

Barriers to physical activity and markers of adiposity in university students

Barreras para la práctica de la actividad física y marcadores de adiposidad en estudiantes universitarios

Barreiras à prática de atividade física e marcadores de adiposidade em universitários

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Keywords:

Anthropometry;
Motivation;
Overweight;
Physical activity.

ABSTRACT

In this study the objective was to establish the association between physical activity barriers and adiposity markers in university students. A cross sectional descriptive study was executed. Anthropometric assessment, sociodemographic data survey and physical activity barrier perception questionnaire were applied to 211 students. The most frequent barriers were lack of time, energy and free will. It was found greater value in indicators of adiposity in men and association between the barriers lack of time, skills and fear of injury, with a higher body mass index. It was found a relationship between barriers to physical activity and adiposity markers, relevant aspects in the strategies of promotion of physical activity and weight control.

Palabras-clave:

Antropometría;
Motivación;
Sobrepeso;
Actividad física.

RESUMEN

El objetivo del estudio fue establecer asociación entre barreras para la práctica de actividad física y marcadores de adiposidad en universitarios. A través de un estudio transversal, se realizó valoración antropométrica, se aplicó encuesta de datos sociodemográficos y cuestionario de percepción de barreras para la práctica de la actividad física en 211 estudiantes. Las barreras más frecuentes son falta de tiempo, de energía y de voluntad. Se encontró mayor valor en indicadores de adiposidad en hombres y asociación entre las barreras falta de tiempo, de habilidades y miedo a lastimarse, con un mayor índice de masa corporal. Como conclusión, se encontró relación entre barreras para la actividad física y marcadores de adiposidad, aspectos relevantes en las estrategias de promoción de actividad física y control de peso.

Palavras-chave:

Antropometria;
Motivação;
Excesso de peso;
Atividade física.

RESUMO

O objetivo do estudo foi estabelecer associação entre barreiras à prática de atividade física e marcadores de adiposidade em universitários. Foi realizado um estudo transversal. Foi realizada avaliação antropométrica, levantamento de dados sociodemográficos e aplicado questionário de percepção de barreiras à prática de atividade física em 211 alunos. As barreiras mais frequentes são falta de tempo, energia e vontade. Maior valor foi encontrado nos indicadores de adiposidade em homens e associação entre as barreiras, falta de tempo, habilidade e medo de machucar, com maior índice de massa corporal. Foi encontrada relação entre barreiras à atividade física e marcadores de adiposidade, aspectos relevantes nas estratégias de promoção da atividade física e controle de peso.

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INTRODUCTION

The university context can be strategic for learning and consolidating personal attitudes, promoting healthy behaviour patterns that determine the future condition of the young adults preparing for university (Peltzer et al., 2017). However, at the university stage, many students cite the lack of time, the inability to create an effective schedule, rules or lack of motivation (Mantilla et al., 2015), as obstacles to the practice of physical activity (Marques et al., 2018) and an unsuitable environment for healthy eating (Mantilla et al., 2014); situations leading to a high prevalence of overweight and obesity (Peltzer et al., 2017; Sánchez-Ojeda and De Luna-Bertos, 2015; Morales et al., 2016). The increasing trend in the transition from overweight to obesity often occurs between 18 and 29 years (Herrán et al., 2016). Obesity is a major public health concern, as it is accompanied by numerous physical and psychological problems including coronary disease, diabetes and various types of cancer (Kearns et al., 2014), morbidities that make the health system more expensive (Torres and Rojas, 2018).

The occurrence of obesity is determined among other behavioural factors by the low level of physical activity, which, in turn, can be explained by self-perceived barriers that seem to be more closely linked to aspects of the individual situation that the person lives in his/her daily life (Capdevila Ortís et al., 2014). However, there are few studies that show the perception of barriers that prevent the physical activity in university students. This research aims to establish the association between barriers to the practice of physical activity and adiposity markers in a group of university students in the rehabilitation area. The results obtained, in addition to identifying possible risk situations, will facilitate the generation of strategies to reverse the tendencies of sedentarism or weight gain and obesity among students.

