RBCE
Revista Brasileira de Ciências do Esporte

ORIGINAL ARTICLE

Effects of sports teaching models on different learning students' domains: rationale and methodological protocol

Efeitos de modelos de ensino do esporte sobre diferentes domínios de aprendizagem dos escolares: fundamentação e protocolo metodológico

Efectos de los modelos de enseñanza deportiva en diferentes dominios de aprendizaje de los estudiantes: justificación y protocolo metodológico

Gabriel Barros da Cunha[a,b]*, Thiago José Leonardi[c], Gabriel Gustavo Bergmann[b]

Keywords:
Pedagogical model;
Students;
Sport education;
Intervention.

ABSTRACT
This study aimed to describe the methodological design of the Project entitled "Effects of the Sport Education Model (SEM) in Physical Education classes on physical, emotional, cognitive and socio-affective outcomes of students in different high school contexts". An experimental study will be carried out with pre- and post-test measures in an experimental group (SEM) and in a comparator group (Traditional Teaching Model) randomized by clusters. The study hypothesizes that SEM will present positive and superior effects to the traditional model in all analyzed variables. The detailed description of the rationale and the methodological procedures of the Project will allow a better understanding of the results that will be presented after the end of the study.

Palavras-chave:
Modelo pedagógico;
Estudantes;
Educação esportiva;
Intervenção.

RESUMO
O estudo tem por objetivo descrever o desenho metodológico da pesquisa intitulada "Efeitos do Sport Education Model (SEM) nas aulas de Educação Física sobre os desfechos físicos, emocionais, cognitivos e socioafetivos de escolares em três contextos distintos do ensino médio". Será realizado um estudo experimental com medidas pré e pós-teste em um grupo experimental (SEM) e em um grupo comparador (Modelo de Ensino Tradicional) randomizado por clusters. Temos como hipótese que o SEM apresentará efeitos positivos e superiores ao modelo tradicional em todas as variáveis analisadas. A descrição detalhada da base teórica e dos procedimentos metodológicos da pesquisa permitirá uma melhor compreensão dos resultados que serão apresentados após o término do estudo.

Palabras-clave:
Modelo de enseñanza;
Escolares;
Educación deportiva;
Intervención.

RESUMEN
El trabajo pretende describir el diseño metodológico del estudio titulado "Efectos del Modelo de Educación Deportiva (MED) en las clases de Educación Física sobre los dominios físicos, emocionales, cognitivos y socio-afectivos de los escolares en tres contextos diferentes de la escuela secundaria". Será un estudio experimental con medidas pre y post test, con grupo experimental (MED) y comparador (Enseñanza Tradicional) aleatorizados por conglomerados. Nuestra hipótesis es que la MED tendrá efectos positivos y superiores al modelo tradicional en todas las variables analizadas. La descripción detallada de las bases teóricas y procedimientos metodológicos de la investigación permitirá una mejor comprensión de los resultados que se presentarán después de la finalización del estudio.

[a] Instituto Federal Sul-rio-grandense, Departamento de Educação Física. Pelotas, RS, Brasil.
[b] Universidade Federal de Pelotas, Escola Superior de Educação Física, Laboratório de Estudos em Esportes Coletivos. Pelotas, RS, Brasil.
[c] Universidade Federal do Rio Grande do Sul, Escola Superior de Educação Física, Fisioterapia e Dança, Laboratório de Estudos Multidisciplinares em Esporte. Porto Alegre, RS, Brasil.

***Corresponding author:**
Gabriel Barros da Cunha
E-mail: gabrielcunha@ifsul.edu.br

Received 9 May 2023; accepted 3 July 2023.
DOI: https://doi.org/10.1590/rbce.44.e20230011

INTRODUCTION

Although advances in the academic debate on Sport Pedagogy, the traditional teaching model (TTM) of sports is still predominant in Physical Education (PE) classes (Giusti et al., 2017). The TTM is teacher-centered and focused on teaching sports skills, privileging the development of the motor aspects to the detriment of cognitive, emotional, and socio-affective aspects (Siedentop et al., 2004; Galatti et al., 2017).

Sport Education Model (SEM) was conceived to surpass the paradigm established by TTM. When designing the SEM, Siedentop's main objectives were to develop competent literate and enthusiastic sportspersons. SEM has six key features (affiliation, formal competition, record keeping, festivity, culminant event and season) to provide a teaching environment that values the sport context. In this line, Siedentop (1994) recognizes the importance of introducing other sports characters in the school setting, such as the coach, journalist, game analyst, physical trainer and referee. Performing other duty roles related to the world of sports favor the development of students' autonomy and protagonism, in addition to expanding sports knowledge.

