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"I am active": effects of a program to promote active aging

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Background: Active aging involves a general lifestyle strategy that allows preservation of both physical and mental health during the aging process. "I am Active" is a program designed to promote active aging by increased physical activity, healthy nutritional habits, and cognitive functioning. The purpose of this study was to assess the effectiveness of this program.

Methods: Sixty-four healthy adults aged 60 years or older were recruited from senior centers and randomly allocated to an experimental group (n=31) or a control group (n=33). Baseline, post-test, and 6-month follow-up assessments were performed after the theoretical–practical intervention. Effect sizes were calculated.

Results: At the conclusion of the program, the experimental group showed significant improvement compared with the control group in the following domains: physical activity (falls risk, balance, flexibility, self-efficacy), nutrition (self-efficacy and nutritional status), cognitive performance (processing speed and self-efficacy), and quality of life (general, health and functionality, social and economic status). Although some declines were reported, improvements at follow-up remained in self-efficacy for physical activity, self-efficacy for nutrition, and processing speed, and participants had better nutritional status and quality of life overall.

Conclusion: Our findings show that this program promotes improvements in domains of active aging, mainly in self-efficacy beliefs as well as in quality of life in healthy elders.

Keywords: active aging, successful aging, intervention program, randomized controlled trial

Introduction

Population aging is taking place worldwide, and has major social, economic, and health consequences. While people are living longer lives almost everywhere, the prevalence of non-communicable diseases and disability is increasing as populations experience aging.[1]

The World Health Organization (WHO)[2] considers that "active aging" is a key concept allowing people to realize their own potential, living their own aging as a positive experience free of disability, with continuing opportunities for health, participation, and security, especially in aging societies like ours. The theoretical WHO model of active aging involves several determinants related to health and social services, economics, and the social and physical environment, as well as personal and behavioral factors embedded in cultural and sex contexts.

The concept of active aging has been developed both at the political and the individual level. Politically speaking, it has been proposed as a strategy that connects key policy issues (employment, retirement, health, and citizenship) with health, and suggests that active aging involves a general lifestyle strategy to preserve both physical and mental health during the aging process.[3] As a political strategy, there are population-based initiatives focused on promotion of active aging. Outstanding examples are "Active Ageing Australia",[4] "Active for Life",[5] the "Building Healthy Communities

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for Active Aging National Recognition Program",[6,7] and the "International Council on Active Aging";[8] in the European Union, 2012 was named as the "European Year for Active Ageing and Solidarity between Generations".[9]

However, aging is not only a population phenomenon, but an experience and an individual reality,[10] and even though active aging is well considered as a political strategy, at the individual level there is a lack of agreement in academic spheres regarding its concept and definition.[11,12] Currently, the most widely used terms are: "successful aging" based on Rowe and Kahn's model,[13,14] defined as free of disease and disability, high cognitive and physical functioning, and social engagement, and "healthy" or "optimal" aging. This conceptual disagreement becomes important when analyzing practical interventions.

Moreover, there are a number of intervention programs designed as strategies to promote active aging which are implemented in groups of individuals. These programs address different dimensions and strategies to promote active aging.

For example, "vital aging" is an individual active aging promotion program developed on the basis of four domains as determinant factors of active aging, ie, health, cognitive and physical functioning, affect and control, and social participation. It is implemented through three different modalities, ie, life, multimedia, and e-learning, and has been implemented in several editions, particularly in Spain. In general, the results show improving physical exercise, diet, improved memory, improved emotional balance, and better social relationships, and participants enjoyed more cultural, intellectual, affective, and social activities than before. It should be said that this program had different results among program versions.[15] Other interventions, also based on the WHO model, focused on health-promoting behaviors in the elderly, such as physical activity, nutrition, stress management, spiritual growth, interpersonal relationships, and health, dimensions considered to implement an educational program based on a successful aging approach. After 12 months, results for 464 elderly people showed that participants in the experimental group improved their awareness of facts about aging and better health behaviors.[16]