MATERIALS AND METHODS

Cross-sectional descriptive study in 2018. The population corresponded to students enrolled in rehabilitation programs (Physiotherapy and Occupational Therapy) of the Faculty of Health in a public university. A final sample of 211 undergraduate students was obtained. For the calculation of the sample, the formula for finite population was used with a margin of error of 5%, a confidence level of 95%, and an expected proportion of 50%. Independent samples were calculated for each of the programs, the population in Occupational Therapy were 130 students and in Physiotherapy 162. With these assumptions the final sample in Occupational Therapy were 97 and in Physiotherapy of 114 (Figure 1). A stratified sampling was performed with proportional fixation per academic semester and each program. None participant refused to take part in the study and no one left the study.

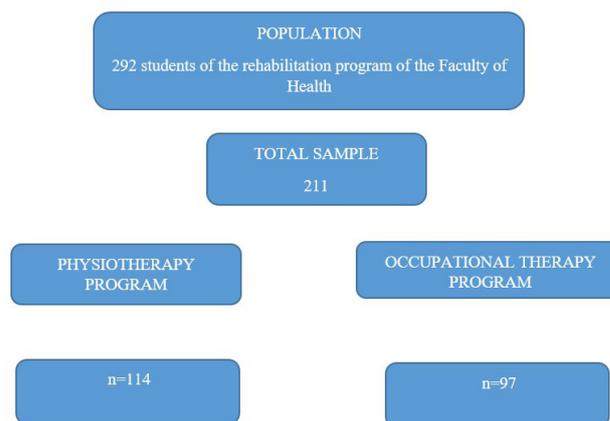


Figure 1. Population and sample size.

INSTRUMENTS

A sociodemographic data survey and the “Barriers to Being Active Quiz-21 Items” Questionnaire (Barriers to Being Active Quiz-21 items) (Rubio et al., 2015) were applied to identify behaviours that prevent the regular practice of physical activity. It has 21 questions, with the option to answer items in categories: very likely with a value of 3, probably with a value of 2, which is unlikely with a value of 1 and very unlikely with a value of 0. In the questionnaire, each barrier was evaluated by three items. To estimate the score of each one, the sum of the three items was performed. A score of 5 or more in any barrier shows that it is an important barrier to defeat, which is classified as lack of time, social influence, lack of energy, lack of free will, and fear of getting hurt, lack of skills and lack of resources.

Anthropometric assessment: Height, weight and waist circumference were measured, with reference to the anatomical points and protocols described by Norton and Olds (2000).

The height was recorded in a biped position with a portable measuring rod, reference 500KL brand Health or meter[®]. Weight was measured with digital balance, reference 500KL, mark Health or meter[®]. The waist circumference was taken with metric tape (SECA 203[®]). This measurement was performed at the narrowest point level between the last costal arc and the iliac crest, taking as a cut-off point abdominal obesity ≥ 90 cm for men and ≥ 80 cm for women (Colombia, 2016).

In a single meeting and with prior citation in groups of 20, the students who accepted and signed the consent for participation in the research, answered the survey of sociodemographic data and the questionnaire of barriers to the practice of physical activity, in a room designed for this purpose, with the aim of providing privacy to answer questions. Then they were measured size, weight and waist circumference.

The following aspects were considered for the anthropometric measures: The exploration was carried out during the morning hours, two hours after breakfast, in a large place with a comfortable temperature. Each subject was asked to be barefoot and with the least possible and appropriate clothing.

No measurements were taken in those participants. No measurements were taken in those who performed physical activity 24 hours before the evaluation. Two non-consecutive measurements were made for each anthropometric parameter, using the mean in subsequent calculations. Two attendees were responsible for taking the measures, and a third assistant was responsible for writing the values and standardizing the measurement technique.

