Does the offer of a supervised program improve community-dwelling older adults' engagement in physical activity? A restrospective study

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Does the offer of a supervised program improve community-dwelling older adults' engagement in physical activity?

Abstract

Introduction: Notwithstanding the existence of robust public health recommendations, older adults' participation in physical activity (PA) remains inadequate. The identification of conditions conducive to the fostering of commitment is of crucial importance if the health outcomes of ageing populations are to be improved. The objective of this retrospective study was twofold: firstly, to ascertain whether older adults residing in senior residences participated in a supervised PA program, and secondly, to explore the factors influencing adherence to the program.

Method: A 14-week adapted PA program was offered to 174 older adults living in three municipal senior residences in Limoges, France. Participation in the study was voluntary. Data pertaining to adherence, physical activity levels (Dijon Physical Activity Score), decisional balance, physical fitness (Senior Fitness Test), and body composition were collected prior to and following the intervention. Non-participants were invited to complete a short questionnaire to identify reasons for non-engagement.

The results of the study are as follows: Among the 174 residents (mean age = 81.7 ± 10.2), 109 expressed interest and 50 engaged in the program. The predominant reasons for non-engagement included perceived health limitations and a lack of motivation. While the program did not result in a significant increase in daily physical activity levels, it led to improvements in several physical fitness parameters and body composition. However, adherence levels were found to be lower than expected (median = 1.4 sessions/week), suggesting challenges in sustaining engagement.

Conclusion: This study underscores the discrepancy between expressed interest and actual engagement in PA among older adults, even in circumstances where program are offered free of charge and readily accessible. Despite the fact that the intensity and frequency of participation were limited, meaningful functional improvements were yielded. In order to promote PA among older populations, it is necessary to address the motivational and perceptual barriers that hinder sustained commitment.

Keywords: Physical activity, Older adults, Engagement, Adherence, Community-dwelling, Senior residences

Introduction

Current physical activity (PA) guidelines for individuals aged 65 and older recommend engaging in aerobic exercise equivalent to 30 minutes of moderate-intensity PA five times per week, or 20 minutes of high-intensity aerobic PA three times per week, as well as two or more sessions of resistance training involving major muscle groups and balance-challenging exercises (World Health Organization, 2010). It is also recommended to minimize sedentary behavior, reduce recreational screen time, and establish healthy sleep habits (Chodzko-Zajko et al., 2009; Ross et al., 2020). An active and healthy lifestyle plays a crucial role in reducing the risk of motor and cognitive decline (Ngandu et al., 2022). The maintenance of such active behavior is also crucial, as partial or complete cessation of PA results in a significant loss of the benefits gained (Leitão et al., 2019; Ross et al., 2020; Sakugawa et al., 2019). Despite these recommendations and the well-known benefits of physical activity, the engagement of older adults, as illustrated by the number who participate in PA (Fredricks et al., 2004), remains insufficient. According to the findings of Hallal et al., (2012), 55% of individuals over 60 do not meet the WHO's recommendations. Shaked et al., (2021) revealed that 70% of a sample of 1799 Israeli adults over 65 did not meet the PA recommendations. Similar results were observed by Carlson et al., (2010), who found that 69.8% of Americans aged 65 and older surveyed in the National Health Interview Survey (NHIS) did not meet the recommendations.

Older adults face various obstacles that limit their engagement in physical activity, including physical limitations, a lack of motivation, and a low perception of their abilities (Franco et al., 2015; Kilgour et al., 2024). Limited access to exercise programs or appropriate equipment further exacerbates these challenges (Franco et al., 2015). These barriers make engagement to PA particularly difficult for older adults, requiring specific strategies to overcome them. Researchers and healthcare professionals recommend, for example, replacing sedentary time (ST) with light physical activity, such as standing or taking a few steps (Lohne-Seiler et al., 2014; Ross et al., 2020). This approach, which requires neither specific equipment nor infrastructure, is more accessible than structured exercise. It can easily be integrated into daily activities, such as shopping or standing while folding laundry, and could promote the engagement of older adults in PA and the adoption of more active long-term habits (Brown et al., 2020; Rejeski et al., 2013).

Moreover, personalized counseling and feedback during exercise have proven effective in maintaining older adults' engagement in PA (Nicolucci et al., 2021). Finally, the implementation of permanent and accessible PA programs within older care facilities helps overcome environmental barriers and supports older adults in achieving recommended health goals (Opdenacker et al., 2011; Touboul et al., 2011).

