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The behavior of practicing sports among nursing students

Comportamento da prática esportiva do estudante de enfermagem

Comportamiento de la práctica deportiva del estudiante de enfermería

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ABSTRACT

Objective: Analyzing the frequency patterns of practicing sports, the stages of change phases and the pros and cons of decision-making balance in nursing students related to gender and which year of study they are in. **Method**: A cross-sectional, descriptive and exploratory study. **Results**: 535 students of both genders participated in the study. An analysis of the results revealed that 27.6% of the students did not present any frequency of practicing sports; 55.3% of the students did not have a consistent or continuous habit of practicing sports; students overall exhibited a non-existing frequency of practicing sports at similar levels throughout the study cycle; male students presented similar percentages in their positioning in the precontemplation and contemplation stages throughout the study cycle; and throughout all the stages of change phases students showed higher values for pros over cons related to practicing sports. **Conclusion**: The results reinforce the relevance for implementing mechanisms for promoting and monitoring nursing students' involvement and regular participation in practicing sports.

DESCRIPTORS

Students, Nursing; Exercise; Health Behavior; Health Promotion.

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INTRODUCTION

Research in human sciences, in health and sports emphasize the multiplicity of advantages inherent to physical exercise practice, and its physical, psychological and social level benefits are well-documented[1-2]. However, contrary to what would be expected, there is evidence that young adults between the ages of 18 and 25, including students of higher education do not have regular habits of practicing sports[3-4]. These data are also corroborated by studies carried out in Portugal[5], in which high levels of sedentarism were identified among higher education students. Furthermore, studies conducted in Germany[6] and in Brazil[7] report low participation in sports among nursing students.

There are many theoretical models in the literature that have been used to explain the behavior of practicing sports and physical exercise[8]. Among the most popular are the Transtheoretical Model of Change (TTM)[9]. The conceptualization of TTM is based on the premise that behavioral change occurs throughout a process in which people have six levels of readiness for change. These six levels are sequenced and ordered on a specific continuum[10] and they are called phases or stages of change: precontemplation (the individual has no intent to change their habits in the next 6 months); contemplation (the individual intends to change their habits in the next 6 months); preparation (the individual intends to change their habits within the next 30 days); action (the individual deliberately performs a behavior and maintains it for 1 to 6 months); maintenance (the behavior is maintained for more than 6 months); and termination (the individual has shaped their behavior for at least 5 years without relapses, it is the ultimate goal for those who change some kind of behavior). This last phase is more commonly used in the analysis of changing addictive behaviors such as gambling, smoking habits, or the consumption of alcohol and other drugs[11].

The TTM also includes other constructs such as the decision-making balance. This construct is a moderator of behavioral change and results from assessing the perceived importance of the advantages (pros) and the disadvantages (cons) for a behavior change regarding themselves and meaningful others. For sports purposes, examples of pros include health benefits (e.g. stress relief) and increased energy and stamina. On the other hand, time constraints, obligations and competing tasks (e.g. less time spent with family and friends) represent examples of cons. The comparison of pros and cons presents positive or negative values in the decision to assume a behavior[12]. In fact, the phases of the stages of change and decisional balance have been successfully used to promote and adhere to the behavior of sports practice[13-14].

In a more comprehensive perspective, we decided to use the concept of Sport already adopted in another study from Portugal[15], in which the term practicing sports (PS) was invariably used in the course of this study.

As a result of the above, we can justify providing evidence to those who will be future health professionals that such behavior can then begin even before entering the labor market. Thus, health professionals' judgment and decision-making are facilitated for them, who are also subject to chronic-degenerative diseases like everyone else. Moreover, these future professionals will be responsible for treating these diseases and should be aware of the benefits of desirable health behaviors (including practicing sports) in order to be able to transmit them to the people under their care[16].

Considering investigations that seek to unveil and understand the reality inherent to the habits of practicing sports and doing physical exercise among higher education students, the present study aimed to analyze the frequency patterns of practicing sports, the stages of change phases and the pros and cons of the decision-making balance in nursing students according to gender and their year of study.

METHOD

This study is characterized by a cross-sectional, descriptive and exploratory design. In order to be included in the study, the participants had to meet the following criteria: age equal to or greater than 18 years and properly enrolled in the nursing course. Individuals who presented medical restrictions to doing regular physical exercises were excluded.