The Body Mass Index with normal cut-off points $\leq 24.99 \text{ kg/m}^2$ and overweight $\geq 25 \text{ kg/m}^2$ (Browning et al., 2010) was used to determine nutritional status. The height waist index was calculated to weigh intra-abdominal fat with cut-off point ≥ 0.50 for central obesity (Browning et al., 2010).

This research was approved by the Ethics and Environmental Impact Committee of the University of Pamplona through act 002 of April 16, 2018, it complies with the ethical standards recognized by the Helsinki Declaration and the current Colombian legal regulations governing research in humans (Colombia, 1993).

STATISTICAL ANALYSIS

From an exploratory analysis, absolute and percentage frequencies were calculated for the qualitative variables, for the quantitative variables with a symmetric dispersion mean and standard deviation were expressed, in the case of the asymmetric, a description was performed by median and quartile 1 and 3.

In order to evaluate the association between the barriers to physical activity and adiposity, linear model was applied (Coutinho et al., 2008). For adjusted models, biological plausibility criteria and statistical criterion were taken into account Akaike (AIC) record. After adjusting the model by plausibility, the candidate variables to enter were selected, using the Hosmer-Lemeshow criteria and the AIC criterion for the order and addition of new variables was taken into account. The models that were performed were explanatory. The parameter estimates were developed with a confidence level of 95% and a nominal significance of $p = 0.05$ was considered. The analyses were performed in IBM® SPSS® STATISTICS. Version 21.

RESULTS

Data collected from a total of 211 undergraduate students who were from the rehabilitation area of a Faculty of Health were analyzed. The age range was 18 to 30 years (\bar{x} : 22,0 SD: 2,1), 13.3% were male and 86.7% were female. The most frequent barriers to

physical activity perceived by participants are lack of time (67.8 per cent), lack of energy (63 per cent) and lack of will (69.2 per cent). Other data are shown in Table 1.

Table 2 shows the description of adiposity markers based on the socio-demographic characteristics described and the barriers to physical activity practice. Men had a tendency to have higher values in the three adiposity indicators, those who claimed to be single tend to have lower values in the three independent adiposity indicators, and in general those who accused not presenting each of the different barriers tend to have lower values in the adiposity indicators, these data are shown in Table 2.

University students who have the time barrier showed higher values in the body mass index, waist index and waist circumference compared to those who do not. However, only the association with body mass index was maintained in the multivariate analysis. Those university students who accused of being afraid of injury or lack of skills showed a higher body mass index ($p < 0.05$). The barriers of social influence, lack of energy, lack of will and lack of resources, showed no association with the indicators of adiposity. Data for generalized linear models are shown in Table 3.

DISCUSSION

The objective of this study was to establish the association between barriers to the practice of physical activity and adiposity markers, in a group of undergraduate university students who were in the rehabilitation area of a health faculty.

The main barrier to physical activity reported by the students surveyed was lack of time. This finding is consistent with previous research (Ramírez-Vélez et al., 2016; Ramírez-Velez et al., 2015; Rubio Henao and Varela Arevalo, 2016) suggesting that the perception of time management in university students is a highly personal and relative aspect, through which they determine their priorities (Castañeda et al., 2018). Other important barriers identified were lack of energy and lack of will (Navas and Soriano, 2016; Hurley et al., 2018). Usually, university students say they do not practice physical activity because they take time off study, or because they are tired of the study, work and/or class (Cambronero et al., 2015). In contrast, other studies have reported that social support during leisure could be considered as an aspect that could positively or negatively influence the practice of exercise and that family or friends' activities should include physical activity (Martínez et al., 2016).

Regarding adiposity markers, in this paper it was found that male university students show overweight and central obesity according to their body mass index and height waist index. Without differentiating by gender, other studies carried out on university students argue overweight and central obesity (Corvos et al., 2014; Salazar et al., 2013); probably due to genetic

Table 1. Description of socio-demographic data and barriers to physical activity among university students in the field of rehabilitation.

