STUDY OF ZUMBA GAME PLAYING EXPERIENCE, RELATED TO
PREVIOUS KNOWLEDGE OF ZUMBA

Masters in Digital Culture

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December 2014

JYVÄSKYLÄ UNIVERSITY FACULTY OF HUMANITIES

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Title	
STUDY OF ZUMBA GAME PLAYING EXPERIENCE, RELATED TO PREVIOUS KNOWLEDGE OF ZUMBA	
Subject	Type of work: Master's Thesis
Digital Culture	
Time (Month/Year)	Number of pages
December /2014	95 pages + 4 pages appendices

Abstract

The focus of this research is to make an analysis of the experiences of Xbox Kinect Zumba game players in correlation to the real Zumba classes. Through the observation of the Zumba game, specifically using the Xbox Kinect motion detection technology, the researcher intends to create a user experience similar to the real classroom experience and/or create a situation pleasant enough to interest the subjects in real Zumba classes or further game playing, despite of their preconceptions about the game/activity. Negative results will be used to pinpoint what is lacking in this situation and environment to achieve the level of comfort and enjoyment required. The researcher intends to show that exergames are possible replacements for fitness activities for individuals unable to attend fitness facilities and they might increase the interest and self-assurance of the players in taking part of the real life activity. This research intends to deepen the previous work done by Ahonen (2012), focusing on a more specific game and technology and restricting the external influences in game playing. By doing so, the researcher intends to demonstrate that the negative results described by Ahonen were influenced by other factors not related to exergames and that further research deems necessary. This research will also open the doors for a better understanding of exergames and their importance in the fitness and health structure of future generations. It will also allow further longitudinal research to be done on the consequences of extended usage of exergames as fitness and health contributors.

Keywords
exergames, fitness, Kinect, player experience, video game, Xbox, Zumba
Location

Tiedekunta – Faculty	Laitos – Department
Humanistinen Tiedekunta	Digitaalinen Kulttuuri

Tekijä – Author
Patricia Zanardi de Toledo

Työn nimi – Title
KÄYTTÄJÄTUTKIMUS - ZUMBA-PELI AIKAISEMMAN ZUMBAKOKEMUKSEN VALOSSA

Oppiaine – Subject	Työn laji – Level
Exergames – Liikuntapelit	Maisteriohjelma

Aika – Month and year	Sivumäärä – Number of pages
Joulukuu 2014	94 sivua

Tiivistelmä – Abstract

Tutkimuksen tavoite on analysoida Xbox Kinect Zumba – pelin pelaajien kokemuksia suhteessa ohjattuihin Zumba-tunteihin. Havainnoimalla Zumba-pelin pelaajia mahdollisimman hyvin aitoa Zumba-tuntia vastaavassa tilanteessa tutkimuksessa tarkastellaan käyttäjäkokemuksia. Tavoitteena on selvittää, pystyykö Zumba-peli herättämään riittävästi kiinnostusta Zumba-tunneilla käyvissä ihmisissä että he viitisivät pelata myös peliä. Toisaalta selvitetään voiko Zumba-peli toimia herätteenä osallistua myös Zumba-tunneille sellaisten käyttäjien osalta, joilla ei ole aimepaa Zumba-kokemusta. Kielteisten käyttäjäkokemusten osalta tarkennetaan, mitkä asiat käyttäjäkokemustilanteessa tai – ympäristössä ovat ongelmallisiaTutkija pyrkii selvittämään , ovatko liikuntapelit toimivia liikunta-aktiviteettien korvaajia sellaisille ihmisryhmille, jotka eivät muuten harrasta liikuntaa Tutkimuksen tarkoituksena on syventää Ahosen (2012) tekemää työtä keskittyen tarkemmin tiettyyn peliteknologiaan ja rajoittaen ulkoisten vaikutteiden merkitystä pelin pelaamisen aikana. Tämän tarkoituksena on havainnollistaa, että Ahosen kuvaamat kielteiset reaktiot ovat mahdollisesti seurauksia itse liikuntapeleihin liittymättömistä tekijöistäTutkimus pyrkii myös lisäämään tietoisuutta liikuntapeleistä ja niiden merkityksestä tulevien sukupolvien kuntoilun ja terveyden edistäjinä. Lisäksi tutkimus mahdollistaa laajemman pitkäaikaistutkimuksen liikuntapelien pitkäaikaisen käytön vaikutuksista kuntoilun ja terveyden myötävaikuttajina.

Asiasanat – Keywords
liikuntapelit, kuntoilu, pelit, Kinect, käyttäjätutkimus, Xbox

Säilytyspaikka – Depository

Muita tietoja – Additional information

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1. Introduction

Although fitness games have existed since the 1980's, the interest in exergaming has boomed in the last decade. This surge in interest is due to increased media attention and marketing, as well as to the worldwide upswing in obesity and sedentarism. Another factor that might have influenced this peak in interest is a possible decrease of social skills or interest in physically present social interactions presented by the youngest generations, due to the technology expansion. However, only recently have the social and ethnological importance of these fitness games been noted. At first, these physical games were mostly *movement games,* games that required the players to move, not specifically with a fitness goal. Only later on games were created to acquire higher fitness levels and for weight loss. Those are denominated *exergames* (Bogost, 2009).

In order to achieve the commitment required to obtain real changes in lifestyle, exergames need to offer a certain level of playability and immersion to the players. This research intends to explore whether the available technology is able to offer this level of playability, and whether exergames are already able to improve the subjects' interest in exercising through these games. If true, exergames would seem to be a valuable tool to drive otherwise sedentary people out of their comfort zone and into a more physically active routine.

The main goal of this research is to make an analysis of the experiences of Xbox Kinect Zumba game players in correlation to the real Zumba classes. The aim is to observe if the Zumba game, specifically using the Xbox Kinect motion detection technology, is able to create a user experience similar to the real classroom experience and/or create an experience pleasant enough to interest the subjects in real Zumba classes or further game playing. And, if that does not occur, it would be interesting to observe what features are lacking in this situation to achieve this pleasant experience.

The Zumba game was specifically chosen due to its visual resources, its improved playability in relation to the older versions of exergames, as well as the social effect of the real Zumba classes.

Although conceived to be a simple fitness activity, available to all levels and ages, and especially attractive to a group of people that does not necessarily enjoy exercising, Zumba is also a social phenomenon, used by many as an entertainment source and social meeting. The subjects that attend Zumba classes rarely see it as a real fitness activity, accepting it as a fun activity that offers also the possibility of being a good cardio exercise and weight loss source. Fitness seems to be a by-product of the activity, resulting of the level of "fun" achieved by the participants. Another issue is that Zumba seems to be highly gender oriented. Although there are men which participate and teach the classes and the creator of the method is male, the activity seems to attract a

clearly higher percentage of women. This factor, in certain cultures, is enough

to alienate men from the activity. On the other hand, according to the Finnish

Player Barometer 2011, 98% of men are digital game players. Therefore, it is

possible that the game experience is able to break the gender barrier that

seems to exist in the classroom and attract both genders. It will also be

interesting to see if the game is able to produce the same social experience and

feelings attached to the real Zumba class and, this way, produce the same level

of commitment and "fitness".

1.1 Aims of the thesis

When the Zumba fitness method was created, it was a feasible substitute for the traditional aerobic classes, and it was an instant hit among the clients (http://www.zumba.com/en-US/about). The idea was to create a dance class for people who can't dance, but urgently need to move. So it needs to be simple, engaging, make a good use of the music rhythms, in this case, Latin music was used, but the concept could be applied to any music style, organized in a way where the participants are able to exercise for one hour, without feeling exhausted, but requiring enough physical efforts to be a fat burning activity. When the first group started getting into a desirable weight and fitness level, the tendency spread. It was in no time that there were gyms all over the world teaching the method, and people buying DVDs to do it at home. The game was the next step.

Due to these aspects of the fitness activity, it would be natural to think that the Zumba game main goal is to engage in the activity people that wouldn't feel comfortable in a gym environment and desire more interactivity than the DVD can provide. The videogame gives the users the possibility of training with the top Zumba trainers, always seen in the advertisement, without being observed or judged by the trainers or peers.

This research aims to observe if, when playing in an ideal environment, without interruptions or external influences and with the proper space and equipment, the game is apt to enable the user to abstract all inner issues, physical and/or psychological, which don't allow him/her to engage in the group activity from the playing experience. And, if it doesn't happen, it might be possible to determine if the limitations found to achieve this goal are related to the game, the technology or the user himself/herself, providing insightful suggestions on how to improve the user's experience.

"When we talk about the unique power of video games, we often cite their ability to engage us in thorny challenges, to envelop our attention and commitment, to overwhelm our senses and intellects as we strive to master physical trials of a battle or work out the optimal strategy for an economy."

(Bogost, 2009)

The second aim which will be analyzed in this research is if the Zumba game is able to alter the confidence level of its players, working as some kind of 'ego booster' for individuals with low self-esteem and a simulator for future experiences, but, at the same time, not being so challenging that the users will feel frustrated due to their inability. This is an important issue, as the inability to create challenging, but achievable situations would probably mean that the users wouldn't be interested in continuing playing. Of course, it is necessary to bear in mind that the playing experience provided by this study is limited to

three sessions and it is possible that the players would need longer time in order to realistically improve their fitness and skill levels in the game. Nevertheless, it is also possible for the data to show some kind of improvement, even if limited, and, therefore, indicate possible future tendencies.

The third aim is related to the definition of *flow* and *fiero.* These definitions are related to positive psychology, which is not the main focus of this research, however these concepts will be used as secondary theoretical base. Flow is the engagement provided when an individual is working on the edge of his ability. Winning is not the source of satisfaction, but the possibility of having one's ability challenged through achievable goals. Fiero ("Pride" in Italian) describes the emotional peak felt when the player achieves triumph over hard challenges. According to scientists, fiero is one of the most powerful chemical peak humans are able to experience (McGonigal, 2011). It will be also observed how the players react to failure during the gameplay and their level of frustration, also related to the flow created (Juul 2012).

The questions this research intends to answer are:

- How is the game able to create a pleasant and interactive environment, allowing the subjects to engage in repetitive and continuous play? How do the game work to allow the players to achieve the proper levels of flow and fiero and avoid higher levels of frustration?

- How does the game differ from the live experience and has the game been able to raise the confidence level of the subjects in relation to the activity?

- What are the deficiencies found in the experience and what are their causes?

