

Knowledge Related to Health in Physical Education Students in the National Assessment of Student Achievement (ENADE)

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ORIGINAL ARTICLE

ABSTRACT

The study aims to analyze the knowledge related to health required the evidence of Physical Education students from the National Assessment of Student Achievement (ENADE) 2014. All Physical Education students from Brazil who declared "present" in the specific component of the test. Students are categorized by gender (male and female), type of institution (public and private) and Brazil region (North, Northeast, Southeast, South and Midwest). Valid percentage of each alternative and the index of difficulty and discrimination of the items were analyzed. We used the SPSS statistical package (version 20.0). Most students answered the items correctly, with good understanding involving healthy habits in childhood and the contributions of physical education in teaching such content. However, many of them interpreted incorrectly, with misunderstandings about elementary questions on this topic. It is concluded that there are some knowledge limitations related to the Physical education students' health, when the ENADE 2014 is used as a parameter.

Keywords: large scale assessment, higher education, proficiency

INTRODUCTION

The evaluation is clearly presented as a complex issue involving multiple sectors of society; however, specifically the educational assessment has been widely discussed covering various audiences, serving as a means for diagnosis, implementation and maintenance practices and educational policies (Bertolin & Marcon, 2015). In this sense, large scale evaluation is shown as a means of finding and / or selection of directions for making decisions about educational practices to improve the student's performance, quality of education and other aspects which influence the educational development (Pontes Junior & Trompieri Filho, 2015).

On that basis, the practice of the assessment on a large scale interacts with the development of students' education and / or educational systems, reflecting on curriculum improvement and training itself for the improvement of education (Gatti, 2009). Thus, the large-scale

evaluation is configured as an essential tool in reviewing and restructuring the public policies, supporting in new decision-making face the evaluated educational system, and having the quality of education as the main goal (Vianna, 2003; Werle, 2011)

Among the large-scale assessments in Higher Education in Brazil, there is the National Assessment of Student Achievement (ENADE), component of the National Higher Education Evaluation System (SINAES), which seeks to assess the performance of entering and graduating students, i.e., assessing their training in respect of program content, the necessary skills and abilities for the labour market which are acquired during training (Brasil, 2011).

ENADE has been applied in many higher education courses since its first edition, in 2004. For many years, Physical Education students have been evaluated on their skills, abilities and knowledge acquired during their training, however, few studies address this issue.

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Thus, evaluating the practice of students (who are ending the teacher’s training course of School Physical Education) concerning the aspects of health required in ENADE can be an important parameter about these professionals’ profile who will be working in schools. Studies point out that it is through the evaluation and co-evaluation that the teacher can seek to improve with respect to their training and pedagogical practice (Fernández-Rio, 2014; Telles, Krüger, Marques, & Krug, 2014).

On the other hand, the inclusion of physical education professional in questions related to health, even contributing in multidisciplinary teams as it occurs in the Centers of Support for Family Health (NASF), requires the professional’s responsibility and qualification to perform a service of preventive, protective and health rehabilitation (Falci & Belisario, 2013), a role which can also be played by the teacher of school physical education. This brings the need for evaluation of health-related knowledge required for the examination.

Therefore, the theoretical and practical training, especially the abilities, skills and attitudes (Libâneo, 2004) is considered one of the segments which contribute to the profession excellence. In this sense, not only the student’s effort but also the quality of course has its influences (Santiago, Pedrosa, & Ferraz, 2016).

Thus, we can start with the following question: what is the health knowledge requested the students of Physical Education in ENADE? In the view of this question, the study aims to analyse the knowledge related to health, required in Physical Education exams of ENADE 2014.

METHOD

Participants

The participants characteristics are contained in Table 1. All students of Physical Education from Brazil which declared "present" in carrying out the specific test component participated. Students are categorized by gender (male and female), type of institution (public and private) and region of Brazil (North, Northeast, Southeast, South and Midwest).

