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# The social game
# Physical activity vs exercise

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## Abstract

**The benefits of physical activity are well known, however, getting people to do it consistently and efficiently is a serious problem. The promotion of physical activity is not a simple goal, there are multiple ways in which it is pursued, from physical education classes in the SEP (Ministry of Education) programs, to the installation of outdoor gyms in Mexico City.**

**On the other hand, a person with a sedentary lifestyle suddenly launching into moderate-high intensity physical activity for long periods if they have never done it before can backfire, as it could lead to injuries and an overall negative experience.**

**At least 30 minutes of regular, moderate-intensity activity on an almost daily basis is recommended (WHO, 2004); it seems simple, however in Mexico the people who report insufficient or null levels of physical activity are close to 50% (INEGI, 2018), the most cited causes for not doing physical activity are lack of time and fatigue from the working day (INEGI, 2018).**

**Most of the campaigns and studies about physical activation focus on exercise routines, walking or running, they do not consider the**

**motivations and lifestyle of some people. A broader, more inclusive, and integrated approach to understanding and promoting human movement is thus required to better address the current public health crisis (Chaput, Carson, Gray, & Tremblay , 2014).**

**How to integrate motivations with lifestyles to contribute to health without becoming an obstacle throughout the day?**

**An alternative could be video games, since they arouse and maintain the interest of the players, so they can be allies so that the acquisition and maintenance of new habits is enjoyed, in particular the so-called exergames, which combine exercise and video games, use the engaging experience of playing a video game to help people achieve their exercise requirements.**

## Keywords

**social game, exergame, group collaboration, physical activity**

## Introduction

**Different articles talk about the concept of adherence that is developed with exergames, which is achieved by promoting collaboration in groups and avoiding the obligation to exercise during specific periods and times, that is, the opposite of what is done in traditional gyms.**

**Social gaming offers specific benefits such as concentration and a good state of mind for players, as well as the acquisition and maintenance of habits.**

**The importance of offering a balance between the challenge level of the game and the skill level of the player, and constant feedback during the game must be emphasized in order to have positive results.**

## Body of the article

**Design is a proposal to increase physical activity that considers the motivations, lifestyles and scope necessary to have a positive impact on health and lifestyle without becoming an obstacle to said lifestyle.**

## The solution then should be:

• ***Facilitate the performance of physical activity that is perceived as an entertaining activity that can be performed in short intervals and can be accumulated during free time.***

• ***Increase physical activity of medium intensity in cumulative intervals, relying on elements of play and social cooperation to achieve this, also promoting community interaction.***

• ***Achieve physical activity of moderate intensity in minimum intervals of 10 minutes.***

• ***Integrate video game elements to promote a state of flow, a positive perception of the task, cooperation between members of a community and the fulfillment of dynamic goals.***

## Lifestyle and obstacles

**The initial focus should be opposed to an individual activity. That is, it must be started considering the advantages that group support grants in achieving goals.**

**Therefore, the adaptation of video game dynamics should be considered to get a community to play in their free time as the main objective, having as a collateral result the performance of physical activity and the construction of positive associations with physical activity in the process.**

**Understanding the human factors of the performance (or not) of physical activity will allow a viable proposal in factors of function, production, aesthetics and ergonomics that complement the approaches of health and sports.**

**Why do physical activity and not exercise?**

**The World Health Organization defines physical activity as any bodily movement produced by skeletal muscles, with the consequent consumption of energy. This includes activities carried out when working, playing and traveling, household chores and recreational activities (WHO, 2018).**

**Physically active people have a better physical shape, a lower risk profile for various disabling conditions and a lower rate of chronic non-communicable diseases.**

**Adults 18 to 64 years old should accumulate a minimum of 150 minutes per week of moderate aerobic physical activity, or 75 minutes of vigorous aerobic physical activity each week, or a combination of moderate and vigorous activities. Aerobic activity will be practiced in sessions lasting at least 10 minutes (de Pablo and Zarzosa, nd), (WHO, 2010).**

**The city and our lifestyles make it difficult to incorporate physical activity into daily life. Physical inactivity is becoming more widespread in many countries, and this has a considerable impact on the general health of the world's population, on the prevalence of Non-Communicable Diseases or NCDs (for example, cardiovascular diseases, diabetes or cancer) and on their factors, such as high blood pressure, excess blood glucose, or being overweight. Physical inactivity is estimated to be the main cause of approximately 21–25% of breast and colon cancers, 27% of diabetes, and approximately 30% of ischemic heart disease. Furthermore, NCDs currently account for nearly half of the total global burden of disease. It has been estimated that six out of every 10 deaths are attributable to non-communicable diseases (WHO, 2010).**

**In Mexico, of the physically active population, 52.4% reach the level of sufficiency to obtain health benefits according to the recommendations of the WHO (2004), depending on the frequency, duration and intensity of physical-sports practice. 44.6% of the physically active population is exercising with a lower level than recommended (INEGI, 2018).**

