ACTIVE BRAIN GAMES FOR SENIORS

" Keep Your Brain Alive, Live Life Colorfully. "

Games
Active Brain for Seniors

ACTIVE BRAINS

Active Brain Games for Seniors

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Active Brain Games for Seniors

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GUIDEBOOK TO UNDERSTANDING THE TARGET AUDIENCE

(A1) REVIEW OF THE RELEVANT DATA AND RESEARCH REVIEW OF CONTEMPORARY FACTS AND DATA ON COGNITION OF SENIORS, GAMIFICATION, REPORTING

The accelerated pace of technological advancement and the emergence of novel developments in the domain of health have directly contributed to the extension of life expectancy. As life expectancy has increased, the aging process and the ability to cope with the changes that accompany it have become a significant social issue. As the population continues to age, the issue of aging itself has become increasingly significant. This underscores the necessity for the investigation of novel methodologies aimed at safeguarding and enhancing the physical and mental well-being of seniors. In this context, studies on the potential impact of gamification in improving the quality of life of seniors are becoming increasingly important. The aim of this study is to examine the impact of gamification on the physical and mental conditions of seniors, to raise awareness in this field and to encourage the participation of seniors. In addition, the objectives of this study include increasing social interaction among the seniors, improving their skills and promoting an active lifestyle by using gamification. It is important to note, however, that gamification is only one tool among many that can be used to improve the quality of life of seniors. Personalized approaches that focus on individual needs and preferences are also important. The findings of this study can inform the development of effective strategies to enhance the quality of life of seniors and facilitate their active engagement in the aging process.

Aging is associated with a multitude of physical and psychological changes. It has been demonstrated that psychological and physical changes influence one another, and that the life motivation of seniors is shaped in accordance with these changes. The presence of problems encountered in old age has been demonstrated to have a negative impact on the life satisfaction of senior individuals. In light of these considerations, it is of paramount importance to develop practices that will contribute positively to the physical and psychological processes of seniors. A review of the literature on aging reveals that seniors are prone to a range of cognitive and psychological disorders, including depression, amnestic disorders, Alzheimer's disease, general anxiety disorders, and post-traumatic stress disorder. A number of studies have highlighted the negative impact of depression in old age on cognitive functions (Bingölo, 2015). Furthermore, it is evident that seniors must navigate a multitude of challenges, including transitions in roles, losses, mortality, chronic illnesses, physical disabilities (such as vision and hearing impairments), economic adversity, solitude, and ageism. Negative perceptions of social environments, changes in physical health and social circumstances, personal relationships, and future outlook may contribute to the psychological distress experienced by seniors (Ekşioğlu Ahad, 2016). Seniors may demonstrate reluctance to engage in active pursuits due to the physical, psychological, and social transformations they undergo. Such behaviors contribute to seniors becoming isolated and result in an increase in various psychological issues. Games serve as a crucial educational instrument, facilitating seniors's integration into an active lifestyle and enhancing their intrinsic motivation to live. The concept of gamification entails the enhancement of motivation, the facilitation of participation, and the provision of an enjoyable experience through the incorporation of game elements into various domains. The fundamental tenets of gamification encompass a number of key elements, including a user-centric approach, the use of rewards, the facilitation of progress, and the establishment of meaningful objectives. One of the primary objectives of this project is to examine the ways in which these principles can be applied in working with seniors and how they can respond to the needs and expectations of this demographic. Moreover, the majority of studies on gamification are focused on younger populations, specifically children and adolescents. There is a paucity of studies in this field that focus on seniors. Seniors are not accustomed to game systems. It is therefore necessary to design more specific games that take into account the physical and psychological conditions of seniors. The objectives and priorities of young and old people are markedly disparate. This indicates the necessity of accurately determining the motivating factors and influences on older individuals, as well as the elements that contribute to their enjoyment of a given activity (Altmeyer et al., 2018).

WHY IS PLAYING GAMES IMPORTANT FOR THE SENIORS?

Playing games offers many social, mental and physical benefits for older people. Here are some reasons why play is important for older people:
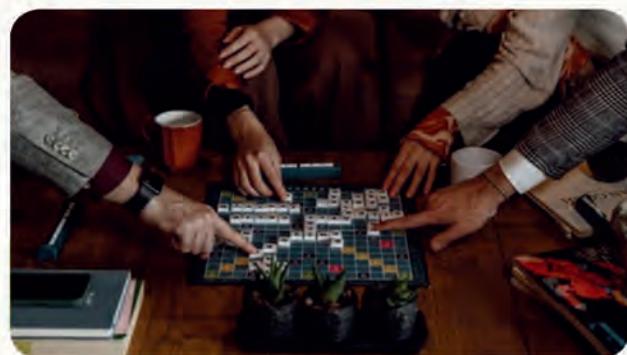
IMPORTANCE

Strengthens Social Bonds:
Games are a great way to spend time with friends and family members. This strengthens bonds and reduces feelings of loneliness.

Provides Mental Stimulation:
Games such as puzzles and chess provide mental stimulation and protect brain health.

Encourages Physical Activity:
Some games require physical movement and help seniors stay active.

Reduces Stress:
Fun and enjoyable activities reduce stress levels and improve overall quality of life.

Supports Emotional Wellbeing:
Games are a source of happiness and joy, which positively affects emotional health.

EXAMPLES OF STUDIES ON GAMIFICATION OF THE SENIORS IN TURKIYE

In a 2018 study titled "The Effect of a Brain Game on Cognitive Skills, Loneliness and Psychological Well-Being of the seniors in a Nursing Home", a board game that improves cognitive skills was designed for the seniors and the effects of this game on the seniors were examined for 10 weeks (Yavuz and Yavuz,2018). After the game application, it was determined that the cognitive skills, ability to cope with loneliness and psychological well-being levels of seniors individuals were positively affected.

In another study conducted by Oğuzhanoğlu and Özdel, it was investigated how seniors were affected by creative drama games. In this study conducted with 11 seniors volunteers, it was determined that seniors increased their life motivation and their desire to participate in active life after psychodrama games. In addition, it was determined that seniors were able to express themselves and their problems more easily after these activities.

In addition to academic research, non-governmental organizations and municipalities working with seniors in Turkey organize activities for seniors to participate in active life through play. Many municipalities have designed theater groups and special playgrounds for seniors (https://www.milliyet.com.tr/yerel-haberler/antalya/muratpasa-yasli-evinde-zeka-oyunlari-12523933, https://www.antalya.bel.tr/Haberler/HaberDetay/3342/aktif-yasli-hizmet-merkezinde-etkinlikler-yeniden-basladi).

EXAMPLES OF STUDIES ON GAMIFICATION OF THE SENIORS IN DENMARK

In Denmark, DGI has extensively explored various methods to promote brain health, aiming to delay the onset of depression and Alzheimer's disease while fostering physical activity and social inclusion. This was explored with a project called "Hold hjernen frisk" which translates to "Keep the brain healthy".

DGI worked with three different methods to keep the brain healty; SMART-training, Movement in Culture and Nature Training for Seniors.

SMART Training: *Focus on training memory, concentration, and balance. The program consists of a series of low-intensity exercises involving words and colors, designed to simultaneously challenge participants' motor skills, sensory perception, and logical thinking. The program is offered for 15, 30, or 45 weeks.*

Movement in Culture: *Activity programs organized by and hosted at selected libraries. The programs vary between libraries but share a common focus on the combination of culture, movement, and social interaction. The programs last for 15 weeks.*

Nature Training for Seniors: *Exercises conducted in nature, aimed at challenging the body and senses while also providing intellectual stimulation. The program emphasizes community, and participants of all levels are welcome. The program is offered for 15 weeks.*

Regardring cognitive skills all three activity tracks show significant increases in the total score for cognitive skills. The largest increase is observed among participants in the Movement in Culture track, followed by SMART training participants and nature training participants. Overall, participants across all three tracks perform better in cognitive tests at the post-measurement compared to the pre-measurement. However, there is no indication that the development over time differs significantly among the three tracks.

These observed changes are therefore likely a retest effect, where the increase in scores is due to participants having taken the test once before. When comparing changes in the Sentences subtest across the three tracks, the Movement in Culture track shows a significantly greater improvement than the SMART training track. This suggests that participants in the Movement in Culture track may have enhanced their cognitive skills more than those in SMART training, potentially indicating that libraries and culture offer more cognitively relevant activities than SMART training. However, it is notable that this difference is not reflected in the total score changes, raising questions about the significance of this finding. The physical tests are based on the European Fitness Badge and include exercises such as the plank and jumping jacks, each reflecting physical parameters like strength and coordination. The results suggest that the nature training program includes activities that improve overall fitness and strength, while SMART training exercises focus more on enhancing coordination. However, the interpretation of these results must consider the data collection procedures. The overall conclusion of the project shows that participants in the SMART training, Movement in Culture, and Nature Training tracks are highly satisfied and enthusiastic about the activities. Between 90% and 95% of participants, for example, would recommend the program to a friend. Furthermore, participants report improvements, particularly in social aspects and motivation for healthier living. The self-perceived improvements appear to result from participation in the "Keep the Brain Healthy" activities. However, it is important to note that the effects lack scientific evidence and rely solely on participants' subjective experiences. While the activity programs are perceived as engaging and relevant, their effects cannot be scientifically documented. Regarding the psychological questionnaires, significant changes were found between pre- and post-measurements, most notably in participants' cognitive test scores and, to a lesser extent, in reduced depression scores among SMART training and Movement in Culture participants. For both cognitive skills and mental well-being (depression), no systematic differences in changes were observed between the three activity tracks, suggesting that the changes are most likely due to a retest effect rather than the activity programs themselves.

EXAMPLES OF STUDIES ON GAMIFICATION OF THE SENIORS IN SLOVENIA

The search for memory-strengthening activities for seniors in Slovenia yields a number of activities and initiatives mainly focused on playing various tabletop games designed to improve recall.

One interesting and reportedly very popular example is the game "Proverb memory". The game, designed by an ethnologist dr. Saša Babič and a paremilogist dr. Matej Meterec and published by the publishing house of The Research Centre of the Slovenian Academy of Sciences and Arts, focuses on proverbs. The game was exceptionally well received among senior citizens in several retirement homes in Slovenia as the seniors were delighted by the opportunity to learn the proverbs from their youth and connect them with their life stories and memories.

The game was such a success that they created part two, "Proverb memory 2", and sent it to 115 retirement homes in Slovenia. Part 2 was again a success and many professionals working with seniors reported that they use the game regularly in their activities. Apart from memory training, the purpose of the game is "to stimulate reflection about the linguistic heritage of Slovene language". (https://zalozba.zrc-sazu.si/sl/novice/pregovorni-spomin-v-domovih-za-starejse)

Another interesting example is a project implemented by Spominčica – Alzheimer Slovenia – an NGO for raising awareness and helping people with dementia. They, together with several farms and organisations active in the field of health protection, are developing tools for training of cognitive functions for vulnerable groups with the focus on people with dementia.They are using farm setting as a dynamic and interesting environment to prepare and implement the training program.
(https://www.spomincica.si/projekti)

EXAMPLES OF STUDIES ON GAMIFICATION OF THE SENIORS IN PORTUGAL

Bridge at USO

For about 7 years USO has been involved in bridge classes for senior participants' Those activities, besides the relative interest of the game by itself, were supported by other evidence that can be summarized as: The Therapeutic Value of Bridge

Bridge and Older People

Recent research has found that playing bridge has a statistically significant positive effect on wellbeing. Researchers at Stirling University, in conjunction with English Bridge Education and Development, as part of their ongoing work on the health and wellbeing benefits of playing bridge, surveyed over 7,000 people, most of whom were bridge players. Most respondents indicated that playing bridge brought benefits to them personally in the form of the game having a competitive element, facilitating socializing with friends, and – most commonly – being mentally stimulating and deriving enjoyment from the activity. This contributed to a greater sense of well-being than average – comparison was possible with data from the English Longitudinal Study of Aging.
 It has been proven that undertaking some form of activity that tests mental agility daily helps to protect our older population from dementia and Alzheimer's. There is also a body of research that demonstrates that social interaction among the SENIORS can stave off cognitive decline. Bridge provides both mental stimulation and social engagement.