The primary objective of this retrospective study was to examine engagement to PA among older adults residing in senior residences. Secondarily, we evaluated the level of participation in the sessions. Additionally, we examined the changes in PA levels and sedentary time before and after the program, as well as the impact of the intervention on participants' physical performance and body composition. We investigated the reasons for the non-engagement in the proposed program.

Methodology

Study design and population

This is a retrospective study following a 14-week PA program offered to community-dwelling adults aged 65 and older. The PA program was provided to all individuals living in senior residences in Limoges, France, following ministerial recommendations aimed at promoting physical activity in this type of facility. Senior residences are social care facilities designed for older adults aged 65 and over who remain independent in daily living activities. The provision of private accommodations is complemented by a range of collective services, including meal provision, social activities, security monitoring, and coordination with home-based care services. These services are offered within a safe environment that is designed to promote active ageing and prevent functional decline. Senior residences are positioned as an intermediate housing solution between traditional home living and medicalized care facilities like nursing homes. They contribute to the diversification of housing options for seniors and are part of public policies aimed at supporting ageing in place. In Limoges, the municipality has three senior residences for older adults (n=34 in the Cervières-Imbert residence, n=73 in the Durkheim residence, and n=67 in the Casseaux residence). The total number of residents was therefore 174. The study inclusion criteria were: (1) being over 65 years old, and (2) having a minimum score of 4 of 6 on the Iso-Resource Group (GIR) (Coutton, 2001). The GIR is a classification system that divides individuals into 6 levels based on their degree of

dependence. This classification is determined using the national evaluation grid Autonomy, Gerontology, Iso-Resource Groups (AGGIR), which measures the degree of physical and psychological dependence of an older adult (Coutton, 2001). GIR 1 corresponds to those who are dependent, while GIR 6 indicates full autonomy in daily activities (Gervais et al., 2009).

Ethical Considerations

This study is based on a retrospective analysis of data collected by the municipality of Limoges as part of a local experimentation conducted in senior autonomy residences. In accordance with French legislation, this research does not fall under the scope of the Jardé Law (Decree No. 2016-1537), and therefore does not require submission to an ethics committee. Nevertheless, in line with ethical research standards and data protection regulations, all participants were individually informed about the intended secondary use of their data. A procedure of non-opposition consent was applied, and only the data of individuals who did not express objection were included in the analysis. Furthermore, this study complies with the General Data Protection Regulation (GDPR - EU Regulation 2016/679). All data were anonymized prior to analysis, and no personally identifiable information was used or shared.

Experimental design

The whole study lasted 19 weeks, divided it is into several steps (Table 1).

Table 1 : Study timeline

	Step 1: Implementation	**Step 2: Initial assessment (T0)**	**Step 3: Intervention**		
			Pre-assessment (T1)	**PA program**	**Post-assessment (T2)**
	2 weeks	1 week	1 week	14 weeks	1 week
Nature		Individual session(s)	Individual session(s)	Group or individual sessions	Individual session(s)
Consent	✓				

Eligibility criteria	✓		
Participants who chose to engage in the program			
Socio-demographic information	✓		
EQ5D5L	✓		✓
F- DBSE	✓		✓
DPAS	✓		✓
Armband		✓	✓
SFT		✓	✓
Body composition		✓	✓
Participants who chose not to engage			
No engagement questionnaire	✓		✓

Note:

EQ5D5L: European Quality of Life 5 Dimensions 5 Level Version questionnaire; DBSE: French version of Decisional Balance Scale for Exercise DPAS: Dijon Physical Activity Score ; SFT: Senior Fitness Test ; Body composition: weight, body mass index, fat and muscle body mass.

- **Step 1: Implementation**

During this preliminary phase, all residents were informed about the impending implementation of the PA program in the following weeks. A preliminary survey was conducted to identify individuals who expressed particular interest in the program. The residents were invited to express their expectations regarding their level of interest in the program, with a view to ascertaining whether they anticipated a positive interest or no interest at all.

- **Step 2: Initial assessment (T0)**

After this initial step, the socio-demographic information of all residents who expressed interest in the PA program was recorded, including sex, age, level of education, and smoking status (T0) (Table 1). They were also invited to complete the following questionnaires:

- The “Assessment of decisional balance for regular physical exercise”, a French adaptation and validation for the Decisional Balance Scale for Exercise (DBSE) (Eeckhout et al., 2013; Marcus et al., 1992). This self-reported questionnaire consists of 16 items assessing the perceived positive (‘for’) and negative (‘against’) aspects of engaging in regular physical activity. Each item is rated on a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The final score is obtained by subtracting the average score of the 'against' items from the average score of the 'for' items. A negative final score in this case represents a predominance of the negative (‘against’) aspects over the positive (‘for’) aspects of engaging in regular physical activity.

