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Gender differences in social support and leisure-time physical activity

Diferenças de gênero no apoio social e atividade física de lazer

ABSTRACT

OBJECTIVE: To identify gender differences in social support dimensions' effect on adults' leisure-time physical activity maintenance, type, and time.

METHODS: Longitudinal study of 1,278 non-faculty public employees at a university in Rio de Janeiro, RJ, Southeastern Brazil. Physical activity was evaluated using a dichotomous question with a two-week reference period, and further questions concerning leisure-time physical activity type (individual or group) and time spent on the activity. Social support was measured with the Medical Outcomes Study Social Support Scale. For the analysis, logistic regression models were adjusted separately by gender.

RESULTS: A multinomial logistic regression showed an association between material support and individual activities among women (OR = 2.76; 95%CI 1.2;6.5). Affective support was associated with time spent on leisure-time physical activity only among men (OR = 1.80; 95%CI 1.1;3.2).

CONCLUSIONS: All dimensions of social support that were examined influenced either the type of, or the time spent on, leisure-time physical activity. In some social support dimensions, the associations detected varied by gender. Future studies should attempt to elucidate the mechanisms involved in these gender differences.

DESCRIPTORS: Leisure Activities. Motor Activity. Interpersonal Relations. Gender and Health. Cohort Studies.

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RESUMO

OBJETIVO: Identificar diferenças de gênero no efeito de dimensões de apoio social na manutenção, tipo e tempo da atividade física de lazer em adultos.

MÉTODOS: Estudo longitudinal com 1.278 funcionários públicos não docentes de uma universidade do Rio de Janeiro. A atividade física foi avaliada utilizando questão dicotômica, com um período de referência de duas semanas, e outras questões relativas ao tipo de atividade (individual ou grupo) e ao tempo gasto na atividade. O apoio social foi medido pelo *Medical Outcomes Study Social Support Scale*. Para a análise, os modelos de regressão logística foram ajustados separadamente por gênero.

RESULTADOS: A regressão logística multinomial mostrou associação entre o apoio material e as atividades individuais (OR = 2,76, IC95% 1,2;6,5) entre as mulheres. O apoio afetivo foi associado com o tempo gasto em atividades físicas de lazer (OR = 1,80, IC95% 1,1;3,2) apenas entre os homens.

CONCLUSÕES: Todas as dimensões de apoio social examinadas influenciaram o tipo ou o tempo gasto em atividades físicas de lazer. Em algumas dimensões de apoio social, as associações variaram segundo gênero. Estudos futuros devem elucidar os mecanismos envolvidos nessas diferenças entre os gêneros.

DESCRIPTORIOS: Atividades de Lazer. Atividade Motora. Relações Interpessoais. Gênero e Saúde. Estudos de Coortes.

INTRODUCTION

Scientific evidence has addressed the various potential demographic, psychological, environmental, and social determinants of leisure-time physical activity (LTPA) and how they act.^{19,21} However, the reasons individuals maintain LTPA over time have been less investigated, although its health benefits are well established.¹⁵ Although gender differences might exist in the relationships between social factors and LTPA, this has also been less investigated, particularly in adult populations.

Increasing participation in regular LTPA has been identified as critically important for improving physical and mental health. In this regard, women are known to be less physically active in their leisure time than men.^{3,27} Some authors^{3,8} suggest that this gender difference generally emphasizes women's different abilities, interests, and choices. However, these arguments may not be sufficient to explain the difference.

Social support, defined as the resources supplied to individuals in need by their social network, has been suggested as an important determinant of LTPA and can be measured through individual perceptions of the degree to which interpersonal relationships fulfill certain social support functions.²⁵ This multidimensional concept is usually investigated in terms of four types of social support: emotional, instrumental, affective, and informational support.⁵ Emotional support,

most often provided by a confidant and intimate other, fosters feelings of comfort and security, and leads an individual to believe he or she is respected, admired, and loved. Instrumental, or material, support reflects the availability of practical services and material resources, for example, aid in labor, money, or kind. Affective support is related to physical contact that expresses good feelings, e.g., a hug. Informational support refers to various types of information, knowledge, and advice embedded in social networks. In addition, some instruments have included positive social interaction as a dimension, representing the possibility of having someone with whom to share enjoyable activities.²⁸ As in the LTPA literature, social support studies have also revealed gender differences. It is well established that women's support networks often include close friends and relatives as confidantes, whereas men's support networks are more restricted: they typically name their wives as the main source of social support.¹⁶