Although not a cure for dementia, there is evidence that playing bridge can contribute to helping to keep the brain healthy:

"A Nov. 2000 study by a University of California, Berkeley researcher, Marian Cleeves Diamond, found that playing contract bridge leaves people with higher numbers of immune cells. "Contract bridge was ideal for what we were after," she said. "It is the closest activity to a challenging card-sorting task that also contains multiple factors that should stimulate the dorsolateral cortex. Bridge players plan they use working memory, they deal with sequencing, initiation and numerous other higher-order functions with which the dorsolateral cortex is involved."

EMPATHY MAP TO UNDERSTAND THE TARGET AUDIENCE

When developing games for seniors, it is very important to first understand their needs and expectations and to develop human-oriented games. We will use the empathy map method to understand the target audience and respond to their needs.

What is an Empathy Map?

An empathy map is a visual tool that helps to understand the feelings, thoughts, needs and behaviors of an individual or target audience. It is usually divided into four main sections:

- *Thoughts (Think): Seeks to understand what the target audience thinks about the topic.*
- *Emotions (Feel): Explores the audience's feelings about the topic.*
- *Opinions (See): Gathers information about events and situations that the target audience sees around them.*
- *Discourses (Say): Examines what the target audience says or how they express it to others.*

In addition, the auditory experiences of the target audience (Hear) and what they do (Do) are often included in the map.

The Importance of Empathy Map in Developing Educational Materials

Better Understanding of the Target Audience: *Empathy mapping offers training material developers the opportunity to gain a deep understanding of the target audience. Knowing about the participants' learning needs, motivations and challenges allows for more targeted and effective content creation*

Personalized Content Design: *Each participant may have different learning styles and expectations. By identifying these differences, the empathy map helps to develop personalized and tailored content.*

Engaging and Meaningful Materials: *Understanding participants' emotions and thoughts allows content to be designed in a way that is not only informative but also creates an emotional connection. This makes the learning process more engaging and effective.*

Problem Solving Skills: *The empathy map makes it easier to understand the problems faced by participants and their reactions to these problems. This information provides the opportunity to offer solutions to real-life problems in training materials.*

Continuous Improvement: *Through the empathy map, training material developers can better analyze participants' feedback and continuously improve the materials accordingly.*

As a result, empathy mapping contributes to the creation of more effective, meaningful and user-friendly content by encouraging thinking from the participants' perspective in the educational material development process.

A GUIDE TO EMPATHIZE WITH THE SENIORS

With the Empathy Map, it is aimed to reveal senior-friendly design principles by understanding the perceptions, past experiences, needs and expectations of seniors people about games in depth, and to design games that are suitable for the physical, mental and emotional needs of seniors, make life more meaningful and contribute to active aging in line with these principles. Below are the basic questions and probing (exploratory) questions prepared for the research to be conducted with focus groups. The aims, objectives and rationale for each question are written in detail and organized into a guideline. In the last section, possible answers to these questions are presented in an empathy map.

1. Essential Question: How do you experience the aging process?

Probing Questions:

- *What does old age mean to you?*
- *How do you experience the effects of aging (physical, psychological and cognitive)?*
- *What are your most prominent feelings about aging?*
- *How have your relationships with your family and close environment changed with the aging process?*
- *How do you see the place of older people in society?*
- *How do you utilize your time?*
- *What does it mean to be an active person in old age?*

Aims and Objectives:

The main purpose of these questions is to understand individual experiences of the aging process and to comprehend the physical, emotional, social and cognitive changes of older individuals in this process. By examining older people's perceptions of the aging process and the social and cultural contexts that shape these perceptions, it aims to raise awareness about the needs and quality of life of older people.

Objectives:

- *To understand the physical, psychological and Cognitive dimensions of the aging process through the subjective expressions of individuals.*

- *To analyze the social, cultural and individual factors that shape the perception of aging.*
- *To evaluate how social relations and social roles change in the aging process.*
- *To explore how individuals structure their daily lives and their perceptions of the concept of active aging.*

2. Essential Question: How do you experience the aging process?

- **Rationale:** This question was asked to understand how individuals subjectively experience the aging process. It is important to examine the effects of physical, psychological and social changes on this experience.

- **Expectations:** Participants are expected to evaluate the aging process in a general framework and express the positive or negative aspects of this process.

Probing Questions:

1. What does old age mean to you?

- *Rationale: It is thought that the perception of old age may differ among individuals. This question was asked to reveal the personal meanings attributed to the concept of old age.*

- *Expectations: Participants are expected to define old age as a period of wisdom, change, loneliness or limitation.*

2. How do you experience the effects of aging (physical, psychological and cognitive)?

- *Rationale: This question was asked to understand the direct experience of physical, psychological and cognitive changes in the aging process.*

- *Expectations: Participants are expected to explain how these changes affect their daily lives and overall quality of life.*

3. What are the most prominent emotions you feel about aging?

- *Rationale:* Understanding the emotional dimension of the aging process plays a critical role in analyzing which feelings individuals experience the most during this process.

- *Expectations:* Participants are expected to express their feelings of happiness, peace, anxiety, loneliness or acceptance.

4. How have your relationships with your family and close friends changed with the aging process?

- *Rationale:* Examining the effects of aging on social relationships is important to understand how individuals' roles in the family and social environment have changed.

- *Expectations:* Participants are expected to explain these changes in a positive or negative way.

5. How do you see the place of older people in society?

- *Rationale:* To assess society's perception of older persons and their role in society and to understand the impact of the social context on aging.

- *Expectations:* Participants are expected to express their thoughts about their social roles and society's attitudes towards older persons.

6. How do you spend your time?

- *Rationale:* This question is asked to understand how older people spend their daily lives and to analyze their leisure time and active ageing strategies.

- *Expectations:* Participants are expected to share their daily routines and the challenges or enjoyable activities they face in this process.

7. What do you think it means to be an active person in old age?

- *Rationale:* This question is asked to understand the individual meanings of the concept of active aging and to evaluate how this concept is reflected in the life practices of individuals.

- *Expectations:* Participants are expected to express how they define active aging in terms of social, physical and mental aspects.

3.   **Essential Question: What does playing games mean to you?**

Probing Questions:

- *How do you feel when you play games or when you think about playing games?*
- *How do the games you remember from your past experiences (as a child or with your own children) make you feel?*
- *How does it make you feel to see your peers playing?*
- *How do you think your environment would react to you playing games?*

Aims and Objectives:

The main purpose of these questions is to gain an in-depth understanding of seniors' perceptions of gaming and the individual, social and emotional factors that influence these perceptions. By revealing the meaning that seniors attribute to games, how they are influenced by their past gaming experiences, and the effects of environmental factors on these perceptions, they aim to provide a basis for designing age-friendly games. The objectives of this core question number 1 and the Probing questions are generally as follows:

- *To gain an in-depth understanding of the emotional experiences that play evokes in individuals. To reveal the individual and social contexts*
- *that shape seniors' perceptions of games. Develop nostalgia-based design principles by analyzing the impact of past experiences on*
- *game perception. To evaluate the impact of social and environmental factors on motivations to play games. To obtain concrete data that*
- *will guide design principles for game design in accordance with the needs and expectations of older individuals.*
-

4. Essential Question: What does playing games mean to you?

- **Rationale:** This question was asked to understand how seniors perceive the concept of play and in which contexts of their lives they evaluate the act of playing games.

- **Expectations:** Participants are expected to explain how they define gaming in terms of entertainment, learning, socialization, nostalgia or any other context. This question may give clues as to how meaningful and motivating games can be for seniors.

Probing Questions:

1. How do you feel when you play or think about playing games?

- *Rationale: This question was asked to understand what emotions gaming or the thought of gaming triggers in seniors. Emotional context plays a critical role in understanding individuals' motivations for gaming.*

- *Expectations: Participants are expected to express various emotions such as fun, happiness, relaxation, anxiety, or perhaps timidity. The exploration of these emotions can help to ensure emotional coherence in game design.*

2. How do the games you remember from your past experiences (as a child or with your own children) make you feel?

- *Rationale:* Past experiences are an important factor shaping individuals' current perceptions of games. This question aims to reveal how nostalgia and past gaming experiences affect seniors' attitudes towards gaming.

- *Expectations:* Participants are expected to express happiness, longing or other emotional contexts from past game experiences. This will emphasize the importance of connecting with the past in game design.

3. How does it make you feel to see your peers playing?

- *Rationale:* This question was asked to understand the perception of game playing in a social context. Older individuals' observation of their peers' play or their thoughts about it provides an opportunity to evaluate play behavior within the framework of social norms.

- *Expectations:* Participants are expected to evaluate their peers' gaming behavior positively or negatively. This will provide insight into the social acceptability of games.

4. How do you think the environment will react to your gaming behavior?

- *Rationale:* This question was asked to understand the impact of environmental factors on individuals' gaming behavior. Environmental reactions may increase or decrease individuals' motivation to play games.

- *Expectations:* Participants are expected to express possible supportive or critical reactions from their family, friends and environment towards their game playing. This will enable the consideration of social barriers and opportunities in game design.

5. Essential Question: Can you share your experiences/practices with games?

Probing Questions:

- *With whom do you prefer to play more (alone, spouse, children, grandchildren, etc.)?*
- *How much time do you allocate/should you allocate for games daily?*
- *What encourages or discourages you to play?*
- *Which of your characteristics (physical, psychological, temporal, etc.) do you think would make it easier/difficult for you to participate in play?*

Aims and Objectives:

These questions aim to understand what types of games older people tend to play, the individual and social factors that influence their gaming habits, and how these habits are integrated into their daily lives. Knowledge of game genres and playing habits is critical in identifying themes and mechanics for elder-friendly game design that align with needs and expectations. 2. The objectives of the core questions and related probing questions are as follows:

- *Understand older people's interests and expectations for types of games.*
- *To assess the influence of social context (e.g. preferences for playing alone or with a group) on gaming habits.*
- *To identify how seniors integrate gaming into their daily routines and the difficulties or conveniences they experience along the way.*
- *·Identify motivators and deterrents and develop appropriate strategies for game design.*
- *To develop features for senior-friendly game design that are suitable for individual preferences and encourage social participation.*

6. Essential Question: Which types of games are you most interested in?

- **Rationale:** This question aims to understand the types of games preferred by seniors and to determine which types of games are more interesting. Identifying the types of games that meet the cognitive, physical and emotional needs of seniors will guide the design process.

- **Expectations:** Participants are expected to indicate which genres they prefer, such as strategy, intelligence, word, board, card or digital games. This information will provide an important insight in determining the types of games that will attract the interest of older individuals.

Probing Questions:

1. With whom do you prefer to play (alone, spouse, children, grandchildren, etc.)?

- **Rationale:** *Aims to understand the influence of social context on play preferences. Understanding whether older people prefer to play alone or in a group is important to prioritize individual or group play in design.*
- **Expectations:** *Participants are expected to express their preference for playing alone, spending time with family members or sharing with the social circle. This will help guide the design of the social interaction levels of the games.*

2. How much time do/should you allocate for games daily?

- **Rationale:** *This question is asked to understand how seniors integrate their gaming habits into their daily lives and how much time they spend on gaming. This provides important data for the design of games in terms of accessibility and duration.*

- **Expectations:** *Participants are expected to indicate how much time they spend or find it appropriate to spend playing games. This will help in determining the duration and frequency of play.*

3. What encourages or discourages you from playing games?

- *Rationale: It aims to understand the positive and negative motivations that influence game playing behavior. This information provides important clues for game design to increase encouragement and decrease discouragement.*

- *Expectations: Participants are expected to articulate what motivates or discourages them from playing games based on physical, mental or social factors. For example, factors such as the fun of games, easy accessibility, physical challenges or social prejudices can be identified.*

7. Essential Questions: How do games contribute/would you like games to contribute to your life?

Probing Questions:

- *What are your expectations from games?*
- *How do you think games can contribute to you psychologically/physically/mentally?*
- *What impact can games have on your daily life?*

Aims and Objectives:

These questions aim to understand how games add or want to add value to the lives of seniors. Assessing the psychological, physical and mental effects of games will provide a basic roadmap for game design to improve the quality of life of seniors. Furthermore, the potential of games to integrate into daily life and strengthen social ties is also explored through these questions. These questions are designed for the following objectives:

- *To identify the psychological, physical and mental contributions of games to the lives of older people.*
- *To understand what kind of personal and social benefits older people expect from games.*

- ·To obtain tips for game design to increase the positive effects of games in daily life.
- To ensure that senior-friendly games are designed in such a way that they can be easily integrated into the daily lives of individuals.
- To explore the potential benefits of games to improve the quality of life of seniors and to develop design strategies accordingly.

