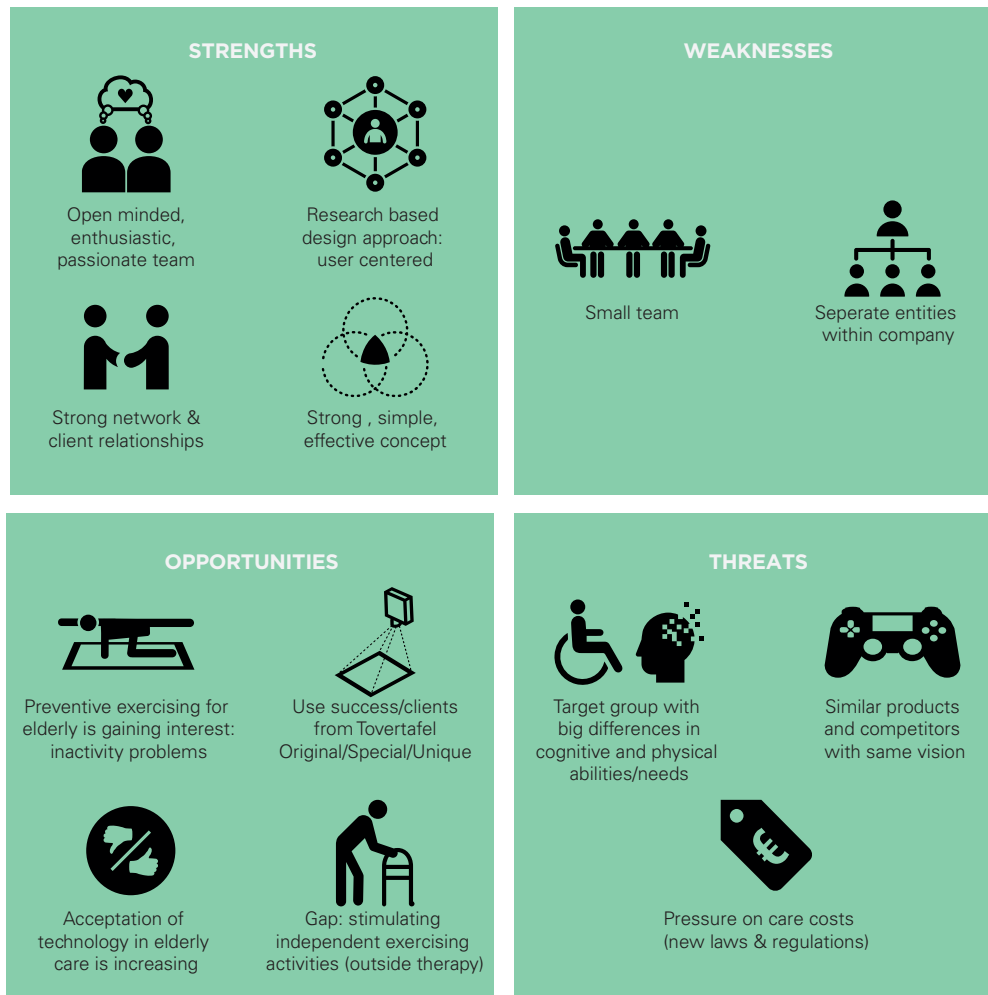


7. APPENDICES



Figure 126 —

A. SWOT ANALYSIS ACTIVECUES



B. CONTEXT RESEARCH

B.1 OPEN INTERVIEW CESAR THERAPIST

SANNE VAN ADRICHEM - 4/3/2016 - NAALDWIJK

1) Why are you interested in this Tovertafel project?

a. How can you describe overlap with your profession? Stimulating movement for elderly people is always a challenge, new initiatives should be supported, maybe I could help with my expertise in finding suitable solutions.

2) What is your vision on preventive movement for elderly people?

a. What are the effects?

In today's society, elderly people should stay independent longer, thus being able to execute the required daily chores is important. The earlier in life people start to exercise, train movements and keep the muscles fit, the longer they can live without problems, or the better occurring problems can be solved. Even starting at younger ages, this has effects later in life!

b. Which are the most important goals for elderly people to stay active?

Every minute of additional moving on a day is already profitable for the elderly. It depends on the goal how qualitative this moving eventually is, but in the end, a fitter body is valuable for most daily chores and activities. Not only big movements or muscle strength are important in this, even fine motor skills could help improve the quality of life. The difficulty is to make people aware of the effects of exercising more, far before they get the actual physical issues.

3) How do you think preventive movement is best stimulated for elderly people?

a. Certain methods?

To practice daily chores and required movements, you should best be doing the exact same things. In therapy, I make the movements literally bigger, so smaller real-life actions can be recreated by the patients as well.

Also building the movements step by step, using the complete body, rather than only practising the problem area, can help improving how the muscles learn to work together. A single movement is always build up in 3D for which multiple connected/intersecting muscle groups of muscles are involved. Learning to correctly combine those while twisting, bending, stretching and in different directions is important in maintaining simple daily actions.

On the other hand, just going for a physical activity without thinking too much and while relaxing can also be a form of preventive movement. For example to get the peace in your body again by going for a stroll can help relief stress and tension from the muscles. The brain releases different hormones, which have positive influence on the functioning of the body and on motivation. So instead of only specifically training certain movements, giving time to the body in a more general activity is also a way of preventing physical issues.

b. Duration/intensity levels?

Depends per person. For younger persons, intensity can be raised, but always within the boundaries of pain. In CT, intensity is linked with the needed focus on executing a certain exercise. I make patients focus very carefully on every movement, so they learn to work with

their body and they are aware what is happening with their muscles step by step. Focus on the movement is triggered by making the exercise very complex, so people have to think much.

c. Types of movements? (goal of movement)

As therapist, we usually work with a certain individual goal, injury or symptom as starting point. This way of working determines in a lot of cases what type of movements are valuable to practice; focus on stability, strength, flexibility, motor skills etc. But in all cases, making the intended movement bigger than in daily life, helps to develop the muscles to work together more smoothly.

d. Functional movements (ADL) required?

I expect that daily tasks which are practiced preventively will stick longer in the functioning of the elderly. But in the end, being fit helps already, so training with realistic movements is not necessary for Tover Tafel to be successful. As functional exercises should be as identical as the situation in real life (which means you will need 3D movements and additional attributes) to be really helpful, this is difficult to stimulate and to monitor with Tover Tafel technology alone.

e. Do you have recommendations for (a set) of movements/exercises which are meaningful for elderly people (or a specific target group)?

Doing a dancing exercise is an example in which a lot of focus is on making proper movements, while this is the goal of the exercise at the same time. Timing, proper body positioning and posture combined in a set of movements in a row make the exercise challenging.

Furthermore, keeping walking helps a lot with all sorts of issues later in life, mainly keeping up the stability.

Rheumatic elderly patients may have more valuable training by doing table top exercises with fingers, wrists and arms.

f. What are important factors to pay attention to with regard to the elderly and exercise?

-pain levels: never go over the pain level

-every extra movement made, is profit for the physical fitness of an elderly person

-Make them understand the goal and the value of moving and exercising, as people usually have little motivation when not feeling pain yet.

-Keep it simple! All differences in cognitive and physical levels need to be challenged. Working with interactive technology could discourage elderly people ('I can't understand this'), but can be a great motivator if applied well.

4) Do you have experience with stimulating and motivating elderly people to move?

a. What should be the focus?

Positive input helps! They should be proud they have 'decided' to be active and do a physical activity, whatever this may contain.

Also make sure the elderly know their goal of each exercise. Without understanding why they do something, it is more difficult to keep motivated on the long-term. Giving elderly people (interim) results and feedback on reaching this particular goal will help as well.

Game mechanics can help to intrinsically motivate them to keep on doing the exercise.

Cheating can be a bad sign for the correctness of the movement and the game design, but if the goal is to make them moving more, also cheated movements are contributing to this goal. In the end, still every added action is positive.

Older adults are sometimes very lax, even though they understand the importance of moving.

They tend to execute the task in the easiest way (so not using all muscles to complete the complex movement). The game should either allow this, or avoid this in the design already.

The exercises should fit the perception of the elderly people. This means games should not contain too much (distracting) stimuli and use themes or subjects which they find interesting. Visuals and audio input should be well balanced and the elderly should be able to understand instructions and tasks clearly.

Just copying what others do is not the best way to stimulate an individual in the setting of exercising, for example 'Nederland in beweging' has a lot of boundaries for the elderly to start moving (no real clear goal, shame to be seen, in living room, stigma). However, group exercising works different: elderly people greatly stimulate each other while being busy with an exercise or activity. The social aspect of exercising together is sometimes already a reason for participants to join the activity. Game elements which work in sports class activities, for example competitiveness or collaboration, could be used in stimulating elderly people with Tover Tafel as well.

Play with action-reaction as the technology is able to keep giving hints or cues which could stimulate elderly people to move on.

5) Extra recommendations/2D surface/ideas/etc....

Do not try to find a replacement for the group activity lessons, as a professional therapist is not only guiding the elderly participants, but also stimulating and correcting them. Making it an addition to the sessions, purely on grounds of more motivation and increased fun, will probably be more valuable.

Using reminiscence in the games stimulates cognitively and socially as well.

B.2 OPEN INTERVIEW PHYSICAL THERAPIST

CLAIRE VAN STAALDUINEN - 7/3/2016 - PIETER VAN FOREEST DELFT

1) Why are you interested in this Tover Tafel project?

a. How can you describe overlap with your profession?

I am working part time at multiple locations of elderly care institution Pieter van Foreest, and as therapist, I am always interested in new ways of making my sessions better. I understand the problematic state of elderly persons in care homes being inactive, and as a physical therapist, my passion is to get people moving again. Tover Tafel is very easy to use and has great potential for the elderly to make exercising fun again.

2) What is your vision on preventive movement for elderly people?

a. What are the effects?

Nowadays new issues arise regarding elderly people who need to stay independent as long as possible. For participating in daily chores, it is important the elderly could stand and move

safely through the house. The longer a person is physical healthy, the better this works out. Therefore, preventive exercising is increasingly needed to keep the pressure on care institutions lowest. Although the target group is already in need of a certain care level, as they are living in a nursing home, still it is valuable to maintain (or even increase) the level of capabilities. This could result in them doing certain daily tasks themselves, instead of the nurses taking over.

b. Which are the most important goals for elderly people to stay active?

To be able to keep participating in daily life and to feel well, because feeling happy has positive influence on physical abilities. It's a vicious circle.

3) How do you think preventive movement is best stimulated for elderly people?

a. Certain methods?

Basically two directions are possible: targeted therapeutic setting or generally moving more. In targeted therapeutic setting, individual needs and capabilities are integrated in the sessions. If the elderly are more generally stimulated to move, the fun-factor becomes more important than the quality of movement/learning.

b. Duration/intensity levels?

Depends greatly on the person and his physical condition. For example, some elderly persons are capable of completing an exercise for 10 minutes maximum, while others are even disappointed to finish after 45 minutes. It is important the elderly do what is in their capability, while not stretching the limits or exceed the pain threshold. Even the time of the day or having a bad day could influence the performance of the elderly. In all cases, an important factor is to listen to the body and do not push the boundaries (causes risks and de-motivates). It is therefore recommended to leave duration and intensity variable.

c. Types of movements? (goal of movement)

Physical condition is a combination of balance, muscle strength, motor skills and fitness. You will need all of those factors to be able to stay independent in daily life. (Example: all stages of standing up from a chair) Of course, a certain exercise could target one of those factors more specifically, but one cannot do without the other.

d. Functional movements (ADL) required?

Not specifically, as functional movements are best trained by actually doing them, which the care staff is already trying to stimulate. But if elderly persons can be additionally trained in understanding and working with their body in the space around them, this could have positive effects on the daily tasks as well.

e. Do you have recommendations for (a set) of movements/exercises which are meaningful for elderly people (or a specific target group)?

PG elderly can have great physical results, as long as their attention is triggered in the right way and they intrinsically understand how to react on the cues. Group exercises work better for this target group, as they copy each other and see people doing certain things. Textual explanation or assignments could be difficult and frustrating to them.

For elderly persons who are revalidating from certain injuries or operations, the cognitive level is usually higher, but certain specific physical exercises could be problematic. This target group gets most valuable exercises from personal sessions which are adapted to specific needs.

Cycling and walking are in a lot of situations helpful exercises for maintaining muscle strength in the legs and motoric skills.

Being able to stand (up) will generally help all elderly target groups in daily life, also when they need a lot of extra care. But this should be carefully trained, as risk of falling is different for all levels of people.

f. What are important factors to pay attention to with regard to the elderly and exercise?

Avoiding to exceed personal physical limits. Every elderly person should be able to train on his own level.

Compensating behaviour for certain intended movements is always better than doing nothing at all. (Although it is recommended to avoid compensation behaviour from PT point of view) Sometimes in daily life, compromises should be found if the elderly are not able to execute a certain movement anymore. In that case, compensating is also a way of staying independent. Exercises should be slowly building up in difficulty. For example first while sitting down, then while holding a chair, then staying independently. All levels should be facilitated in order to involve all elderly people.

Elderly persons should be friendly invited to join playing/exercising. Pushing will not activate the elderly person.

Safety is key in exercising for the elderly, training should never be the cause of injuries. Although the risk of falling is bigger when the elderly are active, in the end, it results in reducing the number of falls as physical condition improves. The exercises or training should be doable while using safety accessories as a walking stick, chair or walker. In therapy sessions, the control of the therapist is an important safety assurance, but in additional exercises without a therapist, the elderly should not be seduced to execute movements which they are not able to safely do. Real life situations could be simulated in a safe way with Tovertafel, for example exercise setups with 'virtual' obstacles.

4) Do you have experience with stimulating and motivating elderly people to move?

a. What should be the focus?

Matching the exercises with the cognitive abilities of the elderly to keep challenging them. Implementing levels of difficulty (both physically and cognitively) is recommended.

Elderly people are often willing to exercise when an activity is familiar or offered by familiar training facilitators. This also means they like to directly understand the meaning, rules and the intended task of the activity.

Between (therapeutic/scheduled) sessions and ADL stimulation, a lot of opportunities are present to stimulate elderly people to move more. Those exercises should mainly evoke a lot of fun. Topics from their past are nice stimulations as recognition can start the conversations and raise feelings of being proud.

Also visitors or family can be great motivators for elderly people to play together, so enabling to

exercise together is recommended. (Especially when visiting PG patients, this can have positive results in breaking through apathy)

In most cases, additional movement programs should be initiated by trusted care staff or facilitators. Elderly people usually do not try something new by themselves, but need subtle stimulation. Once the exercise is considered as fun and challenging, the elderly often keep coming back on their own.

5) Extra recommendations/2D surface/ideas/etc....

Walking patterns/gait/dancing choreography, doable with or without safety accessories could stimulate to practice walking and standing. (lopen/schuifelen/kleine/grote passen/rollator/decupitus hielen)

B.3 OPEN INTERVIEW MOVEMENT ANALYST

FRANKLIN VAN DOESBURG – 4/3/2016 UTRECHT

ISA movement analysis is based on different movement strategies for each individual. Because the body does not easily handle motion changes – using certain thinking strategies - it is valuable to know your own movement strategies. A small pebble in your shoe or a little unusual elbow position disrupts all your best move.

I love to analyse and map movements. The analysis is easily translatable into adjustments in attitude or practice. You can also let people choose between two strategies. Executing the right strategy results in: move optimally, without injuries, movement flow and fun. For the elderly who would like to exercise more to stay independent, those strategies could be used as well, for example by measuring their movement strategy first, after which the game could offer exercises based on the same movement strategy for each player individually. Differences in speed and smoothness of the movement could be measures for following a certain movement strategy. However, feedback on the result for each exercise helps to make people consciously moving and improving their movements as well. Also, when people are moving according to their own movement strategy, exercising feels nicer and motivates more to proceed. When wanting to exercise in groups, the game system should be able to differentiate certain players in order to offer personalized tasks fitting each user.

Using ISA Motion I connect the motion analysis with other disciplines, including physicaltherapy, training / coaching, massage, relaxation and development. So I coached both users and the supervisors.

B.4 OPEN INTERVIEW NURSE

INGRID VERHAGEN – PIETER VAN FOREEST TIJDELIJKE AFDELING

BIESLANDHOF – 21/3/2016

-Op de tijdelijke afdeling hebben ze niet veel tijd en input voor bewegingsstimulering

-Dit wordt vooral overgelaten aan de langdurige zorg afdelingen.

-Er is altijd weinig geld en tijd voor bewegingsstimuleren en de interventies die er zijn worden weinig gebruikt omdat er toch een begeleider bij moet om te stimuleren.

-‘Doe kasten’ oid zijn leuk maar ook niet voor de tijdelijke afdeling.

-Toch merkt ze als verzorgende dat het erg belangrijk is dat ouderen wel altijd gestimuleerd

blijven worden.

B.5 OBSERVATION FYSIOGYM 1

RIA HARTEVELD EN MARJOLEIN VAN KNOTSENBURG – 23/3/2016

Fysiotherapie Koudstaal

In Woonzorgcentrum De Lindenhof

Cort v.d. Lindenstraat 245

2613 LC Delft

+ 31 (15) 214 62 27

info@fysiotherapiekoudstaal.nl

DOEL:

Oriëntatie in de context. Emphasizing en beeldvorming van de doelgroep om later een goede doelgroep selectie te kunnen doen.

METHODE:

Meedoen en observeren van verschillende niveaus (2x aanleunwoningen + 1x verzorgingshuis) fysio gym beweeggroepen in zorginstelling.

Hoofdvragen:

- Hoe wordt er nu bewogen in zorginstellingen?
 - o Binnen de dagelijkse routine?
 - o Wat zijn uitdagingen?
 - o Wie/wat stimuleert ze om te bewegen?
 - o Wat vinden de ouderen leuk?
- Wat is de structuur van een fysio gym les?
 - o Wat is de reden dat de mensen naar de fysio gym gaan?
 - o Bepaalde blokken/indeling?
 - o Welke aandachtspunten heeft de begeleider?
 - o Zijn er bepaalde standaard oefeningen en hoe voor lang en intensief?
 - o Welke dignen vinden de ouderen leuk/fijn/moeilijk?
 - o Hoe worden ze gestimuleerd om mee te doen?
 - o Wat is de focus en doel van beweeggroepen?
 - o Wat is de sfeer tijdens een les?
- Wat moet een begeleider in zich hebben?
 - o Hoe stimuleert en motiveert diegene?
 - o Wat werkt wel/niet?
 - o Waar moet op gereageerd worden?

RESULTATEN EN INZICHTEN:

- Hoe wordt er nu bewogen in zorginstellingen?

o Binnen de dagelijkse routine?

In de Lindenhof alleen tijdens vaste uurtjes of lessen, of lopend naar de eetzaal, en minimaal bewegen tijdens de verzorging/in de kamer. Ouderen worden extern en intern weinig getriggert om te lopen.

In de aanleunwoningen zijn de ouderen veel actiever en ondernemen zelf nog regelmatig activiteiten (en stukjes verder lopen als transport oid). Ook doen ze zelf nog meer in/om het huis, gezien het ziektebeeld nog veel milder is.

o Wat zijn uitdagingen?

Niet alles willen overnemen, ook als het langer duurt of moeilijk is/voelt voor de oudere.

Positief aanbieden van bewegen, veel ouderen zijn negatief/depressief als ze te veel 'moeten' doen. Leuk maken maakt dat ze automatisch bewegen zonder dat zij hier gedemotiveerd van raken.

o Wie/wat stimuleert ze om te bewegen?

Zorgpersoneel moet in de Lindenhof actief stimuleren tijdens de verzorging. Ook familie/bezoek kan positief stimuleren. Vaak lijden de mensen in de Lindenhof aan verschillende ziektes of aandoeningen, de meesten aan een (lichte) vorm van dementie, dus gaan ze niet uit zich zelf dignen ondernemen. In de Lindenhof worden ze actief gevraagd worden mee te doen met fysio gym en dergelijke activiteiten(er zijn vaste dagen voor een lijstje mensen die zich daarvoor hebben ingeschreven) en zij worden dan voor de les individueel gewaarschuwd of opgehaald van de kamer om zeker te zijn dat ze blijven komen/niet vergeten. Ondanks dat soms cognitief aangedaan zijn, mogen ze natuurlijk wel altijd zelf besluiten om te gaan of niet, maar ze worden wel altijd overgehaald, omdat de begeleiding het belangrijk vindt dat ze toch blijven komen.

In de aanleunwoningen komen de bewoners op eigen gelegenheid naar de les en bepalen ze zelf of ze willen gaan of niet(gezondheidsissues of andere plannen). Er is wel een soort (positieve) sociale druk die zorgt dat ze blijven terugkomen als ze eenmaal gestart zijn met meedoen van lessen. (Andere deelnemers maken zich zorgen als mensen niet bij de les zijn en vragen elkaar of ze ook nog komen) Deze deelnemers melden zich ook persoonlijk af bij de begeleiding, en als ze niet weten of diegene komt, bellen ze op.

o Wat vinden de ouderen leuk?

Voor sociale bezigheden, om even uit de kamer te zijn. Ookal vinden ze de activiteit soms niet eens leuk of hebben ze vroeger voorgenomen dat nooit te zullen doen, zijn de meeste ouderen in de Lindenhof toch betrokken, omdat ze de gezelligheid zoeken. Dit is ook zichtbaar bij de ouderen in de aanleunwoningen, al hebben zij nog iets meer eigen initiatief met waar ze wel/niet met mee doen van het aanbod activiteiten.

- Wat is de structuur van een fysio gym les?

o Wat is de reden dat de mensen naar de fysio gym gaan?

Plezier hebben, sociaal contact hebben, in beweging blijven. In de Lindenhof is het vooral het initiatief van de verzorging/begeleiding die het belangrijk vindt dat bewoners blijven participeren en betrokken worden bij activiteiten.

o Bepaalde blokken/indeling?

Lessen duren een uurtje:

LINDENHOF

Klaarzetten

Waarschuwen/uitnodigen deelnemers

Binnenkomst

Inleiding/warming up (10m)

Oefeningen met stokken

Oefeningen met ballen

Oefeningen met pittenzakjes

Cooling down/rekken gezicht (5m)

Afsluiting/dank

Verlaten

Opruimen

AANLEUNWONINGEN

Klaarzetten

Binnenkomst/praatje maken

Inleiding/warming up

Oefening met stokken

Oefening voor balans/lopen

Oefening met elastieken

Voetballen met bal

Overgooien kleine bal

Kegelen + Ringwerpen

Cooling down

Afsluiting/dank

Napraten + verlaten

Opruimen

Bij beide niveaus is altijd een vaste indeling met inleiding, middenstuk en afsluiting, maar de oefeningen kunnen verschillen om afwisselend te houden. Meestal wel van alle onderdelen iets: kracht/coördinatie/balans/rekken etc. Bij de aanleunwoningen zijn de oefeningen ook met meer kracht georiënteerd en ook een deel staand(achter stoel). Er zijn meer spelletjes bij deze groep, want ze worden beter gemotiveerd en maken meer bewegingen als ze niet teveel nadenken bij de bewegingen. Samenwerken is meer de focus dan competitie, omdat alle niveaus toch kunnen verschillen. Er is aandacht voor de individuele progressie en dit wordt ook aangehaald om te motiveren, er wordt weinig gericht op vergelijken van personen. Toch moeten sommige ouderen zelf of door de begeleiding een oefening stoppen of verlagen in intensiteit door gezondheidsredenen. Dit wordt door de anderen wel gerespecteerd, en ondanks aanmoedigen van elkaar, wordt er nooit over grenzen gepusht.

o Welke aandachtspunten heeft de begeleider?

Iedereen eerlijke beurten geven.

Enthousiasmeren van de groep

Oefeningen correct uitvoeren (fysio technisch)

Aangeven aan bepaalde deelnemers of ze een specifieke oefening moeten aanpassen naar gezondheidsgrenzen.

Veiligheid waarborgen

Oefeningen faciliteren: materialen aanleveren en opzetten (bijv bij kegelen)

Bij Lindenhof: instructies geven om beweging/richting in gang te zetten

Checken of alle deelnemers er zijn/informerend naar deelnemers.

- o Zijn er bepaalde standaard oefeningen en hoe voor lang en intensief?

Lijst van oefeningen in de gevolgde lessen:

LINDENHOF

Trappelen op de grond
 Tenen strekken
 Hak/teen
 Knieheffen
 Enkels binnen/buiten/draaien
 Appels plukkens in lucht
 Stokken heffen/naar grond
 Stok door vingers laten draaien
 Stok halve draai sturen
 Stok door hand vallen/omhoog hupsen
 Voeten op stok rollen
 Stapjes over stok zetten
 Ballen langs elkaar hockeyen
 Ballen onder de benen door
 Ringen doorgeven via stokken
 Ringen om pion gooien
 Pitten zak op voet door lucht balanceren
 Pitten zak op hand door lucht balanceren
 Pitten zak in lucht gooien en vangen
 Pitten zak doorgeven
 Pitten zak naar mand gooien
 Gezichtspieren strechen
 Nek spieren strechen
 Adem oefeningen

AANLEUNWONINGEN

Voeten opwarmen patronen(tenen)
 Romp balans op stoel
 Benen strekken/ophouden
 Benen kruislings strekken/ophouden
 Romp balans op stoel
 Loopvormen(voor/achte/zij)
 Balans verplaatsen
 Balans op 1 been (heffen/buigen/strekken)
 Kniebuigingen
 Elastiek armkracht omhoog
 Elastiek armkracht naar achteren
 Elastiek been strekken
 Elastiek armkracht naar voren (achter rug)
 Stokken coordinatie armen
 Stok door vingers laten draaien
 Stok door handen laten draaien
 Stokken gooien en vangen (onder/bovenlangs)
 Stok door hand vallen/omhoog hupsen
 Stok in nek
 Stok tussen benen door/ achter rug/stoel
 Stok optillen tussen voeten
 Skippy bal voetbal /stuiteren
 Skippy bal beenkracht
 Soft bal /frisbee overgooien
 Kegels omgooien
 Ringen om pion gooien
 Adem oefeningen

- o Welke dingen vinden de ouderen leuk/fijn/moeilijk?

Coördinatie terwijl nagedacht moet worden over de beweging is moeilijk, maar wel uitdagend.

Spelletjes met punten verdienen zijn fijn bevonden, ook omdat de rest van de deelnemers even rust heeft maar wel betrokken blijft bij het spel.

Bewegen door een spel/doel is uitdagend en deelnemers bewegen meer/intensiever doordat ze meedoen met het spel.

Het onderdeel balans, staan en looppatronen is voor veel ouderen vrij intensief en kan maar kort duren.

Bekende spelletjes/oefeningen worden leuk bevonden omdat er herinneringen of skills opgehaald worden.

- o Hoe worden ze gestimuleerd om mee te doen?

Verbaal en visueel door begeleider die instructies geeft voor iedere oefening en patroon.

Elkaar stimuleren met complimentjes, enthousiasme en grapjes.

Elkaar de oefeningen zien doen in de kring

- o Wat is de focus en doel van beweeggroepen?

Gezelligheid, even een uurtje eruit kunnen zijn en toch in beweging blijven. Variatie en alle onderdelen van bewegen komen aan bod (vooral bij aanleunwoningen). Bij Lindenhof is vooral coördinatie en flexibiliteit getraind (weinig kracht en weinig balans).

Niet zozeer om progressie te boeken maar om stabiel te blijven en achteruitgang te vertragen.

- o Wat is de sfeer tijdens een les?

Bij sommige oefeningen stil en geconcentreerd, bij spelletjes chaotischer en gezellig.

Iedereen kan commentaar of grapjes maken, maar bij de Lindenhof groep wordt er meestal niet veel op gereageerd/lang bij stil gestaan (ouderen zijn daar meer met zichzelf bezig naarmate ze cognitief meer aangedaan zijn). Bij de aanleunwoningen overheerst een sfeer van respect en behulpzaamheid, vooral omdat ze elkaar goed kennen en de issues van elkaar ook weten. Sommige deelnemers zijn de activelingen (gangmakers), terwijl anderen juist wat passiever/stiller zijn.

- Wat moet een begeleider in zich hebben?

- o Hoe stimuleert en motiveert diegene?

Enthousiasme en openheid.

Bij de Lindenhof groep: leiding geven en structuur bieden

Tijd voor een grapje, niet te serieus instrueren

Geen regime, maar instructies

Open zijn voor gesprekken tijdens de les

Individueel en groeps gericht complimenteren bij moeilijke oefeningen

Nooit negatief uitlaten over de prestatie van een deelnemer

Iedereen gelijke kansen geven en waar nodig aanpassen naar niveau, zonder onder te motiveren.

- o Waar moet op gereageerd worden?

Mensen met klachten/beperkingen bij bepaalde oefeningen

Valgevaar/fout handelen van deelnemers.

EXTRA COMMENTS:

Het zal in de Lindenhof niet snel voorkomen dat bewoners uit zichzelf iets gaan ondernemen. Hiervoor is echt externe motivatie vanuit personen nodig. Voor Tovertafel betekent dit dat context beter in een begeleidde activiteit kan plaats vinden dan in de hal als langslow activiteit. Algemene ruimte als de koffiekamer kan ook, maar hier zijn de ouderen vaak al bezig met focussen op koffie drinken/eten/georganiseerde activiteit. Om dus deel te nemen aan Tovertafel moet er echt een stimulans zijn om ze te laten starten.

Soms kan teveel beweging ook niet goed zijn, omdat er dan geen energie meer over is voor leuke dingen. (vandaar ook hulp in verzorging)

Bij de aanleunwoningen komen de bewoners speciaal voor een georganiseerde activiteit naar de algemene ruimte, het zal dan ook onwaarschijnlijk zijn dat ze voor Tovertafel uit huis komen, tenzij ze met elkaar hebben afgesproken om dit als activiteit te zien.

Tovertafel spellen als ondersteuning /leidraad van de fysioles gebruiken zou ook een optie zijn, maar persoonlijk uitdagen/sociaal is wellicht logischer dan tussenkomst van techniek. Het zou wel goede afwisseling van spellen kunnen zijn, waar niveau en intensiteit interactief bepaald kunnen en aangepast worden. Het moet niet de rol van de fysiotherapeut willen over nemen.

Mensen met dementie kunnen visuele prikkels van de vloer als eng ervaren (vlekken of kleurverschil worden gezien als gaten in de vloer)
Geen muziek of gezelligheid in de kamer.(ivm doofheid/visueel slecht/afleiding), kan wel wat gezelliger. Vooral de aanleunwoningen vinden gezelligheid belangrijk.

Spullen uit een grote tas nodig tijdens de sessies. (oefeningen kunnen wel leuker gemaakt worden dan alleen een stok de lucht in blazen), veel bewegingen zit geen doel achter (behalve de beweging zelf). De bewegingen waar dat wel zo is zijn bij spelletjes, meteen is de intrinsieke motivatie ook hoger.

De sessies zijn op alle beweegcomponenten gericht, zo kan iedereen meedoen als bepaalde dingen minder goed gaan.

De meeste activiteiten zijn vanuit de stoel (valgevaar is moeilijk te managen in een groep met 1 begeleider). Alles in kring; samenhangend, goed zichtbaar wat de begeleiding doet, en centraal als groep.

B.6 OBSERVATION FYSIOGYM 2

WOERDBLOK, KLEINSCHALIG WONEN, NAALDWIJK - 31/3/2016

Via Suzanne Troost, activiteitenbegeleider PG afdeling.

DOEL:

Oriëntatie in de context. Emphasizing en beeldvorming van de doelgroep om later een goede doelgroep selectie te kunnen doen.

METHODE:

Meedoen en observeren van PG afdeling fysio gym beweeggroepen in zorginstelling.

Hoofdvragen:

- Hoe wordt er nu bewogen in zorginstellingen?
- o Binnen de dagelijkse routine?

Kleinschalig wonen is gericht op zo veel mogelijk laten lijken op de thuissituatie: woonkamer, slaapkamers, en keuken. De bewoners helpen zoveel mogelijk mee met de huishouding en klusjes. Verder hebben ze aantal keer per week activiteiten, en

sommige bewoners gaan met familie nog af en toe buiten wandelen.

- o Wat zijn uitdagingen?

Iedereen mee te krijgen aan de activiteit, ook als ze zwaar dement zijn.

- o Wie/wat stimuleert ze om te bewegen?

Personeel en elkaar. De huiselijkheid en beweging in huis ook soms.

- o Wat vinden de ouderen leuk?

Samen eten, klusjes, dingen van vroeger.

- Wat is de structuur van een fysio gym les?

- o Wat is de reden dat de mensen naar de fysio gym gaan?

Ze worden opgehaald door de activiteiten begeleiding/zorgpersoneel of fysio. De meesten weten nog wel dat ze iedere week gaan en vinden het ook erg leuk om eens wat te gaan doen.

- o Bepaalde blokken/indeling?

Kort warmingup liedje zingen.

voeten trappelen

benen strekken om en om

benen gestrekt ophouden 10 sec

balans op bil

polsen draaien

hoofd draaien

roeiboot

zwembewegingen

Drinkbewegingen

grote bal doorgeven

bal boven hoofd en doorgeven

voetballen

Kleine bal gooien (ging erg slecht)

tussen benen doorhalen

langs hoofd omhalen

vingers op elkaar

cognitieve handen omklappen

stampvoeten en klappen

armen strekken hoog naar laag

repetitie beenbewegingen (tussen de andere oefeningen door)

- o Welke aandachtspunten heeft de begeleider?

Deelnemers niet in slaap laten vallen.

Instructies duidelijk uitbeelden en vertellen

Enthousiasmeren

Deelnemers eerlijke kansen geven

Deelnemers ophalen/wegbrengen

Iedereen oefeningen goed laten uitvoeren/corrigeren zo nodig.

Meespelen met de beleving vna de deelnemers

o Zijn er bepaalde standaard oefeningen en hoe voor lang en intensief?

Bij deze PG groep werden oefeningen snel afgewisseld. En niet intensief of met attributen gewerkt. De meeste reproducties 10 keer en hardop geteld. Beenspieren (voor opstaan) worden het meest getraind, steeds in kleine blokjes.

o Welke dingen vinden de ouderen leuk/fijn/moeilijk?

