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ORIGINAL

FREQUENCY OF PHYSICAL ACTIVITY AND SELF-EFFICACY IN THE ELDERLY

FRECUENCIA DE PRÁCTICA FÍSICA Y AUTOEFICACIA EN LA TERCERA EDAD

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ABSTRACT

The purpose of this research paper is to highlight the relationship between weekly physical activity and perceptions of general self-efficacy in the elderly. A total of 289 individuals from Malaga city, Spain, took part. They took mostly aerobic exercise with a moderate intensity and for about one hour at a time. The sample comprised 27.7% (n=80) of men and 72.3% (n=209) of women between 65 and 85 years of age ($M=74.15$; $DT=5.71$). Data was collected by means of interviews to each one of the participants who answered questions of a socio-demographic kind and the General Self-Efficacy Scale (GSE; Schwarzer and Jerusalem, 1995). The main results suggest that those who took physical activity with a moderate frequency (three or four days a week) got better perception of general self-efficacy than those who practised with either a lower or a higher frequency.

KEY WORDS: Physical activity, self-efficacy, elderly.

RESUMEN

Este trabajo pretende poner de manifiesto las relaciones existentes entre la

frecuencia semanal de práctica física y la percepción de autoeficacia general en la tercera edad. Participaron en este estudio 289 individuos de la ciudad de Málaga (España), practicantes de actividad física, fundamentalmente de tipo aeróbico, que lo hacían con una intensidad moderada y con una duración aproximada de una hora. El 27.7% (n=80) eran hombres y el 72.3% (n=209) eran mujeres, con edades comprendidas entre los 65 y 85 años ($M=74.15$; $DT=5.71$). Para obtener los datos, se entrevistó a cada uno de los participantes, que respondieron a cuestiones de tipo sociodemográfico y a la Escala de Autoeficacia General (AEG; Schwarzer y Jerusalem, 1995). Los principales resultados obtenidos indican que aquellos que realizaban actividad física con una frecuencia media (tres o cuatro días semanales) tenían mejor percepción de autoeficacia general que aquellos que practicaban con una frecuencia menor o mayor.

PALABRAS CLAVE: Actividad física, autoeficacia, tercera edad

INTRODUCTION

An important number of studies have highlighted how beneficial physical activity is for human beings (Sonstroem, 1984; Biddle, 1995; Nieman, 1999; Casimiro, 2001; Carranza and Mora, 2003; Capdevila, 2005). The ageing of the population has brought about great interest to study these effects in the elderly, prompting the publication of several studies connected with this age group (Whetsell, Frederickson, Aguilera and Moya, 2005). Also, taking into account the dramatic physical and psychosocial changes which take place and demand the adequate emotional and mental balance to get adapted to them, all topics related to psychological well-being have gained high relevance (Krzemien, Urquijo and Monchietti, 2004). Some samples of this are the studies by Langan (1997) and Navarro, Bueno, Buz and Mayoral (2006), related to self-efficacy, or those by Barriopedro, Eraña and Mallol (2001) and McAuley et al. (2000), which deal with life satisfaction.

With regard to the study of psychological well-being, there is currently a tendency to use positive assessment indicators, like self-efficacy or self-concept, leaving aside negative ones like depression, anxiety or neurosis (Reina, Oliva and Parra, 2010). Self-efficacy in particular is an important factor in the well-being of people and it has been the object of a good deal of research in recent years (Salvador, 2009). This construct stemmed from the Social Cognitive Theory and it is defined as the judgements that each individual holds on his own capabilities, which are considered essential to organize and execute his actions. (Bandura, 1977, 1982, 1986). It points out the appraisal that individuals make of their personal efficacy to face a particular situation, and it works regardless of the skills each individual may have (Ortega, 2005).