8. Essential Question: How would you like games to contribute to your life?

- **Rationale:** This question was asked to understand how seniors perceive the concept of play and in which contexts of their life they evaluate the act of playing games.

- **Expectations:** Participants are expected · to indicate whether they expect emotional satisfaction, mental stimulation, physical mobility, social connections or simply enjoyment from games.

Probing Questions:

1. What are your expectations from games?

- **Rationale:** It aims to understand older people's specific expectations of games. This allows to identify features and functions that should be prioritized in the design of games.

- **Expectations:** Participants are expected to express their expectations from games, such as entertainment, learning, social bonding, physical mobility or reducing feelings of loneliness.

2. How do you think games can contribute to you psychologically/physically/mentally?

- **Rationale:** This question aims to understand the potential impact of games on individuals' health and well-being. Contributions such as physical exercise, mental stimulation or psychological relaxation can improve the quality of life of older people.

- **Expectations:** *Participants are expected to express the contribution of games such as stress reduction, encouraging physical activity or maintaining mental acuity.*

3. What impact can games have on your daily life?

- **Rationale:** *Understanding the effects of games on the daily life of seniors and their perceptions of these effects provides clues on how to integrate games into their lifestyles.*

- **Expectations:** *Participants are expected to describe the impact of games on their daily routines, such as entertainment, social interaction, motivation or leisure.*

9. Essential Questions: What kind of games and content would you like to see designed for you?

Probing Questions:

- *Which types of games are of interest to them?*
- *For what purpose would you like the games to be designed (social, personal development, health, etc.)?*
- *Which features are more important for you in a game or activity that will be offered to you (fun, convenience, level of difficulty)?*

Aims and Objectives:

These questions aim to understand what types of games seniors would enjoy, their expectations from game content and their preferences. Furthermore, by finding out what types of games are played in their social environment, it allows us to analyze the factors affecting seniors' game preferences and the way they approach games. In this way, it aims to make senior-friendly games more meaningful and engaging. The objectives of these questions are summarized as follows:

- *To understand which types and content of games seniors prefer.*
- *Determine how they want games to contribute to the lives of seniors physically, mentally and socially. Tailoring game content according to*
- *individual interests and elements that support social bonding. Understand the factors that shape the game playing behavior of seniors*
- *by analyzing the impact of the social environment on their game playing habits. Develop recommendations on content and mechanics for senior-friendly game design.*

-

10. Essential Question: What kind of games and content designed for you would you have liked to see?

- **Rationale:** Learning the dreams and expectations of older individuals about game content will help to emphasize the elements that are of interest to them in game design.

- **Expectations:** Participants are expected to express their expectations about the types of games that can be played for social interaction, physical activity, educational or just for fun.

Probing Questions:

1. Which game types are of interest to you?

- *Rationale: It is important to identify the personal interests of seniors in game genres in order to understand individual differences. The content and gameplay of the games can be customized according to the user.*

- *Expectations: Participants are expected to express their interest in different types of games such as word games, strategy games, games involving physical activity, virtual games or board games.*

2. For what purpose would you like the games to be designed (social, personal development, health, etc.)?

- **Rationale:** *This question seeks to understand the ways in which games can contribute to the lives of older people. It reveals that games can be designed for physical health, mental sharpness, social connections or just for fun.*

- **Expectations:** *Participants are expected to express that they expect games to offer specific benefits such as socialization, learning, stress reduction, memory enhancement or physical exercise.*

3. What kind of games do your close friends play?

- **Rationale:** *Learning about the gaming habits of older people in their social environment helps to understand the external factors that influence gaming preferences. It also allows to analyze the social acceptance and playability of games.*

- **Expectations:** *Participants are expected to share their opinions about the games played by their friends and provide clues about the potential of games to strengthen social bonds.*

SEMI-STRUCTURED INTERVIEW FORM

The table below shows the 5 basic research questions for senior individuals and the probing questions that are exploratory to these questions. In addition to the basic research questions, the researchers are expected to complete the answers that they think are missing at the time of the interview through the probing questions. The researchers are expected to ask the following questions not as closed-ended (yes/no) like survey questions, but open-ended in accordance with qualitative research methods and to give the participants enough time for the answers. It is estimated that the response time to the following questions, which are prepared in accordance with the purpose of the research, will be 1 hour on average.

Basic Research Question	Probing Questions
1.How do you experience the aging process?	• What does old age mean for you? • How do you experience the effects of aging (physical, psychological and cognitive)? • What are the most prominent feelings you have about aging? • How have your relationships with your family and close environment changed with the aging process? • How do you see the place of older people in society? • How do you utilize your time? • What does it mean to be an active person in old age?
2. What does playing games mean to you?	• How do you feel when you play or think about playing games? How do the games you remember from your past • experiences (as a child or with your own children) make you feel? How does it make you feel to see your peers playing? How do you think your environment would react to you • playing games? •
3. Can you share your experiences/practices for games?	• With whom do/would you prefer to play more (alone, spouse, children, grandchildren, etc.)? • How much time do you/should you allocate to play daily? • What encourages or discourages you from playing/participating in games? Which of your characteristics • (physical, psychological, temporal, etc.) do you think would make it easier/difficult for you to participate in play?
4. How do games contribute to your lives / how do you want them to contribute to your lives?	• ·How do you think games can contribute to you psychologically/physically/mentally? • What impact can games have on your daily life?
5. What kind of games and content would you like to see designed for you?	• Which types of games are of interest to you? For what • purpose would you like the games to be designed (physical, social, personal development, health, etc.)? Which features • are more important to you in a game or activity that will be offered to you (fun, convenience, level of difficulty)?

Questions adapted to the Empathy Map

The answers to the basic and Probing questions were predicted and placed on the empathy map below. However, researchers should keep in mind that the answers to the questions may change their placement on the empathy map. Because the empathy map is created as a result of the analysis of the answers from the participants, not the questions. The sample empathy map below was created only for the researchers to gain insights. Finally, the empathy map to be created should be based on the data obtained from all participants, not for each participant. For example, separate empathy maps should not be created for participant (P)-1 and P-2.

What does he/she feel?

What does playing games mean to you?
- *How do you feel when you play or think about playing games?*
- *How do the games you remember from your past experiences (as a child or with your own children) make you feel?*
- *How does it make you feel to see your peers playing?*
- *How do you think your environment would react to you playing games?*

What does he/she do?

What are your experiences/practices with games?
- *With whom do/would you prefer to play more (alone, spouse, children, grandchildren, etc.) ?*
- *How much time do you/should you allocate to play daily?*
- *What encourages or discourages you from playing/participating in games?*
- *Which of your characteristics (physical, psychological, temporal, etc.) do you think would make it easier/difficult for?*

What does he/she think?

How do games contribute to your lives / how do you want them to contribute to your lives?
- *How do you think games can contribute to you psychologically/physically/mentally?*
- *How can games have an impact on your daily life?*

What does he/she say?

What kind of games and content would you like to see designed for you?
- *Which types of games are of interest to you? For what purpose would you like the games*
- *to be designed (physical, social, personal development, health, etc.)? Which features are more important to you in a game or*
- *activity that will be offered to you (fun, convenience, level of difficulty)?*

A GUIDE TO EMPATHIZE WITH PROFESSIONALS WORKING WITH OLDER PEOPLE
SEMI-STRUCTURED INTERVIEW FORM FOR PROFESSIONALS INVOLVED IN PLAY EXPERIENCE IN THEIR ORGANIZATION

What does he/she think?

1. What do you think about most when working with older people (e.g. their health, well-being, daily activities)?
2. What topics do you think you need more information or training on when running the games?
3. What kind of positive outcomes do you hope to achieve when running the games?

- **Justification:**

These questions were designed to understand professionals' awareness of the needs of seniors, their experiences in game play processes, and their expectations about the positive effects that games can provide. Professionals' insights on these topics provide an important roadmap for designing and implementing games to improve the quality of life of older people. At the same time, it identifies areas where professionals need training and information, and enables the development of support mechanisms to meet these needs.

- **Expectation:**

Participants are expected to articulate their focus on the health, well-being and social inclusion of older people. Professionals are expected to indicate what knowledge and skills they need in the game-playing process. Participants are expected to evaluate the physical, mental and social benefits that games can provide for seniors and share the positive outcomes they would like to achieve in this process. Professionals are expected to present the challenges they face when working with seniors and suggestions for overcoming these challenges. It is aimed to provide tips on which strategies can be developed to increase the impact of games on the qualityof life of seniors.

What does he/she do?

1. What are the experiences of seniors in playing/participating in games?
2. What kind of games might seniors be interested in?
3. What changes do you make in your daily routine when implementing the games?
4. What steps do you follow to implement the games?
5. What do you do to ensure senior's participation in the games?

- **Justification:**

These questions are designed to understand how seniors are involved in the process of playing games and what role professionals play in this process. The experiences and interests of older people in participating in games and the methods followed by professionals in this process allow for the development of strategies to increase older people's engagement with games. Furthermore, understanding professionals' daily routines and implementation processes reveals how games are integrated into the lives of seniors. These questions aim to identify effective methods to increase the motivation of seniors.

- **Expectation:**

Participants are expected to share their experiences during the participation of older people in games and the difficulties they face in this process, explain the types of games they are interested in and the reasons for their interest, express the impact of game applications on the routine of professionals and the changes made, share the steps and methods followed in the implementation of games, and finally share strategies and methods that encourage partiipation.

What does he/she feel?

1. *How do you feel when you play with older people (e.g. stressed, joyful, motivated)?*
2. *What are the most satisfying or challenging emotional experiences you have had in this process?*
3. *How does the reaction of older people to the games affect you?*

- **Justification:**

These questions were designed to understand the emotional impact of the process of playing games with seniors on professionals. Assessing the satisfying or challenging experiences of professionals in this process helps to explore the psychological and emotional dimensions encountered in gaming practices. At the same time, by analyzing the impact of seniors' reactions to the games on professionals, it is aimed to develop better support mechanisms.

- **Expectation:**

Professionals are expected to express their general emotional state (e.g., motivated, stressed, joyful) during the game-playing process, describe their specific positive or negative emotional experiences during the game-playing process, and share the impact of older people's reactions to the games on professionals' motivation and working attitudes.

What does he/she say?

1. *What feedback do you give about these games within the team or to your supervisors?*
2. *Do you have any suggestions on how to make the games more effective?*
3. *What are the motivating and inhibiting factors in the relationship between seniors and the games?*
4. *What impact do you observe that games have on seniors?*
5. *How do you think games can improve the quality of life of both you and seniors?*

- **Justification:**

These questions aim to provide insights into the evaluation of the process of playing games with older people and the development of effective practices in this process. Professionals' feedback, observations and suggestions within the team play a critical role in understanding the impact of games on older people and their potential to improve quality of life. Furthermore, analyzing motivating and inhibiting factors offers opportunities for improvement in game design.

- **Expectation:**

Participants are expected to share their evaluations and suggestions within the team about the implementation and results of the games, make suggestions for improvement regarding the content, method or way of implementation of the games, express their observations about the factors that increase and decrease participation in the games, explain the physical, mental and social effects of the games on seniors and share their ideas on how the games can contribute to the quality of life of both seniors and professionals.