Table 1
Characteristics of the sample according to gender, type of institution and the country

Variables	Year Application		
	2004	2011	2014
Age (Sd)	24.5 (5.7)	26.5 (6.1)	27 (6.8)
Gender (%)	Female	45.6	45.4
	Male	54.4	54.6
Type of Institution (%)	Public	23.7	23.3
	Private	76.3	76.7
Country Region (%)	North	3.0	4.3
	Northeast	8.4	14.3
	Southeast	59.1	51.7
	South	22.6	20.4
	Midwest	6.8	9.3
Total (n)	26775	19227	24362

Data on the performance of students of Physical Education courses were extracted from databases (micro) survey, made available via the Internet by the National Institute of Educational Studies Teixeira - INEP. A sample of students is selected from the institution's own criteria, in which select by stratified random sampling, involving participants from all regions and states of Brazil. The questionnaire has socioeconomic information of students, as well as their

responses to each item, as well as for each component notes, general and specific training. For this study we used only the responses of candidates for the specific component of health items of evidence in 2014, in which the examinations for that course were applied. These items were identified in the tests for the examination which are also available on the website. The items which had been cancelled

and with low level of discrimination from INEP criteria were excluded from the analysis.

Statistical analysis

Items related to health examination were selected in order to perform the analysis. Valid percentages of choice were analysed for each alternative of items in order to identify those ones preferred by students. The answers to these items were also dichotomized into 1 and 0 (corresponding to right and wrong, respectively). Questions without answers or multiple answers were considered wrong. Thus, the parameter of difficulty (p) of the items from the hitting ratio was calculated, having its values ranging from 0 to 1, and the items with less ratio were considered the most difficult ones. The items with average rate of difficulty were considered adequate. It was also estimated the

discrimination parameter of the items by point-biserial correlation between the items and the grade in specific component of the test, being considered discriminative values $r_{bp} \geq 0.20$. Descriptive statistics was used (mean and standard deviation) for the students' grades in the items. Data were analysed via SPSS (version 20.0).

RESULTS

With the test analysis, it was identified three items which were about health-related knowledge; however, one of them was taken out. Figure 1 presents an issue that deals with childhood obesity and its complications into adulthood, requiring the student to assess the role of physical education teacher in front of projects regarding this issue.

QUESTÃO 21 -----

É consenso que a obesidade infantil vem aumentando de forma significativa, e que ela determina várias complicações na infância e na idade adulta. Uma criança obesa tem maior probabilidade de vir a desenvolver patologias em sua vida futura, que lhe dificultarão tanto a vida pessoal como a social. O conhecimento da prevalência de obesidade e dos respectivos fatores de risco é de extrema importância para que possam ser adotadas medidas preventivas. Na infância, o tratamento pode ser ainda mais difícil do que na fase adulta, pois está relacionado a mudanças de hábitos e à disponibilidade dos pais, além de uma falta de entendimento da criança quanto aos danos da obesidade.

AMARAL, O.; PEREIRA, C. Obesidade: da genética ao ambiente. *Revista Millenium*, v. 34, n. 311, 2008, p. 320-324 (adaptado).

Em relação ao que deve ser considerado pelo professor ao planejar, participar e avaliar projetos comunitários relacionados à temática apresentada, avalie as afirmações a seguir.

- I. Os pais têm papel importante na prevenção, no desenvolvimento e no controle da obesidade infantil, influenciando o comportamento das crianças por meio da alimentação e dos hábitos de atividade física.
- II. A escola é um lugar privilegiado na prevenção, cuja as diretrizes de ação no combate à obesidade devem centrar-se nos alunos que apresentam sobrepeso.
- III. Há momentos da vida humana, que incluem o período intra-uterino e os primeiros três anos de vida, em que a má nutrição pode provocar prejuízos físicos e mentais que afetam os indivíduos.
- IV. A variação do metabolismo basal em diferentes pessoas, e na mesma pessoa em circunstâncias diferentes, leva a concluir que com a mesma ingestão calórica, uma pessoa pode engordar e outra não.

É correto apenas o que se afirma em

- A) I e II.
- B) II e III.
- C) II e IV.
- D) I, II e IV.
- E) I, III e IV.

Figure 1. Item 21 of the specific component of the exam ENADE 2014. Source: INEP, 2014.

