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Motivation and self-esteem in university students' adherence to physical activity

Motivación y autoestima en la adhesión a la actividad física en estudiantes universitarios

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ABSTRACT

Objective This study aimed to determine the association between motivation, self-esteem and body composition in university students' adherence to physical activity.
Methods A total of 110 undergraduates from two public universities (Federal and State) in Teresina, Piauí state volunteered for the study. Of these, 75 (68.2 %) were women aged between 18 and 35 years, and 82 (74.5 %) of the students engaged in physical activity. They responded to the Gonçalves Motivation Scale (2010), which contains five factors: Fun, Competency, Appearance, Health and Sociability. Participants also completed the Lages Self-esteem Scale, with sixteen items and five dimensions: Introspection, Physical Image, Life Satisfaction, Acceptance and Confidence. The Jackson and Pollock (1978 and 1980) 3-site skinfold protocol was used to measure fat percentage and body composition by anthropometry (Filizola scale equipped with stadiometer).
Results A significant association between the variables of self-esteem and motivation was demonstrated, with the physical image dimension exhibiting the highest association with the motivational factors fun, competency and sociability.
Conclusion The findings indicate that adherence to physical activity is associated to motivational factors derived from challenging, integrative and fun-related circumstances.

Key Words: Self concept, motivation, motor activity (*source: MeSH, NLM*).

RESUMEN

Objetivos Este estudio analizó la asociación de la motivación y composición corporal con relación a la práctica de actividad física de universitarios.
Métodos Participaron 110 estudiantes universitarios voluntarios, de dos

instituciones públicas (Federal y Provincial) de educación superior de la provincia de Teresina, Piauí, de los cuales 75 (68,2 %) eran mujeres con franja etaria de 18 a 35 años, n=82 (74,5 %) practicante regular de actividad física. Estos respondieron la Escala de Motivación de Gonçalves (2010), que posee cinco factores: diversión, competencia, apariencia, salud y social. Además la Escala de Autoestima de Lages (2010), que consiste de dieciséis ítems y cuatro dimensiones imagen física, satisfacción con la vida, aceptación y confianza. Para evaluar el porcentual de grasa fue utilizado el protocolo de tarea pliegues cutáneos de Jackson y Pollock (1978 y 1980) y la antropometría a través de una balanza con estadiómetro de marca Filizola.
Resultados Los resultados demostraron significativa asociación entre las variables Autoestima y motivación, con destaque para la dimensión imagen física que presenta mayor asociación con los factores motivacionales, diversión, competencia y sociabilidad.
Conclusiones La síntesis combinada de los resultados conduce a establecer que la adherencia a la práctica de la actividad física está relacionada a los factores motivacionales derivados de circunstancias lúdicas, desafiantes e integradoras.

Palabras Clave: Autoimagen, motivación, actividad física referencia (*fuente: DeCS, BIREME*).

It has been widely demonstrated that regular physical activity throughout life is important for maintaining and promoting good health. However, the greatest difficulty encountered by health professionals is long-term adherence, since the beneficial health effects of any physical activity depend on adopting a long-term active lifestyle (1).

Disseminating information regarding health and modes of exercise results in an increased demand for physical activity, but does not, in itself, guarantee continued adherence. Individuals initiate exercise programs for several reasons, generally abandoning them frequently without incorporating them into their daily lives (2).

It is estimated that 50 % of individuals who start an exercise program abandon it in the first six months. In fitness centers the rate is approximately 70 %, increasing when altered lifestyle, such as engaging in sports activities, is involved (3,4). Thus, keeping individuals physically active is one of the major challenges not only for physical educators, but also for public health officials (5). For these reasons, it is important to assess determinants that have a positive or negative influence on adherence to physical activity.

Certain study classified the determining factors of physical activity as follows: demographic (age, sex, schooling level); cognitive (perception,

intention, mood); environmental (surroundings, setting); and family support (6). Nevertheless, another study classified these associated factors into two categories: individual (motivation, body weight, self-esteem) and environmental (social support, time, setting) (7). These same aspects also were found in another study, which states that the success of any physical exercise program is related to the motivation of its participants (8). This is characterized as a dynamic learning process where motivation channels information towards the desired behavior. Motivation includes the needs, impulses, desires, interests, goals, attitudes and inspirations of an individual (9,10).

