JOIN4JOY

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D.7 RESULTS OF THE COMMUNITY PROGRAMME EVALUATION

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Table of acronyms

2MWT	2-minute walk test
FSiE	Fundació Salut i Envelliment
GP	General practitioner
ISES	Istituto Europeo per lo Sviluppo Socio Economico
NA	Neighbourhood association
NH	Nursing home
SDU	Syddansk Universitet
SPPB	Short physical performance battery
PHC	Primary healthcare centre

Introducing Join4Joy

Join4Joy is a methodological approach to promote physical activity among people 65 years of age and older, specifically but not exclusively for those with fewer opportunities to participate. These may include people from low socio-economic status, cultural minorities, physical limitations (e.g. mobility restrictions) and cognitive impairment.

Scientific evidence underscores the importance of social inclusion and enjoyment as critical factors in promoting and facilitating the uptake and long-term sustainability of physical activity programmes (1,2). Adopting a comprehensive and participatory framework, the Join4Joy project has developed and piloted person-centred educational and interventional actions aimed at increasing physical activity and reducing sedentary behaviour.

An adaptable framework has been developed, and feasibility has been studied to place the focus on enjoyment and social inclusion, to overcome barriers, ensure equitable access to exercise and promote active ageing lifestyles from a biopsychosocial perspective.

The project was part of an Erasmus+ Sport programme, co-funded by the European Commission (years 2022-2025).

This report presents some of our main findings so far and provides additional resources for researchers, clinicians and people in general with an interest in promoting physical activity in the older adult population.

Background and rationale

Insufficient physical activity (PA) and excessive sedentary behaviour (SB) among older people are linked to social, cultural, economic, educational barriers, as well as barriers related to disability, health problems and discrimination for different reasons. Adults who have low PA levels and tend to spend more time in a sitting position as part of their main daily activities, self-report bad and very bad general health state (2).

Current PA and SB programmes for older people in the community and long-term care frequently fail to reach individuals with low functional and cognitive abilities, as well as minorities or people of deprived socioeconomic backgrounds. Instead of the traditional method of focusing on health, focusing on enjoyment is an approach that could increase behaviour change and maintenance, by sharing with participants activities they might find more meaningful.

Therefore, the Erasmus+, Join4Joy project aimed to promote PA and decrease SB by co-creating and testing a framework that places the focus on enjoyment and social inclusion. Following the same Join4Joy framework, two separate arms were differentiated: Join4Joy Community, for individuals living in family homes and Join4Joy -NHs, specifically for older adults living in assisted residential settings or nursing homes (NHs). This deliverable focuses on the experiences of the Join4Joy-Community arm, which conducted pilot interventions in Denmark, Italy and Spain. A separate deliverable can be found with results of the Join4Joy -NH interventions.

The initial co-creation process resulted in the development of 9 principles, which were incorporated in later stages (eg., education, intervention) of the project. Join4Joy ground principles can be seen in Figure 1.

Figure 1. Join4Joy approach to PA for older adults Ground Principles.

More information is available on our website: [www.join4joy.eu.](http://www.join4joy.eu)

Join4Joy for adults living in the community

The Join4Joy community setting model was developed and implemented in three countries: Italy (city of Alessandria), Spain (Barcelona), and Denmark (Odense). The common framework for the three community set-ups was based on four key aspects:

- Enrolling older adults with no-to-little experience with PA and currently sedentary, by focusing especially on individuals with higher access barriers.
- Including older adults independently of their degree of physical function and readiness to change.
- Co-creating sessions, according to participants' needs and preferences.
- Placing the focus on enjoyment and tailoring.

Each country adapted and implemented the intervention framework to the cultural and socio-economic context and the specific target population, thus developing a unique set-up. The country coordinators, in collaboration with key local agents, developed the strategy for the recruitment and implementation of the interventions. While all three countries shared a common objective of integrating the most underrepresented population groups into PA interventions, each site defined a distinct target population:

- In Italy, the intervention focused on older citizens residing in a low socio-economic area, characterised by high level of sedentary behaviour, social isolation or at risk of social isolation.
- In Spain: target population comprised older people living in subsidised housing, often experiencing limited mobility and self-report loneliness.
- In Denmark: the intervention targeted older adults belonging to diverse cultural and ethnic minority backgrounds.

Join4Joy Goals

The goals of the Join4Joy -C intervention were:

- To assess participant uptake, attendance and retention.
- To evaluate the feasibility of delivering the Join4Joy sessions in different settings.
- To explore the acceptability and satisfaction levels among participants and staff.
- To collect data to inform the planning of a future larger-scale trial.

Ethics

The study is registered at ClinicalTrials.gov (NCT06100835).

The Research Ethics Committee of the University of Vic (UVic-UCC) granted a favourable report (internal code nr. 233/2022) for the conduction of co-creation processes, on 3 October 2022. The intervention protocol received a favourable report by the same Committee, with internal code nr. 282/2023, on 26 June 2023, providing coverage for the pilot intervention in Alessandria, Italy and Barcelona, Spain (after ammendment on July 13th, 2023, with same internal code). Additional approval was granted for Spain by the Animal and Human Research Ethics Commission at Universitat Autònoma de Barcelona, on February 21st, 2023 under project code CEEAH6186.

The application for the ethical approval was filed to the Regional Committees on Health Research Ethics for Southern Denmark (case number 20232000 – 126). The Committee assessed that the project could not be considered health science research with an obligation to report to the Health Research Ethics Committee System, as found in Committee Act Article §14, paragraph 1 and thereby there was no need for further actions.

All participants were provided signed informed consent forms and were free to withdraw from the intervention at any time. In order to maintain transparency and gather valuable feedback, when dropping out, we kindly requested the participant to provide us with the reason for discontinuation, which they could do on a voluntary basis. This information was deemed relevant for our records and project analysis, as it helped us assess the acceptability of the programme and to make the necessary adjustments.

PILOTS: target groups, recruitment pathways and key personnel

Common structure of the intervention for the three intervention sites

All three sites implemented a 12-week supervised intervention with a once-a-week frequency (1-hour). The inclusiveness framework of the Join4Joy aimed at minimising exclusion criteria and participants were only excluded whether they were not recommended by heir GPs to take part in physical activity programmes or deemed ineligible by the trainers (e.g. cognitive impairment).

The locations of the intervention varied according to each country, and, where possible, following the participants' wishes and needs. Occasionally, the interventions used different set-ups (e.g. Denmark: community centre, and swimming pool). The specific set-up of the intervention locations varied remarkably (e.g. highly equipped sports facility with strength training devices, community centre with ad hoc equipment such as elastic bands, papers,

ropes, clothes chairs). Priority was given to accessibility and acceptance of the facilities by the participants, for example, in terms of minimizing transport and distance from the participants' homes. Additional details are provided according to the intervention sites here below.

All the facilitators in the intervention undertook the Join4Joy education course.

Where possible, facilitators conducted one-to-one interviews with the end-user prior to the start of the intervention to collect preferences and expectations from each participant.

Spanish pilots

Target groups

Frail and highly inactive citizens with low socio-economic profile.

Rationale

Frail and highly inactive citizens with low socio-economic profile

The selected target group for the Spanish set-up was frail/pre-frail older citizens.

Two locations were selected Cerdanyola del Vallès and Sabadell, based on the following considerations: selected for the implementation of the interventions:

1) **Cerdanyola del Vallès** was chosen because it is the city where the main offices of the Fundació Salut i Envelliment (FSiE, project partner) are located, thereby simplifying the allocation of logistical and human resources. Furthermore, the trainer responsible for delivering the sessions was also based in this city, which facilitated her mobility for both evaluations and the intervention itself.
2) **Sabadell**, located in close proximity to Cerdanyola, was chosen due to FSiE's long-standing partnership with the municipal government, which enabled smoother coordination and institutional support.

Both municipalities were strategically selected not only for their geographical proximity to FSiE's headquarters but also because the organization already had a network of local contacts in these areas due to prior collaboration in other projects. The overarching objective was to engage individuals with frailty profiles, low socioeconomic status, and/or low levels of physical activity practice who would benefit most from the intervention. To reach these target groups, it was crucial to collaborate with local entities that could assist with the recruitment process. Conducting the interventions in locations where a network of stakeholders was already established made this process significantly easier.

Recruitment

Sabadell

In Sabadell an initial meeting was held with the Head of the Life Cycle Department at the Sabadell City Council, where it was agreed to recruit participants through the director of the Alexandra complex. This complex consists of publicly subsidized rental housing, including units reserved for low-income. The individuals living in these homes are over 65 years old, can live independently, and require housing due to socioeconomic factors.

Figure 2. Location of organizations in Sabadell, Spain.

The director of the Alexandra Complex recruited a total of 13 individuals who were not engaged in physical activity or participating in municipal programmes. An initial informational session was held for all potential participants referred by the complex director. Refreshments, such as juice and cookies, were provided, and the intervention goals and evaluation process were explained.