On the other hand, ageing brings with it a series of consequences like the decrease of physical and cognitive capacities, which can interfere with the feeling of efficacy when facing everyday demands (Bandura, 1986). In addition, elder people must adapt to new circumstances within a society which not always appreciates the importance of the experience and the wisdom that they have (Trujillo, 2005). This is

a dangerous fact, since it can cause a rejection of tasks that may be regarded as difficult to perform, although the individual may have the skills to face them, and this might give a feeling of frustration and resignation (Ortega, 2005; Prieto, 2007; Casis and Zumalabe, 2008). As a matter of fact, people with low self-efficacy undervalue their own skills, and show low self-esteem, and even assess their lives in negative terms (Sanjuán, Pérez and Bermúdez, 2000).

Although it has been argued that this construct should be used for specific situations (González and Tourón, 1992), some researchers think it adequate to use self-efficacy to assess more general circumstances (Schwarzer, 1992; Grau, Salanova and Peiró, 2000; Salanova, Grau and Martínez, 2005). The first purpose of general self-efficacy was to evaluate a feeling of competence that encompasses a wide set of tasks, creating a disposition to carry out a good number of challenging endeavours with zest and to face a wide range of entailing stressors (Sanjuán et al., 2000; González and Landero, 2008).

Several studies have revealed the impact of physical activity on the psychological well-being of the elderly, particularly on their perception of personal efficacy (Jimeno, Peña, Expósito and Zagalaz, 2009). Montaner, Llana, Domínguez, Moreno and Benedicto (2005) carried out a study on women with an average age of 65 in which they found positive connections between physical activity and physical self-efficacy, general self-esteem and life satisfaction. On the other hand, McAuley, Shaffer and Rudolph (1995) argue that pleasant physical activity contributes to increase the perception of efficacy after the exercise. Emery and Blumenthal (1990) think that attachment to physical exercise programmes at this age and the satisfaction experienced with them have a positive link with the perception of efficacy. We think that at old age physical activity has an effect on general self-efficacy due, among other reasons, to the increase of everyday activity, motivation for new endeavours and participation in their social environment (Gálvez, 2004; Ortiz and Castro, 2009).

The necessary kind and amount of exercise to achieve health benefits is a controversial issue on which researchers do not yet agree, although in most cases a series of suggestions usually recur. Weinberg and Gould (1996) advice to take a kind of pleasant exercise so that it is not dropped, and adapt intensity, frequency and duration to the characteristics of each participant. On the other hand, Aznar and Webster (2006) advice a moderate pace but with the right degree of effort to stimulate the system and bring about improvement. For the elderly in particular it is advisable a kind of planned and regular practice, of moderate intensity, which combines aerobic, strength and flexibility exercises which also train balance, but which bring no risk for any possible pre-existing pathologies (Shephard, 1997; Gonzalo, 2005; Mateos, 2006).

The present study explores the link between physical activity and self-efficacy in the elderly, with special emphasis on the amount of exercise which best matches high levels of self-efficacy, taking also into account the kind of exercise the participants took. The main hypothesis of this study takes the view that weekly practice will bring about different perceptions of general self-efficacy among the target groups of our research.

MATERIAL AND METHOD

Sample

Two hundred and eighty-nine individuals from the city of Málaga (Spain), who took exercise regularly, participated in this study on a voluntary basis. They took moderate exercise, mainly aerobic (some activities were carried out in local sport centres and some outdoors, like dancing, walking or jogging) for approximately one hour at a time. The sample comprised 27.7% (n=80) of men and 72.3% (n=209) of women between 65 and 85 years of age ($M=74.15$; $DT=5.71$).

Tools

The collection of data was carried out by means of interviews with the participants. They answered questions pertaining to sex, physical activity, age and general efficacy perception. The latter variable was measured by means of the General Self-Efficacy Scale (GSE) by Schwarzer and Jerusalem (1995), that is, its version in Spanish as developed by Baessler and Schwarzer (1996). This scale, which comprises 10 items, can assess the stable feeling of competence to handle a wide range of living situations and has been tested with Spanish population on different occasions, its psychometric properties being adequate to be applied (Sanjuán et al., 2000; Martín et al., 2002). A Likert-type scale was used. It gave four possibilities, from *not at all true* (score = 1) to *exactly true* (score = 4), with regard to the statements of each item.