Other studies have implemented intervention programs at the individual level as strategies to promote "active", "successful", or "optimal" aging based on only one dimension, such as physical activity, emotional well-being, intergenerational relationships, or promotion of leisure activities. "The California Active Aging Community Grant Program" is a choice-based, telephone-assisted intervention model in different community settings designed to promote active aging through a training intervention to increase physical activity in older people. Data from 447 participants revealed favorable levels of program satisfaction and significant increases in physical activity.[17] Similarly, the "Program for Active Aging and Community Engagement" is also focused on promoting physical activity among the elderly. Two interventions, based on educational sessions or a prosocial behavior physical activity, demonstrated not only increased physical activity but also improvements in physical function and health-related quality of life after 12 months.[18]

On the other hand, some active aging programs have been designed based specifically on enhancing emotional well-being. Training strategies were based on life review techniques of specific positive events in non-depressed elderly. Results show that the experimental group had decreased depressive symptomatology, improved life satisfaction, and increased autobiographical memory.[19] According to other authors, successful aging strategies are reflected in interest in outdoor adventure activities (such as mountain biking and backpacking). These kinds of activities are considered as positive leisure experiences that include challenging physical activity, social engagement, and the natural environment. This community-based program was assessed using qualitative and quantitative data, and outcomes showed psychological and physical benefits through improvements in health and well-being.[20] Meanwhile "The Optimal Aging Program" emphasizes the importance of intergenerational relationships to promote active aging. This is a longitudinal mentoring program that pairs college students with older adults who are considered to be aging successfully. Its main goals are to provide students with an opportunity to develop a relationship with an older adult who continues to be active in her/his community and expand their concept of aging to include the reality of healthy, active older adulthood.[21]

The intervention program "I am Active" was designed in this study. It takes into account the theoretical model of the WHO, considering active aging as an outcome of different determinant factors that place people in profiles, that are more at risk or, on the other hand, are more favorable to age actively.[22] This program was an intervention on behavioral and personal dimensions of active aging. The strategies used were focused on promoting physical activity, better nutrition, and better cognitive function. "I am Active" considers that one of the main risks for aging is disability, which can be preventable by adequate intervention strategies[23] and healthy nutrition.[24] It also includes cognitive function,

based on the evidence that learning ability remains across old age,[25] improved cognitive function prevents cognitive impairment[26] and its evident progression to dementia,[27,28] considered to be one of the most disabling and expensive diseases of old age.[29]

The purpose of this research was to determine the impact on active aging of the intervention program "I am Active", which promotes physical activity, improved nutrition and cognitive function, as well as quality of life in people aged 60 years and older.

Materials and methods

Participants

Sixty-four older persons participated in this randomized controlled trial, which included baseline, post-test, and 6-month follow-up assessments. Participants were recruited from senior centers based on the following inclusion criteria: age 60 years or older, availability to attend sessions at least twice a week, willingness to participate in the program, and being literate. Exclusion criteria were: depressive symptomatology measured by the Spanish version of the Geriatric Depression Scale[30] and cognitive impairment determined by the Mini-Mental State Examination,[31] translated and validated in Mexico by age, sex, and education.[32]

The experimental group included 31 participants (attrition 13.9%) and 33 control participants (attrition 9.1%). The exclusion of both the study and analysis of those who did not complete the study did not alter the similarity between groups.

The intervention

"I am Active" is a program designed to promote active aging in persons aged 60 years and older by stimulating and improving physical activity, nutrition, and cognitive functioning, and seeks to promote better quality of life. Its specific objectives are to stimulate and improve physical activity, encourage and promote healthy eating behaviors, and improve working memory and processing speed.

The participants in the intervention group received a "user manual" specifically designed for this purpose. The program lasted 2 months, and consisted of 2-hour group sessions, held twice a week (ie, 16 sessions in total). The participants in the control group remained on a wait list and participated in the program once the study was completed, participating in the meantime in weekly social activities organized by the senior center.

All sessions were both theoretical and practical and had similarities in their structure. Eight lessons were focused on nutritional topics and eight sessions on cognitive functioning and were presented alternately (Table 1).