Unlike other Teaching Models (TM), SEM was idealized, planned, and specifically designed to be implemented in PE classes. A review study by Evangelio Caballero et al. (2018), which included children and adolescents enrolled in elementary, middle and high school levels, showed positive effects of SEM on the cognitive, emotional, physical, and socio-affective domains in the school context. With a similar target public, the review study by Bessa et al. (2021) indicated that SEM has positive effects compared to TTM, especially in cognitive, motor, and socio-affective aspects. Both reviews mainly included studies in Europe (Spain and Portugal) and North American (USA) countries. Few studies on SEM have been carried out in the Brazilian school context (Vargas et al., 2018; Lopes and Carlan, 2020; Ginciene and Matthiesen, 2017), and none of them compared the effects on different learning domains with the TTM. In addition, experimental studies with pre- and post-test measures on the subject in the Brazilian school reality are unknown.

Thus, it is essential to understand better how the use of sports teaching models during school PE classes may contribute to developing different skills in adolescents, such as game performance, knowledge, motivation to the PE class, sportsmanship, basic psychological needs, and intention to be physically active (Evangelio Caballero et al., 2018). Considering the promising results presented by SEM in other countries and the lack of studies on the subject in Brazil (Bessa et al., 2019, 2021; Evangelio Caballero et al., 2018), more studies on the subject are important to understand whether the effects of SEM on cognitive, emotional, physical and socio-affective aspects will also be positive in school contexts in underdeveloped and developing countries. In addition, it is worth noting that in some Brazilian regions, full-time schooling is in the implementation phase and that the time allocated to sports may be extended in this format. Finally, the present study goes further by proposing to analyze the effects of SEM in three different teaching contexts.

Given this, the present study aimed to describe the methodological design of the Project entitled "Effects of the Sport Education Model in Physical Education classes on the physical, emotional, cognitive and socio-affective outcomes of students in three different contexts of high school", that aims to analyze the effects of using SEM during Physical Education classes in high school in several learning domains of Brazilian schoolchildren.

METHODS

DESIGN AND SETTINGS

An experimental study with pre and post-test measures in 3 experimental groups (SEM) and in 3 comparator groups (TTM) randomized by clusters (Figure 1) will be carried out involving high school students during the PE classes. It will be carried out in three different teaching networks (state, federal, and private) in Pelotas city, Brazil.

PARTICIPANTS

The study sample will be high school students from the three different teaching networks from Pelotas, Brazil. Municipal school students were not included because it only had one high school, which would not allow controlling the risk of sample contamination.

SAMPLE SIZE ESTIMATION

The effect size of all dependent variables in similar studies was identified. The sportsmanship showed the lowest effect size value (Casado-Robles et al., 2020) (Cohen's d = 0.24). Thus, to calculate the sample size, the following parameters were imputed in the G*Power software: (a) effect size of reference study; (b) alpha of 5%; (c) 95% power; (d) 6 groups participating in the study (3 SEM and 3 TTM) and (e) 2 measurements to be performed. From these parameters, the estimated sample size was 96 participants. We opted for 95% to have greater power to accept the researcher's hypothesis, implying a larger sample size. However, considering possible losses and refusals and the three different teaching networks of the study, approximately 120 students will be included in the sample.

SAMPLING AND GROUP ALLOCATION PROCESS

Initially, the 5th Regional Coordination of Education (5th CRE) will be contacted to identify all the high schools that integrate the state, federal, and private teaching networks of the Pelotas, Brazil. In the second moment, PE