Procedure

This study applied a non-experimental, cross-sectional and correlational design (Salkind, 1999; Ramos, Catena and Trujillo, 2004), using surveys as the tool to collect data. The information was gathered in those places where the participants took their physical activity (public places like the promenade or parks or local sport centres), and they were interviewed after they gave their consent to be included in the study. After all questions were adequately explained and all doubts clarified, the interviewer filled out the questionnaires, according to the answers given by the participants. It took an average of 15 minutes to explain and fill out each questionnaire.

Data analysis

This paper includes descriptive and inferential analyses. The techniques applied to process data were t-student and single factor ANOVA. SPSS 15.0 statistical package was used.

RESULTS

Tool reliability

Table 1 gives the descriptive statistics (mean, standard deviation, skewness and kurtosis) of the General Self-Efficacy Scale items and also the total mean. As can be seen, kurtosis and skewness values match the normality criteria suggested by Curran, West and Finch (1996). The reliability analyses carried out in our study (Cronbach's alpha, 1951) revealed adequate internal consistency levels on the GSE scale, either for the whole of the sample ($\alpha = .87$) and for the *male* ($\alpha = .83$) and *female* ($\alpha = .89$) groups.

Table 1. GSE descriptive statistics

	M	SD	Skewness	Kurtosis
GSE 1	2.73	.93	-.30	-.76
GSE 2	3.15	.81	-.83	.39
GSE 3	3.00	.79	-.65	.27
GSE 4	3.11	.80	-.69	.06
GSE 5	3.02	.77	-.54	.12
GSE 6	3.09	.74	-.50	.03
GSE 7	3.16	.77	-.74	.33
GSE 8	3.04	.83	-.49	-.47
GSE 9	3.13	.75	-.66	.32
GSE 10	3.01	.77	-.44	-.16
Total	3.04	.55	-.56	.61

Comparison of groups

The findings suggest, in the first place, that the men got better results in the General Self-Efficacy Scale ($M = 3.15$; $DT = .47$) than the women ($M = 3.00$; $DT = .57$), the differences being statistically significant ($t_{287} = 2.06$; $p < .05$). However, when we split the sample into two age groups, the score of those between 65 and 74 years of age ($M = 3.04$; $DT = .53$) was similar to those between 75 and 85 years of age ($M = 3.05$; $DT = .57$), with no significant differences between them ($t_{287} = -.28$; $p > .05$). Likewise, when we divided the sample into four age groups ($g_1 = 65-69$ years; $g_2 = 70-74$ years; $g_3 = 75-79$ years; $g_4 = 80-85$ years) there were no significant differences in general self-efficacy perception either ($F_{[3,285]} = .06$; $p > .05$).

However, if participants are compared with regard to the physical activity they took, some differences in perception of efficacy are revealed. When the sample was classified according to the regularity of weekly practice, those who took exercise a few times a week, 1 or 2 days ($n = 133$), got a lower score on the GSE scale ($M = 2.97$; $DT = .63$) than those who took it 3 or more times a week ($n = 156$) ($M = 3.11$; $DT = .46$), and the differences are statistically significant ($t_{237.72} = -2.10$; $p < .05$).