Figure 2 presents a question related to health education programs in Physical Education in school, requiring an understanding about the contributions of this discipline to schoolchildren's health. Table 2 shows the statistics about the items 21 and 28. In the item 21, option E (the correct one) had the greatest students' acceptance. But option D also had great acceptance. Those who have chosen this one did not recognize that eating behaviours

early in life affect the physical and mental aspects of the child. Option A received considerable acceptance. Those who have opted for this one did not consider that people with similar eating habits get distinct physiological reactions when the basal metabolism is different. Option A (correct) from item 28 had the greatest students' acceptance. Option D was widely accepted. Those who have opted for this one failed to understand that physical

education can provide knowledge about exercise physiology and also that anthropometric assessments provide information for monitoring the students' health. In addition, they also associated, wrongly, neuromuscular activities to good cardio respiratory fitness. Similarly, option

B had great acceptance. Besides the other students' misconceptions, the ones who chosen B considered that physical education classes are sufficient to cause physiological changes in the body and promote adherence to an active lifestyle.

QUESTÃO 28 -----

Programas de Educação Física escolar com ênfase na educação para saúde não se restringe unicamente ao desenvolvimento de ações direcionadas aos aspectos fisiológicos associados à prática de atividades físicas. Evidências demonstram que o controle das características dos esforços físicos a que os escolares são submetidos nas aulas pode exercer significativa influência na aquisição e no cultivo dos hábitos do presente e do futuro no tocante à prática sistemática de atividade físicas.

GUEDES, D. P.; GUEDES, J. E. R. P. Esforços físicos nos programas de educação física escolar. *Revista Paulista em Educação Física*, São Paulo, vol. 15, n. 1, jan./jun. 2001, p. 33-44 (adaptado).

Considerando o texto apresentado, avalie as afirmações a seguir:

- I. As aulas de Educação Física devem estimular o conhecimento da fisiologia humana em situação de atividade física.
- II. Nas aulas de Educação Física, as avaliações antropométricas informa sobre os níveis de aptidão física, constituindo-se meio de acompanhamento do estado de saúde.
- III. Nas aulas de Educação Física, as atividade aeróbicas e neuromusculares são estratégias que garantem melhoras no condicionamento cardiorrespiratório.
- IV. Os professores de Educação Física, em suas aulas, podem utilizar indicadores como percentual de gordura corporal, frequência cardíaca e força dinâmica para orientar os estudantes sobre seu nível de aptidão física.
- V. As aulas de Educação Física são suficientes para induzir adaptações fisiológicas no organismo, promovendo aderência a um estilo de vida ativo.

É correto apenas o que se afirma em

- A) I, II e IV.
- B) I, III e V
- C) I, IV e V.
- D) II, III e IV
- E) II, III e V.

Figure 2. Item 28 of the specific component of the exam ENADE 2014. Source: INEP, 2014

Table 2.
Statistics of items related to health in ENADE, 2014

Item	Alternatives (%)						Parameters	
	A	B	C	D	E	IB *	p	r _{bp}
21	13.7	3.1	3.8	29.9	49.2	0.2	0.49	0.39
28	30.0	19.5	14.6	29.4	6.0	0.3	0.30	0.23

* Item left in blank.

As for the parameters, the items showed good levels of difficulty and discrimination, within acceptable margins. This leads to a good metric quality of the items, indicating that despite a few items, they had a reliable assessment.

DISCUSSION

When we discuss about health promotion in schools, managers, teachers and students have the possibility of a new vision for a healthy lifestyle for prevention of chronic diseases (Rocha et al., 2011; Sá, Carvalho, & Gomes, 2014). Spohr, Fortes, Rombaldi, Hallal, and Azevedo (2014) stress that the issue of health remains the agenda for discussions at school,

contributing to habits / actions for the whole population in terms of health promotion.

Simultaneously, Brito, Silva, and França (2012) conclude that actions taken in intervention programs in Brazilian schools are reducing inactivity and integrating health with education activities, although they emphasize the importance of greater participation by the Physical Education professionals in programs to support family's health. Thus, knowledge about the benefits of an active and healthy life for students, family, professional and own co-workers is indispensable (Bankoff & Zamai, 1999; Santos & Marques, 2013).

Yet this perspective, the greater the teachers' knowledge on health promotion at school, the better the possibility to transmit this knowledge to students, therefore, students will have increased awareness of the risk factors that lead to chronic diseases. For instance, the knowledge of high school students presents deficient knowledge about sport and health, as indicated by the results of a large-scale evaluation applied to this level of education in Brazil (Pontes Junior et al., 2016).