Cognitief bewegen van vingers en handen is moeilijkst, net als coordinatie oefeningen met bal rond hoofd/benen. Hiervoor is veel verschil binnen de groep te zien (zwaar – lichte dementie) Het spelletje met de bal vinden ze het leukste, ze konden niet eens wachten om te beginnen tijdens de vorige oefening. Beweging met een doel laat ze concentreren en plezier hebben. Ook inbeelden van situaties (roeiboot naar scheveningen en daar visje eten) helpt in stimuleren van de groep, vooral als ze allemaal mee kunnen denken.

o Hoe worden ze gestimuleerd om mee te doen?

Verbaal en visueel of via intr. Spel.

o Wat is de focus en doel van beweeggroepen?

Even uit de huiskamer te zijn, plezier hebben en zorgen dat de dementie niet sneller achteruit gaat door preventief te bewegen.

o Wat is de sfeer tijdens een les?

Gezellig, kletsen, kinderlijk grappig, sommigen houden zich stil(verder stadium van dementie)

- Wat moet een begeleider in zich hebben?

o Hoe stimuleert en motiveert diegene?

Vrolijk en meegaand met de ouderen, vooral als ze gekke verhalen ophouden.

o Wat werkt wel/niet?

Ingaan en meelachen met de mensen werkt wel.

o Waar moet op gereageerd worden?

Mensen die van hun stoel een bal proberen te pakken.

Deelnemers wakker houden.

-overige inzichten:

- in kleinschalig wonen worden bewoners heel positief geholpen en in vertrouwde omgeving.

-niveauverschil is groot, maar er wordt weinig extra kracht gedaan voor degenen die dat nog kunnen.

-bewegen op muziek helpt bij mensen met (lichte) dementie heel goed.

- de fysiotherapeut zegt dat er in individuele sessies wel meer met balans wordt gedaan, omdat dit veiliger is. In de groepssessie is het vooral beenspieroefeningen, ter bevordering van het opstaan en kunnen dragen van het eigen gewicht tijdens de verzorging. Zolang ze dat kunnen, blijft de kwaliteit van leven veel hoger en de zorgkosten lager.

- ook in deze groep is het enthousiasme hoog wanneer er spelletjes worden ingezet of scenarios beschreven. Mensen blijven wakker, sporen elkaar aan en doen meer dan ze tijdens gewone na-doe oefeningen doen.

- mollen stampen vinden de CVA patiënten super leuk om te doen.

B.7 VISUAL CONCLUSIONS FYSIOGYM

B.8 CREATIVE DISCUSSION SESSION

WITH TARGET GROUP / 22/4/2016

Attendees: 5 residents of Lindenhof supported living houses

GOAL:

The goal of the session was to gain understanding about what kind of activities the elderly in nursing homes like to do (together), what interests them. Getting insight in what kind of subjects and content they prefer is valuable information to create a game experience in a later stage of the project.

Hypothesis:

-Elderly people like to do social-cognitive games as traditional card or board games without a technical feel

-Elderly people miss to do the things they were able to in the past.

-Elderly people would love to do things which are familiar to them or with recognizable content

METHOD:

By having an informal discussion session about their preferred leisure and sports activities in life, insight is gathered. The discussion session is set up according to the theory of ... (REFERENCE convivial toolbox book), in which participants of the session are led through the 'path of expression': From describing

current situations, to thinking of experiences and memories from the past, they are able to think of



Mostly sit in a big circle, so the instructor can have eye contact with all participants, and a group is formed, which invites to have fun together and to play together in games, they motivate each other.

The reasons to participate are to have social activity, to be out of the room for a while, to have fun and to slow down physical decline. When cognitive impaired, participants are actively invited and reminded to join a lesson.



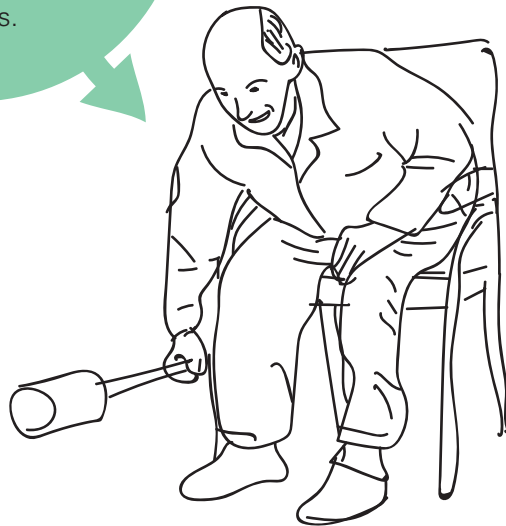
All participants try to follow the instructions (visual and verbal) from the instructor, as long as they do not overload and cross borders of their personal capabilities. Some participants should be warned to take a step down for certain exercises which could be harmful to them.

Most exercises are executed from seated position for safety and endurance reasons.

Lessons are structured in small blocks of a certain type of exercise, in which repetitions of each movement at both sides (L & R) is done. (mostly around 10 reps)

Sometimes simple props are used to make an exercise more difficult (as a weight for strength, for training coordination or to balance) or to give an exercise a clear goal.

Games should be fun for all levels of physical condition. Competition is not the highest goal, but helps somewhat to motivate people in play. Cooperation and support are most important stimulating factors.



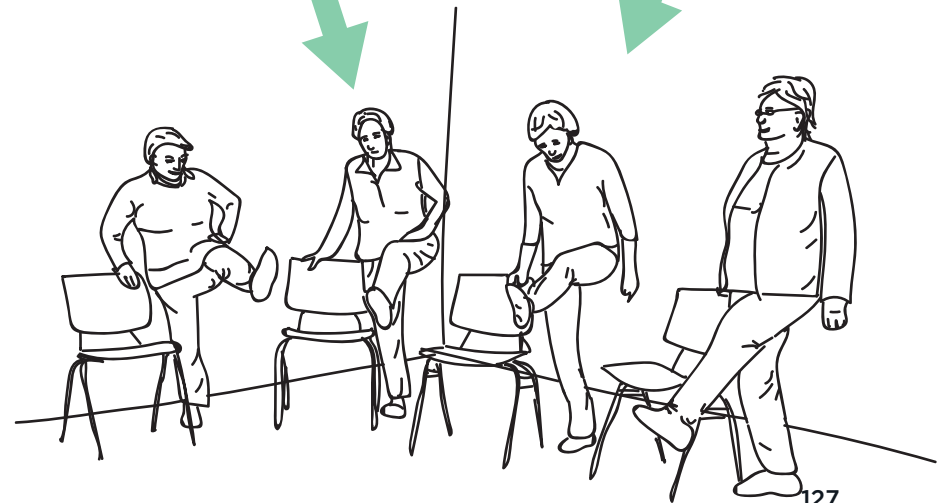
The vibe in lesson is generally positive and fun, time for a joke, but during difficult exercises or coordination exercises, concentration is high. Compliments and supportive instructions are guiding the participants.

Standing and walking exercises seem to be tiring quickly. Only a few minutes of this exercise can be given.

Balance and gait exercises are only done in groups when fall danger is low (only sheltered living groups), and using a chair or walker to hold balance, so staying at the spot.

Besides instructing the simple exercises, during particular games, the instructor helps coordinate the game, so everyone has a fair chance and turns are taken, as well as returning balls and other props back in the game.

In games, participants engage more and make generally bigger and more movements than when doing controlled exercises, as a higher goal is wanted to be achieved. Also, all components (balance, strength, flexibility, reaction time etc) are used simultaneously.



future visions and dreams.

The session is built up as follows:

First, the participants are introduced to the subject and way of working by picking one picture with which they are identifying themselves and explaining their stories about this picture shortly.

Next, each participant individually creates a small visual collage on a timeline sheet(see below), working from current situation towards the past and then the future. The creative element in this activity is related to the generative design research method, to get to the deeper level of what people know, feel and dream (convivial toolbox, p 67). After this, they wrote comments with the pictures and presented them to each other in a brief discussion. They labelled one item from their collage as the 'most loved one'.

OPBOUW:

10 MIN OPBOUWEN:

tafels goed, koffie en kopjes klaar + presentjes in tas + knutselspullen voor iedere plek + camera testen en statief uit

5 MIN INTRODUCTIE:

Doel sessie. Uitleg vervolg project. You are the expert. Basic rules: er is niets goed of fout, eigen ervaringen en meningen. Uit laten spreken. Niet af laten leiden door de anderen. Vragen mag altijd!



5 MIN WARM UP:

Ga door de platen heen en kies 1 plaatje uit die het meest aanspreekt bij u als persoon op dit moment. Met welk plaatje relateer/identificeert u uzelf? Leg uit waarom?

10 min Collage maken:

STAP 1 - HEDEN:

Maak een collage van de dingen en activiteiten die je leuk vind om te doen, de dingen waar je trots op bent en die je momenteel erg blij maken. Je kunt zelf tekenen, plaatjes bijzoeken of schrijven. Plak en schrijf deze in het midden van het blad, rondom het 'heden'.

10 MIN STAP 2 - VERLEDEN:

Doe nu hetzelfde, maar dan voor de dingen die u in het verleden hebt gedaan en leuk vond(linkerkant). Dat kunnen ook dingen zijn die u nog steeds doet, of waarmee u bent gestopt. (schrijf dit er kort bij). U kunt ook iets beschrijven waar u erg trots op bent van wat u ooit gedaan heeft? En wat was het wellicht het fijnste moment van uw leven?

10 MIN STAP 3 - TOEKOMST:

Nu gaan we naar uw toekomstdroom. Denk wild, limiteer uzelf niet door gezondheid, geld of tijd! Wat zou u altijd al of nog een keertje willen doen? Maak een collage van uw toekomst dromen aan de rechterkant van het blad. Dit mogen ook dingen zijn waarvan u verwacht dat u die graag zou willen doen in de toekomst.

5 MIN STAP 4 - HART:

Plak nu een hartje bij de activiteit of situatie waar u het meest van houdt/het leukst vind om te doen.

35 MIN PRESENTATIE EN DISCUSSIE COLLAGES:

Een voor een presenteren van de collages. U mag reageren op elkaar. Leg uit waarom u een bepaalde foto of beschrijving koos. Wat vond u hier zo leuk aan? Waarom bent u hier mee gestopt? Noem wat factoren?Welke dingen waren leukst in een groep? Was dit een vaste club?

5 MIN AFSLUITING: BELANGRIJKSTE CONCLUSIES HERHALEN.

EERSTE OPDRACHT:

D: 'ik zie gewoon een paar dingen waarvan ik allemaal wel een idee bij heb.'

B: 'er zijn genoeg leuke dingen'

B:'de zwaan, die komt altijd bij ons voorbij'

A: 'wij gaan regelmatig naar een museum, daarom heb ik een plaatje van deze schilderijen uitgezocht. Ook moderne musea vinden we leuk, met schilderijen vooral. Laatste dat we gezien hebben was Rothko. Het is leuk om je nog een beetje te ontwikkelen. Alles is weer nieuw. Net zoals in de muziek, we zijn naar veel concerten zijn geweest. En dan niet alleen oude muziek, maar ook moderne bands'

B: 'Ik heb ook veel met kunst gedaan altijd, mijn man was kunstenaar. Dus ik ging ook dikwijls naar musea. Ik vond zijn werk ook wel mooi. IK heb na zijn dood nog een tentoonstelling gemaakt voor hem, al zijn werk stond nog in de kelder, dat toch zonde. Hij schilderde van alles wat, niet echt een bepaalde stroming. Hij was leraar op de technische school'

M: 'mijn zoon heeft nog les van hem gehad'

B: 'ja, hij kende veel jongens in de stad daardoor. Ik had een plaatje van een zangeres, want ik zat altijd op de zang. En nog een plaatje van een kust, want we gignen altijd naar Frankrijk op vanatie, dat landschap. Monaco. Vooral dingen die ik vroeger heb gezien. Ja je kunt er vanalles van maken.'

D: 'ik heb vooral gekeken naar hoe ik nu ben, dus niet naar mijn jonge jaren. Niet echt wat ik allemaal gedaan heb, want ik kijk liever naar hoe ik nu ben. Ik hou ontzettend van ontspanning, laat ik het zo zeggen. Nou ze

zijn hier aan het kaarten, ik doe aan amerikaans patience en gym. Ik vind het gezellig om met mensen om te gaan. Zoals nu, zie ik een paar kopjes staan, dat vind ik erg leuk om samen te zijn. Nu alleen hoor, want vroeger had ik het daar veel te druk voor, wij hadden een eigen bakkerszaak. En natuurlijk ben ik ook kerkelijk, daar ontmoet ik ook veel mensen. En daar doe ik ook met vanalles mee. Er zijn natuurlijk ook veel dingen die ik niet meer kan, zoals fietsen en auto rijden, dus ik kijk echt met wat ik nu nog kan. Maar ik ben een tevreden mens. Dat vind ik ook wel prettig dat je savonds, als je meestal alleen bent, dat je dan de tv hebt. En ik heb het best nog druk hoor daar gaat het niet om.. maar nu je natuurlijk ouder wordt ben ik wat meer gefixeerd op mijn familie: de kinderen en kleinkinderen. Daar is nu meer de tijd voor en dan moet natuurlijk alles goed zijn. Je kijkt toch uit naar als ze komen of als je naar ze toe kan gaan. Dus zo ben ik nu. Ik praat niet meer over vroeger, toen had ik een heel ander leven.'

M: 'ik had 1 plaatje waar ik meteen op viel: het plaatje met het dansen. Het is nu lastiger natuurlijk maar dat vond ik altijd een van de heerlijkste dingen om te doen. Niet perse zo dansen als op dit plaatje, geen stijl dansen maar vanalles wat. Gewoon veel bewegen op muziek. Dat is een herinnering van ons thuis uit die ik koester. Gekke is dat ik er vannacht van gedroomd heb. Met hele verkleedpartijen en alles, heb ik vannacht weer gedanst in mijn droom. Dus toen ik dit plaatje zag dacht ik meteen: ja, deze hoort bij mij ik hoef niet verder te kijekn. Het is wel zo dat dat nog blijft hoor: af en toe doe ik het nog wel eens hoor, heel rustig dansen. Daar heb ik dan wel eens zin in. Het is wel zo met bepaalde muziek, vooral ritmisch, dan kan ik niet stil zitten. Met mijn voeten wiebelen of mijn handen bewegen, dat blijft toch in mijn lijf zitten. De soort muziek maakt wel uit natuurlijk. Het moet wel ritmisch zijn. Ik ben erg ritmisch ingesteld. Gewoon vrolijke. Mag ook modern zijn hoor. Ik hou meer van modern dan hele oude muziek. Ik ben net als herman heel gericht op wat er momenteel gaande is. Ik hou dat wel goed bij. Op de tv en radio enzo. Er zijn ook wel ouderen die hele oude muziek luisteren: bijv mozart, beethoven etc. Ik hou daar niet van. Ik hou van stravinski, daar ben ik mee opgegroeid. Het is wel zo, ik had vroeger 2 platen thuis: een voor als ik somber was, dan ging ik daar op dansen, en 1 voor als ik blij was, dan zette ik die op.

T: 'er zijn er voor mij twee bij die me aanspreken. Ik heb mijn leven lang gebiljart, meestal in een clubverband. Maar dat doen we niet meer, want dan moet je overal heen enzo en dat gaat niet meer. Vroeger ging ik altijd met mijn maten in zeeland (daar kom ik vandaan) biljarten. Gewoon erg gezellig altijd een paar wedstrijdes spelen. Toen heb ik dat een hele poos niet meer gedaan, en toen ik hier kwam wonen zei mijn vrouw dat ze er beneden een tafel hadden staan. Toen heb ik dat weer opgepakt. Ik was natuurlijk niet zo goed meer. Maar het is fijn als je met vrienden samen kunt zijn. Nu doe ik dat iedere week op maandag avond. We zijn nu met 6. En nu is er een nieuwe bij, dus zitten we met een oneven getal, dus we moeten wel even zien hoe we dat doen. Want meestal 2 om 2 in teams en dan houden we de score bij en aan het einde van de maand wordt er bekend wie het best gespeeld heeft. Maar daar gaat het niet om hoor.. ik vind het gewoon gezellig. Er zijn ook 2 mannen die zijn nog erg goed en spelen nog in een club, en die geven dan ook geregeld tips en aanwijzingen aan iedereen. Maar ik ben lekker eigenwijs, ja wat jij ziet zie ik niet. Dus ik doe het soms anders. En daar leren ze dan ook wel van, dan vinden ze het ook wel leuk om dat van jou te horen. Na 65 weer opgepakt. Dan weet je de beginselen. Ik heb ook eens een boekje gekregen van een mevrouw wiens man was overleden. Die was ook een goede biljarter. De mevrouw kwam toen die man pas dood was, met zijn keu en een boekje aanzetten, ze had er toch niets aan en vond dat ik het wel mocht hebben. Maar de meesten hebben gewoon de keu uit de kast daar hoor. Ik heb een eigen.'

COLLAGE MAKEN:

M: 'we moeten wel netjes knippen zeker'



A: 'als ik nu iets uit het heden of verleden vind moet ik wachten zeker?'

B: 'en dan nu bij heden plakken?'

M: 'oh ja dus jullie doen dit op je opleiding ook wel eens? Ja, ik doe wel eens kaarten maken. Ik maakte dan ook wel veel collages, en dan probeer je ook wel dignen bij elkaar te zoeken. En je in te leven in de persoon, waar die van houdt bijvoorbeeld. Dat diegene de kaart ook leuk vind. En de kleurschikking natuurlijk.'

B: 'ja het knutselen heb ik ook gevonden idd.'

M: 'ja op dit plaatje zie je bestaande vormpjes en materialen. Ik zoek altijd zelf alles bij elkaar. Das nog een hele kunst hoor! En een werk!'

M: 'er staat er eentje bij die lijkt op een oude film die jij zat te kijken herman!'

A: 'ja van dalsum, oude van dalsum. Erg leuk, die kun je zo op de computer krijgen. "

T: 'dat heb ik niet'

A: 'ja ik heb een computer. Die gebruik ik wel vaak. Een vaste computer thuis.'

B: 'het is echt hobbymiddag he'

D: 'waar ik blij van word. Ik ga alleen naar het 'nu' zoeken hoor. Ik ga echt niet naar het verleden. Ik heb het zo wel gehad geloof ik.(plakt alles op)'

B: 'ja ik ben snel met vroeger bezig'

D: 'als ik denk aan knutselen. Ik heb 16 jaar geknutseld in een clubje. Kaarten maken, doosjes maken, alles. Toen kwam ik hier en toen ben ik gestopt. Omdat ik hier een beetje naar ben begonnen met mijn hoofd. Ja en dan gingen we iedere dinsdag bij een ander, dan wisselde dat, 16 jaar lang. De kaarten stuurden we weg. Super ingewikkelde kaarten met allemaal laagjes enzo. En de doosjes gaf ik weg met verjaardagen. Een beetje persoonlijk maken voor die persoon. Ik heb er nog een hele doos vol vna. Er was ook iemand die was daar goed bedreven in en een beetje jonger, en die gaf dan ook wel tips en aanwijzingen. En borduren

deden we ook nog. Hele mooie borduurkaarten gemaakt.

Hee kijk eens: je hebt hetzelfde plaatje als ik, dan ben ik beneiwd wat je ermee bedoelt dan!’

B: ‘ja sorry ik heb even last van mijn knie. Heb ooit een tia gehad en toen was het hele been en voet uitgeschakeld. Dat is nooit meer helemaal goed gekomen. Nu is die knie weer aan het opspelen, misschien moet ik wel weer langs de dokter.

UITLEG COLLAGES:

D: ‘Nou hieronder zie ik het plaatje met de spelletjes, ik neem deel aan verschillende spellen, zowel in de kerk als bij het wooncentrum. En dit is een plaatje van die man. Dat is een beetje anders. Ik heb altijd aan zee gewoond. Ik hou erg van de zee dus. En mijn broer was kapitein, en hij hield dus ook veel van de zee en natuur, en toen kwam ik deze plaat tegen en toen moest ik aan hem denken, daarom heb ik deze op geplakt. Dat is gewoon een herinnering.

En hier, als mijn kinderen of kleinkinderen komen, al zijn ze 18 of 20, dan komen ze bij oma zo knuffelen en dat is zo heerlijk! Echt fijn vind ik dat. Van die lange lijven van 2 meter, die zijn tegenwoordig zo lang. Zelfs mijn schoonzoon doet het nog hoor. En dit, ik ben jaren geleden begonnen met alles op te schrijven vanuit mijn ouders, schoonouders en hele familie. Dat had een roman moeten worden, maar dat doe ik niet meer hoor. Want ik heb het allemaal al opgeschreven, dus ik ben wel schrijverig. Meegedaan met wereldbieb met kinderen van de oorlog. Ook wel dingen ingezonden en dat is ooit in een boek uitgegeven. Het is heel goed om alles in je leven meegemaakt heb om dat op te schrijven. Ik doe er zelf niets meer mee maar het is voor later als ik er niet meer ben, dan kunnen mijn kinderen alles nog eens nalezen.

B: ‘Ja de kleinkinderen verwennen, dat is altijd leuk ook inderdaad. Nou ik heb hier het plaatje van kaarten maken. Dat doe ik, en andere dingen. En deze gaat over de yoga gym, bij marjolein. En dit is een van mijn kinderen en dan bel ik dan op en dan praat je over de kleinkinderen.

T: ‘ja het is gym, die goed rekening houdt met de tekortkomingen van de meeste mensen. Ja beetje aanpassen. Die weet van iedereen wat ze hebben. En als je niet mee kunt doen dan hoeft dat ook niet. En als je het te zwaar vindt, dan moet je niet doordouwen. Daar waarschuwt ze herhaalde malen voor.

B: ‘nee niet forceren inderdaad. Als ze niets zou zeggen zou ik ook misschien wel doorzetten ja. Je wilt altijd mee doen! Bijv ik kan dit been niet over de een doen, en dat weet ze dan. Ze laat je niet forceren ofzo.’

D: ‘ik moet altijd zo lachen om marjolein. Kijk, ik kan nog vrij veel hoor. Ik ben nog fit. Als bijvoorbeeld de bal eraan ligt, dan sta ik ervoor op. Maar sinds een paar weken zegt ze steeds: nee liny niet doen hoor. Weet je wat er was? Er was er eentje bijna gevallen toen ze dat ook net zoals mij deed. ’

B: ‘ja ik doe dat ook altijd, toen pakte ik de bal op en viel ik voorover. Maar dat blijf je heel lang in de schouders voelen. Dan zegt ze nu echt: blijft zitten. Maarja, misschien heeft ze savonds ook een zere rug dan. ’

D: ‘ik begrijp dat wel, ze heeft toch een beetje de verantwoording.’

T: ‘ik kijk vaak naar de nederland in beweging sochtends. En dan zie ik oefeningen die wij ook doen met de les. Maar ook oefeningen die wij niet doen met marjolein. Dat is dan of niet geschikt, of te zwaar voor ons. Wij zijn oudere mensen natuurlijk. Alle maal rond de 80 natuurlijk.

B: ‘ja die ochtendgymnastiek zijn altijd jonge mensen. Rond de 60 is heel anders dan rond de 80 natuurlijk.’

M: ‘maar wel soms dezelfde oefeningen hoor.

T: ‘ja marjolein is er op uit om van je tenen tot je kruin alles een beetje los te maken.’

D: ‘en ook een stukje fysisch hoor, want dat ballen wat we doen: daarbij moet je natuurlijk richting aangeven en die knotsen omver gooien. Het is lichamelijk en fysisch heel goed. Is heel leuk! Ik zit meestal naast Herman, he herman!’

T: ‘(laat collage zien) Toen ik in drenthe geweest was mocht je erom lopen, nu is het afgezet met een hek. Er werd teveel rotzooi gemaakt. Ik ga nu nooit meer op vakantie. Al jaren niet meer. Ja dat komt ook, mijn dochter verhuisde naar athene, toen gignen we daar steeds heen op vakantie. En dan vandaaruit met haar erbij naar de eilanden. Nee nu zijn ze gescheiden en terug gekomen en mijn eigen vrouw kan dat niet meer. Dat is te zwaar. Kaarten en biljarten ook. Kaarten 1 avond in de week, van 7 – 9. Maar meestal loopt het ietsje uit. De zwaan hier geeft rust, alleen al om ernaar te kijken.

B: ‘ik heb de zwaan nou al een poos niet gezien. Vorig jaar waren er kleintjes;’

T: ‘ja 5 jongen, en toen ze verdwenen waren, zaten ze bij het zwembad.’

B: ‘ja ze lopen soms zo de weg op. Gelukkig letten de autos er wel op.’

A: ‘hebben we gezongen in de dom van....? nee waar was dat nou? Keulen?’

T: ‘ja ik kijk ook nog graag tv. Spelletjes of quizen. En van die natuurfilms. Is soms wel moeilijk hoor! Maar wel leuk om naar te kijken. En soms denk je, dat weet ik, maar het kwartje wil niet vallen. ’

B: ‘en 1 tegen 100 enzo. Je weet het ook wel eens niet natuurlijk. Dat hebben zij ook natuurlijk. Je moet er gewoon zelf iets van maken. ’

M: ‘ik heb er veel opgeplakt. Deze met de luchten en de sterren. Dat vind ik heel interessant. Als ik snachts wakker lig, kijk ik of ik sterren zie. En de natuur is altijd erg mooi, ik kan daar uren naar kijken. De vogels die zo’n nestjes bouwen allemaal in de bomen, met de wind. Ja heel fascinerend allemaal. En de bloemen. Dan moet ik wel een zonnebril bij op, dus die heb ik erbij gezet. En als ik iets wil weten over die vogels of iets, dan moet ik mijn leesbril hebben. De grammofoonplaat hebben we ook nog wel, maar die draait op het moment niet. Maar gaat meer om de muziek. Oude platen van vroeger. Die ik veel draaide. Ja muziek draaien is gebonden aan periodes, maar op het moment moet ik inkomen na mijn ziekte.’

T: ‘ik draai ook nog veel muziek.’

B: ‘ja op bandjes heb ik nog veel’

M: ‘En op het moment drink ik nog niet zo, maar glaasje wijn op zijn tijd, heerlijk. Oh ja het is heden nu. Glaasje water is ook gewoon heerlijk. Genieten ervan. Het feit dat je water kan nemen, dat is zo fijn. Er zijn zoveel mensen die voor water moeten sjouwen, dan zijn we toch heel blij dat dat zomaar kan.

B: ‘ja mijn dochter woont in schipluiden, en die vind dat veel lekkerder water.’

T: vroeger toen ik naar de lagere school ging, liep ik altijd even langs mijn oma, want die had veel lekkerder water. Want bij ons liep het over de dakpannen met de vogelpoep. Wij hebben gemixt water. ’

D: ‘ik woonde aan de zee, dus ik heb uit de duinen water gedronken.

T: ‘we hebben een tijd slecht water gehad, dat stonk naar de chloor. Nu is het wel weer goed.’

B: ‘ik drink best veel water. Savonds na een kopje koffie’

M: ‘deze is vast in amsterdam, die grachtjes en bootjes varen enzo. Dat vind ik zo leuk! Hebben we vroeger veel gedaan. Half jaar geleden met de zorginstelling in amsterdam geweest. Maar in delft kan je het ook doen. Heel erg leuk. Ook om de stad vanaf het water te zien.

T: ‘vooral als je iemand hebt die er wat van af weet. Dan zie je zo al die koppen: allemaal links kijken en allemaal rechts kijken’

A: ‘ja ik heb een computer, dus die staat er bij. Zit ik nog al eens aan. Ik doe vanalles erop. Films kijken en spelletjes doen. ’

B: ‘ja doe ik ook. Maar ik heb ook een tablet, dat is ook wel makkelijk natuurlijk.’

D: 'ja die heb ik ook, maar ik doe er eigenlijk niets mee, alleen op mijn rekening kijken. Haha. En ben aangesloten bij de kerk groepen. Maar ik kan ietsje, maar heb er geen interesse voor'

A: 'spelletjes doen en opzoeken van dingen, zo'n puzzelboek. Woordeboeken enzo. En kegelen is wat we doen op de gym. Dat vind ik zo leuk dat er een plaatje van staat nu. De gym staat bovenaan! Ik moet ook revalideren in bieslandhof of hier. Het maakt heel veel uit welke docent je hebt, hoeveel motivatie je krijgt. Ik vind het belangrijk dat ze me serieus aanpakken. Tot het gaatje gaan.

M: 'ja als hij naar bieslandhof is geweest voor therapie dan komt hij vaak bekaf thuis, en dan zeg ik wel eens: joh je moet ook een beetje rustig doen, want je word vaak geremd. Dan zegt hij: ja ik ga er toch niet voor niks naar toe. Dat moet je toch wel beetje aan kunnen. '

A: 'daar zit je in een clubje met 2 fysio therapeuten. En het is gezellig. Daar zie je wel erge kreupele mensen hoor.

OVER VROEGER:

D: 'er zal wel veel bij zitten wat ik niet meer doe nu natuurlijk. Dat fietsen kan ik niet meer. Dat vind ik wel jammer. Auto rijden en alles, is allemaal voorbij. Leuke dignen natuurlijk wel, dat heb ik ook gedaan. ik heb ook nog veel getypt. Dat is allemaal voorbij nu. Hier een dikke buik, heb ik ook gehad nog. Paar kinderen. De zwangerschap gign wel goed hoor. Ik ben lekker thuis gebleven. '

B: 'alleen voor de oudste moest ik naar het ziekenhuis. Maar bij de jongste wilde ik dat echt niet hoor.'

M: 'die van ons zijn alledrie thuis geboren.'

D: bij de eerste had ik een stuitligging, maargoed gelukkig wist is dat allemaal niet. Het is allemaal goed gekomen'

M: 'Ik heb na gym vrienden van het koor gezien. We wisten dat we elkaar kenden, maar wisten niet waarvan. Ik zat op koor canterella. '

M: 'ik heb op de delftse zangers gezeten. Dat begon met alleen m,annen en toen is er een dames koor opgezet. Later ook gemixt. Ik was mezzo-sopraan.'

D: 'voor mij is het moeilijk, vroeger had ik een bakkerij met mijn man, daar was je altijd mee bezig. Best wel lastig. De leuke dingen zijn dan toen we op vakantie gingen. Zo leuk vond ik het verder niet altijd, het was hard werken. Vroeger is toch wel heel anders dus. Toen mijn man was afgekeurd is ons huwelijk pas begonenn, die laatste 20 jaar. Dan krijg je tijd voor elkaar en leuke dignen. Veel op vakantie en fietsen. Ja hij was ook ziek dus je kon niet alles. Ja we hadden ineens elkaar. Hij begon natuurlijk met bakken om 3 uur. Maar ik heb hem nooit horen klagen hoor. Maar ja bij mij van vroeger...'

B: 'ik heb het koor waar ik bij was, en het museum waar hij mee bezig was met die kunst. '

D: 'de toekomst vind ik heel erg moeilijk. Mijn leven is toch heel anders.

B: 'je doet niet zo veel meer he.

D: 'je wordt geconfronteerd met allemaal mensen om je heen die wegvallen. Dat is echt niet leuk. Ja bijvoorbeeld agatha die tegenover mij woont. De toekomst, nee daar doe ik niet aan mee. '

B: je weet het ook niet. Je kunt het niet zeggen.

D: de toekomst: dat je zo mag bnlijven wezen zoals je bent.

B: we wachten gewoon af. Precies.

D: al ben je jong of oud. Je weet het niet. Gelukkig maar he. Zou je dat hele blad er niet gewoon opplakken, ben je meteen klaar haha. De toekomst gaat alleen maar over dat je gezond mag blijven.

B: kijk ergens naar toe is ook leuk, maar ja dat doe je nou ook allemaal niet meer natuurlijk.

A: mooi op de bank in het zonnetje. In de zomer.

PRESENTEREN VERLEDEN EN HEDEN

D: 'zoals ik al zei: ik weet niet goed voor de toekomst. In ieder geval belangrijk dat mijn pacemaker het blijft doen en dat ik dus in gezondheid kan blijven leven. Dat is echt heel belangrijk voor me. '

B: 'vroeger gignen we altijd op vakantie naar frankrijk, dat vond ik heerlijk. Samen met mijn man leuke dignen doen. Ook musea bezoeken en in het koor zingen was fijn. Dat doe ik allemaal niet meer. Voor de toekomst drink ik nog graag een lekker glaasje in de zon. Daar wordt je toch blij van! Ik zie de toekomst wel zonnig in zo. Als je maar gezond mag blijven.

T: 'vroeger rookte ik natuurlijk, net als iedereen. Nu is dat wel anders. Gezondheid is belagnrijk. Ik vind het interessant wat er vroeger allemaal gebeurde, de geschiedenis. Bijv de stonehedge en hunnebedden, hoe die gebouwd zijn. Maarja, de tijd gaat door. Ik heb de kegels neergezet omdat we allemaal een voor een gaan in de toekomst, allemaal. En deen oneindig uitzicht tot aan de horizon, want we weten niet wat er daar komen gaat.

A: 'vroeger gignen we altijd zingen in de kerk. En muziek luisteren van oude componisten. En natuurlijk kaartjes sturen en dingen zoeken in de bieb. Ik heb altijd op de faculteit van bouwkunde gewerkt, dus dan had je veel papieren en uitzoekwerk, dat zie je hier. En natuurlijk zijn we veel op vakantie geweest, reizen. Voor de toekomst zie ik zonnig tegemoet op het bankje in het park. Lekker relaxen. Dit plaatje van de man staat voor dat je onzeker bent over wat komen gaat. Maar met de baby en kleinkinderen komt er altijd nieuw leven, en wordt het leven doorgegeven. Daar hou ik nu het meeste van, als mijn kleinkinderen weer komen.