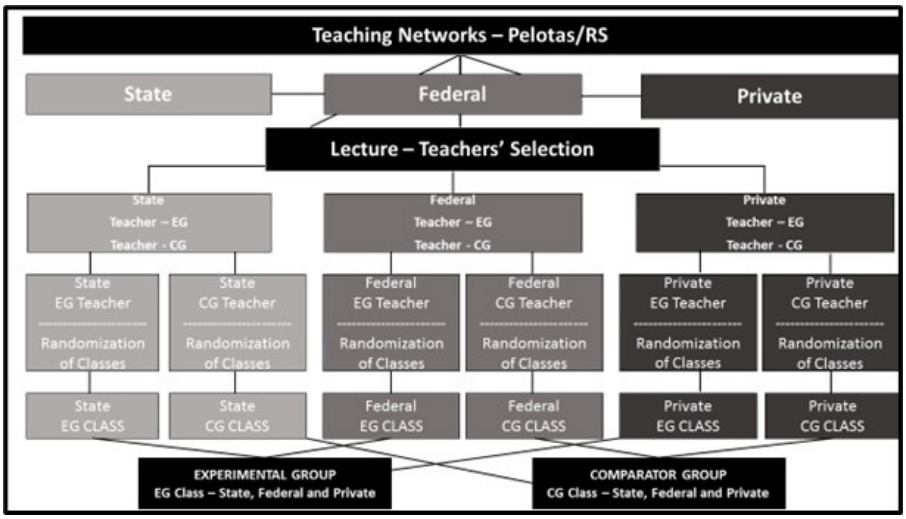

Figure 1. Allocation of the Experimental (EG) and Comparator Group (CG).
Source: elaborated by the authors.

teachers from the three teaching networks will be invited to participate in a lecture entitled "The classification of sports based on Motor Praxeology", thus approaching a sensitive theme to sport but without direct relation to the TM. The project will be presented to the teachers at the end of the lecture. Then, they will be invited to answer a questionnaire [adapted from Giusti et al. (2017) and Silva et al. (2021)] aiming to select teachers to participate of the study.

The teachers and schools' selection of will be based on a questionnaire and according to the following order of criteria: 1) teachers who are interested in performing the course; 2) teachers who work in schools that have the physical structure and resource material to receive the study; 3) For the SEM application, preferably, teachers who present an interactionist approach, game-based teaching, and student-centered teaching will be selected. Likewise, the preference for the application of TTM will be of the teachers who present an empiricist teaching approach, teacher-centered teaching, and analytical teaching method; 4) to avoid contamination, the experimental and comparator group teachers must not work in the same school; 5) two teachers will be selected (one for each group) per network teaching, totaling six teachers. In case of more than one teacher meets the criteria, randomization will be performed to define the applicators.

After defining the teachers, an invitation will be made to each selected school. At this moment, a project summary will be delivered, so schools know about the intervention program. A cooperation agreement between researchers and schools will be formalized if the school manifests interest.

A cluster randomization process will be carried out to define the experimental and comparator group (Figure 1). The randomization units will be composed of the selected teachers' classes. Will be included in the random allocation process all high school classes that present the following characteristic: (a) mixed classes; (b) at least 20 students; (c) invasion sports as content; and (d) students between 15 and 18 years old. At the end of randomization, all students regularly enrolled in the selected classes will be included in the study. Students with a medical certificate of physical or cognitive incapacity to perform physical activities will be excluded from the study.

INTERVENTION

TEACHER'S INSTRUCTION IN SEM

A 20-h instruction program will be performed to improve the teachers' knowledge of SEM. The program will be composed of 10 hours of theoretical and 10 hours of practical. One month before the beginning of the instruction, complementary theoretical material will be delivered to the teachers, containing a handout and scientific articles (in Portuguese or translated) about SEM. Instruction will begin with the practical module, in which planning, conducting, and implementation activities will be carried out on the phases and characteristics of SEM. The theoretical module will introduce teachers to SEM and its teaching concept, objectives, and configuration.

The formation instructions will be delivered in person and during the same week to promote an intensive and immersive formation, according to other successful instruction experiences (Cho et al., 2012). However, if this is not possible, it will be readjusted according to the availability of teachers involved.

At the end of the two modules, a pilot study will be carried out only with students who will not be part of the main study. During this period, the teacher trainer will support the teachers in planning, implementing, and evaluating SEM applications. A pilot study has been fundamental in other studies (Burgueño et al., 2020; Cho et al., 2012) for teachers to apply SEM with greater

confidence and reliability. The theoretical bases of Metzler (2017) and Siedentop et al. (2004) will be used to design the content of the instruction program.

SPORT EDUCATION MODEL – INTERVENTION CHARACTERISTIC

SEM organizes teaching units as sports seasons. This way, the intervention will take place with the development of a season with 20 classes. The intervention will be carried out during PE classes and can be distributed between one to three classes per week, lasting 45 to 50 minutes, depending on the organization of each school. Teachers responsible for the intervention will choose which invasion sport will be implemented.