Each session started with reality orientation techniques, where participants were asked about orientating information, such as time (date, day of the week, time, season, current events), place (address, streets around the site, city, state, cardinal points), and person (name, age, who in the group were absent or present). This initial activity was called " daily news". The next 30 minutes of each session were focused on physical activity, where physical exercises were performed to work on muscular strength, balance, and mobility, and included a discussion of basic concepts concerning fact and fiction related to physical exercise, and benefits, types, and levels of intensity during exercises, preventive measures, and self-monitoring.

After the physical activity was finished, the trainer gave a general presentation of the session's content, presenting supporting evidence on each issue. In sessions related to nutrition, general concepts were reviewed, along with truth and fiction about nutritional facts, healthy proportions of each of the principle food groups and types of nutrients, and good eating behaviors. Later, practical exercises were undertaken, including how to plan healthier dishes on a budget, both on a daily basis and when choosing from a restaurant menu. In the sessions related to cognitive function, the trainer explained the theory of the changes that occur in cognitive aging, and memory and practical activities were developed based on information organization, visualization, or association

Table 1 Contents of the "I am Active" program

Session	Cognitive functioning	Session	Nutrition
1	I am Active introduction	2	About nutrition
3	Memory	4	Eating well
5	Changes in memory	6	Fruits and vegetables
7	Truth or fiction about my memory	8	Meat, fish and seafood
9	Exercises to improve my mind	10	Grains, breads and cereals
11	Types of memory	12	Milk, fats, oils and sweets
13	What is normal and what is not about my memory?	14	My own nutritional plan
15	My own plan to improve my memory	16	Compromise with my health

strategies to improve or activate both memory and attention as well as speed processing tasks like pairing images in the least possible time.

Both topics and practical exercises were included based on literature reviews, and chosen according to their effectiveness. At the end of each session, the trainer made some concluding remarks and homework was explained. As reinforcement, at the end of the intervention, each participant designed his or her own plan and set personal goals. Follow-up group sessions were held monthly during the next 6 months to enhance adherence efficacy.

Outcome measures of active aging

The experimental group and the control group were evaluated at baseline, post-test, and after 6 months of follow-up. Participants were assessed at home by a previously trained team comprising a psychologist and a dietitian. The following outcomes were assessed for all participants.

Physical activity

Balance, gait, and risk of falling were assessed using the Tinetti scale. A goniometer was used to measure the range of motion (in degrees) of the arms when moving sideways and forward, which is regarded as a measure of flexibility. Maximal grip strength (in kg) was measured in both hands using a hand-held dynamometer. Self-efficacy for physical activity was measured by estimating the strength of one's belief in the ability to perform regular physical activity on a scale from 0 ("I cannot do it") to 6 ("sure, I can do it"). [33]

Nutrition

Nutritional status was measured using the Mini-Nutritional Assessment.[34] Body mass index was calculated based on WHO parameters[35] using a digital bioimpedance scale (Tanita Inner Scan BC-558) for body composition. Height was measured using an anthropometric tape. Self-efficacy for improving nutrition was measured by estimating the strength of beliefs in the ability to do so, using a scale designed according to Bandura parameters.[33]

Cognitive function

Working memory was assessed by the Digit Span Backward Subtest[36] and processing speed by the Digit Symbol Subtest.[36] Self-efficacy to improve memory was determined using a scale designed especially for this purpose, according to Bandura parameters.[33]

Quality of life

A Spanish version of the Quality of Life Index[37] was used to assess general quality of life as well as its specific dimensions, ie, health and functioning, psychological/spiritual, socioeconomic, and family.

