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Revisión sistemática sobre hábitos de actividad física en estudiantes universitarios

Systematic review of habits of physical activity in university students

Rubén Moreno-Arrebooa; Andrés Bernardo Fernández-Revelles; Marta Linares-Manrique; Tamara Espejo-Garcés

Universidad de Granada

Contacto: rubenmorenoarrebola@gmail.com

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Abstract

This paper makes a systematic review of the literature, about articles on physical activity habits of college students from different countries. Specifically, with this work we answer questions such as: Is it a novelty subject? is this topic worth of interest? What instruments are used most frequently to measure physical activity habits? What countries have studied this issue? Are the results and conclusions of the investigations studied? What factors are studied transversally along with the habits of physical activity in this population? Are there differences between the sexes? A systematic review procedure through the Web of Science (WOS) has been followed, extracting studies based on certain selection criteria. After applying the selection criteria, a total of 11 investigations results the subject to an in-depth review. It is an innovative topic, that shows an upward trend in recent years. The most used instrument in the reviewed studies has been the IPAQ (International Physical Activity Questionnaire). Speaking about the habits of physical activity within university students, they seem to be weak and must be enhanced. Finally, regarding to sex, the majority of researches has shown significant differences between men and women, with men being more attached to physical activity than their women counterparts.

Keyword

Physical activity habits; university students

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Resumen

El presente trabajo realiza una revisión sistemática de la literatura, de artículos sobre hábitos de actividad física de estudiantes universitarios de diferentes países. Concretamente con este trabajo damos respuesta a interrogantes como: ¿Es un tema novedoso y por el cual se muestra interés? ¿Qué instrumentos se utilizan con más frecuencia para medir los hábitos de actividad física? ¿En qué países se ha estudiado este tema? ¿Coinciden los resultados y conclusiones de las investigaciones estudiadas? ¿Qué factores se estudian trasversalmente junto a los hábitos de actividad física en esta población? ¿Existen diferencias entre sexos? Se ha seguido un procedimiento de revisión sistemática, en la Web of Science (WOS), extrayéndose estudios en base a unos criterios de selección determinados. Tras aplicar los criterios de selección, resultan un total de 11 investigaciones objeto de revisión en profundidad. Es un tema novedoso y con una tendencia ascendente en los últimos años. El instrumento más utilizado en los estudios revisados es el IPAQ (International Physical Activity Questionaire). Con respecto a los hábitos de actividad física de los estudiantes universitarios son débiles, y se han de potenciar. Por último, con respecto al sexo, la mayoría de las investigaciones obtienen diferencias significativas entre hombres y mujeres, siendo los hombres los que tienen mayor apego a la actividad física.

Palabras clave

Hábitos de actividad física; estudiantes universitarios.

Introduction

Currently, obesity, sedentary lifestyle, the consumption of alcohol, tobacco and drugs, and the lack of basic physical skills, are some of the main problems that affect health in our society. In this research, we focus on the habits of physical activity, particularly on the population of university students. The choice of this topic is due to the fact that previous research consistently argue that the lack of physical activity is one of the most important risk factors to develop chronic diseases (Reiner, Niermann, Jekauc, and Woll, 2013) such as dyslipidemias, hypertension, diabetes mellitus type 2, heart disease, chronic arterial diseases, sleep apnea and certain types of cancer (Jensen et al., 2014).

Specifically, obesity is considered as the worldwide epidemic of the 21st century. This excess weight is related to multiple cardiovascular, joint, and even mental diseases (depression).

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
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The World Health Organization (WHO) places as the main cause of overweight and obesity the imbalance between the energetic balance, caused by a decrease in physical activity and an uncontrolled increase in the intake of high-calorie food. To alleviate this problem, the WHO proposes several actions such as limiting energy intake from fats and sugars, increasing the consumption of vegetables, fruits, legumes, whole grains and nuts and carrying our physical activity periodically. Current evidences show that people who have strong physical activity habits have, on the one hand, a better biological profile to deal with cardiovascular diseases and type 2 diabetes, and on the other hand, a greater cardiorespiratory capacity, muscle and bone health with respect to those people who do not have these habits (Graber, et al., 2011).