The SEM intervention protocol will be designed according to Metzler (2017) and Siedentop et al. (2004) and distributed in five phases: (a) Introduction (1 lesson – 5%) – the main features of TM will be presented to students. It will also be time to form the teams; (b) Directed (6 lessons – 30%) – phase in which the teacher will propose learning tasks for the tactical-technical-strategic development of students. At this stage, the teacher will also prepare coaches and captains to carry out their activities from the next stage; (c) Pre-season (8 lessons – 40%) – at this stage, in addition to carrying out the practical task of the classes, students will assume the roles of coach and team captain, with the student/coach responsible for conducting games and activities within your team with the support of the captain. The students/coaches will plan the learning tasks, and they will also organize a game schedule. Teachers will support all these tasks. Teachers will also prepare other students to perform other sports roles (journalist, game analyst, referee, etc.) during the competition; (d) Formal Competition (4 lessons – 20%) – the competitive event will be organized and conducted by the students. Those not participating as players will conduct the event assuming sports roles related to competition. These roles will involve, for example, participating in the refereeing team, the reporting team, the broadcasting team, etc.); (e) Culminating Event (1 lesson – 5%) – it will be the last phase of the season, being a time of great festivity and celebration with the awarding of prizes to the students. The teachers will plan the protocol to be applied with the support of the teacher trainer. A summary example of an intervention protocol based on SEM is presented in Chart 1.

TRADITIONAL TEACHING MODEL

The teachers of the TTM group will be instructed to carry out a traditional skill-drills approach, distributed in the following stages: (a) warm-up; (b) learning task for skill acquisition; (c) formal game; (d) end of class. In addition, teachers must keep the following characteristics in classes: (a) teacher-centered teaching process, (b) students reproduce technical actions; (c) teacher should apply the direct instruction method; (d) learning tasks individually, in pairs, or trios. The TTM protocol (see Chart 1) will be developed with the same sport and number of classes as SEM.

Chart 1. Protocol: sport education and traditional teaching.

INVASION SPORTS PROTOCOL'S – FIVE-A-SIDE INDOOR SOCCER			
Models	**Content**	**Learning Tasks**	**Social Relationship**
SEM	**Tactical Problems**: keep possession of the ball; create goal-scoring opportunities.	**Methods**: game-based approach.	**Sports Characters**: players, coaches, captains, referees, journalists, and statisticians/game analysts.
	Tactical Principles: create pass line; support.	**Learning Environment**: conditional games, pre-sports game, and functional structure (2x1, 4x3+Gol).	**Role of Students**: practitioner - guide the team during the game, encourage sportsmanship, manage the events (competition and culminant event), publicize the individual events' results, and analyze game performance.
	Game Components: pass, control, ball reception, ball conduction, fake, communication, kick on goal.		
	Sportsmanship: fair play, social relationships in sports (player-referee, fans-referee, fans-players, players-players, fans-fans), value the effort, and relativizing victory.	**Main Game**: 3 x 3, 4 x 4 or 5 x 5.	**Role of Teachers**: support sports characters, mediate and evaluate the sports characters.
TTM	**Technical Fundamentals**: pass, kick on goal, ball reception and conduction.	**Method**: analytical and global.	**Sports Characters**: players.
	Sportsmanship: fair play, social relationships in sports (player-referee, fans-referee, fans-players, players-players, fans-fans), value the effort, and relativizing victory.	**Learning Environment**: Individual, pairs or trios tasks to skill development	**Role of Students**: practitioner - reproduce the sports technique during the learning tasks and game formal.
		Main Game: 5 x 5.	**Role of Teachers**: instruction and correction of the learning tasks.

SEM: Sport Education Model; TTM: Traditional Teaching Model.
Source: elaborated by the authors.

SPORTS TEACHING MODELS VALIDATION

To assess the validity of both sports TM, two experienced external observers will analyze the teachers' lesson plans and four recorded lessons from each class that will be part of the study (Hastie et al., 2017). Both the pilot and the main studies will assess fidelity according to the benchmarks proposed by Hastie et al. (2013). An external member using the "Random Function" of the Office Excel package will define the lessons to be analyzed. The inter-observer agreement adopted will be 0.80.

VARIABLES AND INSTRUMENTS

An instrument composed of sociodemographic (gender, age, family income in minimum wages, skin color), school (enrolled teaching network and class), and sports experience information (experience with sport in PE lessons, experience with sport in clubs, time of experience with the sport, level of experience with the sport, experience with other invasion sports) will be built for participants' characterization.

The dependent variables of the study and the respective instruments are presented in Chart 2.

Chart 2. Description of the dependent variables and instruments according to learning domains.