Questions Adapted To The Empathy Map

Semi-structured questions prepared for a better understanding of the professional experiences and observations of professionals who are in active play with seniors are included in the empathy map as follows. Researchers should take into consideration that the answers to the questions may change their place in the empathy map. Because the empathy map is created as a result of the analysis of the answers from the participants, not the questions. The sample empathy map below was created only for the researchers to gain insights.

What does he/she feel?

- How do you feel when you play with older people (e.g. stressed, joyful, motivated)?
- What are the most satisfying or challenging emotional experiences you have had in this process?
- How does the reaction of older people to the games affect you?

What does he/she do?

- What are older people's experiences of play/participation?
- What kind of games can older people be interested in?
- What changes do you make in your daily routine when implementing the games?
- What steps do you follow to implement the games?
- What do you do to ensure older people's participation in the games?

What does he/she think?

- What do you think about most when working with older people (e.g. their health, well-being, daily activities)? What topics do you think you need more information or training on when running the games? What kind of positive outcomes do you hope to achieve when running the games?
-

What does he/she say?

- What feedback do you give about these games within the team or to your supervisors?
- Do you have any suggestions on how to make the games more effective?
- What are the motivating and inhibiting factors in the relationship between seniors and the games?
- What impact do you observe that games have on seniors?
- How do you think games can improve the quality of life of both you and seniors?

Question Set developed for use in the workshops to be carried out in the Design Thinking Perspective
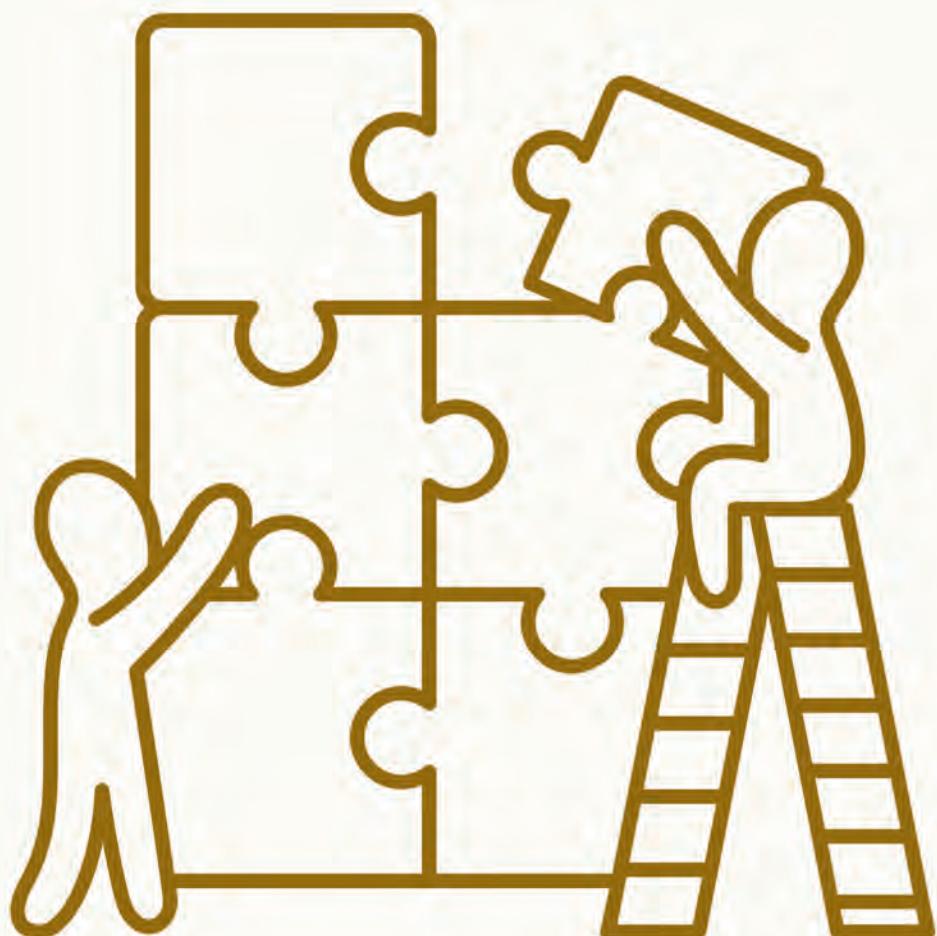
Experiences and Expectations of 60+ Individuals towards Games

Dear partner, participants are expected to provide detailed answers to each of the following questions. It is important to encourage them in this direction and support them with additional questions if necessary. In Questions 7, 8, 9 and 10, options have been added where you can guide the participant to get more comprehensive and accurate answers from the participant. Each interview using the questions below is expected to last a minimum of 30-40 minutes.

Do not forget to record your interviews on your phone or voice recorder (no need for video). A sample interview has been conducted for you and the questions have been revised and updated. We recommend that you also review the interview conducted and transcribed by us before your own interviews. Please obtain written consent from the participant you will interview, and obtain your verbal consent at the beginning of the interview (after explaining the purpose of the study at the beginning of the audio recording, "Would you like to participate voluntarily in this research?"). Thank you for your efforts.

Demografic Information

Participant Name:
 Age:
 Current Job Status:

1. What does play mean to you? What does the game mean?
2. What kind of games did you play in your childhood? With whom did you   play? What did you feel?
3. And if you played the same games today, would you feel the same positive emotions you felt as a child?
4. What kind of differences do you think there are between the games of your childhood and the games of children today?
5. In your culture/neighborhood, how is it perceived for adults to play games?
6. When it is meant games, digital games are now included in addition to street and home games. Do you play any games "in this age period"?

   6.1. If yes; What kind of games do you play? Why do you prefer to play these games and how do you think these games contribute to you?

   6.2. What are your reasons for not playing games? What kind of games are you interested in?

7. What are the benefits of playing games for the SENIORS in general?

(When you think that you did not get enough answers, ask the participant for their opinions on the following options respectively)

a) What are the psychological contributions
b) What are the physical contributions
c) What are the social contributions
d) What can be their mental contribution
e) What are the health benefits?
f) What other contributions can be made

8. What should a game designed for you look like and how would you like it to benefit you?

(If you feel that you have not received an adequate answer, you can have them choose from the options below or add a new idea. The reasons for each choice should also be elaborated. For example, a participant who wants to have physical games should be asked "how do you think physical games can be useful for you?")

a)Mental games (puzzles, memory, word games)
b)Physical games (dance/ folk games, exercise, balance, virtual validity, physical activity)
c)Social games (board games with friends or peers, group games)
d)Individual games (digital or parlor games)
e)Music and art games (karaoke, painting, rhythm games)
f)Virtual and digital games (phones, tablets, computers, etc.)
g)Other

9.What are your personal characteristics or living conditions that make it easier for you to play games?

(When you think that you cannot get enough answers, you should support the participant's thoughts by asking the following options. For example, answers such as "I am a social person (d) so I like to play games a lot" or "I am retired, I am not working anymore, so I have enough time to play games (c)" are expected from the participants)

a) My physical characteristics are sufficient
b) Good health
c) Having free time
d) I value sociability
e) I have grandchildren/children
f) Other

10. What are your personal characteristics or living conditions that make it difficult/challenging for you to play games?

(When you think that you cannot get enough answers, the following options should be asked to support the participant's thoughts. Participants are expected to answer, for example, "I don't like to play games because my physical health is not good (a)" or "I don't like to play games because I am afraid that people around me will condemn me (f).")

a) My physical health is not good
b) Lack of good biological health (diabetes, blood pressure, chronic diseases etc.)
c) Poverty/not having enough money to spend
d) Not having enough time
e) Not caring/not interested
f) Anxiety of marginalization and stigmatization by people around me
g) Other

SEMI-STRUCTURED INTERVIEW FORM FOR PROFESSIONALS INVOLVED IN ACTIVE PLAY EXPERIENCES

Dear partners, the participants are expected to give detailed answers to each of the following questions. Each interview using the questions below is expected to last a minimum of 15-20 minutes. Do not forget to record your interviews on your phone or voice recorder (no need for video). A sample interview has been made for you. Then our questions were reviewed and updated again. We recommend that you review the interview conducted and transcribed by us before your own interviews.

Please obtain written consent from the participant you will interview, and obtain your verbal consent at the beginning of the interview (after explaining the purpose of the study at the beginning of the audio recording, "Would you like to participate voluntarily in this research?").

Thank you for your efforts.

- Demographic Information
  -Age

- Profession

- The institution/organization it serves

- How long has he/she had gaming experience?

QUESTIONS

? What are older people's experiences of playing games usually like?

? Which types of games are they more interested in?

? What do you think are the factors that increase or decrease the participation of the seniors in games?

? What effects do you observe the games have on the SENIORS (outcomes)?

? What do you think you need more information or training on about games?

? What do you do to engage older people in the game?

? How often and for how long do you do play activities?

? What do you think games can be made more effective for older people?

? Is there an approach, technique or method you use specifically to encourage participation of older people in games?

RECOMMENDATION FROM PARTNERS

SUMMARY REPORT - PORTUGAL:

1. INTRODUCTION

As part of the Active Brain Games project, several interviews were conducted with two groups of people. These groups were designated as "Seniors" and "Professionals". The Seniors group included people over 60 years old from a wide range of backgrounds. The Professionals group included technicians specialized in working with the elderly, as well as teachers who lead activities specifically aimed at the elderly.

In total, 29 interviews were conducted, 19 with Seniors and 10 with Professionals.

The aim of the interviews was to gather information about the participants' experiences and expectations regarding mind games. This information is valuable for the next stages of the Active Brain Games project, in which new proposals for games specifically adapted for this age group will be developed.

All interviewees expressly granted authorization for the use of their personal data.

Interestingly, after an initial reaction of refusal, all participants in these interviews were at the end happily and spontaneously available to make further statements if necessary for a future continuation of this study.

2. Statements of Seniors

We were interested in interacting with people who are already at an age level of 60 or older.

The following table lists the individual seniors that collaborated in this study.

Table 1. Seniors involved in this study

#	Name	Age	Status	Activity
1	Américo Almeida Garcia	88	Retired	Army Colonel
2	Ana Paula Silva	60	Active	Engineer
3	Ana Sabater	71	Retired	Translator / Interpreter
4	Ana Sousa Gomes	64	Active	Businesswoman
5	António Bandeira Neves	75	Retired	IT Director
6	António Bispo	73	Retired	Civil Engineer
7	Emanuel Oliveira	82	Retired	Economist
8	Emanuel Percheiro	81	Retired	Businessman
9	Luís Correia	67	Active	Proffessor
10	Maria Manuela Simões	68	Active	Associate Proffessor
11	Mário Lopes	75	Retired	Electrical Engineer
12	Paulo Legoinha	72	Active	Associate Proffessor
13	Pedro Lamas	73	Retired	Professor
14	Rita Ribeiro de Almeida	71	Retired	Economist
15	Rui Duarte	72	Retired	Proffessor at University
16	Rui Soares	76	Retired	Engineer
17	Stephan Toivonen	78	Retired	Businessman
18	Stephen Cramer	79	Retired	Manager
19	Teresa Cardoso	70	Retired	Anesthesiologist, MD

There is one important distinction that must be made about two groups of seniors that were identified.

There is a group of interviewees who belong to what we can call "Solidarity Institutions", such as nursing homes or associations for the elderly. In Portugal, they are called Private Social Solidarity Institutions (IPSS) and they have specific legal rules.

And there is another group that is more linked to senior higher education institutions, such as "Senior Universities". While in the first type of institutions, these people, particularly those who are already institutionalized in nursing homes, for example, are people who already have some weaknesses, particularly from the point of view of mobility, in institutions linked to Senior Universities, people are normally very active. They are already retired, but they maintain interests and abilities that are very close to those they had while they were in their active life.

In the first analysis we did of the games we found in both institutions, when we talked about games at young ages, we found many similar games, some with a more physical component, others with more intellectualizing components or more focused on the mind. An example could be playing hopscotch or leapfrog, or, for example, playing Monopoly or other types of more intellectual games.