Statistical analysis

The data were analyzed using Statistical Package for the Social Sciences version 18 software (Chicago, IL, USA). The data were processed to obtain proportions, means, and their standard deviations. Changes in active aging domains and quality of life in the experimental and control groups were compared to evaluate the effectiveness of the "I am Active" program. Comparisons were performed by chi-squared test, the Student's *t*-test, and repeated measures analysis of variance. Accordingly, when reporting and interpreting intervention studies, a *P*-value can inform whether an effect exists but not reveal the size of it. The magnitude of the difference between groups, or effect size, was calculated as a main finding of the quantitative study, thus both the substantive significance (effect size) and statistical significance (*P*-value) are considered essential results to be reported.[38] In this study, Cohen's *d* was used to determine the effect size, which could be classified as small (d=0.2), medium (d=0.5), or large ($d \geq 0.8$).[39]

Results

The sociodemographic characteristics of participants in the experimental and control groups are shown in Table 2. The groups were comparable for age, sex, marital status, and

Table 2 Sociodemographic characteristics of the participants

Variable	Group		*P*-value
	Experimental n=31 (%)	Control n=33 (%)	
Age (years), mean ± SD	70.45±6.37	70.82±7.20	0.830[a]
Sex, n (%)			
Women	29 (93.5)	28 (84.8)	0.428[b]
Men	2 (6.5)	5 (15.2)	
Marital status, n (%)			
Married	12 (38.7)	11 (33.3)	0.654[c]
Not married	19 (61.3)	22 (66.7)	
Education (years), mean ± SD	5.55±3.12	3.97±3.28	0.054[a]
Diseases, n (%)			
Diabetes	7 (22.6)	9 (27.3)	0.665[c]
Hypertension	18 (58.1)	22 (66.7)	0.477[c]
Heart disease	6 (19.4)	4 (12.1)	0.504[b]

Notes: [a]Student's *t*-test; [b]Fisher's Exact test; [c]Pearson's chi-squared test.
Abbreviation: SD, standard deviation.

disease status. There was a trend of higher schooling in the experimental (5.55 years) group when compared with control group (3.97 years). The results of the intervention on the dimensions of active aging, ie, physical activity, cognitive functioning, and nutrition, are shown in Table 3.

The groups were similar for physical activity dimensions at baseline (all $P<0.05$), but by the end of the study, the intervention group had a lower risk of falls than the control group ($P<0.05$, $d=0.34$, indicating a small to medium effect size. However, at follow-up, a decline was observed and performance returned almost to their initial values.

The same pattern was seen in measures of balance, with participants in the intervention group improving in the post-test ($P<0.05$) compared with the control group (effect size $d=0.41$ considered as medium) but decreasing at follow-up to the baseline value. Similarly, the intervention group showed improved arm flexibility at post-test ($P<0.05$; effect size $d=0.65$, considered as medium to large); however, decreased performance was noted at follow-up. No change in risk of falls, balance, or flexibility was found in the control group. No effects of the program were seen in measures of gait and grip strength in either group.

Regarding self-efficacy for physical activity, the experimental group improved in the post-test ($P<0.01$) with a large effect size ($d=0.77$), and this improvement was maintained at follow-up, when the effect size was increased ($d=0.86$) compared with baseline. The control group showed a significant change in a negative direction at the post-test.

Regarding the cognitive functioning dimension, the experimental group showed significantly better performance on processing speed at the post-test ($P<0.001$), with a medium effect size ($d=0.50$), and this improvement was maintained at follow-up ($P<0.001$), with an effect size of $d=0.44$. The control group showed no significant changes. No significant changes in working memory performance were found in either group. Self-efficacy for improving memory showed a significant improvement in the pre-test/post-test comparison ($P<0.001$) in the experimental group, with a large effect size of $d=0.89$, but declined during follow-up. The control group showed no significant changes.

Improvements were observed for the nutritional dimension of active aging in the experimental group, where participants showed greater self-efficacy for nutrition after intervention ($P<0.01$), with a medium to large effect size ($d=0.62$), and although there was a small decline at follow-up, the improvement was maintained ($P>0.05$), with an effect size of $d=0.33$. No significant changes were noted in the control group.

