US-China Education Review B, January 2018, Vol. 8, No. 1, 23-33
doi: 10.17265/2161-6248/2018.01.002

Association Between Physical Activity Levels and Common Mental Disorder Among Physical Education Students of a Public University in the State of Bahia

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The regular practice of physical education is extremely important, because it helps as a positive aspect for the individual's physical and mental health. In this sense, one understands that the physical inactivity may influence direct and negatively in the mental health of the population. This study aims to verify the association between physical activity level (PAL) and common mental disorder (CMD) among students of physical education course of a public university in the State of Bahia. It is a cross-sectional descriptive research of quantitative analysis, with a sample of 112 college students (65.2% women and 34.8% men). They are aged 18-25 years old (83%), the other researched ones are classified in the ages of 26-30 years old (9.8%), and above 30 years old (7.2%). One used the Identification Questionnaire—the International Physical Activity Questionnaire (IPAQ) and the Self-reporting Questionnaire (SRQ-20). The other used the program Statistical Package for the Social Sciences (SPSS) Version 22.0. It is noticed that 90.2% the participants in the research were classified as sufficiently active and 9.8% as insufficiently active, and 5.1% the men and 12.3% the women being insufficiently active. The students of the initial terms—1st term (93.5%) and 3rd term (86.2%) presented themselves more active than those in the final terms—5th term (80%) and 7th term (85.2%). There was positive classification in 18% the sample. There is an evidence that insufficiently active students presented higher pre-disposition to develop CMD than those classified as sufficiently active, ratifying that the admission to the university may be a difficult phase for the student, who ends up adopting an inactive lifestyle that consequently may offer a risk to their mental health.

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Keywords: physical activity level (PAL), common mental disorder (CMD), college students

Introduction

It is considered that the regular physical exercises is essential for promotion and maintenance of human being. According to S. M. Matsudo, V. K. R. Matsudo, and Barros Neto (2000), one knows that today the regular practice of physical activity (PA) is extremely important. It helps in the development of positive aspects in the physical and mental health of the individual, the physical inactivity being associated to one of the most common courses of death among men and women of all ages (World Health Organization [WHO], 2014). In this sense, one notices the recognizing of PA as promoting the health.

Based on this context, the number of published research that the regular practice of the PA offer point out the physical, physiological, functional, psychological, and social benefits increased down the last years. However, although all knew the damages of the low physical activity level (PAL), recent studies know that most part of the population had decreases of this practice, especially college students (Fontes & Vianna, 2009; Marcodelli, Costa, & Schmitz, 2008; Tondo, Silva, & Roth, 2011).

Upon entering university, the student passes through a series of events that triggers changes in their cognitive and emotional aspects (Brito, Gordia, & Quadros, 2016). As time goes by, the time becomes more and more scarce due to the demands of activities that are required. In the last periods of university, the college student ends up adopting an inactive lifestyle due to the requirements in the academic environment, the anxiety of the course conclusion, and uncertainties concerning the professional future. All of these risk to the students' mental health (MH) and interferences in the level of PA (Polydoro et al., 2001). Thus, the habits and bevahiors may influence in the lifestyle of the individuals and consequently affect their MH.

According to Townsend (2002, p. 15), the MH is seen as a well-succeeded adaptation to stress risks from the internal or external environment, evidenced by thoughts, feelings, and behaviors that are appropriate for the age and congruent to local and cultural norms. Among the main diagnoses and assessments, we point out that common mental disorders (CMD) are associated to some kind of suffering that affects several important daily activities of the individuals (Silva & Cavalcante, 2014). In this sense, the practice of physical education may improve or decrease the symptoms characteristics of CMD.

To do so, this work occurs from the importance of investigating whether there is an association between PAL and the CMD among students of physical education of a public university in the State of Bahia, since college students suffer directly with the curriculum influence, requirements, and society impositions. This research justifies itself through the interest in understanding the context of the college students, due to restlessness related to the intensity of the courseload offered during the academic terms. It relates the practice of PA to CMD that may interfere in health and academic performance of such students.

In front of what one said above, it becomes evident that this research is important, both for physical education and the community to be studied, because these are factors that are directly linked to the psychosocial development of the students. Therefore, this work sought to verify the association between PAL and CMD among students of physical education of a public university course in the State of Bahia. However, it is not aviable to identify and compare the physical education levels with the presence of a probable mental disorder according to the term and gender of the students.