1.2 Structure of the thesis

This research will consist of a experimentation using two separate groups: one formed by subjects with different levels of experience in Zumba classes and a second group with individuals who are interested in the activity, but have never attended a Zumba class due to several reasons: don't enjoy dancing in public; too ashamed; thinks the class it too hard or too easy; gender or time issues, etc.. It is important for the second group members to show interest in the activity in order to take part in the experiment. There will be no upper age limit, but the group will be formed by adults, both genders. The second group will allow us to observe if the game experience is able to abstract the reasons why people don't attend the classes, for being a video game, in a more private environment and not a dance fitness class in a social environment. The situation, where the subjects play unobserved and unjudged, slowly getting acquaintance with the group activity through the game interactivity and design, might also have a significant influence in the experience, maybe allowing them to enjoy the game in a more enjoyable way than the class environment. After the playing sessions, it will observed if these individuals will change their mind about the activity in any extend. To be able to guarantee that all players have the same experience, the playing module of this research will occur in a controlled environment, similar to all subjects.

This thesis will be presented as follows: first there will be a brief definition of "physical activity" and "dance" according to several reliable sources, and, inside these concepts, it will be observed the differences and similarities in accordance to what Zumba Fitness is for the general public and as an activity. These concepts will allow us to position Zumba in its correct category and to define its characteristics, giving us a clearer picture when contrasting it to the game. Afterwards, it will be defined what are Fitness Games and what they comprise. These definitions are of main importance to this thesis, as they will explain and detail the preconceptions and expectations of the users of the game in accordance to what they know about Zumba Fitness.

The second part of this thesis consists of the methodology and research analysis. The main methodological approach is observation of the subjects' behaviors during the gameplay sessions.

Thirdly, it will be presented the research corpus and analysis. This research will be a triphasic analysis, using three different types of material. The first phase is a simple, closed questionnaire, tailored to get basic information from the subjects: their age, previous knowledge of the Zumba fitness activity and game, gaming experience, fitness level and expectations. This shall be a short phase of the experiment, taking a maximum time of 10 min.

The second phase is the game playing itself, which will be video recorded. The groups will play the game in a controlled environment, ideal for game playing, with no external influences. This is crucial to the experiment, because it is necessary to avoid technical issues, third-parties, noises, space issues, anything that can make the game experience less adequate and/or frustrating to the subjects. There will be 2 separate sessions in total. The playing sessions will be video recorded in the most discreet way possible. It is known that providing this artificial environment, and video recording itself might be a negative influence, as it is not the natural situation for gameplay. However, it is expected that the immersion in the game playing will be enough to allow the subjects to forget where they are and that they are being recorded or at least to be less self-conscious. Nevertheless, those points will be taken in consideration during the data analysis.

In the first playing session, the subjects will play individually, with no contact with each other, in order not to be influenced by other players. This session will be executed in 30 min. All subjects must play exactly the same time, in the same environment. This playing session will be the control session, allowing to gather the first game experience data.

The second session will be group sessions, so the subjects can have the experience of the group environment and it is possible to measure if the game can fulfill the same social aspects of the class experience, even though the

game allows only pairs. The group game sessions will be allowed to play "freely", in the sense of no limited time will be given to the subjects, although a reasonable time limit of 75 min will be non-verbally determined by the researcher. This will allow the researcher to see if the engagement level is high enough to make the subjects play for longer periods. The data collected in these sessions will be, afterwards, compared to the data of the first experience. The sessions will happen with a 2-weeks period between them.

The third phase is an audio interview, done right after the first and the third game playing experiences. It must occur immediately after the playing phase, so it will be possible to get their most honest opinions, with no chance of external or third-party influence. The idea is to observe the level of excitement/frustration of the subjects, not allowing them to over-think the experience. The expectation in this phase is to observe if the social stigmas and inner issues can be ignored and the players can enjoy the experience fully and freely. The audio recordings will allow the researcher to analyze verbal cues, vocal tone, breathing rhythm, allowing to compare what is being said and the way it is being said.

This will be also a short interview, maximum of 10 min.

Based on the data collected, there will be presented the final profiles and results. The research questions will be then individually answered and new questions will be presented for future research.

2. Theoretical Background

2.1 Physical Activity

2.1.1 Definitions

Physical activity is "any bodily movement produced by skeletal muscles and resulting in energy expenditure" (Bouchard, Shephard, Stephens, Sutton, McPherson, 1990). As Zumba is advertised as a fitness program, it is necessary that we bear in mind some concepts and definitions used in Fitness and Sports education.

Zumba is mostly seen as a leisure activity, therefore, it is a physical activity performed during someone's free time. It is clearly different from other sport activities and specialized trainings, as it lacks a set of rules, applied techniques and proper feedback system. When we talk about Zumba and exergames, we usually indicate the concepts of exercise and training. Exercise indicates any leisure time physical activity, but it doesn't indicate the frequency or intensity of the exercises. Training, on the other hand, is repetitive sessions of exercise, conducted over certain period, in order to develop physical and/or physiological fitness. A good example of exergame with training rhetoric would be *Yourself! Fitness,* which will be discussed in more details later on this paper. It is important, though, to understand what fitness is and how its concept connects with the idea of Zumba as a fitness activity. Fitness as such is not a clear concept and, in order to better define it, it is divided in Physical fitness and Physiological fitness. Physical fitness, according to the World

Health Organization is "the ability to perform muscular work satisfactorily". It includes cardiorespiratory endurance, muscular strength and endurance, and flexibility. It is determined by variables including habitual physical activity level, diet, and heredity. Physiological fitness extends to biological systems, including blood pressure, glucose tolerance and insulin sensitivity, blood lipid levels, body composition and fat distribution, and stress tolerance. The physical and physiological fitness level influence health and performance in physical activities. In first glance, it seems that Zumba as a fitness activity focus mostly in physiological fitness, as it is clearly used as a weight loss tool. But it is important to notice that it also improves cardiorespiratory endurance, therefore, the physical fitness level. The Zumba fitness as a company has created other variations for the Zumba activity in order to provide muscular strength and endurance, but the modality observed in this study cannot be included in these variations.

The Zumba advertisement commercials seem to be directed to overweight and sedentary individuals, as their videos focus mostly in showing the weight loss of their participants. Imagining that most participants in Zumba classes would be overweight and sedentary individuals, they would usually go through a period of adaptation when they start the activity. In the infomercials and in the interviews previous the gameplay sessions of this research, some individuals also indicated that Zumba worked for them as an adaptive activity, preparing them for harder physical trainings. Adaptation refers to the adjustment processes of the human organism to the variations in the level of physical

activity. It is defined according to responses to the exercises, including

training and lack of adequate physical activities. It is important to understand

that physical activity is relevant to health, but the determination of appropriate

level of physical activity to boost maximum health is very difficult, as it

interacts with fitness level, nutritional status and other sociocultural variables.

It is proven that regular physical activities reduce the incidence and severity of

chronicle diseases and might extend the life span. It seems to also contribute

positively to mental health and to self-assessed health. Researches show that

regular fitness activities increase workers satisfaction and productivity,

decrease absences and personnel turnover and can even decrease industrial

injuries (Bouchard, Shephard, Stephens, Sutton, & McPherson, 1990).

Economically, there are potential societal benefits, including reduction in

demands for chronic medical assistance, lower indirect costs due to illness and

less costly dependence in elderly.

Zumba is proposed as a tool to improve life quality and self-esteem by its

marketing material (Zumba.com). It is this niche of market that it intends to

work. But Zumba is not entirely a fitness activity, as it also includes some

elements of dance classes, influenced by South American culture and music,

even though it is not proposed as a traditional dance activity. Notwithstanding,

it is also important to define what is understood as 'dance' in this context.

Dance is composed by humanly possible actions of the body, gestures and stillness, i.e. movements, with different characteristics, which are grouped together to form a meaning, a choreography, according to certain cultural characteristics (Adshead, 1988). The choice of movement is determined by prevailing social or aesthetic norms. Dance movements also exhibit a dynamic, i.e., a degree of tension or intensity, of rapidity, of sustainment and of repetition. These movements, combined, form a choreography, which is defined as a cluster of movement elements: movements occurring simultaneously with spatial and dynamic elements. The choreography cannot be changed without destroying the meaning intended by its creator, its choreographer. Also, the exact timing of the movements is very important to communicate its meaning. When a dancer is performing, he is interpreting the dance movements. To interpret a dance is to recognize and attribute its characteristics and qualities. Each style is unique and includes its own set of rules.

In this context, Zumba cannot be classified as a traditional dance class, as it lacks certain basic elements, as precision and exact timing. Its choreography can be changed and adapted any time and this freedom is intended to increase the level of satisfaction enjoyed by the participants. But it is performed as a set of choreographies, although not defined by rigid rules, which contain meaning in accordance to certain cultural elements, even if the performance is less critical. It also follows certain cultural rules, which determine the social and aesthetics norms of the choreographies.

Being between two different niches allows Zumba to use characteristics of both markets, fitness and dance, and attract more participants. It also provides a flexibility to the activity, allowing it to adapt to different market situations. In this research, we will not focus on Zumba as a fitness activity, but it is still important to understand what it is and its place in the fitness environment in order to better visualize its gaming idea and its positioning in the exergaming niche.

2.1.2 Zumba and the Zumba game

Zumba is a Latin music based workout, created by Alberto "Beto" Perez in the late 1990s, which main idea is to provide fitness to people who don't particularly enjoy exercising, without giving the subjects the feeling of hard work. According to their marketing material (Zumba.com), Zumba is a fitness program adaptable and safe for all ages, fitness levels and body types. It has 14 million participants, in 185 countries, 140.000 locations. At first, Zumba was mainly used as a group fitness class structure by Perez. When Zumba became a business enterprise, it invested in a larger market and DVDs were sold worldwide. Nowadays, the Zumba brand includes several marketing material. Our focus in this thesis is to look at the Zumba game, more specifically the Zumba Rush for Xbox Kinect (2012).

Although the concept of Latin rhythms as a fitness activity was created in 1986, initially as Rumbaerobic and in 1990 as Zumba, there is no scientific literature specifically about this fitness program. In order to perform a scientific background analysis, researches on sport and dance concepts will be partially applied here, in an attempt to position Zumba in its niche. At first, Zumba would seem to fit in the concept of Fashion Sport. According to Breuer & Sander (2003), Fashion Sport, or Trend Sports, consists of a sport tendency without organization structures and widely social accepted, usually most popular among youth population. It is supposed to have a short life spam and

should not be based on a marketing plans. As Zumba has been popular for

over 12 years and is mostly based on a strong marketing campaign, this

concept doesn't seem to apply. On the other hand, Zumba can also not be

classified as a niche sport, as it enjoys mass acceptance, in contrary to elite

groups (Wopp, 2006). It might be possible to categorize it as recreational

sports, for the same reasons, as it is massively accepted throughout the world

and it is supposed to be a stress free activity. Nevertheless, among several

fitness professionals, Zumba is not considered a proper fitness class, because it

lacks the technique and structure features expected in certain activities, as it is

possible to observe in other fitness modalities, as in Pump, Functional

Training, or even in Aerobic training, where there is a control of heart rate and

body positioning. The freedom provided in a Zumba class also impedes it to

be classified as a traditional dance class, as it presents a partial non-

choreographic structure. But, due to the social aspects related to a Zumba class

and for the focus in dance movements, instead of proper performance, it is

possible to study Zumba through the view of dance ethnology (Jeschke &

Vettermann, 2010).