One of the interesting problems was to verify to what extent these games represented an important component that, in some way, enriched their lives at different stages. And this was clearly recognized by all the participants. And, in particular, also to verify to what extent, in terms of socialization, these games also played an important role.

In any case, it cannot be expected that more physical games, particularly those for an older and more institutionalized population, can be repeated at other ages because people no longer have the capabilities they had before. On the mental side, things are not like that, and it is possible to interest this human component in this type of game, although it must be recognized that, in the case of more institutionalized people, this activity has to be done with some caution and at a slower pace because they have a greater need for adaptation.

But it is clear that, in both groups, there is a recognition that the socialization part is an extremely important part.

Not leaving aside games in which people can have some physical distancing, the search for human contact and the development of personal relationships represent an important component in a happier experience.

When we analyzed the games that interested people over time, obviously there are games that have disappeared, there are games that no longer make sense to be designed for this population and there are others that do and even gain new importance. This is because people have stopped having an active life in their jobs, but they remain potentially very active and therefore games, especially mind games, are a stimulus.

Talking about different games more physically oriented, played in youth, it was interesting to go back to the past of the people, and they recognized that there were something that we can consider games like riding a bike, tag, jump rope, play football, and so on.

The only point is that they were quite useful when they were young, but now, when they have some physical difficulties, it's not so easy to revive that. But the impression they got from those activities was sound, and it was clearly very useful for them, if you consider the progress, life progress.

Mind games emphasized by participants included Bridge, Chess, Checkers, Go, Mahjong, Backgammon, several traditional card games and also board games like Monopoly.

Talking with the students, it was clear that they considered that through the games they could get a considerable evolution concerning their mental capabilities. And we found calculation, memory, concentration, reasoning, some of the aspects, and also group dynamics and socialization. One point that is also quite important for creating games, is the consideration that, when we address to students in this age group, they need more time. Even when things are not very complicated, they have to have some practice on it. And that means time, and that means organizing specific games or specific parts in which they can absorb more easily. But it's progress; it's not so fast, but it's sound.

It was highlighted that seniors appreciate recognition of the evolution of their skills. It is part of the game, it is part of the effort

Table 2. Professionals involved in this study

#	Name	Age	Status	Activity
1	AntónioRocha	65	Retired	SoftwareEngineer
2	Beatriz José Coelho	63	Retired	Businesswoman
3	Inocêncio Araújo	71	Retired	Aeronautical Expert and Consultant
4	Isabel Faro	66	Retired	SchoolPrincipal
5	Isabel Fonseca	64	Retired	Manager
6	Isabel Santos	56	Active	Senior Institution Director
7	Joaquim Costa Domingues	75	Retired	Medicine Doctor
8	PauloCoelho	67	Retired	Navalofficer
9	RuiDuarte	72	Retired	UniversityProfessor
10	TinaFreund	78	Retired	Diplomat

There is a general interesting comment of the professors, of the professionals, related to the students and saying that, in general, they are quite active, competitive, and willing to learn and to improve.

The physical benefits are not evident, for the reasons we explained before, because the age is different, but mentally and with the social skills it's completely different. They can get a lot from them. And again, memory, planning, decision-making, evaluation, deduction, and socializing are considered very, very interesting points.

In general, they become more able to recognize mistakes and to learn from mistakes. This is very important if you want to make progress, it doesn't matter what we are doing.

In all of those games, either more physical or more mental, professionals recognized that there are several steps that are quite important: learning about the game, training about the game, improving about the game, getting the recognition from the others, getting the capacity to see if the improvement is going slowly or if something can be done that can just fasten the improvement.

And all of that can be done, it doesn't matter which game we are playing. It's a required skill for the professional to find a way.

Sometimes professionals have an online platform and on that platform they can just exercise all those things. Other times they have to do everything by themselves. But keeping in mind that those aspects are quite important for seniors: the applause, the critics, the recognition. This is an important part of the game.

And very often seniors make new friends while playing games. They extend the gaming activity to a friendship that is related to several other aspects of life. And it means that we are just building a community with different connections, more sound and more powerful.

Another important part mentioned by professionals is competitiveness, which is also related to socialization. It is found that people maintain their competitiveness in these two groups and have some excitement when they win or when they feel they are getting better or when they feel they are evolving. Therefore, having the ability to organize things so that they have this notion, as they are active participants in the games that are proposed to them, is an important objective.

Professionals recognized that competitiveness exists in both groups of seniors, but it can be expressed in different ways, it can be worked in different ways and it can have consequences that are different but that are, up until now, highly productive from the point of view of stimuli.

In the second group, more linked to higher education institutions or similar, this aspect is highly desired by them and in relation to certain types of mind games, such as Bridge.

There is an immense investment at an international level in online platforms that facilitate various aspects of games.

These online platforms facilitate teaching by making texts and materials available online that did not previously exist. They provide examples of games played, they provide examples of strategies that can be followed and the reasons why they are followed.

And they also facilitate, in relation to games actually played, in-depth analyses of the most correct way to play or the mistakes made.

And all of this allows people involved in these games to have a clear idea of what they did and to learn from mistakes and overcome them.

Recognizing that competitiveness is important and that it makes them happier, professionals in this area have had a very interesting propaedeutic aspect, particularly by achieving that the different activities that happen decentralized in numerous places (for example, tournaments) are recognized at the level of the institutions that nationally oversee these sports, in particular the Portuguese Bridge Federation, and ensuring that these activities, despite being private tournaments, have registered results that contribute to a National Ranking of the seniors involved.

And this aspect is a part of socialization because it is a part in which people, in addition to their own opinions about their merits, obtain recognition from the public point of view. The results are officially approved, published, and subject to evaluation and discussion.

This gives the elderly, when successful, some comfort and, when unsuccessful, some desire to surpass themselves and do better.

4. Suggestions for Future Games

One of the interesting points of this research is that we were able to gather, from those who agreed to respond, some useful information that could better define what the games of the future could be.

Seniors stated that it would be interesting to develop games that can be linked to one's own previous professional activities.

They think it's important to make games that are focused on activities that groups of elderly people may have had in their active lives and that these games allow them to mimic some activities that they had in their professional lives, now that they are retired.

A suggestion was made to develop new financial games, building on Monopoly. Another suggestion was the creation of a game inspired by how the Stock Exchange works.

Trying to promote physical fitness associated with mind and cultural games, a game was proposed around a walk associated with gathering something. Participants would go for walks, take a route, and along the way collect certain items. Then they would upload some tokens to the game central to show that they really saw them or collected them. Items could be certain bird species, small plants, special trees, paintings in a museum, and so on.

Then they are allowed to move on to the next level. This mimicked an online game, but it would be outdoors and get people moving. This is a type of activity that several people can be doing at the same time and can even collaborate with each other. Besides physical activity, it can help socialization and cooperation, fighting seniors isolation.

Seniors showed a preference for simulation games in which things are built, similar to SimCity, in which players build a city. This could be interesting for people who, during their professional lives, worked in urban planning or architecture, for example, because they will build neighborhoods, roads, streets of a city and have to anticipate the traffic that will occur there. All of this is strategy, planning and can be closely related to the engineering that was done in their active days.

The linkage between these ideas is not very strong, we have just encapsulated interesting points, but together they are quite valuable.

These are suggestions for innovative games on various aspects of different areas. It is hoped that these suggestions can help foster creativity in the next stages of the project, where new games will be developed.

5. Case Study: Bridge

Bridge is a card game that is played at several senior institutions. The following table shows the senior institutions that collaborated in this study. All of them have activities related to the practice of Bridge.

Institutions involved in this study			
Acronym	Name	Translated Name	Activities
USO	Universidade Sénior de Oeiras	Senior University of Oeiras	Bridge
USCQAL	Universidade Sénior de Carnaxide e Queijas	Senior University ofCarnaxide and Queijas	Bridge Let's Play
ASCVP	Academia Sénior da CruzVermelha Portuguesa	Portuguese Red Cross Senior Academy	Bridge (twoclasses) Mahjong Backgammon
ESBR	EspaçoSénior do Bairro doRosário, Cascais	Senior Space inthe Rosário Neighborhood, Cascais	Bridge Viv(a)Mente Positiva(mente) [mente= mind]
RCCDCI	Real Clube de Campo Dom Carlos I	Royal Country Club Dom Carlos I	Equestrian activities Horse riding Bridge Tennis

As one of the most complex card games in existence, it may come as a surprise that Bridge has been introduced so successfully in senior academies. It takes a long time to learn how to play Bridge. However, the rewards for practicing it are enormous and well worth the initial learning effort made by seniors.

Bridge players: It is usual that at a Bridge table the average age of participants is about 75 years.

Seniors considered that Bridge was reawakening them mentally and that was quite important. They also could identify a lot of card games, like King, Espadinha, Sueca, that are simpler than Bridge, which in some way also increased the capacities or skills of the participants on reasoning, memory, deduction, planning, communication, understanding. And all those things are quite important for socialization.

In this game, we need to have two players collaborating. Then the social participation is at a different level. It's not only as a group, but a more intense dynamic, more related to the partnership of the two seniors that are trying to win the tournament or to achieve together a better result. And this is a part of the socialization that sometimes is difficult to achieve. And risky because it's quite normal for two people to discuss. Conflicts arise, and some discussions are complex and nasty. Professionals are always careful about this situation.

Bridge professionals

Bridge professionals are highly trained and specialized, with a long Bridge career, some of them have practiced the game for more than 40 years. This group of professors, that we call professionals, with the characteristics specifically targeted at this kind of students, they are responsible for organizing training sessions, courses and tournaments at different clubs and senior universities.

Bridge professionals cooperated with us and told us about the effort they develop when they prepare the human interface with the students for a class. They described the structure of the courses and, at the same time, the individual effort they must do just to make those courses happen.

For instance, when they prepare a session of 8 games that are going to be played by the students, that means about 3 to 4 hours of preparation. It's a very high value, but it must be considered that after a while the professional has a database with information about the different courses that he has been preparing during, let's say, the last year or more than that, and that facilitates the preparations of the further courses.

But nevertheless, it needs a lot of dedication and a lot of effort to be successful. Those courses usually have a theoretical part, concepts, but it needs a lot of examples and a lot of games to be played and it is through those games that the students learn and they get their skills and the professional is able to make the work successful.

Online platforms *Professionals talked about online Bridge platforms because in this kind of games there is a very large investment of the international community in developing platforms. The main platforms worldwide are Bridge Base Online (BBO), Funbridge and RealBridge. Several others exist.*

Most of these platforms are free to be used by the players and by the professionals and some of them, the new ones, are not only able to support real-time participation on the games, but it's possible that the participants can see and talk to each other. In that way they contribute to a very important aspect, which is socialization.

Those platforms support playing many Bridge hands. But in reality, they support much more things. They make a record of all the activities that are going on. And that allows the professionals to use these past games to discuss with the students, to make comments on the specific parts of the game: the auction, the play, the defense. And that's very effective because this information is accessible not only for the professionals, but also for the students. They can see the game they played, they can see how they played it, they can talk with the professional about eventual mistakes they made or things that could be done differently. They can improve and that's the beauty of that.

More than that, you can organize a Bridge tournament at any time, it doesn't matter the hour. It means the only thing you need is to have people that want to play a game together. The online system allows you to announce that, for instance, in 10 minutes you are going to play, let's say, 12 games. And all the preparation will be done automatically and all the supporting background will be there.

We have to emphasize that some of the platforms, like BBO, evolved and developed a lot of tools for the game and also for the students. and so on. But now they just improved that and additionally they have sound and image in real time. It means that you can organize a tournament and you can have all the people together and, besides the game, they can just discuss, they can just talk and be together. It's almost like real table playing.

We can understand that working with those conditions we can be very effective and we can have a lot of progress.

National Bridge Federation *Professionals noted that players like very much the applause, they like very much to be recognized by the partners in the progress they are just doing. And this is very important.*

Bridge teachers discovered that prizes, applause and recognition are quite important for this community. It means that they are just coming for a new game, for a new experience. The experience is not so easy, but they can recognize that there is an evolution, that they are getting new skills, that they are getting new marks, and everything is quite important for them because it equips them as a group, as a team, and the professional helps and is rewarded by the participation in this community.