The Method

It is a descriptive research with cross-sectional quantitative analysis. It was approved by the Ethics and Research Committee of the Universidade do Estado da Bahia (UNEB) by means of the opinion number 1.460.585. One developed the research at a public university in the State of Bahia, by respecting what established in the Resolution 466/2012, from the National Health Council and all individuals of the research signed the Written Informed Consent Form (WICF).

The data were collected during the academic term from December 2016 to March 2017. The target population of this research consists of enrolled college students according to the data from an undergraduate program in physical education, which had 164 students. Among them, 37 (22.56%) from the 1st Block, 40 (24.39%) from the 3rd Block, 32 (19.51%) from the 5th Block, 39 (23.78%) from the 7th Block, and 16 (9.75%) irregular ones. Then, we took all the classes of the undergraduate course in physical education as final sample. From the researched population, 114 answered the instruments and 112 constituted the sample, since two were excluded according to the research criteria.

The criterion in the study are following: (a) to be college student enrolled; (b) to attend regularly the undergraduate course in physical education; and (c) to accept to take part in the research. To refuse to sign the WICF and undergraduate students who practiced PA for above 3,000 minutes will be the exclusion criterion of individuals.

The following instruments are used to collecte the data:

1. Identification questionnaire composed of the questions: age, birth-date, gender, the city in which they were living, marital status, ethnic group, religion, and the term of the participants.

2. International Physical Activity Questionnaire (IPAQ) in its short version for the identification of PAL. According to Matsudo et al. (2001), IPAQ aims to develop the data collection in order to measure the PAL internationally. Two forms, the short and the long one, were presented. The long version being composed of 27 questions that are distributed in five versions, while the short version with eight questions. In both versions, the instrument presents similar reproducibility with the advantage of the fact that the short version is practical and fast. It enables the collection of large population groups, representing a very good alternative for international comparisons, making the short version more accepted by the participants, and considering the frequency, intensity and duration.

3. Self-reporting Questionnaire (SRQ-20) for the identification of CMD. According to Gonçalves and Kapczinski (2008), SRQ-20 is a tracking instrument provided with 20 questions with “Yes/No” answers. They are questions related to the previous month of filling out the questionnaire. Given that a reduced version of the SQR-30 consists of 30 questions, which include 20 questions about psychosomatic symptoms for tracking the non-psychotic disorders, four about the identification of psychotic disorders, one about tonic-chronic convulsions, and five about disorders by the use of alcohol. The SQR is recommended by the WHO for communitary studies and in basic care for the health, because it is a low-cost instrument and easy to use. It presents a good performance concerning the discrimination of positive and negative cases and it has great efficiency for the large scale use.

After explaining the research objectives, the collections were performed every term according to the availability of every class for taking part in the research. Thus, we collected the data by means of printed questionnaires with financing of own resources and handed out to the students who proposed to answer and signed the WICF.

The collected data were tabulated and organized in spreadsheets (Identification, IPAQ, and SQR-20) in the Program Microsoft Excel Version 2016. The variables "terms" and "gender" are used for grouping and make the data analysis easy. Later, one transferred them to the spreadsheet of the software Statistical Package for the Social Sciences (SPSS) Version 22.0 for Windows 19.0.

The identification data were tabulated and analyzed according to the questionnaire questions in order to establish the characterization of the obtained sample. For the IPAQ analysis (short version), it mets the specifications brought in its validation article with the following distributions "sedentary individuals," "active individuals," and "very active individuals," in order to ease the analysis and interpretation of the obtained results. It was necessary to group the results by the quantity of days and hours answered in the questionnaires.

Upon analyzing the SQR-20 data, it was necessary to group the questions in order to make easy the reading and interpretation of the data in "depressive-anxious mood," somatic symptoms," "decrease of the vital energy," and "depressive thoughts." Each question with answer "Yes" is worth one point, while answer "No" is worth zero point, and its total classification having a score variation from zero to 20 points.

The Results and Discussion

Characterization of the Studied Population and PAL

The final sample of the population consisted of 112 (68.29%) college students of physical education of a public university course in the State of Bahia. According to Table 1, 65.2% the researched students was female and only 34.8% was male. The college students are aged 26-30 years old (9.8%) and aged above 30 years old (5.3%).