Notwithstanding, as the aim of this thesis is to focus on the Zumba Rush

game, instead of Zumba as a fitness or dance modality, it is enough to

understand that, in Zumba, what matters in the development of the class is the

form of the movement, and not how it is performed. The participants follow

the instructor, but also interpret his/her movements their own way. The focus

in the other allows the participants to obtain full enjoyment, with less self-

consciousness. This class modality seems to obtain its best results in larger groups, also implementing a feeling of being part of the mass, as the individual performance is not taken in consideration by the trainer. There are no mistakes, but just interpretations of the movements.

These characteristics show that a Zumba class has a lot of similarities to casual games: you do not need certain talents to do it; it consumes an hour of your time without making you feel every second of it; it is easy to start and hard to finish it, as the numbers indicate it is a highly addictive activity; and it has the social advantages of social games, like FarmVille, as people who like Zumba enjoy inviting their friends to the activity, often compare classes and instructors and indicate where they had their best experience (Bogost, 2011). But group activities are not always attractive to all people, including introverts, overweight or self-conscious individuals, among others. It is a challenge for them, as they feel exposed when dancing in front of others. For these individuals, the videogame could possibly be an acceptable solution, as they are able to participate in the activity while being in a protected environment.

Zumba Rush is a newer version of the Zumba game. The first edition of the game had several problems, including poor visual resources, non-effective motion track designs, and poor tutorials, to mention some of the comments posted about the game in the worldwide web

(http://www.amazon.com/Zumba-Fitness-Kinect-Xbox-360/product-
reviews/B002I0H7K6/ref=cm_cr_dp_qt_hist_one?ie=UTF8&filterBy=addOn
eStar&showViewpoints=0). In Zumba Rush, they changed developing
companies, working this time with Majesco Games, which was able to
improve the graphics and playability according to the critics received by the
first game.

The Zumba game works in some ways similarly to previous well known
games, as Rock Band; the player doesn't get points or punishments for
mistakes, but he/she collects stars when playing well and he/she gets extra
help when necessary. The idea is to provide a positive learning environment,
where the player is rewarded for playing, no matter his/her expertise level.
Similarly to a Zumba class, minor mistakes are ignored, as long as the rhythm
and dance flow are kept. It has clearly a fitness focus, instead of a dance class
characteristic. Also focusing on fitness, it is possible to choose the difficulty
level of the choreography, allowing an easier, medium or harder workout.
When high expertise level is reached, by achieving 5 stars in the game, the
player unlocks extra features. The player can choose between several songs, in
different rhythms, and variable class locations, giving the participant as much
freedom as possible to diversify the gaming experience. It is possible to play
alone or in pairs, being 2 players the maximum allowed. This feature was
changed from the first game, where online multiplayer feature was available.
When playing, only a silhouette of the player is showed and the camera focus
is on the instructor. This feature allows the player to see his movements, if

desired, without focusing too much in the appearance. Which instructor is shown depends on the choreography, as each instructor is author of certain choreographies in the game. But all instructors are well known for their expertise and most of them known for the participants through TV commercials. When the gameplay is in good level and the game understands that it is an experienced player, the scenes shown are more of a party, and the camera moves quite a lot, giving the player the illusion of a live class. When the gameplay is less fluent and the console detects that the player needs extra help, the image shown is more static and clear, making it easier to the player to follow the movements. Also, before every movement change, the player receives, through a small window on the right, a visual cue of the next movement a few seconds before the change. This way, the player can follow the instructor in due time, without feeling lost with the choreography. Besides that, a positive voice cue or encouragement is given every time the player does the movements correctly. Again, the idea is to use positive psychology to keep the player engaged in the gameplay. It is also stated, from the beginning of the game, that the goal is to practice each choreography fully, in order to achieve the best expertise level possible. And, by doing that, the player will be able to get extra prizes and have more freedom with the movements. This strategy is used to keep the player engaged in the game, but it is not the only one. By inducing repetitive playing, the game also improves the chances of weight loss and fitness level improvement in the players, which would, in other hand, also increase the chance of more gameplay by the users.

The game also offers data about the amount of calories lost, song by song and healthy eating tips. The Zumba Company, in 2012, chose two overweight

people to start a 90 day challenge, playing the Zumba game for Xbox every

day and eating healthier, in order to lose weight. The male participant lost 52

pounds and the female participant lost 27 pounds

(https://www.youtube.com/watch?v=bl5fEla29Yw). The company wished to

show, as a marketing strategy, that playing the game alone was already

exercise enough to help someone to lose weight, as long as it was followed by

healthy eating. The same strategy has been used before by Red Octane in

2004, with GetUpMove.com, "a promotional and information website

showcasing the uses of dance pads and the Playstation Dance Dance

Revolution as a weight loss tool. Like many weight loss promotional

campaigns, GetUpMove highlighted the most astounding successes, including

a young woman who lost 95 pounds with no exercise program other than DDR

[Dance Dance Revolution]." (Bogost, 2005) This strategy is in sync with the

Zumba company ideal, as the whole program has always been advertised as

the perfect tool to lose weight, while enjoying the dance experience.

2.1.3 Zumba as a Physical/Social Activity

Dancing is one of the activities indicated by positive psychologists to induce happiness. Hecht (2007) affirms that dancing in a circle, meaning in groups, is a perfect mean, and a widely used method in history, to achieve euphoria and longer lasting happiness. This euphoria is called *dancer's high* (McGonigal, 2011). This high is a product of the combination of endorphins, provided by the physical movements, and oxytocin, produced from the touch and synchronization of movements. These chemicals, together with the stimulation of the vargus nerve, produces the excitement individuals feel when dancing. When the dancing activity is combined with hard physical work, and not only restricted body movements, it will flood the body even further with these chemicals (McGonigal, 2011).

But, as indicated previously in this text, dancing is also a source of embarrassment for many individuals, especially when done in groups, for fear of judgment, lack of ability or training, self-consciousness, etc. Positive psychologists indicate that such activities require the participants to show trust, which is also the reason why this activity is so powerful. But to show trust towards strangers is sometimes too much to ask for some individuals. These limitations prevent these individuals of enjoying the group activity and dancing in full. And any dancing activity can turn into a negative experience and a trauma. It is possible that the Zumba game would be able to minimize

this negativity and allow the players to increase their trust level through controlled and private game playing experience.

Besides the physical and chemical reactions normally expected from dancing and fitness, Zumba also provides social advantages. Differently from other physical activities, Zumba intends to provide a social environment for the users and trainers, creating a sense of tight participation. Through forums, polls, social events, annual conventions and competitions, the company attempts to keep the trainers and users engaged in the activity as a way to make friends and meet other people with the same interests. Researches show that individuals crave social connections, especially when the connections are made due to similar experiences and desires and the environment provides a sense of being part of something bigger than the individual (McGonigal 2011). Zumba Fitness, through the tools indicated above, intends to provide this sense of unity and of an important mission and responsibility to improve people's life quality. However, it is not hard to imagine that not all the individuals seem to be compelled to be part of a large community, especially when they do not feel prepare to do so.

For those individuals, the possibility of playing the Zumba game allows them to integrate the group while being on their own. The game intends to give the players a feeling of group environment, with graphics that show the trainers and the entourage, giving the illusion of a bigger event. And when the player

feels ready, it is possible to include another player to his game. The possibility

of starting in a small group improves the chances of increasing the self-

assurance, allowing the player to feel comfortable with the activity at its own

pace. With this improvement, it is plausible to imagine that players who would

never imagine taking part of a Zumba class would see it as a real possibility

after playing the game. The positive experience provided by the game, through

giving positive feedback, unlocking new features, might increase the sense of

safety and self-assurance in the player, making he/she believe in his/her ability

to move according to the choreography presented, even if the player does not

see it as proper dancing. It is important to remember that nobody is asked to be

a professional dancer in a Zumba class.

This idea is defended by McGonigal in *Reality is Broken* (2011). The author

argues that videogames are able to transform otherwise difficult activities in

something pleasurable and possible. Using several examples, she indicates that

games are able to improve social interactivity and push individuals forward, or

even allow them to start an activity they would not otherwise be part of,

including physical activities, all that by transforming these activities in games.

McGonigal also presents the idea of fun failure. She indicates that games

allow gamers to experience their failures as fun and usual things and make

them eager to try again. This is also an important feature in the Zumba game.

Through positive feedback, the game instigates the player in having fun with

the mistakes and play again, to seek improvement, without disappointing the participants. After each song, it is shown to the player how much he/she has done, instead of how much is missing. This positive view is crucial, as shown in games as Rock Band and Guitar Hero, to engage the player in further trainings. And the positive voice cues push the player to see the mistakes with good humor and continue playing. Although it is a machine talking, the player has the illusion of social interaction when the instructor say something directly to the player. It is not uncommon to see players answering back to it either.

According to Bogost (2011), the ideal of physical activities have changed from when they were viewed in our everyday as survival activities. With the increase in use of cars, sedentary work, and leisure time, physical activities pose as a health necessity, an obligation in order to keep our bodies fit. These obligatory physical activities are stripped from the social context that defined this work before. It has become a chore, which must be integrated to our everyday work. Videogames allow the users to see these activities further than the plain obligation and give them the possibility of enjoying it socially as well. The role of exergames, besides instigating the players to move, is to inspire them to want to move. It must include the social rituals that take part of each fitness activity and provide new ones, exclusive of videogames.

2.2 Physical Videogames

2.2.1 Definitions

In order to facilitate the understanding, it is important to explain some concepts used in the following text. These concepts will be applied throughout the text, including the data analysis and conclusion sessions.

A game is a system in which players engage in voluntary participation to achieve determined goals following a certain set of rules, resulting in a quantifiable outcome according to a predetermined feedback system (McGonigal, 2011).

Videogames are games played using home consoles, computers or hand-held devices. Physical videogames, also commonly denominated *exergames* (Bogost, 2009), are a combination of videogames and exercise. This term can also be used for *movement videogames*, in which the exercising is a by-product. As indicated before, they are games that inspire players to move and to *want* to move. They are often used as tools against obesity and sedentary lifestyles, although they can also be used as entertainment tools and to change the way players experience certain realities.

Although not defined as exergame at first, arcade games from the 70s and 80s already engaged the players in applying significant body movements in order to achieve relevant playing experience. It is questionable if it can be defined as "exercise", but it was somehow more active than the early stages of home console gameplay, indicating a relation between physical activity and videogame since the early stages. But the first exergames as such date from late 80s. Bogost (2010) separate exergames according to their rhetoric: in running, agility, reflex and training games.

