

Evaluation of the Game Exermon

a Strength Exergame Inspired by Pokémon Go

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Introduction

- Sedentary lifestyle → Health issues
- Exergames (exercise and gaming) to promote physical activity
- The Pokémon Go phenomena
- Lack of exergames focusing on muscle strengthening →
The Exermon game focuses on this field

Background

- Related exermon games
 - Mobile games - Mainly focus on movement
 - Games on other platforms, e.g. Nintendo Wii & PlayStation Move

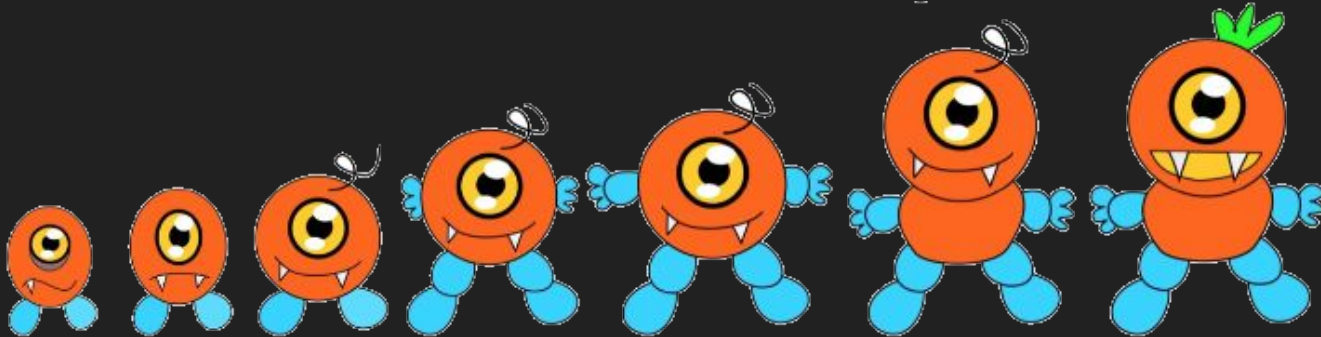
Game design of Exermon game

- Focus areas: Challenge, fantasy and curiosity
- The *gameflow framework*:
Concentration | Challenge | Player skills | Control | Clear goals | Feedback | Immersion | Social interaction
- Dual flow state
When the training gives effect and the game is attractive for the player

Exermon

Exercise + Monster

- Exermon - Your personal monster
- The player's exercise develops its Exermon
- Fight other monsters or bosses in arena
- Main parts in the game: Training - Planning - Fighting

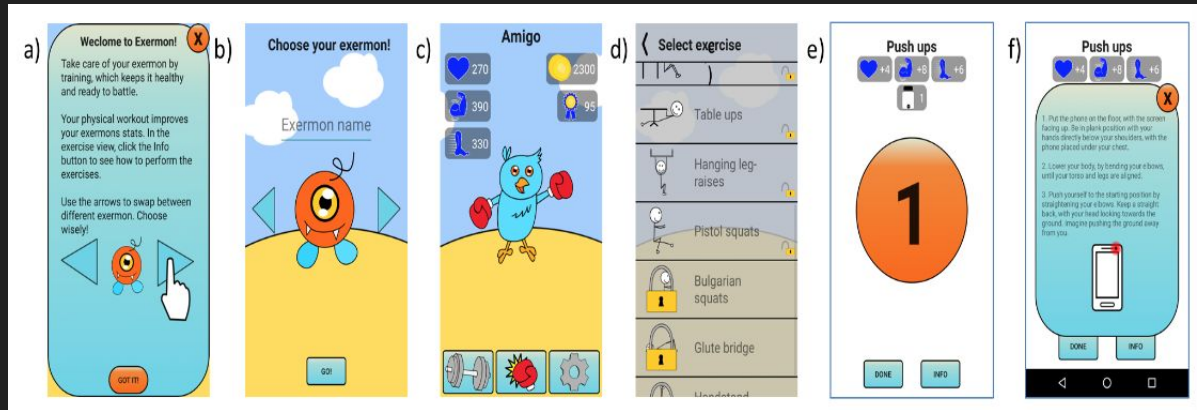


Training

- Tracks the player's exercise from smartphone
From proximity and accelerometer sensors
- Exercising increases stats of the player's Exermon
The appearance of the Exermon will evolve over time from the exercise