This way, Rombaldi, Borges, Canabarro, Corrêa, and Neutzling (2012) conclude that teachers have knowledge in aspects related to physical inactivity, unhealthy diet, smoking etc. These authors still point out that the results are worrying because the school should be the environment to develop the learning on how to deal with the risk factors associated with chronic diseases in adulthood.

Supporting this view, Ferreira, Oliveira, and Sampaio (2013) point out that the concept of health adopted by the participants in the study does not include the extended sense, and also that it is necessary to go beyond the individual and biological aspects of their practices. In this way, teachers from Jaguariúna-SP work with health elements, even though they do not belong to the central axis of their teaching practices, that is, you need a wider understanding of this topic for the development of health in schools (Zancha Magellan, Martins, Silva, & Abraham, 2013).

According to this reality, in other words, to improve the knowledge obtained during and after graduation, the Ministry of Health and Education has contributed through actions at the undergraduate and the postgraduate courses (Falci & Belisario, 2013). From this perspective, there are higher education institutions that make curricular changes in order to bring up the guidelines. According to Costa et al. (2012), these changes are still insufficient, which the author suggests postgraduate courses, in order to minimize the deficits.

Thus, as Table 2 shown in, almost half of the participants pointed out the correct option (E), followed by D, option that is obviously wrong. However, those who chose D considered that

the action guidelines in the fight against obesity should focus on students who are overweight. This statement implies that the ones considered in the proper weight will not become obese.

Therefore, considering that children and teenagers who are overweight or obese are becoming more frequent, there is the need to work some concepts in classroom, and especially practical intervention programs, which foster physical activity. That is why the presence of a Physical education professional is a key factor in the search for results.

Nevertheless, it is worth noting that the interdisciplinary among the subjects can greatly contribute to health promotion at school, such as nutritional monitoring can accelerate the delivery of results, when the goal is a loss, or low caloric intake (Hoehr, Reuter, Tornquist, Nunes, & Burgos, 2014).

Complementing, Araújo, Brito, and Silva (2010) state that when the teacher suggests proposals that get students together, in an attempt to alleviate physical inactivity, he / she contributes in health promotion consequently and must always consider the exercise, sport and physical fitness related to health as one of the main contents of Physical Education.

In order to assist the planning of Physical Education classes with the health theme, high school teachers can make use of students' perceptions scales about the teaching-learning process of the discipline, in order to identify their expectations regarding the objectives associated with health and quality of life (Sousa et al., 2016).

Table 2 shows that only 30% indicated as correct the alternative (A), and 29.4% chose the alternative (D), which there is great similarity statistically. However, when the applicant picked the item D, he or she disagreed the Physical Education classes should encourage the knowledge about human physiology in situations of physical activity, when in fact, both anatomical and physiological knowledge and gathering the minimum knowledge about the body, always linking with physical activities experienced in the students' reality (Melo & Sousa Neto, 2016).

Regarding the aspects and prospects of continuing education of Physical Education course, Salles, Farias, and Nascimento (2015) found that students of both courses have interests to specialize in the area of physical activity and health, specifically, some of the graduates reported that they plan to do some course related to sports training, while the graduates reported they intend to take courses related to exercise physiology. This way it is possible to see interest in parts of some graduates in physiology.

Corroborating, Vanzela, Balbo, and Justina (2007) analysed a sample of students in the 3rd grade of high school to see if they were able to relate the physiological systems in their everyday problems situations. Thus, some of these issues show some relevant points to be addressed in school, such as the performance of the respiratory and circulatory systems during the exercise, and the nervous system and the muscular system in carrying out movements.

Based on this assumption, the understanding of the human organism in its functioning as a whole during basic education is not impossible, but it is not an easy task. Therefore, it is necessary that future professionals must be aware of this task still in college, so that in the profession, they can facilitate student's learning.

CONCLUSION

The singled out and discussed results show that there are limitations in knowledge related to the health of Physical Education students, when the ENADE 2014 is used as a parameter. The questions discussed show that the number of participants who chose the right option was lower than the ones who chose the wrong one.

However, it is emphasized that there are few questions to analyse the health students' knowledge effectively. It is recommended that such a relevant topic to the training and performance of Physical Education teachers may have a larger sample of items in the examination, in order to enable a more efficient student assessment.

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