We chose the population of university students as an object of study because it is a population with a "fragile" age range and it is inclined to lose the previous habits of physical activity (García, 2001), since the transition to university life can become highly stressful (Cooke, Berwick, Barkham, Bradley and Audin, 2006) due to such abrupt changes as moving from cities, learning to live alone and solving problems which they had not previously met with, meeting new people and working with them, managing to have their study and leisure times in the correct way. With respect to stress, there are several studies (Hammer, Stammatakis and Steptoe 2009), which argue that the practice of physical activity reduces stress levels, therefore, the promotion of physical activity habits for this stage is ideal. In fact, Rimmele et al. (2009) found concentrations of cortisol, heart rate and anxiety significantly lower in athletes. In short, Cairney et al. (2013), concluded that people who practice vigorous physical exercise reduce stress levels and improve their health and general feeling of well-being. Thus, it is necessary to promote the practice of physical activity from an early age, so that when we reach ages of 17-18 years, where the practice of physical activity declines strongly (Garcia, 2001), we have these habits well entrenched and they can be part of our lives (González, et al, 2017).

Another reason to choose university students as a population to investigate is that it is a population with priority in order to help and encourage physical activity habits, since according to Irwin (2004) in his study on a worldwide scale, he argues that between 30 and 60% of them are insufficiently active. Even though, higher rates are found in the study carried out by Haase, Steptoe, Sallis, and Wardle (2004) in European countries, which showed prevalence rates of

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A Coruña. Spain ISSN 2386-8333

physical inactivity ranging between 35 and 89%. The results of more recent research in the European context, argue that the behavior of students with respect to the topic is not improving, because similar prevalence rates to the previous ones are exposed (Bergier, Kapka-Skrzypczak, Biliński, Paprzycki and Wojtyla, 2012 Romaguera, et al. Sigmund, Chmelík, Sigmund, Feltlová and Frömel, 2013, Varela-Mato, Cancela, Ayan, Martín and Molina, 2012).

As a reference for this research, we will rely on the global recommendations on physical activity for health (WHO, 2011), we mainly focus on the age group of 18 to 64 years (adulthood). The World Health Organization understands physical activity like that one which is carried out during free time movement on foot, and by bicycle, etc. and occupational activities (work), games, sports, housework and scheduled exercises. With the purpose of improving cardiorespiratory functions, the good condition of the muscles, and bones and of reducing the risk of suffering from NCD (noncommunicable diseases) and depression, it states that adults between 18 and 64 years old should accumulate a minimum of 150 minutes per week of moderate aerobic physical activity. In the absence of any information on this point, a minimum of 75 minutes per week of vigorous aerobic activity. Another possibility is an equivalent combination of vigorous and moderate activities. With regard to aerobic activity sessions should be a minimum of 10 minutes. In order to obtain greater benefits, members of this age range should increase the levels described above up to 300 minutes per week of moderate aerobic activity, or 150 minutes of vigorous aerobic activity per week, or as in the previous case, a combination equivalent of both. Related to muscle strengthening, strengthening exercises of large muscle groups should be performed for two or more days per week. Therefore, whoever who practices less than 150 minutes of moderate physical activity or 75 minutes of intense physical activity, is labelled as a sedentary person.

For all these reasons, it is necessary to gather information with regard to the physical activity habits of university students, since it is an ideal stage to consolidate good habits of physical activity as well as food, sleep, etc. so that throughout their lives they have better physical and mental health.

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
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Material and method

The current systematic review has been prepared with reference to the statement PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyzes) (Liberati et al., 2009), with the aim of getting a correct structure and contrasted by research.

Search strategy

To carry out this systematic search, it has been used as a Web of Science (WOS) database, as it is one of the main databases in the field of health, social sciences and educational research. The component related to health has been physical activity treated as a decisive factor to improve the quality of life and health, and the component related to social sciences and educational research, focused on the type of population, university students. The used keywords have been "physical activity habits" and "university students", using the boolean AND function as a function. The selection filters that have been used have been firstly, a temporary tranche of 11 years, which runs from 2007 to the present days 2018, secondly, we have selected only works from two scientific areas specifically, "Education and educational research", and "sport science". In the third place, we only focus on the articles.

Study selection procedure

After the established filters, the studies have been selected based on the revision of the titles and the summaries of the articles in the Web of Science itself, the articles that we have used later have been selected, taking into account two criteria: relevance of the topic (those that study physical activity habits in university students) and quantitative studies. From the articles that we finally selected, full-text copies have been obtained, and they have been stored in Mendeley.

