



SOCIAL SUPPORT AND PHYSICAL ACTIVITY IN OLDER ADULTS: A SYSTEMATIC REVIEW OF OBSERVATIONAL STUDIES

Apoio social e atividade física de idosos: revisão sistemática de estudos observacionais

Apoio social y actividad física de mayores: revisión sistemática de estudios observacionales

Bianca Andrade de Sousa 

Santa Catarina State University (*Universidade do Estado de Santa Catarina - UDESC*) - Florianópolis (SC) - Brazil

Ítalo Ribeiro Lemes 

São Paulo State University (*Universidade Estadual Paulista Júlio de Mesquita Filho - UNESP*) - São Paulo (SP) - Brazil

Carlos Eduardo Lopes Verardi 

São Paulo State University (*Universidade Estadual Paulista Júlio de Mesquita Filho - UNESP*) - São Paulo (SP) - Brazil

Lisiane Piazza Luza 

Santa Catarina State University (*Universidade do Estado de Santa Catarina - UDESC*) - Florianópolis (SC) - Brazil

Franciele Cascaes da Silva 

Santa Catarina State University (*Universidade do Estado de Santa Catarina - UDESC*) - Florianópolis (SC) - Brazil

Rudney da Silva 

Santa Catarina State University (*Universidade do Estado de Santa Catarina - UDESC*) - Florianópolis (SC) - Brazil

ABSTRACT

Objective: To analyze the relationship between social support (SS) and physical activity (PA) in older adults through a systematic review of observational studies. **Methods:** Searches were carried out in Scopus, PsycInfo, LILACS and MEDLINE electronic databases via PubMed. The Mesh headings used were “social support”, “physical activity” and “aged”. The review included observational studies with a sample of older adults that assessed SS and PA using quantitative instruments and that had been published in the last 10 years with fully online access and available in English, Portuguese and Spanish. Systematic reviews, meta-analyses, intervention protocols, construction or validation of instruments, and studies that assessed SS in relation to behaviors other than PA were excluded. **Results:** The search yielded 1311 articles and, after the selection process, 9 were included in this review. With regard to the type of study, 8 were cross-sectional and 1 was a cohort, and the samples were predominately composed of women. The studies used different instruments, types and sources for the assessment of social support and assessed different domains of physical activity. The studies found that the greater the perceived social support, the greater the level of physical activity. **Conclusion:** There is a positive relationship between social support and physical activity in older adults, thus emphasizing the importance of its instrumental function and of the different sources, such as family, friends and health care professionals, for the promotion of active behaviors in this population.

Descriptors: Social support; Motor activity; Aged.

RESUMO

Objetivo: Analisar a relação entre o apoio social (AS) e a prática de atividade física (AF) de idosos por meio de uma revisão sistemática da literatura de estudos observacionais. **Métodos:** As buscas foram realizadas nas bases eletrônicas Scopus, PsycInfo, LILACS e MEDLINE, acessado via PubMed. Os termos Mesh utilizados foram relacionados ao “apoio social”, “atividade física” e “idosos”. Incluíram-se estudos observacionais, com amostra composta por idosos, que investigaram o AS para a AF por meio de instrumentos quantitativos publicados nos últimos 10 anos, com acesso online na íntegra e disponíveis nos idiomas inglês,



This Open Access article is published under the a Creative Commons license which permits use, distribution and reproduction in any medium without restrictions, provided the work is correctly cited

Received on: 11/20/2018
Accepted on: 04/01/2019

português e espanhol. Excluíram-se estudos de revisão sistemática, metanálise, protocolos de intervenção e de construção ou validação de instrumentos, e aqueles que abordaram o AS para outros comportamentos além da AF. **Resultados:** A busca resultou em 1311 artigos e, após o processo de seleção, 9 foram incluídos nesta revisão. Em relação ao tipo de estudo, 8 transversais e 1 de coorte, predominando amostras compostas pelo sexo feminino. Os estudos abordaram diferentes instrumentos, tipos e fontes para avaliação do apoio social e avaliaram diferentes domínios da atividade física. Encontraram que, quanto maior o apoio social percebido, maior o nível de atividade física. **Conclusão:** Verificou-se que existe relação positiva entre o apoio social e a prática de atividade física de idosos, destacando a importância da sua função instrumental e de diferentes fontes, como de familiares, amigos e profissionais da saúde para a promoção de comportamentos ativos por parte dessa população.

Descritores: Apoio Social; Atividade Motora; Idoso.

