, and two estimates (models) were calculated for each (Table 1). The first is a null model that considers the main variable of interest as the only independent variable in the estimate. The second is a full model that adds to the first the rest of the covariates considered to be important determinants of an individual's self-reported health status. For interpretive reasons and to facilitate comparisons between model estimates, the adjusted forecast for prototypical cases was calculated, and the results of the null and full models were plotted for each variable of interest (Figures 1 and 2). The goodness of fit of the models was assessed by reading the pseudo R^2 and log pseudolikelihood values, while Wald statistics were used to test the significance of the covariates.

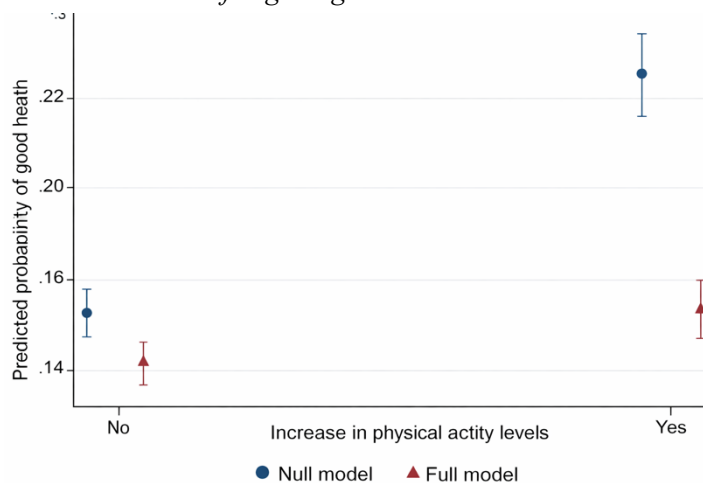
Statistical tests were performed to meet the probability of proportionality assumption of ordinal logistic regression (Harrell, 2015). According to the descriptive

statistics of the final sample, the mean self-reported health status was 2.8, with the majority of respondents reporting fair health (37.6%). The average age of both men and women was approximately 69, with a slightly higher share of women (55.6%). Approximately 12% of respondents were born abroad; nearly 73% of respondents were living with a partner at the time of the survey; nearly 15% were widowed. 18.6% of respondents had completed tertiary education, and the mean net household income (annual) was approximately €30,000, in a family with an average of 2.2 people. The values for our main independent variables of interest show that only 13.5% of respondents changed their lifestyle by increasing their physical activity levels, and most made this change in late adulthood.

6. Results: The importance of physical activity for self-reported health status among individuals aged 50 years and older

Regarding lifestyle changes, Figure 1 shows the adjusted predictions of increased physical activity for reporting good general health. The results of the null model indicate that individuals with better health are those who increased their physical activity levels for at least a year (compared to those whose levels remained unchanged). However, as shown in the full model, the inclusion of all the independent variables considered significantly reduced the health differences between these groups (from 15% and 20.5% to 13.8% and 15.2%, respectively).

Fig. 1- Adjusted predictions of increased physical activity with 95% confidence intervals for good general health

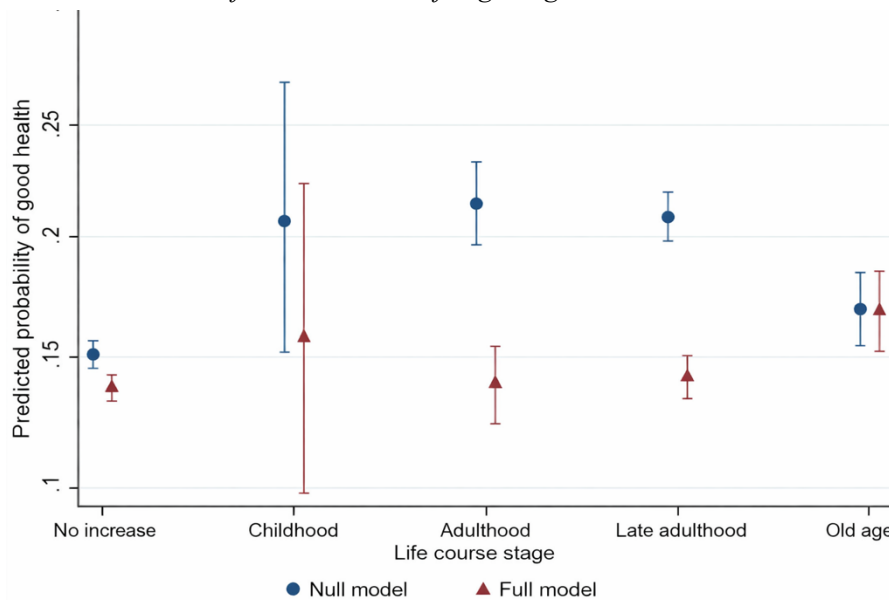


Source: data processing based on SHARE

Regarding the timing of change, that is, the life course stage at which increased physical activity occurred, Figure 2 plots the adjusted predictions of the life course stage at which physical activity was increased for respondents who reported good general health. As illustrated, the results of the null model are consistent with those in the previous section, as the probability of reporting good health is systematically higher for those who increased their physical activity levels. This is also reflected in the odds ratio in Table 1.