Studies have investigated social support's role in LTPA in different populations,^{20,29} generally finding that higher levels of social support positively affect LTPA. Kouvonen et al.,¹⁷ using a longitudinal design, demonstrated that high emotional and practical support from the closest person increases the likelihood of maintaining recommended levels of LTPA. In our preview

study, we found that social support influences individual and group LTPA time and type among those who maintain physical activity during leisure time.²⁰

Although various studies have investigated the relationship between social support and LTPA, most are cross-sectional and do not evaluate type of LTPA and time spent. Furthermore, to our knowledge, no study has investigated gender differences in the association between social support and maintenance of LTPA in an adult population. However, gender differences might plausibly play a role because the explanatory mechanisms postulated for social support's influence on LTPA, such as self-efficacy²² and motivation,¹ might impact men and women differently. Therefore, this study aimed to identify gender differences through the effects of four social support dimensions on maintaining LTPA.

METHODS

The *Pró-Saúde* Study is a prospective cohort study of socioeconomic and psychosocial influences on health among non-faculty public employees at a university in Rio de Janeiro, Southeastern Brazil. Thus far, three phases of data collection have been completed (1999, 2001, and 2006). In phase 1 (1999), all 4,459 eligible workers were invited to participate, and the overall response rate was 90.4% (4,030 participants). The second phase took place in 2001. The present study was based on the 3,253 subjects (1,819 women and 1,434 men) who participated in the first two phases (80.7% of 4,030), with phase 1 serving as the baseline for the longitudinal analyses. Phase 3 was not included in our analyses because of the absence of detailed information regarding LTPA. Employees who had retired or were on non-medical leaves of absence were excluded from the analyses. The analyses were restricted to those who reported practicing LTPA at phase 1 and who provided the full LTPA information required at phases 1 and 2 (1,278 individuals). The subject group is characterized by higher levels of education and income than the overall cohort population. Maintenance of LTPA was evaluated at two-year follow-up. Detailed information about the cohort is available in a previous publication.⁷

Data were gathered using self-administered questionnaires completed in the workplace. Questionnaires inquired into the following areas: socioeconomic, demographic and psychosocial characteristics; occupational and medical history; job strain; psychological distress and stressful life events; experience of physical violence, and social and racial discrimination; integration into social support networks; dietary patterns, physical activity, tobacco (active and passive) and alcohol use; history of medical diagnoses and treatments; use of medication and unconventional therapies; practice of prevention and early diagnosis; and other behaviors

and exposures with impacts on health. Completing the questionnaire averaged fifty minutes of time granted especially for the procedure by the immediate supervisor under an institutional agreement. Various methods were applied to ensure the information's quality, including a large pilot study, validation of the translated scales, test-retest reliability studies, and double data entry.^{7,11}

LTPA was measured at phases 1 and 2 as follows: respondents first answered the dichotomous question: "In the last two weeks, did you engage in any physical activity to improve your health and physical condition or for fitness or leisure purposes?" Respondents answering "yes" were then asked to identify and to quantify the physical activity undertaken in the previous 14 days, in terms of duration (minutes per session) and weekly frequency. From these responses, we generated three different outcome measures: maintenance of LTPA (individuals who practiced LTPA at phase 1 and continued practicing at phase 2, as compared to those who practiced LTPA at phase 1, but not at phase 2); type of LTPA (individual or group activity among those maintaining LTPA, as compared to those inactive at both phases 1 and 2); and time spent on LTPA (time per week among those maintaining LTPA in phases 1 and 2). For example, an individual who reported two different activities (basketball and running) was classified as "group activity," and the time spent on these activities was added to generate the time variable. Following recommendations by the Centers for Disease Control and Prevention and the American College of Sports Medicine,²³ the time spent on LTPA was dichotomized using two hours, thirty minutes per week as the cut-off point. Additionally, all LTPA information was evaluated for reliability using a test-retest approach that yielded a kappa coefficient for the filter question of 0.63 (95% confidence interval 0.54;0.73) at phase 1. More details are available in a previous publication.²⁶