Planning

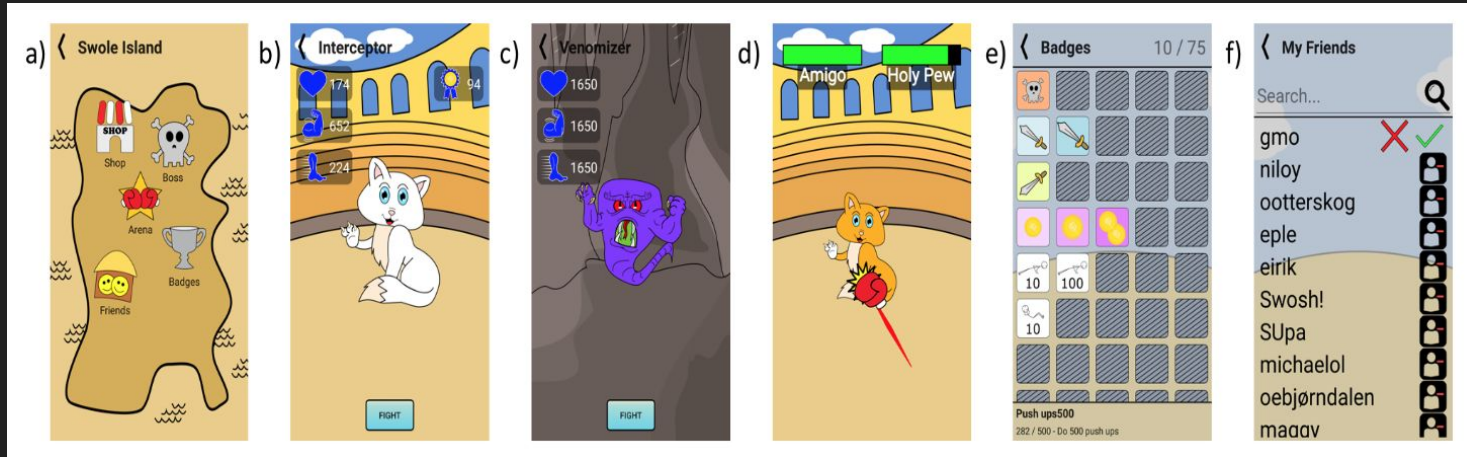
Overview | Progress | Status of the game



a) welcome screen, b) initial choosing an exermon, c) the planning and status screen, d) choose exercise screen, e) execute exercise screen, and f) exercise information screen

Fighting

Boxing with a computer-generated opponent
Fighting modes: Arena, Boss fight & Friend fight



a) the Exermon island, b) an opponent in arena mode, c) boss fight, d) fighting an opponent, e) the badges screen, and f) search for friends' screen

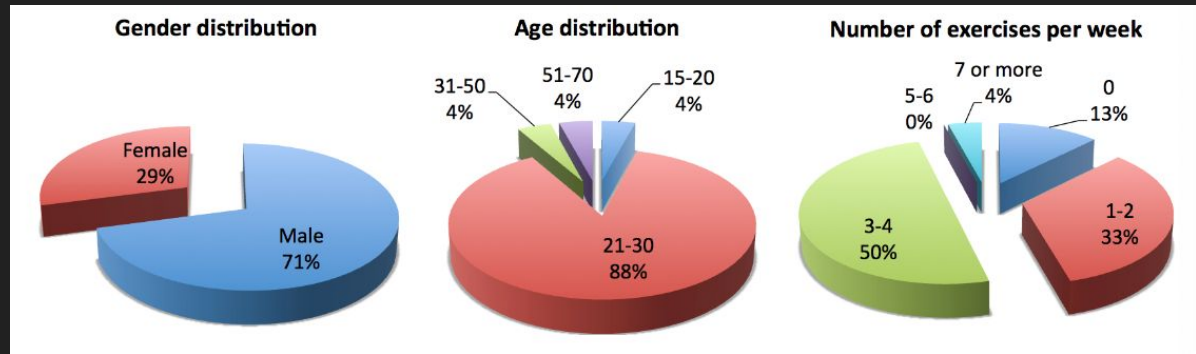
Research Questions and Research Approach

Purpose: evaluate the effect of using a game as a motivation for strength training from the point of view of an adult in the context of everyday life

