

Physical Activity Level and Muscular Power of Physical Education Students

Nível de Atividade Física e Potência Muscular de Estudantes de Educação Física

Felipe da Silva Triani^{*a}; Victor Alessandro Pedreira^b; Walter Gabriel S'Antanna Souza^b; Glhevysson dos Santos Barros^c; Victor Gonçalves Corrêa Neto^d; Paulo Sérgio Pimentel de Oliveira^b

^aUniversity of the State of Rio de Janeiro, Stricto Sensu Graduate Program in Exercise and Sport Sciences. RJ, Brazil.

^bGama e Souza College, Physical Education Course. RJ, Brazil.

^cGrande Rio University, Stricto Sensu Graduate Program in Environment and Health. RJ, Brazil.

^dUniversity of the State of Rio de Janeiro, Stricto Sensu Graduate Program in Physical Education. RJ, Brazil.

*E-mail: felipetriani@gmail.com

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Abstract

Being physically active is an indispensable condition for health and quality of life. In addition, literature has presented promising studies on muscle power associations with other parameters of health-related physical fitness. However, there is still little evidence to assess the level of physical activity and muscle power. Thus, the objective of this study was to evaluate the level of physical activity and muscular power of physical education students of a course in Rio de Janeiro. In order to reach the proposed goal, 37 physical education students of both sexes, with a mean age of 26.13 years, participated in responding the International Physical Activity Questionnaire (IPAQ) and performing the horizontal impulse jump test for muscular power. As a result, it was observed that 86% of men were classified as very active and active. For women, 63,63% were identified as very active and active. For power, mean values of 2.02 ± 0.16 for men and 1.48 ± 0.27 for women were obtained. Therefore, it was concluded that both males and females are physically active, although males represent a greater quantitative muscle power, which is largely inferior to previously published studies.

Keywords: Muscle Strength. Exercise. Sport. Quality of Life

Resumo

Ser ativo fisicamente constitui condição indispensável para a saúde a qualidade de vida. Além disso, a literatura tem apresentado estudos promissores sobre as associações da potência muscular com outros parâmetros da aptidão física relacionada à saúde. No entanto, ainda são poucas as evidências que buscaram avaliar nível de atividade física e potência muscular. Dessa forma, o objetivo desse trabalho foi avaliar o nível de atividade física e a potência muscular de estudantes de educação física de um curso no Rio de Janeiro. Para atingir ao objetivo proposto 37 estudantes de educação física, de ambos os sexos, com média de idade de 26,13 anos participaram ao responder ao Questionário Internacional de Atividade Física (IPAQ) e executar o teste de salto de impulsão horizontal para potência muscular. Como resultado, foi observado que 86% dos homens foram classificados como muito ativos e ativos. Já para mulheres 63,63% foram identificadas como muito ativas e ativas. Para potência obteve-se os valores de média de $2,02 \pm 0,16$ para homens e $1,48 \pm 0,27$ para mulheres. Portanto, concluiu-se que tanto o sexo masculino quanto o feminino são ativos fisicamente, embora os homens representem um maior quantitativo a potência muscular mostrou-se inferior, em grande parte, aos estudos anteriormente publicados.

Palavras-chave: Força Muscular. Exercício. Qualidade de Vida.

1 Introduction

Some studies in Brazil have discussed the issue of student of physical education being an agent physically active¹⁻⁸. Many of these are developed based on possible social representations that to be a physical education teacher it is necessary to be physically active.

Studies involving physical education students indicate that students are active subjects, reinforcing the social representation on this group. In this sense, Silva and Pereira³ assessed 217 physical education students at Federal University of Sergipe and realized that 54.8% were classified as active regularly. Pinho and Barbosa⁴ in their research with students from Rondônia identified that 50% of the students were very active and 31.82 were active. Silva³, when developed

the study also found a percentage of 54.8% as reference to regularly active behavior.

However, Santos and Venâncio² upon investigating the physical activity habits among university students of physical education in Minas Gerais, observed that out of the 43 subjects 23 did not practice or only practiced physical activity a few times. This result contradicts the results of the studies previously exposed.

