INTERVENTION'S FINAL EVALUATION REPORT (IO4)

CONTRIBUTION TO WP4 –EVALUATION OF PILOT PA ACTIONS

UNIVERSITY MEDICAL CENTER RADBOUDUMC

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Summary

Introduction

People with disabilities and senior citizens represent a large and growing segment of the general population, yet they are often less physically active than those without a disability or of younger age. Physical activity is vital for disabled and elderly people. The InAbled Cities project aims to promote and enable physical activities in open urban areas for people with physical disabilities and elderly people, building healthy, active, and inclusive cities in Europe.

Methods

In this report the impact of and the experiences with the physical activity-enhancing program of the InAbled Cities project are described for the municipality of Bologna and Sevilla la Nueva. Quantitative (CHAMPS, Quality of Life, Overall Health, and System Usability Scale) and qualitative (evaluative conversations) outcomes were used. Quantitative and qualitative assessments were conducted to evaluate the Practical Intervention Methodology (PIM) and Citizens Engagement Strategy (CES) of the program.

Results

In Bologna the 1st pilot round was executed in full with a duration of 12 weeks. In Sevilla la Nueva the 1st pilot round only lasted 7 weeks due to logistical issues. The 2nd pilot round had a duration of twelve weeks in both communities. The level of physical activity (CHAMPS) increased in the 1st pilot round in Bologna but decreased at the end of the 2nd pilot round. The overall group score decreased, but the people who participated in the 1st pilot round remained stable, and the group who did not participate in the 1st pilot round decreased from the beginning of the 2nd pilot round through the end. In the 2nd pilot round, there is no difference between people who use a smartphone

and people who do not. Both groups showed a decrease in the CHAMPS physical activity score.

The results on the CHAMPS did not show an increase in physical activity levels for Sevilla la Nueva in the 1st pilot round. In the 2nd pilot round the CHAMPS score decreased. There is an increase of the CHAMPS score for the people who did not participate in the 1st pilot round and a small decrease of the people who did participate. People in Sevilla la Nueva who used a smartphone remained stable and people who did not showed an increase in the CHAMPS score. People in Sevilla la Nueva who lived in retirement homes decreased on the CHAMPS and people who did not slightly increased in CHAMPS score.

The results in the 1st pilot round of the System Usability Scale (SUS) in Bologna show that the InAbled Cities App is usable. In the 2nd pilot round, there is a slight lower score in SUS, participants would like to use the app frequently and found it easy to use.

Quality of Life and overall health is stable in the 2nd pilot round, the general quality of life increased in Sevilla la Nueva. In Bologna both Quality of life and general health remained stable.

In Bologna the overall SUS score for the Practical Intervention Methodology (PIM) was slightly higher after the 2nd pilot round.

After the 2nd pilot round the SUS total score for the Citizens Engagement Strategy (CES) was slightly lower after the 2nd pilot. All scores were 4 or higher. The strongest decline is the Feasibility of the CES. Sevilla la Nueva total score of the PIM clearly improved after the 2nd pilot. Looking at the CES it slightly decreased over the 2nd pilot.

Qualitative results show the participants and healthcare professionals overall are satisfied with the program. The presence of healthcare professionals is very much appreciated. The InAbled Cities App seems usable but there are remarks on the usability. Exercises specified at the individual level seems important. It seems hard to perform a suitable physical activity program for the frailer

people. The step towards autonomously exercise for elderly seems hard but also crucial for the long-term.

Conclusion

Overall, the participants and healthcare professionals are satisfied with the physical activity enhancing program. A possible explanation for the decrease in physical activity during the second pilot round, which occurred in the winter, is the influence of the season. People possibly exercise less when weather conditions decrease. Another explanation has to do with the transition of activities from outside to inside during the second pilot round. Another important factor is that the intensity of the guidance gradually decreased during the project. This could also be an explanation for the decrease in physical activity.

The impact of the physical activity-enhancing program seems to be higher in Bologna than in Sevilla la Nueva in the 1st pilot round. A possible explanation for the difference might be that the pilot in Bologna was run in full, while the pilot duration in Sevilla la Nueva was much shorter. The InAbled Cities App seems feasible for enhancing physical activity but further development is recommended. Future research should focus on solutions for exercising in decreased weather conditions, working towards more autonomous and tailored exercise in larger populations.

1. INTRODUCTION

People with disabilities and senior citizens represent a large and growing segment of the general population, yet they are often less physically active than those without a disability or of younger age. Physical activity (PA) is vital for people with disabilities and elderly, not only to promote health and prevent disease, but also to reduce the number of secondary conditions that can result from an initial disability. It is therefore essential to ensure that people with disabilities and elderly are encouraged to be more active.

A healthy, active city is one that is continuously creating and improving opportunities to enable its citizens to be physically active in day-to-day life. This includes overcoming the barriers that discourage PA in cities among persons with disabilities and elderly, in order to become a healthy, active and disability-inclusive city. Therefore, the overall objective of the InAbled Cities project is to promote and enable physical activities in open urban areas for people with physical disabilities and elderly people, building healthy, active, and inclusive cities in Europe.
InAbled Cities will start as a pilot project in the communities of Bologna (Italy) and Sevilla la Nueva (Spain), with Bologna representing an urban environment and Sevilla la Nueva a rural environment.

This intervention's final evaluation report specifically aims at presenting the results of the evaluation of the 1st pilot and 2nd pilot round of the physical activity-enhancing program in Bologna and Sevilla la Nueva.

Objective
To evaluate the impact of and describe the experiences with the physical activity-enhancing program in Bologna and Sevilla la Nueva.

2. METHODS

The evaluation consisted of six components:

2.1 Quantitative

(1) The physical activity questionnaire CHAMPS (thru Castor) before and after each pilot round to evaluate the impact of the PA interventions on physical activity levels.

The physical activity questionnaire CHAMPS is a self-report questionnaire that assesses the weekly frequency and duration of a variety of lifestyle physical activities that are meaningful and appropriate for older adults. Including activities of various intensity (from light to vigorous) such as walking, running, hiking, swimming, bicycling, dancing, tennis, aerobics, yoga/tai chi, gardening, and housework. The questionnaire was translated to Italian. A Spanish version was available but was designed for Spanish-speaking persons aged 50+ in the San Francisco Bay Area, and was adjusted to the Spanish spoken in Spain. Because body weight is not available, we used CKWKALL, this is an alternative intensity measure, it represents the number of kilocalories per kg spent per week.

For each activity (e.g., item 7, item 9). we created a numeric duration variable (<1hr = 0.5, 1-2.5 hrs = 1.75, 3-4.5 hrs = 3.75, 5-6.5 hrs = 5.75, 7-8.5 hrs = 7.75, 9 or more hrs = 9.75). For each activity, we created a weighted duration variable (e.g., WTHRSWK7, WTHRSWK9) by multiplying the numeric duration variable by corresponding MET values used as METS/minute (see table in the appendix).

During the 2nd pilot round two questions were added: whether people live in a nursing home, and whether people own a smart phone. These questions were used to distinguish between these groups, for the Quality of Life scores (QoL) and for physical activity (Champs questionnaire). In Seville la Nueva, the

participants who were living in a nursing home stopped at their own initiative, which is why the question was added whether or not they live in a nursing home. In other words, they dropped the program. In this way, the answers of these groups can be distinguished from each other. The researchers wanted to see if there is a difference with the people who continued with the program. Guidance was phased out for all participants. During the 2nd pilot round, more independence was expected from the participants. It was expected that having a smartphone will make it easier to continue the program independently.

(2) System Usability Scale (SUS) for evaluating the app by healthcare professionals and participants.

The System Usability Scale (SUS) is used for evaluating the app by healthcare professionals and participants. It is a tool for measuring the usability. We used this tool to measure the usability of the app.

It consists of a 10-item questionnaire with five response options for respondents; from Strongly agree to Strongly disagree (see appendix for the scores on item level).

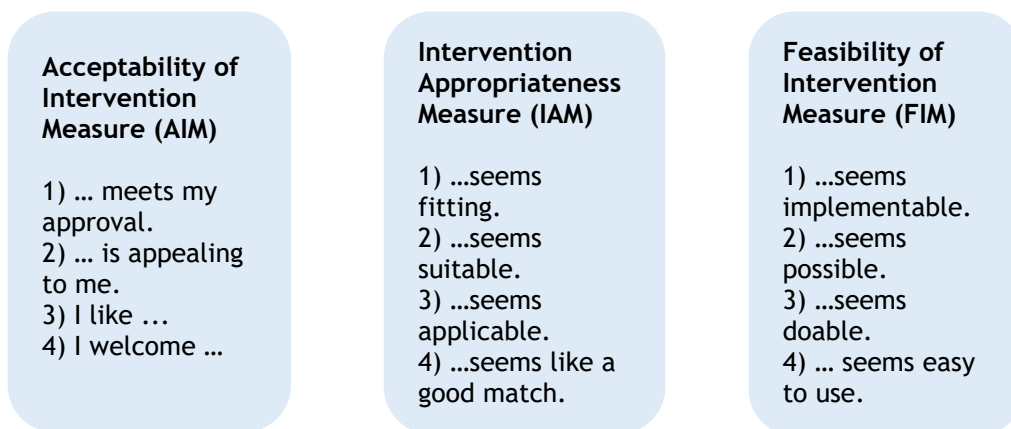*Figure 2.1: items System Usability Scale (SUS)*

- I think that I would like to use this app frequently.
- I found the app unnecessarily complex.
- I thought the app was easy to use.
- I think that I would need the support of a technical person to be able to use this app.
- I found the various functions in this app were well integrated.
- I thought there was too much inconsistency in this app.
- I would imagine that most people would learn to use this app very quickly.
- I found the app very cumbersome to use.
- I felt very confident using the app.
- I needed to learn a lot of things before I could get going with this app.