Table 3 Outcome measures of active aging dimensions, ie, physical activity, cognitive functioning, and nutrition (experimental n=31, control n=33)

Variable	Group	Baseline	Post-test	*d*	Follow-up	*d*
Risk of falls	Experimental	26.29 (5.04)	28.06 (5.31)*	0.34	27.46 (4.55)	0.24
	Control	26.77 (5.63)	26.87 (5.87)	0.02	27.83 (4.33)	0.21
Balance	Experimental	20.42 (3.32)	21.84 (3.68)*	0.41	20.39 (3.24)	0.01
	Control	20.30 (3.32)	20.33 (2.63)	0.01	20.67 (2.70)	0.12
Gait	Experimental	5.87 (2.30)	6.23 (2.14)	0.16	6.90 (1.95)	0.48
	Control	6.47 (2.82)	7.23 (1.83)	0.33	7.17 (2.05)	0.29
Flexibility	Experimental	146.26 (22.69)	158.03 (13.49)*	0.65	147.71 (21.57)	0.07
	Control	141.83 (23.97)	141.67 (20.73)	0.01	134.83 (38.6)	0.22
Grip strength (right)	Experimental	21.16 (5.27)	20.76 (4.99)	0.08	20.12 (5.16)	0.20
	Control	20.66 (7.44)	20.46 (6.96)	0.03	20.03 (5.79)	0.10
Grip strength (left)	Experimental	18.75 (4.87)	19.38 (4.21)	0.14	18.77 (4.75)	0.00
	Control	19.26 (7.17)	18.96 (6.72)	0.04	19.50 (6.74)	0.03
Self-efficacy for physical activity	Experimental	4.48 (1.61)	5.58 (1.23)***	0.77	5.53 (0.84)***	0.86
	Control	5.50 (0.90)	4.90 (1.32)*	0.54	5.30 (1.68)	0.16
Working memory	Experimental	1.90 (0.74)	2.13 (0.99)	0.27	2.06 (0.77)	0.21
	Control	1.83 (0.79)	1.60 (0.77)	0.29	1.70 (0.75)	0.17
Processing speed	Experimental	26.06 (9.99)	31.16 (10.34)***	0.50	30.52 (10.21)***	0.44
	Control	19.87 (9.22)	17.83 (9.18)	0.22	19.41 (8.74)	0.05
Self-efficacy for improving memory	Experimental	4.65 (1.64)	5.71 (0.73)***	0.89	4.84 (1.03)	0.14
	Control	5.20 (1.47)	4.93 (1.43)	0.19	4.77 (1.07)	0.34
Self-efficacy for nutrition	Experimental	4.61 (1.76)	5.52 (1.18)**	0.62	5.10 (1.22)*	0.33
	Control	5.13 (1.38)	4.77 (1.65)	0.24	4.80 (1.40)	0.24

Notes: *$P<0.05$, **$P<0.01$, ***$P<0.001$; *d* is the effect size compared with baseline measure. The data in the Baseline, Post-test and Follow-up columns are shown as mean (standard deviation).

Table 4 Nutritional variables of active aging (experimental n=31, control n=33)

Variable	Pre-test, %		Post-test, %		Follow-up, %	
	Experimental	Control	Experimental	Control	Experimental	Control
Nutritional status						
Normal nutritional status*	54.8	57.6	71.0*	42.4	71.0*	56.7
Risk of malnutrition	45.2	42.4	29.0*	57.6	29.0*	43.3
Body mass index*						
Underweight	0.0	3.3	0.0	0.0	0.0	0.0
Normal	16.1	0.0	16.1	0.0	19.4	0.0
Overweight	29.0	56.7	29.0	56.7	29.0	66.7
Obesity class I	32.3	33.3	32.3	36.7	25.8	29.6
Obesity class II	12.9	6.7	12.9	6.7	16.1	3.7
Obesity class III	9.7	0.0	9.7	0.0	9.7	0.0

Note: *$P<0.05$ comparison between experimental and control group.

Both groups were similar for nutritional status at baseline, with 54.8% of the experimental group and 57.6% in the control group having normal nutritional status and 45.2% and 42.4%, respectively, being at risk of malnutrition (Table 4). After the intervention groups were statistically different, in the experimental group decreased the proportion of participants at risk of malnutrition (29%) while increased those with normal nutritional status (71%) and maintained at follow-up. The proportion of controls with normal nutritional status decreased to 42.4% ($P<0.05$) in the post-test but increased back to baseline values at follow-up. However, differences between the experimental and control groups were statistically significant ($P<0.05$) at the post-test and follow-up.