RESUMEN

Objetivo: Analizar la relación entre el apoyo social (AS) y la práctica de actividad física (AF) de mayores a través de una revisión sistemática de la literatura de estudios observacionales. **Métodos:** Las búsquedas se dieron en las bases de datos electrónicas Scopus, PsycInfo, LILACS y MEDLINE con el acceso vía PubMed. Los términos Mesh utilizados se relacionaron con el "apoyo social", "actividad física" y "mayores". Se incluyeron los estudios observacionales, con muestra de mayores, los que investigaron el AS para la AF a través de instrumentos cuantitativos publicados en los últimos 10 años, aquellos con acceso online a los textos completos y los disponibles en los idiomas inglés, portugués y español. Se excluyeron los estudios de revisión sistemática, las metaanálisis, los protocolos de intervención y de construcción o validación de instrumentos y los que abordaron el AS para otras conductas además de la AF. **Resultados:** La búsqueda ha resultado en 1311 artículos y, después del proceso de selección, 9 fueron incluídos en la revisión. Sobre el tipo de estudio, 8 eran transversales y 1 de cohorte, predominando las muestras del sexo femenino. Los estudios abordaron instrumentos distintos, los tipos y fuentes para la evaluación del apoyo social y evaluaron los distintos dominios de la actividad física. Ha sido encontrado que, a mayor apoyo social percibido, mayor es el nivel de actividad física. **Conclusión:** Se verificó que hay una relación positiva entre el apoyo social y la práctica de actividad física de mayores con destaque para la importancia de su función instrumental y de distintas fuentes como de los familiares, los amigos y los profesionales sanitarios para la promoción de conductas activas de parte de la población.

Descritores: Apoyo Social; Actividad Motora; Anciano.

INTRODUCTION

Population aging is a fact worldwide due to an increase in life expectancy and a decrease in fertility rate⁽¹⁾. In Brazil, the same phenomenon is observed and the population aged 60 and older has risen from 14.2 million to 19.6 million from 2000 to 2010 and is estimated to increase to 73.5 million by 2060⁽²⁾.

In addition to the change in age profile, the population is undergoing epidemiological changes. The main negative impact of aging is the higher incidence of noncommunicable diseases (NCDs), such as cardiovascular disease, cancer, dementia and diabetes⁽³⁾, as well as the progressive impairment of organic functions (balance, flexibility and mobility), physiological functions (respiratory, circulatory and metabolic), psychological functions (depression and anxiety) and cognitive functions (cognitive decline), which are common throughout this process⁽⁴⁾.

In view of this new panorama, physical activity has been recognized for its countless benefits for the physical and mental health of the older adults. Regular physical activity during aging can prevent or attenuate functional, physical, cognitive and psychological impairments and reduce the risk of falls⁽⁵⁻⁷⁾.

Despite evidence on the benefits of physical activity for health promotion and disease prevention in older adults, 65.3% of Brazilians aged 65 years or over are insufficiently active and 34.2% are physically inactive, with this age group presenting the highest percentage of physical inactivity⁽⁸⁾.

In view of this context, it is necessary to understand what mechanisms can influence physical activity during the aging process in order to promote the physical and mental health of the older population. Studies have pointed out the importance of psychosocial factors in this process, such as social support⁽⁹⁻¹³⁾.

Social support can be defined as any information, assistance or protection consciously offered by other people or groups that result in positive emotional or behavioral effects^(14,15); it has different types (instrumental, informational or emotional) and sources (friends, neighbors, health professionals, among others).

However, despite evidence showing the relevance of social support for adherence to physical activity among older adults, the studies are inconclusive as to which types and sources of social support can directly influence the adoption of active behaviors by this population group. Thus, a systematic review that summarizes the studies on the subject may answer such questions and provide information to support more effective interventions to promote the health of this population.

Given that, the present study aimed to analyze the relationship between social support and physical activity in

older adults through a systematic review of observational studies. In addition, the study intends to investigate whether such relationships differ in relation to the type and source of social support for physical activity.

METHODS

This review followed the recommendations of the Preferred Reporting Items for Systematic Review and Meta-analyses: The PRISMA Statement⁽¹⁶⁾.

This review included observational studies (cross-sectional, cohort and case-control) of older adults (age 60 years or older)^(17,18) that assessed social support for physical activity (SSPA) through quantitative instruments and that had been published in scientific journals in the last 10 years with full online access and available in English, Portuguese and Spanish. We excluded systematic reviews, meta-analyses, intervention protocols, studies for construction or validation of instruments and studies that assessed social support for behaviors other than physical activity. The date limit used is due to the intention of presenting a review showing a current overview of published scientific productions.

The following electronic databases were used: Scopus, PsycInfo, LILACS and MEDLINE (Medical Literature Analysis and Retrieval System online) accessed via PubMed. The last search was carried out in March 2019. The search was carried out using the descriptors proposed by the Medical Subject Headings (MeSH) and their correspondents referring to the terms “social support”, “motor activity” and “aged”. The descriptors were combined in each database using the Boolean operator “and”.

The search for studies and their analyses were carried out by three independent reviewers. The titles were analyzed first. After that, the abstracts were analyzed and then the full text was accessed in order to select the studies that met the eligibility criteria. Divergent issues between the reviewers were solved by consensus.

The data analyzed and extracted from the studies were: authors, year, country where the study was conducted, type of study, sample size, characteristics of participants (sex ratio and mean age) (Chart I), and instruments and domains used to assess SSPA and physical activity levels (Chart II). The objectives and main results of the studies are presented in Chart II.