Motivational theories contend that personal (intrinsic) and environmental (extrinsic) factors are the source of an individual's actions (11-13). One relevant study considers this to be true for physical activity, an important variable for adherence, due to its relationship between biological, cognitive and social aspects that impede or facilitate this practice (14). Self-esteem is also an intervening factor for adherence to regular physical activity (15). Some studies report that self-esteem is a complex construct associated with other personality traits and directly related to health or psychological well-being. It consists of an individual's self-assessment, expressing approval or disapproval of oneself, and self-judgment regarding values and competencies (16,17). Furthermore, they claim that self-esteem is one of the key social indicators of social growth and progress. Less ambivalent individuals apparently follow their personal goals more realistically and closely, which is considered a psychological benefit of taking part in physical activities (18).

It is known that commitment to a training routine, a gradual process ranging from inactivity to regular physical activity, is associated to preventing disease and preserving quality of life. It is important to know which factors have a positive or negative influence on adherence (19-22).

Studies and theories attempt to explain behavioral changes in relation to physical activity, in order to guide planning stages, as well as adopt and maintain regular physical activity. However, the primary focus of these theories is not centered on collective physical activity, or non-competitive sports, but rather on fitness centers or physical exercise programs. This is particularly true for undergraduates aged 18 to 35 years, a phase in which individuals start to manage their own time, establishing priorities and acquiring specific knowledge (23).

The identification of factors governing adherence or abandonment of regular physical activity, which could determine an individual's decision to adhere to a physical exercise routine is important to the aim of the present study: to associate motivation, self-esteem and body composition with university students' adherence to physical activity.

METHOD

Participants

The study was conducted with 100 university students from two public universities (Federal and State) in Teresina, Piauí state, all volunteers aged 18 to 35 years: 75 were (68.2 %) women, and 82 (74.5 %) engaged in regular physical activity. The choice of these subjects is due to their discriminative and self-perception capacity, reading comprehension and use of abstract expressions, in addition to the researchers' access to these institutions of higher learning. This study was carried out in accordance with the guidelines for research involving human beings and was approved by the Ethics Committee of the Medical Sciences Faculty of the State University of Piauí (UESPI), protocol no. 128/08.

Instruments

The Gonçalves scale (2010), translated and adapted to Portuguese from the Revised Motivation to Physical Activity Scale developed by Ryan et al (1997), was used to assess motivation levels. The instrument contains 30 items detailing the reasons individuals engage in physical activities, sports and exercise, and is divided into five factors: 1. Fun; 2. Competency; 3. Appearance, others; 4. Health, and; 5. Sociability. The instrument was applied at the start of the study, and responses were scored from 1 (Not very true) to 7 (Very true). Participants also responded to sociodemographic questions (age, marital status, sex and schooling) and others related to physical activity (activity they engage in, duration of the activity, number of hours per week). Self-esteem was assessed using the Lages scale (2010), which contains sixteen items and five dimensions: introspection; physical image; life satisfaction; acceptance and confidence. Responses were structured using the Likert scale, with three levels of agreement: (1) – I agree, (2) – I am indifferent and (3) – I disagree.

Anthropometric assessment consists of measuring body mass and height with a Filizola scale equipped with a stadiometer, with precision to 0.5 kg. We applied the Jackson and Pollock (1978 and 1980) 3-site skinfold

protocol, which uses pectoral, abdominal and thigh skinfold measurements for men and triceps, thigh and suprailiac measurements for women using Lange calipers. A single observer to avoid discrepancies and possible intra-assessor errors performed all physical assessments.

Statistical Analysis

The present study used descriptive statistics, in which variables and their respective dimensions are presented as mean values, variances and frequency distribution. Inferential statistics described inter-variable correlations.

Student's t-test was used to compare the means of a control group (non-exercisers) and experimental group (exercisers). Pearson's nonparametric chi-square test was applied to determine inter-variable associations. A significance level of $p<0.05$ was used for rejecting the null hypothesis (equality between means or non-association between parameters). The data mining method, using data exploration, was employed to identify possible relationships between the dimensions under study, relevant frequencies and associated patterns.

RESULTS

To control possible sex and age biases, intergroup comparisons were made, using Pearson's chi-square test to compare frequency distributions by sex and Student's t-test for independent samples to compare mean ages between the two groups. The control and experimental groups, analyzed for age ($p=0.664>0.05$) and sex ($p=0.066>0.05$) showed no significant statistical differences, shown in Table 1.

