PAMPA GAMES: using dance games to foster socialization and physical activity practice

Cristiane A. da Silva Conrad*

Anne L. L. Escarrone[†]

Aline Vieira de Mello[‡]

Jean Felipe P. Cheiran[§]

Universidade Federal do Pampa, Campus Alegrete, Brasil



Figure 1: Participants dancing

ABSTRACT

Low physical activity of students and professors at university is quite common due to the accumulation of academic tasks, especially in undergraduate programs that depend on constant activity in computers. Considering that lack of physical exercises is a significant cause of serious chronic diseases, it is necessary to promote ways to engage academic community in physical activities that provide opportunities for socialization and entertainment. Thus, the Program C extension program organized and ran an event using Just Dance game franchise. The event was open to the whole community and provided physical activity practice to all players. This paper aims to report the process of organizing, conducting and evaluating the event. In particular, event evaluation was done through a questionnaire containing open and closed questions related to the organization, infrastructure, dynamics and contributions of the event. After statistical and content analysis of collected data, we noticed that the majority of participants liked the opportunity of entertainment and interaction. We also identified positive feedback related to the event organization, the organizers receptivity and game dynamic. Negative aspects pointed out by some participants were related to the lack of diversity of games and the event short duration. In general, it can be seen that the event idea was approved and requested more often over academic year by participants.

Keywords: Dance game, Socialization, Physical Activity, Health.

1 INTRODUCTION

Lack of physical activity has become evident in college life. According to Moura [7], the most common reasons presented are the shift and work day, which end up resulting in lack of time and consequent indisposition. Not only the students are affected by this inertia, but also teachers who, when not teaching, sit for long periods in offices and laboratories planning and conducting teaching, research and extension activities.

Studies show that the percentual of academic community mebers that practices physical activities varies according to knowledge area. [7]. For example, people related to courses in Computing tend to be sedentary due to excessive use of computers. According to Ng and Popkin [11], technology is one of the factors that contribute to reduce physical activity.

According to a post on Vivo Mais Saudável site [13], to combat the sedentary lifestyle and lack of physical activity using videogames technology, dance games come on scene. Although their main objective is not physical conditioning as traditional exercises, dance games bring benefits even for adults, where weight loss and physical activity are allied to fun.

In order to promote physical activity practice, entertainment and integration among academic community members, the Program C extension program organized and held an event using the game Just Dance. It is worth mentioning that students of Computing courses normally are interested in technology, computers and games. Thus, using a game increases their participation probability and, consequently, chances that they practice some physical activity through body moves needed during the game.

This paper aims to report the process of organizing, conducting and evaluating this event. The remainder of this document is organized as follows. In section 2, the historical perspective of rhythm games is shown. The section 3 presents how the event was organized and describes adopted materials and methods. The results of quantitative evaluation and content analysis of collected data during the event are discussed in section 4. At last, in section 5 final considerations are presented.

2 HISTORICAL PERSPECTIVE OF RHYTHM GAMES

According to Rabin [9], rhythm games are games that have the characteristic of measuring player success based on their ability to activate controls in the time and the beat of a certain music. Still according to the author, the first rhythm game was developed by the producer NanaOn-Sha for Sony Playstation console in 1996, and it was called PaRappa the Rapper (Figure 2).

[Os jogos de ritmo são jogos que têm como característica medir o sucesso do jogador baseado na sua capacidade de controle o tempo e a batida de uma determinada música. O primeiro jogo de ritmo foi desenvolvido pelo console Playstation da Sony em 1997, e se chamava PaRappa the Rapper [10] apresentado na (Figura 2)]

As said by Mott [6], "this game did a lot to shape one of the most

^{*}e-mail: cristiane.conrad@gmail.com

[†]e-mail: lizeescarrone@hotmail.com

[‡]e-mail: alinemello@unipampa.edu.br

[§]e-mail: jeancheiran@unipampa.edu.br



Figure 2: PaRappa the Rapper

successful genres nowadays. Its a pioneering action and rhythm game, in which players progress from stage to stage following onscreen tips, while music dictates the rhythm".

However, this genre began to be popular in the late 90's with the game Dance Dance Revolution (DDR) [1]. DDR has a rhythmic approach that uses player's dance steps and body language as entertainment [2]. This game was developed by Konami in 1998 and requires the player to step into a mat-shape controller on the floor, in marked areas that act like the traditional controller's action buttons (see Figure 3), according to direction and music beat indications on the screen [9].



