

**Physical activity (PA) among middle-aged women: Initial and current influences and patterns of participation**

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RUNNING HEAD: Influences on physical activity levels among middle-aged women

# **Physical activity (PA) among middle-aged women: Initial and current influences and patterns of participation**

This study investigated the initial and current influences for doing PA, current levels of PA participation and future plans for it. Participants were 200 women aged 45 to 64 years old. Factor loadings of influences were explored using Principal Components Analysis. Pearson bivariate correlations, t-test and ANOVA were used to show the differences among the influences, socio-demographic characteristics and present/future PA participation. Personal fulfillment was the main initial influence, while health benefits/self-care and outdoor/family activities were the most important current influences. The results highlight the factors that best explain present PA participation, and also plans for activity in the future.

Keywords: physical activity; women; aging; social influences; participation

## **Introduction**

The aging process, along with a lack of physical activity (PA), tends to generate disorders and conditions that affect both physical and psychological health. These negative effects are especially marked in women aged 50 years or more (Brown, Heesch & Miller, 2009; Evans, 1999; Haight, Tager, Sternfeld, Satariano & van der Laan, 2005; Mazzeo, Cavanagh, Evans, Fiatarone, Hagberg, McAuley & Startzell, 1998; Slingerland, van Lenthe, Jukema, Kamphuis, Looman, Giskes, Huisman, Narayan, Mackenbach & Burg, 2007). In order to cope with these problems, and also to improve physical and psychological well-being, doing at least 30 min of moderate PA on most days (and preferably every day) is the general recommendation (American College of Sports Medicine, 1998; U.S. Department of Health and Human Services 1991, 2008).

Although most people (of both sexes and all ages) in economically advanced societies are well aware of the health benefits of PA, many lead a sedentary lifestyle

(Bauman, Bellew, Vita, Brown & Owen, 2002; Van Tuykom & Scheerder, 2010). In the case of Spanish people aged 15 to 70, whereas 39% of the general population participates in PA, only 30% of women participate in PA at least once a week—a percentage seven points lower than the European average for women (Bauman et al., 2009; García Ferrando, 2006; Moscoso & Moyano, 2009). In fact, the situation is even more serious because half the women that participate in PA do so only two days or less a week.

Among women's reasons for doing PA, the following should be highlighted: maintaining and improving physical shape, self-image and health, and also beliefs and perceptions about the health benefits of PA (Burton, Turrell, Oldenburg, & Sallis, 2005; De Bourdeaudhuij & Sallis, 2002; García Ferrando, 2006). Furthermore, doing PA is related to how women have been socialized. With regard to those who participate in PA, family, school, friends and a sports environment are widely accepted influences described in the specialized literature (Burton et al., 2005; García Ferrando, 2006; Giles-Corti & Donovan, 2002). Despite the influence of socialization, it is important to take into account that PA practice decreases with age (European Commission, 2010; García Ferrando, 2006) and, in fact, the cohort of middle-aged non-participants includes people who have never practiced PA, as well as those who have given up PA. In other words, these initial influences may not be enough to ensure continued PA in later life, which means that it is important to identify the current strategies or reasons that prompt middle-aged people to keep up PA in the present and in the future (Brown et al. 2009; Weiss & Knoppers, 1982).

Furthermore, there are socialization processes that have discouraged PA practice among women. In this sense, it should be remembered that in some cultural contexts

they may have been socialized with traditional ideas about gender and family, which still affect PA preferences in both sexes (Henderson, 1991; Koivula, 1995; Lenskjy, 1986; Shaw, 1994). As regards women in Spain aged 50 years or more, they grew up under a dictatorship where they were taught that PA participation and the gender role ascribed to women were incompatible. In fact, women were expected to self-actualize by doing domestic chores, while remaining heavily dependent on their parents and husbands. In view of this, they put themselves at risk by adopting sports values such as showing initiative or possessing self-confidence: in so many words, doing PA might make women “unworthy” (García Bonafé, 2001; García Ferrando, 2001).

With this in mind, those women from this cohort who participate in PA are of particular interest when it comes to examining two types of influences: what made them start PA (i.e., initial influences), and the influences that favor sustained PA participation (i.e., current influences).