Social support was measured using the Medical Outcomes Study Social Support Survey (MOS-SSS), a 19-item questionnaire that covers multiple dimensions of social support and is designed to be easily administered.²⁸ The items do not specify the source of support (e.g., family, friends, community, or others), and they measure the perceived availability of functional support. The MOS-SSS, originally developed in English, has undergone a process of translation and adaptation to Portuguese, a version that has shown good psychometric properties.¹³ Test-retest reliability was consistently high for the instrument's different subscales (intraclass correlation coefficients ranging from 0.78 to 0.87); the internal consistency, as assessed by Cronbach's alpha, ranged from 0.75 to 0.91. Although the MOS-SSS has five theoretical dimensions, previous validity investigations^{12,13} have suggested that questions related to emotional and informational support should be grouped into a single dimension. Consequently, the present

study used four dimensions: material support, affective support, emotional/informational support, and positive social interaction.

Socioeconomic and demographic variables (age, schooling, *per capita* household income), self-reported morbidity, and tobacco and alcohol use were applied as covariates in the models. Age was categorized into five groups: 20 to 29, 30 to 39, 40 to 49, and 50 or older. Monthly household income *per capita* was calculated as total family income divided by the number of family members living on that income; it was then categorized with respect to the Brazilian minimum wage. Education was measured using the Brazilian educational system and categorized into three levels: elementary (up to six years education), secondary (up to 12 years), and higher (more than 12 years). Physical morbidity was self-reported based on a list of 17 common diseases; it was evaluated as a dichotomous variable (none, or at least one, report of any disease). Tobacco use was investigated as follows: "Do you smoke cigarettes currently?". Alcohol consumption was investigated using a dichotomous variable based on the following question: "In the last two weeks, did you consume any type of alcoholic drink?". All these variables were evaluated as possible confounders in the associations between social support and LTPA, because they are associated with social support⁶ and also influence LTPA status.¹⁸

Scores in the four dimensions of social support (positive social interaction, affective support, emotional/informational support, and material support) were categorized in tertiles and analyzed as explanatory variables. The two dichotomous LTPA variables (maintenance – yes/no and time spent on activities – up to three hours per week or more) were used as outcomes. In addition, one outcome variable, type of LTPA, was categorized three ways into: individuals who did not maintain LTPA (reference group for the analysis), practitioners of individual activities, and practitioners of group activities.

Gender differences in the association between dimensions of social support and LTPA maintenance were assessed over a two-year period. Binary logistic regression models were fitted for the dichotomous outcomes, and multinomial logistic regression models were fitted for the three-category outcome. Odds ratios (OR) and confidence intervals (95%CI) were estimated before and after adjusting for confounders. All models were conducted to evaluate each dimension's role of social support on the LTPA maintenance group. The fully adjusted models included the following independent variables: social support dimensions, age, education, monthly income *per capita*, tobacco and alcohol use, and morbidity. The analyses were performed according to gender, using the R software, version 2.15.0.

The research was approved by the Ethics Committee of the *Universidade do Estado Rio de Janeiro* (Register 224/1999, May 10, 1999).

RESULTS

For both men and women, the average age at phase 1 was 40 years (standard deviation, 8.5); 40.0% were in the higher education category, and 55.0% were women. Among women, 81.0% performed only individual LTPA and 19.0% performed group LTPA; 41.0% practiced more than three hours per week. Median time on LTPA was 2.6 hours per week, and percentiles 25 and 75 were 1.5 and 5.0 hours per week, respectively. At two-year follow-up, 25.4% of men and 32.7% of women had maintained LTPA.

Analyses based only on the dichotomous filter question showed that dimensions of social support were associated in neither gender with individuals engaging in any LTPA in the previous two weeks at both phases (maintenance of LTPA). However, the intermediate level in the emotional/informational dimension showed an association ($p < 0.05$) with maintenance of LTPA among women (Table 1).