M: 'ja net als herman, zingen in de kerk. en het dansplaatje natuurlijk, omdat ik zoveel van bewegen en muziek hield. Met ritmische muziek kan ik niet stil blijven zitten. En deze lijkt wel een beetje op badmintonnen wat ik altijd deed bij de club vroeger. En natuurlijk lekker fietstochtjes maken. Helaas gaat dat niet meer. En de boot staat voor de vakanties die we deden. Op een boot ben je vrij om te gaan en lekker in de natuur. Voor de toekomst zou ik nog veel met de natuur bezig zijn, net als nu. En een beetje sociaal blijven zolang het nog kan, onder de mensen, zoals op dat plaatje. Koffie uurtjes en bij de gym bijvoorbeeld. De kerk heb ik bijgeplakt omdat ik nog steeds naar de kerk ga, dat kan je nog lang blijven doen en dat geeft rust. En ik zou ook nog wel veel concerten willen bekijken, samen met herman. Het maatk niet uit wat voor concerten. '

CONCLUSIES:

GROEPS ACTIVITEITEN

niet alle ouderen doen aan veel groepsactiviteiten, maar degenen die dit wel doen gaan heel gestructureerd iedere week een bepaalde tijd. Ze vidnen het belangrijk om onder de mensen te blijven. Ze zoeken sociaal contact dat vroeger vanzelf kwam, moet nu via clubjes en activiteiten komen. Toch voelen sommigen zich daardoor 'druk', omdat ze best veel van dit soort dingen op de planning staan en zeker niet gauw afzeggen voor een andere activiteit of afspraak. Velen hebben op koren gezeten/zitten, spelletjes, of hobby clubjes. Belangrijk is wel dat ondanks het brede aanbod in het zorgcentrum, hebben niet alle ouderen interesse in alle dingen. Vaak vinden ze specifiek iets leuk of helemaal niks aan. Ze oordelen niet over elkaar wie wat leuk vindt.

TOEKOMST:

Vooral doen wat ze al aan het doen waren. Geen van allen hadden echt nog ambities, behalve gezond en gelukkig blijven en zoveel mogelijk van de dingen kunnen blijven doen die ze al doen nu. Voor tovertafel betekent dit dat het vooral een positieve ervaring moet zijn en niet moet confronteren met de limitaties

die ze hebben (en erger worden naar leeftijd). Sommigen zijn zeer optimistisch en leven gewoon het leven. Anderen zijn steeds wat negatiever, doordat de omgeving wegvalt en ze steeds minder kunnen.

VERLEDEN:

Ook hier zijn sommigen erg positief en kijken met een goede blik terug op de dignen van vroeger, terwijl anderen het haast wegdrukken en er niets mee te maken willen hebben of er niet over willen praten. (wellicht traumatische ervaring of heftige gebeurtenissen niet goed verwerkt). Veel activiteiten van vroeger zijn gelinkt aan mobiliteit of sport: reizen, sport clubjes, koren. En vaak hebben ze deze activiteiten ook voor lange tijd volgehouden (>10 jaar). Voor de vrouwen, is creatief zijn (hobbies) ook veel besproken.

NATUUR:

Ook juist rustige, vrij passieve dingen worden in het heden veel genoemd als fijn om te doen: zoals natuur bekijken vanuit huis. Het 'volgen' van dit soort leven is heel fascinerend en kunnen ze uren bezig houden. Voor tovertafel zou dit wellicht een interessant onderwerp kunnen zijn, omdat natuur een open-ended verhaallijn heeft waar je steeds ieder moment in en uit kunt stappen. Ouderen geven ook aan dat ze er dan ook dingen over willen weten. (dit bied ze de kans om zich te blijven ontwikkelen)

TECHNIEK:

Alle ouderen gaven aan de tv een fijn medium te vinden, het geeft afleiding en je hebt iets te doen als je savonds alleen bent en geen activiteiten gepland zijn. Quizen en spelprogrammas zijn geliefd, ook weer om zich toch waardevol te voelen, ondanks dat ze niet alles goed kunnen beantwoorden, maar dat geeft ook niet. Ook series, films en ontspanning worden gezien op tv, maar vaak specifiek per persoon een voorkeur. Sommigen zijn heel erg betrokken met wat er gebeurt in de wereld en willen up-to-date blijven. Verder is de computer bij de meesten wel geïntroduceerd, maar wordt wisselend gebruikt (wel/geen interesse). Voor Tover Tafel is het dus nog steeds belangrijk dat de techniek goed begrijpbaar is en geen technische feel heeft, zodat ook de mensen die computers niet veel gebruiken, snel zullen leren omgaan.

MUZIEK EN KUNST:

Voorals klassiek en koormuziek is geliefd. Maar net waar je mee opgevoed bent, is de stijl die je leuk vindt. Muziek zorgt voor gezelligheid en verbondenheid. Het zet sommigen meteen aan tot bewegen als er goed ritme in zit. Voor Tover Tafel is dit een belangrijke insteek, want intrinsieke beweging werkt het best. Kunst kan ook verbinden. Het doet de mensen denken aan de leuke tijd die ze samen met hun (overleden) partner hadden, toen ze gepensioneerd waren en er vaak samen op uit trokken. Kunst is mooie een vorm van zichzelf kunnen blijven ontwikkelen, volgens een aantal ouderen. Omdat er weinig fysieke activiteit voor nodig is, (alleen zorgen dat mobiliteit genoeg blijft), vinden ze dit in heden vaak nog steeds zo nu en dan interessant. De stromingen of kunstsoorten zijn minder relevant, maar ouderen hebben natuurlijk wel een artistieke voorkeur.

FAMILIE:

iets dat voor de meesten ouderen in het heden het meest belangrijk is/wordt: kinderen en kleinkinderen. Er is meer tijd voor dan vroeger nu ze zelf niet veel meer werken. Een flinke knuffel en verhalen van kleinkinderen zijn zeer waardevol en laten de ouderen meteen stralen. Kleinkinderen mogen verwend worden, vinden de ouderen. Ze zijn onvolwaardelijk trots. Enige nadeel vinden ze als ze te druk zijn en weinig langs komen, dat doet de ouderen verdriet. Voor Tover Tafel kan dit goed gebruikt worden als verbindende factor, al is het de

vraag of ouderen niet liever gewoon quality time hebben met hun familie ipv spelletjes spelen.

GENIETEN IN HET MOMENT:

een glaasje erbij, rustig op een bankje. Ouderen genieten in het moment. Dit beeld past goed bij wat Tover Tafel wellicht kan bereiken. Dit is vooral voor de 'toekomst' zo beschreven bij een aantal collages. Er zijn verder niet echt concrete doelen of ambities die ze hebben. Van een leuk moment of activiteit kunnen ze nog lang plezier hebben/op terug kijken.

DISCUSSION:

-Ouderen vonden het moeilijk om uit zoveel plaatjes te kiezen. Wellicht de selectie wat verkleinen de volgende keer.

-Het hielp goed om stap voor stap plaatjes te zoeken, maar wel te vermelden dat ze later naar de toekomst en verleden mochten, waardoor ze al plaatjes hadden gevonden die later van pas kwamen.

-De template van het tijdschrift werd begrepen, maar de balk werkte als een limiterende factor bij de collages maken (er niet overheen durven plakken).

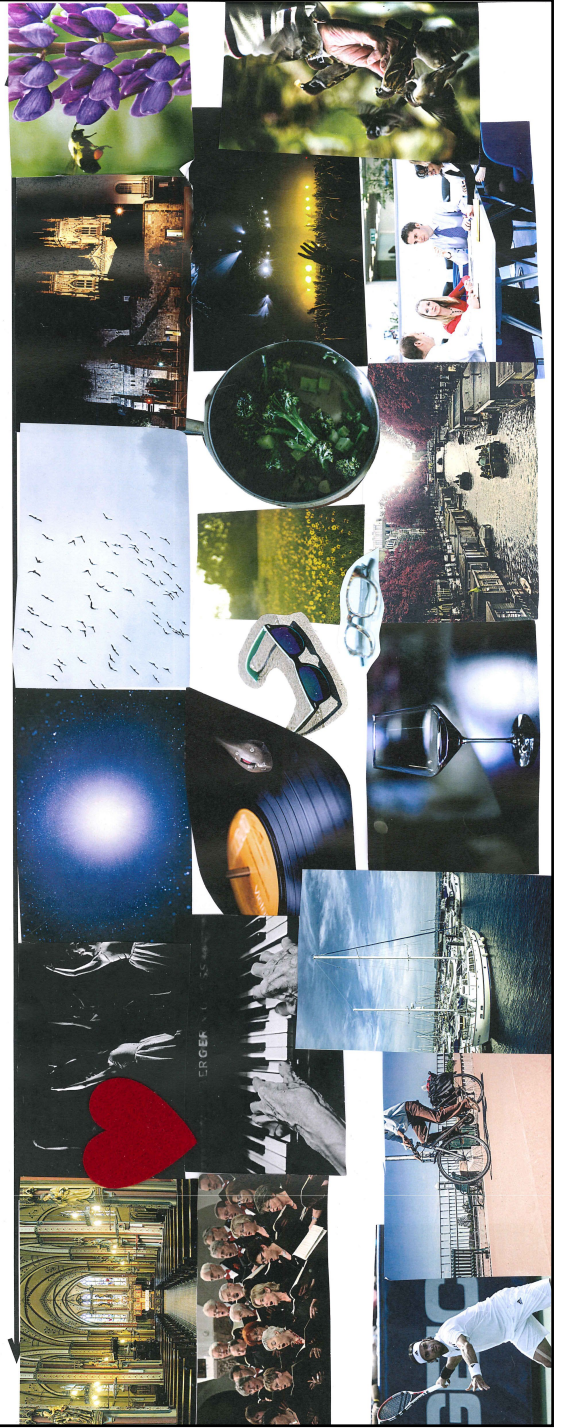
-Ouderen dachten veel in activiteiten en hobbies. Niet zo zeer in belevenissen of gevoelens. Daarbij zochten ze dus ook veel letterlijke plaatjes met een handeling of activiteit uitgebeeld.

-Terwijl we nadrukkelijk over het heden hadden, werd er al veel over het verleden gepraat. Dit komt omdat het verleden zo diep zit en veel betekent voor de ouderen. Veel goede ervaringen met vroeger en ouderen vertellen veelal graag over hun bezigheden en situatie van toen (soms vergelijkend met het heden). Toekomst was er lastig en confronterend voor ze. Vooral gezond en blij blijven was de grootste conclusie. Ze durfden haast niets neer te zetten hier, omdat ze bang waren dat hun 'dromen' toch niet zouden uitkomen. Geen vertrouwen meer in zichzelf. Ook niet als duidelijk gemaakt werd dat er misschien wel dromen zijn die praktisch gezien nooit meer zouden kunnen voor ze, vermeden ze dit onderwerp.

-Tijdens het plaatjes kijken werden allerlei fotos aan namen gelinkt en herinneringen opgehaald. Hele algemene platen kregen een hele persoonlijke herinnering gelinkt: dit werkte goed.

-Workshop structuur: Tijd beter in de gaten houden: ook aankondigen hoe lang nog per onderdeel. Is zonde als mensen een halve collage hebben of te lang zitten te wachten op anderen. Ouderen praten over het algemeen veel en nemen daarbij ook veel onrelevante zijwegen, vaak omdat ze nu hun kans grijpen om hun verhaal kwijt te kunnen. Het aantal deelnemers (5) was dus ruim voldoende, en eerder richting de 2 uur voor een kleine workshop is genoeg.

NAAM: _____



M: [REDACTED]

VROEGER *puur kief*  **HEDEN** *lym*  *likter glange* **TOEKOMST**



lekkinglaasge



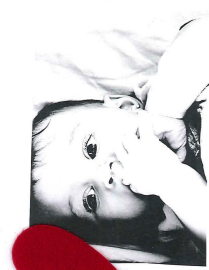
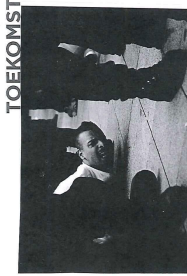
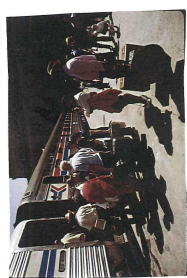
in de hem

dochter
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Klein em
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Samen met
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M. [REDACTED]



TOEKOMST

NAAM: _____

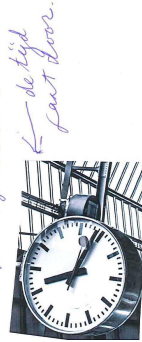


vroeger
normaal
→
nu anders!
→
nu onmisbaar
telefoon altijd

VROEGER



Heel oud en Engeland in
metalen de kluisbedden.
Hoe zijn die gebouwd?



← de tijd
fast door.

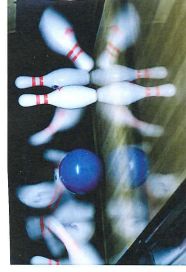


HEDEN



De tranen geeft rust
om naar te kijken
T Van kaartspel a kijkt
geven de nodige ontspanning

TOEKOMST



Alleen voor een, allemaal



meindig
bitterheid
tot aan
de horizon

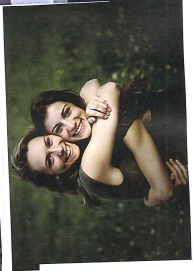
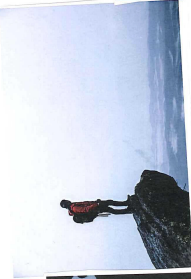
NAAM: _____

VROEGER



Belangrijk voor
de toekomst dat
m'n pace maken
het nog een lange
tijd mag duren.

HEDEN



TOEKOMST



B.9 RESULT CONTEXT RESEARCH: PERSONAS

PERSONA TOOS

AGE	87
STATUS	widowed
LOCATION	Delft
LIVING	somatic nursing home
ARCHETYPE	the old disappointed grandma

“Vandaag heb ik een erg slechte dag! Ik ga niet naar de gymles”

MOTIVATIONS

- Feels she wants to stay part of the community, as this is the last thing she has left.

GOALS

- Prevent the most painful days, as her joints are hurting.
- Does not want to feel lonely.
- Being able to enjoy her children and grand-children as long as possible.

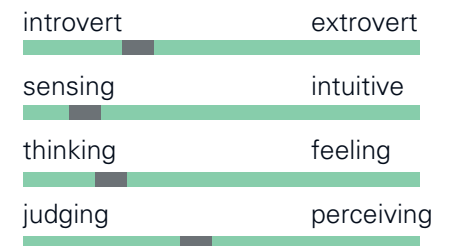
FRUSTRATIONS

- Toos is in bad physical condition, as joints are rapidly deteriorate and muscles are sore.
- Sometimes the pain in her body is very heavy, so she does not want to join group activities downstairs.
- Is disappointed her body is letting her down, and does not accept to take a step back any more. She does not like the prospect of further physical decline.
- Does activities in own tempo/level, but has to be warned to do an alternative execution of certain exercises, which works negative for her confidence.

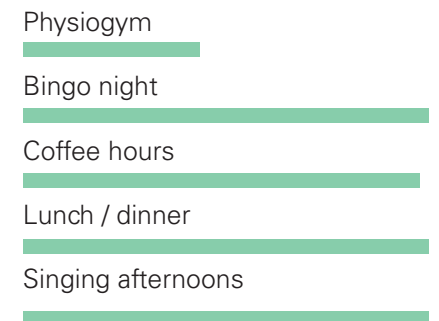
BIOGRAPHY

Toos is always been a nurse herself, and now she has difficulties accepting her physical condition is decreasing very quickly. However, she could accept to move to a nursing home after her husband died five years ago, as she understand the way nurses could help improve her quality of life. But the pain is still depressing her sometimes, as she likes to be in control, so her body often lets her down in the things she still wants to do. From her work experience she already understands the process of getting older, so she is determined that social contacts are important to maintain as long as possible, also when health is reducing her possibilities.

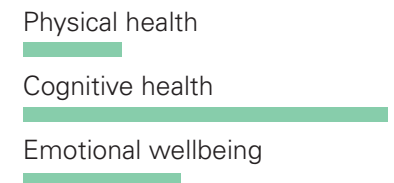
PERSONALITY



ACTIVITIES



HEALTH



PERSONA GREETJE

AGE	82
STATUS	married
LOCATION	Delft
LIVING	sheltered housing
ARCHETYPE	the socially involved

“Ik ben hier pas 4 maanden hoor, en ik kan nog niet helemaal wennen. Maar ik vind dat je wel mee moet blijven doen, anders wordt het helemaal zo negatief”

MOTIVATIONS

- Trying to make the best of life, by staying positive.
- Although accepting age is coming with decline, as long as we feel good, we should stay active and participate to reduce further physical decline.

GOALS

- Being able to participate in society as long as possible.
- Stay independent together with husband.
- Enjoy social life with friends and family

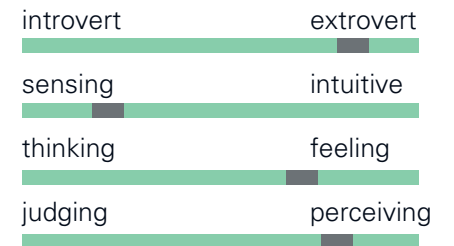
FRUSTRATIONS

- Misses the coziness of their old neighbourhood, in which they lived for 40 years
- Feels not old yet, but moving to a sheltered home since 4 months was necessary, as independently living at home became unsafe.

BIOGRAPHY

Greetje lived in a cozy neighbourhood together with her four children and husband Koos for most of her life. She did not go to university and did not have a job, as Koos has was owner of a supermarket. Besides taking care of the house and the children, Greetje would help him in the shop sometimes. She adored to be in contact with neighbours and friends while doing this. Greetje was always very much involved in the life of her children, by volunteering for activities at school and coaching the local volleyball club. Since Koos is retired, they liked to go on cycling trips throughout the Netherlands. Unfortunately, both are suffering from decline in physical health last years. Now they have decided, together with their children, it's time to move to sheltered living as they increasingly encountered difficulties in daily life.

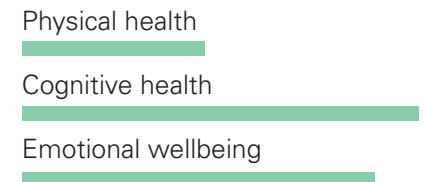
PERSONALITY



ACTIVITIES



HEALTH



PERSONA AGATHA

AGE	78
STATUS	widowed
LOCATION	Delft
LIVING	somatic nursing home
ARCHETYPE	the always laughing one

“Mogen we al beginnen? Het lijkt net of we echte appels plukken, haha”

MOTIVATIONS

- Agatha is being stimulated to go to exercising lessons by the nurses as she forgets about them, but is always in for social and fun activities.

GOALS

- Living without further decline of physical condition.
- Have a fun time together with the other residents.

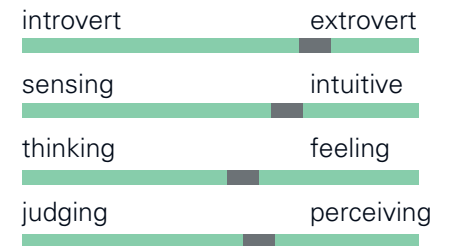
FRUSTRATIONS

- Could not take initiative to start an activity anymore, as moderate level of dementia is reducing cognitive functioning.
- Children are living far away, so they are not able to come over for visiting often.
- Has small motorical issues due to the dementia, but gross movements are still in tact.

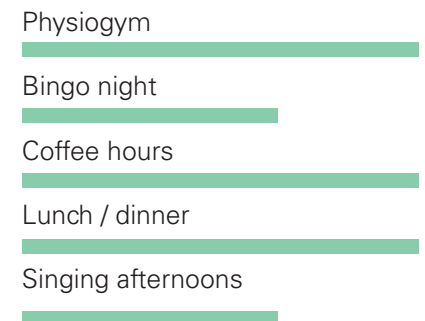
BIOGRAPHY

Agatha lives in the nursing home for 1,5 years now, as home care was not sufficient for the level of Alzheimers disease and her children could not take care of her due to long-distance. During her life, Agatha worked as a secretary for the CEO of a big engineering company. She has two children who live in Brabant and her husband has died 3 years ago from a heart attack. Although she did already suffer from dementia back then, she still understands and remembers this event. However, Agatha could be seen as a woman who stood very positive in life and someone who was always joking around with her friends and family. Nowadays, she receives care in the nursing home, as planning and initiating daily activities are difficult for her. Physically, she is still very fit, as she only needs a walking stick for long distances through the hallway.

PERSONALITY



ACTIVITIES



HEALTH



B.10 BENCHMARK EXERGAMES FOR ELDERLY

Product name	Qwiek.play	Qwiek.melody	Silverfit 3d	Silverfit Mile	Silverfit Newton	Wii	Kinect	Difiets	Vertigo	Sensbalance Therapy cushion/seat/board	Sona
Company	Qwiek BV	Qwiek BV	Silverfit	Silverfit	Silverfit	Nintendo	Microsoft	Stichting-boz.nl	Vertigo systems	SensaMove	Yalp
Target group	all	all	Physio therapy/revalidation	Physiotherapy, All	Physiotherapy/revalidation	Cognitive well	Cognitive well	Physio therapy, all	all	all	Physical well
Goal (preventive/specific)	Overall more movement (mostly upper body)	Overall more movement (lower/complete body)	Motivating while exercising for revalidation, gross motor skills	Motivating for fitness lower body	Motivating for strength training	Overall more movement(wii-games) , motor skills. Improve balance and focus on movement(wii-fit)	Overall more movement(complete body) . Improve balance and focus on movement	Fitness lower body	Having fun while moving	Motiving balance training and stability	Overall more movement(complete body)
Focus (social/physical/ cognitive)	Social, physical, cognitive	Social, physical	physical cognitive	Physical Cognitive	Physical cognitive	Social, physical, cognitive	Social, physical, cognitive	physical	Social, physical	physical	Social, physical, cognitive
Body positioning	Standing Seated	Standing	Standing, seated	Seated, walking	Seated in fitness	Standing, seated	standing	seated	Standing , at table	Seated on special cushion/chair. Or standing on board	standing
Placement location	Common room	hallway	Fitness room	Fitness room, common room	Fitness room	Own home, common room	Own home Common room	Fitness room	Hallway, common room	Fitness room	outside
Feedback	Screen, audio	Audio	Screen, audio	Screen, audio	Screen, audio	Screen, audio, vibrations(remote)	Screen, audio	Screen	Projection floor	Screen	audio
Instructor/ assistance needed	no	No	yes	No(only at start)	yes	Yes (only @start)	Yes (@start)	Yes(@start)	no	yes	no
Individual/group games	Individual (group reactions)	Individual/group	individual	Individual/duo	individual	Individual/duo	Individual/duo	individual	Individual/group	individual	group

C. MAPPING EXERCISES

5/4/2016 – SANNE VAN ADRICHEM – CESAR THERAPIST

11/4/2016 – CLAIRE VAN STAALDUINEN – FYSIOTHERAPIST PIETER VAN FOREEST

INTRODUCTION

The goal of the expert sessions in the second phase of the project was to collect all relevant exercises and the connected concerns and opportunities, so a clear overview of exercises could be presented. This overview has been used as a key resource later in the ideation phase, to be able to assemble game ideas with suitable exercises.

METHOD

As the orienting phase already resulted in insights in physio group lessons for elderly in nursing homes, the expert session with Claire van Staalduinien was focused on getting to a deeper level of discussion about particular exercises, sub-target groups, effectiveness and safety. A set of exercises derived from the observations at the physio lessons (Appendix B.7) was presented and discussed, after which clusters were made based on the components of exercising: strength, balance, motoric skills/coordination, endurance, joint flexibility. Since Cesar therapy focuses on a different way of using the body than physio therapists, it appeared to be interesting to get insight in exercises from this point of view as well. In the expert session with Sanne van Adrichem, an open discussion during a run-through of valuable exercises which support functional mobility was held. For each exercise or movement demonstrated, important attention points in terms of performance and safety were discussed, as well as concerns for sub-target groups if applicable.

RESULTS

C.1 EXPERT SESSION PHYSIO THERAPIST:

CLUSTERING THE EXERCISES:

strength, balance, motoric skills/coordination, endurance, joint flexibility.

IMPORTANT ATTENTION POINTS:

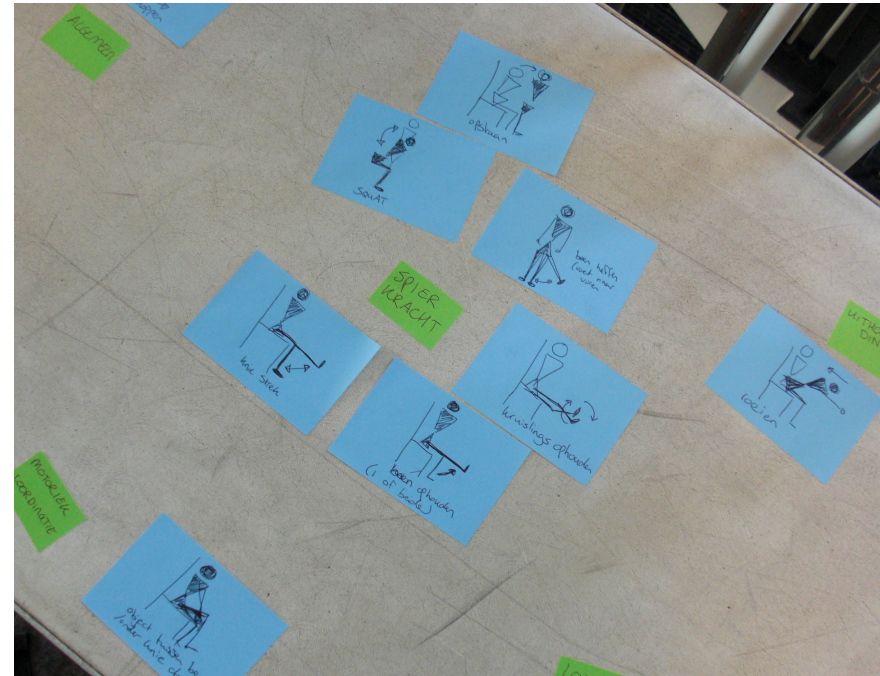
Some exercises evoked some thinking and brainstorming about applying them in a Tovertafel game. Claire understood that the format and development of the game were out of the scope of this session, but she could imagine and suggest how certain exercises could work or would not work out.

In general, Claire found it hard to cluster the movements at first, as for most of them multiple components are trained. However, she did cluster them as can be seen in figure x, keeping in mind the main component which is trained.



BALANCE:

All exercises which require standing or walking are in general indicated as more difficult and less safe, as risk of falling is apparent in such exercises. However, when walking aids or steady chairs could be used, this could already improve the situation. It is important the elderly recognize their own abilities and limitations, or the guidance of a therapist should interfere to avoid dangerous situations as elderly sometimes tend to cross their boundaries or are ignorant of the risks, in particular in game play. For standing exercises, participants should have a certain base level of static balance, which means their feet could be apart for a certain distance while standing. Also seated balance exercises could be dangerous when participants are not aware of their level of trunk balance. Claire recommended to be careful when implementing such exercises in the game, but she also found such exercises important in the overall movement stimulation for maintaining functional mobility. In this case, she suggested the system could give information or instructions to make participants aware of the risk level and possibly even offer alternatives.



JOINT FLEXIBILITY:

With regard to the cluster joint flexibility, Claire liked the variation of exercises, as all lower extremity joints are needed to be trained in order to maintain functional mobility. For the scope of functional mobility, mostly lower extremity exercises are wanted, but they could be combined with upper extremity additions to create more (cognitively) challenging movements. The intensity of the exercises is dependent on the number of repetitions. Although Claire urged to look at the individual when starting the intervention to find a suiting base number, she stated that usually 3 sets of 10 repetitions and a period of rest between the sets will suit most elderly in the target group. Similarly to the balance level, elderly should be aware of their limits, in order not to overload their body. Fortunately, joint flexibility exercises leave possibility to lower intensity (both number of reps as well as partly completing the movement) to personal preferences and could be perfectly performed from a chair or wheelchair as well.

STRENGTH:

Although standing exercises are generally more difficult (technically) and include more risk of falling and injury than seated strength training, some of these standing strength exercises are very effective for functional mobility. Claire stated that the general rule in physio therapy for elderly is that, if possible, the training itself should be as similar as the daily situation you would like to improve. This means if standing up is difficult, only with literally practicing standing up from a chair, the best results will be achieved. If this is not possible, of course it is always recommended to train separate components of a particular movement, as the

rule of doing 'something' is already an improvement in some cases where total inactivity plays a role. However, for strength exercises, one should be careful not to compensate with the wrong muscles or bad posture, for the danger of injuries. Showing visual examples and direct feedback could help the elderly with performing the exercises well. Also with strength exercises, the number of repetitions should be aligned with individual abilities. In accordance with the earlier observations results from physio classes, Claire finds it important to keep an eye on the daily energy levels of elderly. She recommends to build in levels of strength exercises: for example a level for wheelchair users, a level from seated to walking position, and a level focused on improving standing and walking.

COORDINATION/ MOTORIC SKILLS:

This cluster is actually integrated to some extent in all other components and exercises, which was the reason why Claire did assign only one of the exercises to this cluster. She stated that roughly all exercises which require using upper and lower extremities simultaneously could improve coordination very well already. Mixing strength or joint flexibility exercises with coordination training by adding a motoric component could establish this. Using additional objects as balls, sticks, rings, pit bags (which could be frequently seen in the physio group lessons) to the exercise also increases difficulty. However, the question is if it is really needed to put extra coordination exercises in a projected game, as the game itself would already require some coordination in order to operate. Also use of additional objects could be troublesome in nursing homes where the goal is to have a low-threshold access to exercising, as these objects could be easily get lost, or used wrongly.

ENDURANCE:

The endurance component was only recognized in ongoing repetitive exercises, which actually combined multiple other components as strength, joint flexibility, and balance. For example the rowing exercise could be given as an endurance training when performing it for long period of time. Nevertheless, it is not a specific goal to improve the overall endurance or fitness of the elderly, as longer exercises are needed (which reduces the accessibility) and this component could be better trained with specific fitness equipment.

DISEASES AND DISABILITIES:

With regard to the most common diseases and disabilities among elderly, not much special attention is needed according to Claire, as long as endurance component will not be too heavy. Especially lung and heart patients need to take care of their own limits, but it is fine to challenge them a bit while exercising. For most of her clients, Claire says: 'They will naturally stop when it is too difficult for them'.

For diabetic elderly, it is important to note that they should consume enough before starting to play. Claire indicates that most of them understand how to work with their insulin levels properly, but it could be problematic when they also suffer from dementia for example.

However, Claire does not see big issues for the project with regard to danger of hypo.

The content and rules of the games should be intuitively understandable for all elderly within the target group, also for people suffering from light form of dementia. For this group, any additional form of exercise will be very beneficial to slow down the mental decline process, as could also be read in Chapter x.

Furthermore, elderly who have suffered from a stroke, could have cognitive disabilities as well. Besides this, they usually have physical decline or paralysis at one side of their body. For the design of the system, it should be taken into account that this target group still needs chances to participate the game, even if they naturally only use one arm or leg (variation of sides) and that they may not be able to perform standing or balance exercises. Although they should revalidate on their own level and pace, Claire thought people with stroke always have benefit from any kind of exercising. The earlier and the more they start training after a stroke, the more functionality could be restored.

Osteoporosis is a disease which frequently occurs in elderly. Although bones get weaker, Claire did not see any danger for injury in the presented exercises during the expert session. Moreover, the more they train the bones, the stronger the body stays, as could also be read in the results of the literature research in Chapter x. Therefore it can be concluded that game play for this group can be rather beneficial, as long as falling is prevented.

As the project is focusing on functional mobility and gait, upper extremity disabilities like frozen shoulders are not considered problematic, as most exercises will train mainly lower extremities. Hence, artificial hips and knee problems should be taken into account, as stretching legs or making inner/outer circles with legs could be problematic.

C.2 EXPERT SESSION CESAR THERAPIST:

Just like physiotherapist Claire, Cesar therapist Sanne van Adrichem shared the same vision of 'using or losing' and 'what you train is what you get'. However, as Cesar therapist, she has different view on how functional mobility could be trained. Physio therapy focuses merely on separate exercises specifically targeting the problem areas, whereas Cesar therapy tries to include the complete body and posture. The problem or pain area may not be even a focus in the therapy.

For functional mobility, a few basic exercises and associated attention points were discussed.

SITTING:

For elderly, proper seated posture is the first step in correct movement. The upper back muscles work to get the shoulders relaxed and down and the breast pulled up, while feet are flat on the ground and knees in 90 degrees angle. The lower back may move, as long as the upper back stays straight. When sitting on a chair with backrest, the same posture is performed, but the back could be slightly bend to get support from the chair. Important to note is the head should never be bend to the front, but stays right on top of the neck.

STANDING UP:

The next phase of functional mobility is the ability to raise from a seated position to standing position. Being able to perform this movement independently makes care routines easier for both caregivers and elderly, as it is often needed during ADL. Although standing up is one of the heaviest movements to perform for frail elderly, it is worth to keep training it, as use of patient lifts strongly decreases functional mobility and quality of life.

While keeping the same posture as the seated position, first phase of standing up movement is to swing the upper body to the front, by using the hip joint as only rotating point. This swinging movement could be practised in exercises, in order to find the correct posture, feel the muscles work and find balance. Especially for Parkinson patients it could be helpful to start swinging the upper body in a certain rhythm before the actual standing could be initiated.

When the body weight is moved to the front, knees and trunk are stretched in a fluent movement toward standing position. It is important not to use the arms by pushing the armrests. Special attention is needed for people with knee problems or artificial hips, as they should not overload the joints in this movement. Similarly as the focus during the physio group lessons, Sanne believes leg muscle strength is one of the most important components to be able to perform this exercise well. Therefore she also recommends separate leg exercises (see paragraph strength) besides training the actual standing up exercises. She believes repetition of such exercises is very efficient for maintaining mobility, but elderly find such exercises boring to train, so herein lies a great opportunity for applied gaming.

Sitting down is done by reversing the movement. In this case it is important to move the weight backwards, but to keep the back straight and breast up like in the seated position.

WAIST:

To practice waist and balance, Sanne showed a simple exercise which could be done from seated position. The back should be disconnected from the backrest, performing the correct active sitting position. Alternating balancing on the left and right buttock, while keeping the upper back straight. This movement can help to train turns and twisting movements in functional mobility, as the lower body is able to move freely.

Reaching from seated position:

Once the correct posture is found for the seated position and swinging the upper body to the front, also reaching movements could be practised. This movement is based on the swinging movement, but now the arms are stretched while swinging the upper body to the front (somewhat bending in the elbows), without pulling up the shoulders up and still keeping the back and head in a straight line. Sanne suggested this movement could be practised in games like rowing or reaching for interactive objects on the wall.