Table 1. Comparative distribution results of the two groups according to the variable self-esteem and its respective dimensions

Dimension	Groups	Level 1		Level 2		Level 3		Sig. p
		n	%	n	%	n	%	
Introspection	Non-exercising	4	14,3	18	64,3	6	21,4	0.733
	Exercising	13	15,9	46	56,1	23	28	
Physical Image	Non-exercising	0	0	22	78,6	6	21,4	0.002*
	Exercising	1	1,2	33	40,2	48	58,5	
Life Satisfaction	Non-exercising	6	21,4	12	42,9	10	35,7	0.009*
	Exercising	4	4,9	27	32,9	51	62,2	
Acceptance	Non-exercising	2	7,1	8	28,6	18	64,3	0.038*
	Exercising	0	0	32	39	50	61	
Confidence	Non-exercising	-	-	8	28,6	20	71,4	0.139
	Exercising	-	-	13	15,95	69	84,1	
Total Score	Non-exercising	-	-	20	71,4	8	28,6	0.009*
	Exercising	-	-	35	42,7	47	57,3	

(*) Sig. $p<0.05$; n=frequency

The control group (n=28) exhibited a mean age of 20.9±1.9 years and the experimental group (n=82) had a mean age of 21.2±3.5 years. These results confirm the premise of control regarding the factors sex and age in the present study as shown in Table 2.

Table 2. Distribution by sex per group

Sex	Non-exercisers		Exercisers		Total	
	N	%	n	%	n	%
Female	23	82.1	52	63.4	75	68.2
Male	5	17.9	30	36.6	35	31.8
Total	28	25.5	82	74.5	110	100

n = frequency

Intergroup comparison of self-esteem showed no significant differences between introspection and confidence. The remaining dimensions, physical image, life satisfaction and acceptance, exhibited significant differences between frequency distributions, in which the exercising group obtained significantly higher mean scores than those of non-exercising individuals. These findings are confirmed and shown in Table 3 by the significant difference in total score, where once again the exercising group showed a higher mean score than that of their non-exercising counterparts.

Table 3. Comparative results illustrating mean scores of the two groups according to the variable Motivation and its respective dimensions

Motivation Dimensions	Non-Exercisers		Exercisers		Sig. ρ*
	N	%	n	%	
Fun	4,1	1,2	6,2	0,6	0,001*
Health	5,7	1,3	5,7	1,0	0,82
Appearance	4,2	1,4	3,9	1,4	0,48
Competency	3,3	2,3	5,1	1,5	0,001*
Social	3,8	1,3	4,3	0,9	0,03*

=frequency

Intergroup comparison of the variable of motivation shows no significant differences between the mean scores of health and appearance. The dimensions fun, competency and sociability display significant differences between mean scores of the two groups, in which those of the exercising group were higher than those of the non-exercising group.

Tables depicting frequency distributions of the anthropometric dimensions BMI and fat percentage as shown in Table 4 and 5.

Table 4. BMI Frequency Distribution by Group

Anthropometric dimensions	BMI					
	Non-exercisers		Exercisers		Total	
	N	%	n	%	n	%
Low-weight	4	14,3	7	8,5	11	10
Eutrophic	23	82,1	68	82,9	91	82,7
Obese G1	0	0	1	1,2	1	0,9
Overweight	1	3,6	6	7,3	7	6,4
Total	28	25,5	82	74,5	110	100

Sig.p= 0.684 >0.05 non-significant; n=frequency

Table 5. Fat Percentage Distribution (FPD) per Group

Distribution	FPD					
	Non-exercisers		Exercisers		Total	
	n	%	n	%	n	%
Below the mean	2	7,1	11	13,4	13	11,8
Above the mean	13	46,4	10	12,2	23	20,9
Good	6	21,4	20	24,4	26	23,6
Excellent	2	7,1	15	18,3	17	15,5
Mean	0	0	12	14,6	12	10,9
Very poor	4	14,3	5	6,1	9	8,2
Poor	1	3,6	9	11	10	9,1
Total	28	0	82	0	110	0
FPD	21,2	8,6	18,2	9,0		

Sig. p=0.523 >0.05 non-significant; n= frequency

Anthropometry exhibited no significant differences in frequency distributions between the two groups in BMI classifications or between the respective means of fat percentage.

A second comparison consisted of seeking direct relationships between the variables of self-esteem and motivation. The results are given in the table below. For this comparison we used the parametric t-test for independent samples, with the dimensions of fun, competency and sociability (motivation) as dependent variables and self-esteem, physical image, life satisfaction, acceptance and total score as discriminatory variables as shown in Table 6.