To evaluate the methodological quality of the observational studies we used a scale adapted from the New Castle-Ottawa Scale (NOS)⁽¹⁹⁾ consisting of the following items: 1) clear and precise research question; 2) adequate duration of follow-up (for cohort studies); 3) description of eligibility criteria (inclusion and exclusion); 4) selection of participants controlled for potential confounders (for cohort studies); 5) representative sample (for cohort studies); 6) results assessed by blinded evaluators (for cohort studies); 7) validated and standardized outcomes; 8) description of losses and exclusions associated with the study (for cohort studies); 9) description of losses and exclusions; 10) results clearly presented and discussed.

For each criterion evaluated one point (1) was assigned for the presence of indicators and zero (0) for the absence of indicators. Thus, cross-sectional studies scored from 0 to 5 points and cohort studies scored from 0 to 10 points. The studies were divided into three categories: A, including studies that met 80% or more of the criteria; B, including studies that met 50%-79% of the criteria; and C, including studies that met less than 50% of the established criteria (Chart IV).

RESULTS

The searches on the databases yielded 1311 studies, 68 of which were duplicates and were hence excluded, thus remaining 1243 studies for reading. Based on the objectives of the study and the eligibility criteria, 1045 studies were excluded after reading the title, 134 were excluded after reading the abstract and 55 were excluded after analysis of full text. At the end, 9 studies were included in this systematic review. The selection process is shown in the flow diagram in Figure 1.

The main characteristics of the studies are described in Chart I. Regarding the type of study, all the studies are observational and quantitative: 8 cross-sectional studies⁽²⁰⁻²⁷⁾ and 1 cohort study⁽²⁸⁾. As for the country where the studies were conducted, 4 studies were conducted in the United States^(20, 22,25,26), 2 in Brazil^(21,24), 1 in Germany⁽²⁸⁾, 1 in Belgium⁽²³⁾ and 1 in Czech Republic⁽²⁷⁾. Eight studies were available in English^(20,22-28) and one was available in Portuguese⁽²¹⁾. The study period ranged from 2009^(20,21) to 2017^(26,27). The sample size ranged from 34⁽²⁰⁾ to 1285 older adults⁽²⁴⁾, with a total of 4153 people analyzed. As for sex, the study samples were predominantly composed of female participants⁽²⁰⁻²⁸⁾.

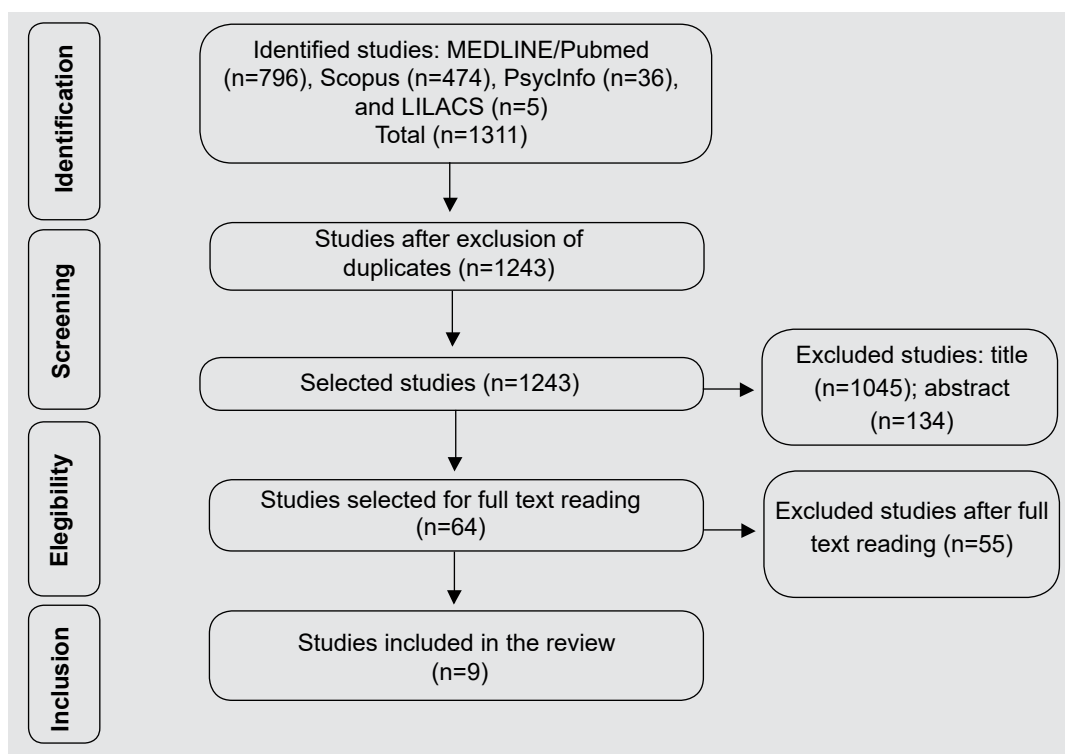


Figure 1. Flow diagram of studies included in the review.

Chart I - Methodological characteristics of the selected studies summarized according to: author, year, country, type of study, sample size, sex and mean age of the participants.