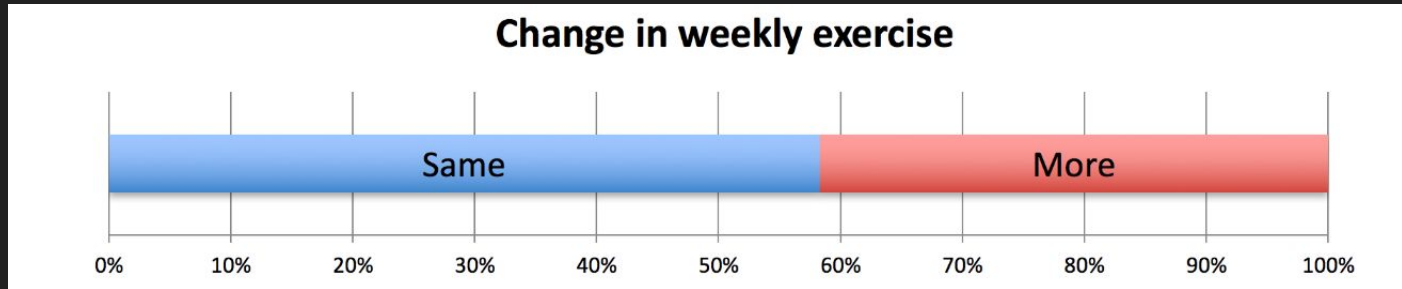
- RQ1: Physical effect
- RQ2: Motivation effect
- RQ3: Enjoyment effect
- RQ4: Engagement effect
- RQ5: How control, progression and social interaction affect the experience

Results

- 24 subjects
- 2 weeks
- Questionnaire
- Observation
- Interview
- Logs



Physical Results



ID	Statement	Disagree	Agree
S1	I have improved my strength because of the game	62%	38%
S2	The exercises matched my fitness level	17%	83%

Results on Motivation

ID	Statement	Disagree	Agree
S3	I was motivated to play the game before each session	8%	92%
S4	My character's appearance inspired me to work out more	58%	42%
S5	Knowing that my character could die made me work out harder	62%	38%
S6	I wanted to play more to unlock all the exercises	30%	70%
S7	Beating an opponent who previously appeared unbeatable gave me great motivation to work out	17%	83%
S8	Being able to compare my exermon with my friends' exermons motivated me to improve	37%	63%

Results on Enjoyment

ID	Statement	Disagree	Agree
S9	I enjoyed playing the game	0%	100%
S10	I felt better at the game the more I played	8%	92%
S11	I found the fantasy world in the game appealing	21%	79%

Results on Engagement

ID	Statement	Disagree	Agree
S12	I felt engaged in the game	8%	92%
S13	I was completely focused on the task I was doing	21%	79%
S14	I was so engaged in the game that I became less aware of my surroundings	75%	25%
S15	I was curious on how my exermon would evolve	17%	83%

Results on Control, Progression and Social Interaction

ID	Statement	Disagree	Agree
S16	I felt in control of what I was doing in the game	21%	79%
S17	It was clear that I was making progress in the game	17%	83%
S18	I was presented with clear tasks to accomplish	33%	67%
S19	The game had an appropriate difficulty level	29%	71%

Discussion

- Technical issues
 - Sensors varied among different Android smartphones
- Cheating
- Threats to validity
 - Used four sources of data, both qualitative and quantitative
 - The Hawthorne effect
 - Limited length of the study

Conclusion

- RQ1: Found that the game gave a **positive physical effect** but not on all test subjects.
- RQ2: The game has a **motivational effect** on the players, but there is room for improvement for making the game even more motivational.
- RQ3: The game was found to be **enjoyable**, but more content should be provided to keep the game enjoyable over time.

Conclusion

- RQ4: In general, the game was found to be **engaging** of almost all test subjects. One part of the game that made it engaging was the players' curiosity of their avatars evolution.
- RQ5: The majority of players felt control over their actions in the game, the progress was easy to follow and easy to understand what to do, and the difficulty level was appropriate. The players also found social component of the game motivational, although there is a potential to improve it through direct fights between friends.

Conclusion

- The evaluation shows that there is absolutely a great potential for exergames for strength training.
- Challenges: cheating, technical issues
- Require the players to be interested in doing strength exercises in the first place
- Weakness: the strength exercises themselves are not directly related to the fantasy of the game.

Future Research

- Investigating exergame concepts where the exercises and the fantasy is tightly integrated
- Examining the long term effects of such exergames.