UPPER EXTREMITIES:

Although physiotherapists did not focus too much on exercises for the upper extremities, in Cesar therapy, the use of the upper body can have influence in the performance of the compete movements and is therefore more often integrated in the exercises. Sanne believes reaching sideways or diagonal over the person's centreline (twist the complete body) has influence on the quality of movement of the lower extremities as well, thus complete body controlling. All muscle groups have to learn to work together as good as possible, as almost all daily movements involve combinations of twisting, turning and bending according to Sanne. As elements in applied games could be a good motivator for reaching (with arms) in certain directions (while standing still), those twisted movements could be evoked quite naturally. Also seated exercises with swinging arms besides the chair are helpful for training the complete body. Exercises like bowling or throwing balls could support training of such movements and are recognizable to elderly.

STANDING:

As elderly tend to sag with age, standing straight could be a problem. Most important elements for standing properly according to Sanne are: feet a bit apart for steadiness and weight on both legs, knees are 'unlocked' and pelvis is neutral position(not turned to the front or back), back is straight and upper body/head are in line(breast up), without leaning to the front or back.

WALKING:

Elderly tend to develop different gait when they are afraid of falling or suffer from decline in physical health. This gait actually increases risk of falling and risk of injury. Sanne pays extra attention to exercises as stepping forwards and backwards(while using heel and toe in correct way), stretching a leg backwards, standing on toes, knee bending while holding toes up, keeping trunk above the front foot while walking, and keeping back and head in straight line while walking. Often, elderly do not roll off their back foot properly in a walking motion and they have their balance on the heels instead of the foot.

BENDING OVER:

Bending over (to pick up or reach something) is a very practical movement which often occurs in daily life activities. From an active standing position, elderly should start the bend movement from the hip joint (pushing the buttocks backwards) and while keeping the upper body in a line. Also shoulders should kept low and knees are bent. If an object is lifted from below, the trunk should be in a more vertical line with increased bending knees (holding the object close between the legs) and pushing the knees out again to stand up.

ATTENTION POINTS:

Although all of these exercises in Cesar therapy are merely focused on feeling and being aware of how the muscles work in the correct way, applied games are operating in an opposite way, as a higher goal and interactive elements could distract the attention from the movement performance to the gaming results.

Besides this, Sanne was aware of the (technical) difficulty of monitoring the quality of the movement in an interactive game. The game could probably evoke elderly to perform a certain exercise, but Sanne notes that elderly always choose the 'easiest' way of moving. In the end, she concluded that the goal of the project is not to take over the role of the therapist, but to get elderly physically active in order to maintain functional mobility, so as long as the participants are stimulated to do 'something' which is related to the discussed exercises above, this could already be an improvement of their physical activity levels. Complex individual problems and disabilities should always be treated with personal therapy.

Just like physiotherapists in earlier research have been stating, also Sanne urges to try to challenge the elderly to move more than they think they would normally be able to, but without crossing their boundaries.

In line with this, the recommended intensity of the game and exercises could be better too low than too high to provide safe training to everyone. If the exercises are simple enough, participants could all find their own level and are more willing to keep doing the exercise or do more repetitions. If the exercise is experienced as too heavy or too complex, they will just drop out easily, which is counteracting to the goal of the game. Sanne could not give a general rule of thumb for recommended number of repetitions, as this is dependent on the individual abilities and the type of exercise.

CONCLUSION

To be tested:

- Influence of placement of the projections with regard to the ability to couple the elderly's action to the reaction on the screen. (Does it feel logical for the participant to understand how the actions are performed in order to get wanted result on screen and do the participants react in the proper way?

- Influence of placement of the projections with regard to the quality of movements.

Are elderly participants still able to execute the exercises fluently (watching and moving simultaneously) without being distracted or failing to properly perform the exercises? (watching to the side, walking straight)

- Do the participants need cues (instructions) for holding them back or challenging them in order to avoid over or under loading their abilities. Or could the game already facilitate this?

- How exercises could be instructed to perform exercises properly. To what extent does the system need to include visual instructions and/or only game elements in order to stimulate the elderly to make safe and effective movements?

- Could the system actively challenge the individual players to reach higher level, but also limit the increase in difficulty if it could sense the player reached his personal physical boundaries? If this is technically possible, this could have positive effect on the motivation, as well as it avoids to bring players in unwanted dangerous situations.

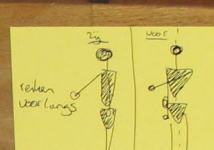
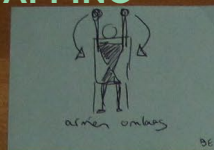
- To what extent could the quality of movements be monitored by the system and is it needed to include (direct) feedback to correct participants? To what extent are the quality of movements required?

In the figure at the right hand side, all conclusions and insights from the observations of the gymclasses and expert meetings with therapists are combined in a mapping of exercises. Yellow post-its are found from the point of view of the Cesar therapist, whereas the blue post-its represent the physio therapist. The exercises are clustered on extremity (complete/ lower/upper) and trained component of exercise.

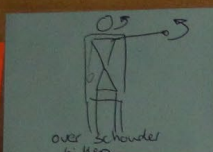
C.3 OVERVIEW OF EXERCISE MAPPING

UPPER
EXTR.

armen
& schouders

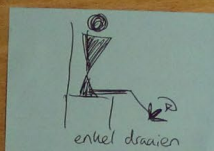
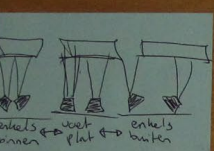


omphalans



LOWER
EXTR.

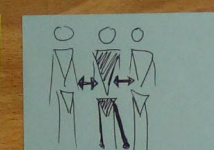
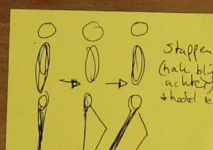
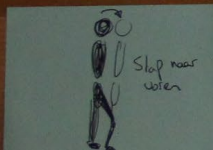
gewichts
mobil. benen



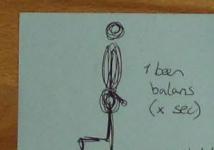
spierkracht
benen/buik



looptgang
passen

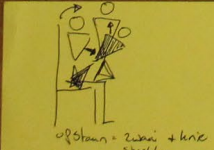


looptgang
balans

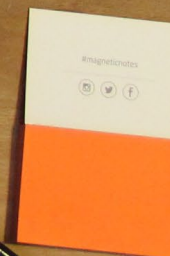


COMPLETE
BODY

opstaan



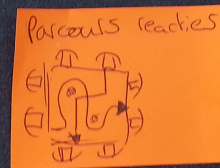
coördinatie



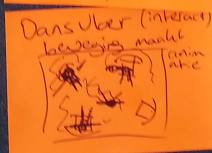
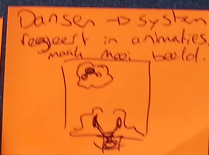
D.1 ALL IDEAS



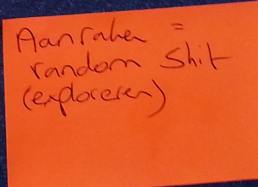
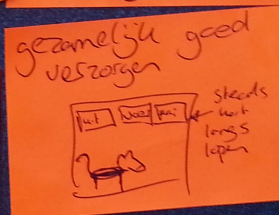
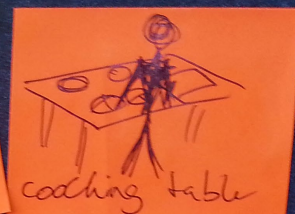
D.2 CLUSTERS



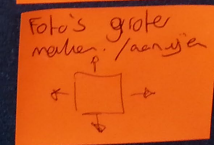
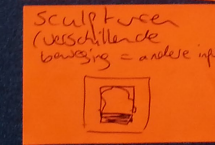
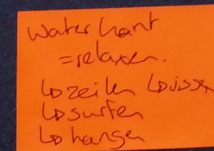
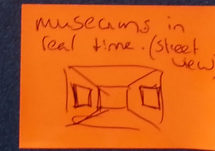
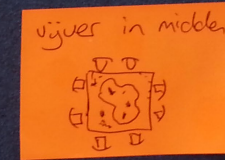
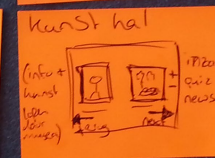
DANCING



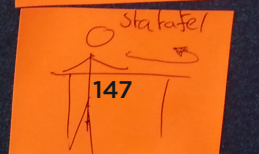
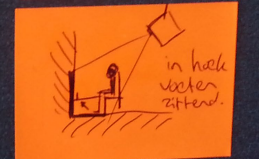
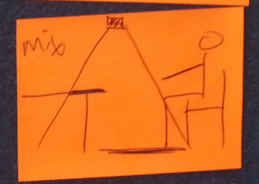
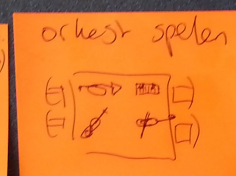
CREATIVE



Nature Film



MUSIC

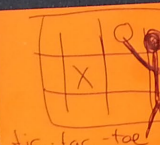


MINI GAMES

Bijbelquiz spel



Mario World



tic-tac-toe

detris muis



Twister (zittend)



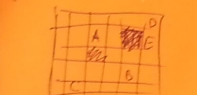
grijps beweging
bedeuten naar om
door te kunnen



connect the dots



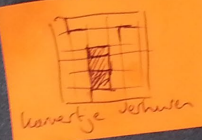
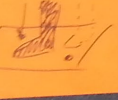
puzzelen



vliegende ballen
over muur

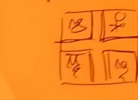


molenstamp



konstige verhuur

4 pics 1 word

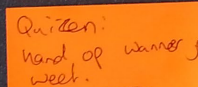
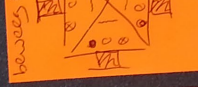
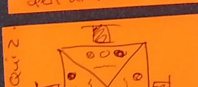
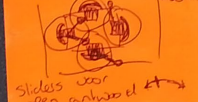


COGNITIVE GAMES

1 tegen 100



Quiz 3D: om je heen



Quizen:
hand op nummer
weet



raad de plaat
(kunst) quiz



Samen puzzelen



oude bordspellen
op groot scherm/door



Wie ben ik met
vriende/familie

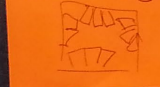
LINGO



geheugen trainer
spellen

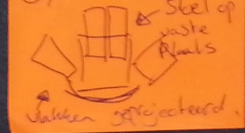


hearts spel met
benen beweging

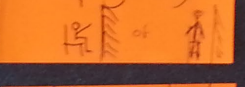


IMMERSIVE

Gymles projected



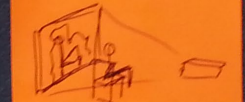
kopieer
bewegingen
(spiegelen)



achter de stoel



Schaduw spel

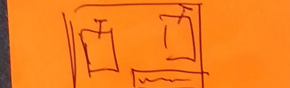


voeten oefeningen

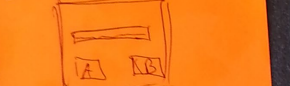


WRITING & OPINION

Printbord maken



Stellingen discussie
sessie of muur



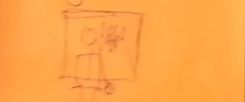
Gedichten maken



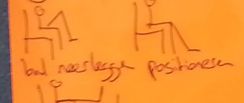
toetsen bord/
schrijven
- open blokboek

SPORTS LEISURE

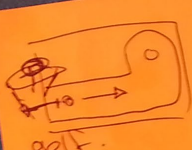
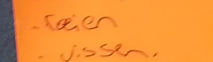
Spelen/borden,
regelen



atgolf met benen



water spelen:



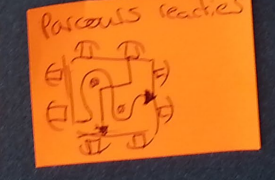
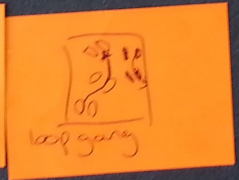
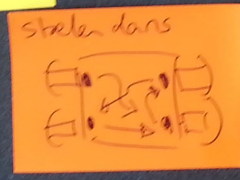
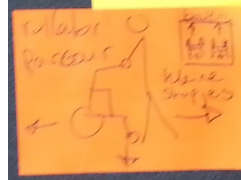
zit biljart



reactiespellen
en aanraken op
muur



MOBILITY



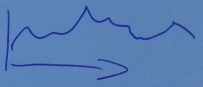
D.3 BY HOW-TO'S

geen afgebakende levels

creatieve spellen
(e.g. bouwen van verbl)

meerdere soorten interacties mixen

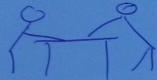
H2 create open-ended play with projections?

oneindige levels


abstract visuals
(eigen beleving)

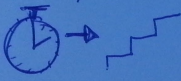
eigen regels verzinnen

eigen invulling voor een object
(dansen)

samenwerking nodig om verder te komen.


responsiveness to faster reaction times/accuracy

H2 progress in a game without saving data?

after x time difficulty raises


explorative/creative elements only. known level, but progress in own creativity.

cues could only do the right thing: evoke correct interaction

tutorial vooraf: oefenen

uitleg vooraf (instructie video)

H2 make elderly understand the goal of the game?

als niets gebeurt, of niet begrepen: animatie geeft extra trigger

easy level starting (tutorial round)

direct feedback of actions

voorbeeld vooraf (visueel) naaien van poppetje

no tekstueel (bad visuals) instructions

chairs & walking aids used in game

combining thinking/exercising:
↳ cognitive training

Slow pace

H2 ensure safe movement for frail elderly?

also make quality of movement a score: slow & gentle / small / delicate moves included.

variation in exercises:
max 10 reps / exercise
↳ different muscles

no extra weights added.
↳ close to body

everybody gets a piece of the complete game.

social behaviour is being rewarded → more advantage better scores

only finish move when people use 4 hands / feet / connect with each other.

H2 evoke teamwork & communication?

use cues at all sides of the screen.

making clear to reach a common goal

case personnel intervenes in game.

only cues which are also giving points if halfway there: max. → min also good.

if diff cues are not touched often enough, system will lower the general level.

system recognizes a certain player to not reach further and does not go on.

H2 stop elderly when they cannot reach any further

system does not give any 'unsafe' cues at all

system gives instructions (verbal / visual)

elderly initiate games with calibration (to set max / min difficulty)

wave all together at start: determine number of players.

register number of hands / feet moving: adjust # interactions / cues to this in real time

no separation in players: everyone works together

H2 make a game with diff # of players per session?

onging game
(no start/end)
join/leave always

screensaver doet
interactie voor
die gedaan moet
worden om te
starten.

always on: on
screensaver

H2 start a
game without
case assistance

tutorial/
instructie vanaf

walk through/
make move to
activate game
from standby.

cues duidelijk
genoeg maken en
aanrekkelijk
genoeg maken
(niet te zwaar)

nieuwe dingen
laten leren:
Zich kunnen
ontwikkelen.

verhaallijn
integreren:
meer te weten
over de situatie

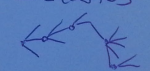
H2 keep looking
exploration in
a game?

onverwachte
resultaten

verschil in
interacties op
verschillende
situaties

keuze momenten
met verschillende
scenarios

random resultaat
na een actie
↳ visueel mooi

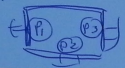


set a basis
level for the
group before
playing.

game recognizes
average play quality
and level during
play.

meer punten/waarde
aan moeilijker
interacties

initiation of game
calibreren for all
players → down level



H2 create levels
suitable for all
players.

opties zelf laten
kiezen HOE:
armen/benen/hult
(open laten om zelf
te doen.)

geen onderscheid
in kwaliteit/snel
van bewegen
↳ random

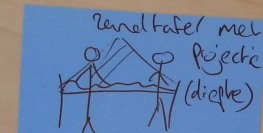
snap to player:
wanneer in beeld
is geweest.
↳ steeds moeilijker
per player

interactie kan
reageren op fine
of coarse moves
(ook level of positie)
precise

andere taken/rol
per persoon:
doe wat je
goed kunt/wilt

meerdere lagen
binnen interactie
mogelijk.
↳ 1) staan
↳ 2) sleep + staan
↳ 3) sleep + positie

fitness gym
nabben.
↳ stekken
↳ banden
↳ zaktjes



game ideas:
golf, icehockey,
tennis, biljart
voetbal, haalsbal,
slagbal.

bal als fysiek
element in digi
wereld.
↳ scores
↳ feedback beweging
↳ goals

H2 work with
attributes in
projected play?

balance
and coordination
exercises.
↳ holding

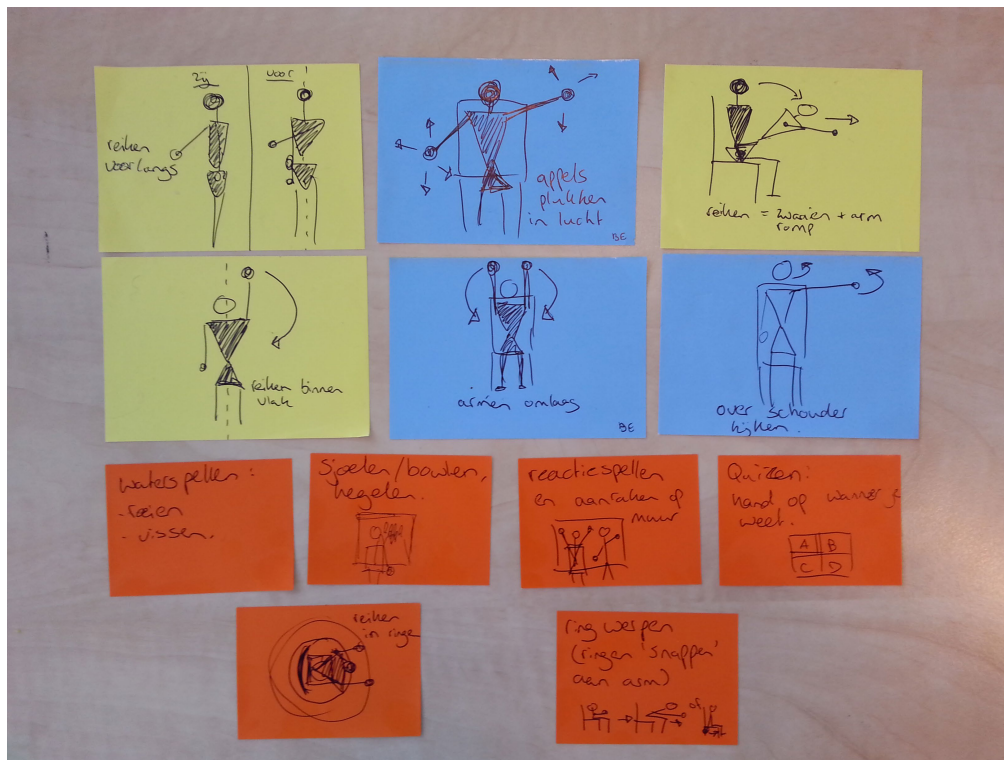
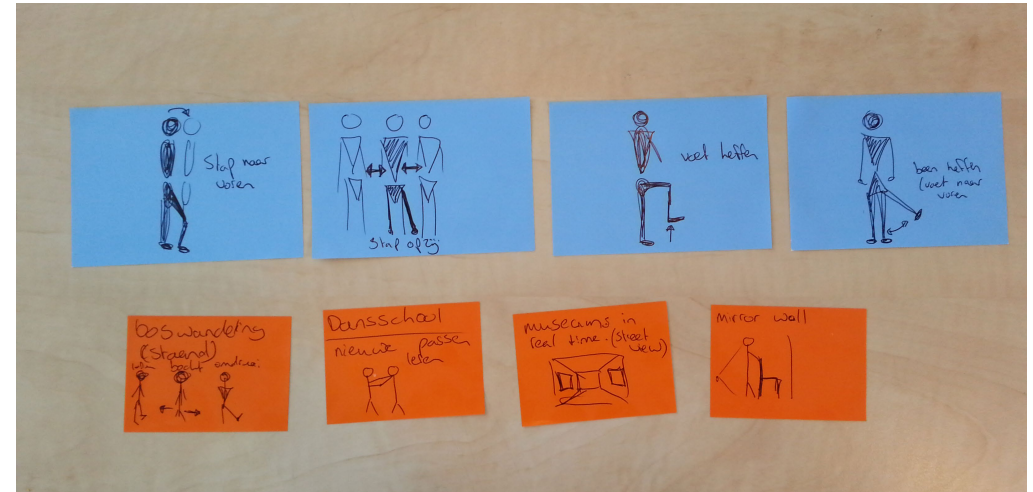
verlenging arm



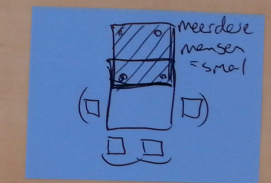
als sportattrib.
↳ stiek
↳ ballen
↳ etc

coordination
exercises
(between legs
around head/back)

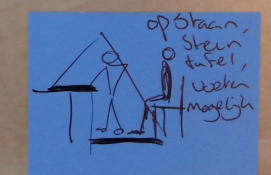
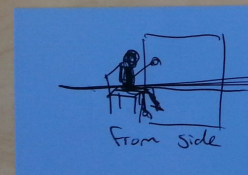
D.4 FROM EXERCISE MAPPING



D.5 ABOUT PROJECTION TECHNIQUES



H2 make movements when projected at mixed media



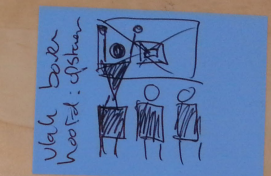
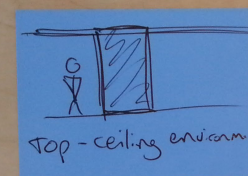
Users to move certain leg/arm to be able to see this move + level of movement

People in projection
↳ shadow
↳ lighting
↳ details

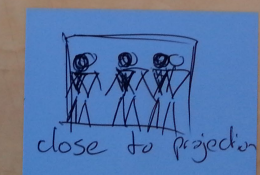
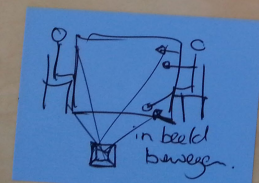
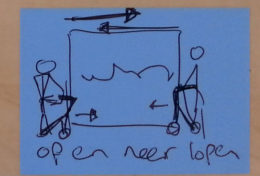
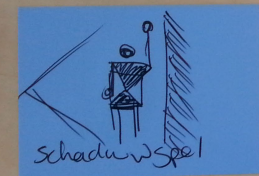
H2 create games which work with 3D sensors (depth)?



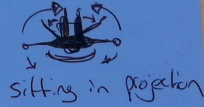
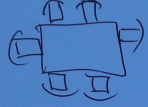
Floor games:
- standing
- moving legs up/down



H2 make movements when projections are at the wall?

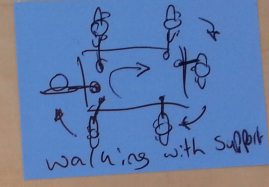
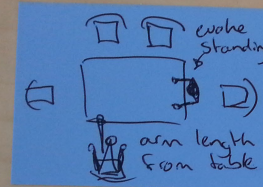
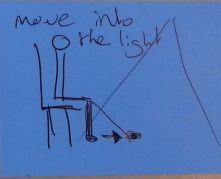


around a circle
with chairs.

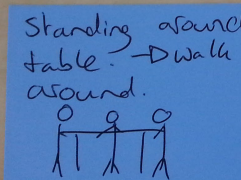


H2 make movements
when light projections
are at the floor.

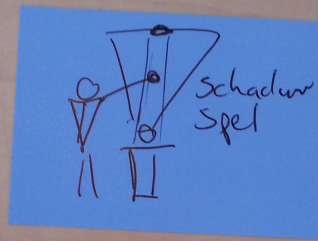
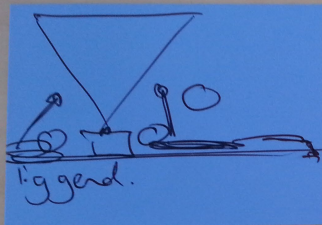
Sideways = seen
↳ walking = seen
↳ steps = seen
↳ turning?



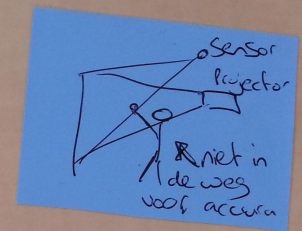
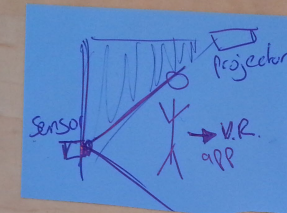
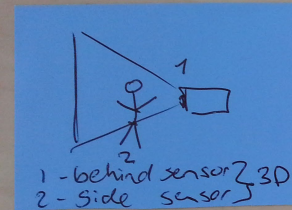
H2 make movements
when projected
at the table?



Seated:
- balance on chair
- rowing / arms



H2 make movements
when projected
on the ceiling?

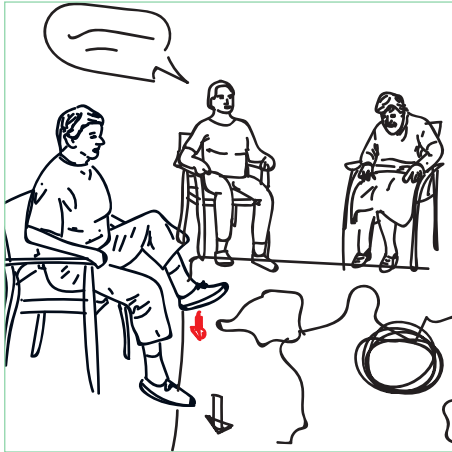


H2 create games
which have diff
position of sensor
& projector?

D.6 BENCHMARK PROJECTED GAMES

Company	pro-motion	lumo play	GestureFX (wallFX, groundFX)	EyePlay	Vertigo	touchmagix	IREX	Pavigym	TWALL
Technical method	own computer, display, webcam/kinect, delivered software and games	integrated camera , computer and projector in wall-mounted box, AR object recognition	IR camera + projector: body tracking, gesture tracking	integrated 3d camera, projector, computer, speakers,.	IR sensor, projector,/ screen, speakers (pc excluded)	integrated computer, (kinect)sensor, software, mount. Own projector. (with mirror)	full-body tracking, 3D vision	sensor mat on floor and wall (areas with numbers and lights), computer and tablet, speakers	Sensor wall (areas in pads), c
Play motives	exploration	exploration, collaboration	exploration, collaboration	training and exploration	exploration	exploration, (collaboration)	exploration	training	training
Visuals	digital, 2D, from above	digital, 2D, from above	digital, 2D, from above, picture behind	digital, 2D, from above.	digital, 2D, 3D(animations)from above, picture behind, abstract	digital, 2D, 3D, from above, picture behind	digital, 2D, 3D, immersive, picture behind	only LED feedback/ feed-forward	Colored LED areas feedback/Feed-forward
Interaction	1) follow user 2) surface 3) pointer	1) follow user 2) surface 3) pointer 4) objects	1) follow user 2) surface 3) pointer	1) follow user 2) surface 3) pointer	1) follow user 2) surface 3) pointer 4) objects	1) follow user 2) surface 3) pointer	1) follow user 2) surface 3) pointer	1) touch the areas 2) jump on areas 3) throw object	1) touch the areas
Target group	children, parties/ events	children at home (2y - 12y)	retail, museums, advertisement, hospitality: children-adults	children (+2) in schools, hospitality, lobbies	children + retail, museums, advertisement, hospitality: children-adults	children + corporates (lobbies, exhibitions ,events)	children, adults(therapy)	physiotherapy, fitness school	fitness school (adults or children)
Goal of play	fun, advertisement, attention	- large motor skills - turn taking - collaborative and social skills - pattern, colour and shape recognition - language skills - problem solving - memory skills	fun, advertisement, attention	fun, fitness training more fun, advertisement	fun, advertisement, attention,	fun, advertisement, attention	fun, advertisement, training(rehabilitation)	training: balance, speed,reactions, stability, precision, coordination, agility, mobility, and postural control.	training: speed, edurance, coordination, cognition, flexibility, visual perception
# players	mostly 1/2. up to 4	1-5	1-4	1-5 (up to 15)		1 - 4	single (or duo)	single (or duo)	single, duo
Bodily use	depends on app: lower extr: floor upper extr: wall	lower extremities (when standing) upper extremities(when seated on floor)	depends on app: lower extr: floor upper extr: wall	depends on app: lower extr: floor upper extr: wall	depends on app: lower extr: floor upper extr: wall	depends on app: lower extr: floor upper extr: wall	complete body	complete body (integration wall and floor)	complete body (when integrated with fitness equipment /exercises)
Examples games	visuals, football, fish, spaceship, music instrument, trail effects	Air hockey, football, counting, play with toys, fishing, dance games	football, wiping picture, trail effects	piano, muizenstampen, football, dancefloor,	football, cars, fish,wiping, trail effects, advertisements,seasons, abstract	board quiz, football, old-skool games, music instruments, vliegmeppen, wiping pic, trail effects	aliens, flying, underwaterworld, football, abstract, vollybal, ninja, trail effects, wiping	fitness exercises, ball throwing	reaction time, fitness exercises, ball throwing, boxing
Price	\$39.99 (system driven) \$7 - \$32 (p. game)	\$499-\$549	?	\$9,995(incl 10 games)	?	\$5,990.00 (incl 20 games) \$30 - 250 (p game)		\$17,279.00	\$6,295.00 (16grid)

SCENARIO OF USE



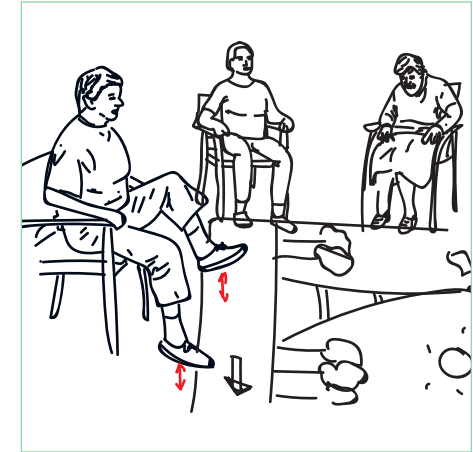
Players discuss what to visit today.
And control the selection circle to the
corresponding area.



To zoom in on the area, ankle is turned.
Zooming back from the detailed map,
both feet are placed firmly on the ground.



While zooming in, little flags give notice
if sightseeing in an area is possible. If
zoomed in on a flag, the area can be
explored by virtual tours and information.



To be able to continue the movies,
pictures and information, the players
should keep on walking movements.

E.2 'TRADITIONAL GAMES' INTERACTIONS

GENERAL

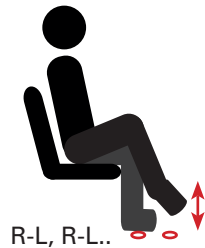
Goal: play and experience traditional games by physical movement in a safe way.
Play experiences: reminiscence, simulation, challenge, competition, completion, control, suffering
Medium: floor
Theme: Sports and leisure
Duration: 10 min per game

INTERACTIONS

select mini game



identify player for next turn



aiming

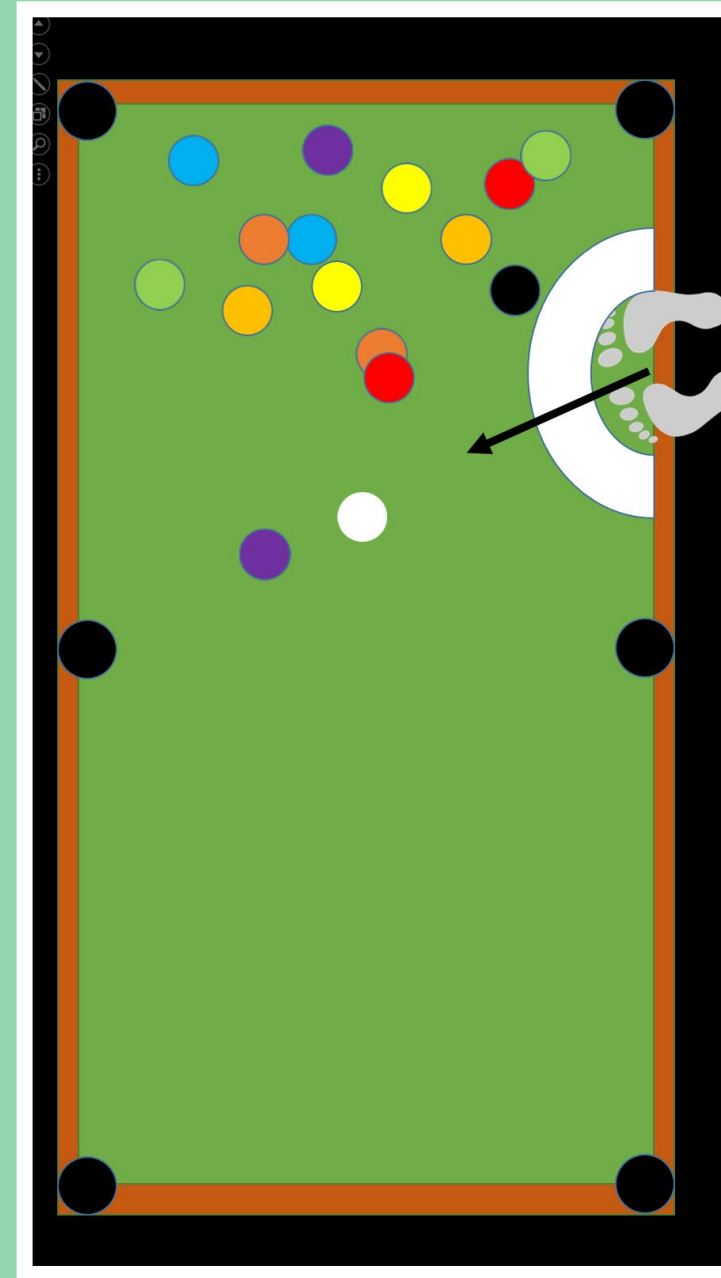


firing to target



DESIGN CHALLENGES

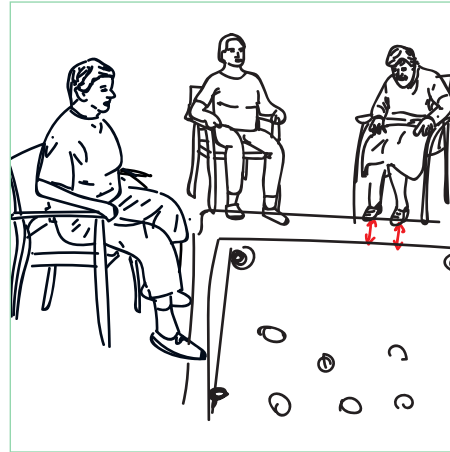
- make the interactive projections a valuable addition to 'normal' physical version of the games.
- keep the players motivated to come back or stay playing.
- evoke enough physical activity during the game.
- snap and link a player's move to the animation in order to take turns without the need to change positions of players.