- The Dijon Physical Activity Score (DPAS) (Robert et al., 2004), a standardized measure for assessing the level of PA (score out of 30, where the range from 0 to 10 corresponds to very sedentary individuals, while the range from 21 to 30 corresponds to very active individuals).

- The European Quality of Life 5 Dimensions 5 Level Version questionnaire (EQ-5D-5L), a standardized measure of health status developed by the EuroQol Group. The EQ-5D-5L instrument includes a short descriptive system questionnaire, with each item rated on a scale from 1 to 5, where 1 indicates no difficulty and 5 indicates extreme difficulty. It also features a visual analogue scale (EQ5D-VAS) ranging from 0 to 100, where 100 represents the best imaginable health state, and 0 represents the worst imaginable health state (Rabin & Charro, 2001).

The residents who expressed interest in the PA program, attended the informational session, but chose not to engage in the activity (group Non-Participants (NP)), were asked to complete a short survey consisting of 4 questions to identify the reasons for their non-engagement :

Question	**Possible answers**
	a) I don’t feel the need for it

Why did you choose not to participate in the physical activity program?	b) I am not motivated c) I am afraid of it d) I don't feel capable e) I don't have the time f) I think my health status won't permit me g) I feel too old to engage in physical activity h) Other (please specify) :
Do you practice a PA in your daily living?	Yes / No (end of the questionnaire).
What types of physical activities do you practice?	a) walking b) running c) cycling d) gardening e) housework f) others
Please also specify the frequency of each activity per week.	a) 1-2 times per week b) 2-3 times per week c) 3-4 times per week d) every day

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- **Step 3: PA program**

The PA program was offered freely to the residents allowin them to engage at their own discretion. The participants were included in the group 'engaged in the PA program' (EPAP). This program lasted for 16 weeks: one week of pre-assessment (T1), 14 weeks of training, and one week of post- assessment (T2) (Table 1).

All the residents EPAP performed three evaluations:

- Assessment of the level of daily PA: the record of 3 consecutive days was done using a wearable sensor (Armband Sensewear ®, Bodymedia ®) according to the recommendations of Hart et al.(Hart et al., 2011)

- This sensor has already been used in similar studies and populations (Wang et al., 2020). It provides the daily total energy expenditure (tEE), step count (SC), and time spent lying (SLD). The data were analyzed using the SenseWear®

Software 7.0, and the results are presented as a daily tEE, SC and SLD average.

- Senior Fitness Test (SFT) (Fournier et al., 2012): a test battery to measure the components of the physical condition of older adults. This test is made up of 6 items: chair stand and arm curl tests for lower and upper limbs strength (30sec), chair sit and reach and back scratch for lower and upper limbs flexibility, six minutes walking test (6MWT) for cardiovascular endurance and Time up-and-go (TUG) for power, speed, agility, and dynamic balance.

- The body composition was assessed through a bio-impedance platform/balance (Tanita MC 780 MA), obtaining the individuals' weight, body mass index (BMI), as well as fat and muscle body mass (Wilczyński et al., 2017).

An adapted PA specialist was specifically assigned to each senior residence to organise and supervise the PA program. The program comprised two distinct types of sessions: individual sessions and group sessions. In each residence, three group sessions per week were scheduled and open to all interested residents. In order to maximise accessibility and accommodate personal preferences or constraints, individual sessions were also available. Residents who expressed a preference for individualised attention rather than participating in group activities, or who were unable to attend during the designated times, were given the option to schedule an individual consultation with the PA specialist. All participants were encouraged to attend three sessions per week, irrespective of the format. The duration of these group sessions was approximately one hour, and they comprised the following elements: an introductory phase, a warm-up involving cardiovascular and musculoskeletal mobilisation, a main workout consisting of endurance and strength training exercises – either in a playful or more conventional format (e.g. walking at varying paces, bodyweight resistance exercises) – and a cool-down phase with stretching. Individual sessions were structurally analogous, yet were of a more concise nature, with a duration of between 30 and 40 minutes, and were customised to align with the specific requirements and scheduling constraints of each participant.