	Physiotherapy	Occupational Therapy	Total
Age \bar{x} [SD]	21.80 [2.55]	22.73 [2.79]	22.23 [2.70]
Sex	n (%)	n (%)	n (%)
Male	15 (13.2%)	13 (13.4%)	28 (13.3%)
Female	99 (86.8%)	84 (86.6%)	183 (86.7%)
Marital status			
Single	107 (93.9%)	88 (90.7%)	195 (92.4%)
Free Union	4 (3.5%)	7(7.2%)	11 (5.2%)
Married	3 (2.6%)	2 (2.1%)	5 (2.4%)
Health scheme			
Contributed	33 (28.9%)	25 (25.8%)	58 (27.5%)
Subsidised	69 (60.5%)	62 (63.9%)	131 (62.1%)
Special	12 (10.5%)	10 (10.3%)	22 (10.4%)
Stratum			
1	38 (33.3%)	33 (34.0%)	71 (33.6%)
2	41 (36.0%)	39 (40.2%)	80 (37.9%)
3 or more	35 (30.7%)	25 (25.8%)	60 (28.4%)
Barriers			
Lack of time			
No	42 (36.8%)	26 (26.8%)	68 (32.2%)
Yes	72 (63.2%)	71 (73.2%)	143 (67.8%)
Social influence			
No	83 (72.8%)	63 (64.9%)	146 (69.2%)
Yes	31 (27.2%)	34 (35.1%)	65 (30.8%)
Lack of energy			
No	46 (40.4%)	32 (33.0%)	78 (37.0%)
Yes	68 (59.6%)	65 (67.0%)	133 (63.0%)
Lack of free will			
No	36 (31.6%)	29 (29.9%)	65 (30.8%)
Yes	78 (68.4%)	68 (70.1%)	146(69.2%)
Fear of getting hurt			
No	109 (95.6%)	94 (96.9%)	203(96.2%)
Yes	5 (4.4%)	3 (3.1%)	8 (3.8%)
Lack of skills			
No	99 (86.8%)	80 (82.5%)	179 (84.8%)
Yes	15 (13.2%)	17 (17.5%)	32 (15.2%)
Lack of resources			
No	78 (68.4%)	58 (59.8%)	136 (64.5%)
Yes	36 (31.6%)	39 (40.2%)	75 (35.5%)

SD: Standard deviation.

conditions or their interaction with various situations specific to university life such as moving away from the family core, taking responsibility for their food, night social life, academic occupations, economic aspects and emotional changes; which may favour negative and unassertive nutritional behaviors that alter anthropometric parameters. On the other hand, women are probably due to aesthetic aspects, as they are more concerned about their image and more aware of their body weight (Peltzer et al., 2014; Villaquiran et al., 2020).

The marital status of students in married status regardless of sex presents a statistically significant association with increased values in waist circumference and body mass index both in univariate and multivariate analysis. A study conducted with young adults from Brazil concluded that marital status was strongly associated with overweight and obesity. Weight gain may be influenced by changes in social behaviour, depending on the living conditions where a married person is developing (Cavalcante et al., 2015).

Table 2. Description of adiposity markers by sex, socio-demographic characteristics and barriers to physical activity in university students in the field of rehabilitation.