Figure 3: Dance Mat

With the increasing popularization of this genre, certain games were also considered a way of practicing physical exercises, while requiring the player to perform certain body movements while playing the game. Betting on a new interactive experience, in 2006 the Nintendo japanese company launched Nintendo Wii video game, that uses a technology that captures player movements in a tridimentional space using controls with accelerometer, gyroscope and infrared camera sensors [8]. Among the games produced for this console is Just Dance franchise, which is about dance games, developed by AiLive and published by Ubisoft Paris [12]. The goal of the game is basically to make the player reproduce the dance moves performed by a dancer on the screen [12], as if looking to a mirror (Figure 4).

Dance Central by Harmonix, produced for Microsoft XBox 360, uses an approach that is similar to Just Dance, in which the player must perform a sequence of movements. However, it uses real people instead of animated characters. The game has more than 2,000 dance moves designed to keep player in movement. It is the most profitable game franchise for XBox 360 [3].

A difference between XBox 360's Dance Central and Wii's Just Dance is that the first uses Microsoft Kinect sensor to capture and map all the player's body movements (and not only the control moves as on Nintendo Wii), forcing the players to move their entire body according to the onscreen character's moves[4].



Figure 4: Just Dance 2014

While rhythm games as DDR, Just Dance and Dance Central are made essentially for entertainment, the Zumba Fitness franchise from Pipeworks Software mixes dance and a physical exercise program. During the game several choreographies are presented to the player. Those must be reproduced, and at the end, the game shows the amount of spent calories [14]. This game mode was later added to Just Dance and Dance Central.

3 ORGANIZATION, MATERIALS AND METHODS

The event was organized by students and teachers of the Computing area of Federal University of Pampa - Campus Alegrete. The executing team made regular meetings, where event date, time, duration and evaluation methods were defined. During these meetings, the team defined that the event's target audience would not be consisted only of academic community members, but would also be open to the external community. This decision was made because the lack of physical activity is a public health issue, in addition to the fact that a dance game allows integration between the external community and the university.

For the event announcement, a flyer was created with event date, time, place, description, objective and target audience. This flyer was distributed within 15-day time interval through institutional sites, emails and mainly through social media sharing. In addition, an event page was created in social networks, allowing to invite community members to attend and have fun.

The event was held on the institution itself, which had the needed infrastructure, i.e., a room with capacity for 100 people, sound and projection equipment available, capable of connecting a Nintendo Wii provided by one of the teachers, who was part of the executing team. Half of the chairs in the room were removed, allowing enough space for the everyone who wanted to dance to do so.

The players were organized in to groups of four people. The choice of each song was made through the opinion of all participants. The players suggested a song and all participants raised the hands with thumbs up to indicate if they accept that song or thumbs down to refuse, as indicated in Figure 5. If that song was accepted by majority, the game was started. Otherwise, the players should suggest another song.

Although in each song only four players were in control, everyone was invited to dance together. This strategy aims to increase the practice of physical activity, decrease idleness due to waiting and prioritize fun, despite the video game limitations.



Figure 5: Board with song selection rules

To evaluate the event, a physical form was used. This form con-

tained thirteen questions, seven of them were multiple choice questions, two simple choice questions and four open questions. This form was distributed to all participants. The questions present in the form are shown in Table 1.

The multiple choice questions (1 to 7) with poor, weak, average and excellent options; and aimed to verify the satisfaction of participants related to event announcement, infrastructure, organization and dynamic. The simple choice questions (8 and 9) had the options yes and no. These aimed to identify if the participants would like the event to repeat, and if its date and time were adequate. Finally, the open questions (10 to 13) were related to their favorite part of the event and suggestions for better events and self-evaluation.

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No.	Item/Question
1	Event announcement
2	Infrastructure
3	Event Organization
4	Organizers' Receptivity
5	Interaction among participants
6	Game Dynamic
7	How would you rate the event?
8	Would you like more events like this to occur?
9	Did you like the event's day and time?
10	In your opinion, what would be the best day and
	time for the event?
11	What was your most/least favorite part of the event?
12	Do you have any suggestion to
	help us make better events in the future?
13	Self evaluation (interest, punctuality,
	participation & learning)

At last, the answers in multiple and simple choice questions (questions 1 to 9) were statistically analyzed using mean and median, and open questions (questions 10 to 13) passed through qualitative analysis using the content analysis technique, as proposed by Moraes [5].

According to Moraes [5], a good content analysis is made up of five steps: information preparation; content unitarization or content transformation into units; categorization or transformation of units into categories; description and, finally, interpretation.

4 **RESULTS DISCUSSION**

Based on evaluation forms and generated attendance certificates, it's estimated that more than 90 people (among students, teachers and external community) attended the event. Of this total, 54 participants filled and delivered the evaluation form. In the next sections the obtained results are presented.