Statistics analysis

Shapiro’s test was carried out to assess the distribution of the data. Comparisons of

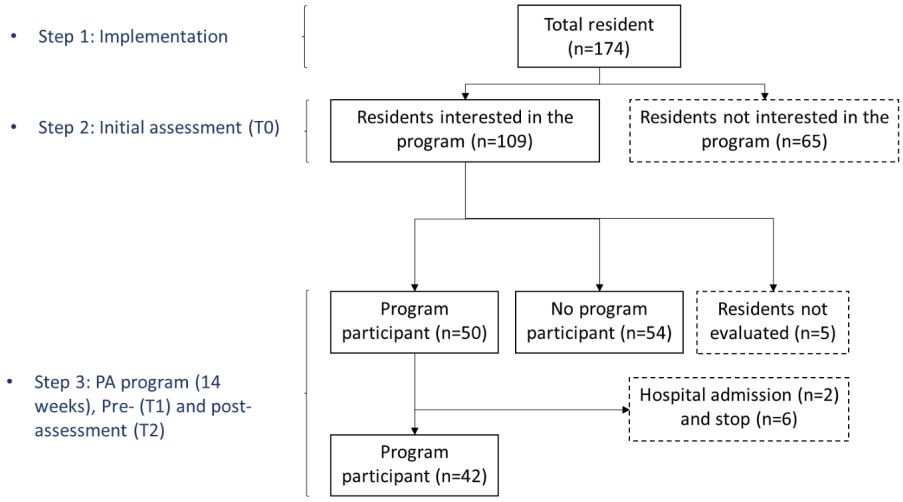
distributions and frequencies were analysed using the Chi-square test (χ^2), considering age groups (over 80 and under 80) and gender. Parametric (T-test) and non-parametric (Mann-Withney/Wilcoxon) paired-sample tests were carried out to examine changes in the parameters measured (SFT parameters, body composition, tEE, SC, and SLD). Analyses were conducted for the entire group and subgroups of individuals aged under 80 and aged 80 and more. The statistical analysis was performed using the software Jamovi, with a p-value set at 0.05.

Results

Adherence to PA Program and Participant's characteristics

The flow diagram is shown in Figure 1.

Figure 1: Flow diagram at the different step of the study



Of 174 total residents, 109 were interested in the free PA program within their residence (mean age 81.7 ± 10.2 years). Sixty-five residents were not interested in the intervention and did not wish to complete the questionnaires. Among the 65 residents who were not interested by the program, 39 reported that they were already sufficiently physically active, particularly through regular walking. Of the remaining 109 residents, 5 attended the informational meeting but chose not to participate in the assessments. Finally, 50 residents chose to engage in the free PA program (28.7% of the original 174) and were included in the EPAP group, while 54 residents opted out of the activity program but agreed to answer our questionnaire and were included in the NP group. The profiles of

these 104 residents who accepted to answer or participate are presented in Table 2.

Table 2: Socio-demographic information and questionnaire results.

		Resident interested in the program (n=104)	Non-participating subject (n=54)	Participating subject (n=50)
Sex	Men (n)	44	34	10
	Women (n)	60	20	40
Age	< 80 (n)	35	21	14
	≥80 (n)	69	33	36
Smoke	Yes (n)	12	9	3
	No (n)	92	45	47
Education				
	No diploma (n)	23	15	8
	Primary school certificate equivalent (n)	60	27	33
	Secondary School certificate equivalent (n)	6	1	5
	High school diploma equivalent (n)	5	1	4
	Higher education (n)	5	5	0
	Professionnal certificat (n)	5	5	0
EQ5D-VAS score out of 100 (mean ± SD)		62.1±19.3	59.9±22.1	64.4±16.2
• **EQ5D-Mobility**				
	Level 1 (n)	61	30	31
	Level 2 (n)	43	20	23
• **EQ5D-Self Care**				
	Level 1 (n)	83	40	43

	Level 2 (n)	18	10	8
	Level 3 (n)	3	0	3
	• **EQ5D-Usual Activities**			
	Level 1 (n)	68	33	35
	Level 2 (n)	33	17	16
	Level 3 (n)	3	0	3
• **EQ5D-Pain**				
	Level 1 (n)	26	13	13
	Level 2 (n)	63	33	30
	Level 3 (n)	15	4	11
	• **EQ5D- Depression**			
	Level 1 (n)	36	15	21
	Level 2 (n)	44	24	20
	Level 3 (n)	24	11	13
Score DBSE out of	(mean ± SD)	0.67±1.01	0.44±1.08	0.91±0.89*
Score DPAS out of 30 (mean ± SD)		17.3±5.9	16.1±7.03	18.5±4.2

EQ5D5L: European Quality of Life 5 Dimensions 5 Level Version questionnaire; DBSE: French version of Decisional Balance Scale for Exercise DPAS: Dijon Physical Activity Score ; SFT: Senior Fitness Test ; Body composition: weight, body mass index, fat and muscle body mass.