The studies that compare the level of physical activity among courses did not find different results for physical education students⁹. Silva et al.¹ investigated students of Physical Education, Pharmacy, Biochemistry, Dentistry and Biological Sciences, among them the Physical Education course showed a result of 90% for very active and active. Paixão et al.⁶ evaluated the courses of Medicine, Physical

Education, Biological Sciences, Dentistry and Nursing, identifying, on occasion, that the Physical Education students, 51.6% were more active than the others. In addition to these studies, Salve⁸ upon comparing students of Nursing, Physical Education, Biology, Pedagogy, Dance, Music, History, Mathematics and Computing, identified that only students of Physical Education, with 89%, practice physical activity in a satisfactory way.

Although the studies on physical activity level involving physical education students in Brazil, in large part, are in line with the social representations of the student being physically active, there is in the literature a shortage of studies developed in Rio de Janeiro, furthermore, studies that relate the level of physical activity to the components of physical fitness. Thus, the objective of this study was to evaluate the level of physical activity and muscular power of physical education students of a course in Rio de Janeiro. The hypothesis is that a higher physical activity level implies a positive influence on the muscle power of lower limbs.

2 Material and Methods

37 students attended this study, with an average age of 26.13 years of both genders (26 men and 11 women), enrolled in a Physical Education course in a private institution of Rio de Janeiro.

As an instrument for checking the level of regular participation in physical activities the International Physical Activity Questionnaire (IPAQ) version 8 short was used. This questionnaire was validated in a sample of Brazilian population¹⁰. The data for this purpose were collected by means of interviews, taking as a reference the previous week, containing questions regarding the frequency and duration of moderate, vigorous physical activity and walking.

The strength of the lower limbs was measured through the long jump Test (ImpHoriz) which allows to evaluate the strength of the muscle groups of the lower limbs. The test consists in jumping as long as possible, initiating a demarcation on the ground, in up to 3 attempts. The longest distance found during the 3 attempts is used as values for the test. The distance was measured between the start line and the nearest mark reached by part of the body that touches the ground¹¹.

Descriptive statistics was used to characterize the sample, as well as for the presentation of results, using mean and standard deviation values as measures of central tendency and dispersion, respectively.

All students participated as volunteers and signed the informed consent form, being respected the ethical and legal criteria in papers involving human beings in accordance with Law 466 of 2012¹². It should be noted that the research was approved by the Research Ethics Committee: CAAE of 41355114.3.0000.5283.

3 Results and Discussion

To illustrate the results obtained in the present study two tables are shown. Table 1 refers to the level of physical activity and Table 2 muscle power.

Table 1 - Physical Activity Level (IPAQ)

	Frequency	Men	%	Women	%
Very active	18	14	67	4	36.36
Active	7	4	19	3	27.27
Irregularly active	6	2	9.5	4	36.36
Sedentary	1	1	4.7	0	0
Total	32	21	100	11	100

Source: Research data.

Regarding the level of physical activity (Table 2), most of the participants were male, and it can be observed that there was a greater concentration of them in the very active and active classification comparing to women.

Table 2 - Comparison of the jump distance (meters) between the sexes in the test of muscular power of lower limbs

Sex	Long Jump (m ± dp)
Male	2.02 ± 0.16 *
Female	1.48 ± 0.27

* Significant difference between sexes ($p = 0.001$); m = average; sd = standard deviation.

Source: Research data.

Table 1 presents data of muscle power; the average of male participants was 2.02. Whereas the average of female participants was 1.48. Regarding the standard deviations, a total of 0.16 for men and 0.27 for women was obtained.

The objective of this study was evaluating the level of physical activity and muscular power of physical education students of a course in Rio de Janeiro. Normally, as the course has a sporting history, the students' profiles are physically active^{13,14,15}, and indeed this is what was perceived as there was a total of 86% being 67% of men very active and 19% active. However, only 9.5% are irregularly active and 4.7% sedentary. As for women, these number also prevail, since there was a total of 63.63% being 36.36% very active and 27.27% active. Whereas the ones considered irregularly active were 79% and none is sedentary.