Author	Year	Country	Type of study	Sample (n)	Sex (%)	Age (mean ± SD)
Purath et al. ⁽²⁰⁾	2009	USA	Cross-sectional	34	62% W 38% M	67 ± 6.9
Salvador et al. ⁽²¹⁾	2009	Brazil	Cross-sectional	385	60% W 40% M	NI
Carlson et al. ⁽²²⁾	2012	USA	Cross-sectional	718	53% W 47% M	74 ± 6.3
Van Holle et al. ⁽²³⁾	2015	Belgium	Cross-sectional	433	54% W 46% M	74 ± 6.2
Bohm et al. ⁽²⁴⁾	2016	Brazil	Cross-sectional	1285	57% W 43% M	70 ± 8.2
Ory et al. ⁽²⁵⁾	2016	USA	Cross-sectional	272	50% W 50% M	69
Holmes et al. ⁽²⁶⁾	2017	USA	Cross-sectional	171	80% W 20% M	87.7 ± 5.7
Mudrak et al. ⁽²⁷⁾	2017	Czech Republic	Cross-sectional	546	79% W 21% M	68 ± 6.2
Warner et al. ⁽²⁸⁾	2011	Germany	Cohort	309	58% W 42% M	73 ± 5.1

SD: standard deviation; USA: United States of America; M: men; W: women; n= number of people; NI= not informed

The instruments used and the domains of physical activity and SSPA analyzed are described in Chart II. With regard to the instruments used to measure the level of physical activity: 4 studies^(21,23,24,28) used scales adapted from the International Physical Activity Questionnaire (IPAQ); 2^(20,27) used the Physical Activity Scale for the Elderly (PASE⁽²⁹⁾); 1 study⁽²²⁾ used the Community Healthy Activities Model Program for Seniors (CHAMPS)⁽³⁰⁾; 1 study⁽²⁶⁾ used the Physical Activity Survey for Long-Term Care (PAS-LTC)⁽³¹⁾; 1 study⁽²⁷⁾ used, in addition to PASE, the Leisure Time Exercise Questionnaire (LTEQ)⁽³²⁾; and 1 study⁽²⁵⁾ used an author-developed scale. In addition to these instruments, 2 studies used an accelerometer to objectively measure the level of physical activity^(22,23).

The evaluation of the studies included different domains of physical activity. Leisure-time physical activity was measured by 4 studies^(20,21,24,27) and physical exercise was measured by 3 studies⁽²⁶⁻²⁸⁾. Household and occupational physical activity was measured by two studies^(20,27). General physical activity and walking for transportation and leisure were measured by two studies^(22,23). Walking for no reason was measured by one study⁽²⁵⁾ (Chart II).

With regard to the assessment of SSPA, the studies used different instruments, types and sources for assessing social support. As for the instruments, 4 studies^(22,24,27,28) used adapted versions of Sallis' Physical Activity Social Support Scale⁽³³⁾; 1 study⁽²⁰⁾ used the Social Support for Physical Activity Scale⁽³⁴⁾; 1 study⁽²¹⁾ used an adapted version of the Neighborhood Environmental Walkability Scale (NEWS)⁽³⁵⁾; 1 study⁽²⁶⁾ used the Social Support for Exercise Scale (SSEHS)⁽³⁶⁾; and 2 studies^(23,25) used author-developed scales (Chart II).

As for the types of SSPA: 7 studies^(20,22-28) addressed "encouraging"; 6 studies⁽²²⁻²⁸⁾ addressed the "performing together"; 5 studies^(21,22,24,26,27) addressed the "inviting" and 3 studies⁽²⁶⁻²⁸⁾ addressed the "helping to plan" (Chart II). In addition, two studies assessed other social influences, such as modeling, that is, "prior family involvement in physical activities"⁽²⁰⁾ and "interest"⁽²⁰⁾ and "participation" of social groups in physical activities⁽²³⁾.

The most studied sources of SSPA were: the support from friends in 8 studies⁽²⁰⁻²⁸⁾; from the family in 7 studies⁽²⁰⁻²⁷⁾; from neighbors in 2 studies^(21,28); and from health professionals, such as physicians and LTC facilities staff in two studies^(20,26).

Chart II - Instruments, domains and characteristics of physical activity and social support for physical activity assessed in the studies included in the review.