* $p<0.05$ between non- participating subject and participating subject.

The reasons for non-engagement in the seniors' program for the NP group are presented in Table 3.

The characteristics of both groups (EPAP and NP) were similar, except for the DSBE score, which was significantly higher in the participating individuals (p=0.02). The main reasons given for not joining the program were poor health, lack of motivation, and feeling unable to participate. The Chi-square analysis indicated a difference between residents' decisions to join the program based on gender ($p < 0.001$), with women being more inclined to participate in the proposed program. No differences were found across age groups (p=0.24).

Table 3: Raisons for not adhering to the PA program and levels of PA in daily life.

Not-adhering individuals (n= 54)	n (%)
Reason for not adhering the PA program	
I do not feel capable	29 (53.7)
- *Impaired general health, pain, fatigue, and visual difficulties*	26 (48.1)
- *Objective health status - upcoming examination (surgery or imaging)*	2 (3.7)
- *Unspecified.*	1 (1.9)
Lack of motivation	16 (29.6)
Lack of interest in the proposed program	9 (16.7)
Does not feel the need.	6 (11.1)
I feel too old to practice a physical activity	3 (5.6)
Fear of falling	1 (1.9)
Does not see any benefits.	1 (1.9)
0ther organizational aspects	5 (9.3)
- *I don't have the time*	2 (3.7)
- *Not the right time - recent arrival at the residence.*	2 (3.7)
- *Does not want to leave his/her dog alone.*	1 (1.9)
The practice of a PA in everyday life	
No	15 (27.8)
Yes	39 (72.2)
Frequency	
Everyday	15 (27.8)
2-3 times a Week	18 (33.3
1-2 times a Week	3 (5.6)
Once a Week	3 (5.6)
Type of activities practiced	
Walk	39 (72.2)

Housework	13 (24.1)
Gardening	2 (3.7)
Other	4 (7.4)
Gym	1 (1.9)
Running	1 (1.9)
Petanque	1 (1.9)
Swimming	1 (1.9)

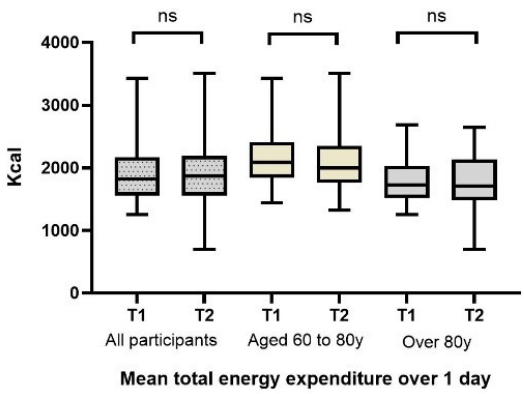
A total of 149 sessions were carried out, including 114 group sessions in the 3 municipal residences (n=39 in the Cervières-Imbert residence, n=37 in the Durkheim residence, and n=38 in the Casseaux residence), and 35 individual sessions at the request of participants in the Cervières-Imbert (n=8) and Casseaux (n=27) residences. The median number of sessions per resident over the 14 weeks was 19 (IQR = 20). The median number of sessions per week was 1.40 (IQR = 1.83).

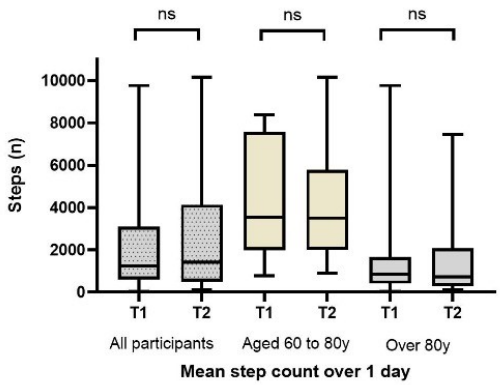
Finally, 42 residents (24.3% of the original 174) continued the program to the end, 6 residents chose to stop the program and 2 were hospitalized (Figure 1).