After meetings with stakeholders and the potential participants, a room was reserved at the Ponent Library in Sabadell, located next to the Alexandra Complex. This location was chosen for its accessibility for individuals with disabilities and its proximity to the Alexandra complex, as some participants had severe mobility issues (wheelchairs or walkers).

The recruitment process was successful, and all referred individuals were interviewed. However, a significant number of them did not begin the intervention or discontinued attendance after a few sessions.

Cerdanyola del Vallès

In Cerdanyola del Vallès, an initial meeting was held with the Councilor for Social Action, Housing, Health Promotion, and Legal Services, who supported the project and facilitated the reservation of a space at the Fontetes Neighbourhood Association (NA) for the

intervention. The possibility of referring users from social services was also discussed; however, it was ultimately not possible to establish timely contact with the municipal social worker responsible for these referrals.

A meeting was also held with the director of the Canaletes-Fontetes Primary Healthcare Centre (PHC) to present the project and request referrals for patients with frailty profiles. The PHC's physiotherapist was responsible for recruiting and referring these individuals. All referred participants had previously been part of a frailty group led by the same physiotherapist. Her involvement, as a trusted professional, and her occasional participation in the sessions greatly contributed to participant adherence.

Figure 3. Location of organisations in Cerdanyola, Spain.

Finally, a meeting was held with the board of the Fontetes NA to explain the project and confirm the date and time of the reservation of the space. The association provided the room free of charge for the intervention.

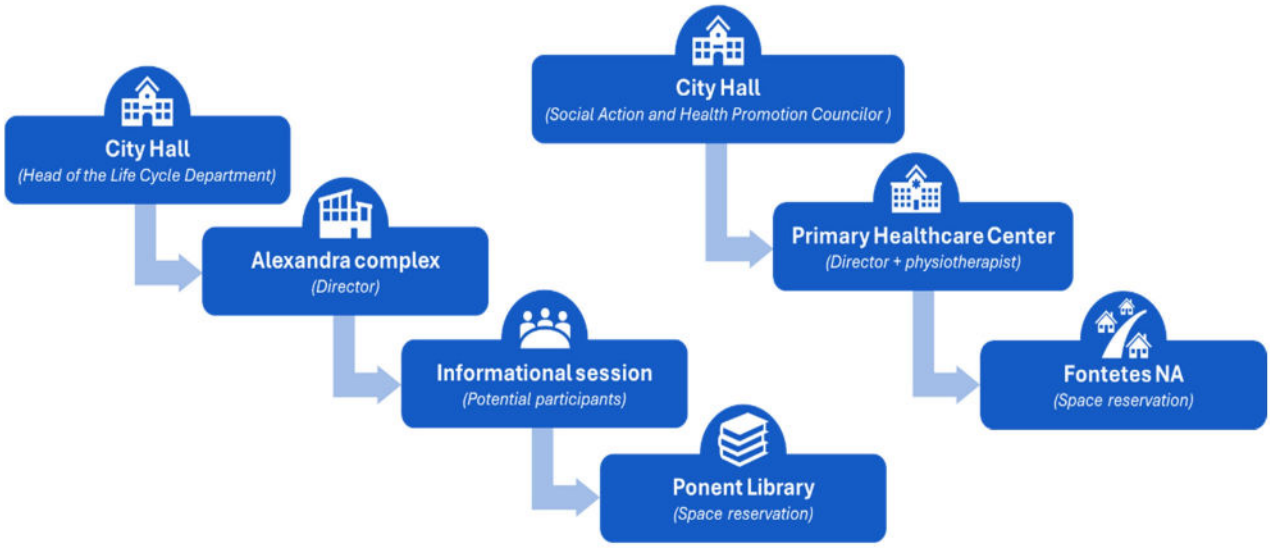

Figure 4. Recruitment Steps in Cerdanyola del Vallés, Spain.

To reduce dropout rates at both locations, a contact number was provided, and participants were asked to notify in case of absence. Follow-up calls were made to those who missed the sessions. However, this process was not systematically implemented. A more structured approach could have potentially reduced dropout rates.

LGTBI community

The project established an agreement with a local organization dedicated to supporting LGTBI individuals and one of the few that includes older adults among its members. Due to difficulty in recruitment, the collaboration was discontinued. However, involvement of this target group is encouraged for future initiatives.

Involved personnel

As outlined in previous sections, recruitment and site selection in community-based interventions involve a complex process that requires the engagement of numerous stakeholders. For this reason, it is essential to acknowledge and highlight the contribution of all individuals who participated in the various phases of implementing the Join4Joy pilot interventions in community settings (see Table 1a and 1b).

Table 1a. Personnel Involved in Sabadell, Barcelona, Spain.

Who: affiliation/background	**How: contribution, role in the project**
Head of the Life Cycle Department at the Sabadell City Council	**Intervention:** Provides support for the implementation of the intervention
Director of the Alexandra complex	**Recruitment:** Identifies and refers participants with frailty profiles who do not regularly engage in physical activity or group-based programmes. **Evaluation:** Reserves rooms for pre- and post-evaluations at the Alexandra Complex and the library. **Intervention:** Coordinates with the library to provide spaces for intervention.
Occupational Therapist and Researcher at FSiE	**Recruitment:** Supports participant recruitment and scheduling calls. **Evaluation:** Conducting pre- and post-intervention assessments.

	Intervention: Main trainer.
Library Receptionist	**Intervention:** Facilitates access to the library and provides the projector.
Psychologists at FSiE with experience in intervention with older adults.	**Evaluation:** Conducting pre-intervention assessments
University Students	**Evaluation:** Conducting post-intervention assessments. **Intervention:** Co-facilitator who has designed and led some sessions and provided support in others.

Table 1b. Personnel Involved in Cerdanyola, Barcelona, Spain.

Who: affiliation/background	**How: contribution, role in the project**
Councilor for Social Action, Housing, Health Promotion, and Legal Services	**Intervention:** Provides support for the implementation of the intervention and reservation of the space
Director of the Canaletes-Fontetes Primary Care Centre	**Recruitment:** Authorised the participation of her centre in the project.
Physiotherapist at Canaletes-Fontetes Primary Care Centre	**Recruitment:** Identifies and refers participants with frailty profiles. **Evaluation:** Coordinates with FSiE to provide spaces for evaluations. **Intervention:** Co-facilitator who has designed and led some sessions and provided support in others.
Occupational Therapist and Researcher at FSiE	**Recruitment:** Supports participant recruitment and scheduling calls. **Evaluation:** Conducting pre- and post-intervention assessments. **Intervention:** Main trainer.
Psychologists at FSiE with experience in intervention with older adults	**Evaluation:** Conducting pre-intervention assessments.

Member of the Fontetes Neighborhood Association board.	**Evaluation:** Coordinates with FSiE to provide spaces for evaluations **Intervention:** Coordinates with FSiE to provide spaces for the intervention
Bar owner at the Neighborhood Association	**Evaluation and intervention:** Provides access keys to the association's rooms
Students	**Evaluation:** Conducting post-intervention assessments. **Intervention:** Co-facilitator who has designed and led some sessions and provided support in others

Italian pilots

Target groups

Older adults from low socio-economic area.

Rationale

We chose to implement the Join4Joy program at the Valenza Senior Centre (Centro Anziani Valenza) due to the specific socio-economic characteristics of the area.

Valenza is a town in Northern Italy, historically known for its goldsmith and jewellery industry. While this industrial vocation has brought economic development, it has also led to a population that is generally more focused on manual and artisanal work, with lower levels of formal education and limited exposure to structured health promotion or physical activity initiatives.

The neighbourhood where the senior centre is located is recognized by local social services as an area of social disadvantage, with many older adults experiencing isolation, economic hardship, and limited access to preventive health services.

The senior centre itself plays a key role in the social life of the area, serving as a trusted space where older residents feel welcomed and supported. However, in the aftermath of the COVID-19 pandemic, the centre experienced a significant decline in participation, as many older adults became more isolated and hesitant to return to communal spaces. The Join4Joy project provided a valuable opportunity to reactivate the centre's social function, encourage people to come back together, and create new energy around movement, connection, and wellbeing.

The positive atmosphere and established community ties allowed us to maximise the impact of the Join4Joy approach, both in terms of physical health and social re-engagement.

Recruitment

Before launching the Join4Joy program, ISES established direct contact with the management of the Centro Anziani Valenza. Two meetings were held to present the project and align on objectives, methods, and expected outcomes.

The centre showed great openness and enthusiasm, offering full support for the initiative. It also hosted the initial focus group, which helped to better understand the needs, preferences, and expectations of potential participants, and to adapt the activities accordingly.

Participants in the Join4Joy program were then selected through targeted local outreach strategies adapted to each pilot phase.

