

EXPLORING AND UNDERSTANDING PHYSICAL ACTIVITY AMONG OLDER ADULTS

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Abstract

This report explores the question of how older adults understand and experience exercise (and physical activity) in their everyday lives. We provide this understanding by deploying a cultural probe study with seven participants in two local retirement communities. The result of our work is a set of design goals for a system to support remote activity.

Introduction

Our interest is in designing systems that facilitate and encourage physical activity among older adults. To support our design process, we conducted a cultural probe study [1]. The focus of this process was to understand their attitudes towards physical activity and its role in their lives.

Various works have explored playful mechanisms to engage older adults in physical activities [2][3][4]. For example, Gerling et al. [3] ran a case study on designing a balance game for elderly people to identify game design guidelines for this age group. Fan et al. [2], investigated barriers to physical activities for older adults, and presented four areas where technology can be helpful in engaging them in physical activities; awareness of personal limitations, social motivation, establishing routings and finding enjoyable activities.

Our work builds on prior works that explore designing for older adults. Using this knowledge, we decided to involve elderly people from local senior homes in the design process to come up with a custom design appropriate for this community.



Figure 1. Collected materials from our participants

Cultural Probes

The goal of the cultural probe was to uncover attitudes and perceptions of physical activity among older adults. We designed twelve probes to investigate different aspects of their lives, which involve physical activities.

When designing the cultural probes, we wanted to make sure that there is an informal and playful feeling with the tasks so that it could elicit informative responses from our participants [1]. In order to do so, we designed weekly activity booklets, repackaged our disposable cameras, used handmade stress-balls, and assembled weekly bags for them.

We designed the probes so that each probe did not take more than 10 to 15 minutes of the participants' time. After this phase, we filtered out the probes that were not aligned with our research goals, or were not easy to complete.

We constructed a booklet for each of the three weeks of the study. Each booklet had different probes. We tried not to overlap activities except for one task each week; we gave the participants a disposable camera and asked them to take pictures of different subjects each week. They had to take photos related to the trigger words or whatever they felt was important to share with us. The other probes were a combination of traditional probes (e.g. cameras, postcards) and playful probes that we specifically designed for our study (e.g. drawing, playing with a stress ball). The specifics of each probe can be found in the Appendix.

Participants

We recruited seven participants from two local retirement communities, six females and one male. The participants ranged in age from 74 to 97. They all considered themselves active people throughout their life.

Method

We brought a two sample probes with us to the senior homes and presented them to a group of potential participants. Then, we started by conducting an initial interview with the volunteers to learn more about each participant and their lives. We used this time to create personal connections to provide a feeling of comfort for them so that they can openly talk about their experiences to us. It also helped us to keep the participants motivated to complete the weekly cultural probes. Each week, we met with our participants to collect the materials from the previous week, check in with them, get feedback and go over what the next week booklet.

Findings

We got back 327 things back from our participants ranging from photos to diaries, postcards, etc. (Figure 3). In this diverse data, we were looking for inspiring themes rather than facts. In the first step, we searched for recurring themes. Then, we selected the ones that could possibly contribute to our design.

First, we found that they enjoyed sharing their activities with younger people. There were different cases where they mentioned how they get encouraged and/or motivated while interacting with younger people. For example, one of the participants wrote in her diary, “Activities with small children could brighten our days”. Another participant was asked what makes you feel accomplished. She responded, “Being with my kids/grandkids and sharing in their activities” (Figure 4). Family members are of a high importance to most of our participants. They relied on their kids for doing different activities like walking/hiking, and perceived them as a major factor for their well-being: “I have three daughters living in Calgary. They encourage my physical well-being and give me great joy”.