A total of 535 students of both genders participated in this study. In the school year of 2015, 1,196 students were enrolled in the in Nursing Undergraduate Course among the different academic years, of which 1,012 (84.6%) were female and 184 (15.4%) were male. The sample corresponded to 45% of the available total, and all the students were attending the *Escola Superior de Enfermagem do Porto*, Portugal.

In order to evaluate the student's positioning regarding the stages of change, the Stage of Exercise Behaviour Change Questionnaire$_p$[17] was used, translated and adapted for Portuguese from the original Stage of Exercise Behaviour Change Questionnaire[18]. This instrument refers to psychological measures that have been developed for physical exercise; it relates to the adapted questionnaire and is derived from the commonly known stages of change (TTM). It consists of an initial question (*Do you perform any kind of physical exercise with a regularity of at least three times a week between 20 and 60 minutes?*), in which respondents should select the responses they perceive are more similar to their current situation among the five available statements: (a) I do not exercise regularly nor do I intend to start in the next 6 months (precontemplation); (b) I do not exercise regularly, but I intend to start within the next 6 months (contemplation); (c) I do not exercise regularly, but I want to start in the next 30 days (preparation); (d) I have been doing physical exercises regularly for less than 6 months (action); and (e) I have been exercising regularly for more than 6 months (maintenance).

In order to evaluate the student's decision-making balance, a translated and adapted version for the Portuguese reality, Decision Balance Scale for Exercise$_p$[17] of the Decision Balance Scale for Exercise[19] was used. This

instrument consists of 10 statements on negative and positive aspects associated to physical exercise which are equally distributed between two factors: (a) pros (e.g. Exercising regularly makes me feel or would make me feel more comfortable with my own body); and (b) cons (e.g. Exercising regularly reduces the time or would reduce the time I have to spend with my friends). Respondents should indicate to what extent they consider each item important for their decision of whether or not to exercise using a 5-point Likert scale (1 = Not Important to 5 = Extremely Important). The total score of each factor results from the arithmetic mean of the values assigned to the respective items. The decisional balance is found by the difference between the scores of pros and cons factors. Results of the decision-making balance therefore reflect the relative weighting of pros and cons of the behavior change over whether or not to exercise. In case the decisional balance presents negative values, these indicate a greater perception of the individual regarding the negative aspects associated to doing physical exercise. In addition, students answered a set of questions about sociodemographic variables (*e.g.* age, gender and year of study). In assessing the frequency of practicing sports, students responded to the following question: *In a normal week, how often do you practice some kind of sport?* and participants could select one of nine available statements: (a) zero times a week; (b) less than once a week; (c) once a week; (d) twice a week; (e) three times a week; (f) four times a week; (g) five times a week; (h) six times a week; and (i) every day.

For data collection, students completed a questionnaire in person during the regular hours of the classes. In addition, students completed a form in which they stated voluntarily accepting to participate in the respective study, and were also informed that anonymity would be ensured.

The questionnaire was applied only once in the teaching unit in a room designated for this purpose in March 2015. The time required to complete the questionnaire was 20 minutes. Statistical analysis was performed in SPSS version 23.

Practicing sports frequency responses were grouped into four categories: (i) non-existent (zero times a week); (ii) infrequent (less than once a week, up to twice a week); (iii) frequent (three times a week), and (iv) very frequent (more than three times a week). This choice was based on the required criteria for practicing sports frequency according to the position of the American College of Sports Medicine[20].

The statistical treatment included descriptive analyzes of frequency and percentage for the variables gender, year of study, frequency of practicing sports and stages of change. In order to identify possible differences between the genders, year of study, frequency of practicing sports and the stages of change it was used the chi-square test (c^2) considering an analysis of standardized adjusted residuals that were superior to 1.96 for p <.05 in the module, thus indicating the cells that were further away from the null hypothesis of independence. The t-test for independent samples was used to analyze differences between the genders and for pros and cons of the decision-making balance considering the stages of change. A significance level of p <.05 was considered for all of these analyzes.

The accomplishment of this study was in accordance with the requirements from the competent organs of the *Escola Superior de Enfermagem do Porto*.

The research project was approved by the Research Ethics Committee on Human Beings of the *Faculdade de Desporto* of the *Universidade do Porto* (CEFADE 21/2016).

RESULTS

A total of 535 students of both genders participated in this study, with 459 (85.8%) females and 76 (14.2%) males aged between 18 and 32 years, and mean age of 19.75 (SD ± 1.95) years.