Author	Instruments to assess PA	Domains of PA assessed	Instruments to assess SSPA	Types of SSPA	Sources of SSPA
Purath et al. ⁽²⁰⁾	PASE	Leisure Occupational Household	SSPAC	Encouraging	Family, social group, friends and health professionals
Salvador et al. ⁽²¹⁾	IPAQ	Leisure	NEWS	Inviting	Family, friends and neighbors
Carlson et al. ⁽²²⁾	CHAMPS Accelerometer	General Walking transportation Leisure walking	PASSS	Encouraging Performing together Inviting	Family and friends
Van Holle et al. ⁽²³⁾	IPAQ Accelerometer	General Walking transportation Leisure walking	Author-developed	Encouraging Performing together	Spouses, friends and acquaintances
Bohm et al. ⁽²⁴⁾	IPAQ	Leisure	PASSS	Encouraging Performing together Inviting	Family and friends
Ory et al. ⁽²⁵⁾	Author-developed	Walking for no reason	Author-developed	Performing together	General
Holmes et al. ⁽²⁶⁾	PAS-LTC	Transportation Personal care Physical exercise Recreation Self-care Repetitive behavior	SSEHS	Encouraging Helping to plan Inviting	Family, friends and health professionals
Mudrak et al. ⁽²⁷⁾	LTEQ PASE	General Leisure Occupational Household Walking Physical exercise	PASSS	Encouraging Performing together Helping to plan Inviting	Family and friends
Warner et al. ⁽²⁸⁾	IPAQ	Physical exercise	PASSS	Encouraging Performing together Helping to plan	Friends, acquaintances and neighbors

PA: Physical Activity; MVPA: Moderate or Vigorous Physical Activity; SSPA: Social Support for Physical Activity; IPAQ: International Physical Activity Questionnaire; LTEQ: Leisure Time Exercise Questionnaire; NEWS: Neighborhood Environmental Walkability Scale; PASE: Physical Activity Scale for the Elderly; PAS-LTC: Physical Activity Survey for Long-Term Care; PASSS: Physical Activity Social Support Scale; SSPAC: Social Support Physical Activity Scale

The objectives and main results of the studies included in this review are presented in Chart III. Most of the studies pointed out a positive association between social support and PA in older adults^(20,21,22,24,25,26,27,28), that is, the greater the perceived social support, the higher the level of physical activity. Only one study⁽²³⁾ did not present such an association.

Chart III - Objectives and main results of the studies selected for review.

Author	Objectives	Main results
Purath et al. ⁽²⁰⁾	To check for relationships between physical fitness, demographic characteristics, general health, well-being, social support and physical activity in older adults.	Physically active older adults presented better levels of strength, aerobic resistance and balance. The social support from health professionals ("encouragement") was related to the level of PA.
Salvador et al. ⁽²¹⁾	To analyze the association between leisure-time physical activity and perception of the environment in older adults.	The presence of courts, banks and health facilities as well as a good perception of daytime security and invitations from friends to perform PA were associated with men's leisure-time physical activity. The presence of churches or religious temples, gyms and squares were associated with women's leisure-time PA.
Carlson et al. ⁽²²⁾	To analyze the associations of psychosocial and environmental aspects with physical activity in older adults.	Neighborhood walkability, social support and self-efficacy were associated with PA (MVPA, walk for transport and leisure). In addition, the interaction between walkability and social support explained the MVPA and the walk for transport.
Van Holle et al. ⁽²³⁾	To assess the effects of psychosocial factors on walkability and PA in older adults.	Social support was not associated with walking for transport and leisure or with the MVPA.
Bohm et al. ⁽²⁴⁾	To describe and assess the association between social support and leisure-time PA in older adults.	Older adults who could count on the family or friends to walk and perform MVPA were more likely to achieve the recommended level of leisure-time PA compared with those who had no companionship. The least reported social support was "performing together" for walking and MVPA. The most perceived social support was the "encouragement" to walk provided by the family, followed by the "invitation" to walk made by the family.
Ory et al. ⁽²⁵⁾	To analyze the influence of sociodemographic, health and environmental factors on walking in older adults.	Older adults without walking companions were less likely to reach the recommended level of PA.
Holmes et al. ⁽²⁶⁾	To assess the impact of intrapersonal, interpersonal and environmental factors on PA in older people living LTCF.	Mood, satisfaction with professionals and activities, and social support from professionals were directly associated with PA.
Mudrak et al. ⁽²⁷⁾	To assess the interaction between social and cognitive variables in PA in older adults.	Self-efficacy and social support were directly associated with self-regulation, which, in turn, was directly associated with PA.
Warner et al. ⁽²⁸⁾	To assess the effects of social support and self-efficacy on physical exercise in older adults.	Older people had greater social support from friends and a high level of self-efficacy and were more active after six months of follow-up.

PA: physical activity; MVPA: moderate or vigorous physical activity; LTCF: long term care facilities for older people

As for the evaluation of the methodological quality, all the studies presented a clear and precise research question, evaluated the outcomes in a valid and standardized way, and presented and discussed the results clearly⁽²⁰⁻²⁸⁾. Only two studies^(22,27) did not describe the losses and exclusions that occurred throughout the study. Of these, only the latter did not describe the eligibility criteria (inclusion and exclusion criteria).

According to the criteria established for the evaluation of the methodological quality, 8 studies^(20-26,28) were included in category A, which indicates good methodological quality, and one study⁽²⁷⁾ presented intermediate methodological quality and was hence included in category B (Chart IV).

Chart IV - Scoring, percentage and categories of the studies according to the criteria established for the evaluation of methodological quality.