Data extraction process

The selected studies have finally been read and reviewed exhaustively, extracting the following data: a) study design, b) number of participants, c) age and sex of the participants, d) country where the study was conducted, e) behaviors studied parallel to physical activity habits, f)

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measure instrument of physical activity habits, g) existence of intervention program or not and h) main findings of the studies.

Results

After the search, we obtained 242 studies, of which, by topic area, 191 were not eligible for inclusion. Other 21 were excluded due to the type of document and, finally, 16 articles were eliminated after the systematic review of the titles and summaries, and 4 because they did not manage to access the full text. The result was a total of 11 articles (n = 11) that complied with the criteria described above and were included in the review (see figure1)

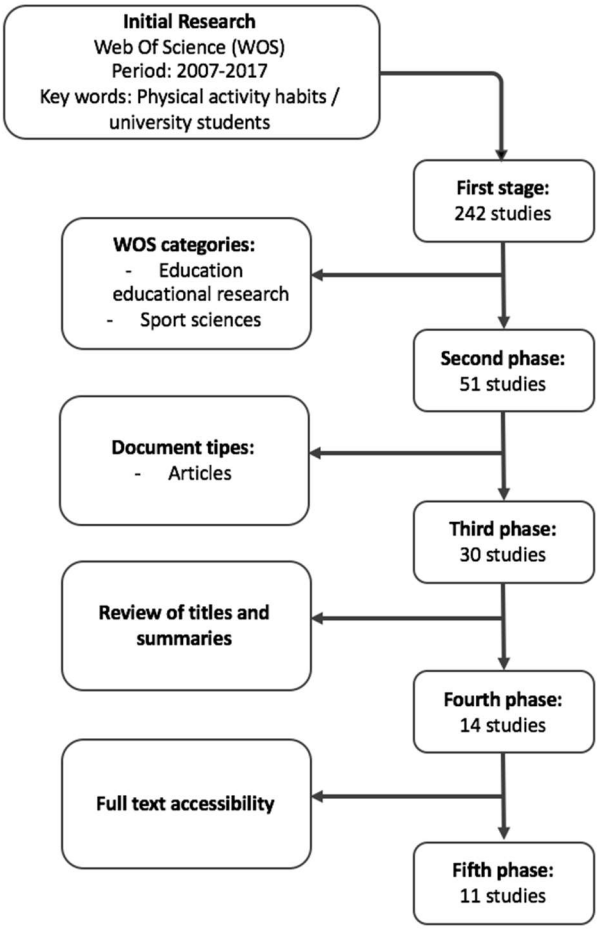


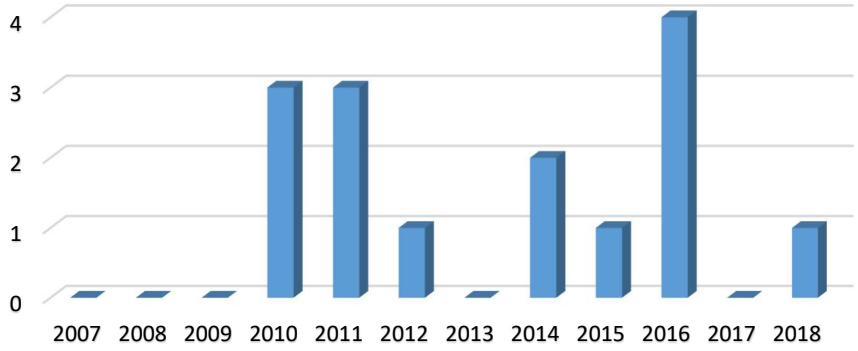
Figure 1. Study selection process

Characteristics of the studies

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
A Coruña. Spain ISSN 2386-8333

Importance of the theme

There is an upward trend in the production of studies related to physical activity habits in university students, since the number of articles that deals with this issue has been increasing since 2007 to the present day. The first articles appear in 2010, and they obtain their maximum (4 articles) in 2016 (Graph 1). The graphic incorporates the 4 articles that we have not managed to access to (one in 2015, one in 2014, one in 2012 and another in 2010).



