

The influence of motivational involvement, in physical activity level improving, using formative evaluation procedures.

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Abstract

The current work was planned to build up an original motivational involvement, based on Self-Determination Theory and Social Cognitive Theory, to improving physical activity in disadvantaged adolescents. One hundred and twenty-eight adolescents (70 females, 58 males; 50% minority; 75% on condensed alimentary program; ages 12–14 years) participated in either a 16-week motivational involvement extra-curricular program (n=64) or a typical extra-curricular program (n=64). The theoretical structure has four main issues for the intervention goal, like: social context (perceived independence, perceived social sustain, input and enjoyment); cognitive mediators (perceived option and self-efficacy); and motivational course (intrinsic motivation, commitment and positive self-concept). Formative evaluation information was composed by organization through daily forms right through the 16-week program and during observational data completed, by independent trained observers, during 4 weeks. The key issues concepts that were recognized, concerning the involvement and logistical context in which the study take place. The results shown information concerning the meaning of the cognitive suitability of the physical activity and motivational actions, the environmental context for promoting relationships, strategies definition for increasing intrinsic rather than extrinsic reinforcement, and stimulate methods for preventing social gender conflicts to keep an appropriate level of social support by formative evaluation procedures.

Keywords: Program Planning; Formative Evaluation; Motivational Involvement; Physical Activity; Adolescent.

Introduction

Disadvantaged adolescents, including those of low socioeconomic status are less physically active, than adolescents who are non-minorities or of higher socioeconomic status [1]. Underprivileged youth are also more likely to keep in inactive actions such as television watching and videogames playing than young people, who are non-minorities or of higher socioeconomic status [2]. Therefore, ground-breaking interventions are necessary for physical activity promoting, in young people, who may be at higher risk for inactivity, obesity and other health-related complications [3].

A significant reflection for health programme is that adolescents are at a vital phase in their development as they pass from parental control to independent lifestyle actions, assuming conscientiousness for their own health choices [4]. One of the biggest issues is related with knowledge at healthy and nutritional behaviors.

Certainly, one challenge is related with the opportunity for higher education institutions to educate and encourage students to custom healthy lifestyle habits. In an effort to stimulate nutrition education, researchers and educators have developed nutrition education programs for college students. Nevertheless, these programs are variable in approach and minimally impact behavior [5].

Computer-tailored nutrition education is likely to be a helpful instrument in enabling and encouraging college students to make wise food intake decisions. In developing a program to improve college students' dietary behaviors, it is imperative to categorize factors they view as influencing their choices, difficulties they face in making healthy choices, and suggestions they believe pertinent to making behavior changes.

Physical inactivity and poor nutrition are major contributors to premature morbidity and mortality all over the world. Multilevel interventions using a social-psychological-ecological approach may be indispensable to transform population behaviors, contributing to the rise of

obesity. Results show positive trends in adults for increased fruits and vegetable expenditure and a reduction in no leisure time physical activity [6].

Physical Fitness is a state of well-being, influenced by nutritional status, the genetic structure and frequent participation in various physical activities. Furthermore, it is important the involvement in physical fitness of psychological, sociological, emotional and cultural [7]. This time, there is a relationship between physical fitness and health, correlating positively with a low risk of developing hypokinetic diseases, which are called "diseases of modern civilization and developing", caused by the lack of movement throughout life. These causes appear due to the current lifestyle of industrialized countries, where everything works the basis of technology, they do not need to expend as much energy as in the past. Like most pandemics, and obesity is a disease hypokinetic considered a pandemic by the World Health Organization, prevention and/or treatment is to change the environment for their development. Therefore, and considering the physical inactivity as a major factor in the development of this pandemic, should be through the promotion and practice of regular exercise to prevent and/or deal with the hypokinetic-related diseases should be made. In this context, it is important the physical fitness assessment, because it will allow to monitor the progression of young people, increase their motivation, help decide the definition of the syllabus, allowing to evaluate the program and has a tendency to promote Physical Education and own Physical Activity.

Many works related with physical activity actions has established humble property on growing physical activity in adolescents [8, 9].