- For Pilot 1, recruitment efforts were particularly successful thanks to the publication of articles in Il Piccolo, the main local newspaper of the province of Alessandria, which helped generate curiosity and trust in the initiative. This media exposure was supported by the active involvement of the local parish, which played a key role in mobilizing the community, especially older adults already engaged in neighbourhood activities. Social media channels were also used to broaden the message and reach potential participants beyond the parish network.
  Thanks to these methods, we recruited 13 participants for the pilot.

- For Pilot 2, participant engagement was primarily driven by word-of-mouth and the continued use of social media. Positive experiences shared by those who had taken part in the first pilot helped build a strong reputation for the program within the community, making it easier to attract new participants. These informal networks proved especially effective in reaching individuals who may not regularly interact with institutional communication but are receptive to recommendations from peers and friends.
  Thanks to these methods, we recruited 12 participants.

Involved personnel Recruitment

As outlined in previous sections, recruitment and site selection in community-based interventions involve a complex process that requires the engagement of numerous stakeholders. For this reason, it is essential to acknowledge and highlight the contribution of all individuals who participated in the various phases of implementing the Join4Joy pilot interventions in community settings.

Table 2 Personnel Involved in Alessandria, Italy.

Who: affiliation/background	**How: contribution, role in the project**
Director of the Centro Anziani Valenza	**Recruitment/Focus groups**: She has provided initial support to host the initial meetings and the 2 Focus Groups with end users.
Priest and Il Piccolo journalists	**Recruitment**: the parish and the local newspaper supported ISES in the recruitment process
ISES, coordinator	**Focus groups**: moderator in the 2 Focus Groups with end users and in the 1 with professionals. **Recruitment**: Supports participant recruitment and scheduling calls. **Assessment**: support in the tests administration and assessment (pre-post for both pilots). Intervention: Presence at each sessions, in both pilots, to offer assistance and support to the participants.
ISES, researcher	**Focus groups**: support to the moderator in the 2 Focus Groups with end users and in the 1 with professionals. **Assessment**: Support in the analysis of the tests results.
Trainer	**Recruitment**: Supports participant recruitment and scheduling calls. **Assessment**: Conducting pre- and post-intervention assessments. **Intervention**: Main trainer.

Danish pilots

Target groups

Ethnic minorities of older adults.

Rationale

Since mid-60s Denmark started a process of voluntary labour migration due to the economic boom and labour shortages. Danish companies thereby recruited "guest workers" primarily from Turkey, Pakistan, and ex-Yugoslavia. The main group was from Turkey and the Danish government signed a labour agreement with several countries which allowed immigration for workers relatively unrestricted (1965-1973).

This process ended in 1973 with the global oil crisis and labour migration came to an end allowing immigration primarily for family reunification and asylum seekers.

In the late 1970s and 1980s political and War-related Migration becomes relatively more prevalent. (e.g Iran (1979–1980s). Unlike during the first large wave of migration, these are political refugees, not economic migrants.

Similar to many European countries, Denmark is experiencing an aging population that increasingly includes immigrants from non-Western countries. Remarkably, demographic reports indicate that older adults of non-Western background in Denmark are living longer than their native Danish counterparts. This is indeed a positive development.

Regardless, despite the increase in longevity of non-Western older immigrants is a positive development, it also brings new challenges for the sustainability of the Danish healthcare system. Key challenges include:

Chronic Disease Burden: Longer lives inevitably mean immigrants will live to ages where chronic diseases are prevalent. Many immigrants face high rates of conditions like type 2 diabetes, cardiovascular disease, and musculoskeletal disorders as they age. For example, non-Western migrants in Denmark have a higher incidence of diabetes than native Danes, and even a higher mortality risk from diabetes complications has been observed in some groups. Likewise, studies have found that refugees (a subset of immigrants) initially had higher risks of multimorbidity (having multiple chronic illnesses) compared to Danes.

As this population of older adults grows, Denmark will see more immigrant patients with complex, long-term conditions requiring ongoing care (diabetes management, hypertension, heart disease, etc.).

Culturally tailored education on chronic disease and life-style factors associated with greater incidence of chronic diseases (e.g. physical inactivity and diet modifications that respect cultural preferences) may be needed to prevent and control such conditions.

An important linguistic and cultural barrier includes Danish language proficiency. Despite having lived decades in Denmark, many first-generation older immigrants have limited Danish language proficiency and may not fully understand the healthcare system. Language barriers make it harder for patients to communicate symptoms and for providers to explain diagnoses and treatments. A recent trial highlighted that many immigrants lack knowledge of “how to navigate the healthcare system” due to language and information gaps. Consequently, immigrant patients may misunderstand medical advice or not seek care until an issue becomes urgent. These barriers can reduce the quality of care if not addressed.

To overcome these barriers, healthcare providers increasingly use professional medical interpreters and written materials in patients’ native languages. An extraordinarily important aspect includes the healthcare utilization patterns. Immigrants seem to use health services differently from ethnic Danes, which challenges the alignment of “care” with “needs”. A relatively recent investigation indicates that non-Western immigrants in Denmark have higher utilization of acute and specialty health services but lower use of preventive care. After adjusting for health status, immigrants were found to use emergency rooms, hospitals, and specialist doctors more frequently than Danes, yet they made less use of preventive services such as cancer screening programmes (3). There is an ongoing need to educate and integrate immigrant older adults into appropriate healthcare pathways.

One of the main challenges is adapting the healthcare system to be culturally competent for a diverse ageing population. A recent study dealing with older patients (4) concluded that migrant families “can be supported by healthcare professionals’ cultural competency training” and by providing linguistically and culturally appropriate services that take into account patient preferences and family involvement. Despite this study refers exclusively to older immigrant patients it is also likely that this “tailoring” may be needed also for life-style prevention which is one of the important pillar for the Join4Joy project.

Odense was the Danish municipality where the Danish pilot was developed. Odense municipality has had the nationally regulated preventive home visit service for older Danish adults but also with strong focus on non-western immigrants. Several multi-ethnic health care personnel have been employed to tackle ethnic minorities with non-western backgrounds. The pilot was thereby developed in collaboration with key personnel from this municipality service.

The Danish pilots focused on older adults with Bosnian, Iranian, Turkish and Arabian ethnicity.

Recruitment

As a first step, SDU developed a "needs analysis" according to health policy strategies and priorities from the municipality of Odense. The head of the nationally regulated preventive home visit service from the municipality of Odense was contacted to co-design the Join4Joy framework and decide the target groups. This preliminary work determined a set of actions (figure 5) which included:

1. Agreement on using current health care personnel from the municipality as health and cultural facilitators.
2. Identification of key people from the different ethnic minorities who are well connected in the territory with the specific target groups.
3. Identification of available locations suitable for the different groups.
4. Identification of trainers/cultural mediators to carry out the Join4Joy intervention.

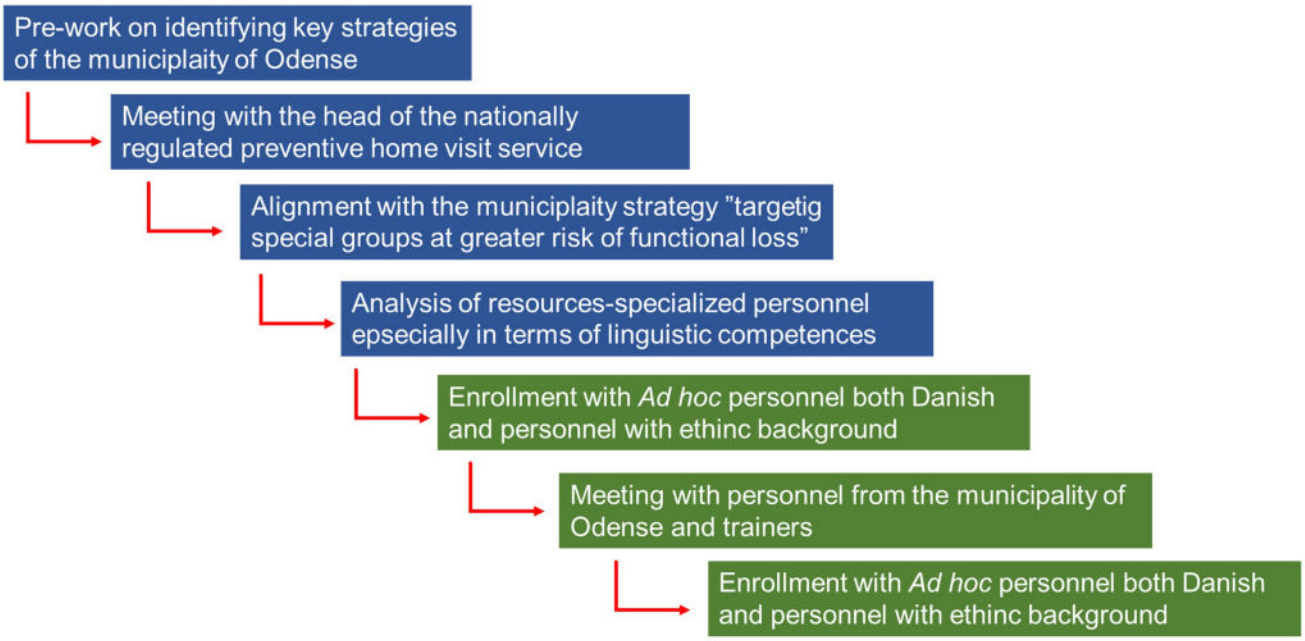

Figure 5. The pathway used to recruit older adults from ethnic minorities in Denmark.