(3) A quantitative process evaluation (appropriateness, feasibility, acceptability) of the Practical Intervention Methodology (PIM) for participating

healthcare professionals, and a quantitative process evaluation for the communication managers in executing the Citizens Engagement Strategy (CES).

The success of an implementation, in this case the "Practical Intervention Methodology (PIM)" and the "Citizen Engagement Strategy (CES)" was measured in three dimensions using the Acceptability of Intervention Measure (AIM), the Intervention Appropriateness Measure (IAM), and the Feasibility of Intervention Measure (FIM) (Weiner et al., 2017). Each of these single dimensions consists of 4 items. These subscales represent the success of implementation, with a response scale from 1 (Completely disagree) to 5 (Completely agree). The measures can be used independently or together. A higher score indicates greater acceptability, appropriateness, and feasibility. The mean score total or for each subscale is also between 1 and 5. No items need to be reverse coded.

Figure 2.2: Subscales for the success of implementation (AIM, IAM, FIM)

Acceptability of Intervention Measure (AIM)	**Intervention Appropriateness Measure (IAM)**	**Feasibility of Intervention Measure (FIM)**
1) … meets my approval. 2) … is appealing to me. 3) I like … 4) I welcome …	1) …seems fitting. 2) …seems suitable. 3) …seems applicable. 4) …seems like a good match.	1) …seems implementable. 2) …seems possible. 3) …seems doable. 4) … seems easy to use.

(4) At the start and at the end at the 2nd pilot round, the respondents were asked about their general quality of life and general health. We used two items of the PROMIS Global Health questionnaire at the start and end of the 2nd pilot round. The first is: "In general, would you say your health is? And the second is: "In general, would you say your quality of life is". The answer categories range from 1 to 5, with "1 being Poor" and "5 being Excellent". A higher score therefore means a better QoL or a better health.

2.2 Qualitative

(5) The local researcher performed an evaluative conversation with participating citizens about their experiences with the Practical Intervention Methodology (PIM). The local researcher provided an English summary.

(6) The local researcher performed an evaluative conversation with multiple healthcare professionals and communication managers. The local researcher provided an English summary.

3. RESULTS

The 1st pilot round in Bologna had a duration of about twelve weeks. The before measurement contained 76 participants. The measurement after the 1st pilot round contained 46 participants. This drop-out rate was caused by health reasons (nine participants), one person deceased, and fifteen participants reason unknown. In general, the high temperature and holiday season caused a decrease in participation in June. The 2nd pilot round in Bologna had a duration of 12 weeks. At the beginning of the 2nd pilot round there where results available for 68 participants. The end of the 2nd pilot round contained 49 participants. The drop-out in the 2nd pilot round was mainly related to personal health and or relatives/family's health problems.

The 1st pilot round in Sevilla la Nueva had a duration of about seven weeks. The baseline measurement contained 31 participants. The measurement after the 1st pilot round contained 22 participants. This drop-out rate was caused by people being on holiday and by an increase of COVID in Sevilla la Nueva at the end of the 1st pilot round. The heat may also have contributed to the drop-out. The 2nd pilot round in Sevilla la Nueva had a duration of 12 weeks. The 2nd pilot round started with 45 participants and at the end of the 2nd pilot round 26 were left. In Sevilla la Nueva, almost half of the dropouts were related to personal health (in one case, the participant broke her wrist, in other cases participants had to undergo a medical intervention). A few participants indicated that the reason was lack of time. The rest of the participants simply disappeared giving no explanation.

3.1 Physical activity questionnaire CHAMPS

3.1.1 Physical Activity questionnaire (CHAMPS) in Bologna

Table 3.1.1: Results Bologna physical activity (Champs)

	Start 1st pilot	End 1st pilot	Start 2nd pilot	End 2nd pilot
CKWKALL	48,4	62,7	62,8	57,9
CKWKMOD	20,3	30,6	31,8	25,1
FRWKALL	16,5	20,9	21,1	19,9
FRWKMOD	4,5	6,6	7,2	5,6

CKWALL = Kilocalories (per kg) per week of all exercise-related activities
CKWKMOD = Kilocalories (per kg) per week of moderate-intensity exercise-related activities
FRWKALL = Frequency per week of all exercise-related activities
FRWKMOD= Frequency per week of moderate-intensity exercise-related activities

Interpretation

The mean kilocalories (per kg bodyweight) per week of all exercise-related activities (CKWALL) increased from 48 before the 1st pilot round to 63 after the 1st pilot round. The Kilocalories (per kg bodyweight) per week of moderate-intensity exercise-related activities (CKWKMOD) increased from 20 to 31 (table 3.1.1). These increases exceed the 20% Minimal Clinical Detectable Change of the CHAMPS (Sattler et al., 2020).

The mean kilocalories (per kg) per week of all exercise-related activities (CKWALL) was 63 at the start of the 2nd pilot round, which is similar to CKWALL at the end of the 1st pilot round, by the end of the 2nd pilot round the mean kilocalories per week of all exercise-related activities was decreased to 58. The Kilocalories (per kg) per week of moderate-intensity exercise-related activities (CKWKMOD) at the start of the 2nd pilot round was similar to the (CKWKMOD) at the end of the 1st pilot round, namely 32. At the end of the 2nd pilot round this decreased to 25.

The increase in physical activity in the first pilot round is not present in the second pilot round. The average scores (figure 3.1.1) for the moderate and all

exercise-related activities were at a higher level at the end of the second pilot round than at the start of the first pilot round.

Figure 3.1.1: Kilocalories (per kg) per week-Bologna
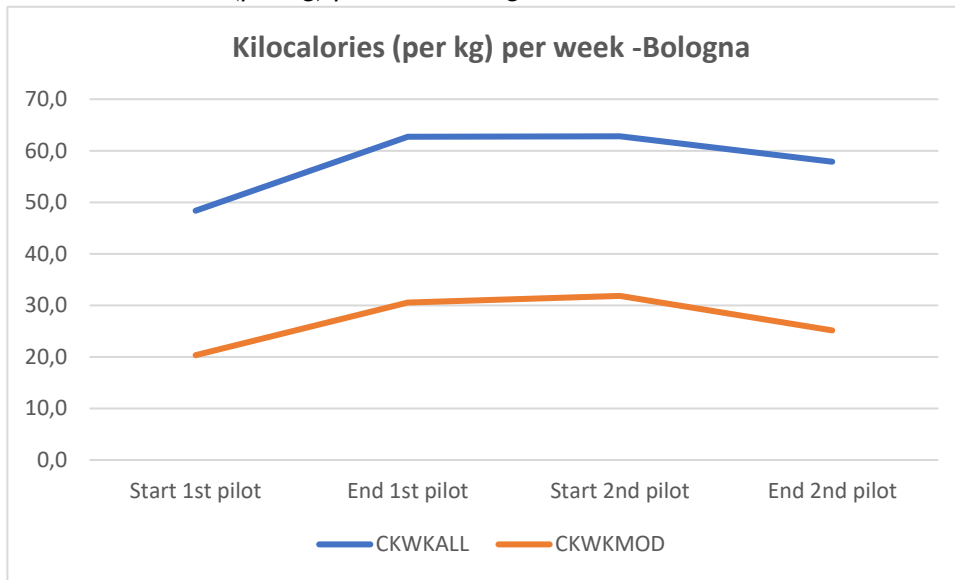
A similar pattern is seen with the number of exercise related activities per week, there was an increase in the number of weekly activities (moderate and all exercise related activities, reaching a peak at the start of the 2nd pilot round and a decrease at the end of the 2nd pilot round. The frequencies of the activities were still higher than at the start of the first pilot round.

Figure 3.1.2: Frequency per week-Bologna
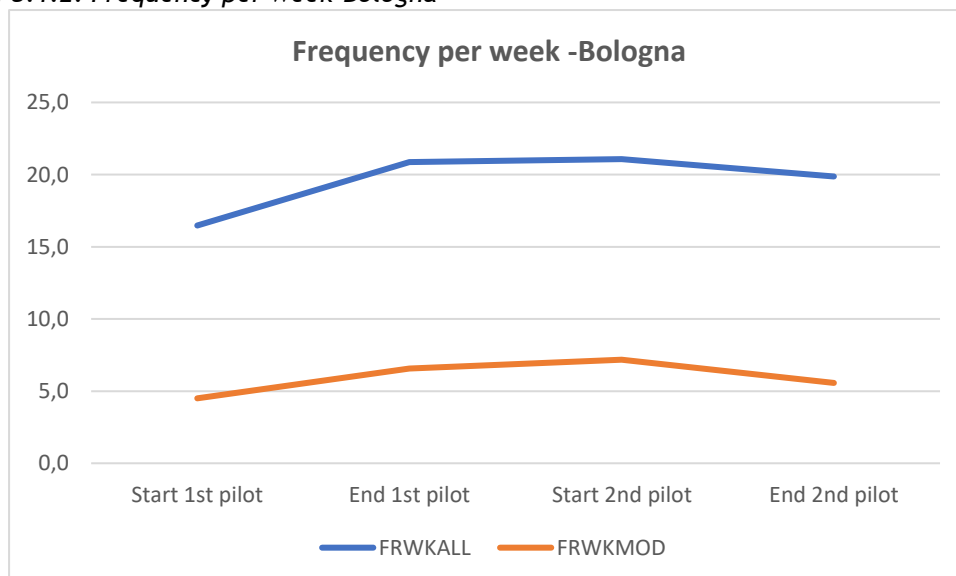
The program seems effective in enhancing physical activity for elderly and disabled people in the 1st pilot round but not in maintaining this increase at the end of the 2nd pilot round.