Although, as we have seen, there are descriptive studies of levels of PA participation among middle-aged women, it is necessary to investigate conjointly the influences affecting PA, the time devoted to practice and future expectations. Specifically, this study focused on a sample of women aged 50 to 64 years old who participate in PA, and its aim was to identify the initial and current influences on PA and the links between them (whether these influences change or remain constant with the passing of time), with consideration being given to the levels of practice needed to ensure good health, i.e., weekly frequency of PA and the length of PA sessions, and future plans for doing PA.

### ***Participants and Procedures***

Data collection took place between 20 January and 4 February 2010. The study subjects were 200 women aged from 45 to 64 years old; they belonged to an existing cohort (Codina & Pestana, 2010). The general study was designed to investigate PA participation in a convenience sample of 636 women from Spain aged 15 to 64, following the general distribution of the Spanish population as described by the Spanish National Institute of Statistics (INE). In the initial study, 2,033 women were invited to participate through a random-digit dialing technique; they were admitted to the final sample on the basis of an initial screening question about PA participation. Only women that did PA at least once in a week were accepted as participants; the process of data collection, through an online survey, was then able to begin.

### ***Method***

The influences on PA participation were assessed using an ad hoc questionnaire. This instrument contained 22 questions (using a 4-point response scale ranging from ‘never’ to ‘very frequently’), of which seven referred to the initial influences for beginning PA and the other 15 were concerned with current reasons for continuing PA participation. The questions were based on existing literature about starting and continuing PA participation, especially studies more closely linked to the situation in Spain (De Bourdeaudhuij & Sallis, 2002; García Bonafé, 2001; García Ferrando, 2001, 2006; Weiss & Knoppers, 1982). A preliminary version of the instrument had been tested previously with a sample of 1,415 gym users (Codina, Rosich & Pestana, 2001), showing an adequate Chronbach’s alpha (0.810, as compared to 0.870 in this study). The questions about current and future PA participation were along the lines of those contained in the pan-European World Health Organization survey (Wold, Aarö, &

Smith, 1994) in its Spanish language version (Balaguer, 2002).

Socio-demographic data that consisted of information about living arrangements and employment status was collected. Living arrangements were sorted into five categories: with a partner; with a partner and children; with a partner, children and other relatives; sharing with housemates; living alone. Employment status was divided into four categories: working; studying; working and studying; neither working nor studying. For purposes of analysis, consideration was given to two age groups (45-54 and 55-64 years old). The reason for splitting the sample into these groups was to compare women in the first and second stages of middle age, where there are differences in both issues of aging and health (Brown et al., 2009).

### ***Data analysis***

Four procedures were employed to analyze the research data (using the SPSS program, version 17.0). Descriptive statistics show the percentages of socio-demographic characteristics and present/future PA participation. Moreover, means and standard deviations for the influences on PA participation were obtained. Factor loadings of these influences were explored using two Principal Components Analyses with a Varimax rotation (one analysis addressed to the initial influences and the other to the current ones). Pearson bivariate correlations were performed to reveal the connections among the Z-scores of the six factors yielded by the factor analysis. Finally, t-test and ANOVA were used to show the significance of the differences among the Z-scores of the six factors according to socio-demographic characteristics and present/future PA participation.

## Results

### *Socio-demographic characteristics and PA participation (present and future)*

Sixty-two point five percent of the sample group ( $n = 125$ ) was aged 45 to 54 years old and the remaining 37.5% ( $n = 75$ ) 55 to 64 years old. The most common living arrangements were partner plus children ( $n = 74$ ; 37.0%) and partner only ( $n = 68$ ; 34.0%). As regards employment status the majority of subjects were working ( $n = 127$ ; 63.5%), followed by a little under a quarter of the sample neither studying nor working ( $n = 43$  or 21.5%) (Table 1). On combining socio-demographic variables, the only significant associations were found between age and living arrangements ( $P < 0.043$ , data not tabulated). A majority of women between 45 and 54 years old were living with a partner and children ( $n = 54$ ; 43.2% of this age group), followed by those living with a partner ( $n = 36$ ; 26.4%). Less frequently, they were living with parents, children and other relatives ( $n = 20$ ; 16.0%), alone ( $n = 14$ ; 11.2%), or with housemates ( $n = 4$ ; 3.2%). On the other hand, in the case of participants aged 55 to 64 the commonest option was living with a partner ( $n = 35$ ; 46.7%), followed by with a partner and children ( $n = 20$ ; 26.7%), with a partner, children and other relatives ( $n = 11$ ; 14.7%), alone ( $n = 8$ ; 2.7%), and with housemates ( $n = 1$ ; 1.3%). It can be observed that the main difference between the two groups is that women aged 45 to 54 still often live with their children while women aged 55 to 64 do not.