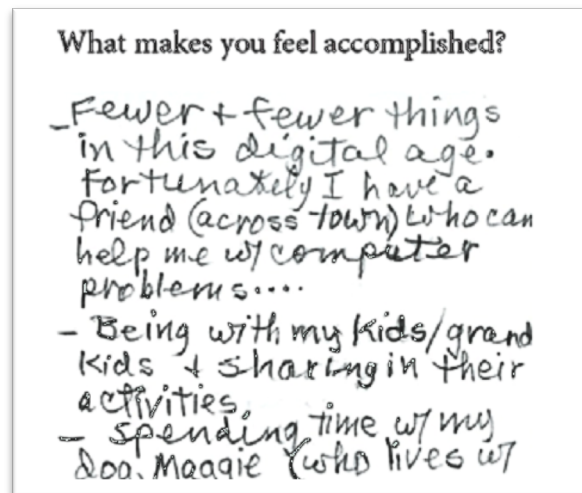


Figure 2. A sample response written on the back of a postcard

Another recurring theme was that most of our participants enjoyed being in situations that remind them of their pasts. They proudly talked about their life accomplishments in face-to-face interviews. In addition, they said being in same places in which they used to do physical activities when they were young could help them feel happy in response to couple of postcard questions. Here are a couple samples: “I love walking in beautiful, wild areas. They remind me of walks/hikes with my father/family when I was a girl. Happy peaceful times”, “I ran cross-country. The training was in the countryside, which I enjoyed immensely. I miss that, but I still walk in the countryside”.

The older adults enjoyed spending time outdoors. Hiking and walking were one of their favorite exercises, but mobility and weather was an issue for some. This was found in their drawing of their ideal activities and their thoughts as well: “I enjoy walking very much, especially in summer as the flowers look so pretty and bright”

Lastly, we found that music could play a big role in motivating them to get more active, and dancing was the favorite physical activity for many of them. For example, one of the participants pointed out the importance of music for her in her diary, “I feel that activities with music inspire seniors to get up and move about. Slow dancing lessons would be worthwhile. This might even encourage men to participate”. Here is another participant’s thoughts: “You can be so tired and have a very down feeling when some singing will change your world”.

Next, we started brainstorming ideas with the help of our colleagues. In designing our ideas, we were aiming to come up with ideas addressing both common issues senior people are facing like isolation, mobility issues and the main themes we found in our study.

We came up with around fifteen design ideas, detailed in the Appendix. Several of them related to music and dance (Figure 3 shows a sample idea called LightFloor).

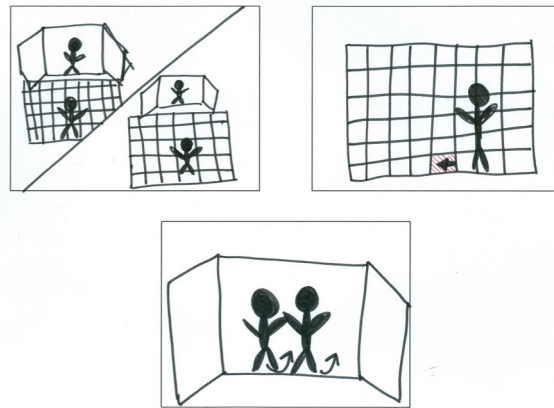


Figure 3. Two people stand in front of a display and dance remotely together. They receive feedback through a light floor.

Next, we went back to the seniors, and asked which one of our ideas do they like the best. Most of them were interested in ideas that involved dancing. We decided to start working on a remote dancing system as it involved both music and rhythmic moves. In addition, it would allow them to do a fun group exercise from comfort of their homes with their loved ones (e.g. grandkids), which would address two of our main findings.

Design Goals for a Shared Dance System

Based on our formative study, and the feedback received from our participants, we decided to focus our efforts on a shared dance system. In this section, we detail several high-level design goals that future designers should consider in putting together such a dance system.

Addressing loneliness. While the basic idea that older adults are lonely is not novel, we were struck by the many different ways that older adults address this problem. Many of our participants found themselves engaging in more activities than they would have prior to retirement, such as engaging in volunteerism, participating in crafting classes, or dancing classes. Yet, even this presented challenges: not all older adults had easy access to transportation, many simply could not leave the facility, and some were just too shy to meet others. Our design solution needed to provide people a means to address loneliness without necessarily needing to have access to transportation.