Somewhat surprisingly, after adding other determinants, the positive effects differ depending on the life course stage at which increased physical activity levels occurred (Figure 2 and Table 1). In fact, the only signs that did not change after including controls in the multivariate analyses are those corresponding to the last life course stage considered: old age. This means that, as confirmed by the full model, increasing physical activity levels is particularly important for reporting better health for those respondents who made this change later in life (after their 65th birthday). The full model also provides significant results for the late adulthood category, but the differences are less pronounced.

Fig. 2 - Adjusted predictions of life course stage of increased physical activity with 95% confidence intervals for good general health



Fonte: data processing based on SHARE

Finally, Table 1 shows the odds ratio of ordinal logistic regression models that consider individual characteristics, proxies for social determinants, current health and habits, and the welfare system.

Tab. 1 - Results of ordinal regression models (Null and Full) on self-reported health status (odds ratio). Main independent variable of interest: increased physical activity and life course stage at which increased physical activity occurred

Variable	Physical activity		Life stage	
	None	Complete	None	Complete
Increased level of physical activity	1.60***	1.13***	-	-
Life course stage (No increase)				
Childhood	-	-	1.65***	1.24

Adulthood/Young Adulthood	-	-	1.75***	1.05
Late Adulthood	-	-	1.68***	1.08**
Old Age	-	-	1.18**	1.32***
Individual Characteristics				
Age in 2009	-	0.97***	-	0.97***
Female	-	0.92***	-	0.92***
Foreign-Born	-	0.78***	-	0.78***
Marital Status				
(Lives with partner)				
Never Married	-	0.79***	-	0.79***
Separated/Divorced	-	0.91	-	0.91
Widowed	-	0.94	-	0.94
Educational Level				
(Primary or less)				
Secondary School	-	1.33***	-	1.33***
Secondary School	-	1.38***	-	1.38***
University	-	1.77***	-	1.77***
Net Household Income	-	1.00***	-	1.00***
Household Size	-	0.96**	-	0.96**
Social Determinants				
Involved in Social Activities	-	1.12***	-	1.12***
Help Given	-	0.98	-	0.98
Current Health and Habits				
Limited in Daily Activities	-	0.29***	-	0.29***
2+ Chronic Diseases	-	0.46***	-	0.46***
Body Mass Index (BMI)	-	0.98***	-	0.98***
Currently Smokes	-	0.77***	-	0.77***
Currently Drinks Alcohol	-	0.99	-	0.99
Welfare System				
(Mediterranean)				
Conservative	-	1.04	-	1.04
Social Democrat	-	1.70***	-	1.70***
Israel	-	1.99	-	1.99
<i>N</i>	16,546	16,546	16,546	16,546
<i>Pseudo-R2</i>	0.00	0.11	0.00	0.11
<i>Log-likelihood</i>	-24095.431	-21,574	-24,087	-21,574

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Reference category in brackets

The results show that women and foreigners tend to report lower levels of health than men and natives. As expected, the likelihood of feeling healthier decreases with increasing age, confirming the importance of socioeconomic and cultural status as main determinants of health (Clemente and García-Pereiro, 2020), given that the likelihood of reporting better general health increases significantly with increasing educational level.

Regarding current health and habits, the results are consistent with expectations. There is a strong negative association between reporting better general health and limitations in usual activities and suffering from more than two chronic diseases. Body mass index (BMI) and the variable identifying smokers are also negatively correlated with health status, both reducing self-perceived general health.

7. Concluding remarks

The analysis conducted with a life course perspective proved useful for understanding how variables that influence health accumulate and interact over the course of individuals' lives. Life course changes were particularly evident when focusing on people who increased their levels of physical activity. Overall, a positive effect of physical activity on the health of the population emerged, even when practiced at an older age (after age 65).

Furthermore, the data showed that the relationship between lifestyle and well-being can vary significantly among different groups of individuals. Women and people with a high level of education tend to benefit more from healthier eating habits than men and individuals with a lower level of education. This is consistent with numerous findings in the literature suggesting a direct relationship between education and good health. Indeed, several studies over the years have demonstrated that educated individuals have the ability to acquire and process health information favorably, developing a more appropriate capacity for aging in terms of well-being (Carter et al., 2019).

This variability indicates that health promotion policies must be sensitive to sociodemographic differences to be effective. Furthermore, the analyzed data also reveal a correlation between the limitation of social activities, due to impediments related to certain conditions and diseases, and health status.

In summary, the SHARE analysis suggests that individuals tend to add and remove healthy behaviors throughout their lives. However, not all changes are sustained long-term, which can reduce their potential impact on health. Therefore, it is essential to promote strategies that foster the maintenance of long-term healthy habits and ensure the pursuit of mental and physical well-being.

Authors contributions

C.C. was involved in the literature review, wrote the second, third, fourth and sixth paragraphs, and drafted the conclusions. P.C. was involved in the literature review and wrote the first, fifth and seventh paragraph.

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ORCID ID

Carmine Clemente  <https://orcid.org/0000-0003-1003-7678>

Paolo Contini  <https://orcid.org/0000-0002-2420-0360>

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Authors biographies

Carmine Clemente is an Associate Professor of Sociology, University of Bari, Italy.

Paolo Contini is an Associate professor of Sociology, IUL University, Florence, Italy.

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