

# Study regarding the knowledge & understanding domain in the physical education classes

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**Abstract.** The Physical Education (PE) lesson is considered by many researchers to be the main tool that can be used to reduce the sedentary lifestyle of the population. But the most effective way to teach this lesson is still a topic of intense debate among schoolers. The present paper aims to highlight the importance of theoretical knowledge in the educational process in the PE lesson. For this reason, a systematic review was conducted through which a number of 42 papers were identified that met the inclusion criteria. Following the analysis of the papers, the results were reported on three themes: (1) PETE (Physical Education Teacher Education); (2) Curriculum; and (3) Research. The researchers believe that the theoretical contents must be taught to the students in the PE lesson so that they can formulate an answer to the question: "Why should they be physically active in life?". But for this to happen, teachers must be trained in this direction, the curriculum must also contain theoretical content, and researchers must demonstrate the benefits that this knowledge brings in the long term.

## 1 Introduction

We live in a time in which the necessity of physical exercise and an active life for health reasons is unanimously recognized [1]. That is why most countries are interested both in the constant monitoring of the physical activity level of the population [2] and in adopting the appropriate measures to improve this area [3,4].

There is no doubt that there are many factors that can influence the level of physical activity of the population. Lobstein & Uauy (2004) [5] differentiate seven levels of influence that they ordered from the macro level to the micro level, as follows: (1) social policies and national legislation; (2) organizational and commercial practices; (3) planning controls and regional strategies; (4) community and cultural traditions; (5) school practices and peer influences; (6) family customs and choices; and (7) individual self-control. And all these levels through their actions, or lack of action, directly influence the individual.

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Starting from this image, by which we agree that there are a multitude of factors that work together directly or indirectly on the physical activity level of the population, we also bring up the subject of the Physical Education (PE) lesson.

This PE lesson is also a tool, among many others, through which you can act on the population from the perspective of solving the problem of sedentarism. Moreover, Corbin (2002) [6] believes that the PE lesson is the most important way by which we can act to promote lifelong physical activity - this is because it directly impacts the young population.

Furthermore, the PE lesson, and more specifically how we teach this lesson, has been and still is a subject of ongoing debate among specialists. As a result of this debate, on the topic of the best approach to the PE lesson, over time, at the international level, two-time intervals can be distinguished, plus a third one which is in full process of manifestation.

The first-time interval begins with the moment when Luther Halsey Gulick, a young graduate of the faculty of medicine from the University of New York, declares the birth of a new profession: "the teacher of physical education" [7]. What led him to this statement were the many articles and essays that medical professionals were writing on the role and importance of physical exercise [8]. In this first-time interval, which took place throughout the 19th century, the PE lesson was introduced into public education [9]. The main means used by PE teachers from that time were borrowed from the military environment (regimental exercises) and exercises specific to gymnastics and athletics [8].

The second time interval appeared during the 20th century and was based on Victorian thinking about masculinity [10]. Sports are introduced into the PE lesson as a way of developing masculinity in boys [11]. Girls are being directed to less violent sports such as cricket or volleyball [12]. In this way, the PE lesson becomes not only a tool for the physical training of the population but also a way to promote certain sports-specific values, such as: leadership, teamwork, and sportsmanship [13].

With the beginning of the 21st century, it is distinguished a new paradigm shift. This time it is considered that the PE lesson is an opportunity for the individual to become physically literate [3]. This concept of Physical Literacy (PL) is attributed to Whitehead (2001) [14] and involves the development of four domains: (1) motivation; (2) confidence; (3) physical competence; and (4) knowledge and understanding – the final goal being that the student becomes an adult who values and practices physical activity all his life [15].

As a result of the indications of UNESCO (2015) [3], the concept of PL is assimilated by more and more countries as the ultimate objective of PE [16-20]. But, as the author of this concept recommends, its understanding and application must be adapted to the specifics of each country.

From the perspective of what has been presented so far, in this paper we will focus on one of the domains of PL – namely, the one aimed at knowledge and understanding. About this field, Cale & Harris (2018) [21] consider it to be the one that fosters the other three. So, considering the different interpretations that PL has received in the world, in this paper we propose to distinguish the main themes of the specialists' speech regarding the role of knowledge and their understanding in the PE lesson.

