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Brief Report

Gender Differences in University Students' Levels of Physical Activity and Motivations to Engage in Physical Activity

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Abstract: The transition of students to the university stage is a critical period in which there are numerous changes that could influence their lifestyles. The aim of this research was to analyse the levels of physical activity and the types of motivation for physical activity among university students according to gender. A quantitative, descriptive, and cross-sectional survey methodology was used. A total sample of 3060 university students, 47.8% women and 52.2% men, with a mean age of 20.88 ± 2.01 years was recruited. The sampling margin of error was ±1.85%. The short form of the International Physical Activity Questionnaire and the third version of the Behavioural Regulation in Exercise Questionnaire were used to evaluate MVPA and motivations to exercise, respectively. Two-way ANCOVA and a mediation analysis were performed. The most relevant results show that less than half of the university men and women are considered physically active. Furthermore, when analysing the interaction between motivation and gender, a large effect in identified motivation (F = 65.03; $p \leq 0.001$) and integrated motivation (F = 324.58; $p \leq .0.001$) and a medium one intrinsic motivation (F = 169.39; $p \leq 0.001$) was found. Therefore, women university students have lower levels of physical activity practice than men students and show higher external motivation and demotivation.

Keywords: physical activity; university students; motivation

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1. Introduction

One of society's greatest challenges is to combat sedentary lifestyles in order to prevent the onset of cardiovascular diseases and problems associated with physical inactivity [1], since physical inactivity is considered the fourth leading risk factor for mortality worldwide [2]. Research has associated low or non-existent levels of physical activity with an increased risk of developing diseases such as diabetes, cardiovascular diseases, hypertension, breast or colon cancer, as well as mental illness [3–7].

The World Health Organisation (WHO) identifies insufficient levels of physical activity for adults as less than 150 min of moderate-intensity physical activity per week, or less than 75 min of vigorous-intensity physical activity per week, or equivalent [8]. In line with the above, recent research shows that most children and adolescents do not meet the WHO recommendations for this age group [9]. In a 2015 Spanish study, the majority of young university students did not meet the WHO recommendations for their age [10].

The scientific literature shows that there is a consistent effect between levels of physical activity in adolescence and levels in adulthood [11]. The recent study of 26,578 people from 27 countries in different EU member states found that 45% of people say that they never exercise or do any type of sport, with a slightly higher figure (47%) in Spain [12]. (Moreover, some studies have shown that levels of physical activity decrease dramatically in adolescents and young adults [13,14]. Therefore, it is important to pay special attention to the different transition stages. In this regard, university students are in a period in which major changes can occur with respect to their family, and social and work structure,

sometimes accompanied by forced emancipation, constant exposure to highly competitive environments, and precarious employment situations [15–18]; coinciding, moreover, with the end of physical education classes at the secondary and baccalaureate stage and with changes in lifestyle that lead to the abandonment of physical-sports practice [19,20].

In this line of research, the study conducted by Sevil et al. [21] with a total of 901 university students found that only 58% of students reached the recommendations established by the WHO. However, according to self-determination theory, students' maintenance of physical activity levels will be influenced by their motivation [22–24] so that students who engage in regular physical activity as part of their lifestyles can adapt these lifestyle changes without detriment to physical activity levels [20].

Following the self-determination theory [25], there are different types of motivation with varying degrees of self-determination: intrinsic motivation, extrinsic motivation, and amotivation. Intrinsic motivation occurs when a person engages in an activity because of enjoyment, interest, and satisfaction. Extrinsic motivation occurs when the activity is controlled by factors external to the person, such as obtaining rewards, avoiding punishment, or meeting external expectations. This motivation is divided into four types of regulation (from the highest to the lowest level of self-determination): integrated, identified, introjected, and external [14,25].

The least self-determined form of extrinsic motivation is external regulation. In this type, the behaviour is performed to satisfy an external demand or for the existence of rewards; therefore, it is the exact opposite of intrinsic motivation. Next, comes introjected regulation, the regulation of behaviour still has an external locus of control. The motive for performing the behaviour is the fact that the person exerts pressure on him or herself to regulate his or her behaviour in order to gain social recognition, avoid feelings of guilt, etc. The third type of regulation is identified regulation. The behaviour is highly valued and the individual judges it as important, so he/she will perform it freely, even if the activity is not pleasant, and there is a high degree of perceived autonomy. The fourth type is integrated regulation, the behaviour is performed freely. Integration occurs when the person evaluates the behaviour and acts in congruence with his or her values and needs. This would be the case of those people who are committed to physical-sports practice because it is part of their active lifestyle [26]. Finally, at one end of the self-determination continuum is amotivation. This corresponds to a complete lack of motivation, both intrinsic and extrinsic [14,25,26].

It is important to take gender into account when analysing physical activity levels, as women present lower levels [4,14,21,27–29], as well as lower levels of motivation [9,22,30,31]. Since no studies have been found in the literature addressing these gender differences in university students in the Madrid region, the purpose of this study was to explore gender differences in physical activity levels and motivations to practice in the aforementioned population.