	Body mass index		Waist to height ratio*		Waist circumference	
	Female \bar{x} (SD)	Male \bar{x} (SD)	Female \bar{x} (SD)	Male \bar{x} (SD)	Female \bar{x} (SD)	Male \bar{x} (SD)
TOTAL	24.5 (4.5)	25.9 (4.6)	0.506 (0.063)	0.516 (0.065)	80.2 (10.2)	88.6 (11.8)
Marital status						
Single	24.2 (4.4)	25.7 (4.5)	0.502 (0.063)	0.511 (0.061)	79.5 (10.2)	88.0 (11.6)
Free union	25.3 (4.2)	32.7	0.540 (0.037)	0.648	85.8 (7.2)	105.0
Married	30.4 (4.6)	NA	0.586 (0.046)	NA	92.4 (9.2)	NA
Program						
Physiotherapy	24.2 (4.7)	26.8 (4.3)	0.498 (0.069)	0.528 (0.056)	78.9 (10.7)	90.9 (10.1)
Occupational Therapy	24.7 (4.3)	24.9 (4.9)	0.517 (0.054)	0.502 (0.074)	81.8 (9.5)	86.0 (13.5)
Stratum						
1	24.2 (4.2)	25.3 (4.1)	0.499 (0.064)	0.502 (0.066)	79.7 (10.4)	86.3 (13.5)
2	24.2 (5.1)	24.1 (3.5)	0.508 (0.066)	0.497(0.044)	79.5 (10.4)	84.8 (8.1)
3 or more	25.1 (4.0)	29.1(5.3)	0.514 (0.059)	0.558 (0.075)	81.8 (9.8)	96.4 (11.8)
Barriers Lack of time						
No	23.4 (3.6)	24.5 (5.9)	0.496 (0.058)	0.501 (0.068)	78.1 (9.2)	86.7 (12.1)
Yes	24.9 (4.8)	26.7 (3.7)	0.511 (0.065)	0.525 (0.065)	81.2 (10.6)	89.6 (11.9)
Social influence						
No	24.0 (4.3)	25.9 (4.7)	0.500 (0.063)	0.512 (0.065)	79.2 (9.5)	87.9 (12.3)
Yes	25.4 (4.7)	25.7 (4.9)	0.519 (0.062)	0.543 (0.070)	82.2 (11.4)	92.5 (8.8.)
Lack of energy						
No	24.3 (4.2)	25.4(4.8)	0.506 (0.059)	0.506 (0.060)	80.0 (9.8)	87.2 (10.6)
Yes	24.5 (4.6)	26.5 (4.5)	0.507 (0.065)	0.528 (0.071)	80 (10.5)	90.2 (13.4)
Lack of free will						
No	23.8 (4.0)	26.8 (4.8)	0.496 (0.066)	0.521 (0.064)	78.2 (10.1)	90.6 (11.7)
Yes	24.7 (4.7)	24.9 (4.3)	0.511 (0.062)	0.511 (0.069)	81.0 (10.2)	86.3 (12.1)
Fear of getting hurt						
No	24.3 (4.3)	26.0 (4.8)	0.506 (0.063)	0.518 (0.067)	80.1(10.2)	89.2 (11.8)
Yes	28.0 (7.7)	24.3 (1.7)	0.522 (0.079)	0.491(0.025)	84.1 (12.1)	80.8 (12.4)
Lack of skills						
No	24.1 (4.1)	26.0 (4.8)	0.503 (0.061)	0.518 (0.067)	79.8 (9.8)	89.2 (11.8)
Yes	26.3 (6.0)	24.3 (1.7)	0.525 (0.074)	0.491 (0.025)	82.4 (12.3)	80.8 (12.4)
Lack of resources						
No	24.3 (4.5)	25.8 (5.4)	0.504 (0.067)	0.513 (0.075)	79.9 (10.7)	88.9 (13.8)
Yes	24.8 (4.6)	26.1 (3.3)	0.511 (0.056)	0.521 (0.049)	80.9 (9.3)	88.0 (8.5)

NA: not applicable, \bar{x} mean; SD: standard deviation. *For the waist-height index it was expressed to three decimal places due to the characteristics of the indicator.