Cognitive Domain
Knowledge of Sports Content
Description: the following sporting knowledge will be considered: (a) rules; (b) tactical-technical knowledge; (c) sportsmanship; (d) general sports knowledge.
Instrument: a Sports Content Knowledge Test (SCKT) will be elaborated by the researchers and teachers' applicators of the intervention (EG and CG). The SCKT will consist of multiple-choice questions and video analysis may be used. The following steps will be respected to elaborate the SCKT: (a) teachers applicator will indicate themes to elaborate the items; (b) researcher trainer will elaborate on the initial version of the SCKT; (c) debate among teachers applicators and improvements in the initial version; (d) validation of the instrument by the group of expert (Hastie et al., 2013) and (e) analysis of reproducibility
Game Performance (GP)
Description: the GP will be analyzed from the cognitive and physical domain interactions perspective. Thus, the GP will show the processual knowledge of practitioners, composed of elements such as decision-making, skill execution, and support (Mitchell et al., 2013; Chatzipanteli et al., 2016; Matias and Greco, 2010; Santos, 2016).
Instrument: the Game Performance Assessment Instrument – GPAI (Mitchell et al., 2013) will be used to analyze the GP. The present study will analyze skill execution (successful/unsuccessful), decision-making, and support (appropriate/inappropriate) (Memmert and Harvey, 2008).
Game Involvement (GI)
Description: the GI is composed of the same elements that GP but is calculated differently. It is important to measure to identify the game's participation level.
Instrument: will be used the GPAI to analyze the GI (Memmert and Harvey, 2008).
Emotional Domain
Motivation for PE lessons
Description: the classification and the levels of motivational regulation proposed by the self-determination theory (SDT) will be used to analyze the students' motivation for PE lessons.
Instrument: the Brazilian version to students of the Perceived Locus of Causality (PLOC) will be used to assess the students' level of motivation during PE lessons. Guedes et al. (2020) carried out the translation and cross-cultural adaptation into the Portuguese language of Brazil.
Basic Psychological Needs (BPN)
Description: will be considered the three BPN: (a) competence – the feeling of mastery, (b) autonomy – a sense of initiative and ownership in one's action, (c) relatedness – a sense of belonging to a group.
Instrument: the Basic Psychological Needs in Physical Education Questionnaire [BPNQ-PE - Pires et al. (2010)] will be used to verify the students' perceptions of BPN.
Intention to be Physically Active (IPA)
Description: the variable identifies whether the students intend to practice physical activity in the future (Cuevas et al., 2016; Gil-Arias et al., 2017).
Instrument: the Intention to be Physically Active Scale [IPAS - Moreno et al. (2007)] will be used to analyze the IPA.
Socio-affective Domain
Sportsmanship
Description: sportsmanship is understood as attitudes and behaviors that promote respect for the rules, refereeing, and positive interactions among all participants (Vallerand et al., 1996).
Instrument: the Multidimensional Sportsmanship Orientations Scale (the Brazilian version of MSOS) will be used to analyze the students' sportsmanship. The translation and cross-cultural adaptation into the Portuguese language of Brazil were carried out (Andaki and Salles, 2018).
Physical Domain
Intensity of PE lessons
Description: the intensity of physical activity is an important health benchmark, being categorized as follows way: (a) light; (b) moderate, and (c) vigorous.
Instrument: a triaxial accelerometer (ActiGraph®) will be attached by an elastic strap at the waist of the participants to assess the intensity of physical activity. Data collection will be analyzed using the software ActiLife (ActiGraph®) and calculated in metabolic equivalents (METs). The categorization will be carried out according to Haskell et al. (2007): (a) Light PA < 3METs; (b) Moderate PA between 3 and 6 METs; and (c) Vigorous PA > 6METs. Participants who achieve at least 50% of the lesson time in moderate to vigorous PA will be classified as "Meet the Recommendations".

EG: Experimental Group; CG: Comparator Group; PA: Physical Activity.
Source: elaborated by the authors.

LOGISTIC

TEAM RESEARCH TRAINING

Before starting the pilot study, the questionnaire and SCKT applicators will participate in training. This training will consist of the following steps: (a) presentation of the instruments and of the application procedures; (b) application of the instruments among applicators; (c) application of the instruments in the pilot study. In addition, two observers will be trained in GP analysis. Will be performed kappa test to analyze intra-observer and inter-observer agreement (0.80 or higher). At the end of the study, it will be rechecked the agreement of 20% of participants with the external observer, a value suggested by Hastie et al. (2017). The 20% of participants will be selected at random.

PILOT STUDY

The pilot study will take place the semester before the intervention and will consist of 12 lessons on the sport selected for the main study. With the training researcher's support, three teachers implementing the SEM will conduct the pilot study. The participation of graduating classes in the pilot study will be prioritized to keep all classes eligible for the next academic year. This pilot study will have the following objectives: (a) provide an authentic practical experience for teachers who will implement SEM; (b) analyze the fidelity of the SEM-based protocol; (c) train the team of the questionnaire and SCKT applicators; (d) analyze of reproducibility of the SCKT and questionnaires and (e) analyze of agreement test among GP and IG analysts with the expert analysts.

