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Associations between everyday physical activity and morale in older adults

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ABSTRACT

Studies that objectively investigate patterns of everyday physical activity in relation to well-being and that use measures specific to older adults are scarce. This study aimed to explore objectively measured everyday physical activity and sedentary behavior in relation to a morale measure specifically constructed for older adults. A total of 77 persons (42 women, 35 men) aged 80 years or older (84.3 ± 3.8) wore an accelerometer device for at least 5 days. Morale was measured with the Philadelphia Geriatric Center Morale Scale (PGCMS). PGCMS scores were significantly positively associated with number of steps, time spent stepping, and time spent stepping at >75 steps per minute. Sedentary behavior did not associate with PGCMS. Promoting PA in the form of walking at any intensity—or even spending time in an upright position—and in any quantity may be important for morale, or vice versa, or the influence may be bidirectional.

Introduction

There is an association between physical activity (PA) and well-being in older adults.[1-3] Even non-intensive PA of as little as 20 min per week is associated with reduced psychological distress.[4] Specifically for older adults, PA is one of the components of well-being and is associated with fewer depressive symptoms and distress.[5]

The role of PA in preventing illness and promoting health and well-being in all ages is well established; however, aging is often accompanied by reduced PA and increased sedentary time.[6,7] Sedentary behavior, as in spending waking time seated, lying down, or reclining,[8] is related to a plethora of adverse outcomes, such as depressive symptoms, cardiovascular disease, type 2 diabetes, cancer,[9] cognitive decline,[10] and mortality.[11]

Normal aging is accompanied by a loss of muscle mass,[12] and older adults often live with chronic illness or disability. Therefore, few older adults achieve the general PA recomendations[13]; 100 steps/minute is often used to define beneficial PA intensity when walking,[14] and 7000–10,000 steps/day are recommended.[15] However, even light PA, such as walking slowly, may prevent depressive symptoms in older adults,[16] therefore promotion of activities such as light walking and reducing sedentary time may be more relevant in this age group.[17] Thus, there is a need for more knowledge that can be used to promote the well-being of very old adults and identify interventions to increase PA,[18] and to develop better outcome measurements that will enable the evaluation of interventions.[19]

Lawton constructed the philadelphia geriatric center morale scale (PGCMS) especially for evaluating the well-being aspect of morale in older adults.[20] Morale is a measure that includes social, emotional, cognitive, and conative aspects of well-being.[21] The PGCMS has since been translated and validated in numerous languages and cultures[22] and is currently one of the most recognized instruments for measuring well-being in older adults.

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Considering the special conditions, circumstances, and physical and mental aspects that differentiate older adults from younger adults, specifically regarding PA, it is important that research and utilized measures are designed specifically for this age group.

Studying everyday PA such as walking in relation to well-being in the older population may, however, be problematic for several reasons. Self-reporting instruments are often used to report everyday PA, but these measures are prone to bias (for example, recall bias), which may be an even larger issue in older populations. Underestimation of sedentary time or social desirability bias can also be an issue.[23-25] Additionally, self-reported hours spent in an upright position are difficult to estimate. Research on PA and well-being associations is often carried out using subjective PA measures, however objective measures of PA can thus provide more specific data with less bias.[26] This can be achieved by accelerometer devices to reflect everyday PA patterns and frequencies.

In order to design interventions and research related to PA and well-being in older adults, it is important to use appropriate measures of PA and well-being that are specific to this age group.[27] Also, further knowledge of how different types of activities and frequencies are associated with well-being could help design interventions and policies concerning PA in an age group that may be excluded from general guidelines due to illness and normal age-related changes. The hypothesis is that even small amounts of PA could associate with higher well-being when controlling for other relevant factors, in older adults. To our knowledge, associations between objectively measured PA types and frequencies, and morale in older adults aged 80 years or older have yet to be described.

Objective

To explore associations between device-measured everyday physical activity/sedentary behavior and the well-being aspect of morale measured by the Philadelphia Geriatric Center Morale Scale and its subscales, in older adults aged 80 years or older.