One international health project, related with cognitive theories and their relationship with choice intervention, between 6th and 9th grades, to increase physical activities levels was presented by [10]. The study shows that there were significant changes in physical activity due to the interference, and also by television viewing. Both predicted changes in obesity

incidence. Related with gender, after 5 years, girls were more likely to show an increase in physical activity than boys. In a more actual investigation, it can be seen that there are some significant changes in physical activity during physical education classes, especially with higher number of weekly stimulus [11].

The formative evaluation is, many times, used in the regulation of the acquisition of new physical skills. This acquisition depends on the motivation with which youths perform the proposed activities. This Self-Determination Theory was postulated in the 1980 decade by, [12], with some theoretical work on “social foundations of thought and action”. In these works it can be seen that individual-cognitive factors depends on environmental events that anyone is exposed. Moreover, intrinsic factors influence behavior changes, such as enjoyable, self-driven, and satisfying experiences more than those behavior changes produced by extrinsic factors, external reward or punishment [1]. The theoretical structure has four main issues for the intervention goal, like: social context (perceived independence, perceived social sustain, input and enjoyment); cognitive mediators (perceived option and self-efficacy); and motivational course (intrinsic motivation, commitment and positive self-concept). This loom is steady with preceding investigations that permit to check out the importance of choice and self-initiated behavior transformation on growing intrinsic motivation for increasing the physical activity level [13].

While carrying out the whole evaluation process, teachers must bear in mind that, evaluating is collecting the necessary information for an improved performance. It is an excellent regulator of the entire teaching and learning process. It is the conscience of the very own educational process [14]. The teacher should therefore have a basic knowledge concerning the regulation of the teaching and learning process through evaluation. Evaluation should be perceived as a review process for previously defined goals. It derives from the very process of

teaching and learning, working as a mechanism that confirms if the intended goals are effectively achieved.

Teachers should master formative evaluation, because this evaluation must accompany the entire teaching and learning process, identifying successful learning experiences and flawed ones, so that the latter can be overcome and students can achieve proficiency and success. Another vital aspect deals with the importance of feedback for student performance throughout formative evaluation, serving as a response to the performance data. This evaluation moment is the only way the teacher can orient the student, by interpreting his performance and letting him know what he is doing well and what he is doing wrong. This (formative) evaluation moment is the most accurate account of student performance, and through it every step of the process is visualized and included in the classification of student proficiency/performance [15].

Obtaining a double feedback is therefore the purpose of formative evaluation. In the first place, it provides a feedback about the student, what stages he overcame and the difficulties he encountered. In the second place, it provides a feedback about the teacher, letting him know how his program is evolving and the obstacles it is facing. By assessing how the teaching and learning process is evolving, formative evaluation helps the teacher adjust his teaching tasks to student learning in the course of the classes [15]. The teaching and learning process should underline the educational role of evaluation, the importance of student retention, the reinforcement of teacher and student roles, and the articulation between the student evaluation system and the evaluation of the teaching system.

To improve the success of physical activity interventions, the present study wants to underline the use of formative evaluation, through process evaluation strategies, to tie up the involvement in school. Formative evaluation also allows certifying that teenagers were truthfully and wholly capturing the conceptual components of intervention [3].

The school, being a privileged means for the diffusion of physical activity in adolescents, has a general, professional and appropriate conditions for the development of this practice. However, professionals should provide safe activities, sensible, that impair effective school-age population of sedentary people and providing, them, habits of physical exercise to them endure into adulthood [10]. Physically active lifestyle, during childhood, is associated with physical well-being in adulthood, as a physically inactive lifestyle is a risk factor for the gain in body mass with result of aging, mainly related with an increase in fat mass. Thus, the promotion of healthy lifestyle habits imposed as a goal of any education system is recognized to the discipline of Physical Education election as one of their guidelines and a central role in health education. The school becomes the most democratic medium of dissemination of physical exercise, because there is no distinction of race, sex or social status.

Today's children are also spending record amounts of time sitting or sedentary, especially related to school activities, this behaviour can be considered a risk for their physical condition [7].

Evaluation is an excellent regulator of the entire teaching and learning process. It is the conscience of the very own process [3]. Evaluation allows an accurate and assertive identification of problems that, properly analyzed, can be solved bearing in mind adolescent success as the final product [4]. Likewise, pedagogical efficiency depends on the problem analysis and decision making [14].