DATA COLLECTION

Data collection will be carried out on the premises of the schools. The SCKT and questionnaires will be applied in the classroom, ensuring a quiet and peaceful environment. Before baseline collection, the main researcher will lead a meeting with each class to present the research project aiming to invite students to formalize their participation in the study by signing the Term of Free and Informed Assent (TFIA). In addition, students' participation will be conditioned to bring the Term of Free and Informed Consent Term (TFIC) signed by a legal guardian. After the presentation of the research and delivery of the TFIA and TFIC, the two groups (SEM and TTM) will have the same data collection flow: (a) baseline; (b) post-intervention.

Most of the baseline collection will be performed before starting the intervention. The exceptions will be the GPAI and the accelerometer. The baseline data collection will have the following application flow: 1st lesson - SCKT; 2nd lesson – PLOC, BPNES, and questionnaire to characterize the participants; 3rd lesson - MSOS and IPAS. The GPAI will be analyzed in the second lesson of the intervention, when the first formal game will take place. Finally, accelerometry data will also be collected from the second class onwards.

As in the baseline, the post-intervention collection will be carried out at different times. For GPAI analysis, the post-intervention stage will be considered the penultimate lesson in which the formal game occurs. The 19th lesson will also be the last that the students will use the accelerometer. After the last intervention lesson, three more lessons will be needed to apply the instruments, respecting the order used in the baseline collection. Figure 2 describes the different stages of the study.

BLINDING

The following research members and participants will be blinded: (a) instrument applicators; (b) GP and

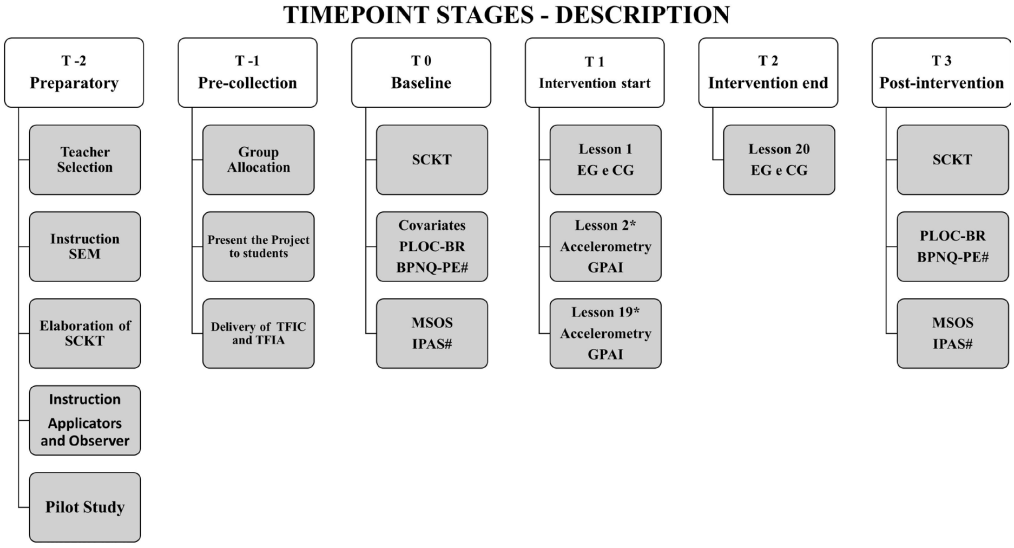

Figure 2. Description of the study stages.
Source: elaborated by the authors. *Accelerometry will be collected continuously between the 2nd and 19th lesson. GPAI will be collected in the 2nd and 19th lesson. # Instruments allocated together will be applied on the same day.

GI analysts; (c) research members responsible for data analysis; (d) students on the objectives of emotional and socio-affective variables.

DATA ANALYSIS

Fleiss Kappa test will be used (0.80 or higher) to assess the SCKT reproducibility and to assess intra and inter-observer agreement in the GPAI.

The dependent variables will be tested for normality according to Shapiro-Wilk test before the analysis is performed. Then, descriptive and bivariate analyzes will be carried out on the baseline data. Bivariate analyzes will assess if there is a difference between groups (intervention and comparator) regarding sex, age, sports experience, and dependents variables. A significance level of $p < 0.05$ will be adopted.