A few articles found a quantity of men higher than that of women like J. G. B. Alves, Montenegro, Oliveira, and R. V. Alves (2005). In their study, after conducting with students of the medicine course and upon verifying the frequency of PA and leisure among young adults, they noticed that 52% the participation was men, while that of women was 47.1%. In Luz's (2015) study with 198 college students of the course sports sciences, which aimed to analyze the PAL and life quality of these students. The participation index was 68% male students and 32% female ones. In these studies, the number of men was higher than that of women. It did not notice any changes in relation to the age of most participants, remaining with variances between 18 and 25 years.

This fact leads one to consider that the college population was composed by young adults with varied ages and most of them female. The quantity of students who live in the city where the institution is established (53.6%) was basically similar to those who live neighboring cities and prefer to commute (46.4%). Most of them (42.8%) declare themselves tan people, while others (together they totalled a number of 57.2%) declare themselves white (26.8%), black (28.6%), and yellow (1.8%). Upon questioned in relation to religion, most of the researched students said they were catholic (74.1%). The interviewees declared themselves single (80.4%). The class with more acceptance for the research performance was the 1st term (27.7% of the total sample of the researched students). In relation to the factors associated to housing, religion and ethnic group one did not find any data consistent with our research (see Table 1).

From the 112 participants in the research, 90.2% were classified as sufficiently active and 9.8% as insufficiently active. When compared according to the gender, 94.9% men and 87.7% women were considered sufficiently active, given that one found 5.1% was insufficiently active men and 12.3% was women (see Table 2).

Table 1

Characteristics of the Students of Physical Education of a Public University in the State of Bahia (N = 112)

Variables		*N*	Percentage (%)
Gender	Male	39	34.8
	Female	73	65.2
Age	18-25 years old	93	83.9
	26-30 years old	11	9.8
	≥ 30 years old	6	5.3
City	Guanambi	60	53.6
	Matina	6	5.3
	Caetité	15	13.4
	Palmas de Monte Alto	5	4.4
	Others	26	23.3
Ethnic group	White	30	26.8
	Black	32	28.6
	Tan	48	42.8
	Yellow	2	1.8
Religion	Catholic	83	74.1
	Evangelical	11	9.9
	African matrix	1	0.9
	Spiritist	5	4.4
	Others	12	10.7
Marital Status	Single	90	80.4
	Married	19	16.9
	Divorced	1	0.9
	Other	2	1.8
Term	1st term	31	27.7
	3rd term	29	25.9
	5th term	20	17.9
	7th term	27	24.1
	Irregular	5	4.4

Note. Research Data (2017).

Table 2

Frequency of Sufficiently Active Students and Insufficiently Active Ones Considering the IPAQ (N = 112)

Variables		Sufficiently active		Insufficiently active	
		N	Percentage (%)	*N*	Percentage (%)
Gender	Male	37	94.9	2	5.1
	Female	64	87.7	9	12.3
Term	1st term	29	93.5	2	6.5
	3rd term	25	86.2	4	13.8
	5th term	16	80.0	4	20.0
	7th term	23	85.2	4	14.8
	Irregular	5	100.0	0	0.0
Total		101	90.2	11	9.8

Note. Research Data (2017).

In a research conducted with 985 college students of the University Vigo in Spain, the women showed themselves less active than men (Mato et al., 2012). Another study with 605 students of the Federal University of Piauí in Teresina revealed a greater proportion of sedentary females with 63.95% (Mendes, Silva, Costa, & Raposo, 2012).

Several investigations conducted among varied populations present considerations that converge with what is pointed out above. In the research carried out by Mendes, Silva, Costa, and Raposo (2012), 3.6% men and 13.2% women were considered sedentary. In the research, most of the interviewees are women. Also, corroborating with results found by Silva and Cavalcante (2014), which considered inactive 53.8% was female and 46.7% was male in their research with 220 college of the health field.

Upon analyzing the data, taking the coursed term into account, it is noticed that there is the irregular students (100%) and the initial students—1st term (93.5%) and the 3rd term (86.2%) according the description in Table 2. According to Silva and Cavalcante (2014), it is possible to dialogue with their research, in the statement that the students of the final semesters presented higher physical inactivity, which make up 58.5% the researched students.