Rhetoric of running, as the name already clearly indicates, is related to games mimicking running and sprint activities. They became present in the late 80s, when the finger controls were replaced by foot controls. Some of the titles included: Athletic World (1987), Running Stadium (1988), and Dance Aerobics (1987). These are among the first games to explicitly produce real physical activity. They try to turn running into an analogous operation, creating a reaction on-screen to the input produced by the player. This procedural rhetoric is not necessarily the most realistic, presenting a bigger challenge to the player's body as the real activity, due to its movement pattern.

Rhetoric of agility is related to games that rely on several physical movements, disrupting the attempts to operationalize agility. In this procedural rhetoric, the players need to shift between movements and intensity levels, creating transitions that are translated into actions on the screen.

The procedural rhetoric of reflex don't require constant physical movements, but demand carefully timed movements responding to external stimuli, usually visual, but it can also be audio stimuli. This rhetoric has been implemented in several games, sometimes in connection to other rhetorics. Games with reflex rhetoric seem to present more social and competitive aspects than other varieties, due to their score system, which is usually based on points.

Training exergames is the clearest use of exergames, as a simulation application for the activities performed by traditional workout methods. It is the most obvious application of exergames, as the combination of exercises and videogame. They have external cultural reference, simulating and creating social rituals that make us want to be physically active, as they borrow rituals from other domains. It usually intends to simulate the reality of the personal trainer, or group fitness class, for example. It can also simulate other physical activities, as playing tennis or archery. But it always works with borrowed references and, therefore, intend to follow third-party rules. Some games, e.g. *Yourself! Fitness,* launched in 2004 by ResponDesign, rely on the traditional rhetoric of personal training. Yourself! Fitness is a training game focused on engaging the players into repetitive training sessions. It intends so simulate the work of a personal trainer, who pushes the player into engaging in physical activities a certain amount of times per week and getting the workout done. This game focus more in repetitions than performance itself. In other games, like *Dance Dance Revolution,* the most famous movement game, the exercise come from the play itself, not from self-motivation to continuous training. It is a rhythm game, where the player must press certain pads in specific moments indicated by arrows on the screen. DDR, differently from Yourself! Fitness, focus not only on individual movements, but on the combination of overall gestures. DDR also provides feedback distinguishing degrees of success and it also has voice cues for encouragement based on the player's current performance.

Zumba would be understood as a training game, although it has also characteristics of reflex rhetoric, as it requires timely physical response to

external visual stimuli. But as it is marketed as a fitness game, we will focus here on its training rhetoric.

As it is possible to notice, the Zumba game has several similarities with DDR: both provide motivational and positive psychological feedback, grouping their procedural rhetoric with the player's goal to finish the dance performance. The goal in both games is to alter the context of training, creating incentives to continue the physical activity through the gameplay. The strength of these games is the possibility of engaging the player into physical activities without demanding any knowledge of fitness, feature which goes hand in hand with Zumba fitness main motto: "Exercise in disguise".

2.3. Motion Detection Technology

There are several consoles available in the market, each presenting different motion detection technologies. The main ones are Wii Fit, Playstation Move and Xbox Kinect. Their technical specifications will not be discussed here, as they are not relevant for this research, but their main characteristics and possible flaws will be presented, allowing us to understand their functionalities and limitations, according to some respected critic sites and their manufacturer sites.

Definition of Motion Controller

In basic terms, *motion controller* is a device that controls the motion of an object.

To work as intended, the following have to be present:

- A prime mover, something that causes the load to be moved

- A load, something to be moved

- Sensors, ability to sense the motion and monitor the prime mover

- Controller, to provide the intelligence to cause the prime mover to move the load

The use of a motion controller suggests the possibility of achieving certain benefits, for example, increased speed and accuracy, faster reaction time, better integration with other processes, improved efficiency and reduction in costs.

The presence of motion controllers in gaming goes back to 1976, but it became more popular and widely present in the 21st century.

Motion controlled gaming, i.e. gameplay using motion controller technology, allows the player to interact with the system through body movement. The input usually occur through combination of spoken commands, natural real-world action, i.e., touchscreen, and gesture recognition.

History

As mentioned previously, the motion controlled gaming started in 1976, with the Sega arcade box/fighting game, where the player had to move a punching glove controller to punch in the game.

During the 80s, several games presented motion controlled options, for example, Sega AM2 arcade motorbike racing game, where the player had to

physically sit and move on a motorbike, and Nintendo's Power Pad dance (1986), where fitness and dance games were played by moving over a mat.

In the 90's, with the Sega Activator, based on Light Harp technology, it was possible to achieve full body motion sensing.

In 2003, Sony introduced Eye Toy, the first motion detection device which allowed gameplay without controllers, by the usage of a camera. This device, together with the XavixPort, produced by SSD company in 2004, were the fathers of the devices produced nowadays.

In 2006, Nintendo released Wii Remote, their handheld motion controllers using accelerometers to detect orientation and acceleration.

In 2009 Playstation Move was released, being more efficient handheld motion controllers in combination with a camera.

And finally in 2010, Microsoft released Kinect: a motion sensing input device for Microsoft Xbox 360, Xbox One and Windows PCs.

Bellow the most modern devices available will be individually analyzed.

Wii remote / Wii motion plus system

Wii is a video game console launched in 2006 by Nintendo. It uses a wireless, motion sensitive remote control to control the players' movements. The control is able to sense movements in three dimensional axes, through the use of inbuilt accelerometers and a light sensor. The control can be improved using

additional features, as the "Nunchuk" and the "Zumba belt"
(www.nintendo.com/wii-). The most obvious flaws provided by this motion
detection technology is the necessity of carrying the controller to have the
movement detected and the lack of sensor for the leg movements

The Wii handheld motion controllers (primarily the Wii remote, (colloq.
Wiimote), secondary the Nunchuk) use accelerometers to track movements
and orientation, while an IR sensor monitors the positioning by using the
lights emitted by a sensor bar. The addition of Wii MotionPlus, an accessory
that gives the handheld controller a gyroscope sensor to complement the
accelerometer to improve the motion detection.

Wii's motion control system is part of the console itself. [6]

Sony's Playstation Move

The PlayStation Move combines a video camera (Playstation Eye, Playstation
Camera) with a physical controller.

The motion controller, or "wand," combines a gyroscope, accelerometer, and a
magnetic sensor. A glowing ball at the end of the controller allows the camera
to get a visual reference for the position 3D-space.

Through inertial sensors to detect motion, the position is tracked using a
glowing orb on each controller, which is detected by a camera.

The internal magnetometer is used for calibrating the controller´s orientation against the earth´s magnetic field.

The motion control system is an optional accessory for the console.

Kinect

The Kinect system for Xbox 360, Xbox One and Windows PC is an optional motion sensing accessory.

Using a single color camera for image recognition and two monochrome cameras to determine where the player is located, the console can acquire a full picture of the environment and player.

The Kinect can track movements without a physical controller, allowing the player to navigate through menus without the need of a physical controller.

A microphone array adds the possibility of voice recognition, where players are able to control the game using voice commands.

Feature	Console	Kinect	Playstation Move	Wii
Handheld Controller		-	+	+
Voice recognition		+	-	-
Camera(s)		+	+	+
Controller Feedback		-	+	+
Motion control system console inherent		-	-	+

3. Methodology

3.1 Research Method

This research is a qualitative research, as it is intended to study human behavior and the reasons and feelings conducting such behaviors. As already mentioned before, we intend to answer three research questions, using the data collected:

- How is the game able to create a pleasant and interactive environment, allowing the subjects to engage in repetitive and continuous play? How do the game work to allow the players to achieve the proper levels of flow and fiero and avoid higher levels of frustration?

- How does the game differ from the live experience and has the game been able to raise the confidence level of the subjects in relation to the activity?

- What are the deficiencies found in the experience and what are their causes?

The method used is observation, which is a very common method in sociological and anthropological studies. It involves the description of events and behaviors, in the social environment chosen for the research. The observational method allows the researcher to describe existing settings using all senses, creating a written image of the event being researched.

Although this research does not observe the participants in their natural environment, which would be what would be expected in fieldwork, the researcher is nevertheless using similar tools used during fieldwork: active observation, interviews, and patiently denoting the nuances of human behavior.

The observation method requires also a certain degree of management in relation to preconception, deception and impression by the researcher. It is required a certain distance and objectivity by the researcher to make sure that the data is not compromised by individual and personal assumptions, removing herself from the situation as totally as humanly possible. It is necessary to keep an open mind, be a good listener and refrain from judgement.

This research, as already mentioned, was organized in steps, in order to allow the subjects to have a resting period between the gameplay experiences, but also not so long that the learning curve would be compromised. The total period of data collection was of 3 months. This is a short period research and the results are expected to mirror it. Usually, observational researches can last for years, and the results can vary greatly due to this fact. In this case, the short period was used as an asset, being considered a positive factor to allow a faster learning curve.

The data collection occurred in three phases, using three different methods. The first phase was a simple, closed questionnaire, tailored to get basic information from the subjects: their age, previous knowledge of the Zumba fitness activity and game, gaming experience, fitness level and expectations.

The participants were given 10 minutes to complete the questionnaire unsupervised. The participants were advised to answer truthfully and disregard any possible external influence.

The second phase consisted of the gameplay sessions, which were video recorded. The participants played the game in a fully controlled environment, ideal for game playing, with no external influences. The environment comprised a large private room, with a large HD television and no interruptions. This was crucial to the data collection, as it made it possible to avoid technical issues, third-parties, noises, space issues, anything that could make the game experience less adequate and/or frustrating to the subjects.

There were 2 separate gameplay sessions. They were both video recorded in the most discreet way possible. It was taken into consideration that providing this artificial environment, and video recording itself could be a negative influence, as it was not the most natural situation for gameplay, usually expected to happen in the home environment. However, it clearly seemed that the immersion in the game playing was enough to allow the subjects to forget where they are and that they are being recorded and they did not seem to feel the least self-conscious. Nevertheless, those points will be taken in consideration during the data analysis.

In the first playing session, the subjects played individually, with no influence from other players or the researcher. This session was time limited to a maximum of 30 minutes. All subjects were indicated to play exactly the same time, in the same environment. This playing session is intended to be the control session, as, for the individuals, it was the first game experience data.

The second session was executed in pairs, intended to mimic the experience of the group environment, allowing to measure if the game can fulfill the same social aspects of the class experience. The pairs were allowed to play "freely", with no predefined limited time, although a reasonable time limit of 75 min was non-verbally determined by the researcher. This allowed the researcher to measure the engagement level of the subjects, indicated by the duration of their free gameplay sessions.

The sessions happened with a 2-weeks break between them, so that the participants could still take advantage of the knowledge and experience acquired during the first session. Also, the pairs were created based on their comments on the first session.