Methods

The study protocol was approved by Maia Institute of Higher Education and Research Centre in Sports Sciences, Health Sciences and Human Development institutional review board. The quasi-experimental design, defined for this study, was attended by students enrolled in 5th and 6th grade (12–14 years) from four middle schools in an urban community. In two schools,

64 children volunteered to enrol in the student-centered motivational after-school, enrichment curricular activities physical activity program. In the other two middle schools of similar characteristics the comparison group (n=64) was defined. Some general characteristics were tracked like, race, gender, age and dietary habits issues. In these schools the physical activity levels was determined, because of their participation in a health curriculum after-school program. In terms of baseline characteristics both, intervention and comparison participants, had similar characteristics and were submitted to the same 16-week program.

Treatment and comparison sample size were similar, 64 for each one. From the total 128 participants, 70 females (35 for treatment and 35 for comparison group) and 58 males, (29 for treatment and 29 for comparison group). Treatment group has a height (cm) of 143.05 ± 7.29 and comparison 147.59 ± 6.37 . Regarding weight (kg), treatment group has 50.01 ± 15.25 and comparison 48.17 ± 10.45 . The waist circumference (cm) were 70.18 ± 11.73 for treatment group and 69.97 ± 10.23 for comparison group.

All student participants and their legal responsible provided informed consent previous study participation, as well as their background and demographic information. Height and weight measurements were obtained by a trained investigator. The purpose for the student-centered intervention was to increase motivational involvement of physical activity 60 min per day (or 30 min of high-intensity exercise) based on the procedures for physical activity standards in adolescents [15]. Adolescents in the student-centered program gave information about their identification, activities made by them and select a variety of physical activities that were fun and interesting. The definition of the best strategies to promote physical activity were also important to raise awareness of the objectives of the study and make positive and permanent the physical activities habits [6]. The participants in the comparison group received a 16-week program of general health education, during an after-school program.

Before proceeding to information gathering, the participants were aware of the procedures to be adopted and the objectives of the study. Four trained staff provided oversight for the program and one investigator, specifically trained in physical activity and injury prevention, provided configuration for the physical activity elements of the program. The program had 3 main components: homework component (30 min); a physical activity component, including activities which the adolescents selected each week of moderate and vigorous intensity (60 min); and a Social Cognitive Theory and motivational component, during which participants behavioural and motivational skills were analysed, to improve their physical activity levels, with their pairs, at home (30 min).

The intervention was consistent with Self-Determination Theory and Social Cognitive Theory, emphasizing the increasing of intrinsic motivation and behavioral skills for physical activity [12]. The adolescent intervention integrated two elements reliable with Self-Determination Theory: (1) providing adolescents the prospect to increase constructive reproducing strategies for building lifestyle changes in physical activity costumes, using a strategic self-presentation (videotaped interview); and (2) providing adolescents the prospect to participate in program development, by selecting a diversity of the physical activities accessible weekly, developing ideas for promoting physical activity. Each week the participants produced a list of physical activities that they desired to engage for the following week, and all group selected on the top two choices.

This formative work allowed the team involvement. Logistical issues experienced during the pilot study were many and varied. However, some common logistical issues should be highlighted. In terms of protocol planning, is very important to have a good communication between the investigator and the school. It is really important to have a viable alternative for activities and spaces, because constant adjustments are required.

The strategy of self-presentation, by videotape, enables high levels of personal connection through strategic self-presentation that enhances motivation and self-concept for physical activity, by encouraging participants to develop their own arrangements for improving physical activity habits [5]. Participants were briefed that their duty was to counsel other students on, how to feel problem situations and arrange the best problem-solving situation in order to their development. To encourage self-presentation processes, students were asked to spotlight on the positive effects they did to achieve their daily physical activity goal and to focus on how they managed to triumph over challenges in shifting their physical activity habits. To encourage commitment, students were videotaped during an interview session and after viewed the videotapes during their next session. Like this, they have the opportunity to adjust their procedures, improving general physical quality.

The intervention was done through a step-by-step programme to constantly refine the intervention [3]. First of all is important to define a complete delivery of the program: staff and investigators participated in several meetings to argue the theory behind the program, define the protocol to be followed and the list of constructs and definitions. The conceptual framework is very important to standardize procedures.

Then it is possible to develop a list of main concern process evaluation questions for pilot test. The selection of these questions, for the process evaluation, was based on objectives and study purposes taking into account the setting-specific issues.