4.1 Quantitative evaluation

The multiple choice questions are presented in Figure 6 graph. The vertical axis refers to number of participants that chose that answer for each question. The questions are identified by each bar color. The horizontal axis represents the possible satisfaction levels: poor, weak, average, good and excellent.

Using mean and median in the answers to identify the central tendency, it was observed that the participants considered as **excel-lent** the following items: event organization, organizer's receptivity, interaction among participants, game dynamic and event's overall evaluation. Regarding the median tendency in questions related to announcement and infrastructure, it was observed that the majority of participants rated the event as **good**. The mean of announcement also reached **good**. However, for the infrastructure question, a bimodal result was obtained, varying between good and excellent, with tendency to good in median analysis.

In simple choice questions, all answers were affirmative. Thus, the conclusion was that participants would like more events of this type to occur, and agreed with event's day and time.

4.2 Content analysis

The open questions' answers (questions 10 to 13) were processed through content analysis. After the first steps of information preparation and unitarization, the units were sorted into categories. Some of these categories had isolated answers and with irrelevant information and, for this reason, were grouped into a category named "Others". For each category found, the number of ocurrences and the frequency (percentage) will be shown in the following items.

Question 10 - Best day and time -

In this question analysis it was verified that the chosen time was adequate, since this category reached 31.58% (6 ocurrences). We also had a reasonable occurrence number for the categories "start earlier" and "longer duration", that reached 21.05% (4 ocurrences) and 15.79% (3 ocurrences) respectively. We also obtained answers in categories "event in sundays", and "event on saturday" with 10.53% (2 ocurrences each). Other categories as "start later" and "more events in a month" had lower frequency, reaching 5.26% (1 ocurrency each). The total of answers in this category group was 19.

Question 11 - Most/least favorite part of the event -

To obtain a precise result, this question was split into 2 parts: the first (11a) analyzes the most favorite part of the event and the second (11b) analyzes the least favorite.

Part 11a - Event's most favorite part: Related to the favorite part of the event, the categories that stood out were "interaction" with 33.33% (10 ocurrences), and "event idea" with 23.33% (7 ocurrences). The other categories identified was "dance" and "fun" with 16.67% (5 ocurrences each), "game choice" with 6.67% (2 ocurrences) and "others", with 10% (3 ocurrences). These ocurrences totaled 30 answers.

Part 11b - Event's least favorite part: In item 11b, can be observed that the categories that stood out were "short duration" and "shyness", both with 21.43% (3 ocurrences each). Other category in this question was "lack of games' variety" with 14.29% (2 ocurrences). Other identified categories were "the joystick is not accurate" with 7.14% (1 ocurrence) and "others" with 35.72% (5 ocurrences). In this question, 14 answers were obtained.

Question 12 - Suggestions for future events - In question 12, three categories appeared more: "have more games" with 23.33% (7 ocurrences), "better announcing" with 16.67% (5 ocurrences) and "more events like this" totaling 13.33% (4 ocurrences). Other categories found were "have other console types", "longer duration" and "better structure", each one with 10% (3 ocurrences each). Other categories that appeared were "events that stimulate competitiveness and debate" and "limit player's participation times", both with 6.67% (2 ocurrences each). At last, "create an alternative for those who won't dance" appeared with 3.33% (1 occurrence). 30 people answered this question.

Question 13 - Self evaluation - This question's answers reflected in other categories' answers or presented an evaluation of the event, deviating from this question's purpose. Out of 62 answers total, only 10 answers referred to the requested in this question (16.14% of total).

After the evaluations' analysis, it was concluded that, despite the participants' shyness, the opportunity for fun and relaxation, opposed to the semester's intense rotine was well received by everyone. This is verified by the majority of participants requesting more events of this kind, with longer duration.

5 FINAL CONSIDERATIONS

Making this event proved to be an important space for the members of the academic community, while at the same time that it facilitates





the accomplishment of a physical activity that is good for the relief of daily tensions, helps to fight the sedentary lifestyle.

Based on feedback received from participants, we found that they would like more events of this kind to be held regularly, not just because the socialization opportunity they provide, but because it allows participants to lose some of their shyness and have fun in this relaxing moment, relieving stress caused by academic routine.

In the future, other editions of the event are intended to be held, with organization and evaluation methodology centered on identify other details on participants, aiming to trace their profiles, what was not possible at this moment.

In general, despite the confusion on participants' self-evaluation questions, we concluded that the event was well received by the academic community and its initiative created space for other events of this kind.

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