Table 6. Comparison between the variables self-esteem and motivation

Dimensions	Physical Image	Life Satisfaction	Acceptance	Total Score
Fun	0,002 *	0,044 *	0,435	0,020 *
Competency	0,007 *	0,331	0,501	0,050
Sociability	0,016 *	0,852	0,060	0,292

(*) Sig.p<0.05 – Significant association

The results demonstrate that physical image (self-esteem variable) shows significant associations with motivation dimensions. The lower the score for Physical Image, the higher the mean values of the respective

motivation dimensions. For life-satisfaction (self-esteem), a direct association was observed only with the dimension fun (motivation). In the dimension acceptance (self-esteem), no significant differences were recorded between motivation dimensions. Finally, a comparison between total score and self-esteem reveals a significant direct association, that is, the higher the total score of self-esteem, the higher the scores for the dimension fun (motivation). A synthesis of the results demonstrates that the variables self-esteem and motivation are concordant among individuals. The direct association between self-esteem and motivation is significant, particularly for the physical image dimension. Within a causal chain, we can assume that self-esteem in the physical image vector strengthens motivational factors that derive from the fun, competency and social variables.

In principle, combined actions to improve perception of physical image, by means of pleasant, challenging (competency) and social (peer interaction) surroundings, translates into adherence to physical activity.

DISCUSSION

The primary objective of this study was to associate motivation, self-esteem and body composition with adherence to physical activity in university students.

Using an exploratory construct, we sought to determine the existence of significant differences between the means of the exercising and non-exercising groups, for the variables motivation, self-esteem and anthropometric classifications. No significant intergroup differences were found for sex and age. Anthropometric classification also showed no significant differences between fat percentage or frequency distributions for BMI categories.

On the other hand, significant differences were observed for the variable motivation (sig.p <0.05) in the dimensions fun, competency and sociability. The exercising group obtained higher mean scores than the non-exercisers. This finding corroborates with other studies, which show that the greatest motivation factor was improved technique (competency), followed by fun (24). This order of importance is similar to that observed in a research with young soccer players, and it is also conformable with what was found with volleyball players (25,26).

There is an important study of professors and staff from the Universidade Federal de Minas Gerais (UFMG) with respect to factors determining adherence to physical activity. They found pleasure derived from exercise to be the main motivating agent, showing the significant influence of intrinsic motivation on adhering to an exercise program (27).

Other relevant research analyzed the reasons university students took part in sports activities. The authors found that the greatest motivation lay in the variable of competition (28), in contrast to the present study, where no importance whatsoever was observed. Our findings demonstrate that the dimensions fun, competency and sociability are correlated with adherence to physical activity (factor that differentiates the two groups). The aforementioned dimensions show the association between personal (intrinsic) and environmental (extrinsic) factors, with a direct relationship between biological, cognitive and social aspects and engaging in physical activity.

A certain study reported that individuals motivated exclusively by some type of external demand are more likely to abandon an exercise program or follow it less efficiently than those that derive pleasure from physical activity, that is, the intrinsically motivated (29).

For the variable self-esteem, significant differences (sig. $p<0.05$) were observed for the dimensions physical image, life satisfaction and acceptance. The exercising group displayed higher scores on the three dimensions than the non-exercisers. A different study showed that the relationship between age and body mass, in terms of physical image, may be associated to habits acquired before engaging in physical activity, as well as genetic factors, and can therefore be considered individual or biological determinants of adherence to a physical fitness program (30).

The variable self-esteem has a complex construct, integrating behavioral traits, and is directly related to its psychological well-being. The dimensions under study underscore the manner in which individuals negotiate their status with the environment, demonstrating its importance in the set of factors influencing adherence to physical activity.

Comparison between the variables motivation and self-esteem showed that the physical image dimension of the variable self-esteem was the most consistent linking factor among the variables, given that it exhibited

a significant association with dimensions of the variable motivation (fun, competency and sociability). In summary, the higher the score for physical image, the higher the motivational scores for the dimensions fun, competency and sociability.

The findings of this study suggest that adherence to physical activity is associated to motivational factors derived from challenging, integrative and fun-related circumstances, combined with the psychological well-being of self-acceptance, particularly physical image. In contrast to the reductionist idea of an external model in forming a value judgment of one's physical image (beauty in others), aspects related to anthropometry and gender do not permeate the results of the present study, indicating that negotiating self-acceptance is a complex process, which transcends mere comparisons between oneself and other members of the group.

We conclude that to better understand the factors influencing adherence to physical activity, one must also be aware of the direct relationship between motivational factors and self-esteem.

It is important to engage in physical activity in challenging, fun and potentially integrative environments, in order to promote the psychological well-being of participants in an inclusive and democratic manner ♣

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