There was a statistically significant difference in body mass index between the two groups at baseline ($P=0.03$), with a higher proportion of overweight participants in the control group, but no changes were observed at the post-test or follow-up assessments.

As shown in Table 5, the experimental group reported improvements in overall quality of life at the post-test assessment ($P<0.01$), with a medium to large effect size ($d=0.63$), which was maintained at follow-up ($P<0.01$, $d=0.63$). Specifically, it was found that participants in the program showed improvements after the intervention (post-test) in quality of life dimensions, health, and functionality ($P<0.01$, $d=0.55$) and social and economic status ($P<0.05$, $d=0.59$), with medium effect sizes of $d=0.55$ and $d=0.59$, respectively, which declined at follow-up to small effect sizes ($d=0.38$ and $d=0.27$). No significant changes in psychological/spiritual or family-specific quality of life dimensions were found in the experimental group. The control group showed no significant changes in any measure of quality of life.

Discussion

The findings show in general that the "I am Active" program promotes improvements in the dimensions of active aging (physical activity, nutrition, and cognitive function) and quality of life in healthy older adults. Specifically, greater effects were observed immediately after the intervention, but some of these decreased at follow-up.

Several studies have focused on identifying factors that contribute to successful lifestyle change. Planning changes in complex behaviors such as diet and physical activity involves a complex and elaborate process of specific

Table 5 Quality of life, outcomes in general and specific domains (experimental n=31, control n=33)

Variable	Group	Baseline	Post-test	*d*	Follow-up	*d*
Quality of life overall	Experimental	25.02 (3.28)	26.80 (2.37)**	0.63	26.67 (1.99)**	0.63
	Control	25.30 (3.33)	24.75 (3.17)	0.17	25.19 (3.00)	0.03
Health and functionality	Experimental	23.79 (4.82)	25.99 (3.21)**	0.55	25.27 (2.95)	0.38
	Control	23.84 (3.80)	23.70 (3.83)	0.04	23.71 (4.54)	0.03
Psychological/spiritual	Experimental	27.15 (3.15)	28.36 (2.29)	0.44	28.12 (2.88)	0.32
	Control	27.51 (3.43)	26.42 (3.57)	0.31	26.31 (2.72)	0.39
Socioeconomic	Experimental	24.87 (3.25)	26.79 (3.27)*	0.59	25.77 (3.50)	0.27
	Control	25.44 (3.96)	24.77 (3.98)	0.17	25.99 (3.45)	0.15
Family	Experimental	25.54 (4.27)	26.84 (2.91)	0.36	26.10 (4.45)	0.13
	Control	25.74 (5.04)	24.92 (4.21)	0.18	25.35 (3.01)	0.10

Notes: *$P<0.05$, **$P<0.01$; *d* is the effect size compared with baseline measure. The data in the Baseline, Post-test and Follow-up columns are shown as mean (standard deviation).

decision-making.[40] Studies have also shown that goals are easier to reach if they are specific and not too broad or general, and there should be sufficient material resources to develop them. In this study, at the end of the intervention, the goals proposed in the physical activity dimension were self–imposed, meaning that they were probably not well planned, which caused that the participants did not followed their own goals. This should be considered in future interventions to achieve better results related to physical activity. Perhaps these types of activity should be performed with other people and not alone. Generally speaking, it has been found from different theoretical models that changes in health behaviors that build up a lifestyle is a process, not an event, and most people relapse at the some point in time.[41]

Regarding cognitive functioning, it is important to note that participants in our program generally had a low level of education (less than primary school), so did not pursue intellectual activities like reading or other cognitively stimulating activities throughout life. The change that the program "I am Active" proposes requires a greater effort for such people and the results might not be seen immediately.