In addition, students of occupational therapy had overweight and central obesity according to their body mass index and waist circumference. This difference may be due to the way this group of students assumes psychological, social, economic and academic situations that can affect their habits and in some way produce important changes in abdominal adiposity. By contrast, [Martínez and others \(2014\)](#) found less prevalence of overweight in university students in the health sciences possibly because they have a greater awareness of their health and healthier habits compared to students in other areas ([Martínez et al., 2014](#)). Perhaps this conviction has

failed to develop in the previously mentioned group of students.

Despite the fact that in the multivariate analysis only the barriers lack of time, fear of injury and lack of skills maintained the association with the body mass index, it was found that male students who showed high values of body mass index, waist index and waist circumference were those who expressed social influence as a barrier ([Ashton et al., 2015](#)), while women who manifest as barriers to the practice of physical activity lack of time, social influence, lack of energy, lack of will, fear of injury, lack of skills and lack of resources presented

Table 3. Association between adiposity markers, socio-demographic characteristics and barriers to physical activity in university students in the field of rehabilitation.

	Body mass index				Waist to height ratio*				Waist circumference			
	Bivariable		Multivariable		Bivariable		Multivariable		Bivariable		Multivariable	
	B ₁ (EE)	P	B ₁ (EE)	P	B ₁ (EE)	P	B ₁ (EE)	P	B ₁ (EE)	P	B ₁ (EE)	P
Age	0.49 (0.11)	0.00	0.49 (0.11)	0.00	0.00 (0.00)	0.00	0.00 (0.00)	0.00	1.08 (0.25)	0.00	1.06 (0.26)	0.00
Sex ^a												
Male	1.45 (0.91)	0.11	1.26 (0.88)	0.15	0.00 (0.01)	0.45	0.00 (0.01)	0.57	8.37 (2.12)	0.00	7.84 (2.04)	0.00
Marital state ^b												
Free Union	1.56 (1.37)	0.25	0.70 (1.36)	0.60	0.04 (0.01)	0.01	0.03 (0.01)	0.07	7.22 (3.16)	0.03	5.08 (3.15)	0.11
Married	5.9 (2.01)	0.00	4.31 (2.01)	0.03	0.08 (0.02)	0.00	0.06 (0.02)	0.11	12.9 (4.63)	0.01	9.30 (4.67)	0.05
Program ^c												
Occupational Therapy ^e	0.16 (0.62)	0.79	0.49 (0.11)	0.00	0.01 (0.00)	0.12	0.00 (0.00)	0.39	1.83 (1.44)	0.21	1.06 (0.26)	0.00
Stratum ^d												
2	-0.95 (0.73)	0.89	-0.47 (0.70)	0.50	0.00 (0.01)	0.48	0.00 (0.00)	0.82	-0.36 (1.69)	0.83	-1.15 (1.64)	0.48
3	1.28 (0.79)	0.10	0.82 (0.76)	0.28	0.02 (0.01)	0.05	0.01 (0.01)	0.14	3.20 (1.82)	0.08	2.32 (1.77)	0.19
Barriers												
Lack of time												
Yes ^e	1.56 (0.66)	0.01	1.35 (0.63)	0.03	0.01 (0.00)	0.07	0.01 (0.00)	0.18	3.07 (1.53)	0.05	2.38 (1.49)	0.11
Social influence												
Yes ^e	1.05 (0.67)	0.11	0.89 (0.65)	0.17	0.01 (0.00)	0.04	0.01 (0.00)	0.11	3.10 (1.56)	0.05	2.25 (1.52)	0.14
Lack of energy												
Yes ^e	0.16 (0.64)	0.01	0.17 (0.62)	0.27	0.00 (0.00)	0.71	0.00 (0.00)	0.85	0.76 (1.50)	0.61	0.35 (1.45)	0.81
Lack of free will												
Yes ^e	0.16 (0.67)	0.81	0.16 (0.66)	0.79	0.00 (0.00)	0.32	0.00 (0.00)	0.38	1.61 (1.58)	0.31	1.12 (1.53)	0.46
Fear of getting hurt												
Yes ^e	2.53 (1.62)	0.12	3.03 (1.56)	0.05	0.00 (0.02)	0.76	0.01 (0.02)	0.48	1.02 (3.78)	0.79	2.53 (3.66)	0.49
Lack of skills												
Yes ^e	1.77 (0.86)	0.04	1.72 (0.83)	0.03	0.01 (0.01)	0.14	0.01 (0.01)	0.19	1.83 (2.01)	0.36	1.31 (1.95)	0.50
Lack of resources												
Yes ^e	0.53 (0.65)	0.41	0.59 (0.62)	0.34	0.00 (0.00)	0.45	0.00 (0.00)	0.44	0.74 (1.50)	0.62	0.79 (1.45)	0.59