Graph 1. Evolution of the number of articles per year

Origin of the studies

The origin of the studies is very varied. Spain is the country with the most articles on this topic (46%), followed by Costa Rica (18%) and Australia (18%), and finally Canada (9%) and Croatia (9%). It is assumed that the majority (64%) of the studies have been carried out in Spanish-speaking countries (Graph 2).

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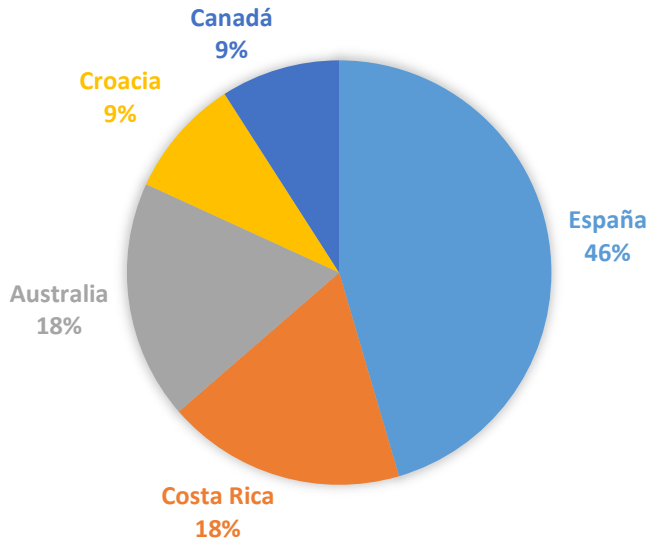


Graph 2. Origin of the studies

Number of participants and sex of themselves

With regard to the number of participants, it is very varied among the researches. The study with the lowest participation has 38 participants, compared to the study that obtains the most participation with 2490. In total, there are 10,492 participants in the total number of studies. From the following chart, referring to the age of the participants, we deduce that the age of the participants is around 22 years, with a standard deviation of ± 3.34. Regarding sex, with the exception of study 2, which only focuses on women, in the other studies, both sexes take part. We find a larger participation by women (n = 6432), compared to that by men (n = 4060).

Study	Authors	Mean age	Standard desviation	N. Women	N. Man	N. Total
1	Castañeda, Carolina; Zagalaz, Mª Luisa; Arufe, Víctor; Campos-Mesa, Mª Carmen	21	± 3,05	569	516	1085

2	Bonet, Judit; Parrado, Eva; Barahona, Anabel; et al. (2016)	22,64	± 2,61	38	0	38
3	Jiménez-Díaz, Judith; Morera-Castro, María (2016)	19.78	± 4.72	48	92	140
4	Jiménez Morgan, Sergio; Hernández Elizondo, Jesennia (2016)	21,99	± 1,55	109	97	206
5	Moses, Jemma; Bradley, Graham L.; O'Callaghan, Frances V. (2016)	20.87	± 3,31	165	38	203
6	Pedisic, Zeljko; Rakovac, Marija; Bennie, Jason; et al. (2014)	21,49	± 1,77	782	472	1254
7	Gnanendran, Abbyrhamy; Pyne, David B.; Fallon, Kieran E.; et al. (2011)	24,75	No consta	124	92	216
8	Castillo Viera, E.; Giménez Fuentes-Guerra, F. J. (2011)	No consta	No consta	674	301	975
9	Romaguera, Dora; Tauler, Pedro; Bennasar, Miquel; et al. (2011)	21,9	± 4,8	1188	863	2051
10	Gómez-López, Manuel; Granero Gallegos, Antonio; Baena Extremera, Antonio. (2010)	No consta	No consta	843	991	1834
11	Perusse-Lachance, Emilie; Tremblay, Angelo; Drapeau, Vicky (2010)	24,1	± 5,4	1892	598	2490
Mean		**22,05**	**± 3,34**			
Totals				**6432**	**4060**	**10492**