The study program had a larger effect on self-efficacy indicators, which could be explained on the basis of theory. People's beliefs about their efficacy can be instilled and strengthened in four ways, ie, mastery experience, vicarious experience, social persuasion, and judgment of their own psychological state.[42,43]

Through the intervention, the participants experienced personally and directly that they were capable to attain physical activity, good nutritional habits and improved memory, this mastery experience constitutes the most powerful source of self-efficacy. Moreover, the group modality used in the program allowed the participants to observe their classmates making an effort and being successful in their activities (vicarious experience), and this is considered to be the second most active way of developing self-efficacy. Further, the participants in this program were verbally persuaded to aim for active aging (social persuasion); this is the third way of developing self-efficacy but requires a greater effort to develop it. Finally, promotion of positive mood during the program (judgments of their psychological states) probably influenced the participants' judgment about their personal efficacy, and this represents the fourth way of strengthening self-efficacy beliefs.

The program design considered all four sources of self-efficacy when attempting to influence the development of these beliefs in the experimental group. Meanwhile, talking about the control group, it cannot be discarded that they were mainly exposed to the social persuasion or the promotion of positive moods related to their capabilities as part of senior center activities. However, it is difficult to communicate high efficacy beliefs exclusively through these channels, because unrealistic encouragement is rapidly offset by self-doubt and disappointing results of one's efforts when is not followed by a performance accomplishment (a mastery experience), which the participants in the control group did not have access to.[43]

Perceived self-efficacy plays a critical role in human functioning. Beliefs concerning efficacy influence people's thoughts, the course of action they choose to pursue, their challenges and goals, their commitment to the action and the amount of effort invested, the results they hope to achieve for their efforts, the magnitude of their perseverance while facing barriers, resistance to adversity, the level of stress and depression they experience when facing a demanding environment, and the achievements reached.[42]

In this sense, the finding that older adults who participated in the "I am Active" program considered themselves to be more capable of physical activity, to develop good nutrition habits, and improve their memory, is an important predictor of their ability to do so, due to the sense of self-efficacy it can even be considered precedent of behavior.[44] Although self-efficacy for improving memory performance declined during follow-up.

With regard to cognitive functioning, the program had a large impact on processing speed that remained during the follow-up measure, also considered as a mechanism that explains cognitive decline in aging,[45] and slowing of processing speed is generally acknowledged as a hallmark of aging.[46] Nevertheless, cognitive decline is not an inevitable outcome of aging, and efforts to improve processing speed through targeted interventions should be implemented due to its relationship not only with cognitive impairment[46] but also with physical functioning.[47]

An important effect of the program that was still present at follow-up was an improvement in overall quality of life. This component involves greater satisfaction in the areas considered important to people's lives. Quality of life is considered a key goal in both individual and social welfare, especially in the elderly.[48] The "I am Active" program assists older adults to achieve this goal.

"I am Active" had a positive impact on health, psychological components, and cognitive performance; these have been found to be the top three factors explaining active aging, as well as social relationships, biobehavioral components, and

personality, and could be used to guide specific community-based and individually-based interventions.[22]

Active aging is still an issue in development, not only conceptually but also related to the assessment tools and designing interventions. In this sense, it is important to develop valid and reliable scales for assessing active aging in older adults. These tools are needed not only in the community but also in clinical practice settings.[49]

The limitations of this study include use of self-reported measures, with their well-known bias in terms of social desirability and acquiescence. However, this does not mean that self-reported data are invalid, just that these potential limitations should be taken into account when analyzing and interpreting the data.[50] Sample size might be also a limitation. The generalization of our results may be limited by the inclusion criteria and the characteristics of the participants; specifically, our participants were literate and attending senior centers, and comprised mainly women.

Active aging at a political level must involve other strategies focused on individuals in order to successfully overcome the challenges faced by our aging population. In this sense, "I am Active" is the first approach to propose a concrete individual strategy to promote active aging according to the WHO conceptual framework, and should be seen as an opportunity to reinforce the program its self, addressing its weaknesses and strengths in future implementations.

Disclosure

The author reports no conflicts of interest in this work.

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