The third phase was an audio interview, done right after the first game playing experience. It occurred immediately after the playing phase, making it possible to get their most honest opinions, with no chance of external or third-party

influence. The idea was to observe the level of excitement/frustration of the subjects, not allowing them to over-think the experience. The expectation in this phase was to observe if the social stigmas and inner issues could be ignored and the players could enjoy the experience in its full extend. Also, the information provided during the interviews allowed the researcher to make an informed decision on how the pairs for the second session should be organized, in order to acquire the most data possible. The audio recordings allowed the researcher to analyze verbal cues, vocal tone, breathing rhythm, allowing to compare what was said and the way it was said.

The researcher took extra measurements to avoid being incorporated in the experience, being absent during the gameplay sessions. This distance also allowed the subjects to be more open and sincere about their feelings and impressions, as they were of no negative consequence for their everyday life.

3.2 Research Material

The research was executes through a triphasic analysis, containing a profile questionnaire, video recorded game sessions and audio interviews.

Profile Questionnaire

The questionnaire created to acquire profile information of the participants consisted of 12 multi-choice questions of simple content (see Appendix). The goal was to avoid misunderstandings or double meaning sentences and also to keep the data collected uniform, as no textual analysis was intended. Besides the questionnaire, it was requested from the subjects their personal data, as full name, date of birth, profession and contact information, in order to have a more complete picture of the participants.

The questions asked in the questionnaire were:

- How often do you exercise?

- How would you describe your fitness level?

- How do you enjoy exercising?

- Have you ever been to a Zumba class?

- How did you like the Zumba class?

- How often do you play videogames?

- Have you ever played Xbox Kinect?

- Have you ever played Zumba for Xbox Kinect (any version)?

- How did you like the Xbox Kinect?

- How did you like the Zumba Game for Xbox Kinect?

- Why did you accept taking part of this research?

- What are your expectations about today?

The participants were selected according to their knowledge or lack of knowledge of the Zumba experience. The objective was to compare how the subjects reacted to the game, in accordance to their previous experiences. This heterogeneity of the individuals taking part in the research allowed the researcher to foresee several possibilities for the results, and increased the interest in the subject analyzed.

3.3 Reliability and Validity of the Research

Reliability in Qualitative Research

Although it is clear that any research, qualitative or quantitative, needs to contain reliable data and reliable methods of data collection to be deemed valid, authors do not seem to always agree on how the terms reliability and validity should be defined for qualitative researches.

Patton (2001) states that validity and reliability are factors which should be taken into consideration by qualitative researchers during the design of any study, during the analysis of the data and while taking conclusions. It is all part of the task in which the researcher must persuade the audience that his questions are pertinent and worth being answered.

Seale (1999), states that the trustworthiness of a research depends on the issues conventionally discussed as validity and reliability when establishing what good quality is in qualitative research.

Strauss and Corbin (1990) believe that the "usual canons of 'good science'…require redefinition in order to fit the realities of qualitative research" (p. 250).

On the other hand, Stenbacka (2001) discusses that, due to the fact that reliability issue concerns measurements, it has no relevance whatsoever in qualitative research. According to the author, reliability seems to be irrelevant in relation to the judgement of quality of qualitative research.

It is clear that reliability in qualitative researches is deeply connect to the validity and should then not be considered separately.

Patton (2001) confirms this idea regarding the researcher's ability, stating that reliability is a consequence of the validity in a study.

Validity in Qualitative Research

Validity is defined in several ways in qualitative researches. It is not a fixed concept, but a construct based in processes and intentions of particular research methodologies, as defined by Winter (2000). Although not all authors agree on the need for the usage of the term "validity", it is widely agreed that qualitative researches also need some kind of qualifying measure to deem the research results able to be taken into consideration.

Creswell & Miller (2000) affirm that validity as such is measured according to the researcher's perception of it in the research and the assumption made in relation to the paradigm observed. As a consequence, the term validity has taken many forms, according to the concepts adopted by each researcher. It is common to read about "quality", "rigor" and "trustworthiness" in qualitative researches.

As qualitative researches based in observation need to take into consideration the concept of interpretivism and issues related to emotional and personal analysis of audio and visual data, it is important to keep a certain distance and take into consideration some aspects of reliability and validity to be deemed trustworthy.

In this research, the issues related to reliability and validity were addressed by a distanciation of the researcher from the participants during the gameplay sessions and also through the use of neutral terms. The objective of the researcher was to obtain the most neutral data possible from the subjects, in order to portrait their direct reactions to the gameplay experience.

To be able to mimic the experience of playing the game as in their own home environment, no instructions were given on how the console or the videogame worked. The researcher restrained from commenting, supporting or advising the participants in any way and was away from the room where the experiment was held until further notice from the participant or conclusion of the session. The researcher also, to the best of her understanding, took into consideration other issues present in the data collection methods used in this research: the test setting, being not a natural environment for the participants, could have effects in the reactions of the participants. Besides that, the choices made and availability of subjects during the group formation is also a factor the researcher was also forced to account for during the research.

3.4 Possible Issues

This research took into consideration in its analysis the data and information collected at the time the questionnaires and gameplay sessions occurred. No long term assumptions or interpretations of this study should be made.

In addition, this research is an analysis of the experiences of Xbox Kinect Zumba game players in correlation to the real Zumba classes under the scope of a humanistic point of view and in no way indicative of a physical or psychological evaluation of the participants. This research cannot be used to portrait the effectiveness of Zumba or Zumba game as an effective fitness method, as well it cannot be used as base for judgement of exergames as effective replacements for physical exercises.

This research has the objective of observing the experiences and make a comparative analysis of the data under the light of social behavior and should not be used in other fields of study without taking in consideration the possible limitations.

All participants were given total anonymity and confidentiality throughout this study.

4. Analysis

The analysis of the data collected for this research will be primarily made according to the phases of collection and afterwards combined in a cross-analysis of the data acquired.

In this way, the researcher expects to obtain a more detailed picture of how the participants developed during the sessions and how, if any, their initial judgement of the experience have been altered by the activity.

In the analysis, it will be taken into consideration the definitions of *flow* and *fiero* and how it is achieved during the several phases of the analysis.

Flow in this research is direct connected to the level of immersion acquired during the gameplay sessions. As flows indicates the mental state in which the person is fully immersed in an activity, the analysis of the level of immersion of the participants is clear indication of the flow.

> *Fiero is what we feel after we triumph over adversity. You know it when you feel it – and when you see it. That's because we almost all express fiero in exactly the same way: we throw our arms over our head and yell.* (McGonigal, 2011)

The level of happiness when achieving a goal or frustrating in face of failure will be also observed in the participants, in order to see if the game is able to create difficulty enough to engage the subjects in constant challenge.

4.1 Analysis of the questionnaires

The participants were asked to fill the questionnaires in full, according to their best understanding of the questions, before initiating the experiment. The researcher refrained from disclosing details about the game session or the research itself, keeping the information provided to the minimum required to guarantee an adequate level of comfort towards the participants. This was organized so to avoid influencing the participants on their comments and preconceptions of the game or console.

The questionnaire was created using closed, multiple choice questions, built to obtain the basic data about the subjects, with no deeper analysis of their feelings, thoughts or opinions on the matter. The objective of keeping the questionnaire simple was to not create presuppositions or raise concerns on the participants, allowing the subjects to start the game play without too much prior speculation on the matter.

The questionnaire itself, in its original presentation, is added in Annex 1. The subjects were given 5 minutes to fill the document. They were left alone during the time of completion of the questionnaire.

The initial division of the participants was made based on their previous experience in Zumba classes and also previous experience in games. It was not possible to find any participant with previous experience in playing the Zumba game for any platform. So this aspect will not be deeply analyzed, as it is a constant in all profiles.

The participants comprised 7 females and 3 males, of which 5 were students and 5 were professionals, from the ages of 26 to 52, therefore all adults. The age aspect of the participants allowed the researcher to analyze the adaptation level of the subjects during a short period of time. Although it is possible to argue that the experience is not immersive enough to provide long term responses and it is truthfully so, it was possible to observe immediate changes, whenever they occurred, and these changes were taken into consideration in the final analysis.

Although their frequency of exercise varied, such that 2 individuals exercise irregularly, 4 practice some kind of physical activity 1-2 times a week, 3 people practice 3-4 times a week and only one subject exercises 5-6 times a week, they all seem to be in a consensus that their fitness level is regular, independent of their daily activities, and they all seem to enjoy it enough, with the level varying from 3-5, being only one subject in the level 3 (level 3 = exercise as a requirement, not a pleasure).

When questioned about their previous experience in Zumba classes, 4 individuals attended previous classes, from which one attended it only once, and 6 subjects never attended any Zumba class. From the individuals who attended the classes, they all seem to enjoy it, from levels 4-5, being 5 translated as the highest level of enjoyment and 4 as an agreeable level of enjoyment.

When questioned about their previous experience with video games, all the participants seem to have some previous experiences: 3 played irregularly, 2 played 1-2 times a week, 1 played 3-4 times a week and 4 of them seem to

play daily or almost daily. This was already expected by the researcher, as video games, web/ PC games and mobile games are a constant in people's lives nowadays. The researcher tried in vain to find someone with absolutely no previous experience with games. Nevertheless, the variations of experience seemed to be enough to measure the participant's immersion in the experience.

Only 3 of the participants were acquainted with the Xbox Kinect, presenting great satisfaction in its usage. But, as indicated before, none of the participants had previous experience with the Zumba game for Xbox Kinect.

The expectations of the subjects varied, being so that 5 of the participants were interested in the gaming aspect of the experiment, 2 wanted to simply enjoy a new experience, and 3 of them were interested in trying Zumba and saw the experiment as an opportunity.

It was interesting to observe by the results of the questionnaires that none of the participants seemed to have any reservations or negative preconceptions of the Zumba experience. Even the male subjects, although reserved in their comments, seemed to approach the experience with open mind and willingness to enjoy the gameplay as such.

4.1.1 Profiles

For this research, before any attempt of grouping the participants based on their responses to the questionnaire, it seems prudent to analyze the item by item, in order to better understand the background of the subjects and how it can influence the results.

According to the age, it is possible to divide the participants in two groups: under 30 years old and over 30 years old. Four of the participants are over third years of age, while six as under thirty. It was expected most of the participants would be under thirty years old, due to the average age of the people interested in Zumba activities and also in video games. It would be natural to attract younger people to such an experiment. However, it is interesting to observe that, although the experience was offered to anyone over 18 years old, nobody under 25 years old seemed interested. This might be attributed to the higher level of interest in the Zumba activity attributed to people over 25 years old, as well as the level of comfort in trying new experiences of mature adults. It might be also possible that younger individuals would have played the Zumba game and participated in the Zumba classes long enough not to be interested in trying it in a controlled environment. As it is not possible to determine it with precision, this research will focus exclusively on the participants in the experiment, refraining from conjectures.

As affirmed before, five of the participants were students, while five were professionals. It is interesting to observe that all professionals were over third

years of age and all students were under thirty. However, this was expected accordingly with the age level of the students in Finland.