3.1.2 Physical Activity questionnaire (CHAMPS) in Sevilla la Nueva

Table 3.1.2: Results Sevilla la Nueva physical activity (Champs)

	Start 1st pilot	End 1st pilot	Start 2nd pilot	End 2nd pilot
CKWKALL	50,2	47,0	57,4	50,9
CKWKMOD	26,4	23,0	33,8	25,3
FRWKALL	21,1	22,1	20,3	17,5
FRWKMOD	8,6	8,7	9,0	6,5

CKWALL = Kilocalories (per kg) per week of all exercise-related activities
CKWKMOD = Kilocalories (per kg) per week of moderate-intensity exercise-related activities
FRWKALL = Frequency per week of all exercise-related activities
FRWKMOD= Frequency per week of moderate-intensity exercise-related activities

Interpretation

The mean kilocalories (per kg bodyweight) per week of all exercise-related activities decreased from 50 before the 1st pilot round to 47 after the 1st pilot round. This difference is not statistically significant with an independent samples test. The Kilocalories per week of moderate-intensity exercise-related activities decreased from 26 to 23. This difference was also not statistically significant with an independent samples test. Both differences were smaller than the Minimal Clinical Detectable Change of the CHAMPS (Sattler et al., 2020).

No solid conclusions can be drawn from this analysis. The sample size was a lot smaller compared to the sample size in Bologna. The duration of the 1st pilot round was about half of the 1st pilot round in Bologna. The very high temperatures in June might have made the participants less active. In Sevilla la Nueva the participants were not able to use the InAbled Cities App.

The number of calories used in all activities (CKWKALL) at the start of the 2nd pilot was 57 and at the end of the 2nd pilot the average was 51 (table 3.1.2; figure 3.1.3). This is almost at the same level as at the start of the first pilot (namely 50). This was also the case with the moderate activities (CKWKMOD)

(table 3.2, figure 3.3). At the beginning of the 2nd pilot, it is at its highest, namely 34. At the end of the 2nd pilot this is 25. This is slightly lower than at the start of the 1st pilot round (when it was 26).

Figure 3.1.3: Kilocalories (per kg) per week-Sevilla la Nueva
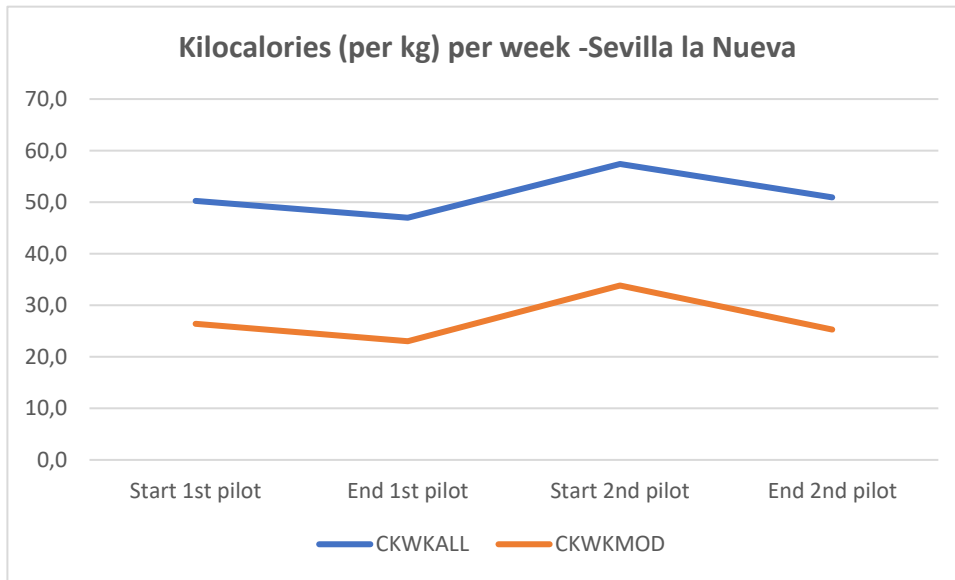
The number of exercise related activities per week (figure 3.1.4) decreased during the 1st and 2nd pilot rounds. There is a decrease in the number of weekly activities (moderate and overall). The frequencies of the activities are lower than at the end of the 2nd pilot then at the beginning of the 1st pilot round.

Figure 3.1.4: Frequency per week-Sevilla la Nueva
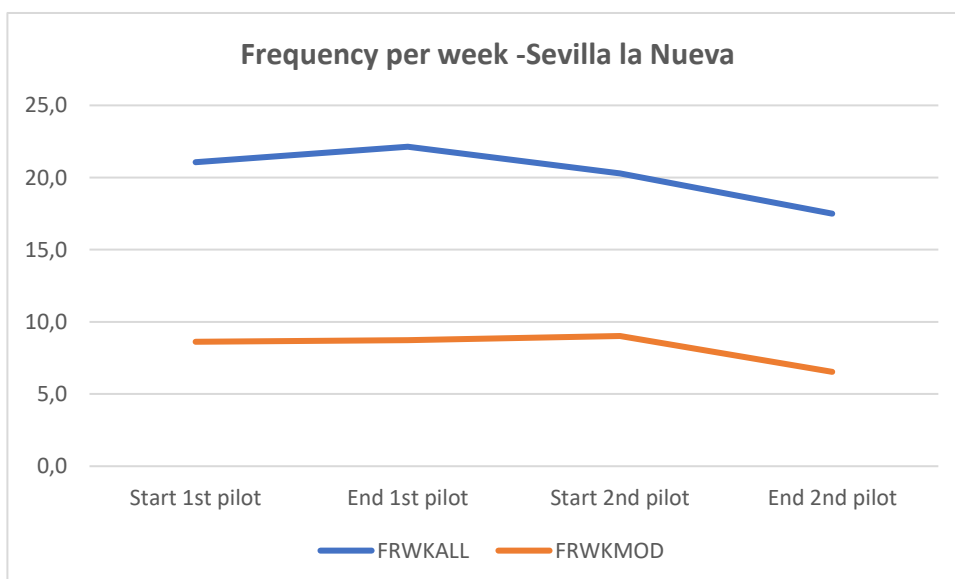
The following figures (figure 3.1.5-3.1.8) show the differences between the two regions, Bologna and Sevilla la Nueva, separately for CKWKALL, CKWKMOD, FRWKALL, FRWKMOD).

As displayed in figure 3.1.5 and figure 3.1.6 in the 1st pilot round there is an increase in for Bologna and a decrease in Sevilla la Nueva. In the 2nd pilot round, both regions start with a higher CKWALL than in the 1st pilot round. And the CKWKALL decreases during the 2nd pilot round for both regions. A similar pattern is visible for the CKWMOD.

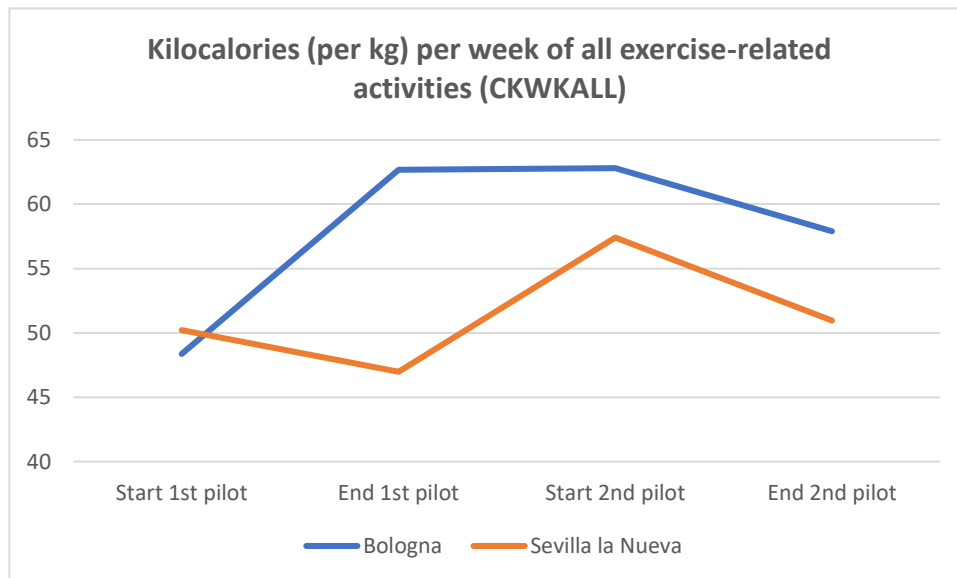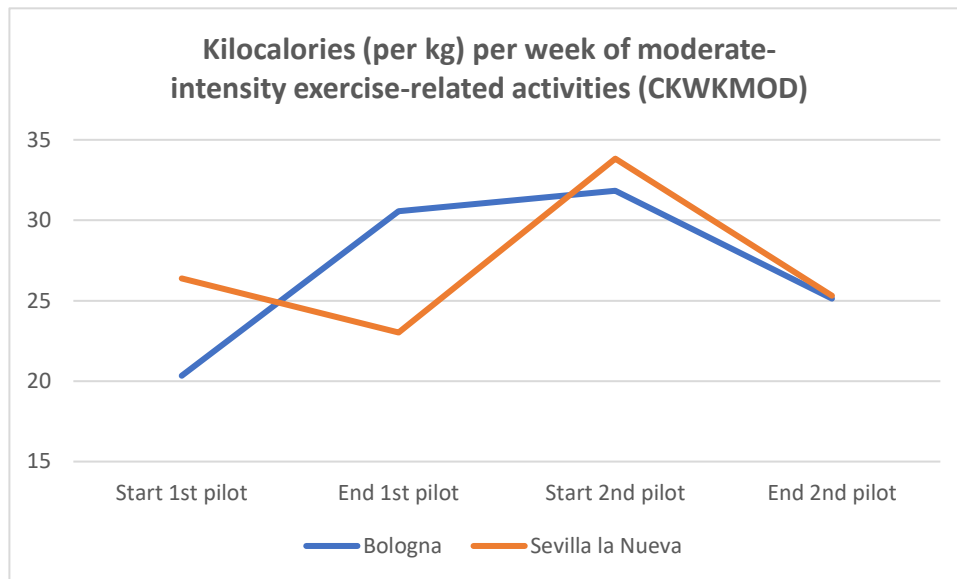*Figure 3.1.5: Kilocalories (per kg) per week of all exercise-related activities (CKWKALL)*

Figure 3.1.6: Kilocalories (per kg) per week of moderate-intensity exercise-related activities (CWKMOD)

In figure 3.1.7 and figure 3.1.8 the frequencies of the activities (all and moderate) are displayed. In the 1st pilot round, there is an increase in activities in both regions but a stronger increase in Bologna. In the 2nd pilot round, there is a decrease in both regions.