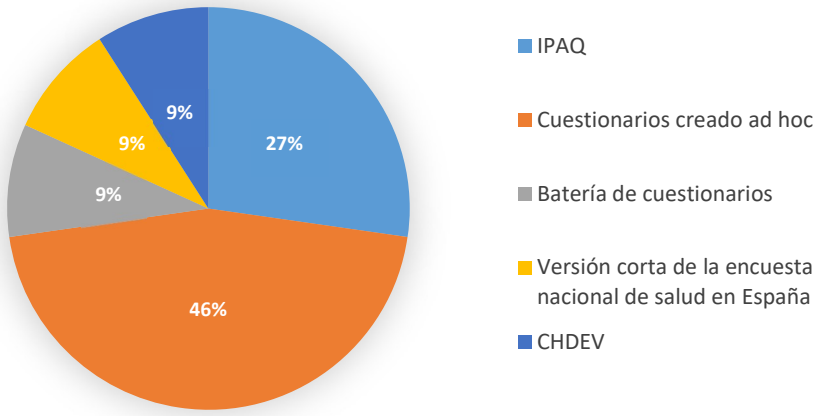
Table 1. Age, sex and total of participants in the researches studied

Typology of studies and instruments used

Regarding the typology of the studies, 100% of the articles reviewed use a cross-sectional methodology, based on questionnaires. It is one of the most used methods when we want to research, for its main advantage, which is time. It is a way to access to some information at a specific time, without depending on a pursuit, which could possibly end with a decrease in participation. 100% of the reviewed studies use the questionnaire as a tool to extract the

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
A Coruña. Spain ISSN 2386-8333

information, and any of the studies carries out intervention programmes. As an instrument to measure habits related to physical activity, several questionnaires are used, which we specify below:



Graph 3. Instruments used

- - The IPAQ is the most used instrument 27%.

- 46% of the reviewed studies choose to create their own ad hoc questionnaire.

- A study uses a group of questionnaires in order to create a standardized evaluation system.

- A study uses the short version of the national health survey in Spain

- A study uses the CHDEV.

Jiménez and Hernández (2016), Moses, Bradley and O'Callaghan (2016) and Pedisic et al. (2014), use the questionnaire "International Physical Activity Questionnaire" (IPAQ) (Booth, 2000; Craig et al., 2003). Translated into Spanish: International Physical Activity Questionnaire. It is structured to report scores separately for three different activities: walking, moderate intensity activity, and vigorous intensity activity. To calculate the total score a sum of the duration (in minutes) and frequency (in minutes) per day of these three types of activities is made and multiplied by MET (metabolic energy). This questionnaire measures the physical activity carried out in the last 7 days, which has been carried out both at work, during

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
A Coruña. Spain ISSN 2386-8333

transportation, at home and during free time. These works, in addition to using the IPAQ, measured other variables such as: alcohol and tobacco consumption (Jiménez and Hernández, 2016, Pedisic et al., 2014), general health (Pedisic et al., 2014), nutrition (Jiménez and Hernández , 2016; Moses, Bradley and O'Callaghan, 2016), mindfulness, social support and sleep hygiene (Moses, Bradley and O'Callaghan, 2016).

Castañeda, Zagalaz, Arufe and Campos-Mesa, (2018), Jiménez-Díaz and Morera-Castro, (2016), Gnanendran, et al. (2011), Castillo and Giménez (2011) and Pérusse-Lachance, Trembla and Drapeay (2010), chose the creation of their own questionnaire respectively. In the first case, a closed and validated questionnaire was used (Castañeda y Campos, 2012), which collects information on the reasons for practicing physical activity related to health improvement, satisfaction and fun. In the second case, they used the Instrument of Evaluation of the Basic Patterns of Movement (IPBM) of Jiménez, Salazar and Morera (2013), to measure the motor performance of the students and specifically to know the habits of physical activity, a questionnaire was created with items that measured the number of days of physical activity per week or the type of physical activity you practice. In the third case, Gnanendran, et al. (2011), developed a questionnaire of 20 items, focused directly on investigating personal habits and attitudes of physical activity in the exercise counseling. It was intended to obtain information on the evolution of physical activity behavior from childhood, before the training postgraduate. In addition, they collected information on tobacco and alcohol consumption. In the fourth case, Castillo and Giménez (2011), design a closed questionnaire, using the Delphi method. The questionnaire consists of seven dimensions, some of them are: influence of school physical education, physical activity practice and psychosocial aspects of physical activity. In the article they only present results related to the "physical activity practice" dimension. Finally, Pérusse-Lachance, Trembla and Drapeay (2010), prepare their questionnaire, based on two previous questionnaires on Health in Canada. Within the created questionnaire, physical activity habits were dealt with three sections, and aspects such as eating habits and factors related to lifestyles were also discussed.