The relationship between social support dimensions and LTPA outcomes were in a positive direction, so that greater support predicted participation in LTPA. In analyses restricted to LTPA type, as shown in Tables 2 and 3, all dimensions of social support, except the emotional/informational dimension, were related to individual and/or group LTPA (fully adjusted model) among women and/or men. In the fully adjusted model, material support increased the odds of performing individual activities by 2.76 (95%CI 1.2;6.5) among women and 2.39 (95%CI 1.0;5.9) among men. On the other hand, the affective dimension was associated with individual and group activities only among women. Additionally, women showed a significant association between the positive social interaction dimension and group activities. In contrast, men at the intermediate level of the positive social interaction dimension had 3.66 (95%CI 1.4;9.1) greater odds of performing individual activities than those who did not maintain any LTPA during the follow-up period.

Table 4 shows results for the association between social support and time spent on LTPA. For women, emotional/informational support was associated with two hours, thirty minutes or more of LTPA (OR = 2.26; 95%CI 1.1;4.5) in the adjusted model. On the other hand, among men, in the fully adjusted model, the highest and intermediate levels of the affective dimension were associated with two hours, thirty minutes or more of LTPA per week (OR = 2.19; 95%CI 1.1;4.6/ OR = 1.80; 95%CI 1.1;3.2, respectively).

Table 1. Frequencies of maintenance of leisure-time physical activity and association with dimensions of social support. *Estudo Pró-Saúde*,^a Rio de Janeiro, RJ, Southeastern Brazil, 1999-2001.

Social support (tertiles)	Maintenance of leisure-time physical activity											
	Women						Men					
	n	%	Unadjusted OR	95%CI	Fully-adjusted OR	95%CI ^b	n	%	Unadjusted OR	95%CI	Fully-adjusted OR	95%CI ^b
Material												
Lower	192	52	1		1		157	60	1		1	
Intermediate	248	77	1.33	0.9;1.9	1.21	0.7;1.9	239	64	1.07	0.7;1.6	1.31	0.8;2.2
Upper	195	52	1.01	0.7;1.5	0.81	0.5;1.3	243	61	1.00	0.7;1.5	1.09	0.6;1.9
Affective												
Lower	192	52	1		1		179	60	1		1	
Intermediate	127	34	0.81	0.5;1.3	0.66	0.4;1.1	122	59	1.16	0.7;1.9	1.24	0.7;2.2
Upper	316	85	1.30	0.9;1.9	1.32	0.8;2.7	342	64	1.08	0.7;1.6	1.05	0.7;1.7
Emotional/ Information												
Lower	169	45	1		1		192	58	1		1	
Intermediate	142	47	1.57	1.0;2.3	1.66	1.0;1.8	228	65	1.24	0.8;1.9	1.15	0.7;1.9
Upper	220	59	1.42	0.9;2.1	1.26	0.9;2.0	217	62	1.04	0.9;1.6	0.87	0.5;1.4
Positive social interaction												
Lower	186	28	1		1		161	59	1		1	
Intermediate	195	52	0.83	0.9;2.1	1.11	0.7;1.8	188	60	1.01	0.8;1.2	1.25	0.7;2.1
Upper	255	69	1.07	0.9;2.1	1.21	0.7;1.9	291	65	1.28	1.0;1.4	1.09	0.7;1.8

Note: Unadjusted and fully-adjusted odds ratios (OR) and respective 95% confidence intervals (95%CI) for the logistic regression models fitted using social support dimensions as the predictors of maintenance of leisure-time physical activity (reference group: individuals who were active in phase 1, but not in phase 2) (2-year follow-up).

n(%) = Number of observations and percentages of individuals physically active during their leisure time, according to each level of social support dimensions.

All statistically significant associations (p < 0.05) are in bold.

^a Faerstein E et al⁷ (2005).

^b Fully adjusted models: adjusted by age, education, per capita monthly income, tobacco and alcohol use, and morbidity.

Table 2. Frequencies of type of leisure-time physical activity and association with dimensions of social support among women. *Estudo Pró-Saúde*,^a Rio de Janeiro, RJ, Southeastern Brazil, 1999-2001.