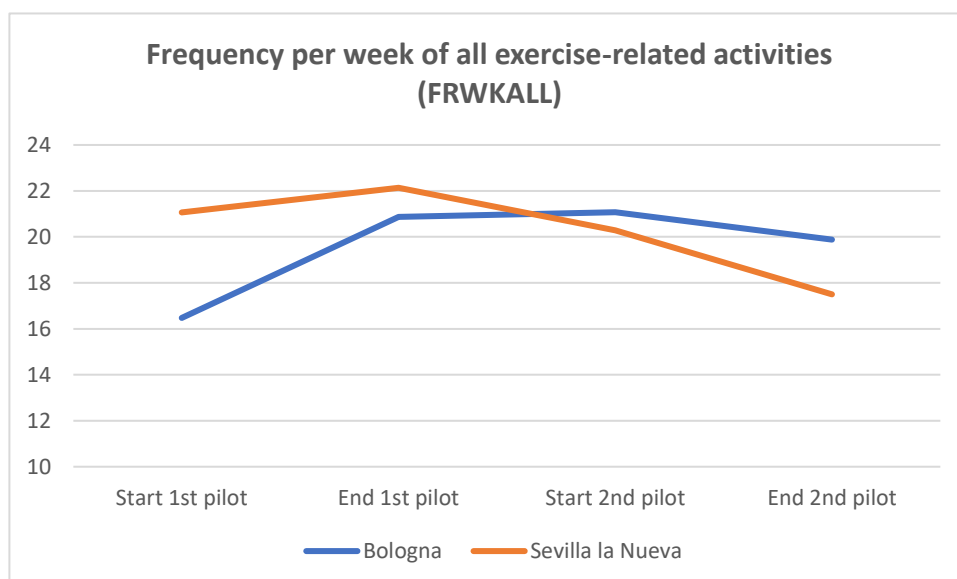*Figure 3.1.7: Frequency per week of all exercise-related activities (FRWKALL)*
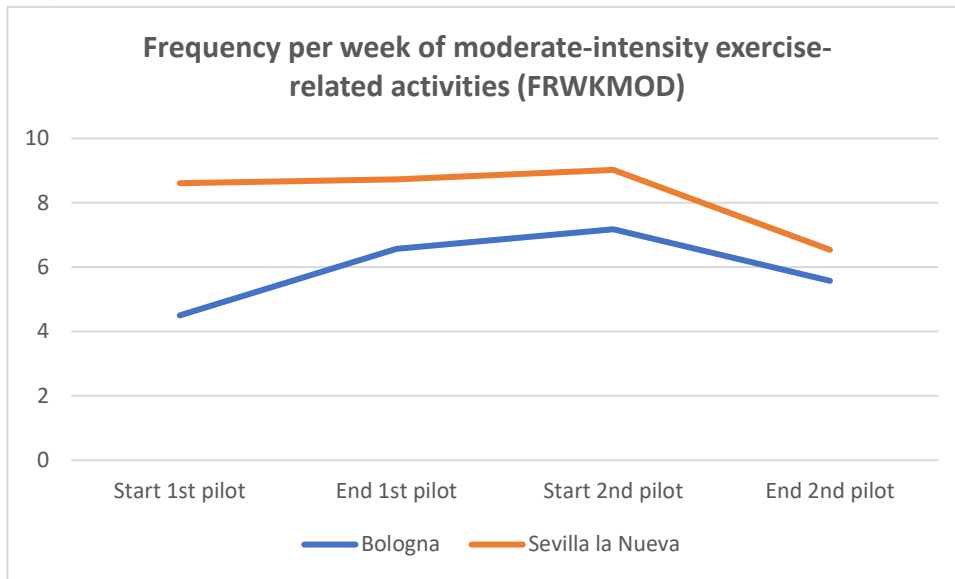
Figure 3.1.8: Frequency per week of moderate-intensity exercise-related activities (FRWKMOD)

3.1.3 Participants in the 2nd pilot round that also participated in the 1st pilot round
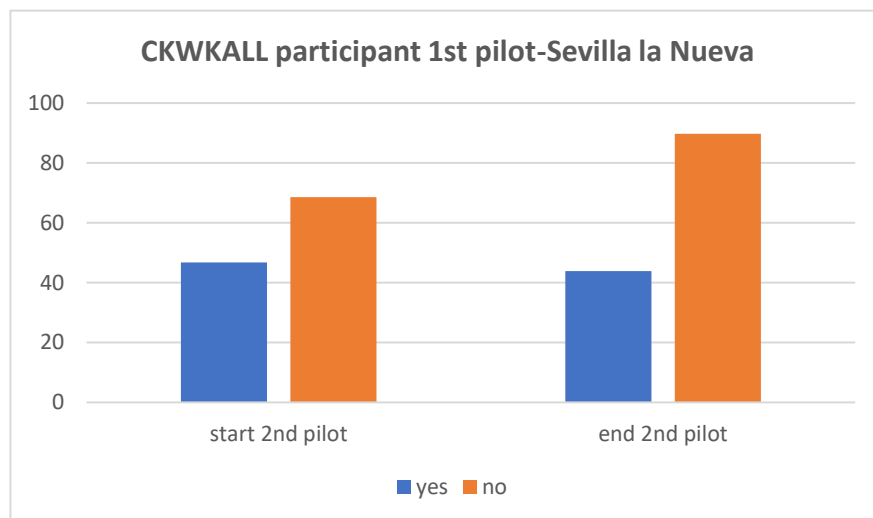
At the start of the 2nd pilot round and at the end of the 2nd pilot rounds, participants were asked whether they participated (yes or no) in the 1st pilot round. Unfortunately, it is not possible to calculate the scores on the different parts of the champs on an individual level. We can, however, show what the differences are per measurement moment at group level (figure 3.1.9).

Figure 3.1.9: CKWKALL participants 1st pilot round Bologna
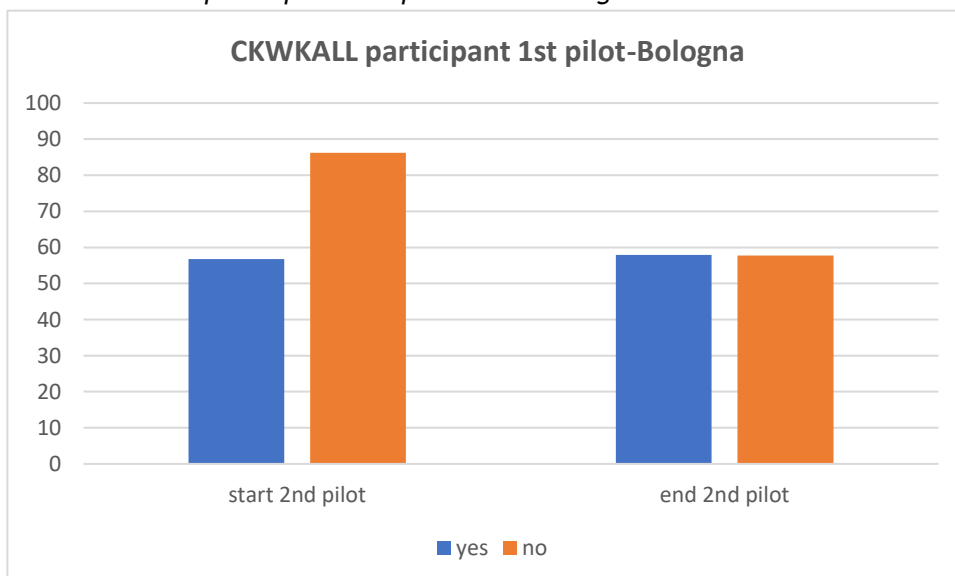
The people in Bologna who indicated that they did not participate in the 1st pilot round report a higher number of kilocalories (per kg) per week of all exercise-related activities (CKWALL), namely 86, than the people who did participate in the 1st pilot round (an average score of 56 CKWALL). At the end of the 2nd pilot round there is almost no difference between the groups (both around 58). The participants who participated in the 1st pilot round ("yes") remained stable, those who did not "no" decreased with de CKWKALL.

Figure 3.1.10: CKWKALL participants 1st pilot round Sevilla la Nueva


In Sevilla la Nueva, people who have not previously participated in the pilot are reported to have a higher CKWKALL at both the start and end of the 2nd pilot (figure 3.1.10).

A mean of 69 (pilot participants 47) and at the end 90 compared to the 44 of the pilot participants.

3.1.4 Smartphone

Smartphone users both "yes" and "no" decrease in CKWKALL in Bologna (figure 3.1.11).