Frequency of practicing sports

The results related to the frequency of PS revealed that 27.6% of the participants in this study were categorized into non-existent practicing sports, 45.2% into infrequent PS, and only 27.2% had a frequency of at least three times a week.

The analysis of the PS frequency according to gender found no statistically significant difference between the variables ($\chi^2_{[3.535]}$ = 9.71, p ≥.05). Moreover, a more detailed analysis of the data revealed that the frequency of PS in the category "non-existent practicing" presented very similar values for both genders. Likewise, the frequency of PS in the frequent and very frequent category also presented similar values for both genders, although males generally presented higher percentage values for both cases (Table 1).

Table 1 – Frequency of practicing sports according to gender – Porto, Portugal, 2015.

Frequency	♂ % (*n* = 76)	♀ % (*n* = 459)	Total % (*N* = 535)
Non-existent	28.9	26.4	27.6
Infrequent	42.2	48.1	45.2
Frequent	19.7	17.2	18.4
Very frequent	9.2	8.3	8.8
Total	**100**	**100**	**100**

χ^2 Test; p ≤.05

Statistically significant differences were observed regarding the analyses comparing PS frequency among students according to their year of study ($\chi^2_{[6.535]}$ = 13.51, p =.036). The study used standardized adjusted residuals and showed a lower number of students in the 3rd year with very frequent practicing of sports and a higher number of students with infrequent PS than expected. Students showed similar levels of overall non-existent PS throughout the study course (Table 2).

Table 2 – Frequency of practicing sports according to year of study – Porto, Portugal, 2015.

Frequency	1st Year (*n* =226)	2nd Year (*n* = 230)	3rd Year (*n* = 79)
	% (Adj. Residual)	% (Adj. Residual)	% (Adj. Residual)
Non-existent	27.1	27.0	25.3
Infrequent	44.5	44.7	62.0 (2.8)
Frequent	17.3	20.0	11.4
Very frequent	11.1	8.3	1.3 (-2.5)
Total	**100**	**100**	**100**

χ^2 Test; $p \leq .05$; (Adj. Residual) = Standardized adjusted residual.

Stages of Change

In addition to the participant's positioning in the stages of change regarding practicing sports (shown in Table 3), it is worth pointing out that 55.3% of the students did not consistently and continuously practice sports, being inserted in the initial phases of the stages of change (precontemplation, contemplation and preparation). The results' analysis of the stages of change revealed that 27.3% of the students did not intend to become involved in practicing a sport for at least the following 6 months; in contrast, 27.6% regularly and continuously practiced for more than 6 months.

The results also revealed significant differences between the variables stages of change due to gender ($\chi^2_{[3.535]} = 13.56$, $p \leq .005$). The study revealed through standardized adjusted residuals that there were fewer male students in the action stage and a greater number in the maintenance stage than expected. In contrast, a greater number of students in the action stage and a lower number in the maintenance stage than expected were observed among female students. The results also indicated that female students were more receptive to taking measures to engage in practicing sports immediately, while 35.5% of male students maintained steady and regular practicing of sports for more than 6 months (Table 3).

Table 3 – Stages of change according to gender – Porto, Portugal, 2015.

Stages of change	♂ (*n* = 76)	♀ (*n* = 459)	Total (*N* =535)
	% (Adj. Residual)	% (Adj. Residual)	%
Precontemplation	7.9	5.4	6.6
Contemplation	21.1	20.2	20.7
Preparation	25.0	30.9	28.0
Action	10.5 (-2.6)	23.7 (2.6)	17.1
Maintenance	35.5 (3.1)	19.8 (-3.1)	27.6
Total	**100**	**100**	**100**

χ^2 Test; $p \leq .05$; (Adj. Residual) = Standardized adjusted residual.

A comparison of stages of change according to the year of study revealed no statistically significant differences between the two variables ($\chi^2_{[8.535]} = 10.42$, $p = .236$). Students generally exhibited very similar levels of non-adherence to PS throughout all study cycles (Table 4).

Table 4 – Stages of change according to the year of study – Porto, Portugal, 2015.