Social support (tertiles)	Type of leisure-time physical activity – Women										
	n	Individual %	Group %	Individual		Group		Individual		Group	
				Unadjusted OR	95%CI	Unadjusted OR	95%CI	Fully-adjusted OR ^b	95%CI	Fully-adjusted OR ^b	95%CI
Material											
Lower	181	7	12	1		1		1		1	
Intermediate	251	7	9	0.95	0.3;2.8	0.94	0.5;1.8	2.76	1.2;6.5	1.22	0.6;2.7
Upper	179	7	20	1	0.7;3.1	0.89	0.4;1.8	2.48	0.9;6.9	1.39	0.6;3.3
Affective											
Lower	183	10	7	1		1		1		1	
Intermediate	112	6	17	1.73	0.4;7.6	1.50	0.7;3.3	4.82	1.6;14	2.25	0.8;6.2
Upper	314	9	16	1.67	0.5;5.3	1.34	0.7;2.5	4.32	1.7;10	2.57	1.1;5.9
Emotional/ Information											
Lower	156	7	11	1		1		1		1	
Intermediate	238	9	14	0.80	0.3;2.4	1.63	0.8;3.2	1.43	0.3;7.0	1.82	0.8;4.1
Upper	215	10	15	0.84	0.3;2.5	0.94	0.4;2.0	2.46	0.5;11	1.46	0.6;3.6
Positive social interaction											
Lower	191	10	9	1		1		1		1	
Intermediate	178	5	14	0.94	0.5;1.0	1.30	0.6;2.6	2.01	0.4;10	1.63	0.7;5.3
Upper	242	9	16	0.80	0.8;1.4	1.31	0.7;2.5	3.06	0.6;14	2.30	1.0;5.3

Note: Unadjusted and adjusted odds ratios (OR) and respective 95% confidence intervals (95%CI) provided by multinomial regression models fitted using social support dimensions as predictors of type of leisure-time physical activity (reference group: individuals who were active in phase 1, but not in phase 2).

n(%) = Number of observations and percentages of individuals who participated in individual and group physical activity during their leisure time, according to each level of social support dimensions.

^a All statistically significant associations ($p < 0.05$) are in bold.

^a Faerstein E et al⁷ (2005).

^b Fully adjusted model: adjusted by age, education, per capita monthly income, tobacco and alcohol use, and morbidity.

Table 3. Frequencies of type of leisure-time physical activity and association with dimensions of social support among men. *Estudo Pró-Saúde*,^a Rio de Janeiro, RJ, Southeastern Brazil, 1999-2001.

Social support (tertiles)	Type of leisure-time physical activity – Men's group										
	n	Individual %	Group %	Individual		Group		Individual		Group	
				Unadjusted OR	95%CI	Unadjusted OR	95%CI	Fully-adjusted OR ^b	95%CI	Fully-adjusted OR ^b	95%CI
Material											
Lower	148	9	19	1		1		1		1	
Intermediate	220	10	24	0.88	0.5;1.7	1.31	0.9;2.0	1.36	0.6;3.3	1.42	0.7;2.8
Upper	220	8	23	1.03	0.6;1.9	1.27	0.9;1.9	2.39	1.0;5.9	1.95	1.0;3.9
Affective											
Lower	165	9	22	1		1		1		1	
Intermediate	111	8	25	1.34	0.7;2.7	1.48	0.8;2.6	1.76	0.7;4.3	1.20	0.6;2.5
Upper	314	10	22	0.92	0.5;1.6	1.20	0.8;1.9	1.82	0.8;4.0	1.69	0.9;3.1
Emotional/ Information											
Lower	173	10	24	1		1		1		1	
Intermediate	220	14	26	1.04	0.7;1.9	0.97	0.7;1.9	1.41	0.9;3.1	1	0.5;1.8
Upper	194	12	22	0.91	0.6;1.8	1.07	0.7;1.5	1.17	0.5;2.6	1.14	0.6;2.1
Positive social interaction											
Lower	152	7	20	1		1		1		1	
Intermediate	165	6	24	2.35	1.1;4.6	1.60	0.9;2.7	3.66	1.4;9.1	1.83	0.9;3.7
Upper	272	11	26	1.25	0.6;2.5	1.41	0.9;2.3	2.13	0.9;5.3	1.86	1.0;3.5

Note: Unadjusted and adjusted odds ratios (OR) and respective 95% confidence intervals (95%CI) provided by multinomial regression models fitted using social support dimensions as predictors of type of leisure-time physical activity (reference group: individuals who were active in phase 1, but not in phase 2).

n(%) = Number of observations and percentages of individuals that participated in individual and group physical activity during their leisure time, according to each level of social support dimensions.