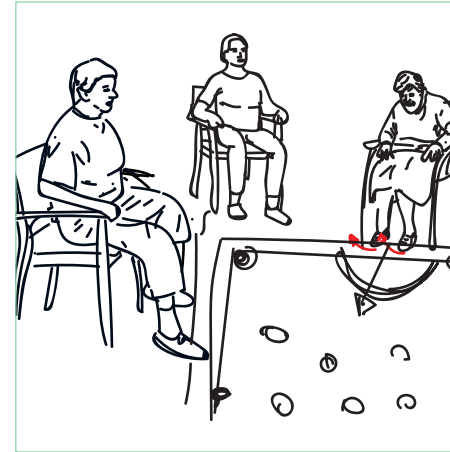
SCENARIO OF USE



Together the players discuss and select a traditional game by tapping on one of the areas in the screensaver mode.



When game is started, creating a walking motion at the edge of the screen identifies the position of a player for the next turn. The system could also actively suggest positioning.



When the system has detected a player, by shifting the feet in the wanted direction on the slider, the arrow aims. By making a kicking motion, the stick will be fired.



The system could create and indicate teams against each other, or play by individual scores. When all points are scored, difficulty level raises.

E.3 'MUSIC MAKER' INTERACTIONS

GENERAL

Goal: compose a piece of music by making (seated) dance moves according to the popping cues. Each individual player has a part in the song which is created altogether.

Play experiences: sensation, captivation, expression, fellowship, challenge, completion, control

Medium: floor

Theme: Music and dance

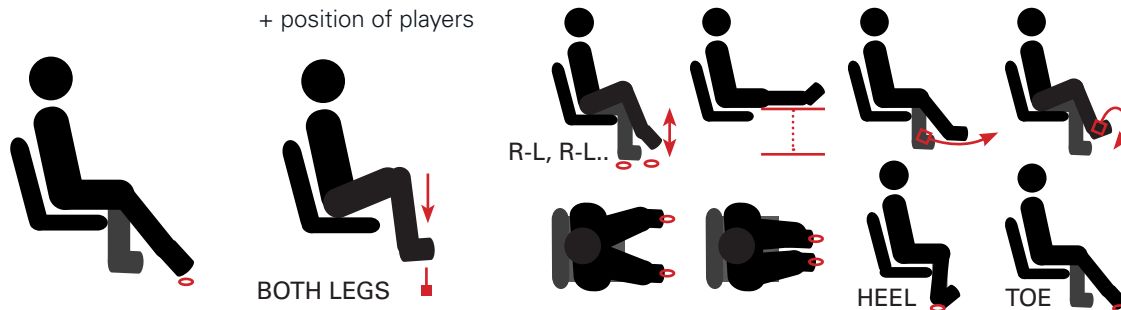
Duration: +3 min per song

INTERACTIONS

selecting genre/artist

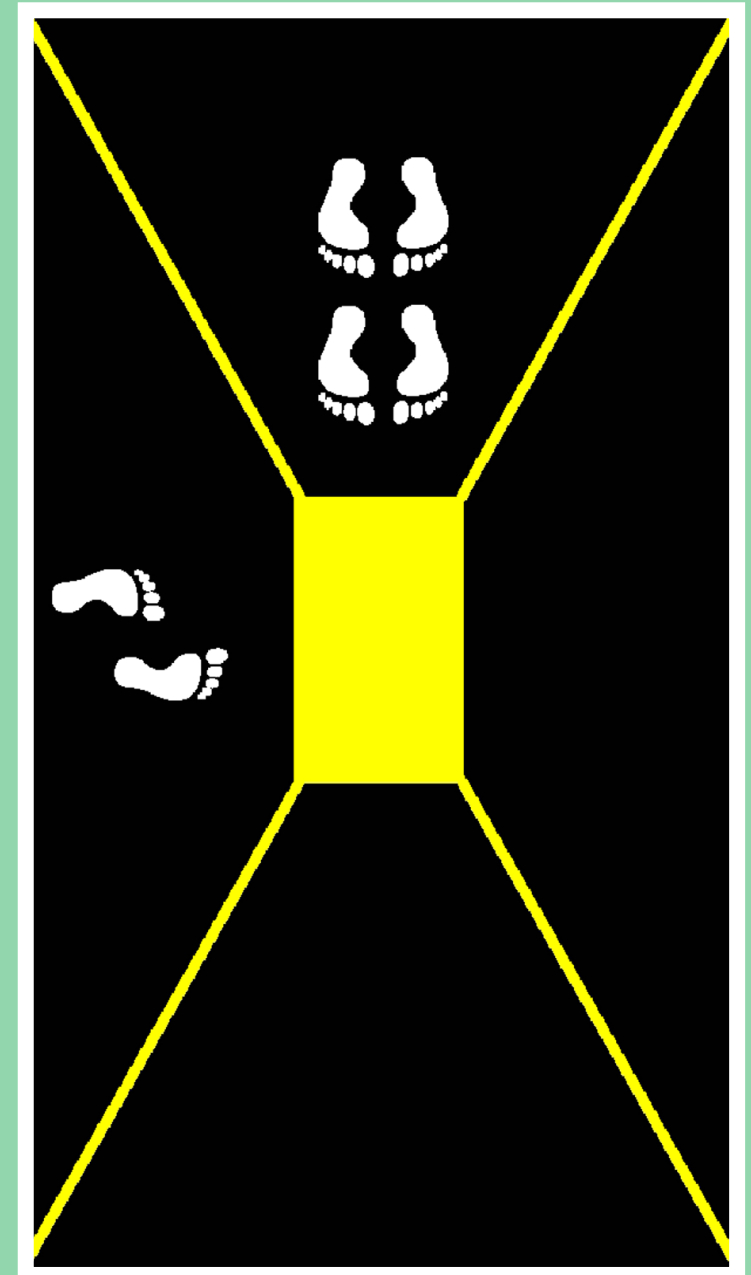
identify number
+ position of players

Variety in notes:

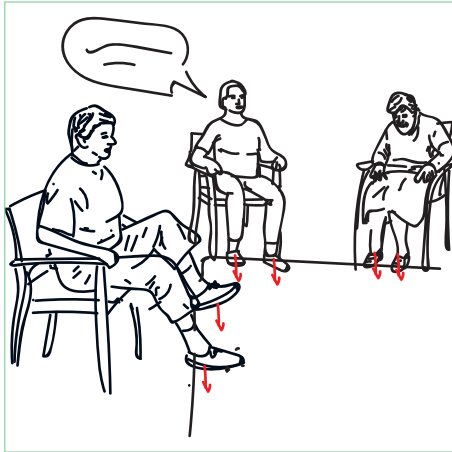


DESIGN CHALLENGES

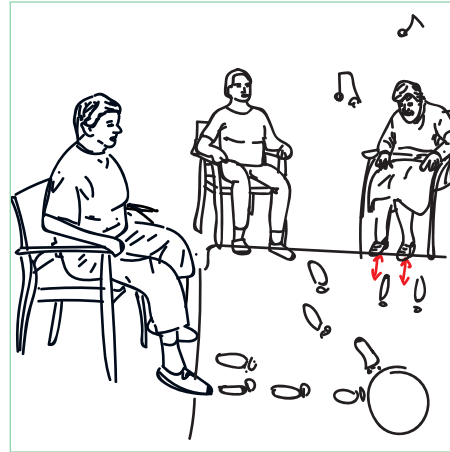
- make players understand the **visual** and audible result of their physical input.
- positioning the players(or recognizing them) in such way the cues are directed to them personally.
- integrate a sense of explorativeness (from interaction vision of the sandpit) and teamwork



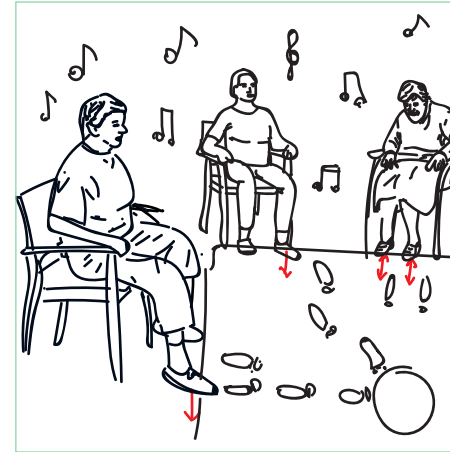
SCENARIO OF USE



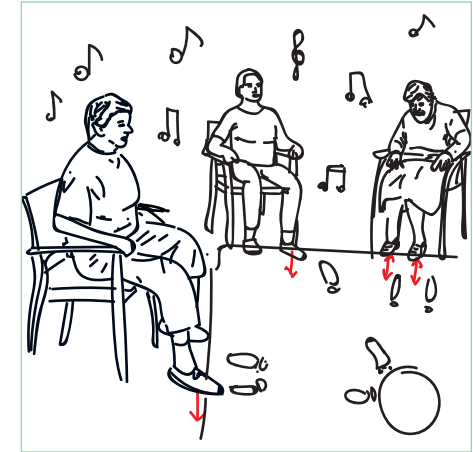
The game starts by discussing and selecting the wanted artist/genre and firmly placing both feet on the ground, to identify number and position of players.



Each player gets a music instrument track, which fires movement cues to the position of the player.



When the cues reach the feet of the player, he has to execute them in time, in order to keep the instrument playing and generate a nice song altogether.



The system could adjust the level of difficulty when sensed that a player is unable or very well able to execute the moves.

E.4 'MUSIC MOVES' INTERACTIONS

GENERAL

Goal: dance and be able to listen to the personally generated sounds. Explore and create the dance moves and routines to create a piece of music together.

Play experiences: relaxation, sensation, captivation, expression, fellowship, humour, control, discovery, exploration, fantasy.

Medium: wall or floor

Theme: Music and dance

Duration: +- 3 min per song

INTERACTIONS

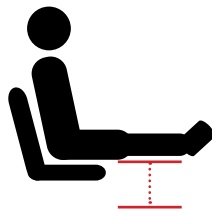
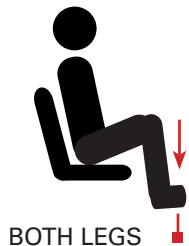
selecting genre/artist

identify number
+ position of players

change volume

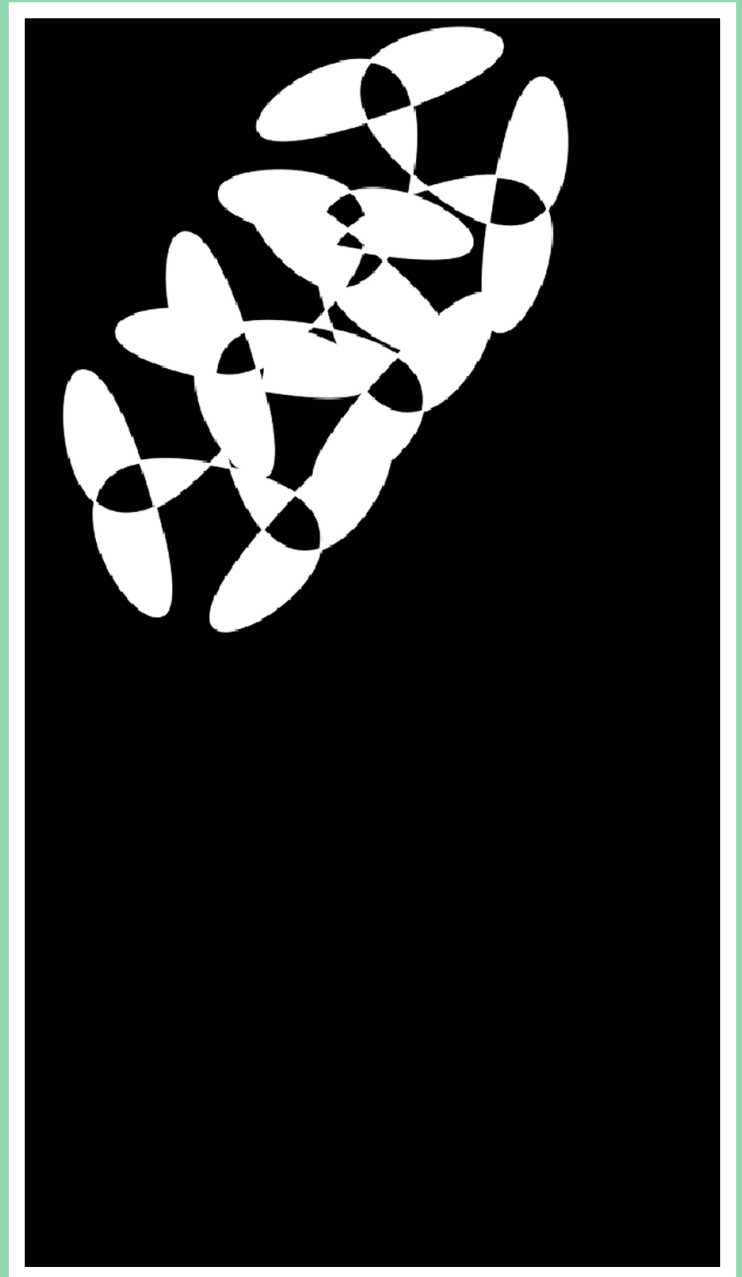
change pitch

change tempo



DESIGN CHALLENGES

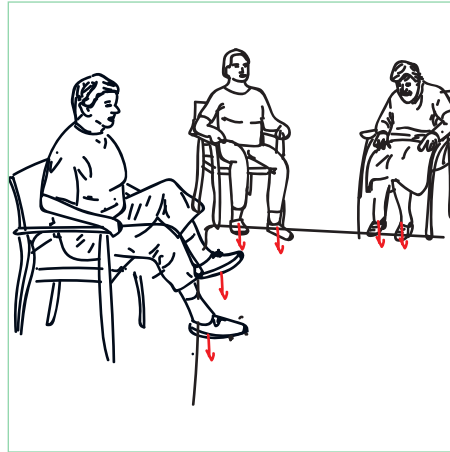
- defining and coupling the moves to particular part of the song and interesting **visuals**: in different situations (number of players)
- making understandable of the individual results of the movements in order to stimulate exploration.
- technically sensing and defining differences in moves by the system.



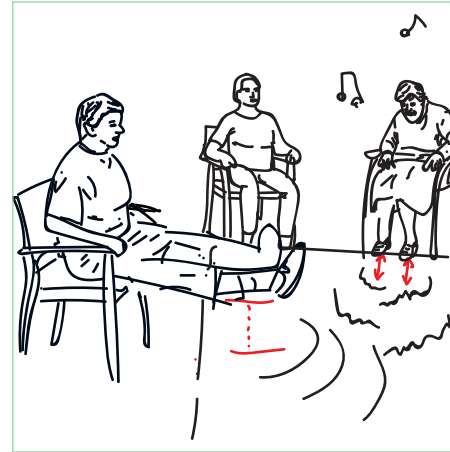
SCENARIO OF USE



Players discuss and select a musical genre or artist by tapping on the item in the screensaver mode.



After being identified as a positioned player, each player can make moves with the legs to influence the music.



Certain moves result in change in tempo, pitch or volume, so exploration and collaboration can be used to compose own music piece together.



Besides the music, **visuals** also give feedback on the moves and could create beautiful pieces of art. If stopped moving, the music and **visuals** stop as well.

E.5 'EXERQUIZ' INTERACTIONS

GENERAL

Goal: test knowledge in an interactive quiz programme which is controlled by physical activity as input for the answers.

Play experiences: fellowship, challenge, competition, completion

Medium: wall or floor

Theme: Knowledge and learning

Duration: +-15 min per round, +- 30 sec p question

INTERACTIONS

identifying players

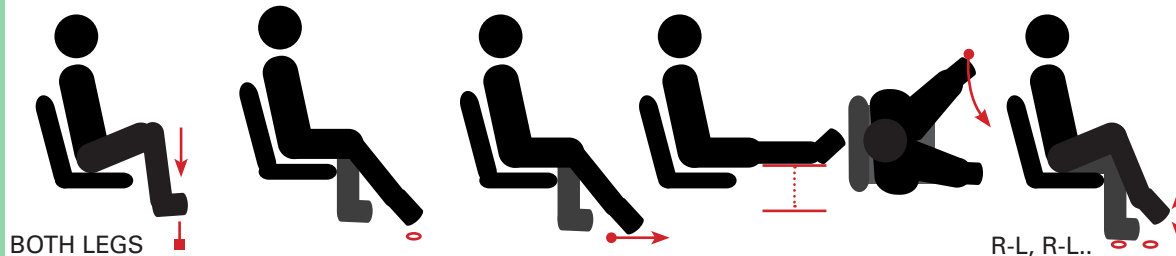
multiple choice

estimation

true/false

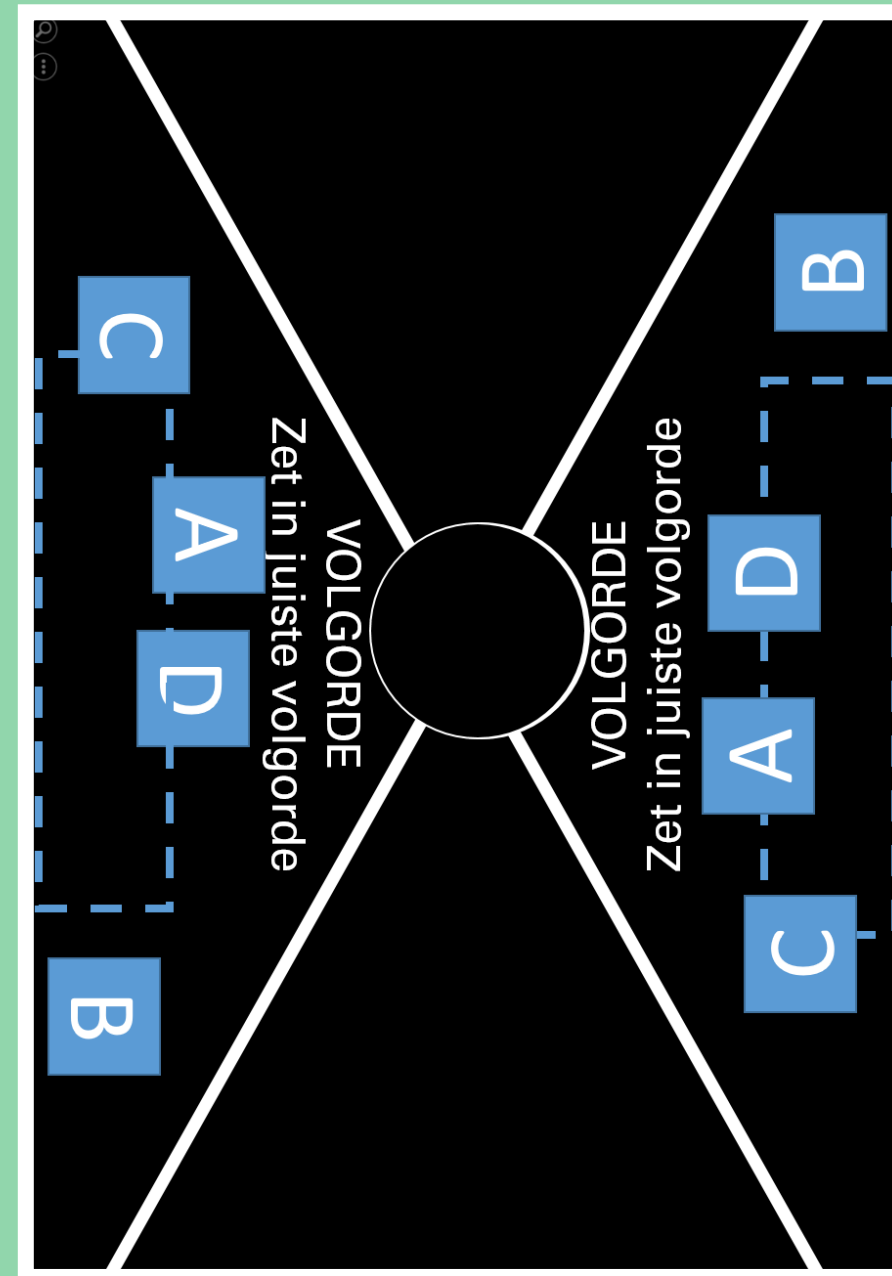
order

counter

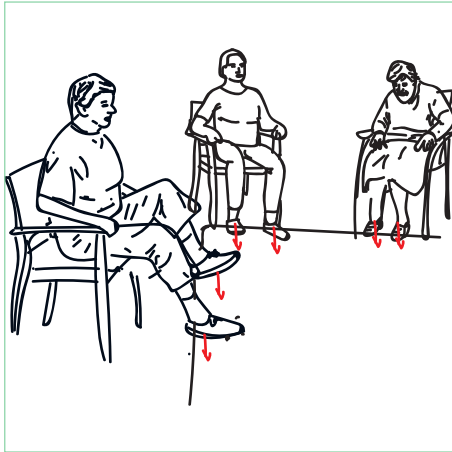


DESIGN CHALLENGES

- find a balance between exercise (training functional mobility) and being occupied with the quiz content: elderly players should move enough but whilst not tiring too quickly and whilst the content is not distracting too much (or moving is distracting from thinking).
- integration of a sense of teamwork and common goals.
- finding and creating enough suitable content and interesting questions/assignments.
- programming a fair and appropriate difficulty level in a quiz situation, while leaving room for exploration by players.



SCENARIO OF USE



The game starts by discussing and selecting the wanted topic and firmly placing both feet on the ground, to identify number and position of players.



Quiz starts and different types of questions arise at all sides of the screen.



To insert an answer, active cues are shown and players can interact with the system by tapping, walking motions, sliding, dragging items or holding legs up. Types of motions are varied for each question.



The system gives correct answers directly after all player have inserted the answers. Explanation comes sometimes in form of multi-media movies, pictures, or animations. The system adds the scores of each player or it could form teams.

E.6 'GROUP CONNECTION' INTERACTIONS

GENERAL

Goal: solve puzzles and find creative solutions for projected assignments while working as a team.

Play experiences: sensation, captivation, fellowship, challenge, subversion (?), completion, discovery, exploration

Medium: wall or floor

Theme: Logic

Duration: +- 15 min per set, 1-4 min per level

INTERACTIONS

select object/letter

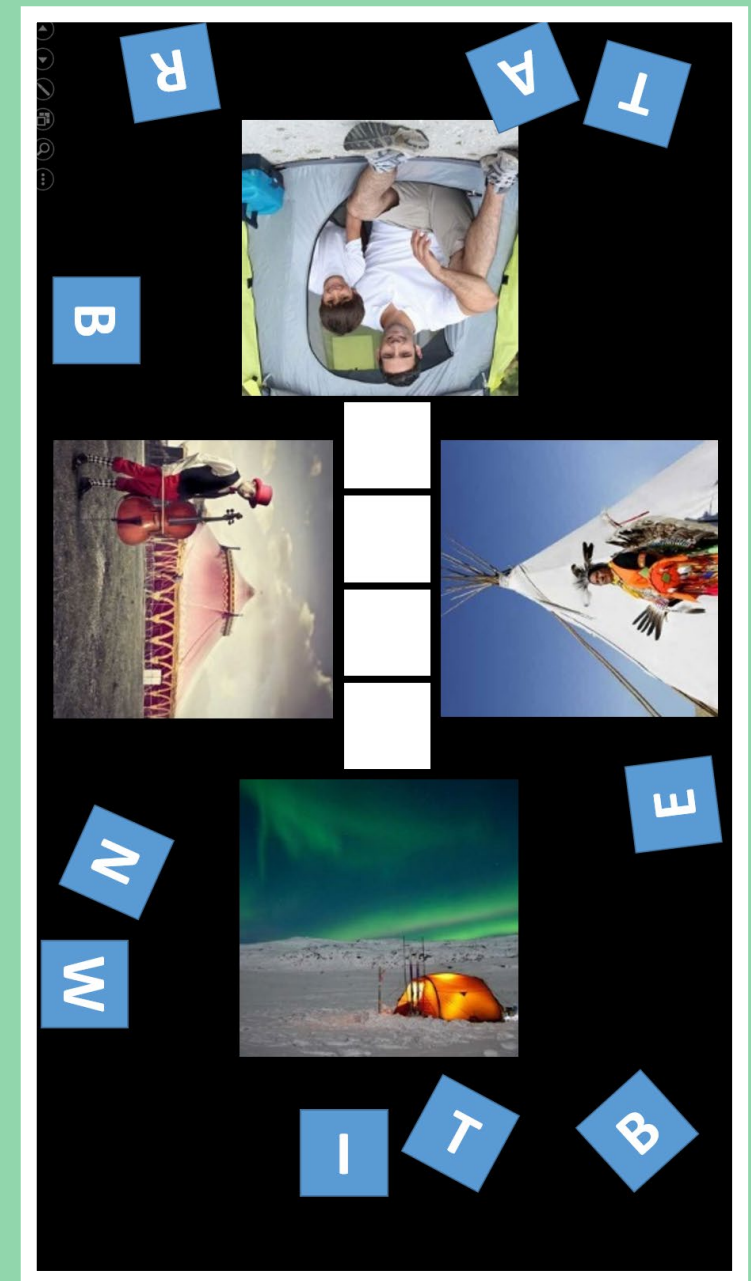
turn object

move position

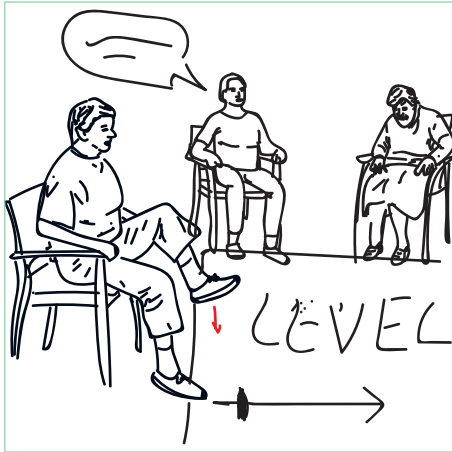


DESIGN CHALLENGES

- finding a balance between stimulating cognitive tasks which evoke teamwork and sufficient physical activity.
- integration of all levels of abilities of players while reaching a common goal.
- programming fluent **visuals** and animations, while leaving room for exploration by players.
- creating enough interesting content to keep players motivated to come back or play along.



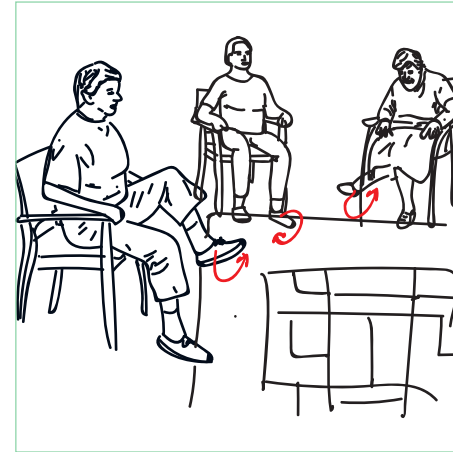
SCENARIO OF USE



The game starts by discussing and selecting the wanted basis difficulty level of play by tapping.



Short cognitive mini-game in which collaboration is needed to complete the level (as the needed items are spread over the projection screen). players discuss the solution and tap at the items to select or navigate them, depending on the game.



Turning objects could be done by all turning the ankle simultaneously.

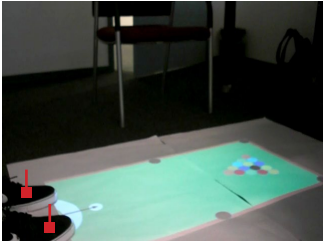


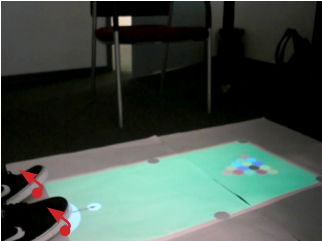
The system gives correct answers directly after all player have inserted the answers or gives a hint if it takes to long. Difficulty raises gradually if more levels are completed.

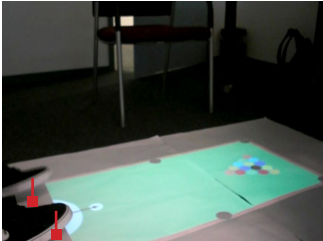
E.7 USERTEST RESULTS 1
INTERACTIONS - 'TRADITIONAL GAMES'

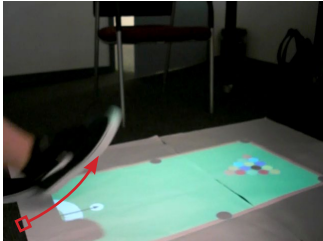
P1

P2



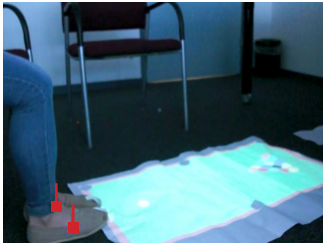






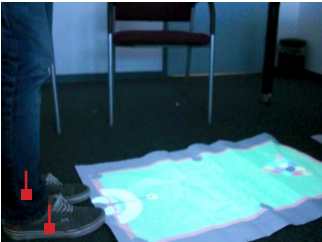
P3





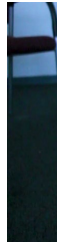


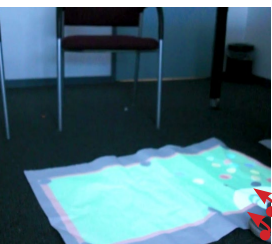
P4





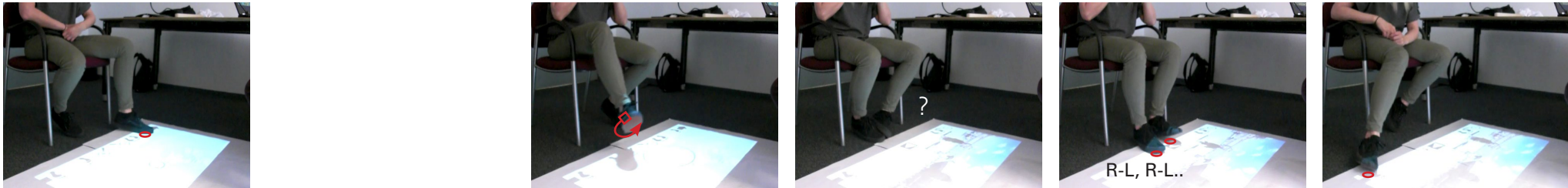




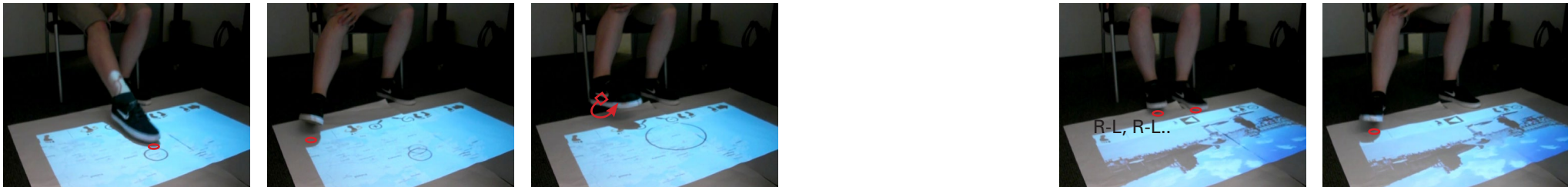


E.8 USERTEST RESULTS 2
INTERACTIONS - 'EXPLORE THE WORLD'

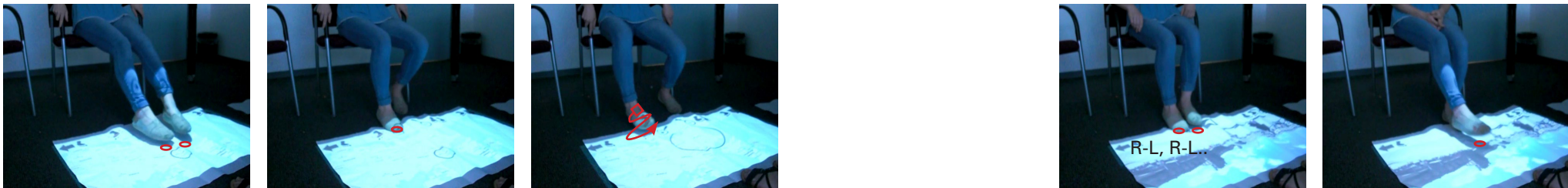
P1



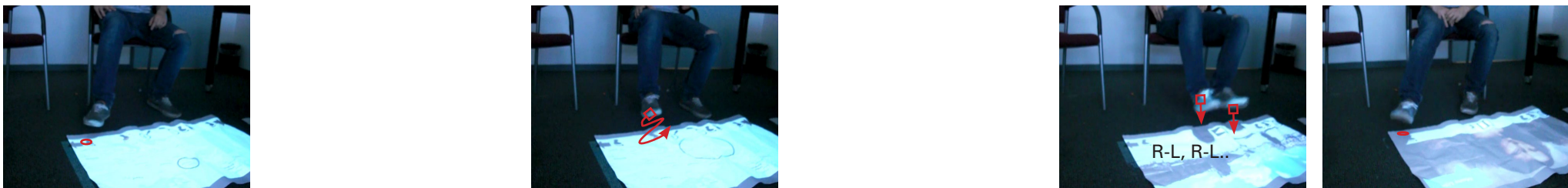
P2

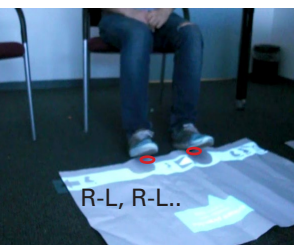
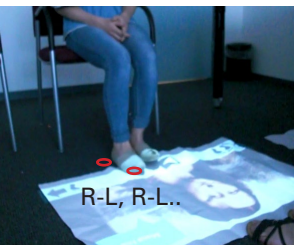
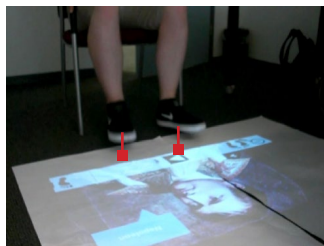
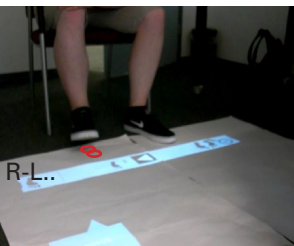