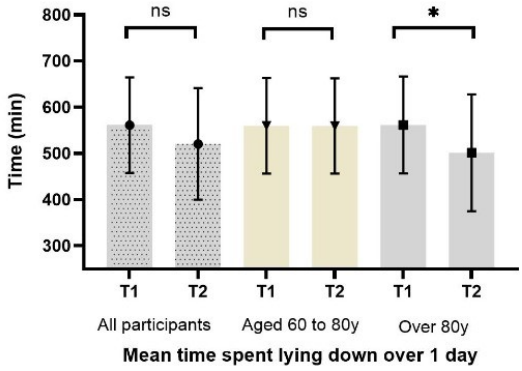
Daily PA level and program benefits

For the resident engaged in the PA program, the comparisons of the daily PA level (tEE, SC, and SLD) between T1 and T2 are shown in Figure 2. Except for the meantime of lie down for the participants over 80 years old (p<0.05), none of these parameters showed a significant difference.

Figure 2: Comparisons of the daily PA level (tEE, SC, and SLD) between T1 and T2 for the total population, people aged 60 to 80 and those over 80

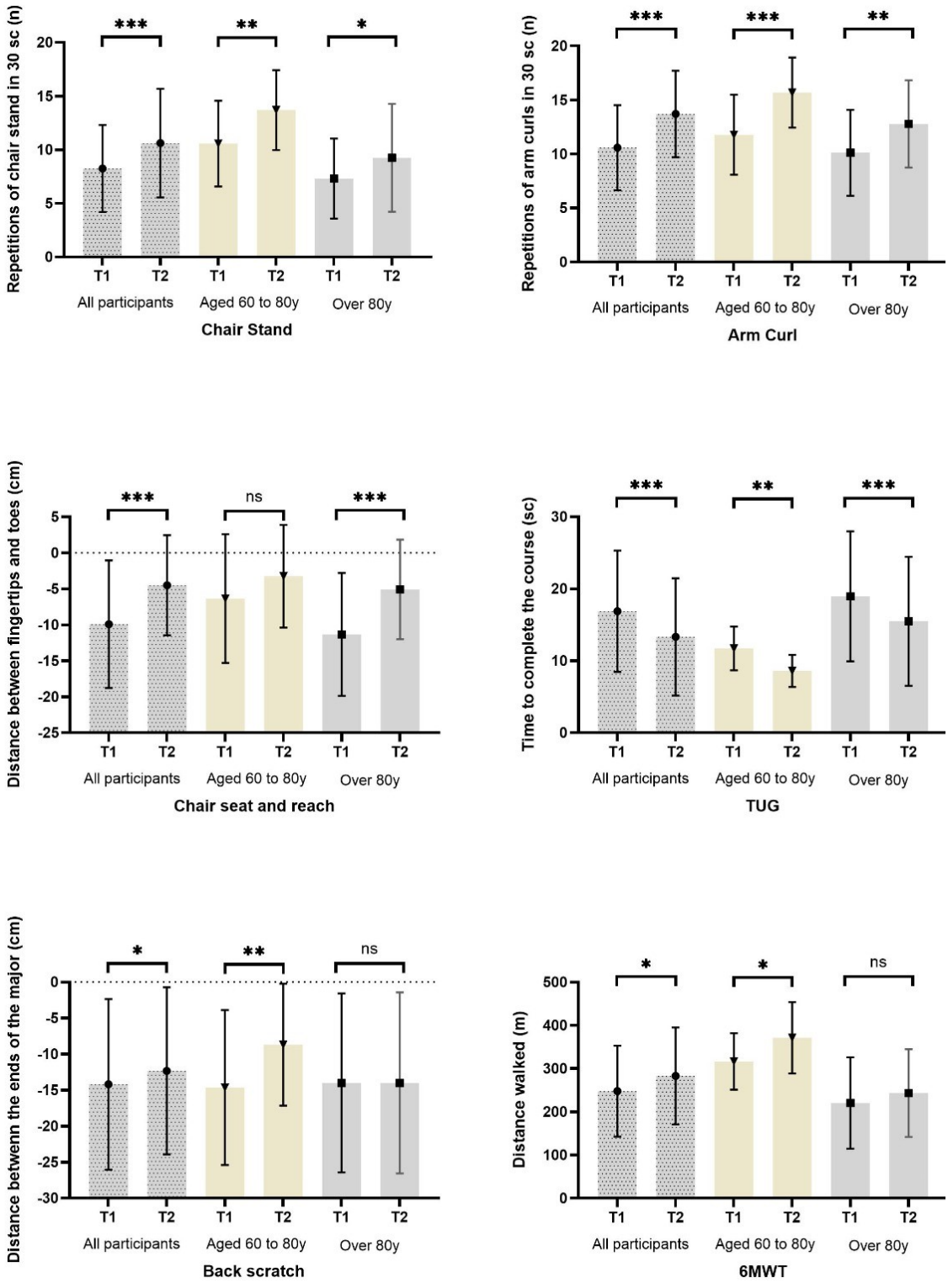






The SFT performances at T1 and T2 are presented in Figure 3. Overall performance significantly improved from T1 to T2. Our result shows a significant increase of the score of chair stand (T1 = 8.24±4.5; T2 = 10.60±5.07, $p<0.001$), arm curl (T1 = 10.60 ± 3.94; T2 = 13.70 ± 4.01, $p<0.001$), chair sit-and-reach (T1 = -9.91 ± 8.85; T2 = -4.50 ± 6.95, $p<0.001$), TUG (T1 = 16.9 ± 8.43; 13.3 ± 8.14, $p<0.001$), back scratch BS (T1 = -14.2 ± 11.9; -12.3 ± 11.6, $p=0.013$) and 6MWT (T1 = 248 ± 105; T2 = 283 ± 112, $p=0.024$). However, these results are nuanced by age group. Specifically, there is no significant difference in the chair sit-and-reach test, back scratch test, and 6MWT for individuals under 80 years old.