**According to the WHO, the physical activity of young people is declining worldwide. It is estimated that more than two thirds of young people do not have enough physical activity to benefit your current and future health and well-being. Children walk or bike to school less and less and spend too much time watching television and using the computer, often at the expense of time spent on physical activity and sports. Physical education and other physical activities performed at school are also declining (WHO, nd). In**

**adulthood, levels remain low due to insufficient participation in physical activity during the time and an increase in sedentary behaviors during work and domestic activities. The increased use of passive means of transportation has also reduced physical activity (WHO, nd).**

**However, early adulthood can also be a period when people are especially receptive to advice about taking regular exercise. The period between the ages of 18 and 25 is characterized by change, exploration, and the adoption of lasting lifestyle options (Rovniak, Anderson, Winett & Stephens, 2002), and physical activity can contribute to social development of young people, giving them the opportunity to express themselves and encouraging confidence, social interaction and integration, as well as greater ease in adopting other healthy behaviors, such as avoiding tobacco, alcohol and drug use, and having better school performance (WHO, nd). Improving physical activity in young people is essential for the future health of the entire population (WHO, nd).**

**In addition to the general benefits of regular exercise, intervals of as little as 10 minutes of moderate-intensity exercise have been shown to show punctual (short and temporary) cognitive benefits in working memory, concentration, and mood. That is, if done three times a day, people doing 10-minute intervals of physical activity could not only reap the benefits of a continuous 30-minute block of exercise, but also improve their focus, concentration, and mood over time. length of the day (Gao & Mandryk ,2012). Another benefit of moderate physical activity is the decrease in the possibility of injuring yourself when doing it.**

## Communities

**For a community to actively participate, the location for an exergame must be in a place that is frequented by all members regardless of the time of day they do so, so that everyone can contribute to the group benefit. Schools or offices are spaces that meet this requirement. What is important is that it be a common place of transit for all the areas or departments involved so that they can play in their free time or at different times between their activities.**

**The idea of integrating mechanics that encourage physical activity at various intervals throughout the day to combat sedentary behavior can be beneficial. Simple activities like climbing stairs or walking down hallways are easy ways to build up time spent on physical activity. The important thing is the registration of it as well as the intensity, duration, modality, and environment where it is carried out.**

**Moderate physical activity also has the advantage of avoiding the pain associated with exercising, which is convenient for those who are just starting out in physical activity.**

**A well-documented barrier to continued participation in physical activity refers to the lack of pleasure derived from community participation and goal achievement.**
**The perception of pleasure is associated with the achievement of goals, a sensation that is known as the autotelic experience, which is experienced when the activity is highly rewarding. For this to happen, the flow state must be reached.**

## Video games and exergames

**In a game where the challenges and goals are structured according to the skill level, the player will be able to achieve the state of flow since the goals and challenges are appropriate according to the skill level, neither too easy nor too difficult, which allows him/her to advance according to the skill acquired. That is, the so-called autotelic experience is achieved where the reward obtained is derived from the very act of performing the activity.**

**Unlike exercise, in a video game the feedback is immediate, which constitutes a motivation to continue and advance since the achievement reached and the level to be overcome are known exactly. In a video game the reward is immediate and visible. Also the rules are simple.**

**In order to achieve the recommended daily goals, it is necessary that the exergame provides a sufficient level of aerobic activity to provide benefits.**

## Sense of belonging

**Group interaction has an influence on individual behavior, from which it can be deduced that playing in a group helps not to abandon the game and maintain the necessary adherence to achieve health benefits, the above plus camaraderie and intrinsic fun become motivations to continue with the activity associated with the exergame. Proof of this is the rise of online group games. In short, the activity should be enjoyed.**

## Music and rhythm

**It is human to associate rhythm with movement. Music is one of the elements common to all mankind. It is capable of generating positive moods and distracting us from the tiredness caused by physical activity. It can be evaluated, if it is possible to synchronize the rhythm and movement of parts of the human body, therefore feedback can be given on the results and the level of synchrony achieved. If full synchronization is not achieved, the need to retry is felt until success is achieved.**

**Beat is an exergame proposal developed by Jenny Reza Arteaga , a student at the Industrial Design Research Center (CIDI), proposed for the student community of that school, that considers the following factors to encourage physical activity. The elements associated with the flow state:**

**› *Challenge-skill balance***
**› *Action-awareness fusion***
**› *Clear goals***
**› *Unequivocal feedback***
**› *Concentration on the task at hand***
**› *Sense of control***
**› *Loss of self-awareness/disinhibition***
**› *Time transformation***
**› *Autotelic experience***
**› *Curiosity***