Author	Score	%	Category
Purath et al. ⁽²⁰⁾	5	100	A
Salvador et al. ⁽²¹⁾	5	100	A
Carlson et al. ⁽²²⁾	4	80	A
Van Holle et al. ⁽²³⁾	5	100	A
Bohm et al. ⁽²⁴⁾	5	100	A
Ory et al. ⁽²⁵⁾	5	100	A
Holmes et al. ⁽²⁶⁾	5	100	A
Mudrak et al. ⁽²⁷⁾	3	60	B
Warner et al. ⁽²⁸⁾	8	80	A

A: good methodological quality; B: intermediate methodological quality; %: percentage

DISCUSSION

The present study analyzed the relationship between social support and the physical activity in older adults through a systematic review of observational studies published in the last 10 years. It was possible to identify different types of social support as well as the association of these with different domains of physical activity (walking, physical exercise and household, occupational, leisure-time and transportation physical activity).

Social support has been widely studied because it is related to the adoption of healthier behaviors, such as physical activity^(13,14). The present review corroborates the literature as 8 studies included in this review⁽²⁰⁻²⁸⁾ pointed out a positive relationship between SSPA and physical activity among older adults and only 1 study⁽²³⁾ did not confirm such an association.

With regard to the sources of SSPA, the main findings of the studies highlight the social support for physical activity received from family and friends⁽²⁴⁾ and from health professionals^(20,26). These data are consistent with studies carried out with other populations. In adolescents, the social support from parents, relatives and friends was associated with a higher level of physical activity^(37,38).

In addition to support from family and friends, older adults receive SSPA from health professionals as they live with chronic diseases, use health services more often⁽³⁹⁾ and have greater contact with these professionals. Furthermore, a study⁽⁴⁰⁾ showed that primary care professionals can influence older adults' adherence to physical activity.

However, when prescribed, physical activity is seen more as a coadjuvant of some treatment than as an alternative preventive measure. Therefore, in addition to making health professionals aware of the importance of providing social support for physical activity to older adults, it is important to highlight the benefits and the preventive role of adopting more active behaviors in the daily life of this population.

Another relevant finding is the role of family members in this process, as SSPA can influence positively and negatively older adults' physical activity. Older adults' spouses and relatives can provide companionship and encouragement for physical activity, but they may also prohibit it due to several factors⁽⁴¹⁾, such as overprotection and overcare⁽⁴²⁾. In view of the findings regarding the importance of family support for physical activity in older adults, the need to raise the awareness of spouses and family members about the benefits and mechanisms by which PA can be encouraged is emphasized.

As for the type of SSPA, "performing together" was the one that had the greatest effect on older adults^(24,25), but it was the least perceived⁽²⁴⁾. Similarly, in adolescents, instrumental dimensions of SSPA, such as "performing together" and "inviting" were the most associated with physical activity level⁽³⁸⁾. The findings demonstrate the importance of the instrumental dimension of SSPA, i.e., that "performing together" can be more effective than the emotional dimensions (praise and encouragement) and informational dimensions (advice, suggestions and information) of the SSPA for older adults' adherence to physical activity.

Sex-based differences were found in a study⁽²¹⁾ that identified a positive relationship between the SSPA from friends and the level of leisure-time physical activity only for men, with the older adults who were invited by friends to perform physical activity being three times more likely to be physically active in leisure time. The same association was not found for older women in the same study⁽²¹⁾.

However, a study carried out with older women pointed out that SSPA, such as having company to perform physical activity, is a factor that contributes to PA⁽⁴³⁾ and, on the other hand, the lack of companionship is seen by the older women as a barrier to physical activity^(42,44).

The present review has some limitations. First, the studies included in this review used different dimensions and instruments to assess both SSPA and the level of physical activity. Therefore, the power of generalization and comparison in the studies on the theme was compromised. Furthermore, although some studies used instruments to assess different sources (family and friends) and types (performing together, encouraging and helping to plan) of SSPA, the results were presented as general scores, thus preventing the thorough identification and study of the different dimensions of social support^(22,28).

Further studies should be carried out using instruments standardized for older adults and taking into account the psychometric properties, the objective and the age range for which each one is intended. Moreover, consideration should be given to the different areas of SSPA that can be assessed, thus allowing the main sources and types of social support to be identified and studied so as to fill existing gaps in the relationship between SSPA and the level of physical activity among older adults and to support more effective interventions.

In view of the findings, actions to raise friends', family members' and health professionals' awareness of the benefits of PA for the older adults should be developed; additionally, the importance of the social support for older adults' adoption of more active behaviors should be emphasized. It should also be noted that health promotion programs and interventions should be conducted in order to favor the instrumental dimension of social support, that is, performing PA together with friends and/or family members should be encouraged.

CONCLUSION

The results of this review point to a positive relationship between social support and physical activity among older adults. In addition, it was possible to identify the importance of the instrumental function of social support and several sources, such as family, friends and health professionals, to promote active behaviors in this population group.

The study also highlights the need for further research to use instruments standardized for older adults taking into consideration the different types and sources of social support that can be assessed.

CONFLICTS OF INTEREST

The authors declare there are no conflicts of interest in this study.