As previously mentioned, professionals typically have a great deal of experience with these kinds of tasks. And it means that they are able to organize, for instance, a small tournament with only eight games with didactic purposes. Everything is registered on the platform and, at the end of the game, the professionals can make a comment on the different aspects. They can comment on the auction, they can comment on the way they played, the way they defended and so on. And again, the mistakes or the things that they could not communicate between them come up from this work. And that is very interesting and rewarding for the participating seniors.

Seniors are competitive and they want to get recognition and the applause for the doings. Professionals in this area achieved a very good success with the Portuguese Bridge Federation and they have all these people now as official participants and there is a National Ranking where they can see the evolution and how good they are, compared with the other players.
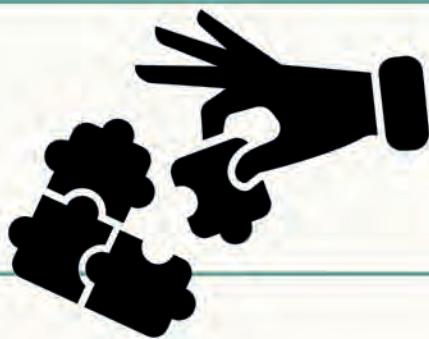
6. Conclusions

In total, 29 interviews were conducted, 19 with Seniors and 10 with Professionals. Two groups of senior institutions were identified.

Seniors in the "Solidarity Institutions" group have some problems with mobility while seniors in the "Senior Universities" are very active. Professionals who operate in these two types of institutions have characteristics that are very different from each other. All participants clearly recognized that games represented an important component that enriched their lives at different stages, in particular in terms of socialization. It was highlighted that seniors appreciate recognition of the evolution of their skills.

Professionals found that, in general, seniors are quite active, competitive, and willing to learn and to improve. Online platforms are a precious tool that helps professionals prepare activities for seniors.

Several suggestions for future games have been presented by the participants. Some of them liked games that could be linked to their previous professional activities.

As a case study, one of the mind games, namely Bridge, has been studied. All participants in the interviews were available to make further statements in a future continuation of this project.

Public institutions, and particularly municipal institutions, must be made aware of the benefits that these games can bring to a segment of the population that will increasingly grow, namely the elderly. Public institutions should provide for some kind of support that could help to increase this whole set of stimuli that, ultimately, mean that the work that is being done can have a different dimension and can have different results.

Measurable results should be obtained about improvements in the mental health of seniors. We should end up having statistics of the results that are achieved in seniors, analyses of their intellectual development and analyses of their physical development.

Therefore, it will be gratifying for everyone to be involved in an activity of this kind.

RECOMMENDATION FROM PARTNERS

SUMMARY REPORT : SLOVENIA

Within the scope of this research we interviewed 8 elderly individuals and 8 professionals. Tables showing participant information are given below. Participant names are given with code names.

Table 1. Information on Senior Participants

Participant Name	Gender	BirthYear
S1	Female	1957
S2	Male	1959
S3	Male	1970
S4	Female	1946
S5	Female	1950
S6	Female	1966
S7	Female	1952
S8	Female	1954

RECOMMENDATION FROM PARTNERS

1. Experiences of the Elderly on the Issue of Games

Elderly participants shared rich, emotionally resonant memories of games played in their youth. Games were remembered as joyful, social, and deeply meaningful activities that fostered a sense of belonging, creativity, and freedom. Participants commonly described playing outside, often in large groups of neighborhood children or with siblings. These games were typically physical, imaginative, and self-invented, involving little to no equipment. Activities like "med dvema ognjema" (dodgeball), card games, drawing games, and building things from natural materials featured prominently. The emotional response to these memories was overwhelmingly positive— words like "fun," "relaxing," "connected," and "free" were frequently used. Even those who had difficult childhoods or responsibilities at home recalled games as an escape and source of happiness. Some expressed nostalgia and a strong emotional attachment to those earlier times, paired with a sense of loss at how play has changed over time.

Most participants noted a significant contrast between the games of their childhood and those played by today's youth. The rise of digital technology —phones, tablets, and video games—was a near-universal concern. Many felt that children today are less physically active, less socially engaged, and more isolated due to excessive screen time. At the same time, several acknowledged that digital games could be beneficial when used mindfully, especially for mental stimulation. Despite age-related limitations such as decreased mobility, hearing issues, or chronic illness, many interviewees continue to engage with games in some form. Whether through group card games like tarok, individual puzzles and crosswords, or even online logic games, the elderly remain invested in play as part of their daily lives. Games were described as mentally stimulating, emotionally uplifting, and often a reason to connect with others—especially grandchildren or community members. The continuation of playful activity in later life was seen as both a personal pleasure and a crucial tool for maintaining mental sharpness, mood, and identity.

2. Needs and Expectations of Seniors

Seniors have nuanced expectations when it comes to games. First and foremost, games must be accessible and tailored to their changing abilities. This includes design considerations—larger pieces, simpler interfaces, tactile feedback—as well as content that engages without overwhelming. Many expressed a preference for games that combine mental stimulation with social interaction, like trivia, card games, drawing competitions with grandchildren, and logic-based group games. Seniors also need opportunities—both spatial and institutional—to participate in games. Those living in retirement homes or with access to community centers spoke positively about structured group activities and the social bonds they foster. Others mentioned that access to transportation, such as having a driver's license or programs like "Prostofer," (volunteer drivers) was essential in enabling their participation. Several participants noted that without such logistical support, isolation could become a barrier to playful engagement.

Another common expectation was that games should offer more than entertainment—they should support cognitive health, provide emotional release, and maintain a sense of purpose. Seniors do not view play as trivial; instead, they recognize it as a valuable mechanism for learning, mental resilience, and interpersonal connection. Many advocated for intergenerational play as a way to bridge gaps with younger family members and preserve cultural practices.

Importantly, participants also emphasized the need for broader social and institutional recognition of the role of games in old age. They called for programs that help older adults transition into retirement, that integrate play into health and social care, and that remove stigmas about seniors "wasting time" with games. There is a desire for play to be normalized as a meaningful, even essential, aspect of aging well.

Table 2. Information on Professionals

Participant Name	Occupation	Age	Gender	Working Time
P1	Adulteducator – leaderof Third ageuniversity	63	Female	7year
P2	Medicalstudent	22	Male	2year
P3	Sociologistof culture	32	Female	5year
P4	Adulteducator, language teacher	56	Female	15 year
P5	Language teacher	30	Female	4year
P6	Worktherapist	43	Female	10 year
P7	Educator	54	Male	6year
P8	Leader of intergenertional centre	59	Female	12 year

SUMMARY REPORT FOR PROFESSIONAL PARTICIPANTS

1. Experiences of Professionals on the Subject

Professionals working with seniors generally report very positive experiences when using games in their programs. Many older adults initially hesitate, especially if they're unfamiliar with games or feel they might be "too childish." However, once they start playing, they often enjoy themselves and become more engaged. Games help seniors stay mentally sharp, improve memory, and even boost their mood by reducing feelings of loneliness. Social games, in particular, encourage interaction, which is especially valuable for those who might otherwise feel isolated. Some seniors also enjoy a bit of friendly competition, which keeps them motivated.

The most popular games among seniors tend to be simple, familiar, and social. Classic board games like Človek ne jezi se (a local version of Sorry!), card games, dominoes, and chess are favorites because many grew up playing them. Memory games, quizzes, and puzzles also work well, especially when they relate to everyday life—like remembering shopping lists or recognizing familiar places. Seniors prefer games with clear rules, large pieces (easier to handle), and themes that feel relevant to their experiences. For example, games that include local history or cultural references tend to hold their interest better than abstract or fantasy-based ones.

However, there are challenges. Some seniors struggle with games that are too complex or physically demanding, especially if they have vision, hearing, or mobility issues. Others feel embarrassed if they don't understand the rules quickly. Professionals note that patience and adaptation are key— simplifying rules, using bigger game pieces, or adjusting difficulty levels can make a big difference. Another obstacle is that gaming isn't yet a widely established activity for seniors in many communities. While some centers offer game nights, others lack structured programs, leaving seniors with fewer opportunities to participate.

2. Needs and Expectations of Professionals

Professionals who use games with seniors often find themselves needing better tools and support to make the most of these activities. One major need is access to well-designed, senior-friendly games. Many existing games are either too complex, rely too much on pop culture references that seniors don't connect with, or don't account for physical limitations like poor vision or arthritis. For example, games with small pieces or tiny text can be frustrating, while those with overly complicated rules may discourage participation. Professionals would benefit from more games tailored to seniors—whether that means larger components, adjustable difficulty levels, or themes tied to their life experiences, like history, nature, or daily tasks.

Another key need is training and practical guidance on how to use games effectively. While many professionals see the benefits of games, not all feel confident in selecting the right ones or adapting them for different cognitive and physical abilities. Some mention wanting workshops or resources that explain how to measure the impact of games—for instance, tracking improvements in memory or social engagement. Others highlight the challenge of motivating reluctant participants, suggesting that mentorship programs or shared best practices could help. Additionally, with technology playing a bigger role in gaming, professionals express interest in simple digital tools, but they need support to introduce them in ways that feel comfortable for seniors who may be wary of screens.

RECOMMENDATION FROM PARTNERS

SUMMARY REPORT - DENMARK:

1. INTRODUCTION

The Active Brain Games project aims to promote an active lifestyle through games that challenge the brain. The primary objective of this project is to develop games that positively impact cognitive development among seniors. By doing so, the project strives to implement preventive measures against cognitive decline, such as Alzheimer's, while also strengthening social connections. This report summarizes the findings from interviews and questionnaires conducted as part of the project. The research targeted both professionals working with the target group and senior participants (aged 60 and above). In total, six questionnaires were completed by professionals and follow-up interviews were conducted. Additionally, five recorded interviews (audio only) were carried out with professionals. For the senior group, four questionnaires were completed and 10 recorded interviews were conducted, some of which were in group settings.

The interviews were conducted by Michelle Knudsen from DGI Vestjylland. The aim was to reach a diverse group of professionals and seniors, ensuring a wide range of perspectives. The senior participants included individuals still working, retirees, men and women, ages 60 to 85, and both active and inactive participants.

Participant Name	Age	CurrentJob Status
P1	79	Retired
P2	68	Accounting assistant
P3	66	Office employee (15 hours)
P4	70	Retired
P5	69	Retired
P6	71	Retired
P7	68	Retired
P8	80	Retired
P9	81	Retired
P10	80	Retired

Findings from the Senior Participants' Perspective 1. What does play mean to you? What does the game mean? For many seniors, playing games holds significant value in their daily lives. It is seen as an opportunity to relax, engage socially and enjoy fun, with the added benefit of mental and physical stimulation. Games provide a way to disconnect from the stresses of everyday life and focus on the present moment.

While many seniors enjoy playing with others, some also appreciate games that can be played alone, such as Sudoku, solitaire and crossword puzzles. The act of playing provides not only entertainment but also a chance to engage their minds in a different way. In their own words, games help to "clear the brain" and foster a sense of community, often accompanied by shared laughter and enjoyment. For many of the participating seniors, playing games is more than just a pastime; it provides a way to learn more about the people they play with. They emphasized that playing games offers a deeper connection compared to simply sitting and talking. However, despite the many benefits, some seniors find it challenging to find the time to prioritize playing games in their busy schedules.

2. What kind of games did you play in your childhood? With whom did you play? What did you feel?

The majority of senior participants fondly reflected on their childhood experiences with traditional games. They commonly recalled playing card games, checkers and various dice games—activities that blended both strategy and luck, while encouraging social interaction and bonding. Additionally, board games such as Monopoly and Jenga were frequently mentioned. These games were typically played with family members or friends, creating an environment of fun, competition and collaboration. During the warm months, outdoor games like pétanque, boccia and croquet were particularly enjoyed. These games encouraged physical activity while providing a relaxed and social atmosphere. Many participants reflected on the joy of playing these games in their backyards. The emotional impact of these games was significant for most seniors. The feeling of joy, excitement and togetherness was central to their experiences. Whether they were playing with parents, siblings or friends, the companionship and sense of teamwork were integral to their childhood memories.