Involved personnel

Table 3 Personnel Involved in Denmark.

Who: affiliation/background	**Why**	**Role**
Head of the nationally regulated preventive home visit service	In charge of the service – decision maker	Initiate, facilitate, distribute resources
3 health care personnel employed at the municipality of Odense Health care background employed in the service preventive home visit	Ethnic background contact with participants, knowledge about language culture, traditions	Present during the training (not always), translate, support, motivate
2 trainers Exercise specialists	Training expert, assessment, ethinc background	Deliver training, assessment
Project coordinator + extra	Target group and project (ethnic minorities)	Facilitate coordinate, control, quality control – long-term planning exploitation

PILOTS: Participant characteristics, intervention, session structure

Participants characteristics

This section describes the profile of the participants (size of each group and socio-demographics) and presents the implemented intervention adapted to the context and tailored to the group participants.

Table 4 Baseline characteristics for the participants in the three countries. SD: Standard deviation; Age: years; Weight: kg; Height: cm.

Baseline	Age Mean (SD)	Weight Mean (SD)	Height Mean (SD)
n=30	76.2 (5.9)	74.5 (11.5)	155.2 (2.0)
n=24	74.4 (5.2)	74.7 (10.6)	163.1 (6.2)
Baseline	**Age** Mean (SD)	**Weight** Mean (SD)	**Height** Mean (SD)
Female n=21	62.2 (6.7)	73.5 (9.7)	159.9 (5.9)
Male n=5	69.4 (6.0)	82.9 (14.8)	174.3 (5.6)

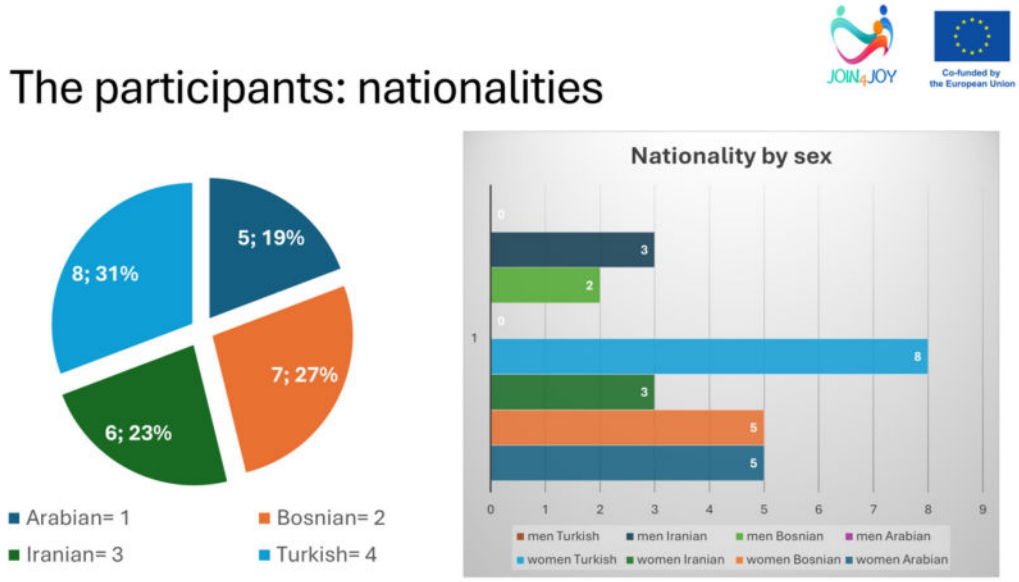

Figure 6. Nationalities of the Danish pilots.

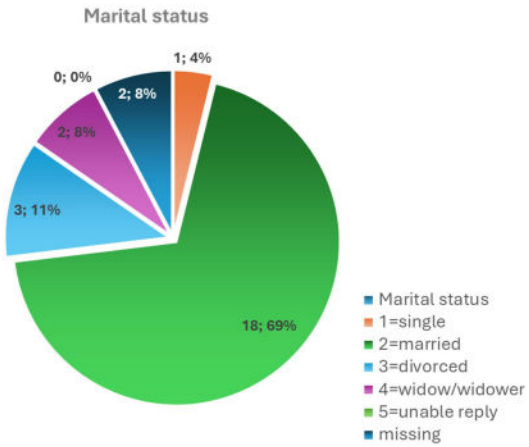

Figure 7. Marital status of the Danish pilots.

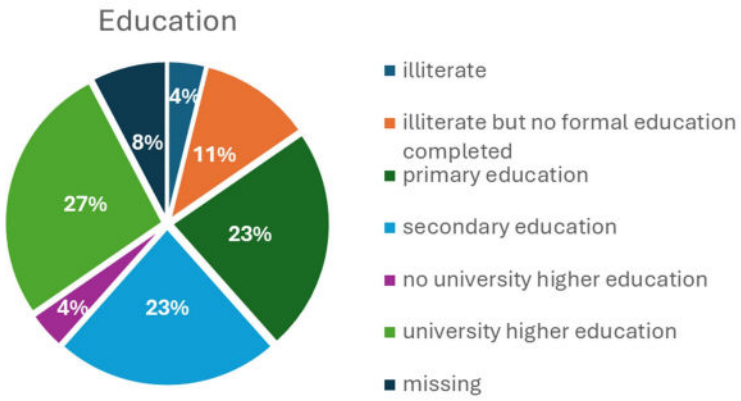

Figure 8. Educational level of participants in Denmark.

Structure of the sessions

Spain

Sessions followed a relatively fixed structure:

- **Introduction (5 min):** A health-related topic was presented, often with a short video, followed by a group discussion.
- **Warm-up (10 min**): Full-body exercises including a memorised body percussion sequence. **Main Activity (40 min):** Group games or playful exercises, conducted individually, in pairs, subgroups, or as a full group.
- **Closure (5 min):** A brief reflection on the session, during which participants were asked what message they believed had been conveyed. The actual message was then revealed on a poster along with the session number.

In Cerdanyola, a field trip to the Art Museum was organised on the final day of the intervention. This required prior contact with the museum director, to whom the project was presented. He kindly offered to coordinate a guided tour at no cost for the participants.

Italy

Sessions followed a relatively fixed structure, carefully designed to be accessible, enjoyable, and adaptable to the needs of participants. The schedule of the intervention was decided by the participants and maintained throughout the intervention period to build a routine and maintain their engagement over time.

Each session began with a moment of welcome and informal social interaction, which helped create a warm and inclusive environment and strengthened the sense of group belonging.

This was followed by a gentle warm-up phase, which included breathing exercises, joint mobility, and slow movements to gradually prepare the body for activity, especially important for participants who had not been physically active for some time. The core of each session drew inspiration from Lindy Hop and Charleston — two joyful and energetic swing dances from the 1920s and 30s. Movements were simplified and adapted to be suitable for older adults, emphasizing rhythm, coordination, and playful expression rather than speed or technical precision. Key elements included steps such as the “step-tap,” “triple step,” and gentle Charleston kicks, which helped stimulate coordination, balance, and memory through rhythmic sequences and repetition. Participants practiced simple solo routines drawn from the vocabulary of swing dance, often repeated across multiple sessions to build confidence and familiarity. Occasionally, exercises were done in pairs or small groups (without physical contact), encouraging eye contact, synchronization, and group cohesion. Music played a central role — with upbeat swing tracks creating an uplifting atmosphere that motivated participants and made physical movement feel more like dancing than exercise.

The final part of each session focused on a cool-down and relaxation, incorporating gentle stretches, breathing exercises, and sometimes guided imagery to promote calmness and body awareness. Overall, this dynamic structure — combining rhythm, movement, and social connection — contributed to participants’ physical and emotional well-being while introducing them to the joyful essence of swing dance in an accessible and age-appropriate format.

Denmark

Initially, we held individual interviews with each participant from the four ethnic groups involved. Where needed, the interviews were mediated by interpreters (health care personnel employed at the municipality of Odense). The interviews aimed at understanding individual background, previous experience with physical activity programmes and preferences. Participants were asked to complete questionnaires regarding education and PA levels. Additionally, data on functional capacities using tools such as the Short Physical Performance Battery (SPPB) and 2-minute walking tests (2MWT) were collected. Based on information collected during this initial stage, we were better able to understand their needs and preferences and to tailor the Join4Joy intervention. We then held training sessions in settings where they felt comfortable attending and engaging in PA (Tables 5, 6).