Method

Design and setting

This cross-sectional study included a sub-sample of the Silver-MONICA cohort. Silver-MONICA is a longitudinal study that included persons in Norrbotten and Västerbotten counties who participated at least twice in the Northern Sweden MONICA study[28] and were 80 years or older at the time of data collection in 2016–2019 (n = 541).

Inclusion procedure

Convenience sampling was conducted with participants recruited from a geographical area within the Norrbotten cohort, close to the study center. Inclusion criteria were participating in the Silver-MONICA study, living within a specified geographical area in Norrbotten, completing the PGCMS instrument, and having at least 5 consecutive valid days of activity measurement. A total of 128 persons were initially eligible for participation; 36 declined and 3 were deceased before inclusion, these were not significantly different from the participants regarding sex or age ($p>0.05$). Four participants had no PGCMS data, 6 participants had less than 5 days of accelerometer wear time, 1 measurement was excluded due to technical failure, and 1 device was lost during measurement. Finally, 77 participants remained for analysis.

Data collection

In order to ensure reliability, all research assistants involved in data collection in the Silver-MONICA studies were trained in the procedure. However for the particular subsample in the current study, participants were visited twice in their home (nursing home or ordinary housing) by the first author. During the first visit, consent forms were collected, primary data collection was conducted, and activity measurement was initiated. The accelerometer (activPAL3 Micro; PAL Technologies Ltd., Glasgow, UK) was chosen over other activity monitoring devices for its validity in comparison with direct observation[29] and its ability to measure both postural elements as well as stepping and stepping cadence. After 7 days of activity measurement, the device was collected at a second visit. The device was fitted ventrally mid-thigh inside a waterproof nitrile casing and attached with dermatologically friendly adhesive. Participants were instructed to wear the device at all hours of the day and to remove it only temporarily while bathing. At least 5 days of consecutive measurement were required for inclusion, as this has been found to be representative of weekly activity in adults using the activPAL system.[30] A day of measurement with more than 4 h of consecutive non-recorded activity was deemed non-valid. The activPAL measurements were reported as the average for the number of valid days in the recording. Stepping at ≥100 steps per minute (SPM) is often used as a definition of moderate activity in adults[14]; however, in this cohort of older adults very few participants and very little time was spent stepping at >100 SPM. In this study, time spent at >75 SPM was used for studying walking at a faster pace than normal in the context of everyday ambulatory behavior, often referred to as moderate activity, which is activity that produces a noticeable increase in breathing and heart rate.[31] Sedentary behavior was represented by time spent sitting. Upright time was total time spent standing or walking. Standing time referrers to time spent standing without stepping. Mean self-paced gait speed (m/s) was calculated from an 8-foot (2.4-meter) gait speed test repeated twice.

Morale was measured using the Swedish version[32] of the 17-item Philadelphia Geriatric Center Morale Scale (PGCMS). Three domains, Attitude Toward Own Aging (ATOA), Agitation, and Lonely Dissatisfaction (LD) have been identified in a factor analysis of the English version of the PGCMS scale[20] and replicated in a validity study of the Swedish version[33] (Appendix A). Missing items due to participant nonresponse were scored as zero. A score of 13–17 was defined as high morale, 10–12 as mid-range, and 9 or less as low.[34]

Information about participant characteristics was collected at the first home visit. Diagnoses, medical conditions, and prescribed drugs were validated against medical records. Hearing impairment refers to the ability to hear normal speaking volume from a distance of 1 meter. Vision impairment refers to the ability to read a sentence of 5-mm block letters from a distance of 30 cm. Nutritional status was measured with the Mini Nutritional Assessment scale,[35] with scores at or below 23.5 classified as at risk for malnutrition and scores below 18 as malnourished. Activities of daily living (ADL) were assessed for instrumental (I-ADL) and personal independence (P-ADL) according to the Katz ADL staircase.[36] Depression was assessed with the Geriatric Depression Scale (GDS-15),[37] where higher scores indicate depressive symptoms and a score of 5 indicates depression. Cognitive function was assessed with the Mini-Mental State Examination,[38] where a score below 24 was rated as abnormal. Findings suggestive of dementia were evaluated by specialists in geriatric medicine, using the Diagnostic Statistical Manual of Mental Disorders, fourth and fifth editions.[39,40] The single-item 30-second chair stand test was carried out were the participant, arms crossed in front of the chest, raises and sits in a chair as many times as possible in 30 s. This has been showed a reliable and valid assessment of lower extremity strength.[41]

Analysis

Differences between groups were tested with the independent samples *t*-test and Mann-Whitney U test when appropriate.