P3



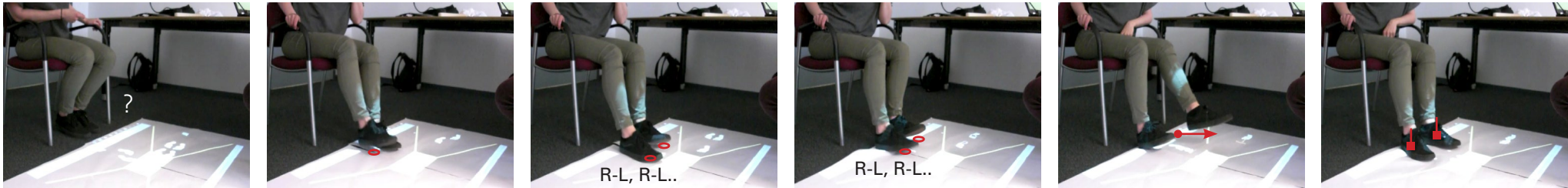
P4



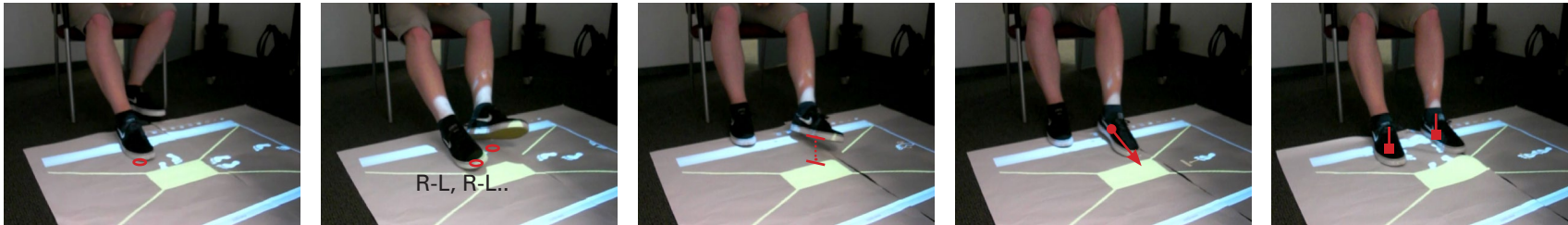


E.9 USERTEST RESULTS 3
INTERACTIONS - 'MUSIC MAKER'

P1



P2

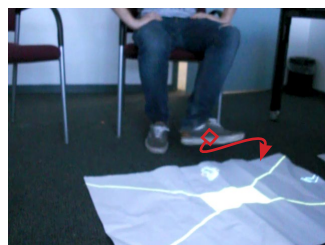
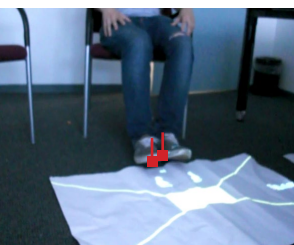
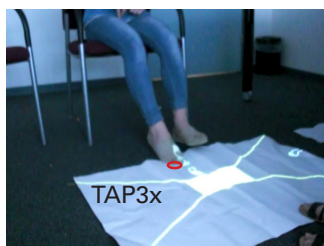
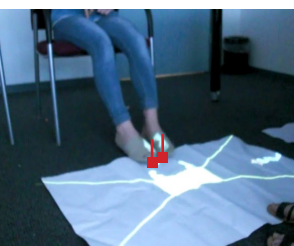
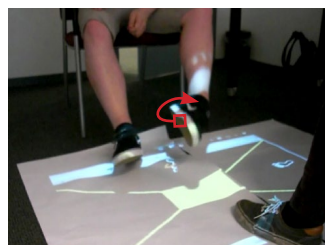
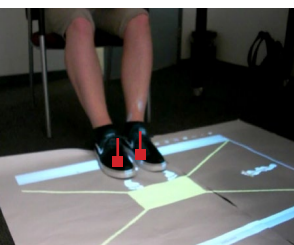
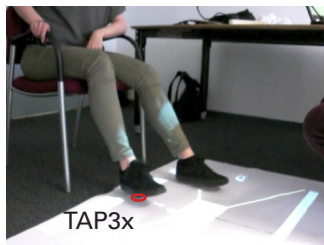


P3



P4

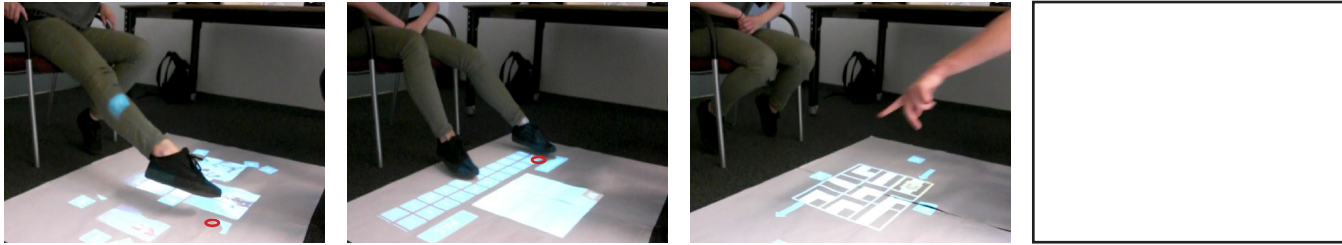




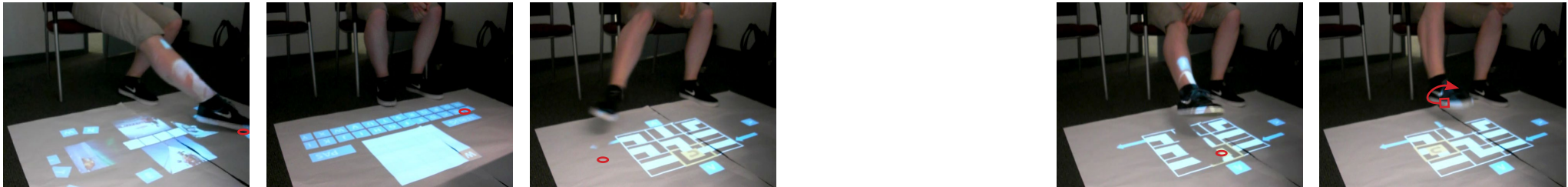
E.10 USERTEST RESULTS 4

INTERACTIONS - 'GROUP CONNECTION'

P1



P2



P3



P4

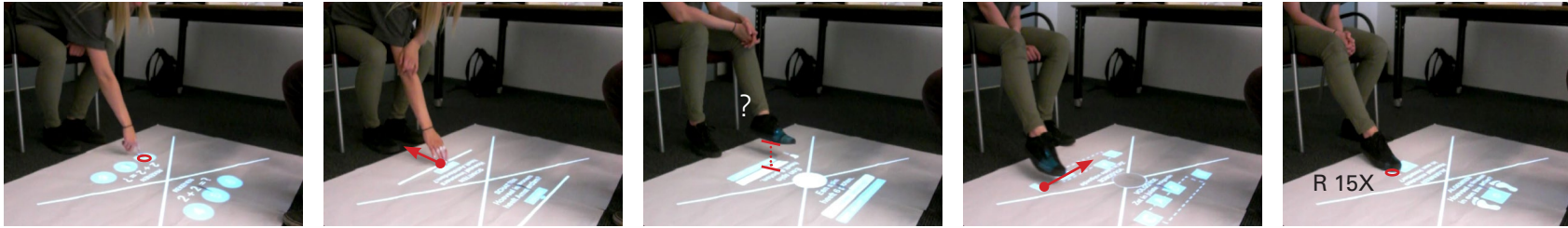


ASKS OTHER

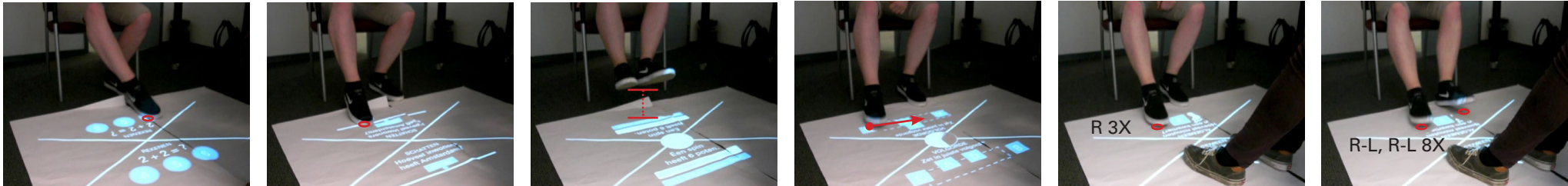
E.11 USERTEST RESULTS 5

INTERACTIONS- 'EXERQUIZ'

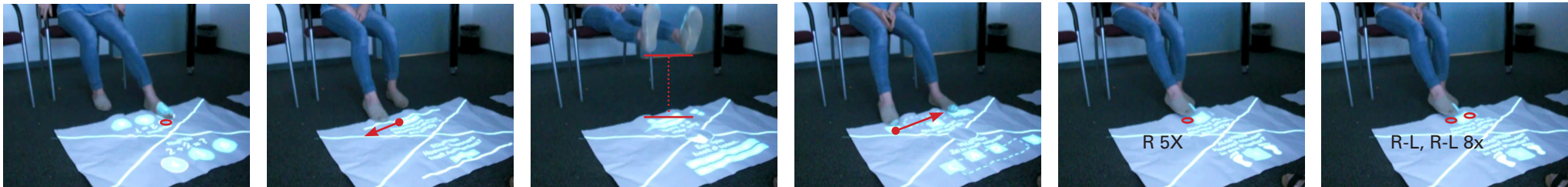
P1



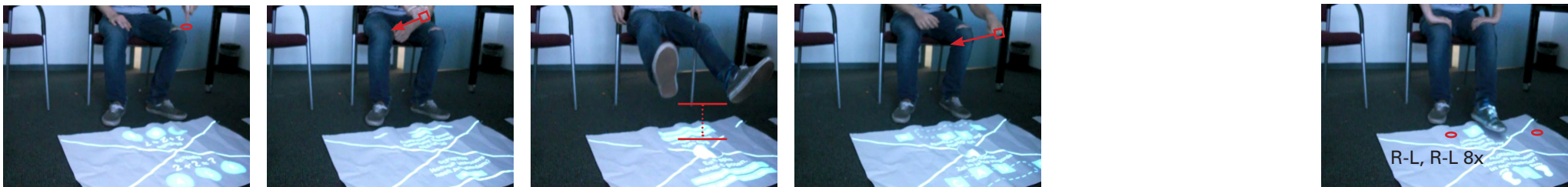
P2



P3

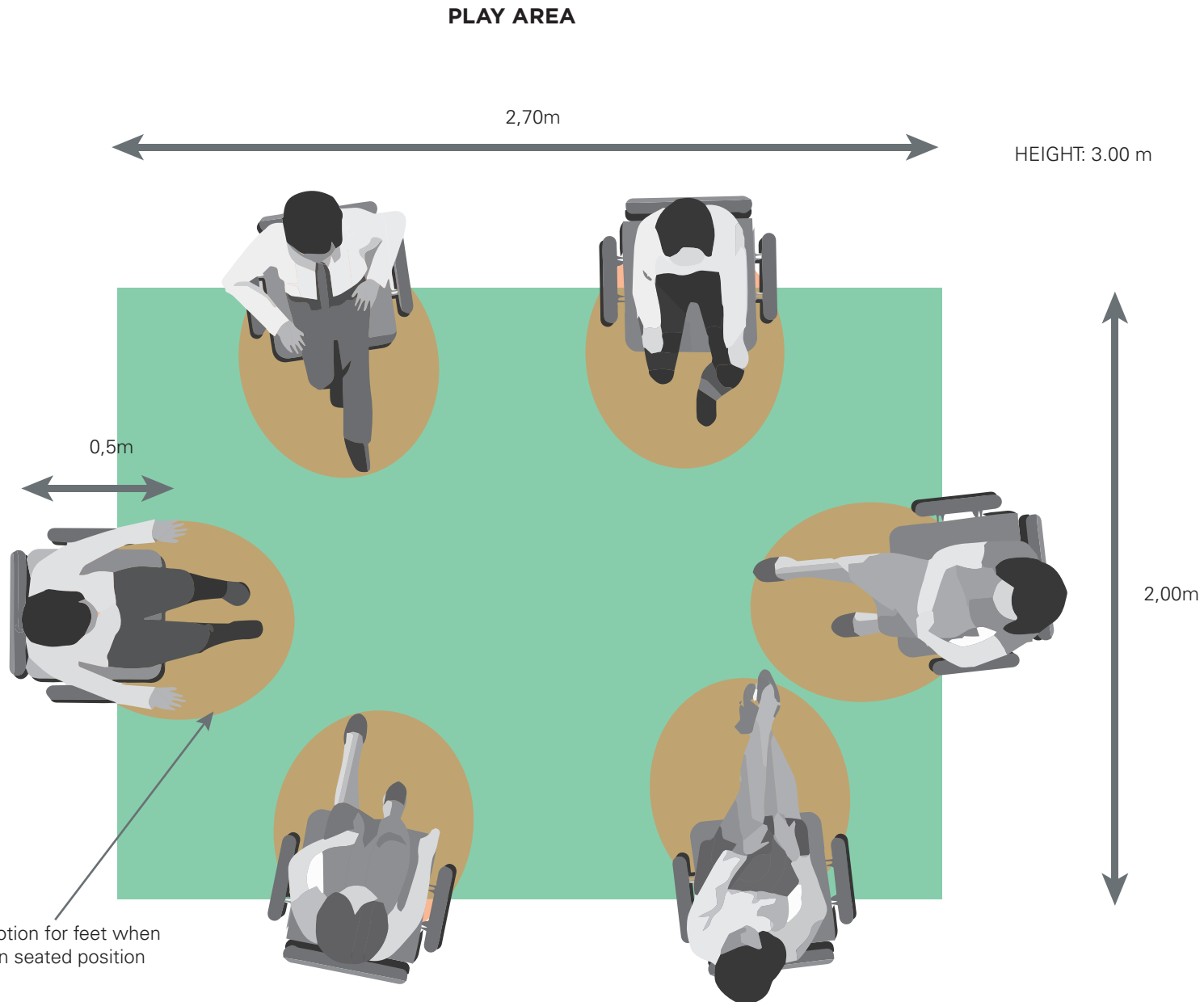


P4

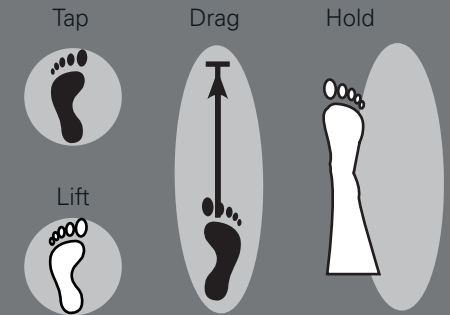


F. CONCEPT ITERATION

F.1 ITERATION MAIN CONCEPT 'MUSIC MAKER'



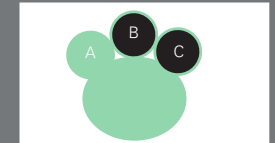
CUES



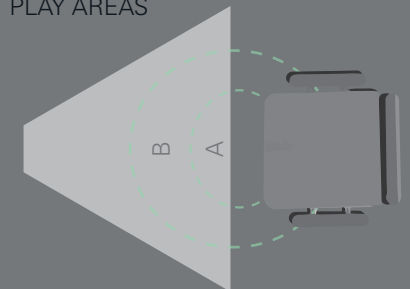
Activate options



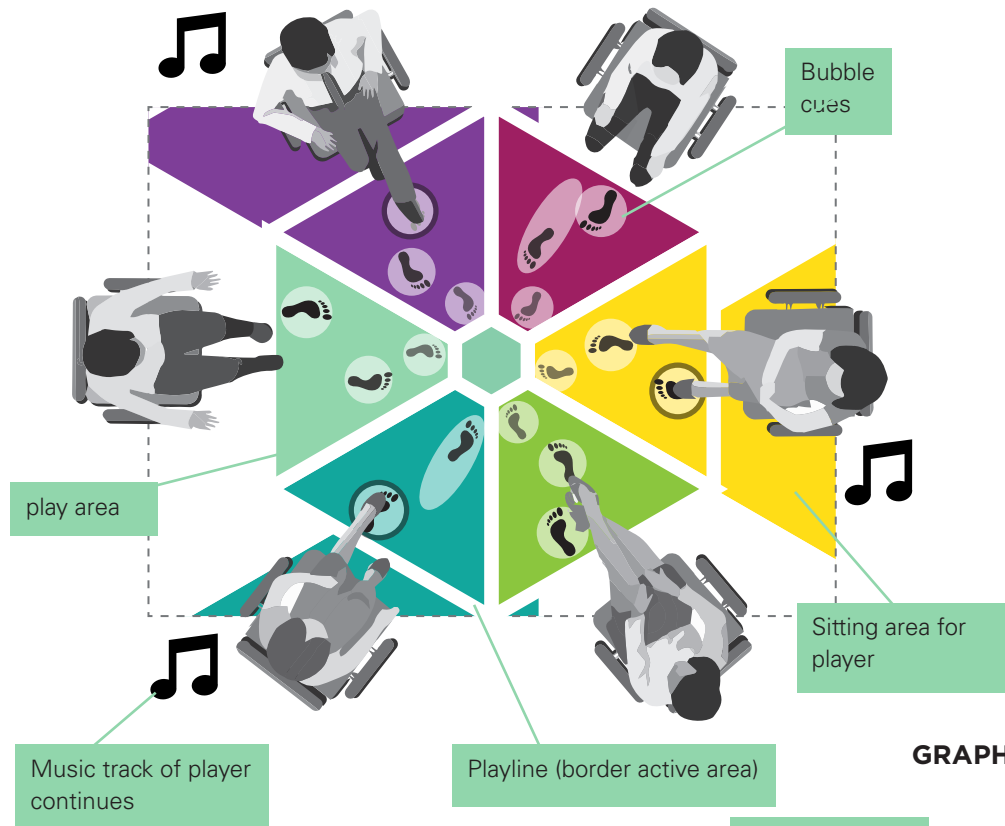
Select



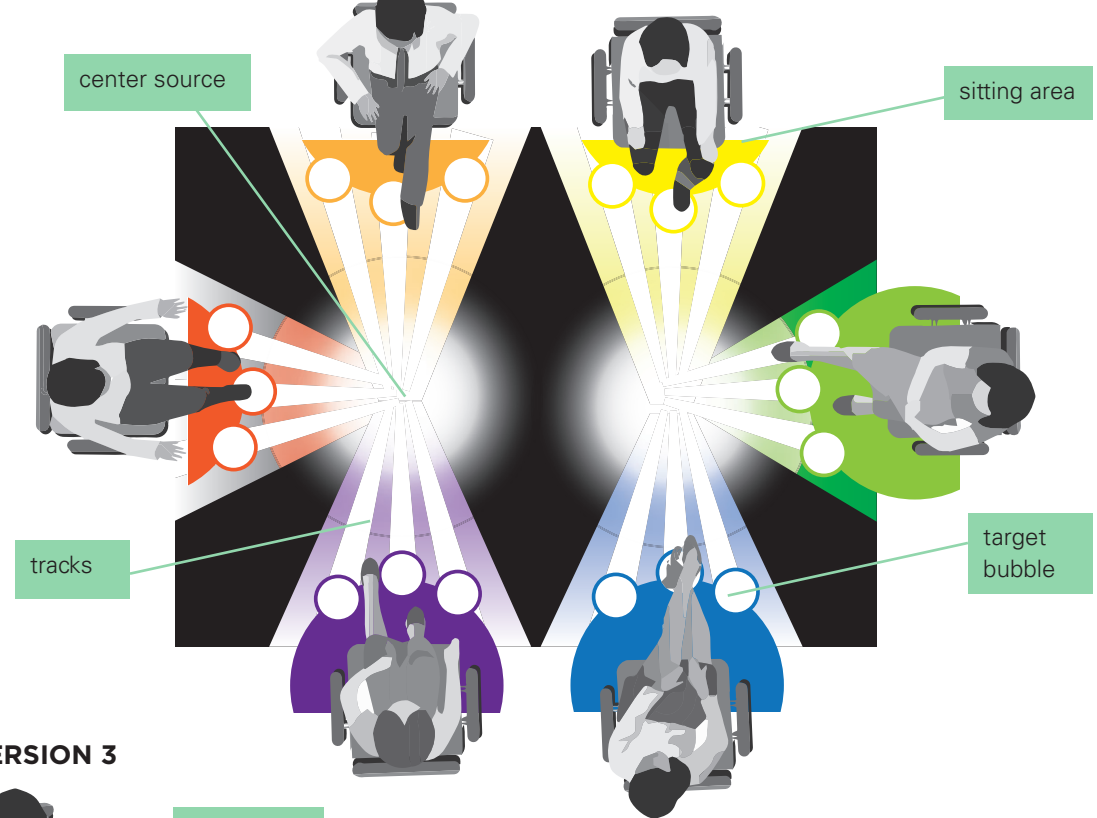
PLAY AREAS



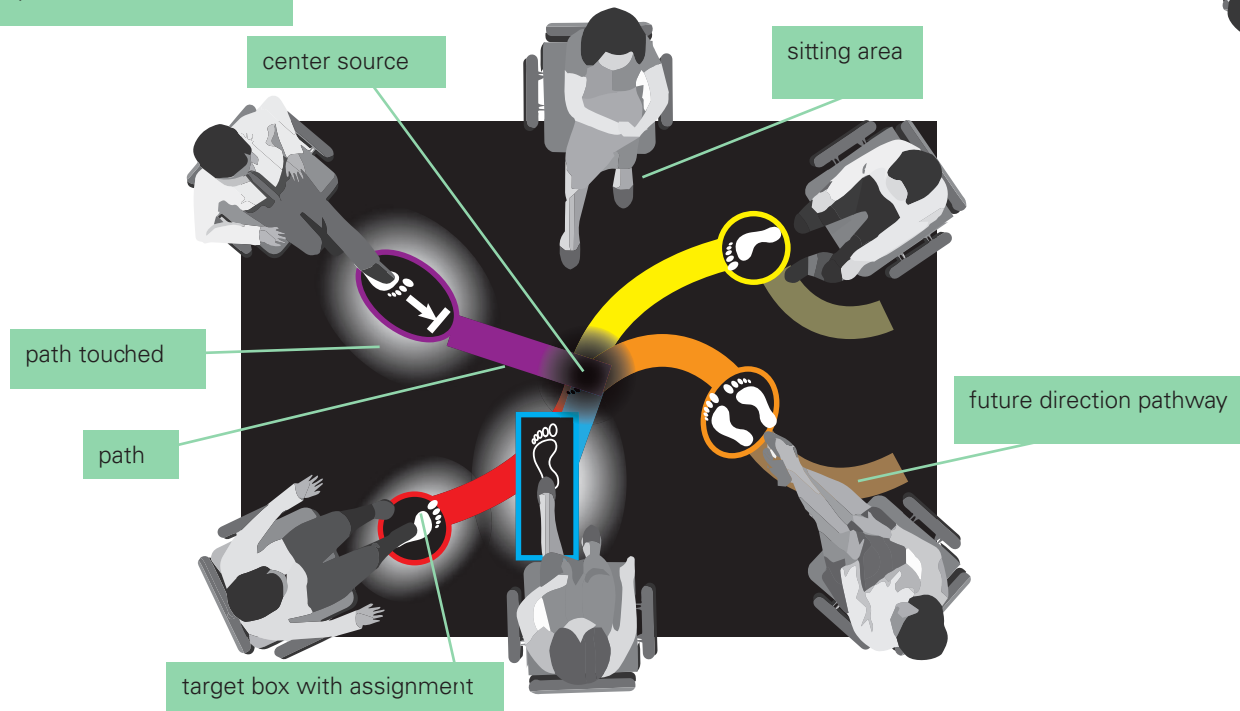
GRAPHIC VERSION 1



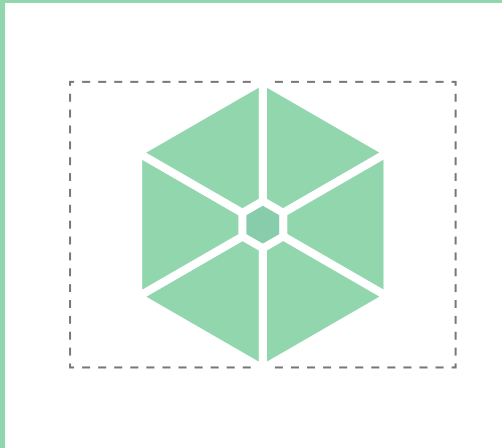
GRAPHIC VERSION 2



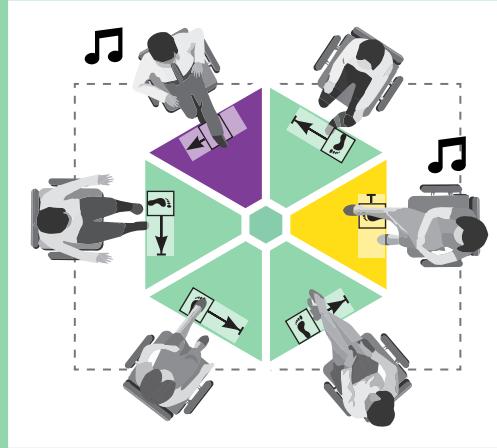
GRAPHIC VERSION 3



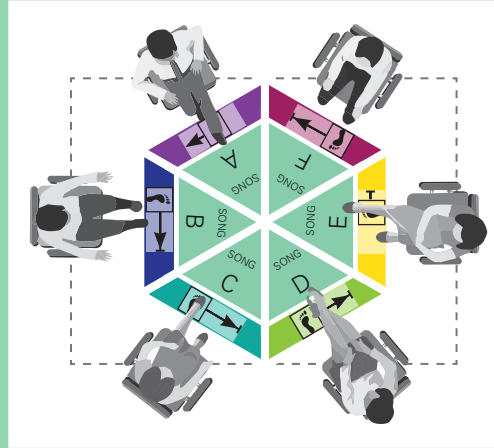
F.2 ITERATION ON SCENARIO OF USE



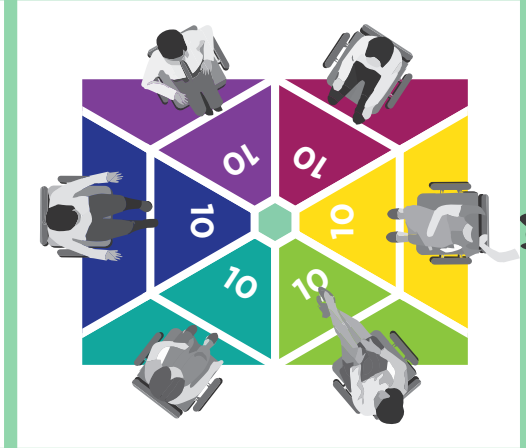
SCREENSAVER MODE: shown when game is activated and players can be positioned. If movement is detected in a play area, sliders for player activation appear.



ACTIVATE PLAYER MODE: each player activates the area by sliding the cue. When activated, a play area colors and activation sound is played.



SONG SELECTION MODE: players select song by the first one sliding. Activation sound is played and all other songs & sliders disappear.



START SONG: system counts down until start song and flashes each area for each count.



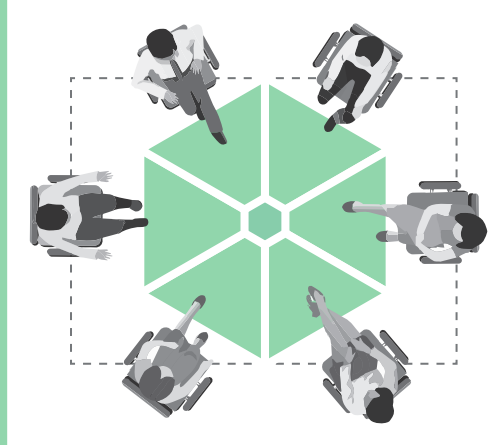
PLAY MODE - CORRECT MOVE:

- outline of cue is colored
- music of particular track is continued
- color of sitting area is filled

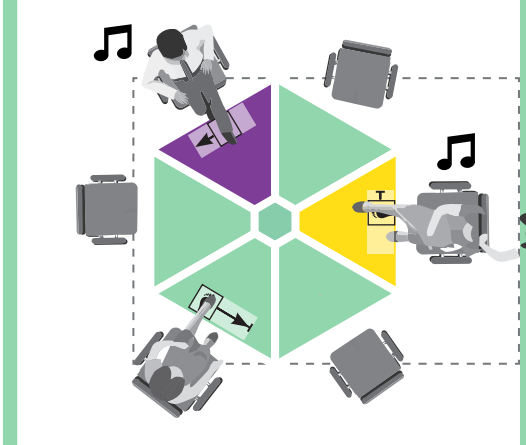


PLAY MODE - LEVEL UP/DOWN:

- after 10 correct/wrong moves in a row, level adjusts automatically for this player



FINISH SONG MODE: after the last cues of the song, the play areas fill up with green and music finishes.



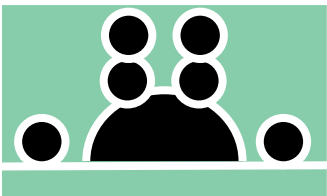
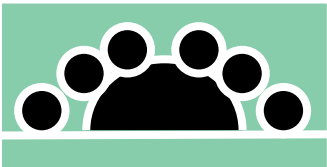
NEW GAME: players could leave/join and change, as game starts with activation of players again.

PLAY MODE - WRONG MOVE:

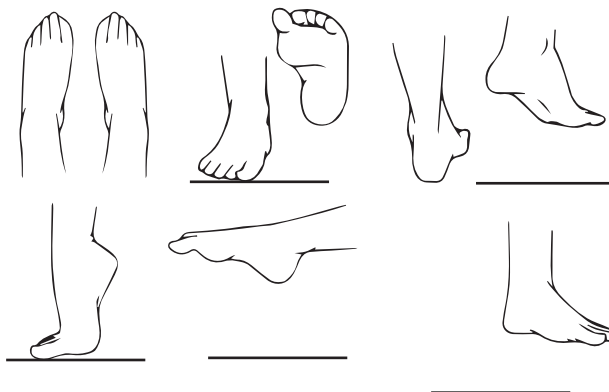
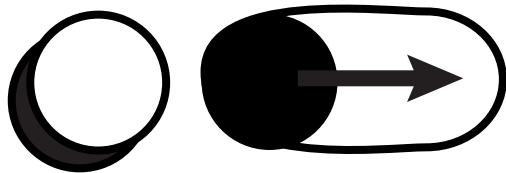
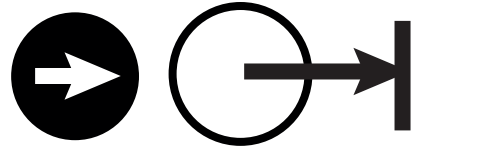
- outline of cue is NOT colored
- music from particular track mutes
- color of sitting area is not filled

F.3 ITERATION ON INTERACTIONS

LAYOUT TARGET BOX



VISUAL CUE



OPTIONS FOR GAME MECHANICS

SPELVORMEN

A) Liedje
ieder eigen track (instrument), samen muziek laten spelen

B) Liedje v2
ieder eigen track, samen muziek laten spelen, hoe meer spelers hoe luider.