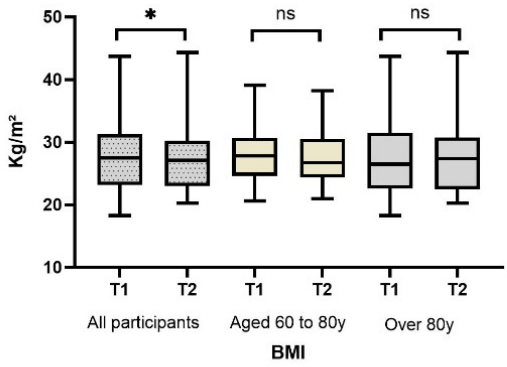
Figure 3: Comparisons of the SFT performance (Chair stand, arm curl,Chair seat and reach, TUG, Back Scratch, 6MWT) between T1 and T2 for the total population, people aged 60 to 80 and those over 80

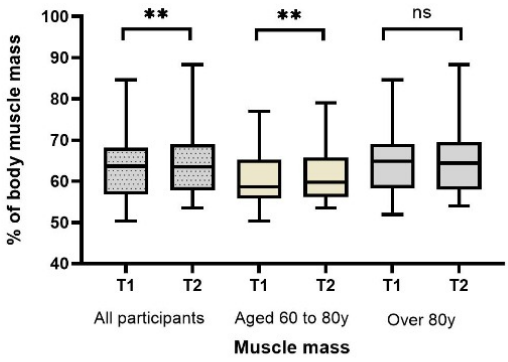


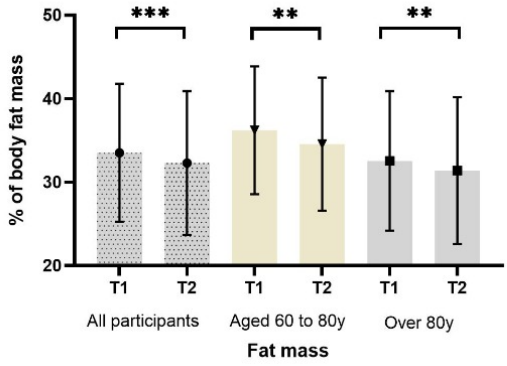
Regarding body composition (Figure 4), we observed a significant decrease in the percentage of body fat mass (T1 = 33.5 ± 8.26; T2 = 32.5 ± 8.60, p<0.001); body muscle mass (T1 = 63.6 [56.9; 67.6]; T2 = 63.5 [57.8; 68.5], p=0.044), and BMI (T1 = 27.50 [23.2; 30.8]; T2 = 27.10 [23.1; 30.1], p=0.040). However, our subgroup analyses did not

reveal significant differences in muscle mass percentage in individuals aged 80 and older, before and after the program.

Figure 4: Comparisons of the body composition (BMI, muscle mass, fat mass) between T1 and T2 for the total population, people aged 60 to 80 and those over 80







Finally, our results revealed no significant differences in DPSA and DBSE scores before and after the program.