## **2 Method**

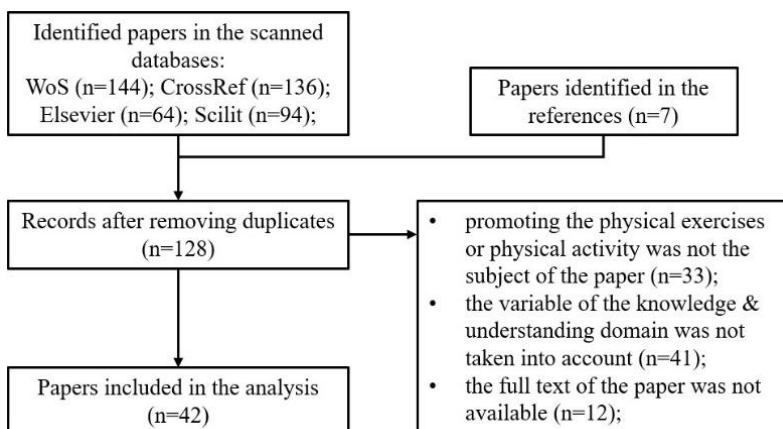
Having as a starting point the objective of this paper, namely highlighting the role of knowledge & understanding domain in the physical education lesson, we conducted a systematic study of the specialized literature to present a condensed conclusion of the domain specialists on this topic.

In the first methodological stage, we used the Systematic Reviews and Meta-analyses statement (PRISMA) [22], to identify the relevant works.

To be included in the research, it was necessary for a paper to cumulatively meet the following eligibility criteria: (1) to be published in English in the last 20 years (2004-2024); (2) have as its subject the promotion of physical exercise and/or physical activity; (3) take into account the variable represented by the knowledge & understanding domain; (4) the full text of the paper should be available open-access.

The search for relevant works was carried out between 03.01.2024 and 01.03.2024 in the Web of Science, CrossRef, Elsevier, and Scilit platforms. The keywords used in this search took into account the different names that the field of knowledge and understanding has in different countries [23]. The combinations of the following keywords were used to identify the works that contained them in the title, in the abstract, or at the keyword level: “knowledge & understanding” or “conceptual physical education” or “fitness education” or “health-related fitness knowledge” or “knowledge of physical fitness” or “exercise knowledge” or “knowledge of health and fitness concepts” or “content knowledge in physical education”.

Following the process of identifying and selecting relevant works (fig.1) we selected 144 works from the Web of Science database, 136 from CrossRef, 64 from Elsevier, and 94 from Scilit. After the elimination of duplications, a number of 121 materials resulted, of which 86 were eliminated on the grounds that they did not cumulatively meet the required inclusion criteria. Following the full-text analysis, 7 other works were included that were identified in the references - as meeting the inclusion criteria.



**Fig. 1.** PRISMA diagram.

So, the stage of identifying the relevant works ended by selecting a number of 42 materials that will be the subject of our analysis.

In the second stage, the full text of the selected papers was analysed separately by the authors of this paper, and then following a meeting, the three main themes on which the report will focus were decided. Then, each author wrote a report on the three themes, and finally, after another meeting, the final form of the report was decided which brought together the key ideas from the other papers.

### 3 Results

In what follows, we present, in short, the description of the three themes, so that afterward they will be addressed in detail.

Theme 1 – PETE (Physical Education Teacher Education): this theme analyses the problem of training future PE teachers from the perspective of the need for them to teach not only practical content on the field or in the gym. The topic analyses the specialized literature that affirms the need for the PE teacher to be prepared to also teach the theoretical knowledge necessary for the student to understand the reasons why he must practice physical activity.

Theme 2 – Curriculum: this theme analyses the papers that raise the issue of theoretical content in the PE curriculum. The theme also analyses the situation of evaluation based on the knowledge criterion in the PE discipline.

Theme 3 – Research: the third theme focuses on the research that took into account the variable represented by the field of knowledge and understanding in the PE lesson or in various interventions that aim to promote an active lifestyle.