^a All statistically significant associations (p < 0.05) are in bold.

^b Fully adjusted model: adjusted by age, education, *per capita* monthly income, tobacco and alcohol use, and morbidity.

Table 4. Frequencies of more than two hours, thirty minutes per week on leisure-time physical activity according to dimensions of social support. *Estudo Pró-Saúde*,^a Rio de Janeiro, RJ, Southeastern Brazil, 1999-2001.

Social support (tertiles)	Time on leisure-time physical activity											
	Women						Men					
	n	%	Unadjusted OR	95%CI	Fully-adjusted OR	95%CI ^b	n	%	Unadjusted OR	95%CI	Fully-adjusted OR	95%CI ^b
Material												
Lower	83	50	1		1		84	42	1		1	
Intermediate	138	50	1.26	0.8;2.1	0.91	0.5;1.7	144	52	1.03	0.6;1.6	0.68	0.3;1.3
Upper	93	50	1.30	0.9;2.2	1.22	0.6;2.2	134	67	1.19	0.7;1.9	0.71	0.4;1.5
Affective												
Lower	84	48	1		1		98	49	1		1	
Intermediate	56	49	1.38	0.7;2.5	1.64	0.7;3.7	72	36	1.83	1.0;3.2	2.19	1.1;4.6
Upper	172	46	1.19	0.7;1.9	1.08	0.5;1.9	193	87	1.43	0.9;2.2	1.80	1.1;3.2
Emotional/ information												
Lower	67	28	1		1		105	53	1		1	
Intermediate	130	37	1.83	1.1;3.1	1.97	1.0;3.8	139	70	1.59	1.0;2.5	1.28	0.7;2.4
Upper	116	45	2.26	1.3;3.9	2.26	1.1;4.5	119	60	1.37	0.9;1.2	1.15	0.6;2.2
Positive social interaction												
Lower	80	34	1		1		99	50	1		1	
Intermediate	93	56	1.79	1.0;3.1	1.93	1.0;3.8	107	54	1.42	0.8;2.4	1.58	0.8;3.2
Upper	140	45	1.70	1.0;2.8	1.64	0.8;3.2	168	56	1.43	0.9;2.3	1.64	0.8;3.1

Note: Unadjusted and adjusted odds ratios (OR) and respective 95% confidence intervals (95%) for the logistic regression models fitted using social support dimensions as the predictors of time on leisure-time physical activity (individuals participating less than three hours per week was the reference group).

n(%) = Number of observations and percentages of individuals that participated in physical activity during their leisure time more than three hours per week, according to each level of social support dimensions.

All statistically significant associations are in bold.

^a Faerstein E et al⁷ (2005).

^b Fully adjusted model: adjusted by age, education, per capita monthly income, tobacco and alcohol use, and morbidity.

DISCUSSION

This research investigated gender differences in the association between social support and maintenance of LTPA. In this association, our results detected gender differences dependent on the social support dimension and the LTPA outcome. In our view, social support may play different roles for women and men in maintenance of LTPA, basically for two major reasons: first, one pathway that could at least partly explain the influence of social support on the LTPA dimension – self-efficacy – may be gender dependent.³⁰ Bandura⁴ has defined self-efficacy as belief in one's capabilities to organize and execute courses of action required to complete certain attainments. In this regard, there is evidence^{22,30} that individuals' confidence in their ability to be physically active (self-efficacy for physical activity) might be more relevant among women. This is perhaps because women with higher self-efficacy are able to overcome common barriers to engaging in LTPA (such as feelings of embarrassment) and consequently continue physical activity. Another explanation for gender differences might be motivational influence. Motivation may be important in reinforcing habit; its effect would therefore not be attributed to the motivation's strength (i.e., intention), but rather to the beliefs, expectations, and arguments underpinning motivation (i.e., attitudes) that might differ between genders.⁹ In fact, extrinsic motivation – present when an individual performs LTPA for an extrinsic reason (i.e., aesthetic benefits) – might relate more to women. On the other hand, intrinsic motivation – represented by LTPA performed for its inherent value, interest, and enjoyment – is more common among men.^{9,24}

Gender differences might reflect LTPA as a social phenomenon that takes place and finds meaning for individuals within a broader societal context and must consequently be approached as such. Accordingly, some authors^{3,27} have explicitly recognized gender's influence on LTPA. These authors have explained women's lack of leisure-time physical activity in terms of the realities of their everyday lives, and particularly, the gendered power relations in society.² In this regard, women's responsibilities for housework and the family are greater, leaving them less time for LTPA. It is plausible to suggest that women may be more dependent on social support to leave their responsibilities and set aside time for LTPA.