2. Materials and Methods

2.1. Participants and Study Design

The research consisted in carrying out a quantitative descriptive methodology using a survey. A total sample of 3060 university students, 1463 women (47.8%) and 1597 men (52.2%), with a mean age of 20.88 ± 2.01 years participated in this cross-sectional study consisting of using structured questionnaires. Considering the population of university students in the Madrid Region (435,347 according to the National Institute of Statistics Municipal Census), a representative sample of participants was recruited from different universities and colleges in the region (confidence interval of 95.5%, and assuming in the populational variance the most unfavourable case of p equals q, the sampling margin of error was ±1.85%). The selection of the sample was non-probabilistic and selected by accessibility.

An informative introductory letter was sent to all universities in the Madrid region and those that volunteered to accept participated in the study. After obtaining the approval for collaboration from the participants, the questionnaires were administered and the

information obtained was collected and recorded. All the procedures complied with the Declaration of Helsinki and were approved by the Universidad Rey Juan Carlos ethics committee board (registration number 1306201809818).

2.2. Instruments

The International Physical Activity Questionnaire Short Form (IPAQ-SF) has been used to quantify PA levels in university students. It has been validated in 12 countries showing acceptable psychometric properties to measure an individual's PA levels in one week [32]. It has been validated in the Spanish population [33].

To this end, the first four questions of the seven that make up this questionnaire were chosen to quantify the moderate to vigorous physical activity (MVPA) levels (i.e., frequency, duration, and intensity) and evaluate compliance with recommendations (i.e., 30 min of MVPA). The questions include a short description about the characteristics of the type of activities that fit into each section.

The Behavioural Regulation In Exercise Questionnaire (BREQ-3) by Wilson, Rodgers, Loitz, and Scime [34] was used to measure the university students' motivation to PA, in its version validated in the Spanish context by González-Cutre, Sicilia, and Fernández [35] and used with Spanish university students [12]. The scale is comprised of 23 items, grouped into six factors: intrinsic regulation ($\alpha = 0.87$), integrated regulation ($\alpha = 0.93$), identified regulation ($\alpha = 0.72$), introjected regulation ($\alpha = 0.69$), external regulation ($\alpha = 0.79$), and amotivation ($\alpha = 0.75$). The response format used was evaluated on a Likert scale of 0 to 4, where 0 corresponded to total disagreement, and 4 to total agreement.

2.3. Statistical Analysis

The statistical analysis was conducted using the software package SPSS for Windows, version 27.0 (IBM Corp, Armonk, NY, USA).

Descriptive data are presented as percentages, mean, and standard deviation (M ± SD). The Kolmogorov–Smirnov test of normality was performed, indicating the need to use parametric statistics ($p > 0.05$).

A two-way ANOVA was conducted to analyse PA levels according to sex and physical status (active vs. sedentary) on the basis of the WHO guidelines. A two-way ANOVA was performed to explore motivation to PA according to gender and physical status. When appropriate, Bonferroni's post-hoc tests were performed to observe pairwise comparisons.

Effect sizes (ES) were expressed with partial eta squared (ηp2), with values of 0.01, 0.06, and 0.14 for small, medium, and large effects, respectively [36]. The level of significance was set at = 0.05.

3. Results

A percentage of 37.77% of women and 38.44% of men were considered physically active according to WHO guidelines.

Gender differences on PA levels are shown in Table 1. Greater levels of vigorous physical activity (VPA), moderate physical activity (MPA), and MVPA were observed in men in comparison to their women counterparts ($p < 0.001$) with moderate ES for VPA and MVPA (ηp2 = 0.08 and 0.07, respectively).

Table 1. Gender differences in PA levels based on the IPAQ.

	VPA_IPAQ				MPA_IPAQ				MVPA_IPAQ			
	M ± SD	**F**	***p***	**ηp²**	**M ± SD**	**F**	***p***	**ηp2**	**M ± SD**	**F**	***p***	**ηp²**
Women Men	17.68 ± 32.12 41.06 ± 44.21	275.75	≤0.001	0.08	23.50 ± 33.15 36.40 ± 42.05	87.60	≤0.001	0.02	41.19 ± 54.28 77.46 ± 68.40	260.86	≤0.001	0.07

Motivational domains according to gender are shown in Table 2. Motivation ratings were higher for men in comparison to women, except for external motivation and amotivation, which were greater for women ($p < 0.001$). The largest effect sizes were found in identified (F = 65.03; $p \leq 0.001$) and integrated (F = 324.58; $p \leq 0.001$) motivation. A medium effect was found in intrinsic motivation (F = 169.39; $p \leq 0.001$). Finally, a small effect between gender was observed for the motivational domains: introjected (F = 10.21; $p = 0.001$) and external (F = 12.30; $p = 0.001$) motivation and amotivation (F = 32.29; $p \leq 0.001$).

Table 2. Gender differences in motivation to PA practice.