### **3.1 PETE**

Before starting the discussion on the topic of preparing future PE teachers, it is useful to reflect on the fact that every student is different, and this means that they will not react in the same way to the same training program. Dowling (2011) [24] showed that the majority of those who chose the PE teaching profession did so out of a sincere desire to share their love of sport and physical activity with the younger generation. But as Garrett & Wrench (2007) [25] pointed out, each of these students comes to the first year of university with a baggage of conceptions and beliefs related to sports and physical activity. Baggage that has its roots in everyone's experiences from childhood to the present day. This is why the PE teacher training process cannot be viewed simplistically.

However, there has always been a group among PE teachers who have admitted that they prefer working with gifted students – many of whom have also pursued a career as a coach in a sport. Therefore, the question we seem to have to answer when discussing how best to train PE teachers is this: ‘What concepts of teacher professionalism do we offer students explicitly and implicitly, intentionally and unintentionally, via our words, our actions and/or our inaction?’ Dowling (2011, p.202) [24].

When discussing the need for students to be taught theoretical knowledge as well, so that they rationally understand the objectives of the practical activity - there seems to be a consensus. Namely, in the training of future PE teachers, it is necessary to focus not only on the methods of training students' physical skills but also on innovative methods of teaching theoretical content [26-29].

Even among teachers in the activity, a group can be noted that believes that the teaching process in PE must be made up of a mix between theoretical and practical contents. Also, it seems that there are teachers who consider a PE textbook necessary [30]. It is interesting to note that during the period when education went online due to the pandemic generated by Covid-19, teachers said that they taught both practical content in which they developed agility, endurance, and strength [31], but also theoretical content such as hygiene notions, nutrition notions, information on famous sportspeople, etc. [32].

It is as clear as possible that in the training of future PE teachers, we must take into account that these teachers will also have to teach theoretical content - not just practical. In Table 1 you can see a series of topics that Corbin et al. (2020) [33] believe they should be taught to future PE teachers. Professor Corbin C. being known for being among the first to propose the theoretical contents in the PE lesson, through his approach called Conceptual Physical Education (CPE) [13].

**Table 1.** Topics for a CPE Course in PETE Programs ([33], p.48).

- CPE Program Philosophy and Theoretical Foundations
- Physical Education Content Standards, FE Benchmarks, and Physical Literacy Overview
- Overview of CPE/FE Content Knowledge (e.g., common content, specialized content)
- Methods of Presenting Classroom Content (e.g., use of AV, classroom discussions)
- Methods of Presenting CPE/FE Activity Session Content
- Overview of Available Programs (e.g., Fitness for Life, Physical Best)
- Overview of Student and Program Evaluation (e.g., tests, portfolios, projects, workbooks)
- Integrating CPE/FE with Other Physical Education Programs (e.g., Sport Education, Traditional PE)
- Integrating CPE/FE with Whole-of School Programs (e.g., CSPAP, PYFP)
- Using the Web and e-books in CPE
- Online CPE: Pros and Cons, Guidelines for Implementation

At the end of this chapter, we will highlight one of the main barriers that prevent teachers from teaching theoretical content to students in the PE lesson. This refers to the fact that most of the specialized teachers come from the area of performance sports, some even have a second job as a coach in a sports branch. For this reason, these PE teachers tend to bring the values of performance sports into the PE lesson. For them, the student with superior physical qualities should receive the maximum grade in the PE lesson. These teachers cannot conceive the performance evaluation in the PE lesson based on knowledge, but only based on the level of physical performance/competence [34].

### 3.2 Curriculum

In recent years, most curricula are built around competencies. Almost all curricula state that they aim to develop competencies. But discussing the dynamics through which these skills are developed gives birth to another discussion [35,36]. This discussion must be based on two concepts: (1) declarative knowledge; and (2) applied knowledge. The first ones refer to what the student knows from a theoretical point of view, and the applicative ones refer to what he knows how to do - or, in other words, if he knows how to apply the declarative knowledge [37].