After the intervention, a mixed Anova (two-way repeated measures) will be performed. Thus, it will be possible to analyze the effects of the interventions by (EG and CG) groups and stratified by school context, by time (pre and post-test) and the group*time interactions. Effect size Cohen's "d" will also be computed and interpreted as Insignificant (<0,19), Weak (0,20 – 0,49), Moderate (0,50 – 0,79), Strong (0,80 – 1,29) e Very Strong (>1,30), according to Rosenthal (1996).

ETHICAL ASPECTS

The School of Physical Education Ethics Committee from the Federal University of Pelotas analyzed and approved this study (protocol number 5.428.713). In addition, to participate in the study will be necessary to bring TFIC and TFIA signed by legal guardians.

DISCUSSION

This study aimed to describe the methodological design of the study entitled "Effects of the Sport Education Model in Physical Education classes on physical, emotional, cognitive and socio-affective outcomes of students in different high school contexts". When describing the methodological approach, it is necessary to make some considerations. Initially, it is necessary to recognize that the study design has some limitations. The main ones are the need for an extensive preparatory stage to train teachers and the dependence on teachers' engagement in the research project.

On the other hand, it should be noted that the Project presents several contributions, the main ones being: (a) to verify the effects of teaching sports on models-based approach in three different national high school contexts; (b) evaluate the effects of a pedagogical model on various learning domains; (c) present an ecological study design on pedagogical model; (d) promote teachers' continuous formation; (e) assist in the dissemination of knowledge about teaching sports models-based approach among the basic education teachers and; (f) present teachers with possible alternatives for teaching projects adjusted to the contextual demands of full-time schools.

Finally, conducting more experimental studies on the national stage about Sport Pedagogy and, more specifically, about teaching sport in school may promote significant advances in knowledge scientific and practice applications.

FUNDING

This paper did not have financial support of any nature for its realization.

CONFLICTS OF INTEREST

The authors report no conflict of interest.

REFERENCES

Andaki R Jr, Salles JGC. Tradução e adaptação transcultural do questionário "The Multidimensional Sportpersonship Scale (MSOS – 25)". Rev Bras Educ Fís Esporte. 2018;32(1):121-9. http://dx.doi.org/10.11606/1807-5509201800010121.

Bessa C, Hastie P, Araújo R, Mesquita I. What do we know about the development of personal and social skills within the sport education model : a systematic review. J Sports Sci Med. 2019;18(4):812-29. PMid:31827367.

Bessa C, Hastie P, Ramos A, Mesquita I. What actually differs between traditional teaching and sport education in students' learning outcomes? A critical systematic review. J Sports Sci Med. 2021;20(1):110-25. http://dx.doi.org/10.52082/jssm.2021.110. PMid:33707994.

Burgueño R, Cueto-Martín B, Morales-Ortiz E, Medina-Casaubón J. Influence of sport education on high school students' motivational response: a gender perspective. Retos. 2020;37:546-55. http://dx.doi.org/10.47197/RETOS.V37I37.70880.

Casado-Robles C, Mayorga-Vega D, Guijarro-Romero S, Viciana J. ¿Es efectivo el Modelo de Educación Deportiva para mejorar la deportividad y actividad física en escolares? Rev Int Cienc Deporte. 2020;60(16):180-98. http://dx.doi.org/10.5232/ricyde2020.06005.

Chatzipanteli A, Digelidis N, Karatzoglidis C, Dean R. A tactical-game approach and enhancement of metacognitive behaviour in elementary school students. Phys Educ Sport Pedagogy. 2016;21(2):169-84. http://dx.doi.org/10.1080/17408989.2014.931366.

Cho O, Richards KA, Blankenship BT, Smith AL, Templin TJ. Motor skill development of students enrolled in a sport education volleyball season delivered by in-service physical education teachers. Phys Educator. 2012 [cited 2023 Jul 3];69(4):375-94. Available from: http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=90037804&site=ehost-live

Cuevas R, García-López LM, Serra-Olivares J. Sport education model and self-determination theory: an intervention in secondary school children. Kinesiology. 2016;48(1):30-8. http://dx.doi.org/10.26582/k.48.1.15.

Evangelio Caballero C, Sierra-Díaz J, González-Víllora S, Fernández-Río J. The sport education model in elementary and secondary

education: a systematic review. Movimento. 2018;24(3):931-46. http://dx.doi.org/10.22456/1982-8918.81689.

Galatti LR, Bettega OB, Paes RR, Reverdito RS, Seoane AM, Scaglia AJ. O ensino dos jogos esportivos coletivos: avanços metodológicos dos aspectos estratégico-tático-técnicos. Pensar Prát. 2017;20(3):639-54. http://dx.doi.org/10.5216/rpp.v20i3.39593.