Low-impact physical activity. We are still interested in providing a means for older adults to engage in physical activity. Considerable prior work has demonstrated that even light activity can be beneficial to the health of older adults. Yet, our participants were not interested in activities that were necessarily

“exercise”—that is, “exercise” was not high on the list of priority activities. As such, we needed to design support for an activity that would, as a consequence of participation, result in light physical activity.

Sharing, shared or parallel experience. We were fascinated with the distinction between sharing experiences vs. shared experiences vs. parallel experiences [5], [6]. Specifically, many systems allowing sharing of experiences, where one participant can share (e.g. via video stream) an activity. In contrast, we can imagine shared experiences, where participants are actively engaging in the same activity together, where one’s participation meaningfully affects the other’s engagement with the activity. This is in contrast to parallel experiences, where people engage in similar activities, but enjoy them in parallel (i.e. one’s actions do not meaningfully affect the other’s engagement/enjoyment of the experience). Of these, we felt that shared experiences meant that people would be motivated to return to the activity, as it presented a meaningful way to interact with another person (thereby addressing loneliness).

Open experiences. Many video games provide fairly closed experiences, where the experience is essentially limited by a script, or “what has been programmed.” In contrast, we were interested in designing an experience where participants had the opportunity to influence the flow and direction of the interaction. In effect, we were interested in the kind of open play experiences afforded by systems such as [7] that provide a shared, but open connected space (e.g. [8], [9]).

We were explicitly not designing for existing technology, and instead looking toward future technology to support our designs. Thus, we did not limit ourselves to consumer grade technology.

Conclusion

This report describes our work in understanding how older adults experience and understand exercise in their daily lives. At the outset, our intention was to design a system to facilitate/engender physical activity among older adults. The result of our cultural probe and discussion with older adults is a set of design considerations for a system for shared dancing – something that the older adults were interested in: it is an activity that allows them to exercise without feeling as though they are exercising. A big reason for this is that dancing is a social activity.

References

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Appendix 1: Cultural Probe Materials

Participant Bio



Name _____

Age _____

Gender _____

Hometown _____

Favorite Colour _____

High School Activities Participated In _____

Write down a quote you might say that sums you, your goals, or beliefs up _____

Camera Activity (First Week)

In your package you will find a disposable camera for your use. We would like you to take a picture of something or some situation that is related to the words written on the camera. Please take two to three pictures per word to ensure there is enough film for entire activity to be completed. This could be a photo of whatever you would like. You can find the same list of words below. Please put the corresponding picture number next to the words so we know what picture goes with what word. Every picture that you take, you will receive a copy at the end of the study. The better pictures you take, the better memories you will have to save.

Week 1 Words:

1. Lively _____

2. Tired _____

3. Childhood _____

4. Gathering _____

Camera Activity (Second Week)

In your package you will find a disposable camera for your use. We would like you to take a picture of something or some situation that is related to the words written on the camera. Please take two to three pictures per word to ensure there is enough film for entire activity to be completed. This could be a photo of whatever you would like. You can find the same list of words below. Please put the corresponding picture number next to the words so we know what picture goes with what word. Every picture that you take, you will receive a copy at the end of the study. The better pictures you take, the better memories you will have to save.

Week 2 Words:

1. Desirable _____
2. Exercise Device _____
3. Proud _____
4. Relaxed _____

Camera Activity (Third Week)

In your package you will find a disposable camera for your use. We would like you to take a picture of something or some situation that is related to the words written on the camera. Please take two to three pictures per word to ensure there is enough film for entire activity to be completed. This could be a photo of whatever you would like. You can find the same list of words below. Please put the corresponding picture number next to the words so we know what picture goes with what word. Every picture that you take, you will receive a copy at the end of the study. The better pictures you take, the better memories you will have to save.

Week 3 Words:

1. Boring _____
2. Communication Device _____
3. Empowered _____
4. Hard work _____

Connection Probe

We would like you to list your routine physical activities that you do alone for us. This could be house chores, walking, or other activities that keep you moving. Please write down activities that you do individually in the boxes below.

Now we would like to ask you to list your routine activities for us. In the right column, please list people you are close to. In the left column, please list activities that you do with others.