CONTRIBUTIONS

Bianca Andrade de Sousa and **Rudney da Silva** contributed to the study design and conception; acquisition, analysis and interpretation of data; and writing the manuscript. **Ítalo Ribeiro Lemes** contributed to acquisition, analysis and interpretation of data; and writing the manuscript. **Carlos Eduardo Lopes Verardi**, **Lisiane Piazza Luza** and **Franciele Cascaes da Silva** contributed to the study design and conception; and writing the manuscript.

REFERENCES

1. World Health Organization. World report on ageing and health. Geneva: World Health Organization; 2015.
2. Borges GM, Campos MB, Silva LGC. Transição da estrutura etária no Brasil: oportunidades e desafios para a sociedade nas próximas décadas. In: Ervatti LR, Borges GM, Jardim AP, organizadores. Mudança demográfica no Brasil no início do século XXI: subsídios para as projeções da população. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística; 2015.
3. World Health Organization. Noncommunicable diseases prematurely take 16 million lives annually: WHO urges more action. 2015 [accessed on 2017 Sep 22]. Available from: <http://www.who.int/mediacentre/news/releases/2015/noncommunicable-diseases/en/>

4. Maciel GM. Atividade física e funcionalidade do idoso. *Motriz*. 2010;16(4):1024-32.
5. Nelson ME, Rejeski WJ, Blair SN, Duncan PW, Judge JO, King AC, et al. Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. *Med Sci Sports Exerc*. 2007;39(8):1435-45.
6. American College of Sports Medicine, Chodzko-Zajko WJ, Proctor DN, Fiatarone Singh MA, Minson CT, Nigg CR, et al. Exercise and physical activity for older adults. *Med Sci Sports Exerc*. 2009; 41(7):1510-30.
7. Galloza J, Castillo B, Micheo W. Benefits of exercise in the older population. *Phys Med Rehabil Clin N Am*. 2017;28(4):659-69.
8. Ministério da Saúde (BR). *Vigitel Brasil 2015 Saúde suplementar: vigilância de fatores de risco e proteção para doenças crônicas por inquérito telefônico*. Brasília: Ministério da Saúde; 2017.
9. Resnick B, Orwig D, Magaziner J, Wynne C. The effect of social support on exercise behavior in older adults. *Clin Nurs Res*. 2002;11(1):52-70.
10. Mahmood A, Chaudhury H, Michael YL, Campo M, Hay K, Sarte A. A photovoice documentation of the role of neighborhood physical and social environments in older adults' physical activity in two metropolitan areas in North America. *Soc Sci Med*. 2012;74(8):1180-92.
11. Valerio MP, Ramos LR. Promoção de atividade física à população idosa: revisando possibilidades. *Rev Didática Sistemática*. 2013;15(2):155-73.
12. Chaudhury H, Campo M, Michael Y, Mahmood A. Neighbourhood environment and physical activity in older adults. *Soc Sci Med*. 2016;149:104-13.
13. Devereux-Fitzgerald A, Powell R, Dewhurst A, French DP. The acceptability of physical activity interventions to older adults: a systematic review and meta-synthesis. *Soc Sci Med*. 2016;158:14-23.
14. Glanz K, Rimer BK, Viswanath K, editores. *Health behavior and health education: theory, research, and practice*. 4ª ed. San Francisco: Jossey-Bass; 2002.
15. Gonçalves TR, Pawlowski J, Bandeira DR, Piccinini CA. Avaliação de apoio social em estudos brasileiros: aspectos conceituais e instrumentos. *Ciênc Saúde Colet*. 2011;16(3):1755-69.
16. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA Statement. *PLoS Med*. 2009;6(7):e1000097.
17. World Health Organization. *Active ageing: a policy framework*. Geneva: World Health Organization; 2002.
18. Brasil. Lei nº 1.074, de 1º de outubro de 2003. Dispõe sobre o Estatuto do Idoso e dá outras providências. *Diário Oficial da União*; Brasília, 1 Out 2003.
19. Silva FC, Hernandez SSS, Gonçalves E, Castro TLS, Arancibia BAV, Silva R. Qualidade de vida de policiais: uma revisão sistemática de estudos observacionais. *Rev Cuba Med Mil*. 2014;43(3):341-51.
20. Purath J, Buchholz SW, Kark DL. Physical fitness assessment of older adults in the primary care setting. *J Am Acad Nurse Pract*. 2009;21(2):101-7.
21. Salvador EP, Florindo AA, Reis RS, Costa EF. Percepção do ambiente e prática de atividade física no lazer entre idosos. *Rev Saúde Pública*. 2009;43(6):972-80.
22. Carlson JA, Sallis JF, Conway TL, Saelens BE, Frank LD, Kerr J, et al. Interactions between psychosocial and built environment factors in explaining older adults' physical activity. *Prev Med*. 2012;54(1):68-73.
23. Van Holle V, Van Cauwenberg J, Deforche B, Van de Weghe N, De Bourdeaudhuij I, Van Dyck D. Do psychosocial factors moderate the association between objective neighborhood walkability and older adults' physical activity? *Health Place*. 2015;34:118-25.
24. Böhm AW, Mielke GI, da Cruz MF, Ramirez VV, Wehrmesister FC. Social support and leisure-time physical activity among the elderly: a population-based study. *J Phys Act Health*. 2016;13(6):599-605.
25. Ory MG, Towne SD Jr, Won J, Forjuoh SN, Lee C. Social and environmental predictors of walking among older adults. *BMC Geriatr*. 2016;16(1):155.