The associations between PGCMS and PA/sedentary measures were explored using multivariable linear regression, including age, sex, and number of years in school as potential confounders. For readability (Table 3), minutes in the measurements were transformed to hours, and number of steps into units of 1000. P-values less than 0.05 were considered statistically significant. Due to multiple regressions per PGCMS variable, we used a modified Bonferroni–corrected level of statistical significance at < 0.0083. All analyses were conducted using SPSS (ver. 26; IBM Corporation, Armonk, NY, USA).

Ethics

This study was planned and carried out in accordance with the Declaration of Helsinki,[42] and was ethically reviewed and approved by the Regional Ethical Review Board in Umeå Sweden (dnr 2015–11–31 M, 2016–241–32 M and 2018/381–31). All participants received written and oral information before signing the consent form. Participation could be terminated at any point, without stating any reason for choosing to do so. The analysis was done using pseudo-anonymized data. All tests were supervised by an experienced physiotherapist/nurse, and the tests were stopped upon suspicion of potential negative consequences for the participant. In case of cognitive impairment, the participant's relatives, next of kin, or trustee was consulted before inclusion.

Results

Participant characteristics and statistics

The final sample included 77 participants, 42 (55%) women and 35 (45%) men, primarily living in ordinary housing (Table 1). One woman and one man resided in nursing homes. Compared with men, women were to a larger extent living alone ($p<0.001$), were more often diagnosed with osteoarthritis (p = 0.018), were more often medicated with benzodiazepines (p = 0.018) and analgesics (p = 0.022), and had higher systolic (p = 0.010) and diastolic (p = 0.016) blood pressure. Men more often had a medical history of cardiovascular infarction (p = 0.004), had impaired hearing (p = 0.013), and were more dependent on assistance with instrumental ADL (I-ADL) (p = 0.008) compared with women.

There were no significant differences between women and men in regard to activity types or PGCMS scores except for women spending more time standing without stepping ($p<0.05$) (Table 2). The mean number of steps per number of valid days in the accelerometer recording was 6166, which translates to an average of 84 min of walking per day. Out of these, a mean of 33 (39%) minutes were spent walking at >75 SPM. Mean time spent in an upright position was 339 min (5 h, 39 min) out of which 255 min (4 h, 15 min) was spent standing without stepping. Time spent sitting was 558 min (9 h, 18 min). Mean gait speed was 0.75 m/s. Total PGCMS mean score was 13.2.

PA and morale associations

Adjusted for age, years in school, and sex, the PGCMS total score was significantly associated with number of steps, total time spent stepping, and time spent at >75 SPM (Table 3). Hence, results suggest that for every thousand (1000) steps, the PGCMS total score was 0.190 points higher, for every hour spent stepping the PGCMS total score was 0.896 points higher. As for the association with time spent stepping at >75 SPM, every hour translated to another 1.545 points on the PGCMS total score. The ATOA and LD subscales displayed similar associations as the PGCMS total score; however, LD was also significantly associated with time spent upright and time spent standing. Taking potential multiple comparison issues into account, significant associations remained for total number of steps in the ATOA and LD subscales, along with time spent stepping in the LD subscale. The Agitation subscale showed no statistically significant associations with any of the activity or sedentary measures. The sedentary measure of sitting time was not associated with any of the PGCMS measures (Table 3).

Table 1
Background characteristics, total, and divided by sex.