Table 5. Overview of tailored PA sessions for older adults with ethnic minority background in Odense, Denmark.

Pilot groups	**Session duration**	**Main location**	**Resources used**	**Session plan**
Iranian	60 min	Gym, Southern University of Denmark	Dumbbells, machines, treadmill, bikes and swimming pool	Resistance training and aerobic training
Bosnian	60 min	Gym, Southern University of Denmark	Dumbbells, machines, treadmill, and bikes	Resistance training and aerobic training
Arabic	60 min	Municipality club	Elastic bands and chairs	Aerobic training, dancing, and resistance training
Turkish	60min (+60min social)	Municipality club	Elastic bands, chairs, and Swimming pool	Aerobic training, dancing, and resistance training

Table 6. Overview of The Session Plan of the Turkish Group Odense, Denmark.

Time	Activity	Description
0-10 min	Warm-up	Gentle stretching
10-25 min	Main Exercise 1	Aerobic or dance activity
25-50	Main Exercise 2	Resistance training (elastics)
50-60	Cool-down	Stretching and deep breathing
After the training session	Social time	Group reflection, feedback, and have breakfast together

After each single session, we asked participants what types of activities they would like to do in the next session. We tried to follow our project structure, which focused on tailoring activities based on their preferences. The intervention was "culturally adapted" and respected any specific event for each target group (e.g. Ramadan).

Assessments

Physical function was assessed as 2-min maximum walking test (Figure 9) and the Short Physical Performance Battery Test (SPPB) (Figure 10).

Daily physical activity and sedentary behaviour were assessed as daily minutes spent in each behaviour using a self-report questionnaire. Participants enjoyment of the intervention was assessed using categorical scale (smiles 1-5: 1=no, 5=max enjoyment).

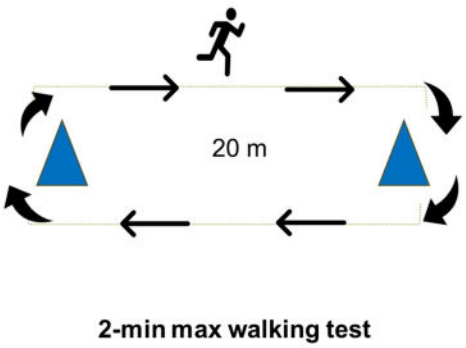

Figure 9. 2-min max walking test.

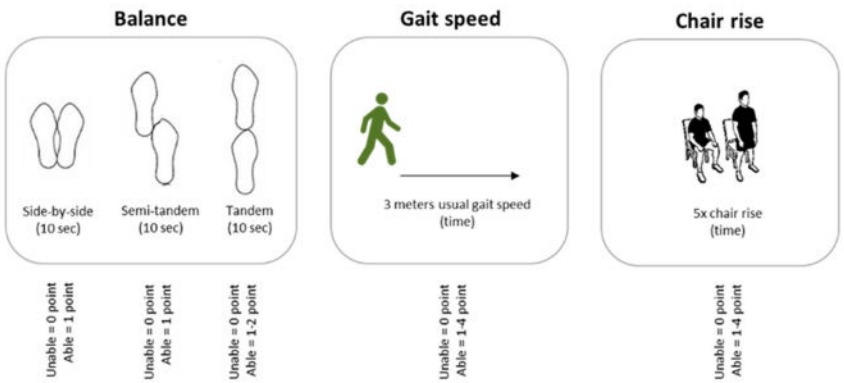

Figure 10. Short Physical Performance Battery test.

Pilots: selected results

Drop out and adherence to the Join4Joy training intervention

Twenty-two participants in Italy, 22 Denmark and 12 in Spain completed the Join4Joy intervention. Reasons for dropping out varied and included health issues, lack of time, loss of interest and additional less frequent reasons.

Participants who remained in the intervention had a varying frequency to the training sessions, with Italy and Denmark showing the highest frequency (10-11 sessions).

Physical Function (by country)

Italy (*n* = 22)

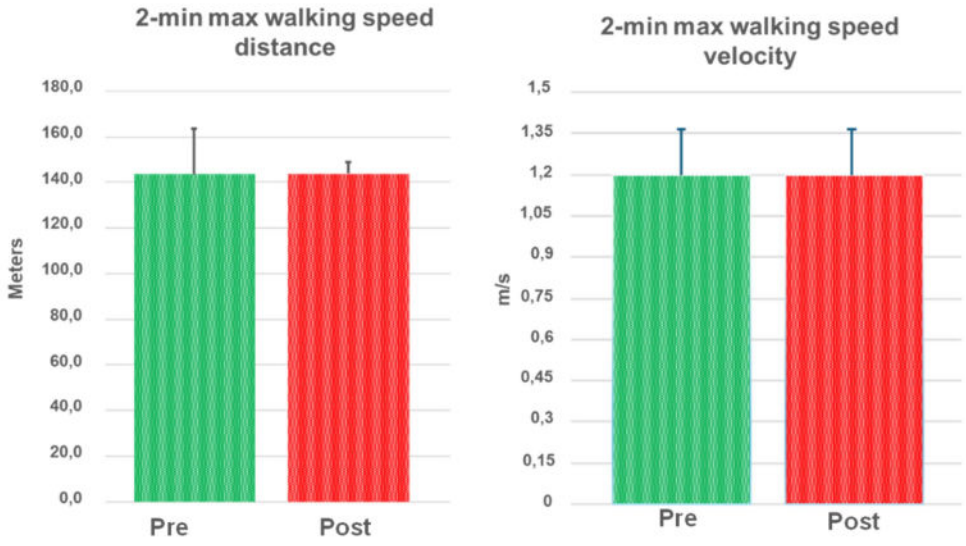

Figure 11. Italian pre-post 2-min walking speed distance

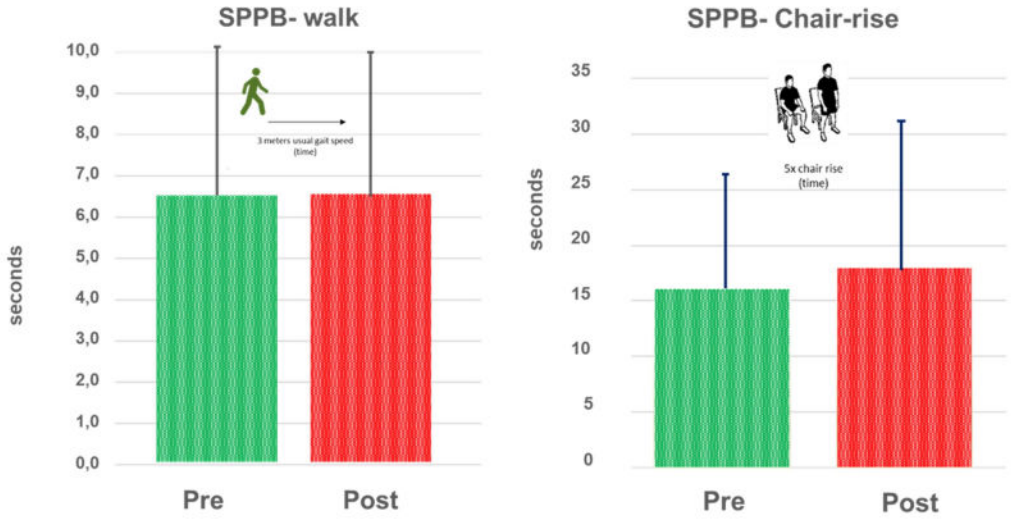

Figure 12. Italian pre-post SPPB - walk

Spain (*n* = 9)