*Figure 3.1.11: CKWKALL and smartphone use Bologna*
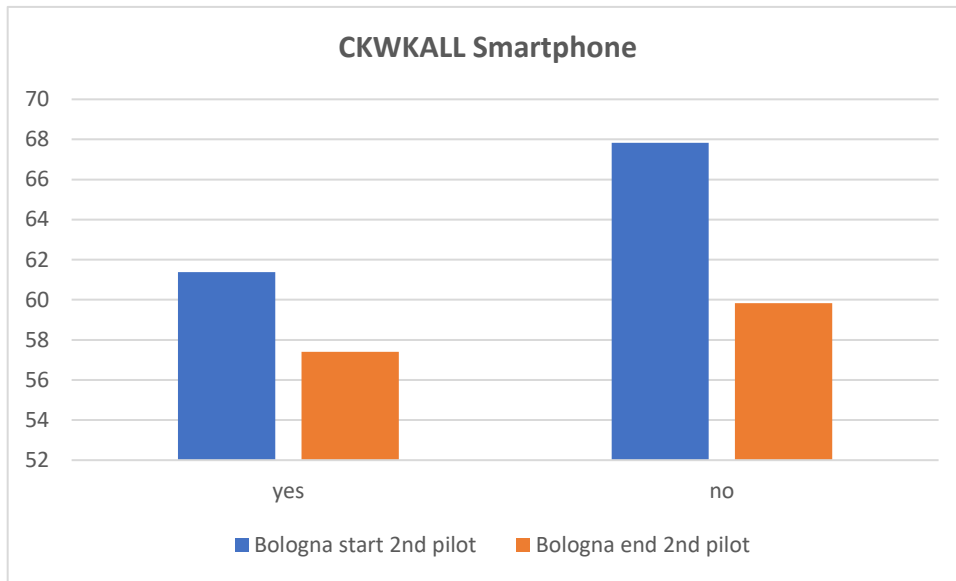
In Sevilla la Nueva the smartphone users group decreased in physical activity level but those who do not a smartphone increase with CKWKALL at the end of the 2nd pilot round (figure 3.1.12).

Figure 3.1.12: CKWKALL and smartphone use Sevilla la Nueva
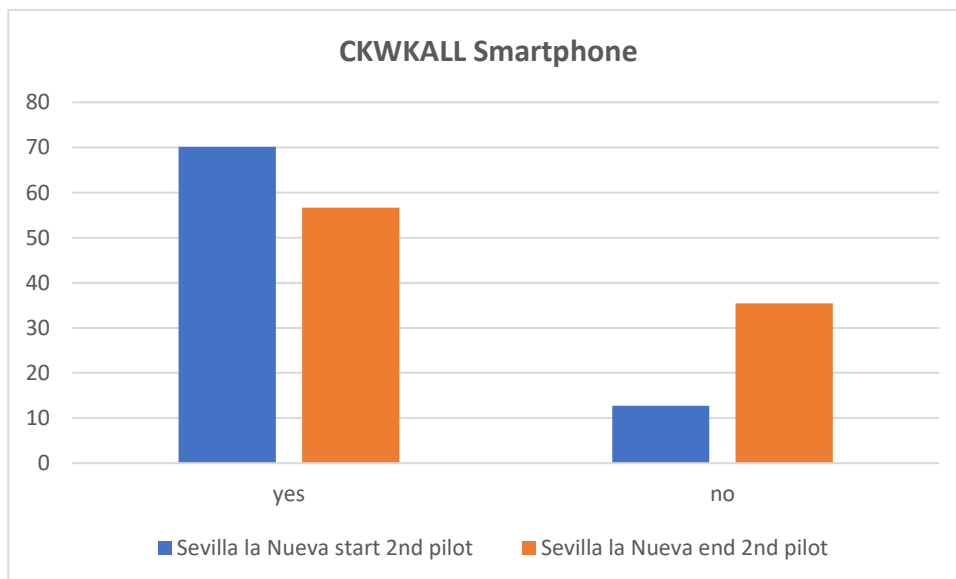
3.1.5 Nursing home

Figure 3.1.13: CKWKALL and nursing home (yes/no)

CKWKALL-nursing home
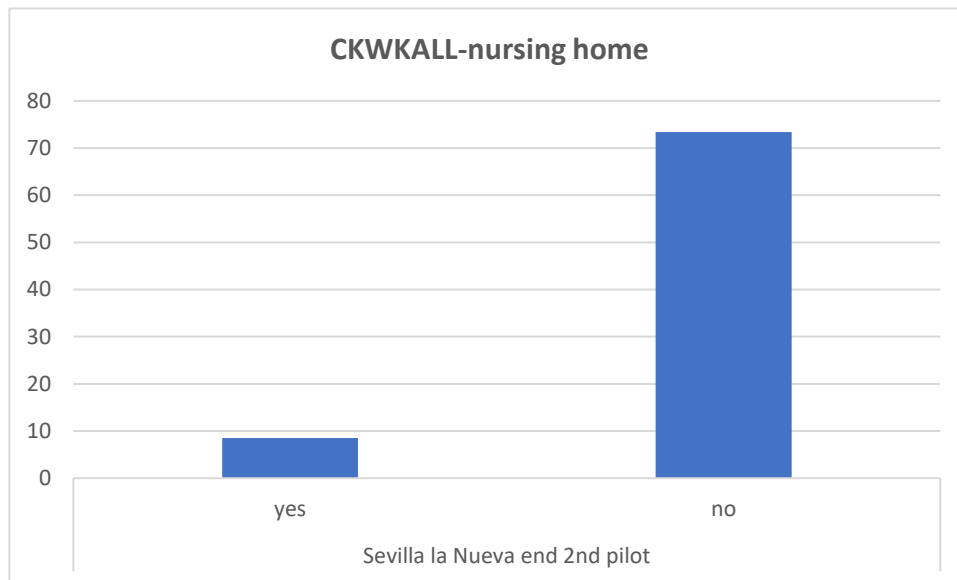
Only in Sevilla la Nueva the people were asked at the end of the 2nd pilot round if they lived in a retirement home. The mean CKWKALL for the people living in the nursing home was 9 for the people who did not it was 73.

3.1.6 Step count

Step count was unavailable in Bologna and Sevilla la Nueva due to technical limitations.

3.2 System Usability Scale (SUS)

Interpretation

The results of the System Usability Scale (SUS) show that the app is usable. Other studies about the SUS reported an average value of 68 points. The score in this study is with 68.97 slightly above average. At the end of the 2nd pilot round this score was slightly lower (61.65). Overall, participants would like to use the app frequently and found it easy to use. The opinions on the complexity and the cumbersomeness of the app vary. Half of the participants reported not

needing support of a technical person to use the app. The majority of the people found the various functions in the app well integrated. The opinions about the inconsistency in the app were widespread. The participants reported that they thought the app was fairly easy to get used to for other people. People were quite confident using the app. The opinions about needing to learn a lot of things before being able to use the app varied a lot.

Table 3.2.1: System Usability Scale Bologna (end of 1st pilot round: n=17 end of 2nd pilot round: n=53)

SUS Bologna	Mean (sd)	(min-max)
End of 1st pilot round: n=17	68,97 (18,79)	(47.50-100.00)
End of 2nd pilot round: n=53	61,65 (25,81)	(2.50-100.00)

System Usability Scale Sevilla la Nueva was unavailable at the end of the 1st pilot round, the app was not yet translated into Spanish and therefore only tested at the end of the 2nd pilot round. The score in Sevilla la Nueva is with 51.88 below average.

If we look at the answers to the item scores (in the appendix you can see the results on item level), it can be seen that the range of the scores is very large, and that the neutral category in particular is often used. There is disagreement about the usability of the app.

Table 3.2.2: System Usability Scale Sevilla la Nueva (end of 2nd pilot round: n=20)

SUS Sevilla la Nueva	Mean (sd)	(min-max)
End of 2nd pilot round: n=53	51,88 (17,79)	(17,50-80,00)

3.3 Appropriateness, Feasibility, Acceptability of Practical Intervention Methodology (PIM) and Citizen Engagement Strategy (CES)

In Bologna the overall score for the PIM was slightly higher after the 2nd pilot round (figure 3.3.1).

Figure 3.3.1: PIM results Bologna
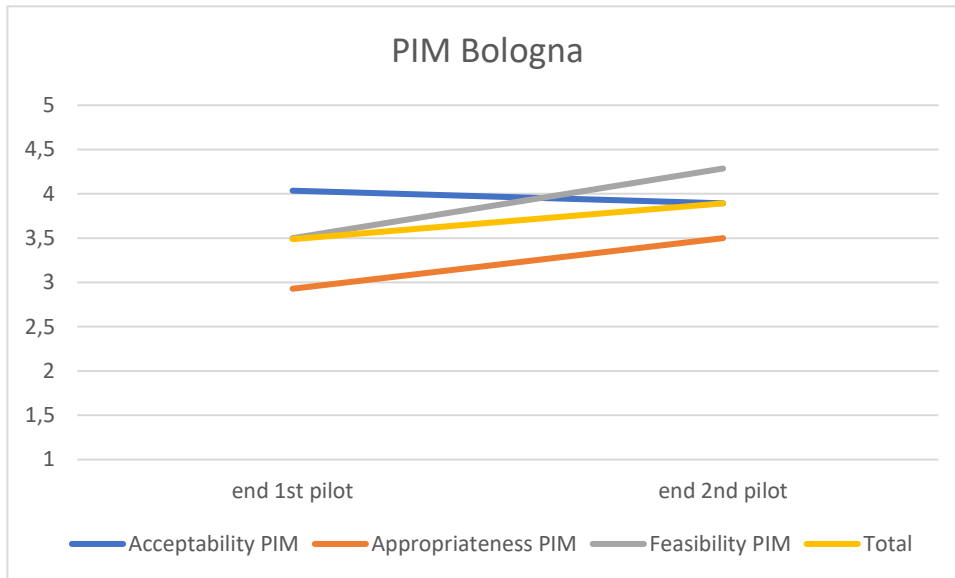
The total score for the CES was slightly lower after the 2nd pilot, although the scores remain high (figure 3.3.2). All scores are above 4, the biggest difference can be seen for the Feasibility of the CES, which is lower at the end of the 2nd pilot round.