Bonet, et al. (2016) decide to choose the creation of an evaluation system based on a group of questionnaires and tests that measure: aptitude for physical activity, anthropometric measures, physical condition, physical activity practice behaviors, history of physical exercise,

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
A Coruña. Spain ISSN 2386-8333

diet, general health, mood, reasons for physical exercise and obstacles to the practice of physical exercise.

Romaguera, et al. (2011), use the short version of the Spanish National Health Survey of 2006 (http://www.msc.es/estadEstudios/estadisticas/encuestaNacional/), and complete it with information on motivation for the practice of physical activity , based on the questionnaire developed by Pavon, et al. (2007) specifically for Spanish university students. In addition, information was obtained through other questionnaires about: habits of sedentary activities (watching television, computer use, etc.), smoking, eating habits, patents´ professional, educational and physical activity levels. It should also be noted that the questionnaire was divided into two sections, one concerning those who had answered "no" physically active and those who answered "yes" physically active. For the latest ones, questions about years of physical activity practice, age of initiation, place of physical activity practice, frequency of practice and reasons for practicing physical activity were included. They give an enormous look visual about habits of physical activity practice and influential factors in it.

Finally, Gómez-López, Granero, and Baena (2010), chose as an instrument the CHDEV (Questionnaire on Sports Habits and Lifestyles). It consists of 51 grouped questions in different blocks. In this publication, they expose the data regarding the obstacles that prevent university students from practicing physical activity and sports in their free time.

Factors related to the habits of physical activity treated in research

In addition to measuring the habits of physical activity, several factors are measured, which are associated in one way or another with this habit. These factors have been described in previous paragraphs. In order to clarify the issue, we have grouped these factors into 5 categories: habits, health, physical condition, social aspects and motivation, because they are important topics. In the following chart you can see specifically the factors that we associate to the different categories and the number of the researches that study them cross-sectionally with the physical activity habits.

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
A Coruña. Spain ISSN 2386-8333

Categorías	Factores	N. Estudios
Habits	Smoking / alcohol	3
	Nutrition	3
	Daily habits "stile of living"	3
	Sleep	1
	Mindfullnes	1
Health	Health	3
	Frame of mind	1
	Wellbeing and stress	1
Physical condition	Physical condition	2
	Fitness for physical activity	1
	BMI	1
Social aspects	General social support	1
	Parental support	1
	Esthetic	1
Motivation	Motivation for the exercise	1
	Obstacles to physical activity	1
	Competition	1
	Fun	1

Table 2. Factors associated with physical activity habits in university students

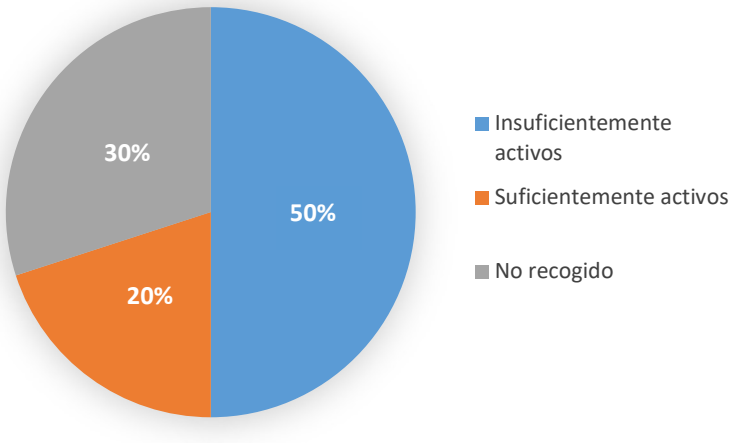
Main conclusions of the studied researches

Related to on the thematic relevance of the studied research, we have focused on checking the physical activity habits of university students, differences between sexes with respect to the same habits, and the main obstacles which university students faced up to at the time, of practicing physical activity.

Habits of physical activity in university students

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
A Coruña. Spain ISSN 2386-8333

Regarding physical activity habits, we find that: in 5 of the research, university students are classified as inactive people, in 2 as active people and in 3 the results are not collected (Graph 4).