In frequency of exercising activities, six of the participants could be seen as less frequent trainees, while four should be considered as frequent trainees. It is curious to observe that the age and/or professional aspects do not seem to influence the frequency of trainings. It is also not possible to correlate it to the ages, as these items do not seem to be connected.

Although the frequency of trainings vary among the subjects, it is possible to observe that all of them responded to be in a regular fitness level. It would be plausible to declare that the concept of fitness level might have differentiated signification to the participants. It is also possible that the participants see the concept of "couch potato" or "sporadic trainee" to be too negative to be admitted.

It should be also taken into consideration that, although the variation of frequency of trainings is present, all participants seem to share a fair level of enjoyment in their physical activities. This enjoyment might also be an influencer in their concept of the fitness level. Seeing physical activities as something enjoyable and positive seem to allow the participants to have a more positive view of themselves as trainees.

According to their experience in Zumba classes, four of the participants had previous experience. It is important to note that all four were females and three were over thirty years old. The initial profile that the individuals which mostly

enjoy Zumba classes are adult females seem to be correct, although those numbers are too limited for a concrete proof.

The level of enjoyment of the participants in the Zumba classes seems to be a consensus, all the subjects indicating to have positive experience with the real Zumba classes, when they have tried it. The researcher was not able to get any person to the groups which did not have a positive experience with Zumba. This is understandable, as it would be possible to deduct that people which had negative experiences in Zumba classes would not be inclined to play the Zumba game.

There seem to be no correlation on the frequency of video game sessions to any of the previous analyzed data. The frequency of gameplay varied in age, gender, professional background and experience with Zumba too greatly, and it does not seem to be in any way an influencer of the profiles. And even though it would be natural to imagine that the videogame experience and frequency would be an influencer in the reason to participate in the experiment, it seems to show variations in this aspect as well.

As the variation in experience with Xbox Kinect is so small and the experience with the Zumba game is inexistent, it cannot be taken into consideration in the analysis.

In the aspect of the motives for taking part in the experience, it is of interest to observe that half of the group decided to take part due to interest in the game, two due to curiosity in trying something new and only three subjects applied due to their interest in Zumba. It would be possible to affirm that the game

experience seems to be a good driver for new participants to enjoy the experience. Furthermore, it seems safe to affirm that the game technology might be a good replacement for the real life experience, when analyzed by interest level alone.

The questionnaire results also indicate that nine of the ten participants had very positive expectations of the experience and one subject seemed to be neutral to it.

4.2 Analysis of the video recordings

The video recordings were arranged in a manner to avoid disrupting the experience as much as possible. The camera was out of the range of view of the participants, in a safe distance, as discretely positioned as the equipment would allow.

Some initial assistance was required from the researcher, as most participants had no experience with Xbox or the Kinect system. It was natural and expected that some technical issues would emerge during the game play sessions, and these issues will be taken into consideration in the analysis as part of the immersion experience, as they would and could easily occur during a Zumba class and/or gameplay sessions organized in the subjects homes.

It is important to take into consideration that the level of expertise and/or accuracy of the participants will not be evaluated in this analysis, as it is not relevant for the topics of this research, but only the experience and level of immersion in the activity.

The analysis of the gameplay sessions will be divided according to the individual and group sessions – as occurred in the sessions themselves.

4.2.1. Individual sessions

<u>Subject 1</u>

Female, 37 years old, researcher, previous Zumba experience, high fitness frequency

The subject started the session timidly and body language demonstrated a certain level of discomfort, but it was easily overcome. In less than 3 minutes, the participant was more comfortable and the movements were more precise and better timed in accordance to the game. The Kinect system also did not seem to be very hard to master.

The body language indicated that she was having a pleasant time, and the gameplay results mirrored her naturality in performance. It is possible to affirm that her previous experience in Zumba classes allowed her to better adapt to the gameplay experience. But still the game seemed to be challenging enough for the subject to keep trying to improve her performance.

No further indications from the researcher were necessary after the initial adaptation and the subject needed to be informed of the time, to be able to conclude the experience in 30 minutes, which indicates a satisfactory level of immersion.

The subject presented an acceptable level of perspiration and indicated heighten body temperature, related to the level of training, but did not seem out of breath or had altered color. As the participant exercises very often, it is

plausible that, although effective, the game was not a physical challenge to the subject.

Subject 2

Female, 32 years old, researcher, previous Zumba experience, moderate high fitness frequency

The subject seemed clearly more timid and concerned about being observed, although oblivious to the camera. This was indicated by constant check of the door, in order to make sure she was not being observed. Yet, the participant also seemed very comfortable and focused on the activity throughout the session.

The game seemed to capture her complete attention for long enough, although less than subject 1.

Although her body language indicates less than on subject 1, her constancy in playing and immersion in the experience are evidence of the effectivity of the session.

<u>Subject 3</u>

Male, 27 years old, student, no previous experience in Zumba, regular fitness frequency, high experience in videogames

From the very beginning, it is possible to identify the subject's previous experience in videogames, due to his naturality with the Xbox and less inclination in asking for assistance. Also, probably due to his lack of experience in Zumba classes, he seemed to expect instruction on how to play the game, which was provided by the researcher by request.

It is interesting to observe that the lack of experience in Zumba did not hinder the experience. The participant was vastly immersed and relaxed during the gameplay, with no signs of inhibitions or limitations. Also, it is clear to notice that the subject was very comfortable with the movements, adapting them to his natural inclinations, and obtaining the most out of the game. He seemed to overcome any challenge presented by the movements simply introducing his own style. The fiero is this case was clearly presented by his constant reactions, times positive, times frustrated, to the feedback system, as he constantly tried to achieve more stars.

The differentiation in fitness level seem to be applied here, as the subject needed a pause for water, which did not happen in the first two subjects. Also, his level of perspiration and skin color denoted a higher level of physical challenge.

Additionally, an interesting observation was that he was the first of the participants to acknowledge the stars punctuation system and to try to achieve more stars. The previous subjects were interested only in the experience itself.

<u>Subject 4</u>

Male, 26 years old, student, interest in games, no previous experience in Zumba

The subject's initial discomfort is quite evident, but body language indicates good humor in taking his initial difficulties. The instructions given on screen did not seem to be clear enough for the participant and he seemed at times confused.

Although at first the subject seemed to have a good experience, after 5 minutes it was clear that he was frustrated. The participant started to browse and try different songs for 30-45 seconds, giving it up due to the difficulty of the movements. It was easy to notice that, after the first attempts, his frustration grew and then almost no movement would be easy enough for him. The fiero for him was not in balance and it was clear that he was not engaged in the activity.

The level of frustration peaked to an extreme where he just ignored the game altogether and started reading notes left in the room or checking his messages on the phone. It seemed he was not willing to admit defeat and was willing to

continue, but his frustration took control and he was not able anymore to keep playing.

After several attempts, he asked to stop playing, but he endured for 25 minutes.

Subject 5

Female, 28 years old, student, frequent fitness trainee, irregular player

The subject had some difficulty to work with the Kinect system at first, but quickly adapted to it.

The participant seemed to have a different approach to the experience, repeating the same song to achieve better understanding of the movements. It is possible to notice a clear improvement of her movements in the second attempt and the realization of such improvement seemed to boost the morale of the subject, pushing her to try other songs.

Once informed, upon request, that her skill level was not under judgement in the experiment, the participant seemed to enjoy herself more and appreciate better the experience as a whole.

Subject 6

Female, 27 years old, graphical designer, good fitness frequency, some previous experience in games and Zumba, but not extensive

The participant's previous experience in Zumba classes, although limited, seemed to help her adapt to the game and to the movements.

The subject, although displaying symptoms of initial shyness, seemed to have a positive experience, and constantly smiled and got engaged in the activity.

No immediate difficulty, frustration or negative feelings were expressed by the subject and she needed to be remembered of the time to conclude the first part of the experiment.

Subject 7

Female, 52 years old, occupational therapist, very experienced in Zumba classes and games in general

From the very beginning, it is possible to notice the results of the participant's previous experience in Zumba in her movements. Although not exactly proficient, the movements were more precise and secure than the other participants.

It was also possible to notice the effectiveness of the game as exercising method when performed vigorously, as the subject clearly became tired and flustered after 20 minutes.

Differently from the other subjects, she attacked the movements with more intensity, as it would be expected from her in a real Zumba class, and was able to achieve better physical results this way.

Subject 8

Male, 34 years old, graphical designer, regular fitness training frequency, high level of experience in games, no previous experience in Zumba

The subject started the gameplay with a different approach from the other participants, choosing the slowest song, used for stretching, as the starting point. It was unclear if he believed this approach would give him a better understanding of the game or if he just wished to warm up and start in a slower mode than the others.

He had no initial problems controlling the Kinect system and seemed to be very familiar with the process, even though he had no previous experience with the system.

The participant, during the faster songs, seemed quite uncomfortable with the Latin American based movements, and showed some restrictions in his

mirroring. This aspect was expected as indicated before, but it was more clearly pointed in this subject than the previous ones.

Notwithstanding his initial discomfort, the subject continued the gameplay session and seemed to become more relaxed after a few minutes.

In the end of the session, he indicated he enjoyed the slower songs better, due to the fact that he could better follow them. The subject 3 had indicated before exactly the opposite: he believed the faster songs were easier to follow.

<u>Subject 9</u>

Female, 28 years old, student, regular fitness frequency, some experience in games, but none in Zumba

The subject requested assistance with the Kinect system during the first song, but adapted quickly to the system.

It was clear that the participant is in good fitness level, has some experience in rhythm based activities and would have no problem following the instructions.

She treated the gameplay session as a real fitness class, being totally immersed in the experience, and seemed to be focused on getting the most out of it. Her movements were intense and after the first session it was clear to see she worked out as she would in the gym.

She indicated, after the session, feeling muscular soreness and had very high perspiration. She was also very excited about the equipment and game and interested in acquiring them for home training.

<u>Subject 10</u>

Female, 26 years old, student, regular fitness frequency, highly experienced in games, but no previous experience in Zumba

The subject was, from the very beginning, very focused and dedicated to the experience, but seemed a bit flustered and presented not the happiest expressions. It is though hard to indicate if she was just concentrated or if she was frustrated with the experience.

The only indication given of some negativity by the subject was questioning the time remaining of the gameplay. Nevertheless, there is no clear indication if the subject was anxious for it to come to an end or if it was just simple curiosity, as she never emitted any sort of protest.

The participant seemed very neutral in expressions and reactions throughout the session, which hinders the ability of the researcher to affirm if the subject was enjoying or despising the game experience.

But physical posture indicates the subject was concentrated, in a certain competitive mode, and engaged in the gameplay during the session.

4.2.2. Group sessions

The subjects were divided in pairs, randomly, in order to analyze if there was an improvement and/or any alteration in their initial experience with the game and the Zumba experience.

The goal was also to mimic the group experience obtained in real Zumba classes and observe the level of interaction between the participants.