Even as they grow older, the seniors continue to play these same games with their children, grandchildren and great-grandchildren. Passing down these games not only preserves traditions but also strengthens intergenerational bonds, highlighting the timeless nature and emotional connection of these games.

Almost all of the participants used the Danish word "hygge", which refers to a sense of warmth, coziness and contentment—typically in the company of others. Hygge is central to Danish culture, and it perfectly encapsulates the emotions that arise from playing games in a relaxed, enjoyable setting.

3. If you played the same games today, would you feel the same positive emotions you felt as a child?

For the majority of the participating seniors, playing games still brings the same joy, excitement and sense of competition as it did in their childhood. The emotional attachment to these games remains strong and many seniors continue to enjoy the challenges and fun that they offer. However, some seniors—particularly those over the age of 80—now prefer quieter, more traditional games, as they may find the more physically demanding games less suitable.

Despite this shift, playing games still evokes feelings of happiness and relaxation. Many seniors described how playing games allowed them to unwind and recharge mentally. The competitive spirit still shines through in many games, with seniors enjoying the chance to "read" their opponents and engage in lighthearted competition.

The opportunity to see growth and improvement in younger players, such as grandchildren, was particularly noted. Seniors expressed the importance of both learning to win and lose, a valuable lesson for children and adults alike. Many participants mentioned the loving teasing that often accompanies games and emphasized the importance of these social interactions. For some seniors, the level of competition varies, with some enjoying more intense competition, while others prefer a more relaxed, social atmosphere.

4. What kind of differences do you think there are between the games of your childhood and the games of children today?

While many seniors acknowledged the arrival of new games, they pointed out that many modern games are simply updated versions of the classics. The most notable difference, however, is the shift towards digital and online games. Younger generations tend to favor online games, which were not part of the seniors' childhood experiences.

Some seniors highlighted the popularity of tactical and strategy games, such as building games and partnership games, that were less common when they were children. While new types of games have emerged, the core principles of many games remain rooted in the traditional games of their youth.

5. In your culture/neighborhood, how is it perceived for adults to play games? *The perception of adults playing games varies depending on family traditions and cultural backgrounds. Seniors who grew up in households where playing games was a regular activity tend to continue this practice into adulthood. Conversely, those who were not exposed to games at home are less likely to engage in games as adults. This cultural aspect seems to play a significant role in seniors' current engagement with games. Many mentioned a strong tradition of playing games within families, with multiple generations engaging in games together. Seniors also noted that games are just as much for adults and seniors as they are for children and younger generations. There is a long-standing tradition of card clubs, social clubs and sports clubs where games are played. The more active kinds of games, such as games incorporated into physical exercises, are popular among seniors. Seniors are highly aware of the importance of staying active, both mentally and physically, and recognize that games can be an excellent way to maintain physical and mental health status.*

6. When it comes to games, digital games are now included in addition to street and home games. Do you play any digital games? *Responses to this question varied among participants. Those who played digital games typically engaged in online card games, word games and memory games. Digital games such as Wordfeud were frequently mentioned. However, most seniors who played digital games preferred using smartphones or tablets, rather than computers or gaming consoles. Some seniors are familiar with games like Roblox or Pokémon through their children and grandchildren, but few actively play these games themselves. For many, there is a cautious openness to digital games, with no major concerns. Those who did not play digital games often viewed them as time-consuming or too complicated. Nevertheless, many of these seniors expect to explore digital games more in the future once they become more familiar with technology.*

7. What are the benefits of playing games for seniors in general? *Seniors overwhelmingly agreed that playing games helps keep their brains active and encourages physical and social engagement. Many felt that the competitive aspect of games was particularly beneficial in maintaining mental sharpness and alertness. The social aspect of games—creating and maintaining connections with others—is crucial for seniors. Games provide an opportunity to engage in a community, helping to combat loneliness and isolation. The physical activity involved in certain games also contributes to maintaining overall health, particularly regarding reaction times and coordination. More of the participants also recognized the value of games in care facilities like nursing homes or dementia centers. These games, which include both traditional and more active small games like beanbag tosses, help maintain physical and cognitive skills. Shorter, less complex games with physical elements seem to be particularly popular with this target group, as they are accessible to a broader range of seniors. Finally, the cross-generational nature of games was highlighted as an essential benefit. Seniors enjoy the ability to play with younger generations, whether children, grandchildren or great-grandchildren. Moving games outdoors and engaging in various settings was also seen as an important way to diversify the experience.*

8. What should a game designed for you look like and how would you like it to benefit you?

A game designed for seniors should prioritize simplicity and accessibility, ensuring it is easy to understand and not overly complex. It should be engaging without being too physically demanding, providing mental stimulation while being enjoyable and relaxing. The game should offer opportunities for social interaction, as this is highly valued by seniors who emphasize the importance of companionship and community during games. For instance, games like card games, board games or word games could be ideal, as they offer mental challenges while fostering social engagement. Additionally, physical games with light movement, such as games that include small active elements or can be played outdoors, would be beneficial. These games could also offer cross-generational appeal, enabling seniors to play with family members, including grandchildren or great-grandchildren, reinforcing the emotional connection and sense of togetherness. The main benefits expected from such games would include mental stimulation, relaxation and an opportunity to maintain cognitive health through games that require focus and strategy. The social aspect of these games would provide a sense of joy, combat loneliness and create a sense of community and belonging. Additionally, games that include physical elements would help seniors stay active and improve their physical coordination and reaction times.

9. What are your personal characteristics or living conditions that make it easier for you to play games?

Several characteristics and living conditions make it easier for seniors to engage in games. These include having access to family and friends with whom they can play as social interaction is a key element of game-playing. Living in a supportive environment with access to recreational spaces— such as community centers, senior clubs or sports clubs — can also facilitate participation in games, providing opportunities to engage in group activities. Seniors who live in family-oriented homes, where games are part of family traditions, find it easier to continue playing games, as this practice is ingrained in their daily lives. Furthermore, having good physical and mental health can make it easier to participate in a wide range of games, from physically active outdoor games to strategy-based board or card games. For many seniors, the ability to engage with games that require social interaction, like playing with grandchildren or participating in clubs, helps maintain a sense of purpose and keeps them mentally engaged. The availability of both digital and traditional games allows them to choose the types of games that best fit their preferences and abilities.

10. What are your personal characteristics or living conditions that make it difficult/challenging for you to play games?

Certain personal characteristics and living conditions can make playing games more challenging for seniors. Physical conditions such as visual impairments, limited mobility or respiratory issues can hinder participation in certain types of games. For example, games requiring fine motor skills, physical movement, or quick reflexes may become difficult for those with arthritis or other physical limitations. Additionally, living in an isolated environment, far from family or social groups, may limit opportunities for social interaction, which is a critical aspect of game-playing for many seniors. Lack of access to social spaces or clubs where games are offered can also restrict participation in group activities. Another challenge is the digital divide. While some seniors enjoy playing digital games, others may find them complicated or difficult to navigate, especially those who are not familiar with modern technology or prefer more traditional face-to-face games. Lastly, the emotional challenge of time constraints or a lack of energy can make it difficult for some seniors to prioritize games.

Key Takeaways:
- *The definition of a "game" varied significantly among participants, with some considering traditional board and card games, while others viewed physical activities like pétanque and darts as games. Seniors*
- *with visual impairments or respiratory issues can find it more challenging to engage in certain types of games. The inclusion of both*
- *digital and traditional games should be considered to meet diverse preferences, as seniors enjoy both types of activities, depending on the context.*

Name	Age	Profession	Institution/Organization	Experience
P1	34	Physiotherapist & osteopath	Fysio DanmarkHolstebro	9 years
P2	46	Senior Consultant	DGI Østjylland	9 years
P3	34	Senior Consultant	DGI Nordjylland	5 years
P4	40	Senior Consultant	DGI Midtjylland	9 years
P5	62	Leader of Activitycenter & occupationaltherapist	Aktivitetscenter Struer	+30 years
P6	31	Physiotherapist	Struer Kommune(Municipality)	9 years
P7	52	Occupational therapist & dementia consultant	Struer Kommune (Municipality)	13 years
P8	35	Pedagogue	Ældrecentret Solvang (Nursing home with focus on dementia)	11 years
P9	36	Project Manager	Lemvig Municipality	1 year
P10	31	Sports consultant	DGI Vestjylland	6 years
P11	26	Senior Consultant	DGI Nordjylland	2 years

1. What are the seniors' experiences of playing games usually like? *From the perspective of professionals, seniors generally have positive experience with games. Games are seen as an effective way to keep seniors engaged, both physically and mentally. They are often associated with enjoyment, relaxation and social interaction. Professionals emphasized that seniors tend to appreciate games that provide familiarity and tradition. Many seniors enjoy the sense of recognition, as the games often bring back memories of past experiences. However, some professionals mentioned that seniors can be skeptical about new games. Therefore, it is beneficial for new games to resemble something they have already tried before, with a slight twist to make them more engaging.*

2. Which types of games are seniors more interested in? *Professionals noted that seniors often show a preference for more active games, such as pétanque, new age curling and other similar low intensity physical activities. These games not only keep them physically engaged but also foster a sense of enjoyment. However, there is still interest in traditional games like card games, billiards and puzzles, which appeal to a broad range of individuals. The interest in games is often dependent on the specific professional background. For instance, physiotherapists tend to focus on more physical active games such as ball games and SMART- training, which is cognitive training. Among more recent games, the professionals express that the target group prefer games such as Rummikub and magnetic chess. Many also enjoy playing word games, such as those involving old proverbs or similar themes. Quiz games are also beneficial for this target group, both in terms of maintaining memory and learning new information. In this context, it may be advantageous to use older quiz games, such as "Denmark Round" or quiz questions from the local newspaper.*

While some seniors might initially express reluctance to participate, once a game is initiated, they often enjoy it. The familiarity of games, especially those from their childhood, is important. Seniors prefer games with simple rules, avoiding overly complex new games. Moreover, games that involve a degree of chance, where luck plays a role in determining the winner, are also appealing. Games with a competitive element are particularly engaging, as they help to stimulate both mental and physical involvement.

3. What do you think are the main factors that increase or decrease seniors' participation in games? *Several factors can influence the level of participation among seniors. On the positive side, easy accessibility and the social aspects of games were highlighted as key elements that encourage seniors to join in. Games that are simple to start and do not have too many rules are more appealing. For example, games like New Age Curling, singing games or Pickleball are accessible because they require minimal physical exertion and have straightforward rules. The competitive element in games is often a driving force for participation, as it helps seniors to forget about their physical limitations and focus on the game. Several professionals also emphasize that the relational aspect plays a significant role in motivating seniors to participate. On the more negative side, factors that can reduce participation include overly complex rules or games that are physically demanding, such as badminton, where point-counting can be confusing or the physical demands may be too great for some seniors. It is important that games are adaptable, particularly for those with disabilities or injuries, to ensure that they can still participate. It is also essential that the games do not appear overly childish, as this could have a negative impact on participation.*

For some seniors, words such as "gymnastics" or "football" may evoke negative associations with a high level of physical activity that they feel unable to participate in. As a result, some may choose not to participate in these games. Therefore, the way the game is presented is of great importance. Even if active participation in the game is not possible due to various reasons, it is beneficial to assign the participant a different role, such as a referee. In this way, the participant can continue to engage actively in the game.

4. What effects have you observed from games on seniors' outcomes?
Professionals unanimously agreed that games play a crucial role in maintaining both cognitive and physical functions among seniors. Regular engagement in physical active games has been observed to improve motor skills, cognitive abilities, balance, coordination and muscle strength. Games can also improve overall wellbeing and contribute to mental stimulation. The choice of games is key in determining the specific outcomes, with more physically demanding games contributing to increased physical capacity, while other games help to improve cognitive functions. Several professionals refer to the use of music and its effects. In particular music from the "old days," which allows participants to sing along, has an uplifting effect. One professional mention that there may be benefits in ending with high energy and a heightened level of arousal, ensuring that participants leave with smiles and a sense of joy.