Discussion

This study aimed to examine engagement to PA among older adults living in care facilities. Despite an informational session and the implementation of a free PA program, our results indicate that 50 residents adhered to the PA program, representing 28.7% of the original 174 participants. The main reasons for non-adherence among the participants who did not join the program were examined.

Engagement to physical activity

Our results reveal that the primary obstacle to participating in the program is that individuals do not feel capable of engaging in physical activity due to their health status, which aligns with the findings of Franco et al., (2015) and Kilgour et al., (2024). For people with health problems or physical limitations, PA can be perceived as physically and morally demanding and can be considered painful and intolerable (Babakus & Thompson, 2012). Many people report unpleasant sensations such as muscle pain and shortness of breath (Chen, 2010). Additionally, motivation, which is partially related to the apathy described by Beck et al., (2010) represents a second major obstacle to engagement among older adults. The transition from occasional to regular PA requires an important reduction in the constraints and more consideration of the benefits of PA (Eeckhout et al., 2013). ransitioning from occasional to regular physical activity requires not only a significant reduction in constraints but also a better appreciation of the benefits of physical activity, as noted by Eeckhout et al. (2013). Despite implementing strategies such as informational sessions and improving access to physical activity opportunities, our results show that these measures have not been sufficient to increase participant engagement. This suggests that more frequent and proactive solicitation may be necessary to encourage engagement and overcome the identified obstacles.

Physical activity level

The free physical activity program did not alter the overall activity habits of older adults, except for a significant reduction in sedentary time among individuals aged 80 and older. After the program concluded, most participants did not continue the activities. This outcome is consistent with existing literature, which indicates that the presence and quality of instructors significantly influence physical activity behavior. Without instructors, exercise was perceived as risky and potentially discouraging, which likely contributed to the discontinuation of the activities (Franco et al., 2015; Kilgour et al., 2024). It would be advisable to offer this free program permanently to maintain a level of PA in line with recommendations. Residential professionals should also routinely encourage older adults living at home in the community to increase their PA levels, particularly by selecting activities they enjoy the most (Burton et al., 2014).

Program benefits

The PA program led to a notable improvement in residents' physical abilities, as assessed by the SFT. Improvements also included increased muscle mass and reductions in BMI and body fat. However, no improvements were observed in the back scratch test and the 6-Minute Walk Test (6MWT) for individuals aged 80 and older, despite their initial scores below normal values (Steffen et al., 2002). Similarly, our results did not show a significant increase in muscle mass. This may be attributed to the lower participation rate of seniors in the program compared to the proposed frequency (1.4 sessions per week versus 3). Nonetheless, the program contributed to maintaining initial performance levels. Overall, the program facilitated rapid and effective improvements. These results are consistent with existing literature, which shows that training programs combining strength, endurance, balance, and flexibility exercises within the same session over 8 to 24 weeks lead to improvements in maximal strength, oxygen consumption, static/dynamic balance, and mobility, ultimately enhancing functional capacity and quality of life The maintenance of capacities can be considered a benefit in the special context of ageing.

Limits and perspectives

A key limitation of the present study is its retrospective design. The data were collected as part of a local experimentation led by the City of Limoges and its senior services department, in collaboration with the University of Limoges. Consequently, the study is subject to certain methodological biases inherent to real-world, non-randomised initiatives. Nevertheless, it facilitated access to valuable field data, thereby offering pertinent insights within the context of contemporary strategies promoting physical activity among older adults. The findings regarding the program's effectiveness and engagement should be interpreted with caution, as the absence of a control group for comparison limits our ability to establish a causal effect. Moreover, over 60% of non-adherents self-report as active, engaging in walking activities at least 2 to 3 times a week. It would have been valuable to compare PA levels between program participants and non-participants. Additionally, measuring PA over a one-week period would have been beneficial, as daily activity levels can vary significantly. Finally, individuals who have always been physically active are more likely to adhere to the program. In contrast, those who have never engaged in regular PA are more hesitant to start now. It would be valuable

to investigate individuals' past activity levels to better understand their adherence to the program and their engagement in PA following the program (Kluge & Ann, 2002).

Conclusion

Although participants' activity levels remained below the WHO's recommendations, the program still yielded significant benefits, particularly in improving participants' physical capabilities. These results underscore the importance of implementing physical activity programs within residential settings. Such initiatives can play a crucial role in supporting residents, even if the recommendations are not fully met. To maximize their effectiveness and promote better long-term adherence, it is essential to continue refining these programs by incorporating participant feedback and adapting approaches to their needs and preferences.

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