*For the waist-height index it was expressed to three decimal places due to the characteristics of the indicator. Reference groups: ^aFemale; ^bSingle; ^cPhysiotherapy; ^dStratum; ^eNo barriers.

central obesity according to the waist circumference (Hurley et al., 2018). In addition, a significant relationship was found between sociodemographic variables, adiposity markers and barriers to the practice of physical activity; and the older the body mass index and waist circumference increase regardless of sex, suggesting that overweight and obesity could be related to the aging of the organism.

The results of this research show that there is a close relationship between the reasons for not performing physical activity and the increase of waist circumference, waist index and body mass index as adiposity markers in university students in the rehabilitation area of a health faculty. Similarly, Saghafi and other authors (2020) examined factors that affect the behavioral intent of weight control and body mass index, finding that overweight students showed higher scores on the scale of perceived barriers to adopting healthy eating habits and physical activity. Participants who considered lack of time, ignorance, lack of motivation and the cost of

physical activity as barriers had a higher body mass index (Saghafi-Asl et al., 2020).

The results of this study suggest that higher education institutions have as a challenge to find strategies to positively influence and facilitate conditions for students to acquire the habit of moving, overcome barriers to initiate and achieve adherence to the practice of physical activity. Although paradoxical, it is a challenge to raise awareness among teachers about healthy lifestyles and the varied possibilities they have to perform physical activity on a regular basis, without forgetting to impact the importance of self-care in students who belong to the health area, since as future professionals they will be directly responsible for influencing weight control and related problems. The adiposity markers and the removal of barriers to the practice of physical activity play an important role in the success of the maintenance and weight loss programs (Lazzeretti et al 2015; Faghri et al., 2016), being the most common weight control methods among students, exercise practice and healthy eating (Senekal et al., 2016). Educational

strategies in the university context for the prevention of overweight, obesity and the promotion of the regular practice of physical activity, should have considering that many students say they try to control their weight to improve their appearance, moreover, that individuals make changes if they perceive that their current state could have serious health complications (Saghafi-Asl et al., 2020). If university students know the benefits of managing their weight through diet and exercise and if they also have the facilities of time, schedules, access and free training, provision of infrastructure, proximity to facilities and easy access, they could join the programs.

The present is one of the few studies on the subject. It suggests the generation of others that identify the barriers to the adoption of healthy food and its relationship with the level of physical activity and demographic factors that could influence the perception of barriers to physical activity.

LIMITATIONS

Within the limitations of this report, the cross-sectional design is highlighted, which does not allow to identify causal relationships between the variables. In addition, the fact that the barriers were self-informed and therefore aspects to be considered as true motives could have been confused with possible “excuses” related to barriers to PA. The sociocultural and economic profiles of the students who participated in this study may be different from those of the students attending other universities in Colombia. Another limitation was that the level of physical activity of the participants was not objectively measured.

CONCLUSION

A close relationship was found between the barriers to physical activity, mainly lack of time, with the increase of waist circumference, waist index and body mass index as adiposity markers in university students. This result represents a relevant and useful input for health, sports and university professionals in the construction of strategies to promote physical activity and weight control as strategies of public health.

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CONFLICTS OF INTEREST

The authors declare there was not conflict of interest.

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