26. Holmes SD, Galik E, Resnick B. Factors that influence physical activity among residents in assisted living. *J Gerontol Soc Work*. 2017;60(2):120-37.
27. Mudrak J, Slepicka P, Elavsky S. Social cognitive determinants of physical activity in Czech older adults. *J Aging Phys Act*. 2017;25(2):196-204.
28. Warner LM, Ziegelmann JP, Schüz B, Wurm S, Schwarzer R. Synergistic effect of social support and self-efficacy on physical exercise in older adults. *J Aging Phys Act*. 2011;19(3):249-61.
29. Washburn RA, Smith KW, Jette AM, Janney CA. The physical activity scale for the elderly (PASE): development and evaluation. *J Clin Epidemiol*. 1993;46(2):153-62.
30. Stewart AL, Mills KM, King AC, Haskell WL, Gillis D, Ritter PL. CHAMPS physical activity questionnaire for older adults: outcomes for interventions. *Med Sci Sports Exerc*. 2001;33(7):1126-41.
31. Resnick B, Galik E. The reliability and validity of the physical activity survey in long-term care. *J Aging Phys Act*. 2007;15(4):439-58.
32. Godin G, Shephard RJ. A simple method to assess exercise behavior in the community. *Can J Appl Sport Sci*. 1985;10(3):141-6.
33. Sallis JF, Grossman RM, Pinski RB, Patterson TL, Nader PR. The development of scales to measure social support for diet and exercise behaviors. *Prev Med*. 1987;16(6):825-36.
34. Cousins SO. Exercise cognition among elderly women. *J Appl Sport Psychol*. 2008;8(2):131-45.
35. Sallis JF, Hovell MF, Hofstetter CR, Elder JP, Hackley M, Caspersen CJ, et al. Distance between homes and exercise facilities related to frequency of exercise among San Diego residents. *Public Health Rep*. 1990;105(2):179-85.
36. Casado BL, Resnick B, Zimmerman S, Nahm ES, Orwig D, Macmillan K, et al. Social support for exercise by experts in older women post-hip fracture. *J Women Aging*. 2009;21(1):48-62.
37. Cheng LA, Mendonça G, Farias JC Jr. Physical activity in adolescents: analysis of the social influence of parents and friends. *J Pediatr (Rio J)*. 2014;90(1):35-41.
38. Mendonça G, Cheng LA, Mélo EN, Farias JC Jr. Physical activity and social support in adolescents: a systematic review. *Health Educ Res*. 2014;29(5):822-39.
39. Lima Costa MF. Epidemiologia do envelhecimento no Brasil. In: Rouquayrol MZ, Almeida N Filho, organizadores. *Epidemiologia & saúde*. 6ª ed. Rio de Janeiro: Medsi; 2003.
40. Horne M, Skelton D, Speed S, Todd C. The influence of primary health care professionals in encouraging exercise and physical activity uptake among White and South Asian older adults: experiences of young older adults. *Patient Educ Couns*. 2010;78(1):97-103.
41. Fuller BG, Stewart Williams JA, Byles JE. Active living – the perception of older people with chronic conditions. *Chronic Illn*. 2010;6(4):294-305.
42. Lopes MA, Krug RR, Bonetti A, Mazo GZ. Barreiras que influenciaram a não adoção de atividade física por longevas. *Rev Bras Ciênc Esporte*. 2016;38(1):76-83.
43. Krug RR, Lopes MA, Mazo GZ. Barreiras e facilitadores para a prática da atividade física de longevas inativas fisicamente. *Rev Bras Med Esporte*. 2015;21(1):57-64.
44. Cassou AC, Fermio R, Rodriguez Añez CR, Santos MS, Domingues MR, Reis RS. Barriers to physical activity among Brazilian elderly women from different socioeconomic status: a focus-group study. *J Phys Act Health*. 2011;8(1):126-32.

First author's address:

Bianca Andrade de Sousa
Universidade do Estado de Santa Catarina
Rua Pascoal Simone, 358
Bairro: Coqueiros
CEP: 88080-350 - Florianópolis - SC - Brasil
E-mail: bia-andrade@hotmail.com

Mailing address:

Rudney da Silva
Universidade do Estado de Santa Catarina
Rua Pascoal Simone, 358
Bairro: Coqueiros
CEP: 88080-350 - Florianópolis - SC - Brasil
E-mail: rudney.silva@udesc.br

How to cite: Sousa BA, Lemes ÍR, Verardi CEL, Luza LP, Silva FC, Silva R. Social support and physical activity in older adults: a systematic review of observational studies. Rev Bras Promoç Saúde. 2019;32:8635.