Figure 3.3.2: CES results Bologna
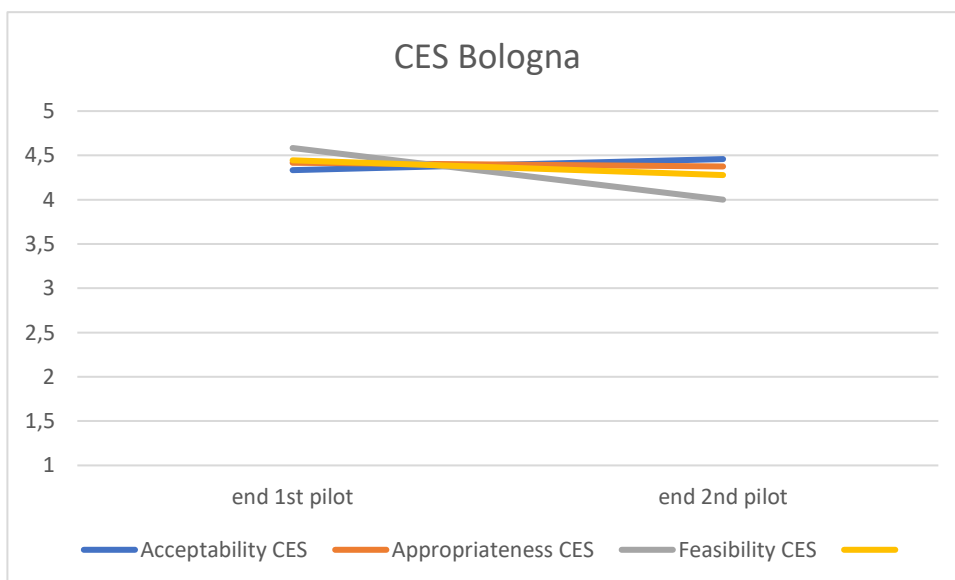
In Sevilla la Nueva the total score of the PIM was clearly higher after the 2nd pilot (figure 3.3.3).

Figure 3.3.3: PIM results Sevilla la Nueva

PIM Sevilla la Nueva
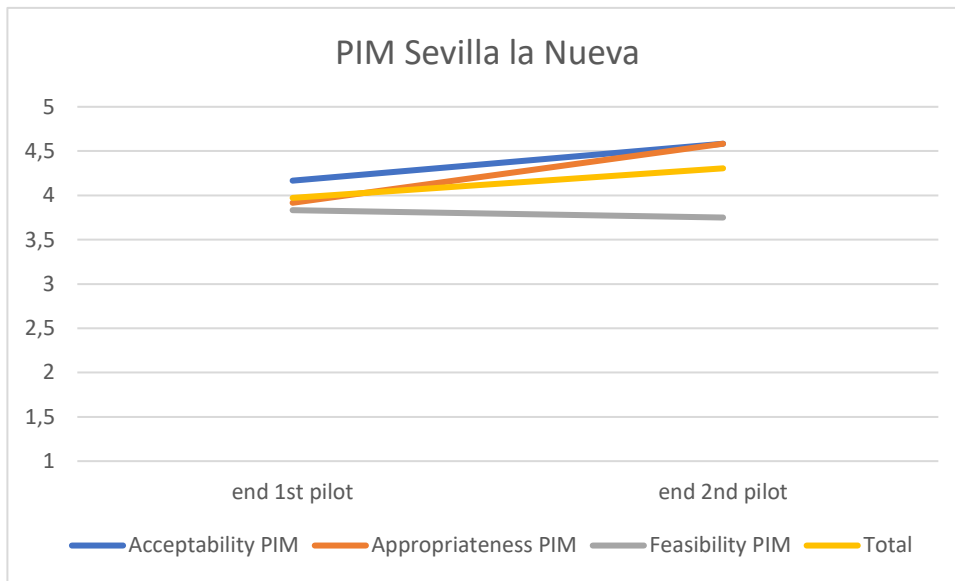
Looking at the CES in figure 3.3.4 it slightly lower at the 2nd pilot in Sevilla la Nueva.

Figure 3.3.4: CES results Sevilla la Nueva

CES Sevilla la Nueva
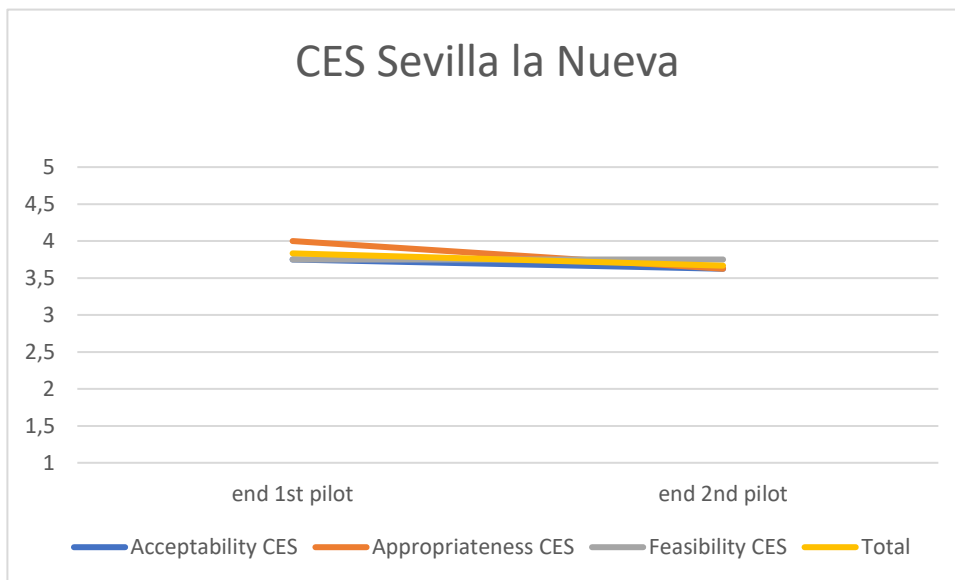
3.4 Quality of life and overall health

For the answers to the individual items, see the appendix.

Figure 3.4.1: QoL and overall health
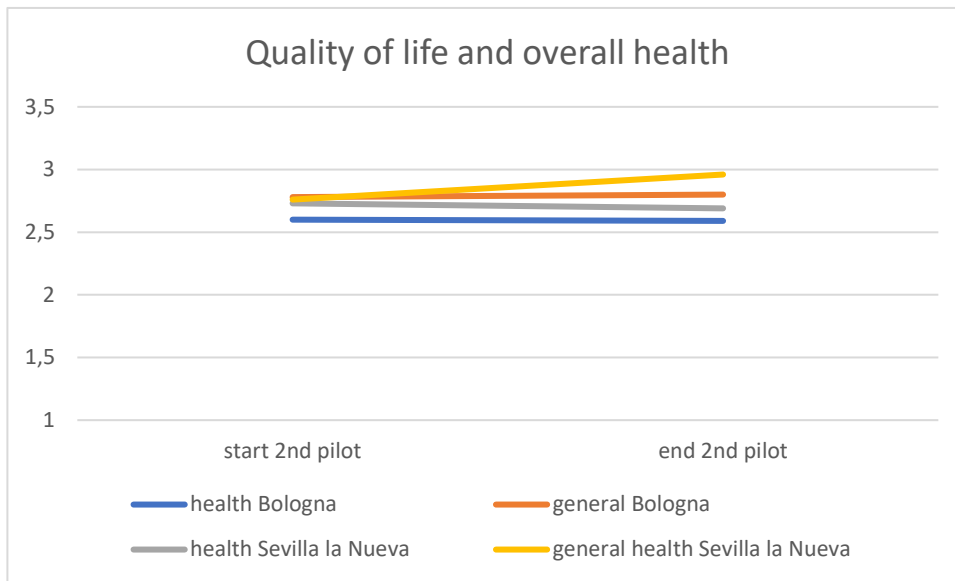
The scores for overall health and general quality of life (QoL) are at all times and for both regions between 2.5 and 3. In Bologna, the scores for overall health and general QoL remained almost the same at the beginning and the end of the 2nd pilot round. For health the average score was 2.6 and for general the average score was 2.8. In Sevilla la Nueva, the average score for health at the beginning and at the end of the 2nd pilot round was 2.7. For the general score, there was an increase from 2.8 to 3.