Stages of change	1st Year % (*n* = 226)	2nd Year % (*n* = 230)	3rd Year % (*n* = 79)
Precontemplation	5.3	5.2	8.9
Contemplation	20.8	21.3	15.2
Preparation	31.4	28.3	31.6
Action	17.3	23.9	29.1
Maintenance	25.2	21.5	15.2
Total	**100**	**100**	**100**

χ^2 Test; $p \leq .05$

Decision-making balance

No statistically significant differences were found comparing pros and cons of decision-making balance considering the stages of change according to gender. However, males had consistently higher mean values for cons than females, except for in the contemplation and maintenance stages.

Regarding the decision-making balance (the difference between the pros and cons score), we also found that the pros always maintained higher scores than the cons regardless of the stage and the gender. Although decisional balance is always positive, the lowest score values were found for the precontemplation stage of changes among males, and for the preparation stage with females (Table 5).

Table 5 – Analysis of decision-making balance and stages of change according to gender – Porto, Portugal, 2015.

Stages of change	Pros and Cons	♂ M (SD)	♀ M (SD)
Precontemplation (*n* = 31)	Pros	2.96 (0.77)	3.20 (0.76)
	Cons	1.40 (0.43)	1.25 (0.70)
	Balance	1.56 (1.04)	1.94 (1.08)
Contemplation (*n* = 108)	Pros	3.38 (0.55)	3.18 (0.65)
	Cons	1.04 (0.63)	1.17 (0.64)
	Balance	2.34 (1.02)	2.01 (1.03)
Preparation (*n* = 161)	Pros	3.30 (0.48)	3.24 (0.58)
	Cons	1.56 (0.74)	1.34 (0.67)
	Balance	1.72 (1.03)	1.90 (0.99)
Action (*n* = 117)	Pros	3.20 (0.55)	3.32 (0.58)
	Cons	1.57 (0.90)	1.21 (0.65)
	Balance	1.62 (0.78)	2.10 (0.90)
Maintenance (*n* = 118)	Pros	3.31 (0.56)	3.25 (0.54)
	Cons	1.28 (0.67)	1.28 (0.68)
	Balance	2.06 (1.12)	1.96 (1.00)

DISCUSSION

Regarding the positioning of nursing students in the stages of change in relation to practicing sports, the results found were similar to those from other investigations with higher education students, and are not surprising when compared to results obtained in a previous large study with university students from 23 countries[21]. Thus, participation below the recommended levels in a substantial proportion of students was identified, evidencing that this behavior was congruent with results from other countries.

In addition, the present study revealed an infrequent or even non-existence of practicing sports among nursing students, since about three quarters of the students had infrequent or even non-existent PS, and only a residual amount of students reported a frequency of practicing higher than three or more times per week. These data thus revealed a PS frequency with little expression in nursing students. However, this panorama was also not particular to this population since other studies (*e.g.* Canada[22], the United States[23], Portugal[5] and Spain[24]) also found similar profiles to those of students in higher education in relation to frequency and adherence to practicing sports, thereby showing that both (adhesion and frequency to practicing sports) do not reach the recommended minimum frequency in this population.

It was expected that the studied variables could define practicing sports as an activity incorporated into the habits of health promotion among nursing students. This assumption was based on the fact that nursing students would have a higher sensitivity for regular PS frequency since they belong to the area of health sciences, adopting some of the recommendations necessary for health promotion[8]. However, the results revealed that students' behavior in relation to PS is far below the desirable.

In relation to the analysis of PS frequency according to gender, very similar results were found between students who reported practicing sports at least three times a week and those who had a PS frequency of twice a week or less among both genders. In fact, the analyses comparing the means of variables in our study allowed to verify that there were no statistically significant differences related to gender in PS frequency. In this regard, our results are incongruent with the literature, which report males presenting a greater tendency for PS[25-26]. However, even though there are no statistically significant differences, males present higher percentage values for frequent and very frequent PS overall.

With regard to the pros and cons of the decision-making balance, it is worth remembering that the TTM theory supports that the perception of cons is greater than that of pros in the early stages of behavioral change (precontemplation, contemplation, preparation), while there is a greater perception of the pros in relation to the cons in the more advanced stages (action and maintenance). In general, the students in the present study perceived less expectations of drawbacks compared to the benefits.

These results may possibly be related to the perception of previously experienced pros in relation to practicing sports[27]. In fact, it is plausible that the students have gained a greater perception of the benefits of exercising throughout their student career and in their history of practicing sports, which is cognitively rooted in the transition to higher education.