C) Voordoen
1 persoon doet een patroon aan bewegingen voor, anderen spelen na

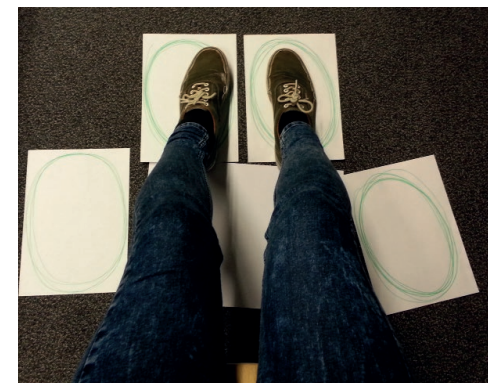
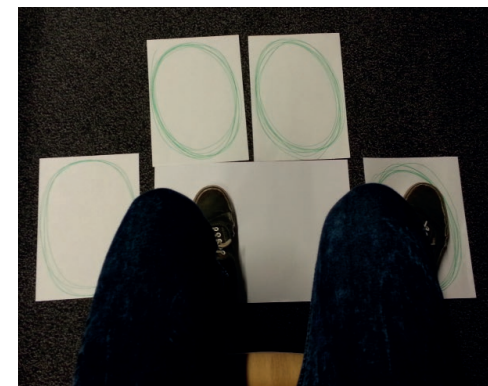
D) Solo improvisatie
ieder eigen track (instrument) zelf bewegingen/patronen verzinnen

E) Muziek maken ieder eigen track (instrument), iedere box = bepaalde noot

UITBEREIDING/ONDERZOEK

A) gebruik armen/ romp
B) Toevoegen van weerstand voor krachttraining (elastiek, gewichtjes, veren)
C) Song selection voor het spel
D) Spelen met minder mensen
E) Puntentelling

PLAY AREA PER PLAYER



F.4 MULTI-PLAYER SETTINGS

Player sits around

Player area active

Player area inactive

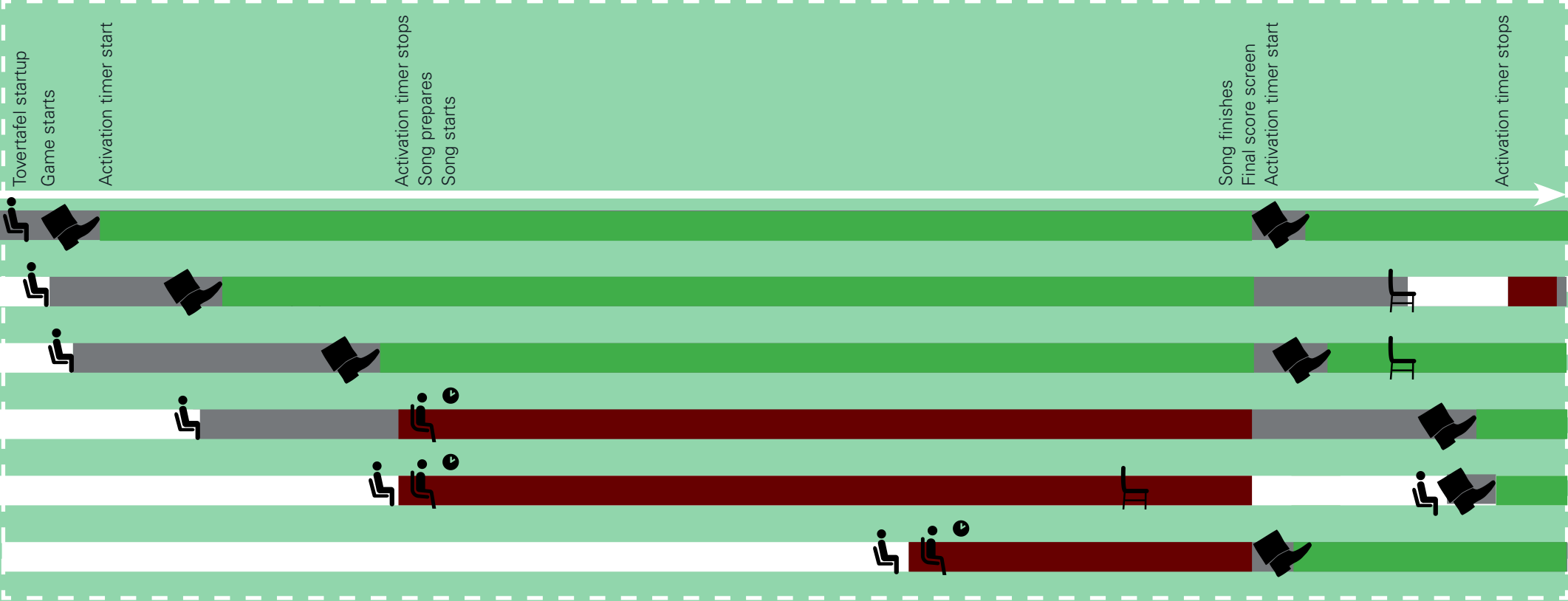
Player activates area

Player waits

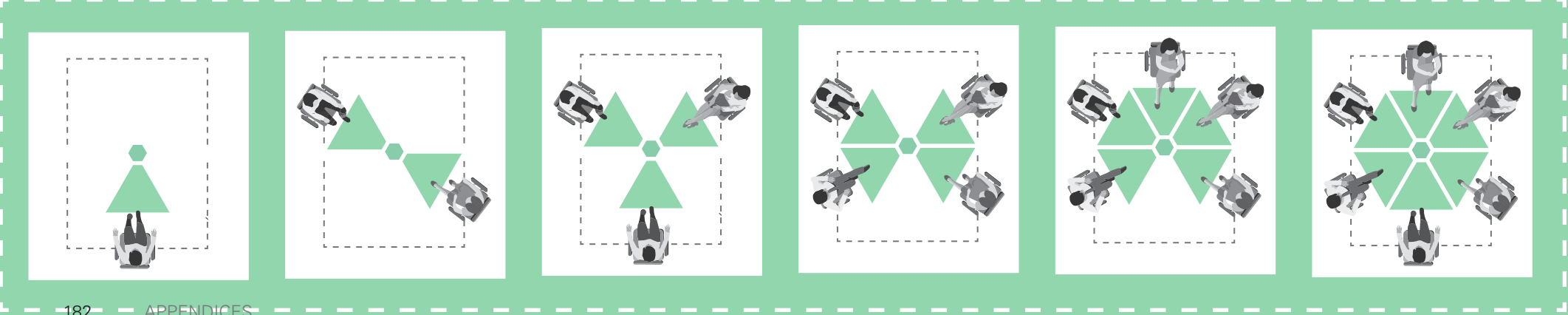
Player sits down

Player left

SCENARIO PLAYER ACTIVATION/DEACTIVATION. ONLY CONCEPTUAL, NOT IN PROTOTYPE

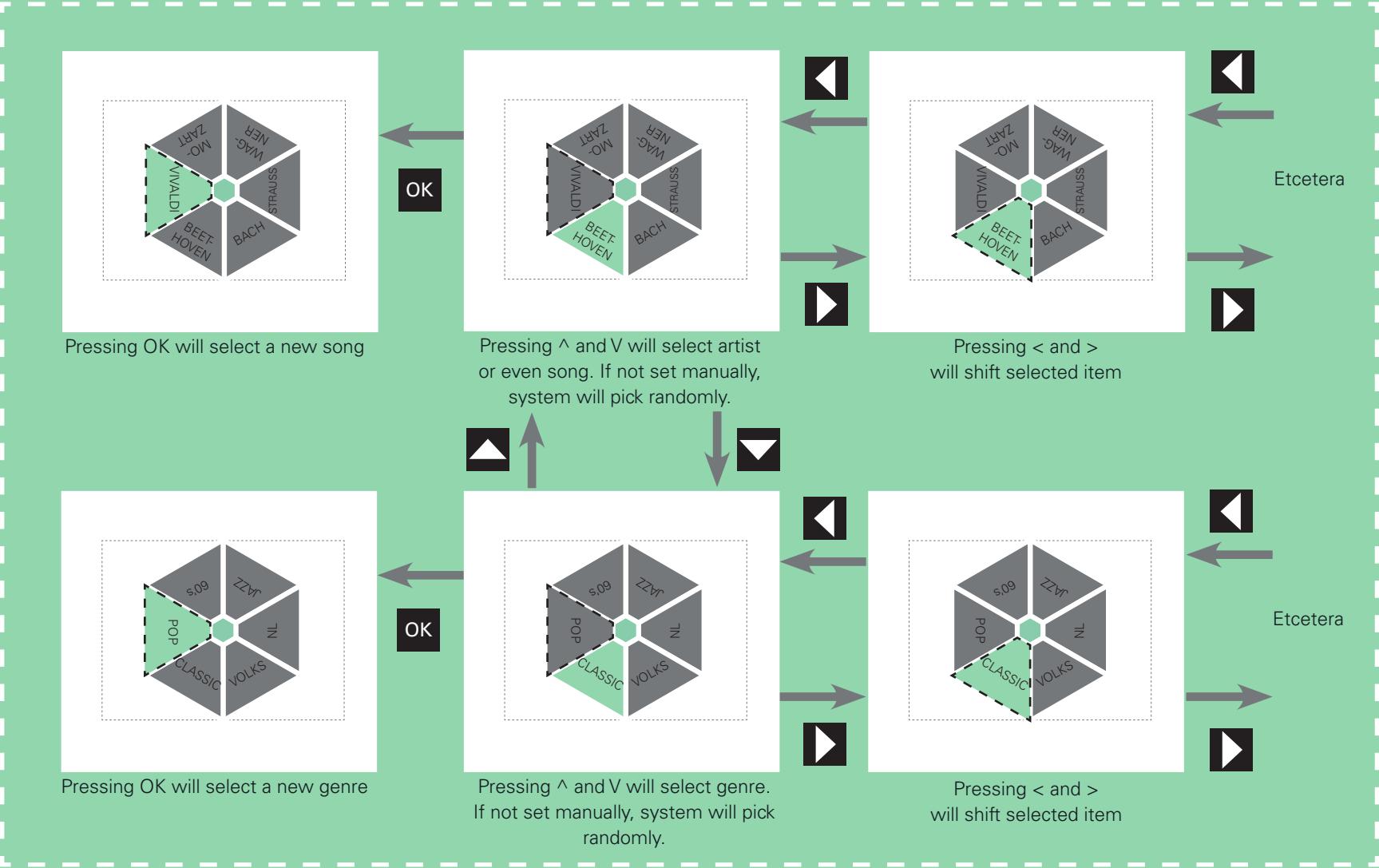


FIELD LAYOUT POSSIBILITIES FOR X NUMBER OF PLAYERS. ONLY CONCEPTUAL, NOT IN PROTOTYPE



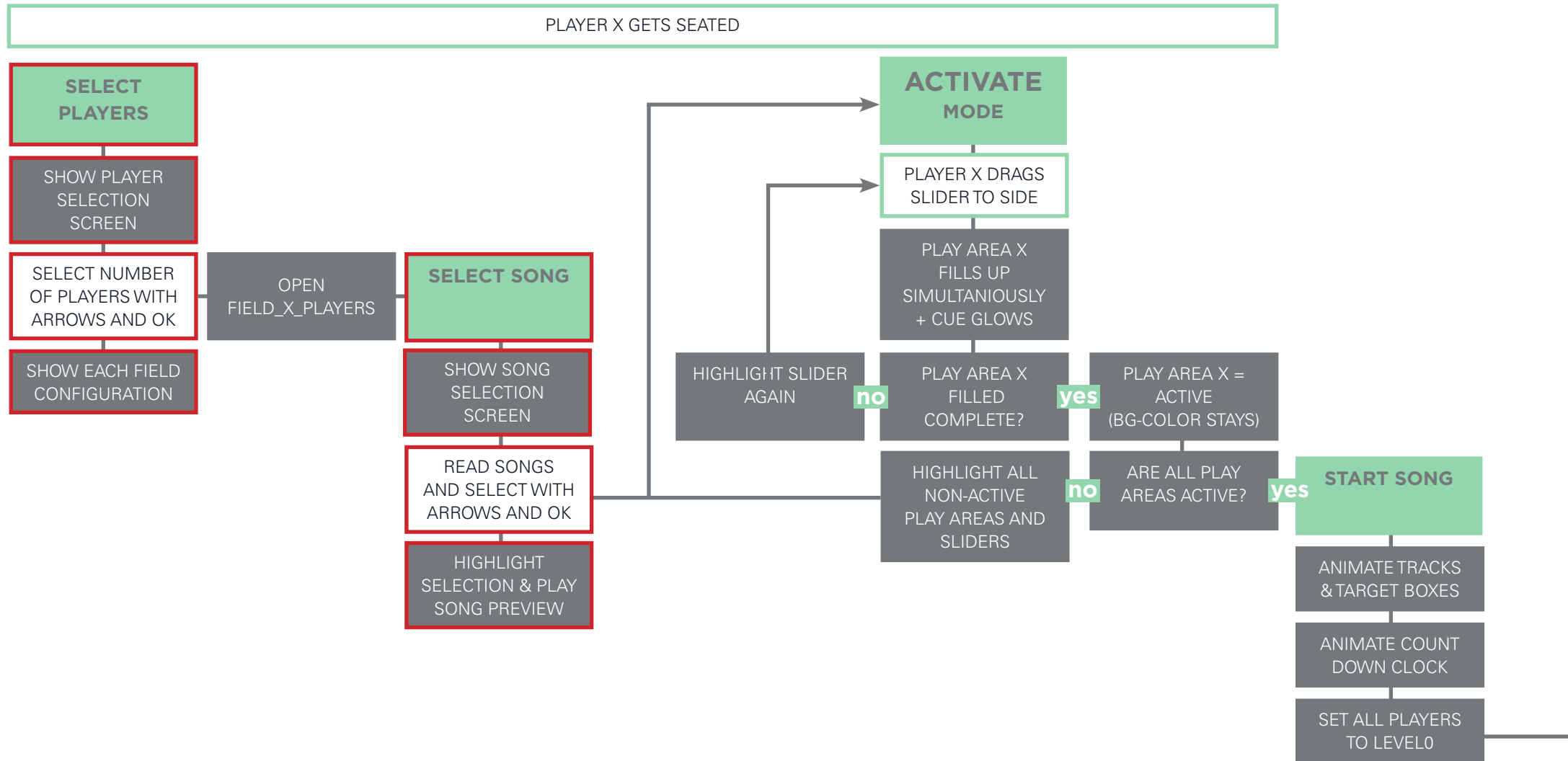
F.5 SONG SELECTION SETTINGS

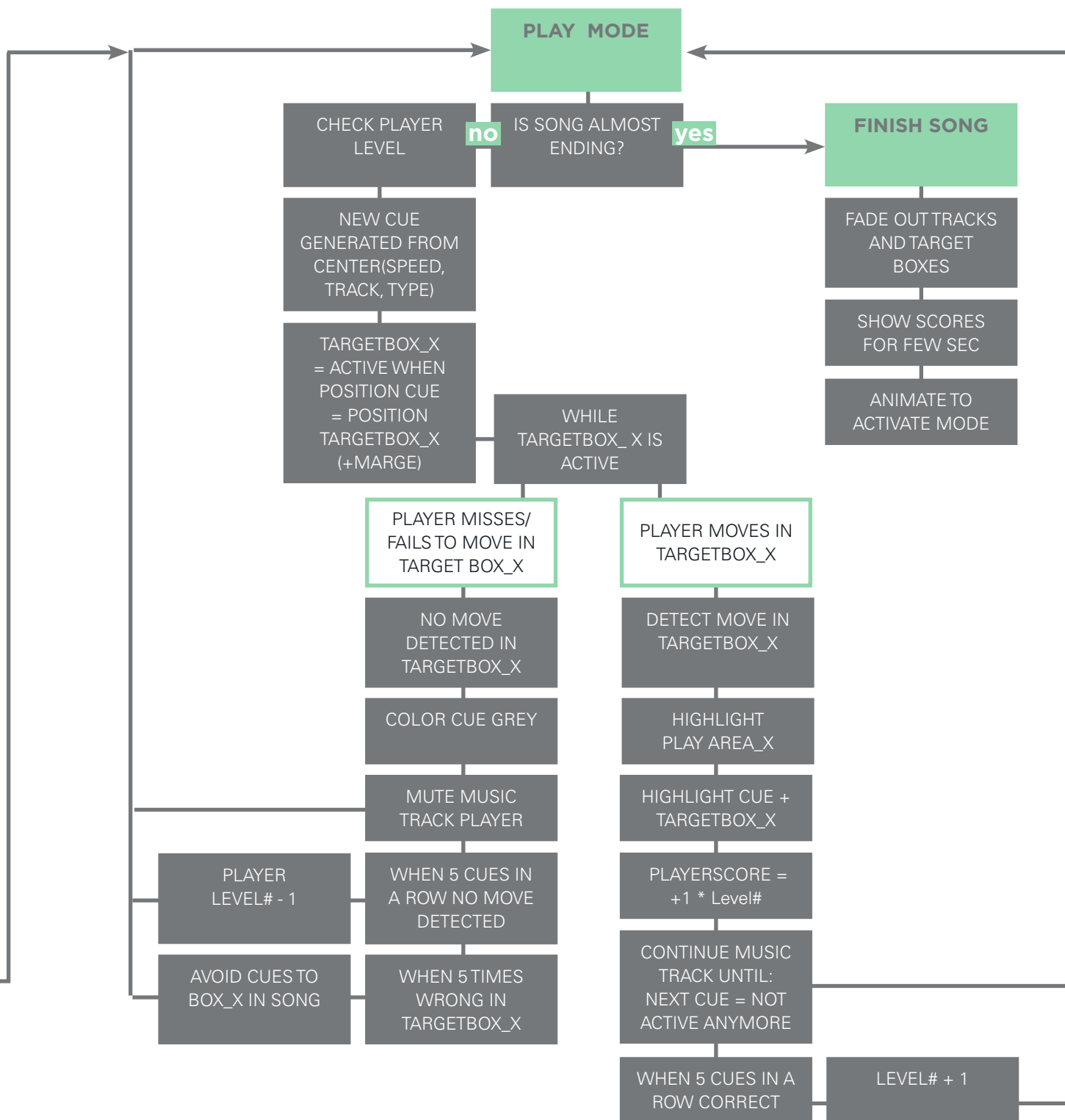
EXAMPLES FOR X NUMBER OF SONGS AND GENRES. ONLY CONCEPTUAL, NOT IN PROTOTYPE



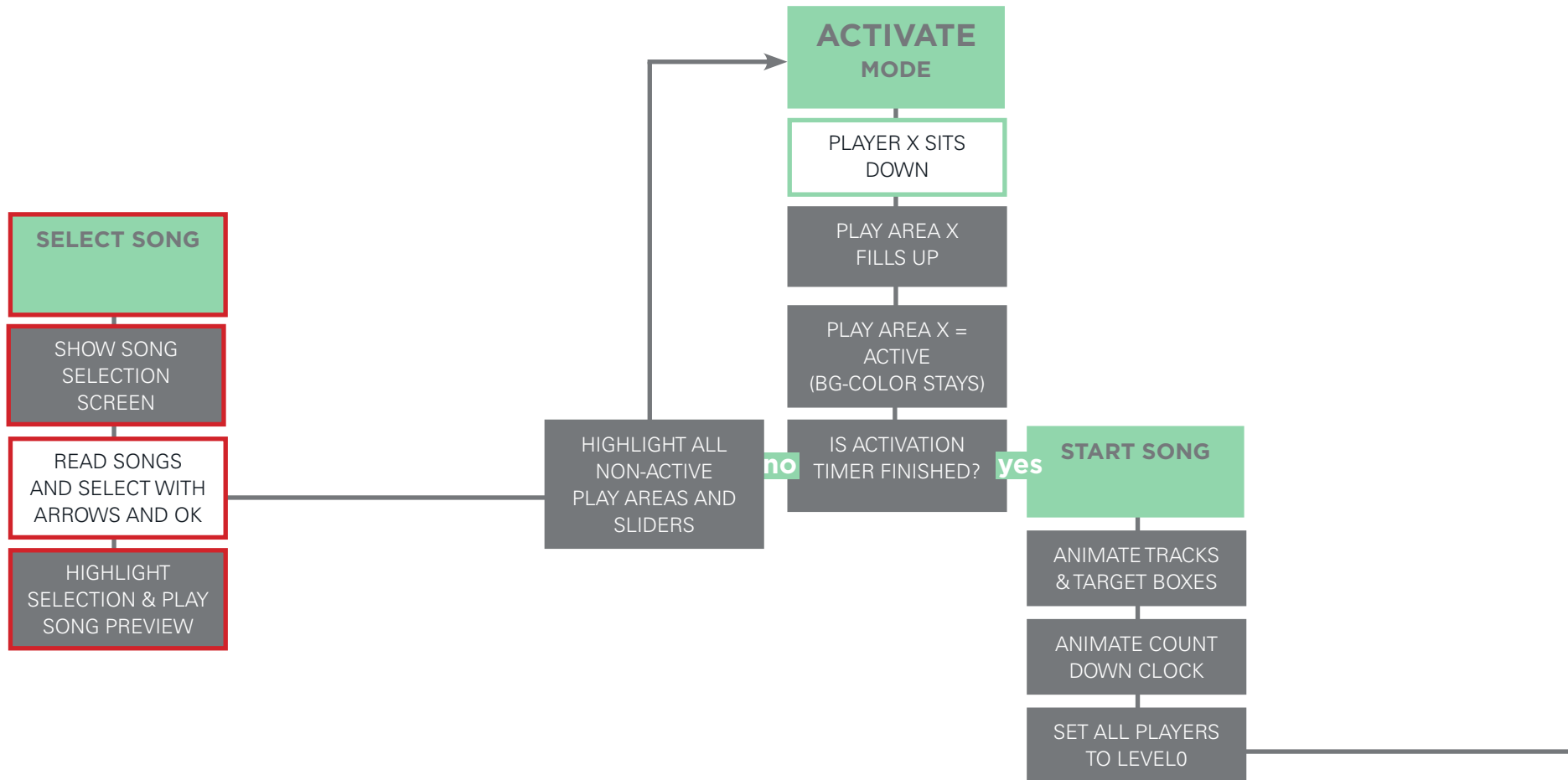
Pressing MENU button toggles
menuscreen open or close
(back to previous screen)

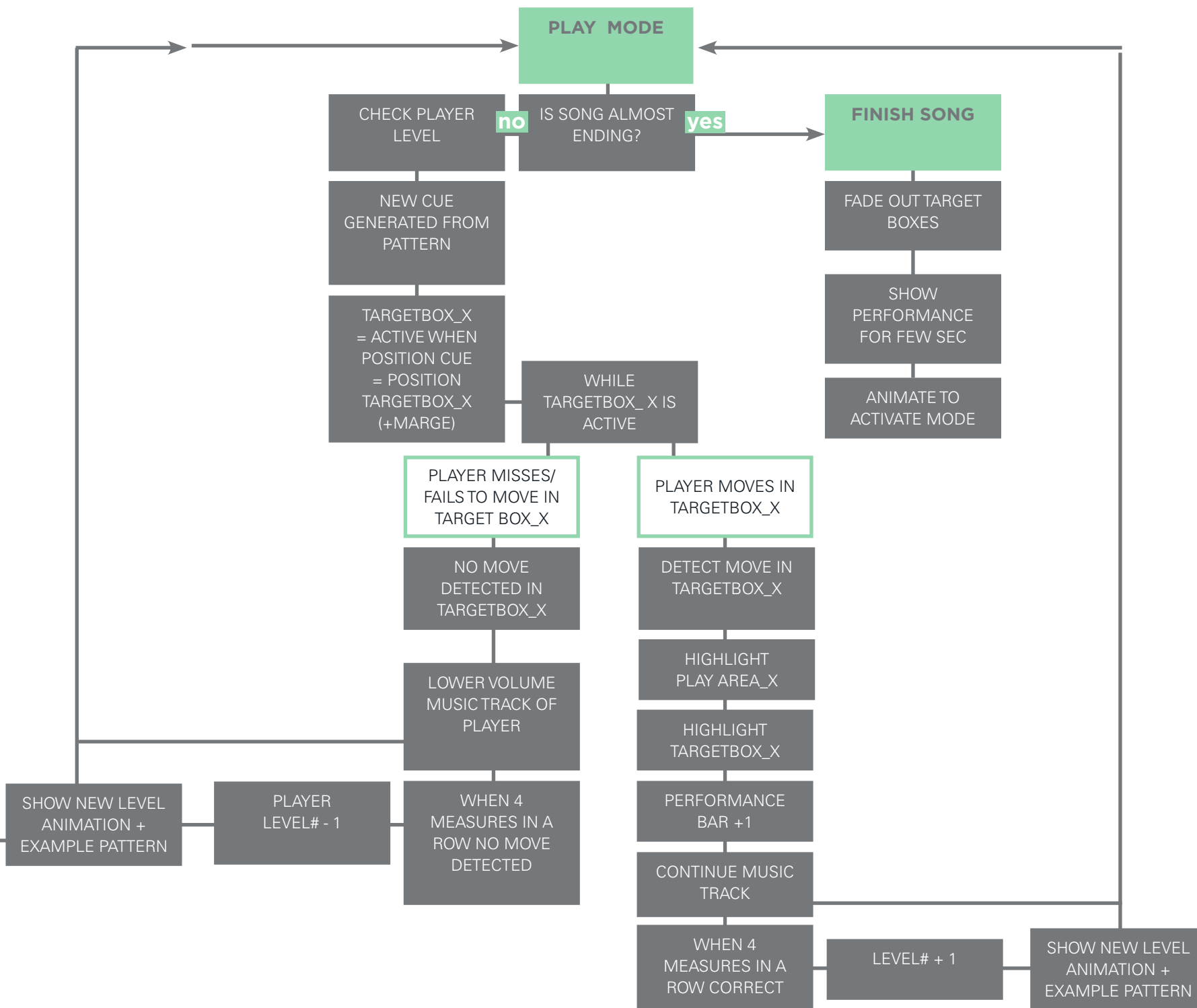
F.6 INTERACTION FLOWCHART PROTOTYPE V1



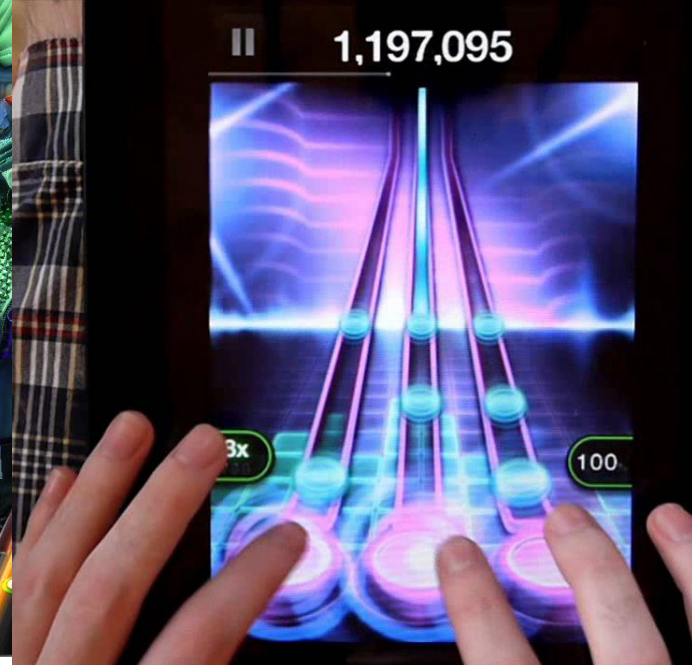
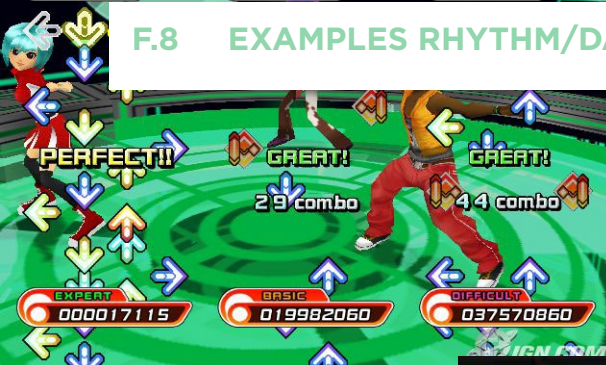
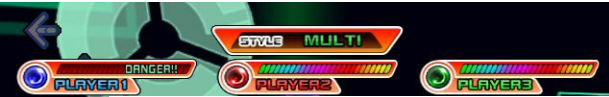


F.7 INTERACTION FLOWCHART PROTOTYPE V2





F.8 EXAMPLES RHYTHM/DANCE GAMES



DANCE DANCE REVOLUTION

Exergame focused on rhythm by standing leg movement. Player should react on arrow shaped cues which are sliding up the screen in front. When the player jumps on the corresponding area on the individual play mat, the player scores points. The game is dynamically adjusting the difficulty of patterns according to performance of the individual player (within a chosen main difficulty level). Players can select a song beforehand. Sensor and projector are at different positions (tv screen and sensor mat)

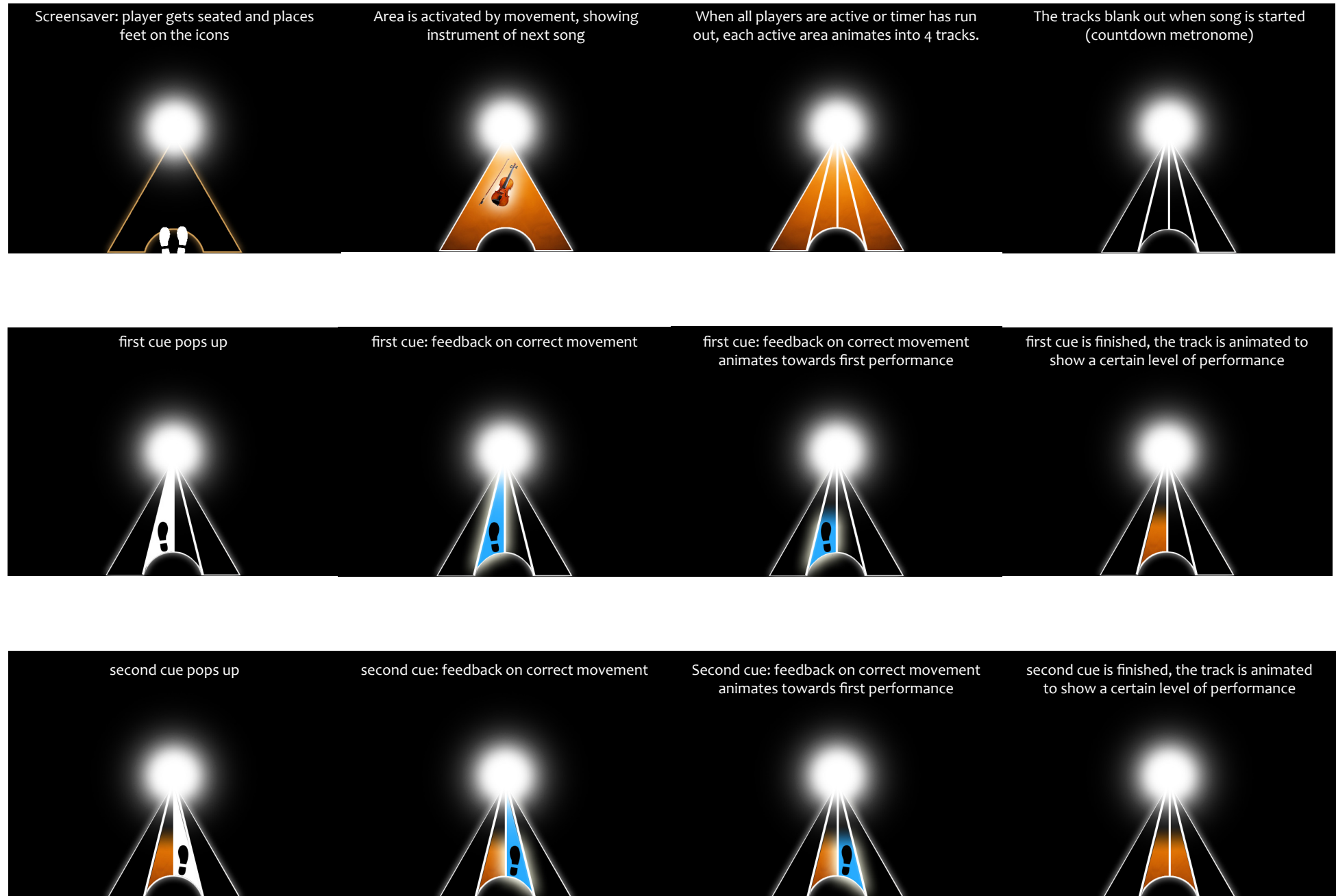
TAP GAMES

Rhythm game focused on coordination and fine motoric skills(depending on medium of play: guitar, ipad, or key board). Player should react on bubble cues which are sliding down towards the player in the screen in front. When the player taps on the corresponding target box when the cue arrives, the player scores points. The game is dynamically adjusting the difficulty of patterns according to performance of the individual player (within a chosen main difficulty level). Players can select a song beforehand. Songs get unlocked by reaching certain number of points.

DANCE GAMES

Dance game focused on copying proposed moves of the avatar. When the player correctly moves and the sensor recognizes this move, points are scored. gesture recognition is used. The game is dynamically adjusting the difficulty of moves and speed according to performance of the individual player (within a chosen main difficulty level). Players can select a song beforehand.

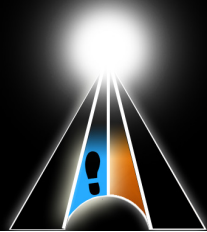
F.9 PROTOTYPE 2: SCENARIO



third cue pops up



third cue: feedback on correct movement



third cue: feedback on correct movement animates towards new performance of this track



third cue is finished, the track is animated to show the new level of performance



fourth cue pops up



fourth cue: feedback on correct movement



fourth cue: feedback on correct movement animates towards new performance of this track



fourth cue is finished, the track is animated to show the new level of performance



after sufficient number of correct moves, level up: new exercise is shown for fifth cue (e.g.: outside tracks)



fifth cue: feedback on correct movement



fifth cue: feedback on correct movement animates towards new performance of this track



fifth cue is finished, the track is animated to show the new level of performance

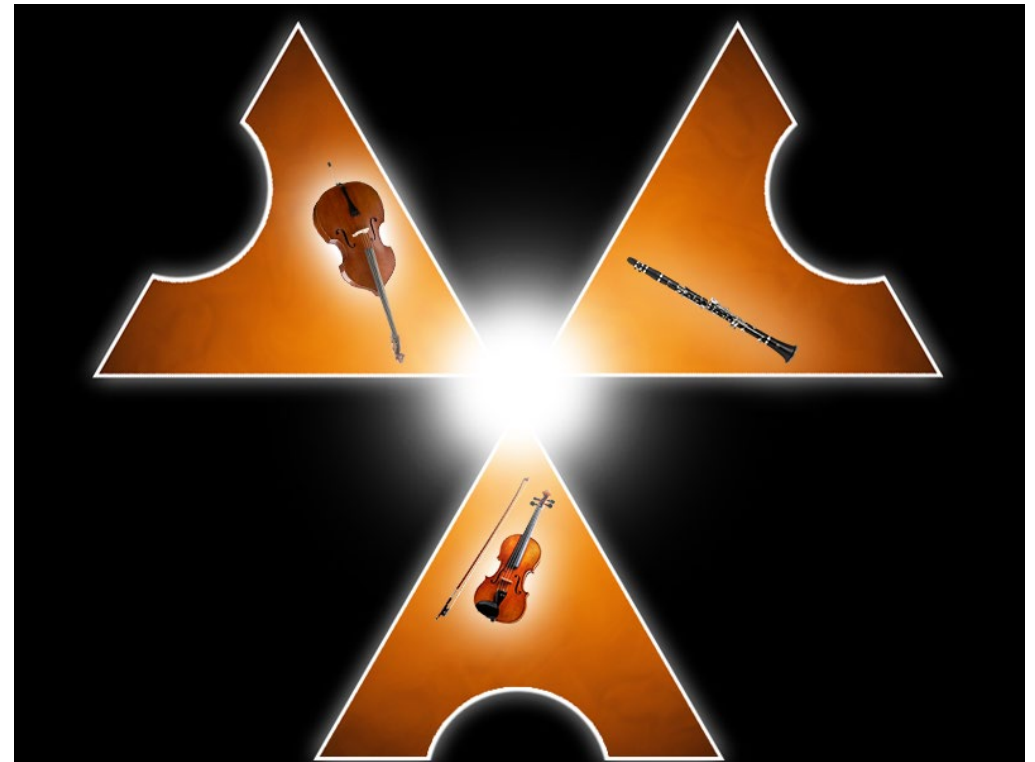


F.10 PROTOTYPE 2: VISUALS

All play areas active (6 players)
Each play area has 4 tracks



Three play areas after activation process. Instruments are shown in start procedure.