Such results corroborate with the other studies, thus supporting the tendencies described above and presented in Table 2. Fontes and Vianna (2009) developed a research with 1,503 college students of the Federal University of Paraíba (UFPB). It is noticed that 31.2% those students presented a low PAL and the students with longer time of admission to the university presented a tendency of decreasing this practice.

It is worth pointing out the study by Claumann, Pereira, and Pelegrini (2014) with 198 college students upon their admission to the first year of a public university in the region of Florianópolis S.C.. They noticed the association of PA practice according to its kind and intensity, revealing that the male and students of the health field have higher quantities of vigorous PA. As one can evidence, students at the last term are less active than those of the initial terms. A possible explanation for that is that as undergraduate years passes by, time becomes more and more scarce, because they engage themselves increasingly in academic and extra-curricular activities. Other aspects that can be considered are personal barriers, such as lack of money, company for the practice of PA, motivation, and so on (Del Duca et al., 2009; Fontes & Vianna, 2009).

Thus, most college students tend to decrease the practice of PA during the undergraduate course. It probably happens due to the attempt to balance the economic life with the day-by-day agenda, and may be affected by the course requirements such as practicums and course conclusion work or by the professional exercise (Silva & Cavalcante, 2014).

Negative Influence and Relationship Between CMD and PAL

Table 3 represents the frequency of the answers to the factors of negative influence to CMD, which is divided into four factors: “anxious depressive mood,” “somatic symptoms,” “decrease of the vital energy,” and “depressive thoughts.” From the questions related to the Factor I (anxious depressive mood), 50% the participants stated that they feel nervous, tense, or worried. Related to the Factor II (somatic symptoms), 25% the researched ones stated that they sleep bad and feel frequent headache. In the questions concerning the Factor III (decrease of the vital energy), the highest frequency of answers to the question “Do you have difficulty to take decisions?” (39.5%). As far as Factor IV (depressive thoughts) is concerned, 14.9% the interviewees answered “Yes,” they have recently lost interest in things.

According to the data found in the article by Gonçalves, Stein, and Kapczinski (2008) on SQR-20

qualification and reproducibility carried out with 485 people, they found the results are similar to those presented above. They analyzed the performance of each in terms of sensibility and specificity in order to detect positive cases of non-psychotic disorder and the question "Do you feel nervous, tense, or worried?" The question with the greatest sensibility was 89.81%, corroborating with the findings.

Table 3

Total SRQ-20 Score of Students' Answers to the Factors of Negative Influence to CMD/Categories

Factors		*N*	Percentage (%)
Factor I: Anxious depressive humor	E—Do you get afraid easily?	45	40.2
	H—Have you been sad recently?	21	18.7
	I—Have you cried more frequently?	9	8.0
	Q—Do you feel nervous, tense or worried?	56	50.0
Factor II: Somatic symptoms	A—Do you sleep bad?	28	25.0
	B—Do you have a bad digestion?	12	10.7
	C—Do you have lack of appetite?	16	14.2
	D—Do your hands tremble?	15	13.4
	J—Do you often have headache?	28	25.0
	P—Do you disgusting sensations in the stomach?	18	16.0
Factor III: Vital energy decrease	F—Do you get tired easily?	31	27.4
	G—Do you feel tired all the time?	10	8.8
	L—Do you have difficulty to take decisions?	45	39.5
	N—Do you have to think clearly?	23	20.2
	S—Does your work cause you suffering?	6	5.3
	T—Do you have difficulty to play a useful role in your life?	18	15.8
Factor IV: Depressive thoughts	K—Have I had to put an end to my life?	5	4.4
	M—Have you lost interest in things?	17	14.9
	O—Do you feel a helpful person in your life?	6	5.3
	R—Are you unable to play a useful role in your life?	3	2.6

Note. Research Data (2017).