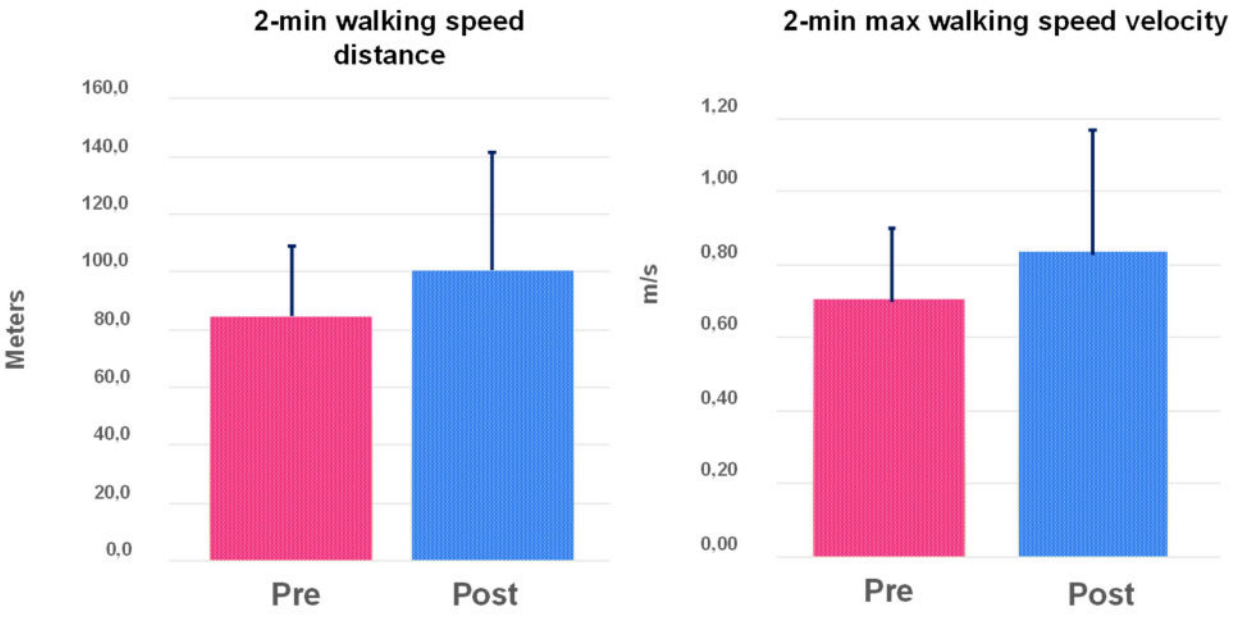

Figure 13. Spanish pre-post 2-min walking speed distance

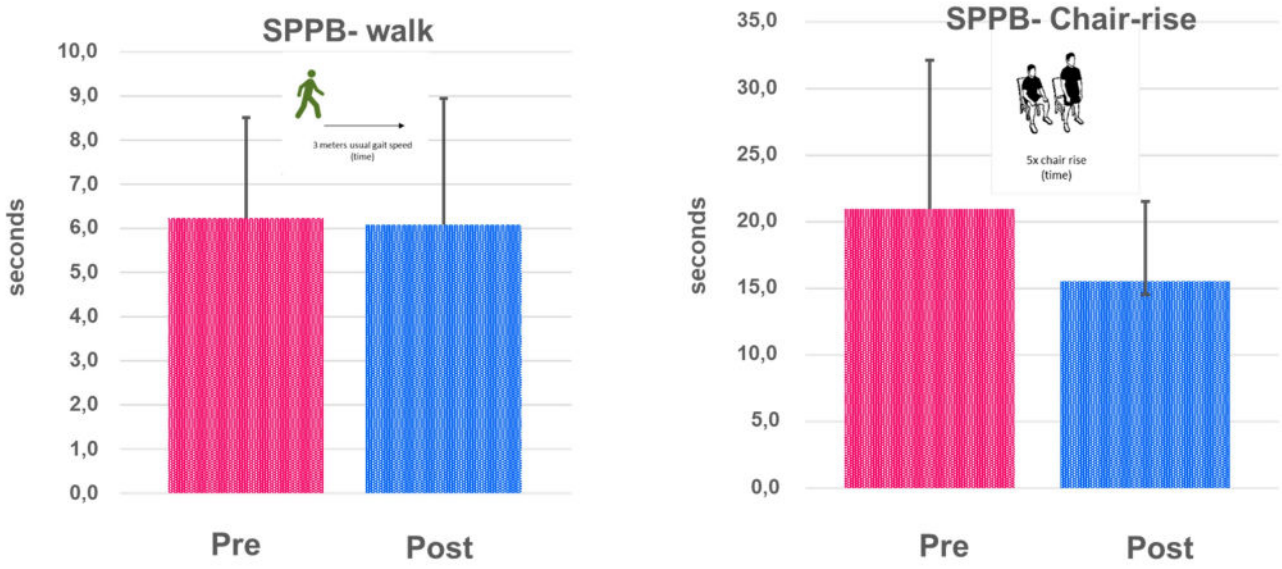

Figure 14. Spanish pre-post SPPB - walk

Denmark (*n* = 23)

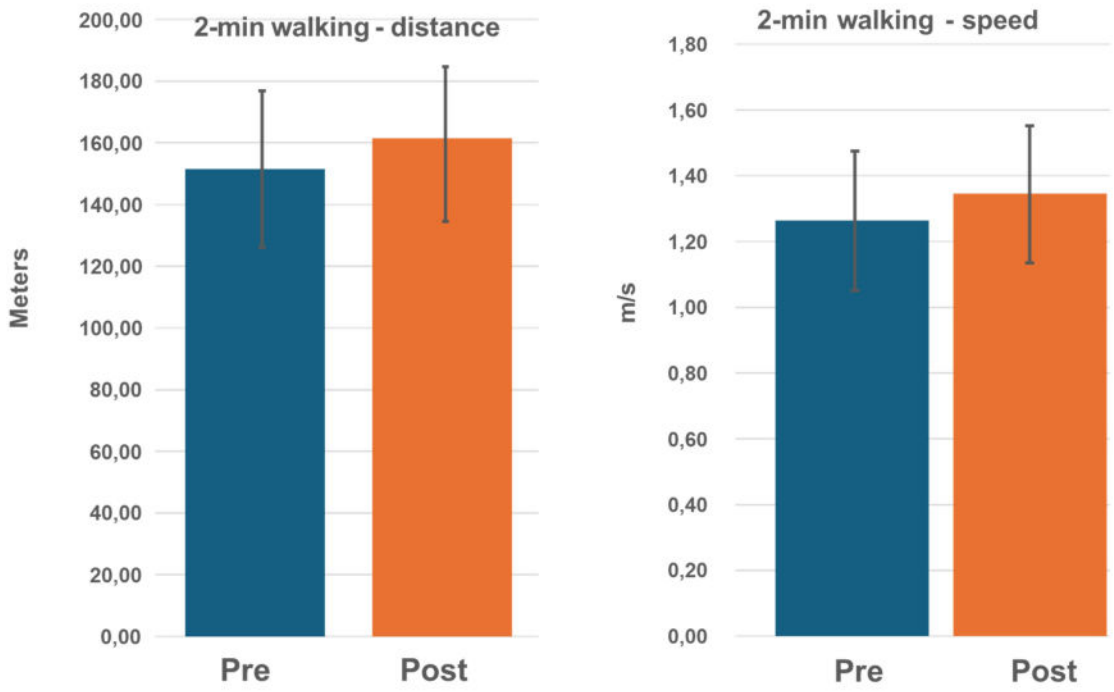

Figure 15. Danish pre-post 2-min walking speed distance

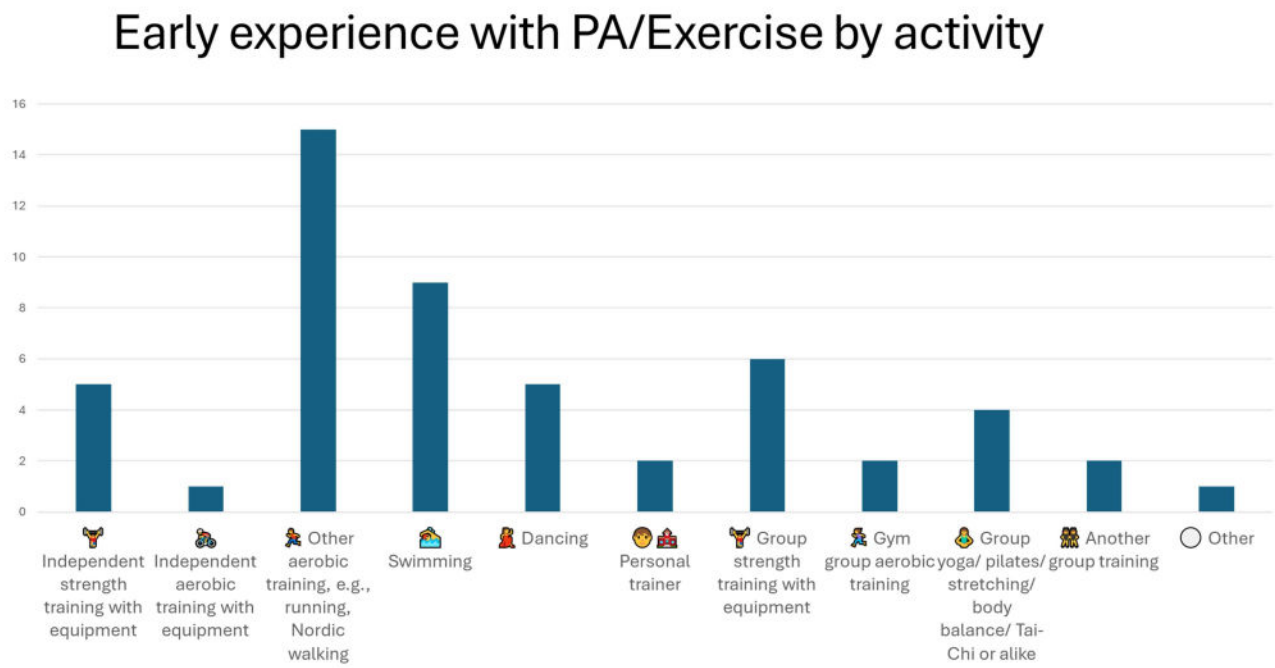

Figure 16. Earlier experience with leisure-time PA (Danish pilot).