INSERT TABLE 1 ABOUT HERE

With regard to present PA participation, the aspects taken into account were its weekly frequency and duration. In addition, perceptions about future activity were considered. The frequency of weekly activity was distributed fairly evenly among

participants: high (5-7 days per week,  $n = 65$ ; 32.5%), medium (3-4 days per week,  $n = 68$ ; 34.0%) and low (1-2 days per week,  $n = 67$ ; 33.5%). For half of the sample group, PA sessions usually lasted 60 min or more ( $n = 105$ ; 52.5%), while PA sessions lasted 50 min or less much more infrequently. When asked about future PA participation, the sample was divided between those who were sure about continuing ( $n = 93$ ; 46.5%) and those who were not ( $n = 107$ ; 53.5%). No significant associations were observed among socio-demographic characteristics and PA participation (present or future), or duration of sessions and future PA participation.

### ***Factor structure and connections among initial and current influences on PA participation***

The analysis proposed a six-factor structure to describe the influences on PA participation among Spanish women, three factors concerning initial influences and three the current ones; communalities ranged from 0.362 to 0.853 (Table 2). As regards initial influences on PA participation, these were identified as follows: primary socialization agents (family, school and friends), the influence of health professionals (doctor, psychologist), and reasons of personal fulfillment (a decision taken on the subject's own initiative and ideas about the health benefits derived from PA). These factors accounted for 63.1% of the total variance. The current influences on PA participation among women were contact with others (basically meeting up, talking or getting in touch), health/self-care (related to improved health, fitness and appearance) and outdoor/family activity (activities in the open air and activities shared with the family). These three factors accounted for 66.9% of the total variance.

INSERT TABLE 2 ABOUT HERE



Two significant correlations were obtained by combining the six factors (Table 3). Women initially influenced by primary socialization agents regard contact with others as a current influence on PA ( $r = 0.303$ ,  $P < 0.001$ ). The other significant correlation observed was between the initial influences of personal fulfillment and improved health and self-care, as a current reason for continuing PA ( $r = 0.308$ ,  $P < 0.001$ ).

INSERT TABLE 3 ABOUT HERE

***Initial and current influences and their associations with socio-demographic characteristics and present/future PA***

Initial factors influencing PA participation were also associated with either socio-demographic characteristics or present and future PA participation (Table 4). The opinion of health professionals was more important to women who were only studying ( $P < 0.026$ ). Reasons of personal fulfillment were of greatest importance to the women who had a high level of PA practice ( $P < 0.054$ ), and also those who considered they would continue PA participation in the future ( $P < 0.006$ ).

INSERT TABLE 4 ABOUT HERE

As regards current influences (Table 5), the quest for better health and reasons of self-care were highlighted by women aged 45 to 54 ( $P < 0.031$ ), as well as by participants who see themselves doing PA in the future ( $P < 0.041$ ). As for outdoor activities and being with the family, the highest figures were registered among participants living with a partner and children ( $P < 0.011$ ); this was the most highly rated influence among high-frequency participants ( $P < 0.000$ ) and women who intend to continue PA in the future ( $P < 0.002$ ).

INSERT TABLE 5 ABOUT HERE

## **Discussion**

Drawing on the propensity of middle-aged women in Spain to lead sedentary lives, this study focused on women that participate in PA at least once a week. The object of the study was to investigate the following: the influences on initial and ongoing PA (i.e., initial and current influences); the participants' present PA routine (weekly frequency and duration of PA sessions); and their plans for PA in the future.