For a better understanding of this statement, it should be noted that the initial stages of change in the TTM involve aspects of a more cognitive nature, while the final ones include more behavioral aspects[28]. In other words, students are more able to perceive the benefits associated with PS; however, such perception does not seem to have influenced a desirable behavior regarding the frequency of PS in the present study.

CONCLUSION

The lack of adherence to practicing sports by nursing students demands greater attention and concentrated efforts in promoting a greater frequency of PS; in fact, this population should be more sensitized to practicing sports. However, before considering an intervention in this field for such a population, the findings suggest that future investigations should analyze students' habitual behavior in sport and the PS frequency over time. Therefore, a longitudinal design study would provide an adequate methodology to identify and allow more appropriate strategies to better integrate students in this behavior change.

The low involvement of students in a habitual behavior of practicing sports occurs from the moment they enter higher education, thus increasing the chances of sedentary behavior occurrence during the cycle of studies, and may even become more accentuated. In this context, the results obtained in this study confirmed that practicing sports is generally not a

priority for nursing students. However, regardless of gender and year of study, all students clearly identified the benefits associated with practicing sports to some extent, showing that they were enlightened about the benefits of this desirable behavior. In terms of study limitations, we can point out the lack of a longitudinal design and the asymmetry of the participants regarding their gender, among others. In addition, it seems relevant to associate TTM to other theoretical models (*e.g.* motivation) in future investigations with students of higher education, in the sense of enhancing the utility of this one in the study of practicing sports.

Finally, regarding implications for the practice, programs that focus and reinforce an implementation of mechanisms for promoting and monitoring the involvement and regular participation in exercise among these future health professionals are recommended. Such measures would result in the intrinsic development of educational classes and a greater awareness of students' need for self-care, culminating in the development of a generalized exercise program. We also hope that this will encourage students to use this knowledge beyond their own benefit, meaning among the population in society.

RESUMO

Objetivo: Analisar os padrões de frequência de prática esportiva, as fases dos estágios de mudança e os prós e os contras do balanço decisional em estudantes de enfermagem, em função do sexo e do ano da licenciatura. **Método**: Realizou-se um estudo transversal, descritivo e exploratório. **Resultados**: Participaram do estudo 535 estudantes de ambos os sexos. A análise dos resultados revelou que 27,6% dos estudantes não apresentavam qualquer frequência de prática esportiva; 55,3% dos estudantes não tinham uma prática esportiva habitual consistente e continuada; os estudantes exibiam globalmente uma frequência de prática esportiva inexistente em níveis similares ao longo do ciclo de estudos; os estudantes do sexo masculino apresentavam porcentagens similares no seu posicionamento nos estágios de pré-contemplação e contemplação ao longo do ciclo de estudos; e em todas as fases dos estágios de mudança, os estudantes apresentaram valores superiores de prós em relação aos de contras para a prática esportiva. **Conclusão**: Os resultados reforçam a pertinência da implementação de mecanismos de promoção e monitorização no envolvimento e participação regular na prática esportiva nos estudantes de enfermagem.

DESCRITORES

Estudantes de Enfermagem; Exercício; Comportamentos Saudáveis; Promoção da Saúde.

RESUMEN

Objetivo: Analizar los estándares de frecuencia de práctica deportiva, las fases de los estadíos de cambio e los pro y contra del balance de decisiones en estudiantes de enfermería, en función del sexo y del año de licenciado. **Método:** Se llevó a cabo un estudio transversal, descriptivo y exploratorio. **Resultados:** Participaron en el estudio 535 estudiantes de ambos sexos. El análisis de los resultados reveló que el 27,6% de los estudiantes no presentaban cualquier frecuencia de práctica deportiva; el 55,3% de los estudiantes no tenían una práctica deportiva habitual consistente y continuada; los estudiantes exhibían globalmente una frecuencia de práctica deportiva inexistente en niveles similares a lo largo del ciclo de estudios; los estudiantes del sexo masculino presentaban porcentajes similares en su posicionamiento en los estadíos de pre contemplación y contemplación a lo largo del ciclo de estudios; y en todas las fases de los estadíos de cambio, los estudiantes presentaron valores superiores de pro con relación a los de contra para la práctica deportiva. **Conclusión:** Los resultados refuerzan la pertinencia de la implementación de mecanismos de promoción y monitoreo en la involucración y participación regular en la práctica deportiva de los estudiantes de enfermería.

DESCRIPTORES

Estudiantes de Enfermería, Ejercicio; Conductas Saludables; Promoción de la Salud.

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