Once the boxes are filled, please draw a line from boxes left to right and match activities that you do with people close to you.

Stressball

We have provided you with a stressball in your activity package. We would like you to play and use the stressball for the duration of Week 1. While playing with this ball, please think about how it is helping you and what it makes you feel. Notice if there are changes in your mood and if it is helping you in anyway.

Stressball (Feedback)

Now that you have worked out with the stressball for one week, we would like you to draw a face on it and give it a name that expresses your feelings towards the ball. Afterwards, write down a short story about your experience. Tell us in what ways it did and did not help you.

Name _____

Now that you are done with your exercise, please write down how your body feels? Do you have the same thoughts? How did the exercise match your expectations?

Diary

In the blank pages, feel free to write down or draw ideas, memories, or other thoughts that you believe would be beneficial.

Reflection Drawing

In this task, we would like you to draw an ideal settings in which you want to exercise. It could be either a place you used to go to or even an imaginary place. Feel free to use diary pages if you do not have enough space here.

Mapping Activity

You will find a map of your local area and three colors of stickers located with this activity log. Each sticker type symbolizes one category as shown below. Place five to ten stickers for each category in locations that correspond to what the sticker symbolizes on the map provided.

1. Where you are active.
2. Where you spend time alone.
3. Where you spend time with others.

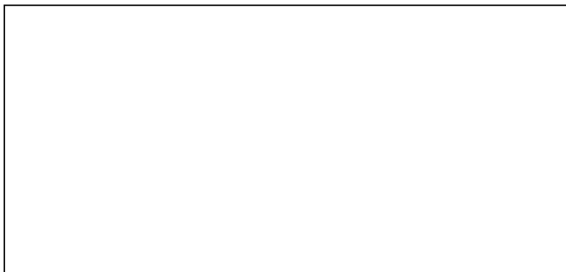
Once this is completed, please place the map back into the activity package.

Reflection Journal

In this task, we would like you to write down your feelings before and after a group exercise session. It would be great if you could repeat this activity for two different sessions. If you are not able to get together with others to exercise, call Melissa at (403) 805-5843 and she can do an exercise with you. Please write down your feelings before you start your exercise routine. How does your body feel? What's on your mind? What kind of exercise are you going to do? What do you expect from the exercise?

Reflection Drawings

In the boxes provided, please draw your feelings about a physical activities that you did throughout a day in Week 3. Please list the activity that goes to each feeling.



Word Association Activity

In the following activity you will find pictures with spaces to write a word or phrase. Please write down the word or phrase that first comes to mind when you see the picture.





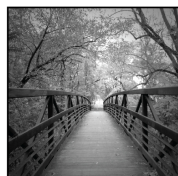












Activity Log

Please write down physical activities that you have done throughout one day in Week 3. An activity can count as anything that gets the heart racing or you believe is a physical challenge or activity. Please choose a number between 1 (for the lowest level) and 5 (for the highest level) when asked to rate.

Description:	Length:	_____
	Location:	_____
	When:	_____
	Intensity:	1 2 3 4 5
	Joy:	1 2 3 4 5
	Importance:	1 2 3 4 5

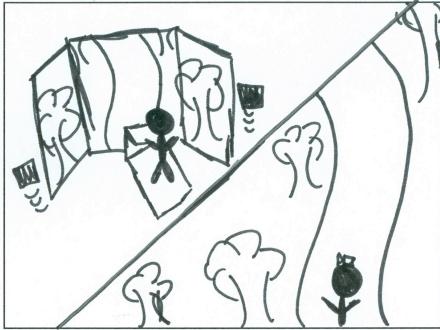
Description:	Length:	_____
	Location:	_____
	When:	_____
	Intensity:	1 2 3 4 5
	Joy:	1 2 3 4 5
	Importance:	1 2 3 4 5

Postcards

In the next couple of pages, you will find some postcards. Each postcard has an image paired with a question for you to answer on the back. Please take time throughout the week to take one out and complete it. When complete, please put it back in the activity package.