	Women	**Men**	**Main Effects**		
	M ± SD	**M ± SD**	**F**	***p***	**ηp^2**
Intrinsic	2.47 ± 1.23	3.04 ± 1.10	169.39	≤0.001	0.05
Integrated	1.93 ± 1.35	2.81 ± 1.27	324.58	≤0.001	0.10
Identified	2.66 ± 1.08	2.98 ± 1.05	65.03	≤0.001	0.22
Introjected	1.26 ± 0.96	1.38 ± 0.98	10.21	0.001	0.00
External	0.46 ± 0.74	0.37 ± 0.64	12.79	0.001	0.00
Amotivation	0.56 ± 0.78	0.41 ± 0.63	32.29	≤0.001	0.01

4. Discussion

The aim of this study was to explore gender differences in physical activity levels and motivations to practice in the aforementioned population.

The findings of the present study show that the majority of the students (more than 60%) did not meet the minimum levels of physical activity recommended by the WHO. These results are in line with the study by Arias-Palencia et al. [10] in which, through data collected with accelerometers, they concluded that only 5.4% of university students did comply with the recommendations. However, in the study by Sevil et al. [21] with a total of 901 university students, the data were higher, as 58% of the students met the recommendations established by the WHO. Furthermore, in this study, they concluded that students who did not meet the PA practice recommendations perceived higher values in most PA practice barriers than those students who did meet the recommendations.

It should be remembered that the transition to the university stage involves a change in lifestyle that could influence the abandonment of physical-sports practice, as previous research has pointed to an increase in abandonment due to the demands of studies, from 23.7% at 13 years of age to 42.05% at 17–18 years of age [37]. Other factors that could condition the lack of physical activity practice among university students, in addition to their studies, are the lack of free time and the incompatibility of schedules with daily occupations [21,38]. All these factors could eventually trigger physical and emotional discomfort in students, and in fact, studies such as that of Salgado and Au-Yong-Oliveira [18], have shown that the higher the levels of physical activity among university students, the fewer the symptoms of burnout.

Regarding possible differences in levels of practice according to gender, the data from this study corroborate that men have higher levels of practice of both moderate and vigorous physical activity. A study conducted in China concluded that adolescents and young adults (aged 15–19 years) were less likely to meet MVPA recommendations compared to children aged 9–11 years, and that boys were more active than girls [13]. Similarly, in research by Romero-Parra et al. [9] with children in primary (6–12 years) and secondary and baccalaureate (13–18 years) in Spain, they concluded that younger students were more physically active than older students, and boys had higher levels of physical activity.

However, as for adults, in Europe, 18% of men and only 10% of women engage in 91 min or more of vigorous activity per day when they are physically active [12]. Furthermore, in this report, 22% of women and 17% of men stated that they had not done any moderate physical activity in the seven days prior to the survey. In Spain, 39% of Spaniards responded that they had not done any vigorous physical activity in the last 7 days. 36%

had done some vigorous physical activity in the previous 7 days. Thirty-six percent had done vigorous physical activity between one and three days out of the previous seven days and 25% had done so between four and seven days [12]. More specifically, the MVPA levels of Spanish university students are 279.52 min per week, and men have higher levels of weekly MVPA (384.93) than women [21].

When analysing motivation towards physical activity practice as a function of gender, in the present research, the men presented higher levels in all types of motivation except for external motivation and demotivation. This gender difference in favour of men has been identified in previous studies [9,30], and these results could be due to the fact that women have higher values in external motivation and demotivation. These data could be due to the fact that women are more sedentary because they do not like competition and because they seek longer-term goals which, being less easy to obtain, would make it more difficult to maintain exercise practice [39]. On the other hand, men who enjoy exercise for the sake of competition receive an immediate reinforcement or reward that makes it easier to maintain their behaviour [40].

In this line of research, previous studies have shown that there is a relationship between self-determined motivation and the practice and adherence to physical activity and sport, more specifically intrinsic and identified motivation [40]. Thus, the study by Sevil et al. [14] concluded that students who showed higher intrinsic motivation had higher levels of physical activity practice, both moderate and vigorous. Specifically, with university students, it has been determined that intrinsic, identified, and integrated regulation positively predicted participation in physical-sports activities [22,41].

Among the limitations found in this study is that physical activity levels were measured by means of a validated questionnaire, but it would be interesting to use accelerometers or other methods to measure the subject's actual minutes and intensity of physical activity. As a future line of research, it would be very interesting to carry out a study that would allow us to delve deeper into these questions.

The results of the present research could be interesting from a practical application point of view since, according to Arias-Palencia et al. [10], physical activity habits can vary and be modified. Moreover, the earlier such habits are acquired, the more likely they are to be reproduced in adulthood. Therefore, it is very important to identify behavioural patterns and motivations that lead young people to have one lifestyle or another, as this will allow educational administrations to design programmes that facilitate adherence to physical activity and thus prevent future health problems. However, in order to maintain or increase physical activity levels in the university transition, it seems necessary to develop intervention programmes that improve not only physical activity levels, but also intrinsic motivation towards them [14].

5. Conclusions

In conclusion, this study provides information on the levels of physical activity and motivation to practice in university students in the Madrid region. The women university students had lower levels of physical activity practice than men students and showed higher external motivation and demotivation.

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