In cognitive psychology, learning is defined as changes in long-term memory. What led Sweller & Kalyuga (2012) [38] to state that: "If nothing has changed in long-term memory, nothing has been learned" (p.24). On the same subject, Ofsted (2019) [39], concludes that progress in learning involves remembering more (the theoretical element) and knowing how to do more (the practical element). We notice again, two elements: one theoretical and one practical - or applicative.

These two examples highlight the need for the PE curriculum to be built in such a way as to first ensure that the student has assimilated theoretical content, and then to offer him the opportunity to apply that content in practice. Unfortunately, there are still many countries where physical literacy is found at a low level in the PE curriculum [16], and instead of physical literacy, we find a sport-based approach in which students are evaluated based on physical performance [40].

As an example of good practices, we will discuss a curriculum from Australia that proposes an integration of theory and practice [41]. This curriculum as analysed by Jones & Penney (2019) [28] refers to three types of education that can be addressed in the PE lesson.

Namely education "in motion", education "through movement" and "education about movement".

Among the three types of education, the one "about movement" implies an approach to teaching physical education that is quite distinct from education "in movement" and "through movement" [28]. This aims to build a rational picture of physical activity, so it focuses on anatomical, biomechanical, physiological, sociological, psychological and/or philosophical information [42]. Examples of learning units of this type of education are; understanding heart rate thresholds to develop endurance, calculating caloric consumption and daily caloric needs, psychological preparation strategies before a competition, etc. It is thus observed that the accumulation of theoretical knowledge is the main characteristic of " education about movement".

Another discussion that arises if we agree with the need for theoretical content in PE, is related to the nature of this content. In other words, if the teacher should also teach theoretical content in PE, what is that content? And here arises the problem of a textbook for this discipline - or a standard content of theoretical knowledge that must be taught to students. We therefore see several authors who emphasize the need for the teacher to have at his disposal a standard theoretical content, even printed in the form of a textbook, to use in the process of teaching theoretical knowledge [43-45, 30, 31].

The PE curriculum must also contain theoretical content. And to convince teachers of this aspect, Cloes (2017) [46] invites PE teachers to ask their students "How do they benefit from this lesson?". The author shows that it is surprising to read the answers - to see that most young people do not know how to explain the PE objectives.

### **3.3 Research**

The third theme of our paper focuses on research. Here are discussed the research projects that highlight the role of theoretical knowledge in the PE lesson.

Iconomescu et al. (2021) [47] conducted a systematic review in which they identified concrete ways by which theoretical knowledge can be implemented in the PE lesson at each educational level. The authors have compiled research starting with the elementary education level and ending with the training of future PE teachers. The conclusions of this paper show that by achieving a mix of theory and practice in the PE lesson, we are much closer to the educational objective of this discipline.

From the identified research, we would like to present one that we consider representative. Namely, the one conducted within the Project Active Teen (PAT) where 1500 students were part of the experimental group that was subjected to a Conceptual Physical Education (CPE) program that involves the implementation of theoretical knowledge. The subjects were tested the first time 3 years after the intervention, the second time after 6 years, and the third time after 20 years after the intervention. The results showed that 56% still remember the theoretical contents taught, 50% still use that knowledge, 47% consider that course to be very useful, and 97% consider themselves well-informed on the subject of PA due to the course [34]. This research very well underlines the role that theoretical knowledge in the PE discipline plays in the long term from a mental well-being perspective [48,49].

Also, within this theme, an important topic is represented by the need for researchers to develop valid instruments for measuring the level of theoretical knowledge in the PE lesson. For this we note that the specialized literature proposes a series of measurement tools that the teacher can use in class [50-52], but also methodologies through which the teacher can build his own instrument [44].

## **4 Conclusion**

Of the three detailed themes, the one that refers to research is the one in which most of the identified materials were included (27 papers). This is not necessarily worrisome, because this is the natural order. First, the researchers highlight the positive results recorded as a result of the implementation of theoretical knowledge, then the curriculum creators introduce such contents in the PE lesson, and finally, the future specialized teachers are trained on how to apply the curriculum. This is also the reason why countries need to share their examples of good practices [53].

The field of knowledge and understanding is in a process of growth in terms of attention from specialists. It remains to be seen if this trend will continue, and if we will end up talking about a normality for PE teachers to teach theoretical concepts in addition to practical content.

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