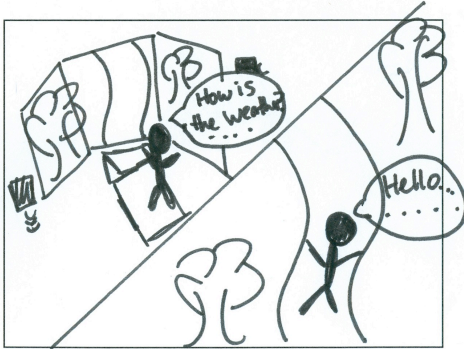
APPENDIX: BRAINSTORMING IDEAS

Idea #1: Exercise Chat

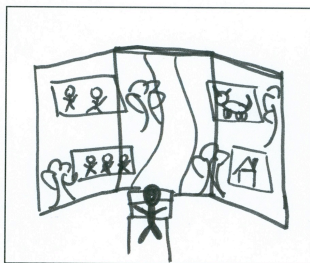


Start Workout
Location: ▾

Available Partners:
- Jim in Banff
- Teri in Banff
- Sam in Canmore



Idea #2: Reminisce Alley



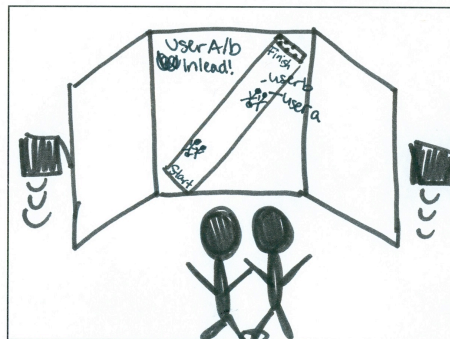
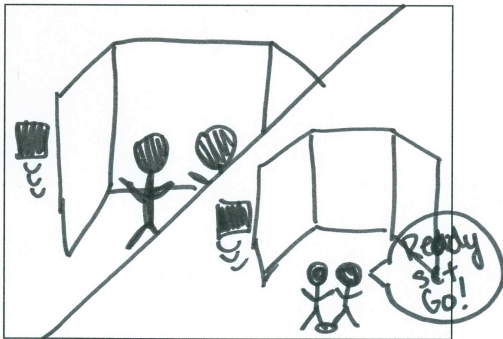
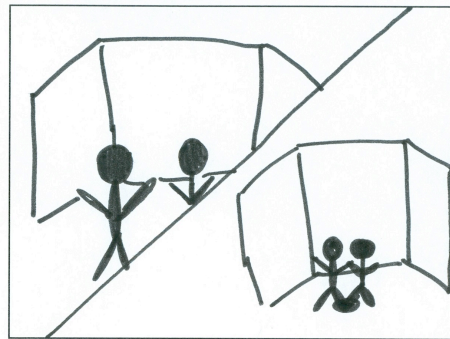
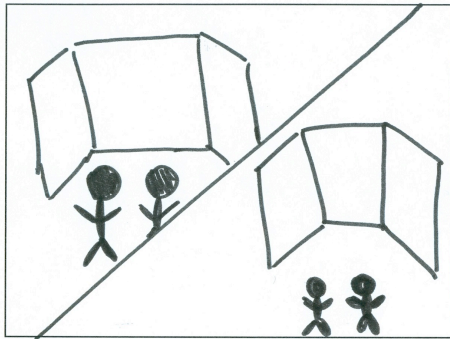
Select Workout
Location: ▾
Album: ▾