Gil-Arias A, Harvey S, Cárceles A, Práxedes A, Del Villar F. Impact of a hybrid TGfU-sport education unit on student motivation in physical education. PLoS One. 2017;12(6):e0179876. http://dx.doi.org/10.1371/journal.pone.0179876. PMid:28658267.

Ginciene G, Matthiesen SQ. O modelo do Sport Education no ensino do atletismo na escola. Movimento. 2017;23(2):729-42. http://dx.doi.org/10.22456/1982-8918.69788.

Giusti JGM, Galatti LR, Voser RC, Azevedo MR. O ensino do esporte através do jogo: análise, possibilidades e desafios na educação física escolar. Pensar Prát. 2017;20(3):433-45. http://dx.doi.org/10.5216/rpp.v20i3.40709.

Guedes DP, Bernardes AG, Yamaji BHS. PLOC – regulações motivacionais para aulas de educação física: validação psicométrica para uso em escolares brasileiros. Rev Bras Educ Fís Esporte. 2020;34(1):19-31. http://dx.doi.org/10.11606/1807-5509202000010019.

Haskell W, Lee M, Pate R, Powell K, Blair S, Franklin B, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. Circulation. 2007;116(9);1081-93. http://dx.doi.org/10.1001/jama.273.5.402. PMid:17671237.

Hastie PA, Calderón A, Rolim RJ, Guarino AJ. The development of skill and knowledge during a sport education season of track and field athletics. Res Q Exerc Sport. 2013;84(3):336-44. http://dx.doi.org/10.1080/02701367.2013.812001. PMid:24261013.

Hastie PA, Ward JK, Brock SJ. Effect of graded competition on student opportunities for participation and success rates during a season of sport education. Phys Educ Sport Pedagogy. 2017;22(3):316-27. http://dx.doi.org/10.1080/17408989.2016.1203888.

Lopes FS, Carlan P. O ensino do futsal escolar a partir do Sport Education Model. Motricidades. 2020;4(2):127-41. http://dx.doi.org/10.29181/2594-6463-2020-v4-n2-p127-141.

Matias CJAS, Greco PJ. Cognição & ação nos jogos esportivos coletivos. Ciênc Cogn. 2010;15(1):252-71.

Memmert D, Harvey S. The Game Performance Assessment Instrument (GPAI): some concerns and solutions for further development. J Teach Phys Educ. 2008;27(2):220-40. http://dx.doi.org/10.1123/jtpe.27.2.220.

Metzler M. Instructional models for physical education. 3rd ed. New York: Routledge; 2017. http://dx.doi.org/10.4324/9781315213521.

Mitchell S, Oslin J, Griffin L. Teaching sports concepts and skills – a tactical games approach. 3rd ed. Champaign: Human Kinetics; 2013.

Moreno JA, Moreno R, Cervelló E. El autoconcepto físico como predictor de la intención de ser físicamente activo. Psicol Salud. 2007;17(2):261-7.

Pires A, Cid L, Borrego C, Alves J, Silva C. Validação preliminar de um questionário para avaliar as necessidades psicológicas básicas em educação física. Motricidade. 2010;6(1):33-51. http://dx.doi.org/10.6063/motricidade.6(1).157.

Rosenthal JA. Qualitative descriptors of strength of association and effect size. J Soc Serv Res. 1996;21(4):37-59. http://dx.doi.org/10.1300/J079v21n04_02.

Santos RB. A utilização do Game Performance Assessment Instrument (GPAI) no basquetebol: revisão de literatura. Arq Mov. 2016;12(1):119-28.

Siedentop D, Hastie P, van der Mars H. Complete guide to sport education. Champaign: Human Kinetics; 2004.

Siedentop D. Sport education: quality PE through positive sport experiences. Champaign: Human Kinetics; 1994.

Silva LFN, Leonardo L, Scaglia AJ. Epistemologia da prática pedagógica na educação física e esporte. Mapeamento a partir de um instrumento metodológico. Lect Educ Fís Deportes. 2021;25(274):145-63. http://dx.doi.org/10.46642/efd.v25i274.2344.

Vallerand RJ, Deshaies P, Cuerrier JP, Brière NM, Pelletier LG. Toward a multidimensional definition of sportsmanship. J Appl Sport Psychol. 1996;8(1):89-101. http://dx.doi.org/10.1080/10413209608406310.

Vargas TG, Morisso MM, González FJ, Sawitzki RL. A experiência do Sport Education nas aulas de educação física: utilizando o modelo de ensino em uma unidade didática de futsal. Movimento. 2018;24(3):735-48. http://dx.doi.org/10.22456/1982-8918.79628.