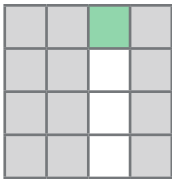
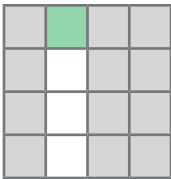


F.11 CONCEPT FOR PROTOTYPE2: EXERCISE PATTERNS

only 4/4 beats per bar, on 4 positions possible

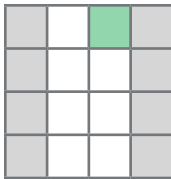
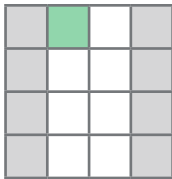
LEVEL 1

Speed: 1 per bar
Tracks: 1
Combo: only singles



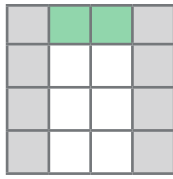
LEVEL 2

1 per bar
2
only singles



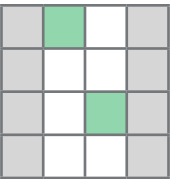
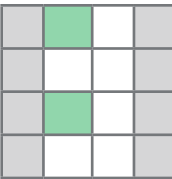
LEVEL 3

1 per bar
2
doubles



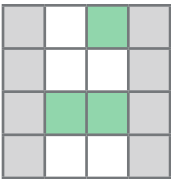
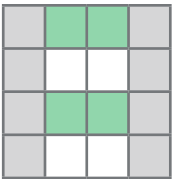
LEVEL 4

2 per bar
2
only singles



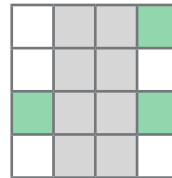
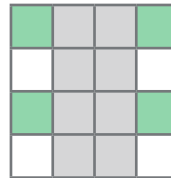
LEVEL 5

2 per bar
2
singles + doubles



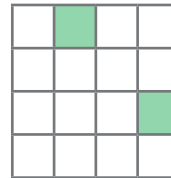
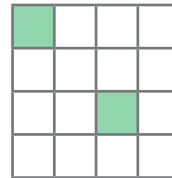
LEVEL 6

Speed: 2 per bar
Tracks: 2
Combo: only outsides



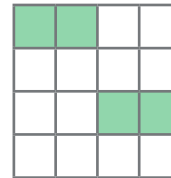
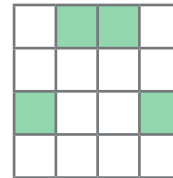
LEVEL 7

2 per bar
4
-



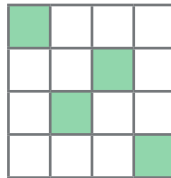
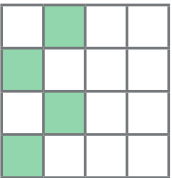
LEVEL 8

2 per bar
4
swing both feet



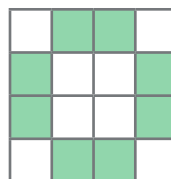
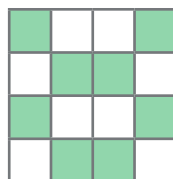
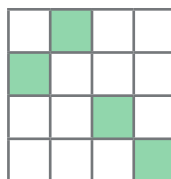
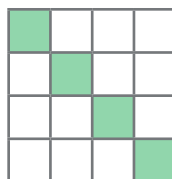
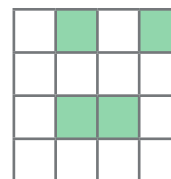
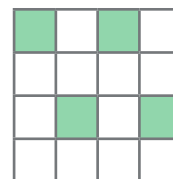
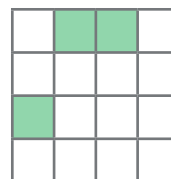
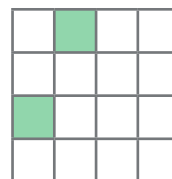
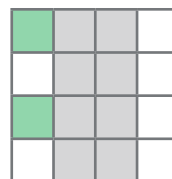
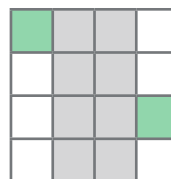
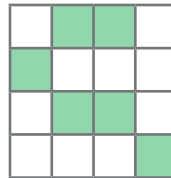
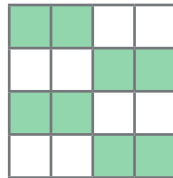
LEVEL 9

4 per bar
4
singles



LEVEL 10

4 per bar
4
swing/dubbles



F.12 PROPOSED MUSICAL CONTENT

To be able to list recommendations about musical content, three music therapists specialized in elderly care are asked for their feedback on suitable music (styles, artists) regarding the game concept. Their input has been concluded as follows:

- **Suitable genres**

All three music therapists indicate that the preferred music comes from the years when the elderly were in puberty or adolescence (15-25 years). If the targeted age of players is known, the musical style can be calculated back to these years. There seems to be no difference for cognitive healthy elderly and people with dementia in this regard, although for dementia the younger years stay most clearly remembered.

Most likely, dance music from 30's – 50's will suit most players. Furthermore, Dutch folk music, original school songs and regional anthems are popular as they are easily recognizable (and often sang) by a large population. As musical taste is increasingly varying since the younger generations start to live in nursing homes, also 60's, rock'n'roll, rock music may be a suitable genres.

Furthermore, classical music is preferred by many older adults. Nevertheless, such music is mostly written as complex compositions, lots of countermelodies and layers of instruments better suitable for listening than for dancing. However, sub-genres of Waltzes and Marches are suitable classical music as they have clear hearable count and cadence. For example Andre Rieu works well for elderly, because the music is often predictable and easy to the ear.

- **Beat types and tempo**

In general, the music therapists recommend up-tempo and happy songs using a clear beat. 4/4 or 3/4 beat types are usually triggering to dance or move. However, too large BPM should be avoided.

- **Melody**

Although beat type is important for evoking dance and sway, melody is often recognized and remembered best. Old popular songs for singing purposes are therefore also recommended by the music therapists, as they trigger positive memories easily.

- **Licences and rights**

Presenting music publically will require the company or nursing home to have the correct licences available. Buma-stemra arranges licences and rights for using music in audio-visual productions as games and for reproduction and presenting in different situations. Music therapists were not completely informed about how this works, but they indicated that usually nursing homes already need licences for presenting audi-visual content. Furthermore, in general, music is free for use after 70 years from date of decease of the composer.

- **Testing**

To conclude, a list of suggested artists and songs is created, based on the advice from the music therapists and feedback from the target group during the play-tests. However, none of the items on this list are currently checked for licences or buma-right costs, but it is only a suggestion for suitable music. Overall, it is recommended to test this list with the target group and to keep iterating in order to match the content of the game with its players.

MUSIC THERAPISTS CONTACT INFO

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Hartmelodie - muziektherapie
www.hartmelodie.nl
mirjam@hartmelodie.nl
06-555 444 43

Monique de Langen
Muziek op Maat
Alberikpad 10
3833 BV Leusden
06-512 17 377
monique@muziekopmaat.net

Jennifer Zantopp
Muziektherapeut Reflectieklanken
<http://www.reflectieklanken.nl/>

EXAMPLES OF RECOMMENDED SONGS

Waltz

- 'the second waltz'
- ' and the waltz goes on
- ' emperor waltz'
- 'The skaters waltz'
- 'russian waltz'
- ' king of waltz'
- 'An der Schönen Blaue Donau'

Classical

- de Orkestsuite no.2 Badineert van Bach
- de 'Bolero' van Ravel
- de vier jaargetijden van Vivaldi.

March:

- It's a long way to Tipperary
- Colonel Boogie Mars
- 'oh when the saints'
- Koning Voetbal mars
- Washington Post
- The Star and Stripes forever.

60's

- Tom jones
- Abba
- Elvis
- johnny cash
- 'Twist and shout'
- 'Runaway'
- beatles

Dutch

- 'Ik heb je voor het eerst ontmoet, daar bij de waterkant'
- 'De paden op, de lanen in'
- 'zoek de zon op'
- 'Tulpen uit Amsterdam'.
- ' ik zou wel eens willen weten'
- ' omdat ik zoveel van je hou'
- 'wat een geluk'
- 'de familie van tutte'
- moeder'
- ' fluitliedje'
- ' zeg kleine schooljuffrouw'
- 'samen'
- ' zambesi'
- ' de olieman'
- ' draaien maar'
- ' twintig kleine vingers'
- ' Batje vier'
- ' Daar bij die molen'
- ' Strohoedje'
- ' De pil'

G. EVALUATION

G.1 PLAYTEST 1

Combined results of all three participants of the pre-test and post-test questionnaire.

LEEFTIJD:

85

81

85

DEZE (SPORT OF HOBBY) ACTIVITEITEN DOE IK VAAK:

fysio gym, **fysio gym**, **play cards**, **computer games**

OP DIT MOMENT GEEF IK MJN ALGEMENE FYSIEKE GESTELDHEID EEN:



OP DIT MOMENT GEEF IK MIJN MOBILITEIT EEN:



LEGEND:

Participant 1

Participant 2

Participant 3

	TOTAAL ONEENS	<----->			TOTAAL EENS
Plezierig? (pleasurable)	0	0	0		
Fysiek zwaar? (physically demanding)	0	0	0		
Vaardigheid-onafhankelijk? (skill-independent)	0	0	0		
Ervaring gericht?(experience-focused)	0	0	0		
Meeslepend? (immersive)	0	0	0		
Samenwerking? (social)	0	0	0		

G.2 INTERACTION QUALITIES EVALUATION

results questionnaire after playtest 1 and 2. Participants rated the interaction qualities

	strongly disagree	disagree	neutral	agree	strongly agree
pleasurable	0.0	0.0	1.0	4.0	3.0
immersive	0.0	1.0	2.0	4.0	1.0
skill-independent	0.0	1.0	1.0	5.0	1.0
experience focused	0.0	1.0	2.0	4.0	1.0
social	0.0	0.0	0.0	3.0	5.0

	TOTAL
PLAYTEST 1	3
PLAYTEST 2	5

Betreft: Geïnformeerde toestemming Tovertafel speltest

Beste heer, mevrouw,

Ik ben Nina van Adrichem en ik doe mijn afstudeerproject voor Industrieel Ontwerpen bij Active Cues, de Tovertafel. Samen met verschillende zorginstellingen zorgen wij ervoor dat alle Tovertafel spellen perfect aansluiten op de doelgroep. Dit doen we bijvoorbeeld door de spellen zo veel mogelijk te testen met de doelgroep en te leren van deze ervaringen. Het plezier en geluk van u staat hierbij voorop!

DE TOVERTAFEL

De Active Cues Tovertafel is een speels product voor ouderen, dat interactieve projecties op tafel maakt. Echter, dit afstudeerproject is gericht op het onderzoeken van een nieuwe product richting voor Active Cues, namelijk door de projecties op de vloer te richten. Interactieve spellen reageren op voet en been bewegingen (vanuit stoel) en stimuleren de deelnemers zowel in fysieke activiteit, cognitie en sociale interactie. De Tovertafel is ontwikkeld tijdens het vierjarige promotieonderzoek van Hester Le Riche, voor een groot deel in samenwerking met de doelgroep zelf. Om ook de nieuwe spellen van dit afstudeerproject perfect aan te laten sluiten op de behoeften en wensen van de doelgroep, is het belangrijk om de doelgroep te betrekken bij de ontwikkeling door middel van playtests.

PLAYTEST

Voor een playtest wordt het spel aangezet op de Tovertafel en in kleine groepjes gaan de deelnemers hiermee spelen. Observaties worden gemaakt en indien nodig wordt er meegespeeld. De sessie zal niet uw bekwaamheid 'testen', maar juist het spel zal inhoudelijk worden getest om verbeterpunten in het ontwerp te kunnen identificeren. Na het spelen wordt door iedere deelnemer een vragenlijst ingevuld en wordt de ervaring en mening van de deelnemers besproken. De playtest zal worden opgenomen om interacties te analyseren voor verdere ontwikkeling van het spel.

BEELD MATERIAAL & RESULTATEN

In verband met het doen van observaties is het voor mij van belang foto en video opnames te maken. Indien u aangeeft dit niet prettig te vinden, wordt hier uiteraard rekening mee gehouden. De gemaakte foto's en video's worden niet zonder uw toestemming op de afstudeerpresentatie vertoond of in het thesis rapport geplaatst. De resultaten van alle playtests worden beschreven in het thesis rapport, welke gepresenteerd wordt aan de leden van het project team en de coaches. Uw naam zal nooit worden gebruikt in het rapport, evenals uw naam nooit aan de data zal worden gelinkt.

Met bijgaand formulier vragen wij om uw toestemming voor het meedoen aan de speltest. Heeft u vragen, neem dan gerust contact op met mij.

Met vriendelijke groet,

Nina van Adrichem
Student Industrieel Ontwerpen
Technische Universiteit Delft
Tel: 06-39885884

GEINFORMEERD TOESTEMMINGS FORMULIER

Ja, ik neem graag deel aan playtest op deze zorglocatie voor de ontwikkeling van nieuwe Tovertafel spellen.
Ik heb dit toestemmingsformulier gelezen en begrijp de opzet van de studie. Al mijn (eventuele) vragen zijn naar tevredenheid beantwoord.

Zorglocatie: Careyn Waerdblok

Naam: Schiereiland 51

Adres: Naaldwijk

Telefoonnummer: 06-10574097

E-mailadres: g.sittes@careyn.nl

Hierbij geef ik ☒ WEL / ☐ GEEN toestemming voor het gebruiken van foto's en filmpjes waarop ik te zien ben in het afstudeerrapport of de afstudeerpresentatie.

bewoners: Ans Schutter - Westra.
Helders uit buurt

Fr Groenelboer

m. Spunnen
24/07/2016

Datum:

Plaats: Naaldwijk

Handtekening: _____

G.4 EVALUATION INTERVIEWS PHYSIOTHERAPIST

DAVID VAN OOIJEN , PHYSIOTHERAPIST , 3/8/2016, SCHIPLUIDEN

GENERAL

1. WHAT IS YOUR OPINION ABOUT THE CONTENT OF THE GAME?

This is a very nice game, definitely fitting the problem of inactivity! It is both stimulating in physical way, cognitive (coordination) and also very much in a social way. I like the simplicity. It is already a win situation if the elderly people are out of their rooms, have a nice time together, or at least have something to share. Everyone can play at their own level, but they are playing in teamwork and also look at each other's performance, this is actually what motivates elderly very much.

2. TO WHAT EXTENT DO YOU THINK ELDERLY PLAYERS CAN DO THIS GAME INDIVIDUALLY (WITHOUT SUPERVISION)

In terms of safety, I think it is required to have a supervisor at the game. Maybe the play itself is safe for them (they do not make a lot of really strange movements and they are not forced to do movements which they cannot make, so if they get tired, they automatically stop playing usually) But supervisor is needed for example for safely positioning the players at the chairs, noticing when some players are overloading themselves (just like in the movie of your test) So physiotherapist is only really needed when the game is being implemented for physio therapeutic exercises. In all other instances, also activity counselors will be able to supervise this game. Also to keep them going, organize they will gather at the game, to lead the conversation and to motivate them, which will improve their experience of the game usually. You will have to be enthusiastic about it.

3. WHAT IS YOUR OPINION ABOUT THE INTENSITY AND OVERLOAD?

I don't think the intensity is too high in any sense. Usually they stop playing automatically if they are getting tired, or they make smaller movements. Or the supervisor can manage in this situation. All of your participants have showed movement, so that's actually very good.

4. WHAT IS THE MOST IMPORTANT ADVANTAGE OF THIS GAME?

That they have something fun to do together in a social context. This moment of pleasure is really important.

5. WHAT IS THE MOST IMPORTANT DISADVANTAGE OF THIS GAME?

I cannot think of any disadvantages.. maybe the costs of getting such a Tovertafel box. haha

EXERCISES

1. WHICH EXERCISES ARE MOST NATURAL TO DO WITH THIS GAME? WHAT IS TRAINED BY THIS?

The stamping or tapping movements are most natural. If you stamp by raising your leg, that is mostly training upper leg strength and endurance (and a bit of core muscles). If you tap by only moving ankles (heel on ground or toe on ground), this is affecting mostly lower leg muscles and joints. The exercises to outside tracks is working for mobility in the hip or knees. The faster or more complex patterns they have to follow (reacting on the lighting cues) will train their coordination of muscles, which is usually degrading slowly for elderly people.

2. TO WHAT EXTENT DO THESE EXERCISES FIT IN FUNCTIONAL MOVEMENT

(TRANSFERS, ADL) MAINTAINANCE?

Mostly prevention in general. From a physiological point of view, you will have to find the individual problems and specifically train for this in order to improve functional activity. Sometimes the level of function is perfectly fine, but people are still not participating in activities, then you will have to find the problem first.

FUNCTIONS – muscle strength, endurance, flexibility, coordination, etc.

ACTIVITY – walking, stepping, standing, raising from chair

PARTICIPATION – organized activity, ADL activity

This game is not focusing on this specific level, so I better see it as a prevention (keep in motion, stay fit) and social thing. Only if the game would be manually adjusted (by physiotherapist) in terms of exercises, specific patterns or different focus, this game could be helpful in a therapeutic setting.

3. WOULD YOU THINK OF DIFFERENT EXERCISES FOR PREVENTION AND MAINTENANCE OF FUNCTIONAL MOVEMENT/STRENGTH/ENDURANCE/COORDINATION/MOBILITY?

- If you would use different type of seating, the players are challenged to train trunk balance. Wobble seats for example, will challenge on overall balance and trunk balance when you raise legs. This effect is already taking place when you use chairs without (arm/back) support.
- Putting the cues in front of the players (extend the legs) would be a nice exercise for mobility in the knees or variation in coordination skills.
- the more the cues are changing positions, the more mobility (in hips) is trained.
- the more the cues are on unexpected places, the more coordination/ reaction time is trained.

INTENSITY

1. WHAT TIME DURATION WOULD YOU ADVISE TO CONSIDER AS MAXIMUM PLAY TIME?

Depending on how fit the people are and how dense the session is going to be. I would say, do this for 15 minutes and there is already a benefit for elderly people. I am not able to call a maximum number, maybe testing could define this, but I think people will stop if they are getting tired. Or a supervisor could assess the situation and hold back the player from overloading. Usually normal group activities are also between half an hour and an hour in total, so while taking turns with active playing, this could be feasible. This is also very much dependent on group dynamics. Also if personal challenge is well-balanced by the game, may it be by social pressure, physical challenge, or cognitive challenge, then the game would be interesting for longer periods of time.

2. WHAT TIME DURATION WOULD YOU ADVISE TO CONSIDER AS MINIMUM PLAY TIME, IN ORDER TO BE PHYSICALLY EFFECTIVE?

Any extra movement is already beneficial for elderly, especially if they already have health issues.

3. DO YOU THINK PLAYING THIS GAME WOULD BE PHYSICAL ACTIVITY?

Yes, especially if you (verbally) motivate the elderly to make a certain type of movement

(stamp, tap, heel, toe) or the system stimulates them to move more (or longer) than they would usually do during organized activities.

4. FOR WHO AND HOW WOULD YOU INCREASE INTENSITY?

For the really fit elderly people, extra weight (1 or 0.5 kg) could be added to their ankles to strengthen their leg muscles. They would not notice the difference if they are focusing on the game itself, and thoughts of 'being tired' are postponed a bit so they will persist the exercise for a longer period of time than while they are specifically focusing on training. Note that strength training requires slower movements (maybe design a different game mode for this) as the muscle coordination is important. With Terabands it would be a bit more difficult, as you need attention to how to extend and hold the bands. In both situations: only safe when the physiotherapist is supervising!

REVIEW MOVIES

1. ARE THERE ANY POINTS FOR ATTENTION?

- The sitting posture of the players. Their head and neck are really bent over in order to see the cues underneath their feet. If the cues were colored completely (full lane), and focus is not on their own feet, this issue may be solved already as they could sit back.

- When having arthritis, rotation from the hip will be painful. So the outside lanes should not be too far at the sides. (maybe maximum a bit wider than chair size) In this prototype I think it will be sufficient. Players always move in the easiest/least painful way, and if the cues are not too wide, this will not result in any issues for people with arthritis.

2. TO WHAT EXTENT ARE THOSE MOVEMENTS USEFUL FOR FUNCTIONAL MOVEMENT?

As explained earlier, from a physiological point of view, functional movements should be trained by specifically focusing on the individual problems. However, if the elderly are moving more than normally, this could help in delaying muscle decrease (age-related), which is always good for general functional movements. The game could also positively affect the players' psychological state, which is also helping in daily situations. Furthermore, depending on how often and what intensity they play, endurance and coordination are generally triggered.

IMPLEMENTATION

1. IN WHAT SITUATIONS WOULD YOU SEE THIS SYSTEM WORK?

In organized settings (social activities) like your test, this would be ideal! Also in quiet and secure/trusted environment this would help a lot. (especially when people have difficulty focusing/ CVA patients/ parkinsons/ light dementia)

However, I also see this as an addition to my physiotherapy sessions, when a specific goal is focused on, to make the training more challenging and fun. It could also help in the situation of when elderly people are advised to move more often (by a therapist), and (daily/regularly) stimulated by the nursing personnel to go playing for a few minutes.

2. CAN YOU THINK OF ANY POINTS OF ATTENTION FOR FURTHER DEVELOPMENT?

Keep the concept simple like this! Find something to correct the sitting posture (neck/head bent over).

3. ARE THERE ANY VARIATIONS/EXERCISES WHICH COULD BE ADDED TO BETTER SUPPORT MAINTAINING FUNCTIONAL MOVEMENT?

In the case of applying this to my physio therapy sessions, it would be nice to be able to manually set different exercise patterns in the game: for example:

- mode for strength training = slower paced, ankle weights are added by therapist
- mode for coordination training = cues are presented in different lanes/patterns, per cue performance visible. Action/reaction game.
- mode for mobility training = cues are presented in different lanes (at rhythm basis). Outside/insides/front/back, more doubles
- mode for standing = no doubles, time to step back and find balance
- mode for arm training = at table
- mode for Parkinson patients = clear and suitable rhythm.

G.5 EVALUATION INTERVIEWS CESAR THERAPIST

SANNE VAN ADRICHEM 4/8/2016 - HONSELERSDIJK

GENERAL

1. What is your opinion about the content of the game?

Very nice, simple game! Music is always helpful to get people moving. Really good that they can all play their own level, but still work together.

2. To what extent do you think elderly players can do this game individually (without supervision)

In group activities, a supervisor will be needed, just to make sure safe positioning and to motivate the group. I don't know if elderly will try this on their own, without supervision, but for what they do, I think the movements are kind of safe.

3. What is your opinion about the intensity and overload?

probably they will do this about as little as 15 minutes of a game, in that case even though high-intensity stamping will not lead to overload. Actually sometimes it's good when they are exhausted and a bit challenged to move. Eventually, they have a lot of fun and that's most important. Muscle pain is not a terrible problem, and when they get tired they will stop it from themselves or do much less. It's always good to have a supervisor who all keep an eye on these situations and also possibly stop people in time. However, I think this will not really be a problem. Stamping is not an exercise where people overload their heart rate, especially when they are not doing this for hours. Sweating a bit will be good for them, they are usually inactive way too much!

EXERCISES

1. Which exercises are most natural to do with this game? What is trained by this?

Stamping or tapping, mostly just mobility in the legs. Maybe after a while also muscle strength or endurance.

2. To what extent do these exercises fit in functional movement (transfers, adl) maintenance?

Sideways stepping is a motion in daily life. Stepping at the same location is good for reacting

and coordination.

3. Would you think of different exercises for prevention and maintenance of functional movement/strength/endurance/coordination/mobility?

Step to the front and backwards.

Standing exercises for real life situations.

INTENSITY

1. What time duration would you advice to consider as maximum play time?

I think this game will not have a max time.. they will probably take turns and if only this particular game is played, they will be done with it after reasonable time.

2. What time duration would you advice to consider as minimum play time, in order to be physically effective?

No minimum time needed for this game. Any extra move on a day is already helpful. They will probably play this game together for a reasonable time (otherwise no use)

3. Do you think playing this game would be physical activity?

Yes, as you see the people in the movie moving, for this age that's definitely active!

4. For who and how would you increase intensity?

Doubles are very hard for elderly as their core muscles are declining. I would decrease the intensity of the game and put the doubles in the last few levels only, for the very fit players.

REVIEW MOVIES

1. Are there any points for attention?

- Patterns are difficult to recognize, people are always tempted to make up for mistakes after they occur and then they get confused. (Even if they understand the game). So make more changes as feedforward pattern or when the pattern starts. Not only for parkinson's patients, but also for the rest. Maybe a different animation in between to prepare the players something is going to be different.

- Use bright colors which need to be distinguished (bad vision at that age).

- Color the complete track against neck strain. Then the elderly can sit back in their seats and relax the neck as they can see the patterns better.

- Use steady chairs: they are quite active and leaning forward, moving from their backs a lot (usually seen in elderly people), in particular the arm handrails are required to keep their balance and prevent falling.

- Maybe an assignment to step back to base every time could help see the rhythm without confusion.

- The cues from version 1 are clearly too much to understand. Music is always catchy, and makes sense in the rhythm, especially for this target group and when using familiar music.

IMPLEMENTATION

1. In what situations would you see this system work?

Group activities with an activity counsellor, or therapist. Maybe even as therapeutic setting, but then I think some points should be specifically designed for certain target groups.

- Parkinson patients need a certain starting trigger. Especially an announcement in form

of movement, so they can move after it. Doubtful if just flashing cue is going to help. Probably the old version (prototype 1) will work better for these people, but I cannot say so because every Parkinson's patient is different. You may need to test.. in many residential groups people with Parkinson's are living.

- Osteoporosis: bone loss prevention through movement. Maybe this game even does not give enough load to the bones, as I usually let people with this disease jump or run, as impact on the bones helps to stop bone loss. If you give the assignment to stamp hard, they are maybe training enough. Besides this, the game will probably cause no harm to them and will only be an improvement.

- arthritis patients need to keep moving to reduce decline. A lot of people have this to some degree (always when bones get older), but in this game it will be no problem to my opinion. Besides that the exercises are not that demanding, smaller movements are also picked up by the system, so pain may not be a problem. They may even like to be stimulated to move in this way.

- Games can also be very interesting for autism, or other people with cognitive problems. I see a lot of opportunities

- Wheelchair would not make much difference to join the game. In principle, they should be able to reach the floor or just project the cues over their feet stands. No danger of wrong posture, wheelchairs are often just sits well in terms of support.

2. Can you think of any points of attention for further development?

Mentality of elderly is often to compete in everything! Perhaps you can use this as a stimulation for playing this game. The level design may be more specifically saying which level each player reaches. This could also help them in setting personal goals and trying to become better in the game each time they play, thus a stimulation to play this game frequently (and to keep it interesting). I don't think specifically showing level numbers will work negatively (even though differences in physical and mental abilities), they will always be lurking "how are the others doing?"

3. Are there any variations/exercises which could be added to better support maintaining functional movement?

Cues to step forwards/backwards often needed in everyday life. By sliding you train your mobility of the hip, and forward motions are involving mobility of the knee or ankles. Also muscles working for forward movements are mostly used in daily functional activities. Standing exercises could be an addition in levels (Preferably with safety gates/chair on the side so that the players keep balance safely (without leaning over) and the projection is still visible)

G.6 EVALUATION REQUIREMENTS AND WISHES

Failed requirements & wishes

Requirement/wish	why?
Player should be able to join and leave at any time	Leaving will be possible any time, but the activated play area will continue to play.
The game will not frustrate the player on an individual level	After the players understood the raising performance bars were feedback on their moves, some players indicated they got a bit frustrated when they did not manage to get the bars at their own tracks.
Elderly players should be able to understand the goal of the game within the first session	The game goal of tapping in the rhythm of the blinking cues was not successfully understood by all participants, as some were just moving in their own preferred way (not minding the course of the cues).
The game is open ended and without a clear end	Although the game focuses on experience of enjoying music (which is open ended), each song has a clear end, after which player can decide to stop playing another round.

Still to be achieved requirements & wishes

Requirement/wish	why?
Playing without therapists around should be possible and safe	Experts have indicated that a supervisor would be preferred (for organisational factors) and the previous playtests were also executed under supervision, so no conclusions can be drawn yet about safety in this case.
The game should enable play for 2 -6 players at a time	The prototype allowed play for 3 persons at a time and did not include the proposed dynamic activation concept for variable number of players [appendix x] yet. It is expected that two – six players are working well, but it should be tested how this works with unused music tracks and audio feedback.
The difficulty should be progressing during a session	Although the reinforcement schedule of the second playtest already included progressive difficulty, in depth testing and refining is needed to keep challenging all players.
Elderly people with light/beginning dementia should be able to join the game	Playtests were only done with cognitive healthy elderly. More testing is needed to find the boundaries of the target group for playing this game.
Elderly with hearing or vision disabilities should be able to follow the course of the game	Although all elderly participating in the playtests indicated they could clearly see and hear the system (on max volume), no specific playtests have been done with people who suffer from these disabilities. It is expected that hearing disabilities can be solved with the visuals and seeing other people move in the same beat. Vision problems may reduce the perceived feedback, though in easier levels players could just move on the beat.
The game should stimulate to move with light to moderate intensity for 3 times a week, 10 min	The playtests revealed that elderly players like to continue the game for about 15 min – 30 min. It has to be tested if regular play is also preferred and what physical intensity the game actually evokes. Playtest observations and post-test perceived effort questionnaire concluded the game motivates for light to moderate intensity.

Intended interactions should be intuitively explored by the elderly players	Although it seemed to be intuitive to stamp or tap according to the music, the participants were instructed to some extent to follow the cues. It should be tested how players will interact if no instructions are given (by a supervisor).
The game could be played outside organized sessions as well	Experts mention that a supervisor present might be preferred to motivate players and organize/start up the play session. Since the playtests are naturally an 'organized' activity, new tests should be conducted to evaluate the game as open activity.
The game should not harm or bring the players in any danger in standing or seated position	During the playtests, no players were harmed and experts are indicating to be unlikely that players would injure themselves by playing this game, however, no specific safety assessment is conducted yet. Standing game play is currently excluded from the design of the game, as safety risks are expected to raise by this type of play, but no conclusions are drawn yet.

Achieved requirements & wishes

Requirement/wish	why?
No additional materials or attributes will be needed to play the game	The game does only require the Tovertafel setup and chairs.
The game should be produced by the existing development team of Active Cues	The prototypes are made by a programmer from Active Cues, so also further development of the game could be produced in-house.
Installation process should be similar as normal Tovertafel	No adjustments are needed to the Tovertafel box for playing the designed exergame, so the installation process stays the same.
The system should work with existing Tovertafel Techniques: projections and sensors only	Although projected on the floor instead of the table, the same sensor technique is used and proved to be working in the playtests.
The game should support seated position	Both playtests have been done by seated participants.
System should be able to react to at least 3 players at a time	The playtest revealed all three players could
The game should challenge to increase levels, but also hold back when player is unable to perform anymore.	Although the level design is not yet refined enough to match the abilities of the target group, the second playtest showed that level up and downs are working.
The game could involve multiple layers of difficulty, to challenge all players	The cognitive and physical effort increase when players are able to complete a few bars in a row.

The game should include 'rest' moments, to reduce overload	Although the prototype did not include the rest moments, the final concept describes pause moments in between songs, which is also the moment players can refuse to activate their areas.
Risk of falling will be eliminated	As seated play is required and the final concept has bars light up completely, elderly players do not have to stand or bend over from the chair to reach the cues.
Elderly of all sizes should be able to reach the targets projected by the game	All player sit down during the game, so as long as they can reach to hover over the cues,
Elderly should not be seduced to stand when they have severe risk of falling	From the observations of the playtests, none of the players tried to stand during a game.
Both males and females will be interested in the content of the game.	The game is based on music preference, which is unisex. During playtesting, mostly women were participating (as the current composition of residents in nursing home consists of mostly women), but also men have enjoyed playing the game.
Focus of the game should be on functional mobility, not on overall more movement	Only stepping exercise with the legs is used in the exercise, so coordination, flexibility, endurance and muscle strength are trained in lower extremities(depending on play duration), which are supporting to maintain functional mobility.
The game will not feel like training exercises	Since the music is main motivator, players did not indicate to feel like training exercises, although they recognized similar movements in the gym classes.
The game could be seen as preventive intervention	Therapists expected this game to be effective for a large target group in a general way, evoking physical activity for prevention goals.
At least half of the players should get in state of 'flow'	Observations of the two playtests revealed some players to be immersed in the stamping to the rhythm of the song, forgetting about all surroundings.
The game should evoke a moment of joy	Observations (laughing, players' quotes) and post-test interviews (mood indication) showed that players had a pleasurable experience.
The game could leave a positive and happy experience after the session	Most players indicated they liked to play the game after the tests. Some of them indicated to be quite tired, but the experience of playing together
The game should give a feeling of togetherness, having a social time	As the tests and the post-test interviews are concluding, the participants are indicating that although they play an individual instrument track, they feel involved with the other players.
The game will not take over the role of the physio lessons or physio therapists	The experts indicated they would see this game work as prevention activity, like an addition in the total physical activities of elderly people or a means of stimulating a physical activity (during a group activity). Although the game can be played with relatively low supervision (safe), this does not take over the role of the therapist.

The goal and personal value of playing will be understood by the players throughout the first session	Observation and interviews during the playtests concluded all players were able to understand the game goal of stimulating to move the lower extremities. Some participant actually indicated they valued to get challenged cognitively and physically, as they understood the importance of physical activity.
The game could be seen as recreational activity, but also as part of gym lessons	Both participants as well as the physical therapists indicate they like to do this game for fun (during social activities) or to try this game as part of the exercises in gym class
System should not fall, move or rotate from the anchor point	Although this was not a focus point of the project, this requirement can be seen as achieved, since the existing setup of the Tovertafel technology is not adjusted for the design of the exergame.
The system should be placed using a similar process and techniques as Tovertafel original	The design of the game does not require any adjustments in original setup, apart from moving the table aside.
The system should not save personal results or game data after a play session	The design of the game only records in-game performance to give direct feedback.
The game will contain reactive factors	The players are stimulated to react on the changing patterns of blinking cues.
Immersion and collaboration could be major game motives.	Although some participants of the playtests did not fully understand that each player contributed by playing a different instrument, they indicated a feeling of involvement with each other. Observations showed that they are immersed to some extent in the course of the song.