Lessons learned

Pilot studies included a pre-post evaluation of quality of life, functionality, physical activity, sedentary behaviour with standardized scales, tests and accelerometry, if accepted. The instruments used are referenced in the published Join4Joy Protocol Publication.

However, given the focus on the feasibility of the pilots and not the efficacy, only selected data for the quantitative outcomes are presented. Additional results may be presented in scientific publications.

Community-based interventions require significant time investment in building and nurturing relationships with local institutions and stakeholders. Creating a functional and interconnected network is essential, even if it involves navigating complexities and unexpected barriers. It is vital to identify, support, and maintain engagement with these key individuals from the outset, as they are fundamental not only in the initial implementation but also in the sustainability and long-term success of the project

Based on quantitative and qualitative analysis methos, this section reports:

- the impact on end-user for all pilots, per country.
- the impact on facilitators/trainers and assisting students.

Spain

The implementation of these pilot interventions with individuals exhibiting frailty and low participation in physical activity programmes has highlighted several key considerations to take into account when targeting this population in community settings:

1) **Role of trusted figures with pre-existing relationships participants.**
2) **Importance of institutional engagement for effective recruitment.**
3) **Multistakeholder involvement across all phases.**

The following sections outline how each of these lessons learned influenced the pilot interventions.

Role of trusted figures with pre-existing relationships with participants

Achieving participant adherence in community-based interventions, especially among individuals who do not regularly engage in physical activity or group programmes, presents a significant challenge. One of the key factors identified in both pilot interventions was the involvement of trusted figures with pre-existing relationships with participants. These individuals acted as intermediaries, fostering familiarity and trust throughout the recruitment and intervention phases.

Active engagement of key personnel during both the recruitment phase and the implementation of sessions appeared to significantly influence participant adherence. This suggests that the involvement of institutional stakeholders extends beyond mere approval and participant enrolment; their continued presence and encouragement may serve as effective behavioural nudges, reinforcing participant commitment throughout the intervention.

Moreover, the presence of a trusted individual such as a trainer with an established rapport with the participants who follows up after missed sessions (e.g. through personal phone calls) appears to be a critical factor. This personalized follow-up contributes to building trust and may play a pivotal role in facilitating re-engagement and sustained participation.

➢ *Recommendation:*

- **Involve trusted community persons in the recruitment and implementation phases:**
  Identify and engage individuals with established, trusted relationships within the target population. Their role as intermediaries should start during recruitment and continue throughout the programme. This will foster trust, familiarity, and engagement.
- **Promote active involvement of key institutional stakeholders:**
  Ensure that key personnel (e.g. municipal representatives, healthcare professionals, community leaders) remain actively involved beyond the initial recruitment phase. Their presence during intervention phase serves as a behavioural "push" or nudge, reinforcing participant commitment and adherence.
- **Develop and facilitate personalised follow-up to prevent dropout:**
  This is an essential step. Structured follow-up strategies where trainers or facilitators personally contact participants after missed sessions (e.g. through phone calls or other personalised communication) are needed. This approach strengthens trust, supports re-engagement, and reduces the risk of drop-outs.

<u>Importance of Institutional Engagement for Effective Recruitment</u>

As previously mentioned, recruitment in community settings typically requires an initial phase of meetings with key local stakeholders. Depending on their availability and level of engagement, this phase can delay the recruitment process by several weeks.

As described earlier, the process generally begins with outreach to major local institutions, such as municipal governments. Their endorsement significantly facilitates subsequent

collaboration with other community organizations that play a critical role in identifying and recruiting suitable participants.

➢ *Recommendation:* Obtain endorsement from local organisations.

Multistakeholder Involvement Across All Phases

As highlighted earlier, a considerable number of individuals are involved in each phase of the intervention. Regardless of the magnitude of their contributions, the involvement of each of these actors was essential to the successful implementation of the intervention. Without their collaboration, the project would not have been possible.

➢ *Recommendation:* Significant interventions require involvement of multiple layers.

Italy

Several relevant aspects have been highlighted from the Italian Pilots and are reported here below together with some recommendations for future interventions.

Social Connection Enhances Engagement

Creating a friendly, inclusive atmosphere was crucial to participant motivation. Many reported they returned each week not just for the activity, but to reconnect with peers.

➢ *Recommendation:* Prioritise group bonding and informal social moments as part of the programme structure.

Enjoyment is a Key Motivator

Framing physical activity as fun and expressive — through music and dance — helped reduce resistance to exercise, especially among individuals who had never joined similar programmes before.

➢ *Recommendation:* Use joyful formats (e.g., music-based activities like Lindy Hop and Charleston) to lower psychological barriers and improve participation.

Low-Threshold, Familiar Settings Increase Accessibility

Running the program in a well-known and easily reachable community centre helped reduce logistical and emotional barriers, especially for older adults with lower mobility or digital access.

➢ *Recommendation:* Deliver interventions in familiar, local spaces that participants trust and already attend.

Co-Creation with Stakeholders Builds Relevance

Early collaboration with the Senior Centre's management and local parish ensured that the program was tailored to the community's specific needs and well received.

➢ *Recommendation:* Involve local stakeholders and community members from the start in co-designing the program.

Consistent Structure Supports Habit Formation

Weekly sessions at the same time and place (every Thursday, 11:00–12:00h) helped participants build a routine.

➢ *Recommendation:* Maintain regular scheduling to promote long-term behavioural change.

Monitoring Progress Encourages Commitment

Although some were hesitant, physical tests (before and after the intervention) helped many recognize their own improvements in balance, strength, and flexibility.

➢ *Recommendation:* Include simple evaluation tools that make participants aware of their physical progress

Post-COVID Recovery Needs More than Exercise

The program supported the reactivation of the Senior Centre, which had seen a drop in users after the pandemic. Participants highlighted how much they valued the social reconnection.

➢ *Recommendation:* Design programmes that address both physical and emotional well-being, particularly in post-pandemic contexts.

Diversity in Activities Maintains Interest

Participants expressed interest in more musical and cultural variety, as well as outdoor sessions when possible.

➢ *Recommendation:* Introduce occasional theme variations or social events to maintain engagement over time.

Denmark

Key aspects from the different Danish pilots are reported here below together with some recommendations for future interventions.

Safe environment

It is extraordinarily important to adapt the environment (location, trainers and in general set-up) to ensure a sense of safety and trust.

➢ *Recommendations:*

- The selection of the intervention site should be guided by the principle of geographic and social familiarity for the target population. Factors such as proximity to participants' residences, walkability, and access to public transportation must be prioritized to minimize logistical barriers and promote sustained attendance. This aspect is particularly important for this specific population of older adults.
- Furthermore, efforts should focus on cultivating a welcoming and comfortable atmosphere. While the availability of advanced equipment may be of lesser importance, creating a setting that fosters a sense of safety and homeliness is essential for participant engagement and well-being.
- Finally, the appointment of a trainer with demonstrated cultural competence and understanding of cultural diversity is crucial. This individual should possess the interpersonal skills and sensitivity necessary to support participants' diverse goals, fostering motivation and inclusion without imposing predetermined agendas. Without any doubt, these qualities are more relevant than scientific or technical skills.

Culturally adapted activities

Although many of the activities included in the intervention resembled those found in conventional physical activity programmes, the use of a tailored approach fostered a strong sense of ownership among participants. Continuous, responsive feedback, both verbal and non-verbal, was highly valued, particularly when it conveyed appreciation or signalled the need for adjustments to the intervention design. This participatory dynamic contributed positively to both adherence and overall enjoyment of the programme.

➢ *Recommendations:*

- **Implement tailored interventions:** design physical activity programmes that are adaptable to individual participants' preferences, abilities, and goals. A tailored approach enhances perceived relevance and fosters a greater sense of ownership, which is associated with improved adherence and engagement.

- **Foster two-way communication:** establish regular channels for both verbal and non-verbal feedback throughout the intervention. This should include opportunities for participants to express satisfaction or suggest modifications, thereby ensuring that the programme remains responsive to their evolving needs.
- **Embed a regular feedback loop in programme:** Integrate structured feedback mechanisms (e.g. short post-session reflections, informal conversations, or visual cues, such the smiles used in our intervention) into the intervention. This dynamic exchange helps to maintain motivation and can inform real-time adjustments that enhance participant satisfaction.
- **Promote participant agency:** Particularly in populations with highly diverse cultural backgrounds and life experiences, participant agency should be considered a key element of the intervention. Actively involving individuals in shaping the content or structure of the sessions—such as selecting activities or defining personal goals—enhances perceived relevance and autonomy. This empowerment fosters deeper engagement, supports sustained enjoyment, and contributes to improved long-term adherence.