	Total (n = 77)	Women (n = 42)	Men (n = 35)
Sociodemographics			
Age	84.3 ± 3.8	84.4 ± 3.5	84.1 ± 4.3
Nursing home resident	2 (2.6)	1 (2.4)	1 (2.9)
Living alone	32 (42.0)	28 (67.1)	4 (11.4)
Years in school (n = 76)	10.1 ± 3.7	10.0 ± 3.6	10.4 ± 2.9
Diagnoses			
Dementia	18 (23.4)	8 (19.0)	10 (28.6)
Cerebrovascular event (ever)	10 (13.0)	7 (16.7)	3 (8.6)
Myocardial infarction (ever)	11 (14.3)	2 (4.8)	9 (25.7)
Hypertension	57 (74.0)	31 (73.8)	26 (74.0)
Heart failure	8 (10.4)	4 (9.5)	4 (11.4)
Hip fracture	4 (5.2)	2 (4.8)	2 (5.7)
Diabetes	8 (10.4)	2 (4.8)	6 (17.1)
Osteoarthritis	40 (52.0)	27 (64.3)	13 (37.1)
Chronic respiratory disease	14 (18.2)	8 (19.0)	6 (17.1)
Prescribed medications (current)			
Benzodiazepines	13 (17.0)	11 (26.0)	2 (5.7)
Antidepressants	8 (10.4)	6 (14.0)	2 (5.7)
Analgesics	44 (57.0)	29 (69.0)	15 (42.9)
Total nr of prescriptions	7.0 ± 3.5	6.9 ± 3.3	7.1 ± 3.9
Specific characteristics			
Pain during last week	36 (46.8)	23 (54.8)	13 (37.1)
Hearing impairment	26 (33.8)	9 (21.4)	17 (48.6)
Vision impairment	24 (31.2)	16 (38.1)	8 (22.9)
Mini Nutritional Assessment (0–30)	25.8 ± 2.3	26.1 ± 2.1	25.5 ± 2.4
Body mass index (BMI)	25.3 ± 4.1	25.4 ± 4.1	25.1 ± 4.2
Systolic blood pressure, mm Hg (n = 76)	144.1 ± 21.6	149.8 ± 23.6	137.4 ± 17.0
Diastolic blood pressure, mm Hg (n = 76)	76.8 ± 10.1	79.3 ± 10.4	73.8 ± 9.1
I-ADL independence	37 (48.1)	26 (61.9)	11 (31.4)
P-ADL independence	69 (89.6)	39 (92.9)	30 (85.7)
Geriatric Depression Scale (0–15)	2.0 ± 1.7	1.9 ± 1.7	2.1 ± 1.8
Mini-Mental State Exam (0–30)	26.0 ± 3.3	26.3 ± 2.7	25.6 ± 4.0
30-*sec* chair stand test (n = 69)	13.6 ± 5.7	13.5 ± 4.1	13.7 ± 7.3
Gait speed, m/s (n = 76)	0.73 ± 0.2	0.75 ± 0.2	0.72 ± 0.18
Falls last week (n = 75)	6 (8.0)	3 (7.3)	3 (8.8)
Use of walking aid indoors (n = 76)	19 (25)	11 (26.2)	8 (23.5)

Characteristics are presented as n (%) or mean ± SD. Diagnoses refer to ever being diagnosed. Medications include pro re nata (PRN) prescriptions. P-ADL and I-ADL refer to Katz's personal activities of daily living and Katz's instrumental activities of daily living, respectively. The Geriatric Depression Scale indicates more depressive symptoms with higher scores.

Discussion

This study describes significant associations between PA measured with an accelerometer and morale measured by PGCMS. However, associations differed among the PGCMS subscales, with Agitation subscale having no significant associations, Attitude towards aging subscale having significant associations with number of steps/stepping time and time spent stepping at >75 SPM, and Lonely dissatisfaction subscale having associations with the same activity variables as Attitude towards aging subscale plus time spent in an upright position and time spent standing. The most distinct associations were found between the morale measures and time

Table 2
Physical activity and morale characteristics, total and divided by sex.