Graph 4. Habits of physical activity in university students

Differences between men and women

With regard to gender, there are disagreement among the researchers, form then works, only 6 research show these differences. 50% of these research states that there are significant differences between men and women (Castillo & Jiménez, 2011; Pedisic et al., 2014; Romaguera, et al., 2011) pointing out in all of them that men practice more physical activities than women, whereas the other 50% conclude the opposite idea (Gnanendran, et al.; 2011; Jimenez y Hernández; 2016; Pérusse-Lachance, TremblaY y Drapeay, 2010).

Main reported obstacles

Checked the university students´ general sedentary lifestyle and look of adherence to the practice of physical activity we are going to focus on the reason of this situation, identifying the most common obstacles to the practice of physical activity of this population. We classify these obstacles into external and internal obstacles (Daskapan, 2006). Of the 10 research studied, 3 of them (Bonet, et al., 2016, Castañeda et al., 2018, Gómez-López, Granero, and Baena, 2010) expose these obstacles. All the three agree in considering the lack of time, external obstacle, as the main obstacle that the university students find to practice physical activity. Internal barriers of the type such as: they don´t like physical activity, they do not see it like

something useful, belief of inability to practice it , they do not have will, lack of social support and laziness or reluctance, all of these reasons are located in the three research as the second most important obstacle which students can find with in order not to practice physical activity.

Discussion and Conclusions

The objective of this research was to carry out a systematic review of the literature on physical activity habits in university students, which we have tried to clarify with an issue that is growing due to its relevance. With respect to the current trend to study the physical activity habits of the university student population, we conclude that it follows an ascending line, enhanced by the worrying previous results about sedentary lifestyle and bad habits in this type of population.

With respect to the instruments used to measure physical activity habits in university students, the IPAQ (International Physical Activity Questionnaire) (Hallal and Victoria, 2004), is situated like the most widely used instrument, since it is a highly reliable and valid instrument (Craig, et al., 2003; Hallal & Victora, 2004; Pedisic, Jurakic, Rakovac, Hodak, & Dizdar, 2011). The short version is the most used by the research we have reviewed.

In relation to physical activity, we can qualify as sedentary people to the majority of university students of the worked studies studied, because in 5 of the researches studied, data are obtained, below the indications of the WHO (2010). The results of this review coincide with the findings of Gutiérrez-Salméan et al. (2013) and Bolaños and Zegarra (2010), in university students from Mexico (where more than 50% of the students practice very little or no physical activity) and from Peru, where 42.8% do not practice exercise) and with those studied by Irwin (2004), who argues that between 30 and 60% of the worldwide population of university students is insufficiently active. Against and for the two studied research (Gnanendran, et al., 2011; Romaguera, et al., 2011) that, if they conclude that university students (Australia and Spain, respectively) are physically active, Irwin (2007) in his study in Anglo-Saxon countries concludes that the university studied students are physically active.

Review. Systematic review of habits of physical activity in university students. Vol. IV, Issue. 1; p. 162-183, january 2018.
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With respect to the same subject, it is observed that the two research that report that the studied university students are physically active are of 2011, however, the most current research of 2016 agree in considering to this population insufficiently active, reason why it is deduced a decline in physical activity in this population. Therefore, it should be noted that the levels point out to high degrees of sedentary lifestyle, which it is necessary an active promotion of physical activity habits among the university population is by.

In relation to gender, there are two opposite opinions, although in the reviewed research there is disparity in this topic, what can be concluded is that in those jobs that are gender differences, men obtain higher rates of physical activity than women. This position is common in several findings (Abdullah, Wong, Yam, and Fielding, 2005, Bauman, et al., 2012, Beltrán et al., 2012, Fernandes, Dimond, Hirshberg, and Lofgren, 2013, Sigmundová et al., 2013, Varela-Mato, et al., 2012).

Finally, we focus on the obstacles that university students usually show when they practice physical activity and adopt it as a habit. The results obtained by the research in study are not at all strange, since they follow the line of previous research with university students (Flores and Ruiz, 2010; Sanz and Ponce, 2006), which also place the lack of time and lack of interest as the main reason of the presented obstacles in this population. Because of the fact that lack of time is difficult to control, since we live in a society which we are excessively busy in one of the factors we should bet on to improve the adherence to the practice of physical activity in university students are the intrinsic motivations (Chacón, et al., 2017).

Study limitations

One of the main limitations of the study is the use of just one database. On the other hand, in 30% of the reports, interesting data are collected, but they do not include the level of physical activity of university students.

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