The following step was related with the questions evaluation process, associated with the questions selection by consecutive drafts developing. The validation and fidelity should be high, trying to prevent misinterpretation of questions when participants are filling in their answers.

Observers used an instrument with several questions for each program factor, developed as part of the process evaluation. Observers included both, individuals involved in the project, and individuals not involved in the project, but area expertises.

Pre-test, revise, and manage the process evaluation tools to assemble process validation data during the pilot-test. Qualitative data was also composed, from investigators involved in program implementation, following the Grounded Theory, by a systematic methodology through the analysis of data, of content analysis.

Review process evaluation results from the pilot-test. This information was used as formative research to build up the process evaluation plan, as well as to update involvement scheduling, training and goals definition. Involvement in this process allowed investigators decision making, creating the idea of being more reasonable and realistic, both in terms of framing the reality of the participants, as setting the best way to achieve the objectives proposed in the study. The pilot study allowed the opportunity to test some of these concepts and proposed plans for role it, in a more effective way, given the goals set. With this work in progress is possible to understand what should be adjusted, revised, added or deleted previous to execution.

Results

A review of the ending reports generated from the pilot study process assessment yielded various subjects concerning program propose and carrying out. The pilot study process assessment bent numerous courses, about program strengths and areas needing revision prior implementation. These programs are presented as grouped categories. In one hand, some of them showed new issues and in the other hand, emphasized how improvements program components implementation [16].

During the pilot study implementation it was evident the importance of the motivational skills. For majority participants in the program, small group activities were too cognitively advanced. Therefore, is demanding the curriculum revision, making it more specific to students needs and time-bounded with a goal to develop skills for the present time and to the future.

The interactive procedures are very important to behavioral skills improving as well as group dynamics and team building consolidation [17]. In this work, the results demonstrate that the students enjoyed playing the physical activity games, showing motivation by building their skills and source of knowledge. The program intend to the students being more interactive in their learning, playing and trying the use of new experiential education techniques, with debriefings to maintain the students' interest and participation. The course was revised to include more interactive behavioral skill-building activities in team interactions groups. Students were able to consider skill level in playing new physical activity games after numerous times of playing. During the pilot study 12 new games were introduced, over the 16 weeks course.

The attention along the study was the student, which means that students have the opportunity to provide input and have choice in each day activities. The student provide, also, the feedback about the program implementation, besides the choice regarding program activities they want to do each day and what games they want to play in the next week. This was done through a diversity of different voting activities. Moreover, investigator continually asks students about the games preferences and what they did and/or did not like about them.

The student-centered motivational involvement emphasizes a social context that is constructive and encouragement for students. During the pilot study it was discovered that, because investigators made such an effort to be constructive and encouragement, they did not place sufficient prominence on also keeping control. In the start of the pilot study ground

protocol was established; however. This was anticlockwise too much of the other work that the investigators were to accomplish, to create a constructive encouragement environment for the participants. The practice included simulations so that the investigators had a prospect to experience methods of positive discipline. Moreover, the curriculum has been revised to incorporate more time dedicated to establishing principle rules and consequences at the very beginning of the program. Lastly, a step-by-step set of consequences has been established for participants that violate the protocol rules. The first was the warning, the second was the execution “time-out” for 15 min, and the third was the removal from the program for the rest of the day and the final step was the exclusion from the program completely.

Throughout the pilot study investigators adjusted protocol experiences between them, particularly with most experienced investigators, with coaching or students. Most experienced coaches had a predisposition to prize students with small rewards, for either performance or participation. In addition, staff had a propensity to verbally congratulate students for performance. During investigators' preparation more time was dedicated to elucidating the concept of intrinsic motivation, and helping to identify new methods for offering support for team effort, instead of individual performance. Investigators' training addressed the importance of emphasizing and praising students for participation, rather than performance, and for ensuring that all participants get an equal quantity of awareness.

Positive participants' interactions have been fundamental to motivational intervention since its beginning. This is a crucial component to the program implementation for all students. In addition, countless of the behavioral skills addressed in the involvement to support students with being more dynamic when they are not in the program making on constructive environmental connections, establishing social relations and improving physical exercise habits.