Figure 3.4.2: QoL and overall health, participants 1st pilot round "yes"
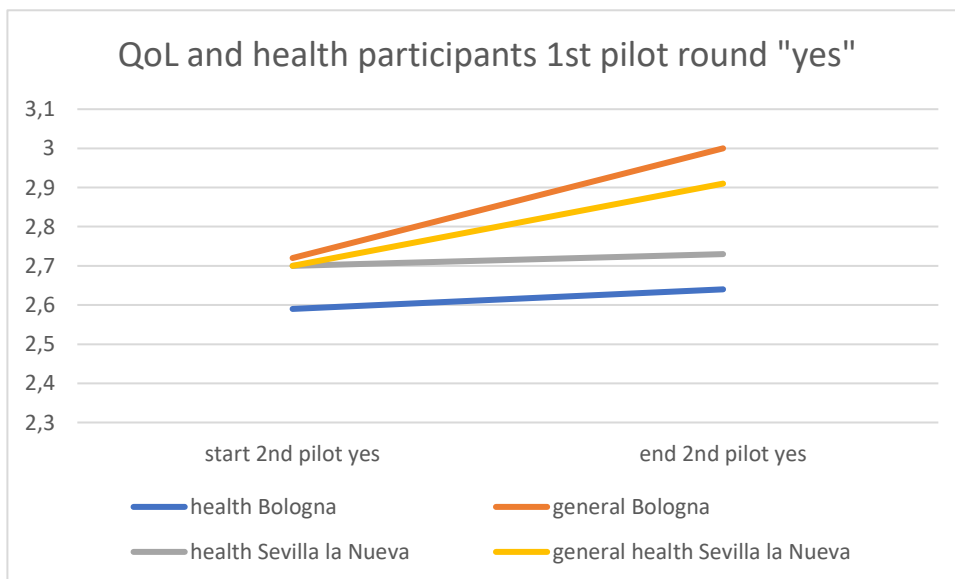
Figure 3.4.3: QoL and overall health, participants 1st pilot round "no"
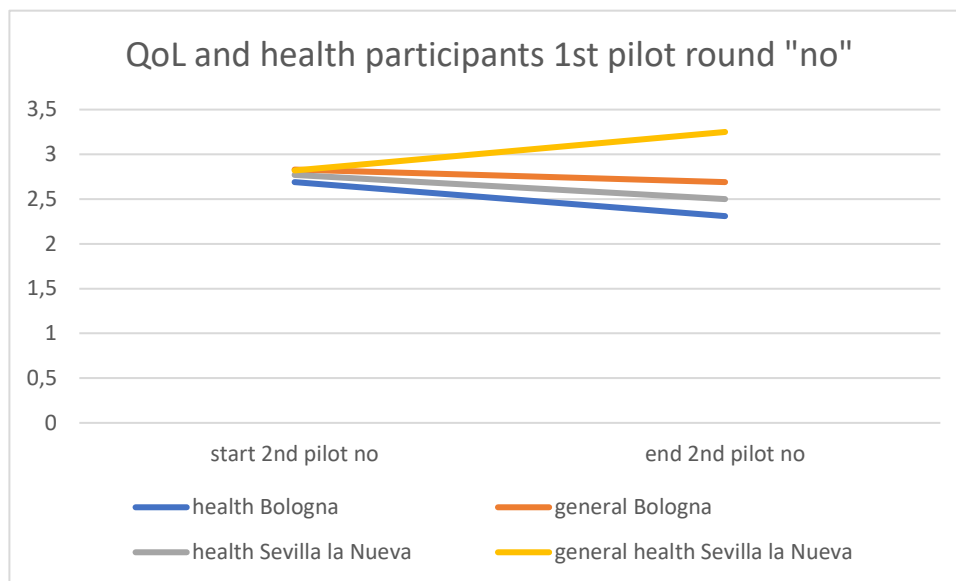
In Bologna it is clearly visible for both general QoL and overall health, the participants who participated in the 1st pilot round actually reported a better QoL than the people who did not participate in the 1st pilot round. The Quality of Life Health in Sevilla la Nueva when a participant of the 1st pilot round, stayed stable but decreased for the people who did not participate in the 1st pilot round. The general QoL increased for both groups in Sevilla la Nueva but the increase was larger for the people who did not participate in the first pilot round.

In Bologna for general QoL, the people with a smartphone remained stable from the start to the end of the 2nd pilot round (a score of 2.6). For Health QoL this group decreased (from 2.9 to 2.8). The people who did not have a smartphone increased (2.5 to 2.9) for general QoL, but they decrease for health QoL (2.7 to 2.4).

Figure 3.4.3: QoL and overall health, smart phone "yes"
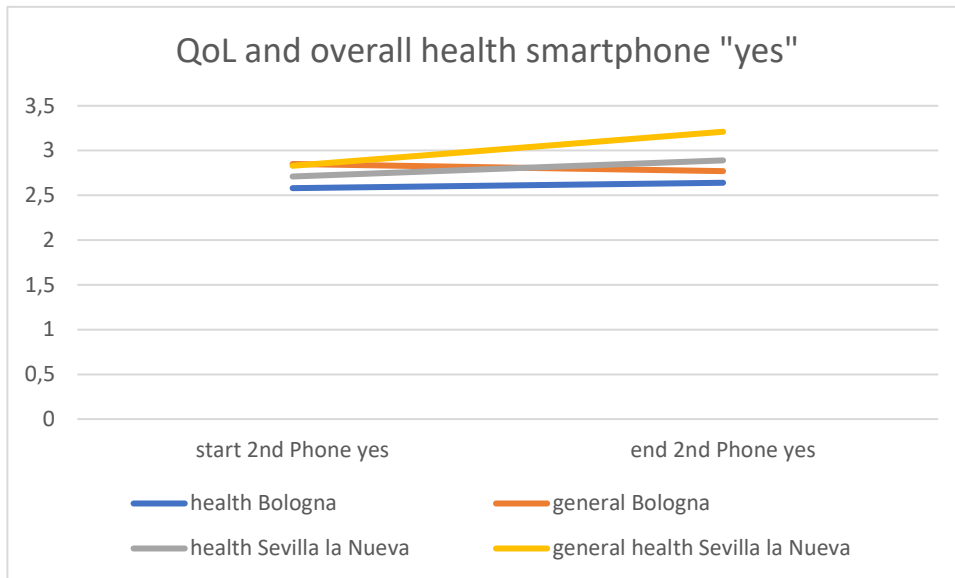
The Quality of Life and overall health for Sevilla la Nueva improved for the people (2.7 to 2.8) who have a smartphone but decreased (2.9 to 2.1) for the people who do not have one. For Quality of Life Health there is an increase (2.8 to 3.2) for the people who did have a smartphone and a decrease (2.5 to 2.3) for those who did not have a smartphone.

Figure 3.4.4: QoL and overall health, smart phone "no"
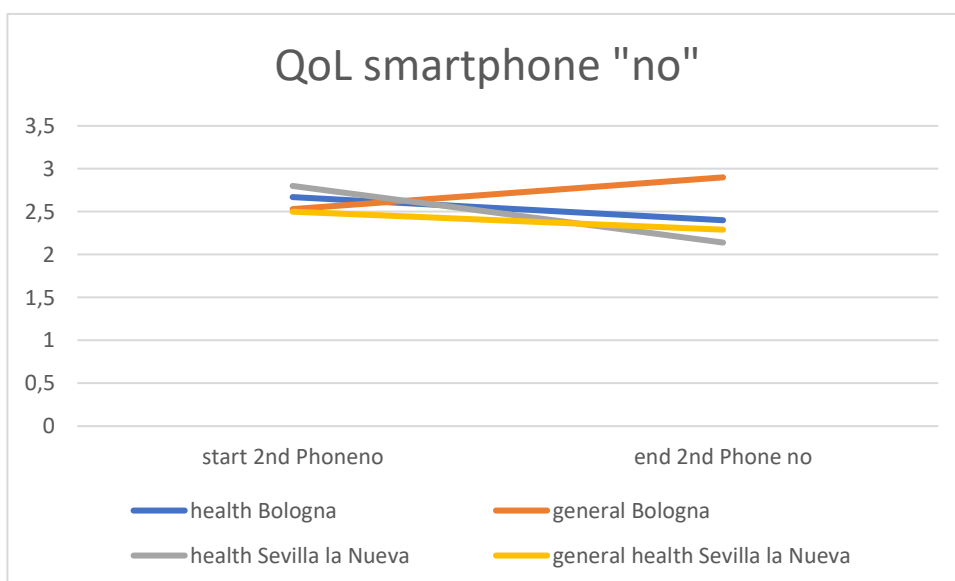
3.5 Qualitative results

Open-ended questions to participating citizens were used to evaluate the Practical Intervention Methodology (PIM). Interviews were performed by communication managers who provided an English summary. The local researcher performed a verbal evaluation conversation with multiple healthcare professionals and communication managers. The local researcher provided an English summary. This was done both for the 1st and for the 2nd pilot round.

Summary of qualitative feedback from evaluative conversations with participants and healthcare professionals:

3.5.1 Municipality of Bologna: results of the 1st pilot round

Group exercises results

- Everything is OK. Participants' general satisfaction and willingness to continue the activity;
- Participants are very satisfied with the Physical Activity Manager (PAM);
- Good teamwork in conducting the session between the physio (playing a supervising role) and the Physical Activity Manager;
- There is a need for more challenging exercises for some participants;
- It is important that participants learn that fatigue is a good thing;
- Physical Activity Managers and physiotherapists should encourage participants to focus on the quality of the exercise;
- More physiotherapists are needed to provide more guidance to the frailer participants (budget? Retired physiotherapists?);
- Physiotherapists request a medical history of people before the start of the 1st training for safety reasons;
- Group exercises should be easier to individualize to a person's own level;
- The frailer groups need more physical assistance during exercises than 2 persons can provide;

- Participants, communication managers, physical activity managers, and physiotherapists like the program;
- Participants especially appreciated the balance exercises; it made them more confident in daily function;
- Particular appreciation of balance and strength exercises;
- Dedicate more time to use the App, even whole sessions of autonomous use, so participants become more familiar with it and feel comfortable enough with the App to use it by themselves (promotion of the effect in the long term);
- Physiotherapists have adapted exercises modifying small gestures to lower/increase the difficulty of some exercises, they have created a progression;
- Add more complex exercises in category 5;
- Very complete program, adapts to different needs. For example, people that joined the program doubting its effect (they have a good aerobic capacity) have enjoyed a lot of the balance and strength exercises;
- Most of participants consider the app an 'integration support' meaning this should not be a complete replacement for the physical activity manager. The physical activity manager plays a key role to give motivation and confidence and keep the group on track without distractions and correcting the participants when they make mistakes in the execution of exercises;
- Some physical activity managers point out the difficulty of keeping even participants with more difficulty up to speed and stress the fact that a suitable action would be to try to detect the reasons in case those persons stop coming to the activities: this would result in the need for more physical activity managers and the need to form ad hoc groups with the same level of difficulties. Physiotherapists (coordinator and some colleagues) highlight the difficulty to involve in the project more physiotherapists on a voluntary basis: for the second pilot round the

coordinator will try again looking for university interns and will also try involving retired physiotherapists;

- Physical activity managers' idea for next pilot round could be to organize PA session with half an hour in conduction and half an hour in autonomy trying to educate people to independent activity, however always under the supervision of the physical activity manager in presence, instead of envisaging only remote calls; this approach could really help to gain more and more confidence in doing PA and participants would appreciate that.