Although the definition of the pairs were done as randomly as possible, it was taken into preference that the subjects would not be acquainted with each other before the gameplay session, to avoid any awkwardness or excessive liberties.

This gameplay session had no indicated limited time, although the researcher kept a no-expressed limit of 90 minutes for the experiment. This way, it was possible to observe how immersed in the experience the participants were and what would be the game's retention time.

4.2.3 Video profiles

<u>Subject 10 & Subject 4</u>

Due to the level of frustration presented by the subject 4 during his individual gameplay session, the researcher was interested in observing if the group experience would enhance or reduce his level of frustration with the game.

Although they both now had previous experience with the Kinect system, working it in pairs seemed to be a renewed challenge. The researcher had to aid all the pairs, as it seemed the Kinect system's sensitivity does not always work properly with the pair configuration.

Despite the fact that the subjects never seem to look at each other, it is clear that their sense of space and direction was improved by their presence in the same area. Conscious or not, they seem to rely on each other to define their own movements and improve their performance.

It is extremely curious to see that the once frustrated subject 4 seems to be enjoying the experience and confiding on his partner to obtain better results. Subject 10 seems to be less dependent of her partner, but also collaborative in the movements.

It also seems the participants quickly adapted to their deficiencies and decided as a consensus to refrain from the faster, more difficult songs and enjoy the less up-tempo choices provided.

Although they played only thirty minutes, due to other responsibilities of the day, they left the experiment in a more positive tone.

Subject 7 and Subject 5

This group started the experience in good mood and high energies and carry it on throughout the experience. Both parties presented themselves very relaxed and self-confident, independent of any difficulties they might be facing with the movements or Kinect system.

They seemed to be less dependent and cooperative than the first group, but seemingly in a more social manner than the ones before them. Their interaction was more active than the first group. It is possible to observe that both individuals are more social and talkative, which enhanced their chance of positive interaction, even being total strangers.

The group played for forty minutes without interruption, but declared they needed to leave after that due to their personal activities. They seemed inclined to play longer, if they did not have other responsibilities.

Subject 9 and Subject 3

Although both subjects were very comfortable in their individual sessions, it was curious to observe that they seemed a bit out of their comfort zone when the group gameplay started. The first impression caused was that they were more self-conscious of the partner and intended to correct their movements and adapt based on the other party, but not in the collaborative way. It would be plausible to affirm they were aware of their own limitations and were not willing to show it freely to the partner.

However, maybe due to the fact that both subjects had similar difficulties and none was more proficient in the movements, they seemed to adopt a more relaxed posture after a few minutes and focus deeper in the movements presented by the game, not taking so much in consideration the other.

Although their movements improved during the experience and they clearly were able to get into a cardiovascular level indicative of a well based fitness training, their interaction between songs showed that the participants were still self-conscious and shy about dancing with an unknown party. They hardly exchanged a few words.

It is curious to observe such a fact, because the same did not occur with the other participants. On the previous two cases, the teams supported each other, in different manners, in order to improve their experience. In this team, the parties looked for support from the game, in the immersion itself, in order to overcome their social awkwardness.

Subject 6 and Subject 8

The male subject, at first, seemed to take control of the song choices in the game and focus mostly on his comfort zone. His body language indicated that he was trying to reflect an image of confidence, with more controlled movements and better posture, even though the experience was clearly not a common ground for him. His behavior could be related to a male/female interaction present in other kinds of social interactions, including courtship, where the male needs to portrait a certain posture to demonstrate his superiority/acceptability.

After a few minutes of gameplay, by noticing that his partner was very relaxed and active into the activity, he seemed to put more energy in it himself.

It was possible to notice that both parties improved exponentially in this second gameplay session. Their movements were more precise, they were more comfortable with the system and adventured to try new songs and different movements.

Although it is too short a period to affirm that the Zumba game would be enough to keep them engaged and improve their dancing skills and fitness level, it is possible to observe that there was clearly positive results in subjects with regular fitness levels.

This team played for over an hour, without noticing the time passed. They decided to interrupt the session due to fatigue.

Subjects 1 and 2

As both participants had previous experience in Zumba classes, and knew each other previously, it was the researcher's interest to compare how their gameplay experience would be differentiated from the other groups.

As expected, the individuals were more relaxed and less self-conscious, due to their previous acquaintance. Also, they were more easily immersed in the gameplay, as it would be expected of them to be in a normal Zumba class. Subject 2 was clearly more relaxed in a group environment than she seemed to be in her individual session. The support of a peer seemed to increase her self-confidence in the movements.

What was interesting and uncommon in comparison to the other groups was the fact that subject 1 took a position of dominance and even, in some parts of the session, of superiority, asserting subject 2 as the pupil.

This aspect is of interest because such an imposition would not be possible in a classroom, where the lecturer is clearly the person in dominant position and all the other participants are interacted as equals.

Due to the distance and lack of human factor created by the game, one of the subjects felt the need to fill this position of dominance.

Subject 2 did not seem to be affected by it negatively and was thankful for the assistance. In general, both parties were relaxed and comfortable with their roles in the experiment.

4.2.4 Comparison of Video and Questionnaire Data

Subjects with previous experience in Zumba classes

It was expected, at first, that the learning curve for the individuals with previous experience in Zumba classes would be shorter and there was an expectation in observing their reaction to the game experience in comparison to the real life experience, but without any prediction of possible results.

The first expectation was confirmed, as no extra direction or instructions were required in regard to the gameplay itself. However, it was challenging for the individuals with no previous experience with the Kinect system to maneuver it smoothly.

On the question of reaction and level of immersion and interaction to the game in comparison to previous experiences, the results were surprisingly positive. Although it is not possible to affirm, only based in body language, that the game is able to perfectly mimic the real life experience, it is possible to indicate that the subjects seemed to be positively immersed and active into the activity.

The general physical result was a healthy level of perspiration and a general insistence in playing. All participants kept their full attention to the game, indicated by the positioning of the body and eyes in relation to the screen and face expressions.

The average time of gameplay in the second session was 48 minutes and the indicatives of time-up used by the participants were either professional obligations or fatigue.

Subjects without previous experience in Zumba classes

Among the subjects without previous Zumba experience, the results were more varied.

Among the female subjects, all seemed to enjoy the experience and leave the experiment with positive body language. The level of fitness intensity varied depending on the effort invested in the gameplay and the frequency of physical activities, but it was clearly inferior to the individuals with previous experience in Zumba classes. The learning curve, being longer, consumed a larger part of the gameplay session.

None of the female participants, though, seemed aggravated or irritated by the experience and showed positive body responses. The same cannot be said of the male subjects.

Amidst the male subjects, it was possible to observe three levels of interest and response.

The subject more experienced in games played focused on the feedback, number of stars and better results. It was an objective approach, which helped him minimize any issues provided by his lack of dance experience.

The subject 6, nevertheless, focused more in the physical aspects of the game, with intension of achieving the highest fitness responses of the gameplay. He structured the experience as a class would be, with warm up and cool down sessions, and focused as little as possible in technical aspects, trying the best just to move.

The third male subject, although indicating excitement in his questionnaire responses, seemed irritated and upset after just a few minutes of playing. It was interesting to observe that he had no intention on learning a new trait, jumping from one song to the other, when he felt he would not be able to perform his best. He seemed unable to follow the game's lead. However, with a partner, he showed a better tendency of following leads and a better insistence, maybe due to social pressure or due to a better knowledge of the experience.

4.3 Analysis of the audio interviews

The audio interviews were collected immediately after the first gameplay session. A brief interview was collected also after the group gameplay sessions, but more informally.

The official interview sessions contained the following questions:

- What was your expectations before playing the game?

- How did the game fulfil your expectations?

- What were the best and the worst points of this experience?

- What would you change in the game/experience, if you could?

- Do you have any other comments?

As the responses for the questions were quite homogeneous among the subjects, with exception of the subject 4, the results will be presented without distinction of participant.

In a consensus, all participants indicated in the interview the same expectations provided in the questionnaires. None of them seemed to have any negative expectations or troubles before playing the game.

Nine out of ten participants felt as the game fulfilled their expectations and were very satisfied with the experience. They thought the game was effective as a fitness activity, fun and with good song choices. They could see themselves repeating the experience and four actually asked the price of the console and game for purchase, as they affirmed it would be a good solution for them to exercise more often.

Six of the participants indicated they would like the game to have a learning mode or level difference. This was an interesting comment, as the game offers a "Learn the Steps" mode, presented right under the "Play" button, which was not seen by any of the participants. Also the song selection menu presents a color coded representation of the levels, which was not noticed by 8 out of ten participants.

All participants indicated that the Kinect system is not the easiest to understand at first, but that they believed it would not be a problem in longer term, as they indicated they learnt the processes pretty fast.

The subject 4 was the only one to indicate negative results from the experiment. He indicated he believed the game was poorly designed, the movements too fast, the cues not well provided and the level indications were not clear enough. He noted though that, after the second session, his response was more positive and that the group system helped in the adaptation. He was the only participant that, even though there was an improvement, indicated no interest in repeating the gameplay or the Zumba experience in general.

None of the subjects indicated being bothered by the environment or the presence of the camera. They all affirmed the game was interesting enough to make them forget where they were.

4.3.1 Profiles post-gaming

Although the differences in features between the individuals with no previous experience in Zumba classes and the ones with some previous experience are not as prominent and defined as they could be, it is possible to observe some.

The subjects with previous knowledge were easily adapted to the structure of the game, were more natural into following the movements and did not seem to question the experience as much as the ones without knowledge. But the game and the first gameplay session was quite able to even the field for both groups and less demarcation could be notice in the second session.

The subjects with experience in Zumba also indicated that the game imitated the life experience quite well, enabling them to immerse positively in the gameplay.

There were also no large difference between the opinion after the first and the second session, or even from before and after the experiment. This might be consequence of the high level of information shared about the Zumba experience in television commercials and also peer comments. The individuals seemed to know a lot about how the class is formed and how to proceed, even

when they have never attended the class itself. As the advertisement shown on television intends to create excitement, they include high amount of information to calm the viewers when it comes to proficiency required to enjoy the experience. This might be the reason why the subjects that agreed to be part of this research seemed to be so comfortable with Zumba, regardless of their inexperience.

But it was possible to note that the game seemed to surpass all expectations, in one case negatively, and in all other cases in a positive view, as all participants with positive view of the game were interested in continue playing and even attending classes, and noting how much physical activity they felt they have done, although this research cannot indicate the level of physical stress obtained. None of the participants expected the gameplay session to be so physically extenuating or so easily engaged.

Among the participants, it was possible to notice three kinds of profiles: the game focused, the exercise focused and the fun focused subjects.

The game focused participants engaged in a more competitive mode, trying to get the best feedback and points, not interested in quality of performance when it did not influence the results. They seem to quickly notice that, as long as they kept moving, the game accounted it as positive and translated it into stars. In some way, by understanding the positive psychology based design, they were able to "crack the game".