Role of personnel with similar ethnic background

Although not explicitly and formally reported by the trainers, it seems that the presence of a trusted facilitator played a critical role, particularly during the initial phase of the intervention when participants were unfamiliar with the trainer. This individual's role in establishing trust, promoting engagement, and modelling appropriate communication and behavioural norms was instrumental in creating a supportive group dynamic. The trainer should understand cultural norms and "communication style". Where feasible, the involvement of a facilitator who shares the same or a similar ethnic background as the participants may further enhance cultural alignment, reduce barriers to engagement, and foster a more inclusive and responsive intervention environment.

While the need for this role may diminish as participants become more familiar with the setting and trainer, it appears to be a key factor in fostering initial acceptance and setting the tone for sustained participation.

➢ *Recommendations:*

- **If needed, ensure the presence of a trusted facilitator:**
  Identifying a facilitator, ideally someone already familiar to the participants and possibly with same or similar cultural/ethnic background, to support the early stages of the intervention is recommended. The facilitator does not need to be a trainer but

may play a key role in establishing trust, encouraging engagement, and modelling appropriate communication and group norms.

- **Enhance cultural competence of trainers:**
  Trainers should be provided with training and guidance on culturally appropriate communication styles, behavioural expectations, and social norms relevant to the participant group. This cultural sensitivity is essential for building rapport and maintaining respectful, effective interaction.

Social Connection and engagement

Creating a non-judgmental and inclusive setting contributed to a positive group atmosphere and enhanced participant motivation. For many older adults—particularly those not primarily motivated by health-related goals—social engagement emerged as a key driver of participation. The presence of a structured social component following physical activity sessions (e.g. shared meals, rotating hosting responsibilities) played a vital role in strengthening group cohesion and sustaining involvement. Such practices are especially valuable in culturally diverse groups, where social belonging may outweigh individual health objectives.

➢ *Recommendations:*

- **Prioritise socially inclusive settings:**
  Design interventions to take place in welcoming, non-judgmental environments where all participants feel respected and accepted, regardless of background, ability, or motivation. In our intervention, the inclusive atmosphere promoted psychological safety and increased willingness to participate.
- **Integrate social components into the programme structure:**
  Embed opportunities for informal social interaction before or after physical activity sessions (e.g. shared meals, rotating hosts). These social routines enhance group cohesion and may be particularly important for participants who are more motivated by social connection than health outcomes.
- **Recognise diverse motivational drivers:**
  Acknowledge that for many older adults, especially those from culturally diverse backgrounds, social engagement may be a stronger motivator than physical fitness or health. Programme goals and messaging should reflect this broader understanding of participation benefits.

- **Encourage peer-led activities:**
  Support the development of participant-led social activities that go beyond the structured intervention. Empowering participants to organise and lead these activities may reinforce engagement, foster ownership, and strengthen community ties.

Co-creation with key stakeholders

Engaging key stakeholders from the beginning proved to be a critical factor in the success of the intervention. This included individuals at the municipal level (e.g. coordinators of preventive home visits), healthcare professionals with non-Western ethnic backgrounds, culturally embedded community figures of any age who serve as trusted references for the target population, and trainers with demonstrated cultural awareness. The approach represents a multi-level effort that requires substantial initial investment both in time and human resources. However, the learning from the pilot interventions targeting ethnic minority populations suggests that such investment is essential during the initial implementation phase, serving as both a catalyst and enabler for successful participant engagement and sustained programme adherence.

➢ *Recommendations:*

- **Engage key stakeholders early in the process:**
  Secure the active involvement of key stakeholders from the very beginning, including municipal representatives (e.g. preventive health coordinators), culturally aligned (where possible) healthcare professionals, and recognised and respected community figures (e.g. family members) who serve as reference for the target group.
- **Ensure cultural representation:**
  Understanding cultural norms is extraordinarily important. We recommend, where possible, to Include members such as facilitators or health personnel who share cultural or ethnic backgrounds with the target group. This will enhance communication, trust, and cultural relevance.
- **Identify trainers with cultural sensitivity and awareness:**
  The recruitment of trainers is a delicate step. Trainers should not only be skilled in "physical activity" but also demonstrate cultural competence. Their ability to navigate diverse values, communication styles, and social norms is crucial for programme acceptance and effectiveness.

- **Recognise and plan for multi-level investment:**
  Engagement with ethnic minority groups may require greater investment in stakeholder coordination and trust-building. This effort should be well-recognized and acknowledged in the planning phase and it should not be seen as excessive or “hyper-protective", but rather as a necessary condition for successful mobilisation and long-term impact.

Analysis on the implementation and adaptation to local contexts

As already detailed, the Join4Joy approach was implemented in the 5 participating countries and required an adaptation to the settings (nursing home or community), to the cultural and socio-economic contexts, and the specificities of the target population involved in each site. It is to be highlighted that the trainer, after undergoing the educational training, was the key actor to adapt and implement the Join4Joy approach in the PA programme.

Therefore, a specific evaluation was conducted aimed at understanding how each intervention site in the 5 participating countries has implemented and adapted the core components of Join4Joy approach, i.e., enjoyment and social inclusion, to the setting (nursing home or community), specific target population and the cultural and socio-economic context.

Specifically, a qualitative design applying a phenomenological perspective was conducted. All trainers involved in the 5 sites were asked to participate. The techniques applied were online semi-structured interviews conducted via teams. A total of 8 individual interviews and one group interviews reaching a total of 9 professionals from the 5 sites who agreed to participate. Interviews were audio-recorded and transcribed.

The topic guide structuring the interview included questions about: the characteristics of the group, enjoyment, social inclusion, implementation and adaptation and ideas for improvement and sustainability.

An inductive thematic analysis was conducted looking for similarities and differences across settings, as well as what has worked better and what worse.

The **results** found in terms of similarities across sites were the following: enjoyment was key for adherence and participation in the programme; the intervention created a sense of belonging and bounding; the trainer addressed individual needs.

Regarding the differences encountered, in the community, a specific challenging step was the recruitment of participants. Overall, community-dwelling participants were autonomous in their daily lives. Moreover, a very diverse population was targeted in this setting needed specific adaptation such as the groups for different ethnic minorities, which required overcoming language barriers when they were not fluent in the local language. During the programme, some groups had to deal with participants having low assistance and some others dropping out.

The specificities found in the nursing home settings were related to the high diversity of functional capacities and pathologies. Given the heterogeneity among participants, the

recruitment and the implementation of the programme required coordination with other professionals working in the nursing home, as well as the support of the facility director.

Similarities were identified across sites: music was played in all sessions, enjoyment was used both as a tool and as a goal in itself, elements supporting having fun were included, the session was structured while accounting for adaptations to individual needs. The differences reported across groups were related to the trainers' profile and how they facilitated the groups. Trainers came from a diversity of disciplines and their heterogeneity in previous experience with PA groups lead to different levels of confidence in applying specific tools. They could dedicate different amounts of time to plan the sessions and planned them differently, for example they all did the initial interview, but it changed slightly from trainer to trainer according to the setting. Finally, the degree of cocreation during the sessions, i.e., the extent to which participants were asked and involved in the decision making of how sessions would be conducted, differed across sites.

Enjoyment was reported as a drive for sustained participation, a key element to motivate participants and was related with autonomy and a positive social interaction.

Social inclusion was reached with limited success. The more isolated and socially vulnerable profiles of older people were more difficult to reach. In the case of ethnic minorities, groups were conducted among themselves, thus not reaching social integration. In this case, cultural and idiomatic barriers were encountered.

The adaptation differed in the sites, counting on different degrees of co-creation during the implementation (participation of the participants in deciding what to do and how, along the process) and was influenced by the previous training and experience of the trainer.

This analysis was useful to identify barriers and enablers. The main limitations reported were the room and the space they had to conduct the groups and the material at their disposal. In the community setting, recruitment was challenging, as already mentioned, while in nursing homes, the lack of staff was a limitation. Key enablers were assisting students and members of staff involved in the project who supported recruitment and the facilitation of groups. Last but not least, the facilitator charisma was a major facilitator to motivate participants and establish a bond with him/her.

This process had some **limitations**. Interviews were carried out using English as a common language between trainers and the professional interviewing. However, for none of those English was the mother tongue and some trainer had difficulties with English. Therefore, researchers from the local site were present during the interview to support understanding. Moreover, interviews could not be conducted in person and were done through video calls.

Conclusions from the analysis on the implementation and adaptation to local contexts are the following:

- Enjoyment has been the main motivational pillar of the interventions.
- Inclusion has been challenging and demands specific adaptations.
- Implementation is a balanced action between structure and flexibility.
- Logistic challenges persist.
- The role of the trainer is key to successful implementation.

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