**Other aspects taken into consideration for its design are the following:**

**› *Positive emotional experience***

**› *Social experience***

**› *Moderate intensity physical activity***

**› *10 minutes long***

**› *Availability***

**These elements make it possible to ensure that the objective of getting people to perform physical activity, without the obstacles usually associated with doing so, is met.**


***fig 1 Beat exergame***

**In the proposal of this exergame, the casual game style, simple game dynamics, popularity and movement stimulation of rhythm games were used to modify and control the intensity of physical**

**activity, while the simplicity of the game allows players to get acquainted quickly an increase of the intensity in the physical activity at higher level, without increasing the complexity of the game dynamics can be achieved, so that the balance between challenge and skill prioritizes physical fitness, and not the ability to play a video game. The appeal was maintained by speed increases and not dynamic changes, as in Tetris, and the ability to keep up with the game and continue a winning streak without errors, as in the Flappy Bird game.**

**By adhering to the flow elements and adding the rhythmic and social elements, players are intended to be intrinsically motivated to play, because they enjoy it, and this enjoyment of the game and physical activity provides a positive emotional experience regarding to the intensity of the activity (with the correct balance of challenge-skill-feedback), so that the challenge keeps the game attractive and effective, turning Beat into an autotelic activity (performed by itself) that motivates intrinsic (enjoyed) supported by social coexistence.**

**Beat offers short bursts of physical activity of varying intensities throughout the day, and encourages the player to stay and play with friends and gradually increase the intensity/difficulty of the game by providing clear challenges and feedback on their progress.**

**It consists of a screen that serves to visualize the current status, feedback to know the progress during the game. It is connected to a mat with two clearly defined spaces for one or two people to position themselves, which allows you to play individually or in pairs.**

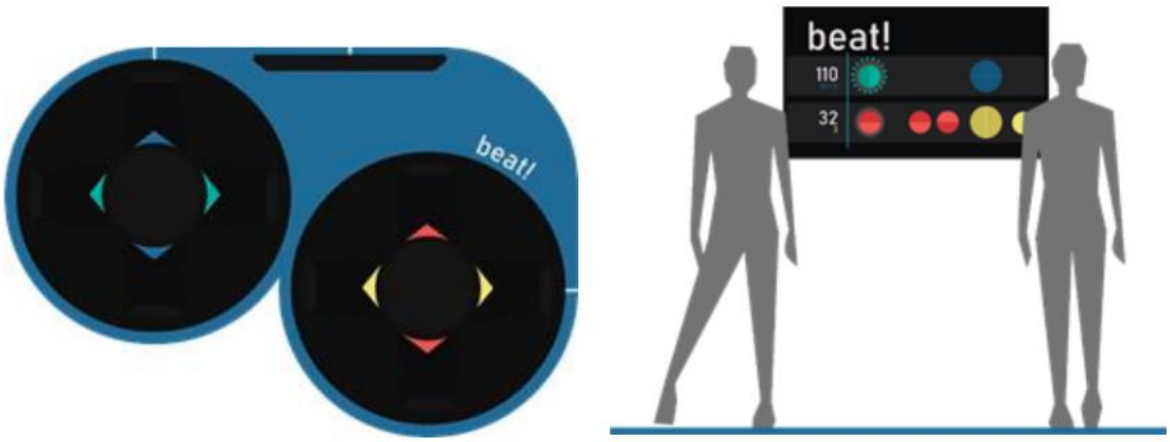


*fig 2 Beat platform and screen*

**It is proposed to be located at the access area to the facilities, in one of the corridors with the highest flow of people, but with enough space not to obstruct circulation.**

**The social game will be achieved in two ways, one more immediate than the other: the first consists of cooperating with their classmates to achieve the common goal of obtaining a higher score than the others (which will be achieved with more game time in more complex levels).**

**This cooperation-competition will also be used to arouse curiosity and encourage students to play, since the classification of the generations will be shown as a waiting screen between players.**

**The second has to do with the very installation of the game in a social and common space, in addition to promoting competition or cooperation by awarding a higher score when two players play instead of one, regardless of whether they are of the same class (cooperate), or a different one (compete). At the end of the game,**

**the individual scores are added to the collective score, and the player is suggested to select a level of greater/lesser difficulty or repeat the same according to their performance.**

## Conclusions

**Beat keeps a simple game dynamic. Adjusts between different levels of intensity of physical activity in an efficient way, when changing players. Arouses and maintains the interest of the players, promoting adherence.**

**It facilitates the performance of physical activity and that it is perceived as an entertaining activity that can be carried out in short and cumulative intervals during free time.**

**Allows physical activity of moderate intensity in minimum intervals of 10 minutes and also integrates video game elements that promote a state of flow, a positive perception of the activity carried out, cooperation between groups in a community (in this case the different generations) and the fulfillment of dynamic goals as well as immediate feedback and recommendations.**
**Beat is an example of the way in which design can contribute to solutions to complex problems for the benefit of different social groups**.

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