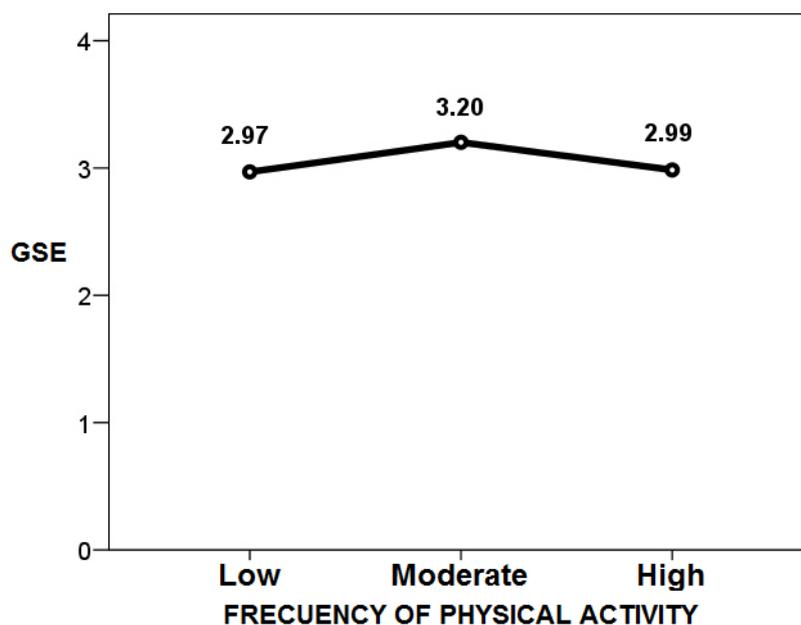
On the other hand, if those with more weekly practice were split into two groups (3 or 4 days a week, n= 88; 5 to 7 days a week, n= 68), the resulting three groups showed statistically significant differences ($F_{[2,286]}= 5.47$; $p<.01$). In order to contrast the means of the three groups (multiple comparisons), the homogeneity of variance test was applied (Levene) and the null hypothesis had to be rejected ($F_{[2,286]}= 8.49$; $p<.001$) since it revealed no equality of variance. It was decided then to use the Games-Howell test to carry out such procedure.

As can be seen on table 2, figure 1, those who practised with moderate frequency (3-4 days a week) showed significant differences in their favour, on the GSE scale, with those who practised with either higher or lower frequency ($p<.01$). There were no significant differences between the groups of high and low practice ($p>.05$).

Tabla 2. Multiple Comparisons (Games-Howell). VD= GSE, Blocking factor= Physical activity

Error difference				
(I) Practice	(J) Practice	mean (I-J)	standard	Sig.
Low (1-2 days)	Moderate	-.23**	.07	.003
	High	-.02	.08	.979
Moderate (3-4 days)	Low	.23**	.07	.003
	High	.22*	.07	.012
High (5-7 days)	Low	.02	.08	.979
	Moderate	-.22*	.07	.012

Figure 1. GSE mean output depending on the frequency of physical activity per week.



DISCUSSION

The findings of our study point out, firstly, that the men had higher levels of self-efficacy than the women. The consulted literature gives no definite consensus in this regard, because although some studies revealed differences by sex in favour of the boys, in others the girls got more favourable results or there were no significant differences (Britner and Parajes, 2001; Smith, Sinclair and Chapman, 2002; Reina et al., 2010). If we pay attention to our data, we can say they match others collected on population of different age, like teenagers (Olivari and Barra, 2005) or adults (Aguirre and Vauro, 2009). In that respect, our study contributes to highlight some differences found in such an interesting age bracket as the elderly.

With regard to the age of the participants, we thought we might find significant differences between the various brackets, since we dealt with a considerable range of them, and assumed, a priori, they had different characteristics. Bandura (1986) pointed out that the evolution of self-efficacy reached a critical point at old age due to the loss of personal capacities and social function. In this study, the perception of efficacy has been remarkably similar among the participants in the different brackets. We cannot come to any firm conclusions on this point, although a possible research track may be the stability that physically active persons might keep in the long term. Another suggestion in the light of this data is the logical argument that points out the difference between biological age and real oldness of one individual, as underlined by Párraga, Zagalaz, Moreno and López (2002), but that would have required classifying the participants under different criteria.