The exercise focused participants used the intensity of the movements as base for performance. They faced the experiment as a physical training and tried to

achieve the most in physical performance. Their reward seemed to be perspiration and exhaustion.

The fun focused participants took a more relaxed approach to the experiment. They did not seem to control the points, number of stars or precision of movements, and either were attempting to achieve the most of it as an exercise method. Their main goal was to enjoy the game as is, and learn something new by it.

It is important to underline that these profiles are not totally separated and the same participants were able to show indications of aspects of different profiles here defined.

4.3.2 Comparative analysis of the data

The data acquired from the experiment, although of great interest, was not able to provide great diversity. This may be caused by the small amount of participants in the experiment or the lack of time to acquire longer term results.

Although the researcher would be able to organize a third gameplay session, the logistics seemed to be too improper and results acquired in the first two sessions showed that a third session would probably not provide any altered results. Also, the data acquired seemed in order to answer the research questions proposed by this research.

- How is the game able to create a pleasant and interactive environment, allowing the subjects to engage in repetitive and continuous play? How do the game work to allow the players to achieve the proper levels of flow and fiero and avoid higher levels of frustration?

According to the data, the game is able to create a pleasant environment by mimicking the real life experience, improving the retention and enabling the users to pleasant continuous play. In most cases, the flow is achieved through the positive feedback and lack of attention to details that could create distress in the players; while the fiero is attained through the selection of high and low tempo songs, creating differentiation in levels, without segmenting the users. Nevertheless, the lack of clear levels showed to be a possible cause of frustration in users which prefer a more traditionally structured and designed game.

- How does the game differ from the live experience and has the game been able to raise the confidence level of the subjects in relation to the activity?

It is clear that, although the game mimics the real life experience quite well, the lack of human interaction increases the difficulty level for some users, despite of the fact that it can be seen as an advantage by others. McGonigal (2011) addressed this concept when analyzing how group dance activities

seem to expose a high level of flow due to the effects of the music and social activity, while individual challenges increased the level of fiero, due to social aspects related to personal exposure. The Zumba game seem to work in a similar manner: the dance experience when faced individually may cause a higher level of fiero, while the music can help increase the flow, allowing the continuation of the gameplay. For the individuals that prefer human interaction, the group experience increases the flow even more, without reducing the fiero too much.

On the other hand, the game seems to be an effective form of training, as all participants improved in movement, coordination and confidence during the second gameplay session.

It is plausible to affirm that, given proper time, users playing the Zumba game might feel more inclined to participate in the real life activity, as well as other group dance activities.

- What are the deficiencies found in the experience and what are their causes?

The deficiencies pointed by the data include difficulties in dealing with the Kinect system, although it seemed to be a minor issue and easily overcome. Although criticized, the Kinect system was indicated as a better system for movement games than Wii system, for example. But the sensitivity of the sensor and delay in response might be a problem at times. With the

improvement in the movement sensor, it is possible to imagine that the precision of movements will be better taken into consideration as well, improving the quality of the feedback.

It was also clear that the menu and the options of gameplay were probably not clearly enough offered to the users, as none of the participants noticed the "learn the moves" area.

Also, the indication of levels should be more direct and clear, in order to help beginner users to avoid high level of frustration in the very beginning of the experience and improving retention. It would be interesting if the game would offer structured class modes, defined by level, where the users would just follow the order during an hour and get the real life experience in its fullest, without need to selection. It is possible that, this way, the beginners would feel more comfortable in playing longer periods and the game would promote more repetitive sessions.

5. Conclusion

The concept of exergames as possible replacements of exercises for non-active people, as suggested, although not ideal, seems to be a possible alternative. It is not ideal due to the lack of directions and of presence of a physical expert, who can avoid injuries and health issues. But it is plausibly a positive choice for someone who needs movement and is not able to visit a proper fitness center. This research, although limited, was able to show that there is an acceptable level of physical activity involved in Zumba games and would be a proper starting point and temporary solution for fitness trainings, although not advisable as unique form of exercise. It would be advisable to research further, through physiological measuring, how effective the Zumba game really is, though.

The enjoyment level of the participants indicated that Xbox Kinect is effective in attracting and maintaining the users interested in the movements and it is plausible to believe that, with the improvement of the technology and graphical experience, the level of enjoyment and immersion of the users will grow. It is possible that, with Oculus Rift and similar technologies, soon the users will be able to enjoy the Zumba experience without requiring to leave their home.

With the rise in levels of obesity and amount of sedentary people, shortening the life expectancy, it is important to acknowledge that exergames might be a suitable substitute to avoid these issues. But it is again important to underline that this research should not be taken as sole consideration for this affirmation and further research would be required in order to stress the positive and negative traits of exergames in physical activities.

The feedback system provided by the game seems to be effective in creating the proper flow and the songs available are satisfactory in creating the proper Zumba experience, offering an adequate level of fiero, but there are still deficiencies in the presentation of the menu options and selection of levels.

As effective replacement for the Zumba experience, the game's intentions of creating a similar experience to the real life were fruitful enough. The game is clearly an effective way to engage users which would not willingly go to a class and might, in longer term, attract new participants to the real life experience. But the individuals which enjoy video games and do not enjoy real life exercises seem to be more inclined to play the game than to attend a real life class.

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Zumba website. www.zumba.com

University of Jyväskylä
Master's Degree Program in Digital Culture
Patricia Zanardi de Toledo

Profile Questionnaire

Full name:
Date of Birth:
Profession:
E-mail:
Telephone Number:

1. How often do you exercise?
(a) Everyday
(b) 5-6 times a week
(c) 3-4 times a week
(d) 1-2 times a week
(e) irregularly
(f) never

2. How would you describe your fitness level?
(a) Athlete/Fitness Trainer
(b) Enthusiast
(c) Regular
(d) Sporadic
(e) Couch potato

3. How do you enjoy exercising?
(a) I love it!
(b) It's ok, Sometimes I enjoy it.
(c) I do it because I have to.
(d) I don't like it. (Please include the reason) _____
(e) I hate it! (Please include the reason) _____
(f) I have never done it.

4. Have you ever been to a Zumba class?
(a) Yes, many times
(b) Yes, few times
(c) Once
(d) Never

5. How did you like to Zumba class?
(a) I love it!
(b) It's ok, I had fun.
(c) I didn't like it. (Please include the reason) _____
(d) I hated it! (Please include the reason) _____
(e) I have never done it.
6. How often do you play videogames?

(a) Everyday
(b) 5-6 times a week
(c) 3-4 times a week
(d) 1-2 times a week
(e) irregularly
(f) never

7. Have you ever played Xbox Kinect?
(a) Yes, many times
(b) Yes, few times
(c) Once
(d) Never

8. Have you ever played Zumba for Xbox Kinect (any version)?
(a) Yes, many times
(b) Yes, few times
(c) Once
(d) Never

9. How did you like the Xbox Kinect?
(a) I love it!
(b) It's ok, I had fun.
(c) I didn't like it. (Please include the reason) _____
(d) I hated it! (Please include the reason) _____
(e) I have never done it.

10. How did you like the Zumba game for Xbox Kinect?
(a) I love it!
(b) It's ok, I had fun.
(c) I didn't like it. (Please include the reason) _____
(d) I hated it! (Please include the reason) _____
(e) I have never done it.

11. Why did you accept taking part of this experiment?
(a) I love Zumba and I am interested in doing more of it.
(b) I love videogames and I am interested in playing.
(c) I want to try something new.
(d) I want to give Zumba a last chance.
(e) I had some free time.
(f) I don't know why I came.
(g) _____

12. What are your expectations about today?
(a) I think it will be fun!
(b) Better than not doing anything.
(c) Maybe I find another way to exercise.
(d) I'm not expecting anything.
(e) _____

Release Form for Use of Video and Audio Material

Researcher: Patricia Zanardi de Toledo
Supervisor: Prof. Raine Koskimaa
University of Jyväskylä
Master's Program in Digital Culture

I, _____, hereby give my permission to
Patricia Zanardi de Toledo to use any audio or videotape material taken of myself
during her research on "Comparative study of XBox Kinect Zumba game players
related to previous (in)experience in real Zumba classes".
I understand the researcher will film me while I am playing and also interview me after
the session. I also understand this material will not be released to the public, but used as
research data in this and further studies.
The audio and videotape material will only be used for research purposes and for the
presentation of the research. As with all research consent, I may at any time withdraw
permission for audio or video footage of me to be used in this research project.

Signature: _____Date: _____

Participants	Age	Gender	Profession	Frequency exercise	Fitness Level	Enjoy exercising	Zumba class	Enjoy Zumba class	Frequency video games	Played Xbox Kinect	Played Zumba Xbox Kinect	Enjoy Xbox Kinect	Enjoy Zumba Xbox Kinect	Why did accept?	Expectations
Subject 1	37	Female	Researcher	5-6 times week	Regular	4	Many times	4	3-4 times week	Once	Never	4	Never done it	Interested in playing	Fun!
Subject 2	32	Female	Researcher	3-4 times week	Regular	4	Many times	5	Irregular	Few times	Never	4	Never done it	Love Zumba	Maybe try another way of exercise
Subject 3	27	Male	Student	Irregular	Regular	4	Never	Never done it	5-6 times week	Once	Never	4	Never done it	Want to try Zumba	Fun!
Subject 4	26	Male	Student	1-2 times week	Regular	4	Never	Never done it	1-2 times week	Never	Never	Never done it	Never done it	Interested in playing	Fun!
Subject 5	28	Female	Student	3-4 times week	Regular	5	Never	Never done it	Irregular	Never	Never	Never done it	Never done it	Try something new	Fun!
Subject 6	27	Female	Graphic Designer	3-4 times week	Regular	4	Once	4	Irregular	Never	Never	Never done it	Never done it	Try something new	Fun!
Subject 7	52	Female	Occupational Therapist	Irregular	Regular	3	Many times	5	Daily	Never	Never	Never done it	Never done it	Interested in playing	Fun!
Subject 8	34	Male	Graphic Designer	1-2 times week	Regular	4	Never	Never done it	Daily	Never	Never	Never done it	Never done it	Interested in playing	Better than doing nothing
Subject 9	28	Female	Student	1-2 times week	Regular	4	Never	Never done it	1-2 times week	Never	Never	Never done it	Never done it	Want to try Zumba	Fun!
Subject 10	26	Female	Student	1-2 times week	Regular	4	Never	Never done it	Daily	Never	Never	Never done it	Never done it	Interested in playing	Fun!

5 - Love it
4 - Sometimes enjoy it
3 - Do it because I have to
2 - Don't like it
1 - Hate it
0 - never do it

5 - Loved it
4 - Had fun
3 - Didn't like it
2 - Hated it
1 - Never did it

5 - Loved it
4 - Had fun
3 - Didn't like it
2 - Hated it
1 - Never did it