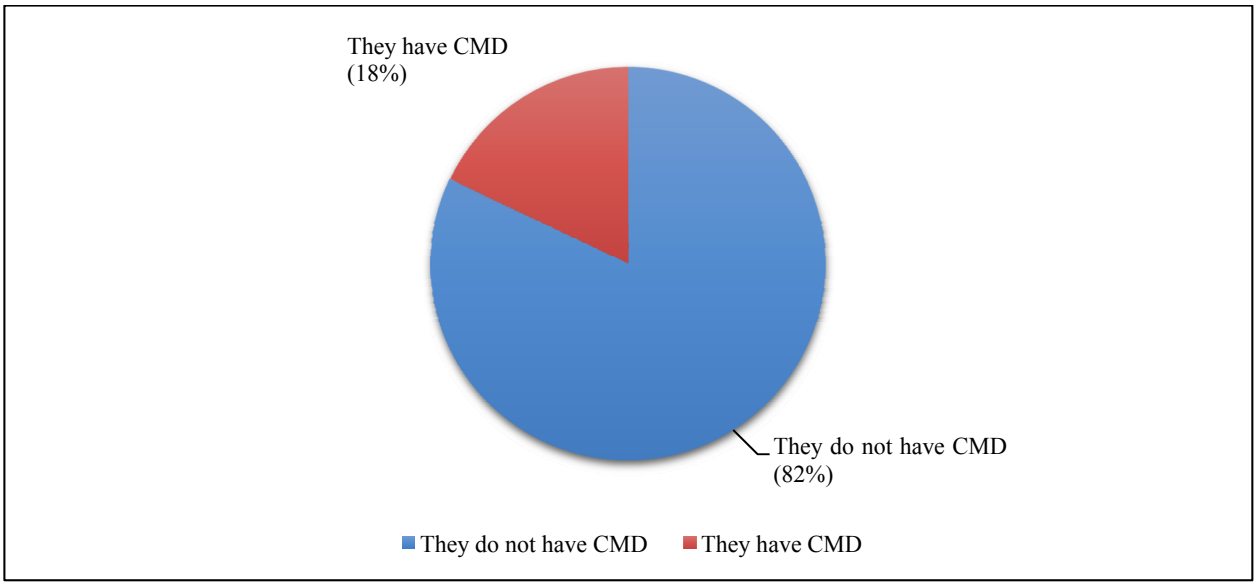

Figure 1. Pre-dominance of CMD related to the total score of the answers of negative influence (Source: Research Data, 2017).

According to the analyses done and illustrated in Figure 1, 18% the researched students either have or pre-disposition to develop some kind of CMD, the other (82%) being considered as not having preposition to that. Silva, Cerqueira, and Lima (2014) conducted a research with this same instrument involving 434 students of medicine course of São Paulo State University. It presented a rate of individuals who have pre-disposition to the development of some CMD in a percentage of 44.9%, which is also presented in the study Silva and Cavalcante Neto (2014) with ratio being 43.9%. What is also presented in the study by Silva and Cavalcante Neto (2014) with ratio being 43.2% of the 220 researched students. Even having an index higher than the other studies also present a higher number of people who do not have predisposition to develop CMD.

Corroborating with these findings, Pie et al. (2012) developed a study to analyze the PAL and CMD with 83 servants of Jequié Campus in Universidade Estadual do Sudoeste da Bahia (UESB). In the study, the index of interviewees who have predisposition to develop some kind of CMD was 9.9%. Several studies carried out with the same instrument in varied populations point to similar results (Alves et al., 2015; Cachoeira et al., 2016; Gonçalves, Stein, & Kapczinski, 2008). All these articles cited here present significant rates of individuals who have predisposition for the development of some kind of CMD.

Table 4

Relation Between CMD and PAL Among College Students of Physical Education Course

Variables	Unadjusted model			Adjusted model		
	B	R^2	*P*-valor	β	R^2	*P*-valor
PAL	-0.252	0.064	0.008	-0.249	0.107	0.009

Notes. Adjustment for coursed term and marital status; Resear Data (2017).

According to Table 4, the PAL has influence on the development of CMD and presents an inverse relation between both, in which, the lower the PAL the higher the index of development of CMD. According to the unadjusted model that, PAL has the dependent variable the scale of CMD (β is situated in -0.252, R^2 for 0.064) with the probability of reproduction in other researched populations being 0.008%. When adjusted to the PAL for the coursed term and for the marital status of the participants of the research β goes to -0.249, R^2 for 0.107 and increasing their probability of reproduction for the other researched populations being 0.009%, thus, presenting a significant association between PAL and CMD in the researched individuals.