The InAbled Cities App results

- Participants would really like a group chat function;
- It needs an option to train by yourself;
- Some kind of alarm in the afternoon when you did not exercise/move enough, would be nice;
- A possible arrow for the breathing pattern per exercise might be a good idea;
- More complex exercises might be dangerous for participants;
- Improve the progression between exercises;
- The app should include pop-ups of static displays with tips between exercises;
- Perhaps a BORG-scale can be included to measure the fatigue after a certain exercise;
- It would be nice if participants had insight in their progression in the app;
- Lots of installing problems with the app.

3.5.2 Municipality of Bologna: results of the 2nd pilot round

Group exercises results

Strong points of the group activities:

- Socialisation;

- Confrontation;
- Group is motivating;
- Mutual encouragement;
- The stimulation of the Physical Activity managers;
- Staying active in daily life;
- The ability to Collaborate;
- Cohesion in community;
- Team making;
- The group activity facilitates to do the exercises;
- The locations where the activity takes place also have their importance to spur and stimulate the activity of the group.

Recommendations for group activities
- Testing progress further with respect to adherence to the proposed activities;
- Continue the activities learned but better with the supervision of an expert/trainer who can correct mistakes in the execution of the exercises and make suggestions;
- Implement additional exercises, also plan walks with group coordination, e.g., organise urban trekking.

The InAbled Cities App results

Strong points of the InAbled Cities App:
- Points of interest in the app appreciated;
- Guided training is quite easy and smooth;
- Appreciation on the function 'useful tips and healthy habits', well described and pleasant reading;
- The guided training is quite clear;
- It is useful as a tool for those who have learned the basic movements to do activities on their own;

- The guided training is very basic but without variations;
- Autonomy of everyone, but always supervised by an expert/trainer who can correct participants in the execution of the exercises when the exercises are performed incorrectly;
- The app is quite clear (guided training);
- It is an 'incentive' to get out, not to stay at home.

Recommendations for the future use of the App:
- Audio description about the set of exercises;
- A sound timing for start click time and pause;
- Increase the variety of exercises: having new exercises provides more motivation;
- To adapt the app to any smartphone, even to less performing ones;
- The app would require a training upgrade after a certain period of time;
- To reduce the boring repetition of the same exercise;
- To increase the variety of exercise sets: for example, it is emphasised that a 'menu/exercise programme' could be envisaged periodically, e.g., on a monthly basis.

Physical Activity Managers and Physiotherapists: what do you consider the strengths of the Practical Intervention Methodology?
- The exercises provided are complete;
- The activity carried out by the group well suited the methodology (PIM);
- More autonomous use in 2nd round is complementary to 1st pilot round;
- Well structured, with provision of several training steps: warm-up, balance, flexibility, strength etc;
- The methodology includes a wide variety of exercises in the document/output with different progression and difficulty of the exercises;

- Different backgrounds and professional skills of the Physical Activity Managers supported more comprehensively in leading the group, so multi-professionality played an important role.

Physical Activity Managers and Physiotherapists: what are your recommendations for improvement of the Practical Intervention Methodology?

Specifically to the App:
- Increasing the variety of exercises: having new exercises you have more motivation;
- About new exercise progression: progression that could be based on
    1. verification system through a short questionnaire, after the execution of a given set of exercises over a given period;
    2. providing different levels of difficulty for each exercise;

- Provide evaluative tools for improved functions e.g., strength, balance, etc.

Communication managers: what do you consider the strengths of the Citizens Engagement Strategy?
- Enlarged working group connected to what is 'moving' in the city districts on the topic of the elderly and healthy ageing;
- Effective methodology through the different interconnections of the territorial network;
- The project through also the CES made even more central and formalised the role of the communication managers and volunteers;
- In particular, the word of mouth in the city districts involved, was a successful tool, as well as the posters/calendar on physical activity sessions appointments and the project pilot actions preceded by informative meetings.

Communication managers: what are your recommendations for improvement of the Citizens Engagement Strategy?

- To further strengthen this system that is based on a formal and informal network;
- To consolidate and enlarge the coordination connections between the different actors;
- Further strengthening the dissemination tools used.

3.5.3 Municipality of Sevilla la Nueva: results of the 1st pilot round

Group exercises results

- Participants and communication managers don´t feel that the CHAMPS is useful. They would like other questionnaires that reflected their health state instead, because they´ve felt the bigger changes there;
- Participants and communication managers would like more sessions per week;
- Participants liked strength and balance exercises best, while aerobic exercises were liked the least;
- Participants proposed to change aerobic (walking) for something more social and fun, like group exercises, in which they could work the aerobic component but in a more playful way;
- Physical activity managers feel that participants are a little resistant to work by themselves;
- Participants like the program, especially the interaction with the physiotherapists. They highlighted the good relationship with them and that they feel safer doing exercises when they are present, that´s why they want the same physiotherapists in the second pilot round.

InAbled Cities App results

- Participants haven´t really used it, but they are very motivated to try it in second pilot round;

- Physical activity managers would like group exercises to be implemented in the App (they´ve tried some of them since they are in the Practical Intervention Methodology).

3.5.4 Municipality of Sevilla la Nueva: results of the 2nd pilot

What do you consider the strong points of the group activities?
- Support among the attendees and with the monitors;
- Walking;
- Freedom to go out, to do outdoor activities;
- Presence of a monitor;
- Good organization;
- Perseverance and continuity on their part;
- Humanity and understanding of the monitors.
- Improvement of the physical activity by being in a group;

What are your recommendations for group activities?
- More exercises with objects;
- More sessions per week.

What do you consider to be the strong points of the application?
- Simplicity of the explanation of the exercises;
- Intuitive.

What are your recommendations for the future use of the application?
- Improve the ease of use;
- More exercises with objects such as weights, balls, etc.

Some commented that sometimes the APP did not work correctly.

4. DISCUSSION

After the 1st pilot round of the physical activity-enhancing program for elderly and disabled people we can conclude that the participants and healthcare professionals overall are satisfied with the program. The participants feel the need for a healthcare professional to be there for them. Then they feel safer. Participants are particularly happy with the balance exercises. It is important to work towards autonomy for the participants, especially for the long-term level of physical activity. The autonomous use of the app seems to be a useful tool towards autonomy for the participants but guidance of the healthcare professional and integration with the physical activity program is essential. The possibility for an easy way to progress through the exercises should be available. The presence of physiotherapists and physical activity managers is crucial. However, the recruitment of these healthcare professionals is difficult because of the lack of reimbursement for their participation. The impact of the physical activity-enhancing program seems to be higher in Bologna than in Sevilla la Nueva. A possible explanation for the difference might be that the pilot in Bologna was run in full, with a duration of twelve weeks, while in Sevilla la Nueva the duration of the pilot was only 7 weeks due to logistical issues. Frailer people tend to drop out early because they need much more guidance and assistance of healthcare professionals. The physical activity groups should be arranged according to physical activity level/fitness. Then the group exercises can be adjusted to the individual needs of the participants. The app seems to be beneficial, but the usability can be improved. Participants should be able to train on an individual basis with using the app. They need training and guidance to attain autonomy in using the app.

In the 2nd pilot round in Bologna, the Champs' physical activity score decreased. People who participated in the first pilot round remained stable in their Champs score. The people who did not participate in the 1st pilot round decreased in their physical activity over time. Due to the phasing out of the supervision

during the activities, more self-discipline was asked of the participants. The idea was that having a smartphone would help to continue the program independently. In Bologna, however, in the 2nd pilot round, the score decreased for both groups. In Sevilla la Nueva, the total score of the Champs decreases in the 2nd pilot round. Participants in the 1st pilot round decreased in physical activity levels in the 2nd pilot round. People who did not participate in the first pilot round actually increased their score slightly. In Sevilla la Nueva, the participants who lived in a nursing home stopped on their own. These people decreased in their Champs score, the other group increased somewhat in their physical activity score.

The system usability scale slightly decreased in both communities in the 2nd pilot round. The Quality of Life in both communities remained stable.

What is remarkable is the decrease in physical activity during the second pilot round. That could be the influence of the season, in which people exercise less in wet and colder weather. Or perhaps it has to do with the transition of activities from outside to inside. The amount of guidance has gradually decreased during the project, this could also be an explanation for the decrease.

4.1   Recommendations for policy makers

Investing in supervised training activities accompanied with a mobile device application might increase the physical activity levels of elderly people. There seems to be a desire for supervision in training. Targeting at homogenous groups seems to the preferred option.

4.2   Recommendations for future research

Future research might focus on larger cohorts in multiple countries investigating the influence of the weather conditions, training indoors or outdoors, and how to work towards autonomous physical activity.

5. CONCLUSION

Overall, the participants and healthcare professionals are satisfied with the physical activity enhancing program. Physical activity levels increased in the 1st pilot round and decreased in the 2nd pilot round. A possible explanation for the decrease in physical activity during the second pilot round is the influence of the season. People possibly exercise less when weather conditions decrease. Another explanation is the transition of activities from outside to inside. Another important factor is that the intensity of the guidance gradually decreased during the project. This could also be an explanation for the decrease in physical activity.

The impact of the physical activity-enhancing program seems to be higher in Bologna than in Sevilla la Nueva in the 1st pilot round. A possible explanation for the difference might be that the pilot in Bologna was run in full, while the pilot duration in Sevilla la Nueva was much shorter.

The InAbled Cities App seems feasible for enhancing physical activity but further development is recommended. Future research should focus on solutions for exercising in decreased weather conditions, working towards more autonomous and tailored exercise in larger populations.

6. REFERENCES

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