Discussion

Investigators detected that participants would have many slight positive student-to-student connections. If participants were rewarded in public or regularly by investigators, for their behavior, it would reduce the frequency of positive student-to-student connections. This steadiness and the desire to congratulate a student for positive behaviour, by suggesting that investigator reward in more slight ways and if possible in a context where others would not be as aware of it [18].

There are clicks defined among participants in this age group [7]. For that reason, investigators need to be aware of the clicks from the very first day and define several diverse strategies for grouping participants in activities, in order to reduce the effects of the clicks and to make students to interact with other students. When investigators were too clear about trying to take apart a click, participants got disturb, having to be in different groups. Yet, when the investigators grouped students, in a randomized method, student complaints were less common. Methods for recognizing clicks were trained among investigators, in order to establish a common analysis line [19].

The pilot study recognized the need to develop strategies for dealing with gender conflicts. During the pilot study investigators realized that having boys and girls simultaneously, during homework and group time, provided too many opportunities for social connections, which were disadvantageous to the social environment, that was one of the intervention concerns. During this time, if the boys and girls were in groups simultaneously, much of their focus was spent on flirting and participants were not as open to participate in the group activities. Participants were also more reserved about sharing details of their life in mixed gender groups.

During physical action solicitations some activities were more enjoyable than others, according to respective gender. Collective sport games, such as basketball, soccer, football

were more attractive for boys rather than girls, likewise to [10] idea. When students were playing a new game, in which they had little or no experience, they enjoyed playing in mixed gender groups and most of the participants continued to be dynamic in the mixed gender group [3].

During the pilot study it also became clear that investigators needed to be helpful and to be able to help each other, implementing the program as it was designed. It was not enough for investigators to have tolerant judgment, but a sense of shared responsibility. Also, when the investigators worked as a team and shared duties, respecting their roles, the investigators excitement about the program was contagious.

Several methods for changing students, from one activity to the other, while keeping them moving at a fairly efficient pace and maintaining order and safety [20]. This required at least two supervisor members with each small group, one to stay at activity area, awaiting the next group and one to follow students to the next activity. In addition an extra member to serve as an all-rounder and bathroom supervisor was helpful.

When transmitting knowledge, theory always exceeds practice. Consequently, initial teaching training is clearly focused on the theoretical level, promoting knowledge but relegating action to a second plan [15]. There should be a bigger concern with the correlation between knowledge and action, because knowing, knowing how to do and doing are closely interconnected.

Analysing the study data information, in a simple and depth way, it is possible to see that the flexibility levels are indicators of general physical condition, being in line with the bibliography [21]. Students also revealed that when they practice enjoyable physical exercise, they get better performances, besides showing better levels of socialization. The results also demonstrate an ability to adapt to unforeseen circumstances, as well as a greater decision-making process competence.

One of the main issues, of the intervention, successfully implemented in this school intervention, was related with the implementation of intensive and systematic physical activity routines. Physical activity team promoting is very important, more important than the competition itself, where the winning is the only objective to achieve.

Conclusion

During this project, and according to the data analysed, it can be seen that work time is better at the end of the day as opposed to right after school. The students were too frayed from being in school all day to make their homework there. Therefore, changing homework to the end of the day became much more productive with far fewer discipline problems.

The process evaluation of the activity intervention served as formative procedure for developing the context of the student teaching and learning process. In this study sample, it is possible to identify various categories. The model point out the importance of the correct intervention to student success. Furthermore, the process certification is necessary for the determination of the right variables to be implemented.

This formative work did not timely the investigative team to double-check the blocks of the conceptual framework or logic model. Yet, it did provide prosperity of information, regarding how to better operationalize the various categories of the intervention model for this project, targeting adolescents in an after-school situation. Besides, it provided the necessary information to more clearly define program fidelity, ensuring that the program is being well implemented. The formative evaluation provided the process regulation to the process. It identified training requirements and provided the investigative team the information needed to define training components.

According to the study, it is possible to indicate that students revealed that when the physical practice is pleasant, they get better performances, besides showing gains in socialization

levels. The results also reveal an ability to adapt to unexpected situation, as well as a greater decision-making process capacity.

This study provides a structure for formative evaluation, according to both, theoretical concepts concerning the intervention, as well as field intervention necessities. More research on the profit of formative evaluation is crucial to enhance pedagogy understanding of the success of theoretically based interventions in students' physical activity promotion.

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