This study brought to light six factors that influence PA participation. Initial factors were primary socialization agents (family, school and friends), the influence of health professionals (doctor, psychologist) and reasons of personal fulfillment (a personal decision taken on the subject's own initiative and ideas about the health benefits derived from PA). Factors that influenced ongoing PA were contact with others (chiefly meeting up, talking or getting in touch with other people), health/self-care (related to improving health, fitness, appearance) and outdoor /family activities (doing activities in the open air and sharing them with the family). Intercorrelations among factors suggest that the initial and current influences for doing PA have some continuity. Specifically, women who were influenced by primary socialization agents when they began PA continued because of the influence of contact with others. When reasons of personal fulfillment were the initial influence on PA participation, health and self-care were an important current influence for continuing.

The data yielded by our analysis confirmed previous studies that had highlighted the influence of personal ideas about the health benefits of sport (De Bourdeaudhuij & Sallis, 2002; García Ferrando, 2006), as well as the importance of social groups such as

the family (Brown et al., 2009; Weiss & Knoppers, 1982). Moreover, the questionnaire used in this study both integrates and complements previous knowledge of influences on initial and ongoing PA participation.

The pattern of present PA participation showed a weekly frequency that was almost evenly distributed among high (5-7 days per week), medium (3-4 days per week) and low (1-2 days per week) levels. Compared to the data from general surveys, carried out in both Europe (European Commission, 2010) and Spain (Bauman et al., 2009; García Ferrando, 2006; Moscoso & Moyano, 2009), current PA participation levels in the sample group were adequate. In this sense, our results suggest that this frequency could be optimized in following cases: if the initial influence on PA is personal fulfillment or if the current influence is doing PA outdoors and/or with the family.

When asked about their plans for continuing PA in the future, women were equally divided between those who were sure about it and those who were not. The fact that half of the subjects were not sure about continuing PA suggests that other factors may influence middle-aged women who are currently involved in PA. As shown by the results of this study, primary socialization agents were not associated with future expectations about PA practice, unlike the initial influences of personal fulfillment and health professionals. In addition, future PA practice is associated with current factors such as health and self-care and doing PA with the family and/or outdoors. Bearing in mind the context in which the participants grew up, this finding tends to downplay the importance of early socialization processes as an explanation for doing PA. On the other hand, future studies could include indicators related to the impact of daily routines on PA practice, as well as objective and subjective determinations of health levels.

To summarize, the strong point of this study is that it shows that certain factors—reasons of personal fulfillment and the quest for better health/self-care— have greater weight as an explanation when analyzing why middle-aged women begin PA.

Moreover, our results bring to light those aspects of present PA participation most strongly associated with continuing this activity in the future and complement previous research, not only that carried out on middle-aged PA participants in Spain but also in other contexts where early socialization processes either questioned or ignored the importance of PA for women. Future research could include a deeper examination of variables related not only to early socialization but life-long socialization as well.

Moreover, by clarifying the initial and current influences that middle-aged women relate to PA participation, as well as its associations (with regard to influences, socio-demographic characteristics and participation levels), health professionals might develop strategies that favor a change of attitude towards PA, that is, by persuading women who do not participate in PA to take up an activity that has the potential to overcome sedentary behavior and benefit their health.

#### **Note**

The authors declare that they have no competing interests.

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Table 1. Socio-demographic characteristics and participation in physical activity (present & future)

	<i>n</i>	%
<b>Age (years)</b>		
45-54	125	62.5
55-64	75	37.5
<b>Living arrangements</b>		
With a partner	68	34.0
With a partner and children	74	37.0
With a partner, children and other relatives	31	15.5
With housemates	5	2.5
Living alone	22	11.0
<b>Employment status</b>		
Working	127	63.5
Studying	10	5.0
Working and studying	20	10.0
Neither working nor studying	43	21.5
<b>Weekly frequency</b>		
High (5-7 days)	65	32.5
Medium (3-4 days)	68	34.0
Low (1-2 days)	67	33.5
<b>Session length</b>		
60 min or more	105	52.5
50 min	39	19.5
40 min	29	14.5
30 min or less	27	13.5
<b>Future participation in physical activity</b>		
Sure	93	46.5
Not sure	107	53.5