Based on responses to the filter question, our results suggest that social support dimensions do not influence maintenance of LTPA in either gender. The exception is the emotional/informational dimension at the intermediate level, which increases the odds of women's maintaining LTPA by 66.0%. These findings emphasize

the importance of using more specific LTPA variables (time and type) and also indicate that emotional support may influence women's motivation to maintain LTPA. Previous studies^{17,20} have shown that emotional support plays a role in maintenance of LTPA. However, the present study is the first to point to gender differences in that association.

Regarding type of LTPA, significant associations were found in the relationships between the material support dimension and individual LTPA in both genders. However, among women only, an association was found between the affective dimension and both types of LTPA (individual and group). A possible explanation for these findings may lie in the fact that a socially supportive environment – with friends or family members considering physical activity important (social norm), being physically active themselves (modeling), and providing practical support – was a correlate of LTPA for males and females. On the other hand, it is plausible to postulate that females who receive affective support may experience lower levels of stress and consequently, be able to maintain LTPA and communicate with partners to perform group activities. Another possible explanation is that higher levels of affective support are related to feelings of well-being, which in turn may improve self-efficacy, an LTPA mediator.²² These findings are, at least partly, consistent with social cognitive theory.¹⁴ Social support was also indirectly related to outcome expectancies and self-regulatory behaviors through self-efficacy.² In addition, the relationship between social support and physical activity was almost entirely indirect. These results suggest that interventions focusing on increased social support for physical activity act indirectly through other social cognitive constructs.²

In relation to the time spent on LTPA, most of the social support dimensions showed no association with performing more than two hours, thirty minutes of LTPA. An exception was detected in the affective dimension among men. These findings suggest that social support dimensions might not be important in time spent on LTPA and also reveal that higher levels of affective support may increase the interest among men in performing LTPA, in turn increasing LTPA time. In this sense, self-determination theory proposes a series of motivational regulation types graded on a continuum of autonomy (i.e., self-determination) in relation to external demands (e.g., expectation of rewards or emotional/affective support).^{9,31} Previous studies^{10,31} have suggested that these regulators are associated with greater LTPA frequency, duration, and intensity.

Some limitations of our study should be pointed out. First, the use of self-reporting to measure LTPA and the use of a social support instrument that did not focus on LTPA might have limited comparison with other

studies' findings. On the other hand, these measurement strategies generated helpful LTPA outcome variables and enabled investigation of the all dimensions' roles of social support in LTPA. Second, time spent on LTPA, as reported in the questionnaire, might have been overestimated. However, the strategy of individuals separately completing information on activity and time spent probably minimized this problem. Third, this specific occupational cohort of public employees in Rio de Janeiro is likely to display higher levels of LTPA, making it uncertain to what extent the findings can be generalized to the overall population or to other occupational groups and countries. Fourth, because the study design was based on measurement of LTPA at only two points, it could not evaluate possible changes in LTPA that may have occurred between the measurement points. Finally, some of the models returned large confidence intervals of the effect measures evaluated.

Nevertheless, this study is the first using a longitudinal approach to demonstrate gender differences in how social support influences maintenance of LTPA, by type and time, in a working population. Generally speaking, the roles played by different dimensions of social support differ between men and women, and these roles seem more important for certain aspects of LTPA. Another interesting finding is that affective support directly influences the type of LTPA among women. Higher levels of affective support for LTPA from a family member and/or close friend seem significant in this regard, and this might be an important consideration for recommendations on women's practice of LTPA. Furthermore, our findings highlight that gender differences should be considered by social/health policy-making directed toward LTPA practices. Different approaches might be necessary to introduce gender-specific LTPA programs. Future studies should attempt to elucidate pathways by which gender differences influence the association of social support dimensions with maintenance of LTPA.

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