In Pie et al.'s (2012) study, they could not evidence any significant association between PAL and the pre-dominance of CMD. However, the CMD's pre-dominance of the less active was 12.5%, which is higher than the most active with 7.3%. Given that inactive ones with CMD (67.4%) is higher than the active ones (32.6%), Silva and Cavalcante (2014) found there is significant association. In a research with 95 elderly living in the countryside of Jequié B.A., the pre-dominance of CMD was less among non-sedentary individuals. However, there was association with statistically significant between PAL and CMD (Pinto et al., 2014).

Corroborating the statements above, a study with 1,280 Dutch elderly evidenced that the depressive mood was associated to an unhealthy lifestyle, which increase of the consumption of cigarette and the excess of alcohol (Gool et al., 2003). This result matches the research by Benedettii, Borges, Pedroski, and Gonçalves (2008) with 875 elderly in the city of Florianópolis. Upon presenting the association between PAL and depression, Santa Catarina points out that the non-sedentary elderly had less frequency of developing this disorder. This restates the importance of PA for the promotion of health and facing CMD.

Once pointed out and discussed the analyzed data from the collections done for the research, we found an important questioning to be approached—Which are the effects and the contributions of PA for CMD? In a research conducted with three groups consisting of 54 individuals (Group A: healthy individuals; Group B: sedentary individuals who started to practice physical exercises regularly; and Group C: individuals who took part in programs non systematised PA). It can be found that Group B decreased the indicative scores for anxiety, passing from the classification of slightly depressed to non-depressed. We may attribute such results to physical exercise, as a non-pharmacological alternative that produces physiological and metabolic improvement (Cheik et al., 2003).

Following the results pointed out above, in a bibliographic research by Agapito (2009), who used 20 national and original studies with the aim to identify the influence of physical exercises in order to fight anxiety symptoms. It is showed that seven of them revealed significant differences in the anxiety levels after specific physical exercises, three of the studies noticed reductions in anxiety, and the other 10 obtained expressive reductions in the anxiety indicators.

In Peluso's (2003) doctorate research, he points out that PA is related to mood improvement and the several other aspects, such as self-esteem, vitality, well-being, and physical appearance. It may protect the individual from depression and anxiety, promoting distraction of unpleasant stimuli, putting physical exercise as a challenging practice, and social interaction of the individuals. It increases the synaptic transmission of monoamines and the liberation of endorphins if this practice is not practiced in a disordered and excessive way and does not cause abstinence, because it may damage personal and professional activities of the individuals and stimulate the development of CMD.

Conclusions

As occurs in every research, it can be found situations of limitations, from among the problems that emerged during the carrying out of the study. It is worth mentioning the disregard of questionnaires for the analysis upon presenting answers considered exorbitant and without logic, which are presented by the studied literature, the absence of regional studies with a similar public, since only one study was found, something hindered the theoretical deepening for discussions on the studied theme. These limitations forced us approach studies with different populations in order to confront the obtained data, methodological limitations that may have underestimated the expectations, such as the non-acceptance to take part in the study by some constituents of the target public of the research.

As for positive points, we can mainly point out that the expressed results contribute as a comparative referential for future research that may be carried out with the public approached here, also serving as a trigger for likely problematizations that involve aspects of mental and physical health as the course goes on. Since the undergraduate course is a phase, in which the college students face several stress factors, end up adopting an inactive lifestyle and unhealthy habits. Therefore, upon exposing such results, one believes that the investigation contributes as evidence in the sense of making the academic community observe more carefully the focused population, and elaborate strategies to promote health directed to this group.

Furthermore, the present study observed that there was significant statistical association between PAL and CMD among the researched students. It considers that PAL has a direct influence on the development of CMD, presenting an inverse relation between both. The lower PAL is, the higher the development of CMD will be. It concludes that the college students classified as inactive presented higher probability to develop CMD than the active ones.

From everything that is exposed and evidenced in this study, it becomes perceptible that the practice of PA has a certain influence on CMD and that may be considered a factor of prevention and treatment for it. We state that due to the conditions found by the research, since the results indicate that the higher PAL is, the less the outcome of CDM among the researched individuals will be. This fact justifies itself by the association between the presence of CMD and the low level of PA that could be assessed by means of the analyses when adjusted to the terms and marital status of the participants.

Thus, one needs new studies with a similar population, other courses and with a larger sample in order to improve the understanding of risk factors and to detect the association between the PAL and CMD among students during their academic training.

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