Table 2. Factor loadings of initial and current influences on participation in physical activity

Item	Initial influences		Factors			Communality
			Primary socialization agents	Health professionals	Personal fulfillment	
4	Friends	2.02 ± 0.97	0.760			0.595
5	School	1.61 ± 0.91	0.729			0.584
3	Family	2.02 ± 1.05	0.683			0.578
1	Doctor	1.96 ± 1.04		0.803		0.671
2	Psychologist	1.31 ± 0.72		0.752		0.621
7	Decision taken on the subject's own initiative	2.90 ± 1.13			0.778	0.668
6	Beliefs about PA health benefits	3.43 ± 0.77			0.771	0.702
	Current influences		Contact with others	Health and self-care	Outdoors and family	
8	Getting in touch with others	2.76 ± 0.98	0.900			0.853
12	Meeting new people	2.66 ± 1.02	0.886			0.818
21	Talking to people	2.68 ± 1.00	0.885			0.813
18	Meeting up with a group of friends	2.60 ± 0.99	0.840			0.780
9	Being in friendly surroundings	3.11 ± 0.82	0.547			0.612
22	Spending the weekend with the family	2.39 ± 1.15	0.541			0.566
13	Having fun	3.24 ± 0.78	0.457			0.529
10	Improving fitness	3.59 ± 0.58		0.865		0.761
14	Improving health	3.65 ± 0.53		0.841		0.727
11	Improving physical appearance	3.32 ± 0.72		0.795		0.666
20	Disconnecting from everyday activities	3.34 ± 0.75		0.463		0.446
17	Getting to know oneself better	2.73 ± 1.03		0.398		0.362
19	Contact with nature	3.12 ± 0.98			0.860	0.783
15	Doing an outdoor activity	3.11 ± 0.93			0.831	0.756
16	Doing an activity with the family	2.35 ± 1.09			0.604	0.578

Mean ± standard deviation.

Table 3. Intercorrelations for initial (1-2-3) and current (4-5-6) factors that influence participation in physical activity

Factors	1	2	3	4	5	6
1. Primary socialization agents	—					
2. Health professionals	0.000	—				
3. Reasons of personal fulfillment	0.000	0.000	—			
4. Contact with others	0.303**	0.081	0.019	—		
5. Health and self-care	0.066	0.125	0.308**	0.000	—	
6. Outdoors and family	0.110	-0.109	0.112	0.000	0.000	—

\*\* =  $P < 0.001$

Table 4. Descriptive statistics on initial factors that influence participation in physical activity (PA), with regard to socio-demographic characteristics and present / future PA

	Primary socialization agents		Health professionals		Reasons of personal fulfillment	
	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>
Age (years)*						
45-54	0.03 ± 0.99	0.600	0.00 ± 1.04	0.134	-0.04 ± 1.03	-0.862
55-64	-0.05 ± 1.00	0.550	-0.01 ± 0.92	0.893	0.07 ± 0.94	0.390
Living arrangements						
With a partner	-0.09 ± 1.10	0.781	-0.05 ± 1.08	0.288	0.01 ± 1.10	1.481
With a partner and children	0.15 ± 0.90	0.539	0.07 ± 0.98	0.886	-0.15 ± 1.03	0.209
With a partner, children and other relatives	-0.12 ± 0.97		-0.06 ± 0.88		0.24 ± 0.82	
With housemates	0.10 ± 0.94		-0.26 ± 0.29		0.68 ± 0.55	
Living alone	1.02 ± 0.21		0.04 ± 1.06		-0.02 ± 0.72	
Employment status						
Working	0.04 ± 0.98	0.363	-0.00 ± 1.00	3.147	-0.06 ± 1.03	1.184
Studying	0.07 ± 1.01	0.780	0.88 ± 1.60	0.026	0.16 ± 0.81	0.317
Working and studying	-0.11 ± 0.98		-0.21 ± 0.61		0.36 ± 0.78	
Neither working nor studying	-0.10 ± 1.05		-0.09 ± 0.88		-0.01 ± 1.01	
Weekly frequency						
High (5-7 days)	-0.09 ± 0.94	0.902	0.05 ± 1.01	0.822	0.17 ± 0.83	2.962
Medium (3-4 days)	0.12 ± 1.16	0.408	0.07 ± 1.01	0.441	0.05 ± 0.95	0.054
Low (1-2 days)	-0.03 ± 0.86		-0.12 ± 0.97		-0.23 ± 1.15	
Length of sessions						
60 min or more	-0.01 ± 0.96	0.056	-0.07 ± 0.95	0.592	0.02 ± 1.02	1.989
50 min	0.00 ± 1.08	0.982	0.01 ± 0.95	0.621	0.10 ± 0.91	0.117
40 min	0.06 ± 1.05		0.20 ± 1.14		0.15 ± 0.74	
30 min or less	-0.01 ± 1.00		0.03 ± 1.08		-0.41 ± 1.17	
Future physical activity*						
Sure	0.06 ± 1.02	0.903	0.00 ± 1.01	0.044	0.20 ± 0.95	2.807
Not sure	-0.05 ± 0.98	0.367	-0.00 ± 0.99	0.965	-0.18 ± 1.00	0.006