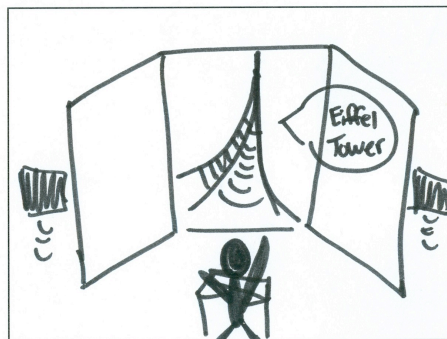
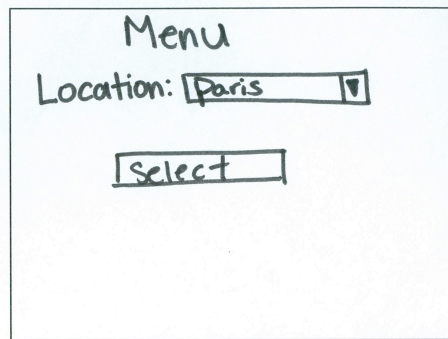
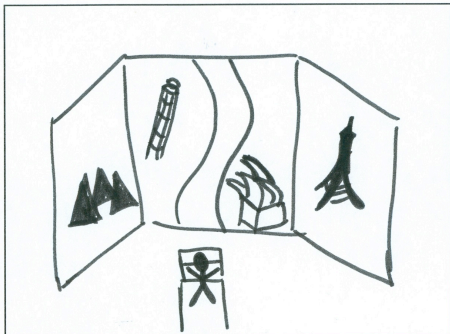
End Workout
Do you want to save recordings?

Do you want to share recordings?

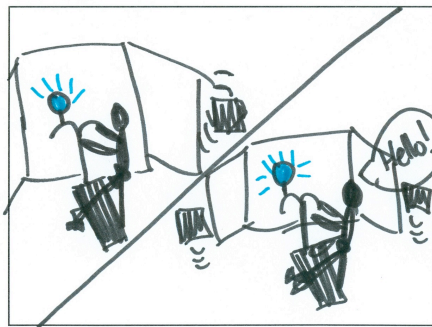
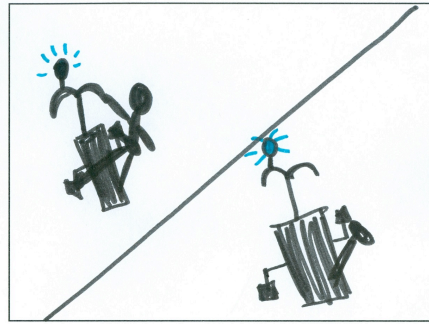
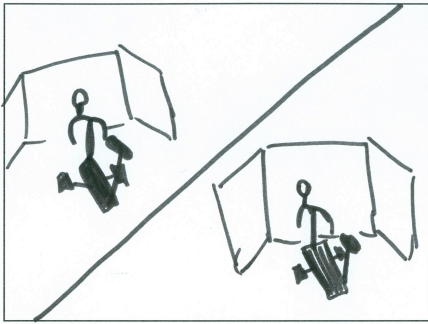
Idea #3: Virtual Picnic Games



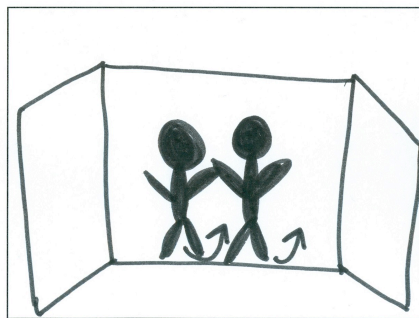
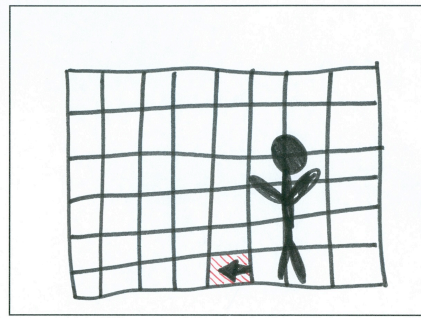
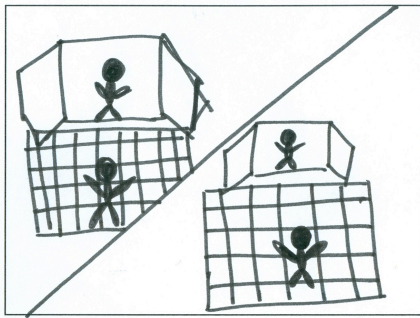
Idea #4: History Walk



Idea #5: Exercise Pal



Idea #6: Light Floor



Idea #7: Youthful Mirror