Comparing to the study of Silva⁵, the author also investigated the level of students' physical activity at a public university in the northeast of Brazil, which obtained the following results: 89.4% of the respondents are active and 10.6% are moderately active, a total of 217 participants, 119 men and 98 women. It is verified that there is a prevalence regarding the active practitioners of physical activity of these students, which is important in combating some diseases such as obesity.

As seen in the studies, usually men have greater predominance in relation to practice of physical activity, as

they seek collective activities such as soccer and basketball, attributing the practice to pleasure and leisure. Whereas women have more individual habits, looking for activities such as walking and cycling, attributing the practice of physical activity more to the questions of aesthetics⁵¹⁶.

It is also possible to check this issue of men being more active in another study¹, conducted with two hundred and eighty participants, 194 students of Physical Education, being 100 men and 94 women. The students who participated were from different shifts. The results indicated that 44% were classified as very active and 48% active, totaling 92%, but no difference was observed ($p > 0.05$) between the male and female groups. Classified as insufficiently Active B, were 1.5% and 6% as Insufficiently Active-A, and there was no existence of sedentary students. It was also concluded in this study that men have a higher level of physical activity compared to women, being the physical education students, more physically active.

Mielke et al.¹³ performed another analysis on the practice of physical activity in leisure and travel in first-year students at Federal University of Pelotas, Rio Grande do Sul, in different undergraduate courses. Physical education (Teaching and bachelor's degree) and nutrition were classified according to the authors, as courses in the area of health. Compared to other courses, the area of health prevailed and the courses that practiced weekly physical activity the most with 75.7% against 53.3% in relation to leisure. Whereas regarding travel, we had 55.3% with respect to health area against 60%.

When it comes to the results of muscle power¹⁷, a study conducted with 45 male students of physical education, obtained a mean of 2.52 ± 0.19 m when the Long Jump test was applied. When comparing this result with the present article that was 2.02 ± 0.16 m it is realized that, although both groups are students of physical education, the sample of the article obtained inferior results.

Moro et al.¹⁸ developed a survey with 30 students in order to compare the physiological variables. Among the tests performed in the survey, one of them was the Long Jump, having obtained an average of 2.04 ± 0.28 m for male students of the morning shift, 2.06 ± 0.28 m for the afternoon shift and 2.05 ± 0.29 m. These results, when compared to those found in the present study, reveal that students who were part of the sample, considering the average, are again below the results of previous studies. However, when considering the standard deviation, it can be considered an approximation among the results.

For females the result was 1.47 ± 0.22 m to the students of the morning shift, 1.51 ± 0.18 m for the afternoon shift and 1.47 ± 0.22 m for the night shift. In this case, the results, when compared to the research herein are more similar, being the average of the present study 1.48, i.e., superior to that found in the morning shift and in the evening shift, but lower than the results obtained with the students in the afternoon shift. However, in general terms, one can perceive a greater

similarity among the results found for females.

The survey developed by Sena¹⁹ counted with 80 college students who were evaluators regarding the components of physical fitness, among them was the Long Jump and identified that 29 students achieved a result below 2.30 m, 18 presented values between 2.31 m and 2.49 m and 33 values higher than 2.50. These results are consistent with previous studies²⁰ and reaffirm that the values found in the present study are below the average.

4 Conclusion

The results found in this survey responds satisfactorily the objective of the study, but do not confirm the hypothesis. The students' level of physical activity that comprised the sample, in general terms, corresponds to previous studies already published, that is, the college students of the Physical Education course tend to be physically active. Moreover, the results are also consistent upon confirming that females are less active than the males.

Muscle strength was inferior, in large part, to the studies previously published. However, it is disturbing the fact studies already published use a single standard table for both genders, without considering the differences between them.

The conclusion of the study, in synthesis, suggests that the level of physical activity seems to have no direct relationship with the muscle power of lower limbs. Although a large part of students are classified as very active and active, obtained results below the published studies regarding the muscle power of lower limbs.

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