Mean ± standard deviation. \* *t* statistic reported for these variables

Table 5. Descriptive statistics on current factors that influence participation in physical activity (PA), with regard to socio-demographic characteristics and present / future PA

	Contact with others		Health and self-care		Outdoors and family	
	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>	<i>F</i>	<i>P</i>
Age (years)*						
45-54	0.00 ± 0.99	0.058	0.12 ± 0.96	2.179	0.09 ± 0.91	1.663
55-64	-0.00 ± 1.00	0.954	-0.20 ± 1.02	0.031	-0.15 ± 1.11	0.099
Living arrangements						
With a partner	0.01 ± 0.98	0.687	-0.15 ± 1.05	1.500	0.02 ± 0.97	3.351
With a partner and children	0.05 ± 0.98	0.602	0.01 ± 0.93	0.204	0.19 ± 0.87	0.011
With a partner, children and other relatives	0.07 ± 0.93		0.34 ± 0.76		-0.09 ± 1.00	
With housemates	-0.18 ± 1.32		-0.32 ± 1.23		-1.18 ± 0.94	
Living alone	-0.31 ± 1.12		0.03 ± 1.20		-0.34 ± 1.25	
Employment status						
Working	-0.05 ± 0.97	1.754	0.02 ± 0.99	0.746	-0.09 ± 1.01	1.046
Studying	0.43 ± 0.97	0.157	0.34 ± 0.63	0.526	0.14 ± 0.75	0.373
Working and studying	-0.25 ± 0.87		-0.21 ± 1.24		0.25 ± 0.90	
Neither working nor studying	0.19 ± 1.10		-0.03 ± 0.96		0.11 ± 1.04	
Weekly frequency						
High (5-7 days)	-0.01 ± 1.06	0.065	0.13 ± 1.01	0.926	0.38 ± 0.72	7.922
Medium (3-4 days)	-0.02 ± 0.99	0.937	-0.04 ± 0.97	0.398	-0.11 ± 0.93	0.000
Low (1-2 days)	0.03 ± 0.95		-0.08 ± 1.00		-0.25 ± 1.17	
Length of sessions						
60 min or more	-0.04 ± 1.01	0.361	0.10 ± 1.01	1.567	0.05 ± 1.04	1.064
50 min	-0.03 ± 0.94	0.781	0.03 ± 0.87	0.199	-0.17 ± 0.90	0.366
40 min	0.08 ± 1.03		-0.10 ± 1.01		-0.14 ± 0.95	
30 min or less	0.14 ± 1.03		-0.34 ± 1.05		0.20 ± 0.99	
Future physical activity*						
Sure	0.01 ± 1.04	0.181	0.15 ± 0.93	2.054	0.23 ± 0.91	3.203
Not sure	-0.01 ± 0.96	0.856	-0.13 ± 1.03	0.041	-0.20 ± 1.02	0.002

Mean ± standard deviation. \* *t* statistic reported for these variables