Some studies have highlighted the effect of physical activity on personal competence, which has an incidence on confidence and self-esteem and affects some traits like self-efficacy in a positive way (León, Medina and Munduate, 2008). Successful experience achieved in motor activities, together with physical fitness and other factors like better spirits, bring about positive transfers in tasks of a different nature, which pave the way for an improved feeling of general competence (Balaguer, Escartí and Villamarín, 1995; Macone, Baldari, Zelli and Guidetti, 2006). Nevertheless, when health and physical activity are compared, it is essential to assess certain areas like personal characteristics or under what conditions it is carried out in order to draw true healthy parameters (Veiga, 2004).

Our study revealed differences depending on the frequency of physical activity, although those who practised three or four days a week got better scores on the General Self-Efficacy Scale. Some studies like those by Marcus, Eaton, Rossi and Harlow (1994) point out that an increase in frequency of activity has a positive connection with an improvement in personal self-efficacy. The results of our research point out too that there were differences depending on the regularity of practise, but not with a steady positive leaning. We believe that the peculiarities of the kind of sample we used vary from those of others, like the one of the study above, which was younger and to whom physical activity probably affects in a different way.

For population of this age, the consulted literature gives diverse recommendations,

but by and large it advises a minimum practice of three days a week and normally with a moderate intensity, but some authors suggest that it may be taken every day (Jimeno et al., 2009). Some papers give more specific instructions which suggest not to increase the intensity too much when more experience is gradually acquired in this kind of tasks, although the bulk of the activity can be increased by lengthening each session up to a prudent and not too demanding duration, and trying to take breaks along the week by practising every other day, to make sure that those breaks are taken (ACSM, 2000; Millán, 2006).

Our study concurs with the need to take those breaks into account, as well as other patterns leading to achieve higher benefits of a psychological nature with regard to self-efficacy, self-esteem or reduction of anxiety. Among them, we would underline those which recommend to take physical exercise on a regular basis, three to five days a week, mostly of a moderate intensity and preferably of an aerobic kind, like jogging, walking, cycling, etc. These recommendations add that, in order to achieve those aims, aerobic activities are the most advisable, although strength training and other kind of exercise may entail some positive effects too at different levels (Guillén, 1997; De Gracia and Marcó, 2000; Ströhle, 2009).

It is important to know in depth the available routes to foster health, mostly nowadays, since it is not just based on strict biomedical principles, the priority of which is the absence of illness, but on the promotion of well-being and personal satisfaction (Bandura, 1999; Garrido, 2000). Besides, self-efficacy can be a tool to take up other healthy habits, therefore, stimulating it will indirectly help to achieve those aims (Durán, Ferrer and Gili, 1999). We also think that the general self-efficacy construct (Schwarzer, 1992) is a good work tool to assess self-perceptions in this age group, since these people usually keep more or less stable feelings of efficacy in a wide range of tasks.

CONCLUSIONS

This study has allowed us to analyse the differences in perception of general efficacy between active, old age men and women. Although it tallies other consulted research papers, it is a controversial issue on which researchers do not completely agree yet. It would be interesting to carry on working along these lines, and checking whether physical activity affects men and women differently.

On the other hand, the evolution of self-efficacy in the elderly, as well as other self-assessments, is becoming an interesting issue given the lengthening of life expectancy in developed societies. Apart from providing further corroboration of the positive effects of physical activity on self-assessments, another track of research we will take up in the future is whether those activities contribute to keep high perceptions of these constructs throughout that period, and so improve well-being and life standards accordingly.

Different sources give a number of recommendations with regard to taking part in physical activities. Following the suggestions pointed out by the consulted literature about the effects on psychological health, this study underlines that the highest score

in perception of general self-efficacy has been achieved by those who took three or four sessions a week, taking into account that they practised with a moderate intensity and took mostly aerobic exercise.

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