5. What do you think you need more information or training on about games? *The professionals did not express a desire for a lot of information and training. This could be because of their experience in this field. However, a few of the participants wished to get more inspiration for games that challenge seniors both physically and cognitively. While many professionals felt well-equipped to engage seniors in games, they acknowledged that newcomers to the field may need additional training to understand the nuances of designing games that address both physical and cognitive needs. Moreover, there is a desire for materials that easily show how to make the games harder or easier. A more varied selection of games, including those that target specific cognitive or motor skills, would be beneficial for enriching senior activities. One professional points out that games for children and young people typically indicate what ages, levels and other relevant information the specific game is relevant for, which is not the case for games aimed at seniors. In books, the LIX index is used to know the target group of the specific book. As a professional, it can be difficult to determine the target audience of a game in relation to factors such as the target group, level (both physical and mental) and so on.*

6. What do you do to engage older people in the game? *Professionals emphasized that actively participating in the games themselves is crucial for engaging seniors. By participating alongside them, professionals create a more encouraging environment that helps seniors overcome initial reluctance. It is also important to provide clear instructions and maintain a welcoming atmosphere. Many professionals also adapt games for individuals who may find certain activities challenging, ensuring that everyone can participate at their own level.*

The use of icebreakers, such as those from SMART training, is an effective way to get seniors comfortable. Additionally, providing the option for breaks, especially for those who need physical or mental rest, was emphasized as an important part of the experience. Additionally, it is mentioned that thematic divisions, such as those related to holidays or traditions, can be beneficial. For example, a theme based on Carnival could involve costumes and provide an opportunity to learn about the history and traditions behind the holiday. Games could then be created in this context.

7. How often and for how long do you do play activities? *Games are typically played 1-2 times a week, with each session lasting between 10 minutes to 1.5 hours, depending on the game. Breaks are often incorporated, particularly during more physically demanding games. All the professionals expressed that they tend to use games as part of group sessions, more than with individuals. When introducing new games, professionals noted that adequate time for learning is important, allowing seniors to understand the rules and feel comfortable with the activity. A proper introduction to the game is key to ensuring seniors are engaged.*

8. What do you think games can be made more effective for older people?
To make games more effective for seniors, professionals suggested that games should incorporate daily living skills and preventative measures, such as fall prevention. A mix of both active and relaxing games would appeal to a broader range of seniors, accommodating their diverse physical and cognitive abilities. Games that have simple, easy-to-understand rules are ideal, as they are more accessible for a broader demographic. Specialized knowledge within different professional fields, such as physiotherapy or occupational therapy, can be used to tailor games to meet specific needs. The games should also be easy to set up and not require much equipment or complex instructions. Additionally, including elements of daily activities within games, such as coordination, balance and movement exercises, can make games more beneficial for seniors. This approach would also help with fall prevention, a common concern in senior health.

9. Is there an approach, technique, or method you use specifically to encourage participation of older people in games? To encourage participation, professionals emphasized the importance of making games accessible, familiar and meaningful. Seniors are more likely to participate if they recognize the games and can easily understand the rules. Additionally, professionals suggested that games should be designed with a clear purpose, such as improving mobility, balance or cognitive function. SMART training and outdoor activities were specifically mentioned as effective methods for engaging seniors in games. These methods combine both physical and mental stimulation, which aligns with the goals of increasing seniors' functional capacity.

Creating an informal introduction session, where seniors can learn about the games without pressure, helps to make them feel more comfortable and less apprehensive. Furthermore, group games were often noted as being more successful because the social aspect of playing together encourages participation. Professionals also pointed out that incorporating a competitive element in the game could be highly motivating. Seniors can forget their physical limitations when engaged in competition, often pushing themselves further than they initially thought possible. The idea of using a "handicap" system, similar to golf, where the competition is adjusted to make the game fair for everyone, was proposed as a way to ensure that all participants have a positive experience. The reminiscence method is mentioned by one professional as an effective

experiences, memories and personal stories, particularly with seniors, to stimulate their memory and emotional engagement. This method is often used with seniors who may face cognitive challenges due to aging, dementia or other forms of memory loss.

The aim of reminiscence is to:

1. *Activate memory – By recalling past experiences, participants strengthen cognitive functions and memory.*
2. *Enhance self-esteem – Sharing life stories allows individuals to affirm their life experiences and feel valued.*
3. *Encourage social interaction – Sharing memories promotes conversation and relationship-building.*
4. *Increase well-being – Positive memories bring joy and satisfaction, enhancing quality of life.*

The method often uses tools such as pictures, music, objects or stories to evoke memories and create a space for reflection and conversation.

The CTS method (Cognitive Training System) is also mentioned as a valid technique used to enhance cognitive functions in individuals with dementia or cognitive challenges. It focuses on brain stimulation through targeted exercises and activities designed to maintain or improve memory, attention and other mental skills. The method aims to:

1. Enhance cognitive skills – By practicing memory, concentration and problem-solving, participants can maintain or improve their mental abilities.
2. Slow cognitive decline – Regular training can help slow the cognitive deterioration often associated with dementia.
3. Increase quality of life – Engaging in meaningful cognitive activities can boost a sense of independence and well-being.

The CTS method typically involves the use of digital or printed training materials and can be conducted either individually or in group sessions, tailored to the participant's needs and abilities.

Additional Comments: It was noted that the definition of what constitutes a "game" can vary— many professionals view games as a form of play and the introduction of a competitive element adds an extra layer of motivation to engage. Overall, games serve not only as a fun and enjoyable activity but also as an effective way to maintain physical and cognitive function among seniors.

Key Takeaways:

- *Games for seniors should be accessible, engaging and simple to understand.*
- *Both physical and cognitive benefits are observed from game participation.*
- *Social aspects, such as group games and competition are key motivators.*
- *Professionals suggest incorporating daily living skills and preventative measures into game design.*
- *Training for specific games that cater to both physical and cognitive needs would be beneficial for professionals.*
- *The use of the Reminiscence and CST methods could be useful in the creation of new games for seniors.*

Conclusion: *The findings from both senior participants and professionals show a shared recognition of the benefits that games can bring to seniors, including cognitive stimulation, physical activity and social engagement. This study has demonstrated that both traditional and digital games can play a significant role in improving the quality of life for seniors, fostering not only cognitive development but also social interaction. Moving forward, it is essential to consider the diverse needs and preferences of seniors when designing and implementing games, taking into account factors such as accessibility, familiarity and the balance between physical and mental challenges.*

RECOMMENDATION FROM PARTNERS

SUMMARY REPORT - TURKIYE:

Within the scope of this research, 10 elderly individuals and 9 professionals were interviewed. Tables showing participant information are given below. Participant names are given with code names.

Table 1. Information on Senior Participants

Participant Name	Gender	BirthYear
S1	Male	1960
S2	Female	1961
S3	Female	1962
S4	Female	1964
S5	Female	1963
S6	Female	1963
S7	Female	1963
S8	Male	1951
S9	Female	1957
S10	Male	1958

Table 2. Information on Professionals

Participant Name	Occupation	Age	Gender	Working Time
P1	Psychologist	27	Female	2 year
P2	Physical therapy and rehabilitation	27	Female	2 year
P3	Social Worker	30	Female	3 year
P4	Art Teacher	33	Female	7 year
P5	Nursing Staff	20	Male	1 year
P6	Nursing Staff	33	Female	8 year
P7	Nurse	33	Female	7 year
P8	Nurse	48	Female	16 year
P9	Psychologist	34	Female	8 year
P10	Social Worker	31	Female	5 year

1. Experiences of Professionals on the Subject

In line with the interviews, professionals stated that active play practices have positive effects on both physical and cognitive development of elderly individuals. For this reason, they stated that they regularly organize play activities in their institutions. In order to increase participation, it was emphasized that it is important to establish individual communication, develop personalized motivational strategies and conduct awareness raising activities for games. Professionals stated that they observed that elderly individuals who play games have higher life motivation, therefore, there is a need to increase the variety of games for the elderly. In addition, it was stated that older individuals were more interested in games that preserve their autonomy and involve physical interaction.

Participation in competition-based games was also reported to be higher compared to other types of games. In the interviews, it was emphasized that clearly explaining the benefits of the games to the elderly increased participation and motivation. It was stated that when older adults understand the positive effects of a game on their quality of life, cognitive and physical condition, their level of participation increases significantly. However, it was also stated that mental games can be challenging for some elderly individuals and that awareness-raising activities and trainings for both the elderly and professionals are necessary in this field.

2. Needs and Expectations of Professionals

As a result of the interviews, it was determined that professionals are not adequately equipped in game design, game development and game implementation; therefore, they need comprehensive training support, practical materials and guidance documents. Professionals emphasized the necessity of developing policies and implementation guidelines by the relevant public authorities for the dissemination of game applications in these institutions, as nursing homes in Turkey are mostly affiliated to ministries. They also stated that they need budget support to provide materials to be used in game development and implementation processes and to ensure the sustainability of these studies. In order to increase professional competencies, it was pointed out that in-service trainings should include comprehensive content on game-based interventions, the gains provided by the game and professional responsibilities. In addition, it was stated that non-governmental organizations (NGOs) are very weak in this field and that both public and private nursing homes need NGO cooperation and support. Finally, it was emphasized that game-supported health services and psychosocial rehabilitation programs should be developed and evaluation tools that can objectively measure the effects of games on older people should be developed.

SUMMARY REPORT FOR SENIOR PARTICIPANTS

1. Experiences of the Elderly on the Issue

For the older adults who participated in the interviews, play was defined not only as a childhood activity but also as an experience that keeps life alive, exercises the mind, strengthens social bonds and brings happiness. Participants frequently emphasized childhood feelings of enthusiasm, mobility and togetherness when recounting their memories of past play. For many of them, play triggers mental vividness as a nostalgic memory and provides a connection with the past. Some participants stated that games were not only fun but also functional in terms of learning, mental development and social interaction. It was stated that emotions such as laughter, excitement and energy discharge came to the fore during the games and that individuals felt young despite their old age. It was stated that especially games played in groups reduce the feeling of loneliness and increase social visibility. It is seen that mental games are used as a kind of mental exercise to cope with age-related problems such as Alzheimer's and forgetfulness. However, due to physical limitations, some of the participants keep their distance from active games and prefer low-paced and cognitively-oriented games. Socially, play is perceived in two ways by the participants: On the one hand, there is a group of people who argue that there is no age for play and appreciate those who play; on the other hand, there is also environmental pressure that considers adults playing games as "childish" and views this situation negatively.

2. Needs and Expectations of Seniors

Participants drew attention to some basic needs and expectations for the dissemination of play activities for older adults. The most important of these is that games should be designed in accordance with the age group and physical capacity. In particular, considering age-related mobility limitations, there is an expectation for games with a slower pace, simplified but encouraging participation. Demand for games that support mental capacity is quite high. It is desired that games that strengthen memory, support problem-solving skills and involve strategy are designed to be played both individually and in groups. Such games are seen not only as entertainment but also as a means of mental exercise. Apart from this, a significant number of participants also expressed their needs for physical games. Elderly individuals stated that it is important for the social environment to be supportive, for the games to be playable together and for the game environment to be designed in a tolerant structure in order to increase participation in games. The main factors preventing participation include physical health problems, the complex structure of games and social judgments. It was also emphasized that games should not only entertain individuals, but also give them a sense of "sense of accomplishment", "visibility in society" and "self-confidence". Some participants stated that they were motivated by the fact that the games were presented in a more structured and systematic way, and that the games should be transformed from random to structured activities. Finally, although the participants had positive feelings about the games, it was also understood that some individuals had difficulties in participating in the games due to lack of technical knowledge and needed guidance and training on the introduction and implementation of the games.

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ACTIVE BRAIN
GAMES FOR SENIORS

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