Activity type	Total	Women	Men	p
Number of steps[1]	6166 ± 3752 (5719; 4–16,947)	6115 ± 3643 (5799; 4–12,973)	6227 ± 3930 (5463; 120–16,947)	0.9
Upright time, min[1]	339 ± 134 (345; 7–614)	362 ± 141 (390; 7–614)	312 ± 121 (324; 63–559)	0.1
Standing time, min[1]	255 ± 111 (252; 7–504)	280 ± 117 (274; 7–504)	224 ± 97 222; 47–496	.02*
Stepping time, min[1]	84 ± 47 (80; 0.1–220)	81.1 ± 46 (81; 0.1–165)	88 ± 50 (80; 3.2–221)	0.5
>75 SPM, min[2]	33 ± 26 (32; 0.0–117)	35 ± 25 (34; 0–87)	32 ± 27 (28; 0–117)	0.6
Sitting time, min[1]	558 ± 129 (572; 179–865)	540 ± 130 (559; 225–784)	579 ± 127 (578; 179–865)	0.2
Morale				
PGCMS total score (0–17)	13.2 ± 2.4 (14.0; 3.5)	12.9 ± 2.4 (13.0; 4.0)	13.5 ± 2.4 (14.0; 3.0)	0.2
PGCMS Agitation (0–8)	4.9 ± 1.2 (5.0; 2.0)	4.7 ± 1.3 (5.0; 2.0)	5.1 ± 1.0 (5.0; 1.0)	0.2
PGCMS ATOA (0–5)	2.8 ± 1.4 (3.0; 2.0)	2.7 ± 1.4 (3.0; 2.0)	2.9 ± 1.3 (3.0; 2.0)	0.6
PGCMS LD (0–6)	5.5 ± 0.9 (6.0; 1.0)	5.5 ± 0.8 (6.0; 1.0)	5.5 ± 1.0 (6.0; 1.0)	0.6

Activity type includes measures from ActivPAL, presented as mean ± SD, (median; range).
[1] Indicates the average for a number of valid days in the recording. [2]Indicates stepping bouts with less than 10 steps excluded. PGCMS, Philadelphia Center Morale Scale, presented as mean and SD, (median; IQR). ATOA, attitude towards own aging. LD, lonely dissatisfaction. * $p < 0.05$.

spent stepping at >75 SPM. Time spent sitting did not associate with the PGCMS or subscales.

To interpret why the lonely dissatisfaction domain was associated with the activity variables examined (including time spent in upright position and time spent standing), prior descriptions of associations between PA and both loneliness and satisfaction need to be considered, both separately and in relation to each other. Associations between loneliness and PA have previously been described as working in both directions, with PA decreasing loneliness and loneliness reducing PA. Further, this relationship is mediated or moderated by

Table 3
Morale and PA associations: univariable and multivariable regression analysis.

	Unadjusted		Adjusted	
	B	95% CI for B	B	95% CI for B
PGCMS total				
Number of steps	0.213	0.077 to 0.349	0.190*	0.039 to 0.341
Time in upright position	0.134	−0.107 to 0.374	0.131	−0.116 to 0.378
Time spent standing	0.009	−0.283 to 0.300	0.042	−0.259 to 0.343
Time spent stepping	1.022	0.378 to 1.666	0.896*	0.190 to 1.602
Time spent at >75 SPM[1]	1.704	0.501 to 2.908	1.545*	0.199 to 2.891
Time spent sitting	0.128	−0.122 to 0.377	0.111	−0.146 to 0.367
Agitation				
Number of steps	−0.002	−0.077 to 0.072	−0.007	−0.089 to 0.075
Time in upright position	−0.071	−0.195 to 0.053	−0.057	−0.186 to 0.072
Time spent standing	−0.109	−0.257 to 0.040	−0.083	−0.239 to 0.073
Time spent stepping	0.030	−0.323 to 0.383	−0.003	−0.388 to 0.383
Time spent at >75 SPM[1]	−0.073	−0.725 to 0.579	−0.063	−0.793 to 0.666
Time spent sitting	0.111	−0.015 to 0.238	0.095	−0.038 to 0.227
Attitude towards own aging				
Number of steps	0.133	0.054 to 0.211	**0.119****	0.032 to 0.206
Time in upright position	0.081	−0.059 to 0.221	0.069	−0.075 to 0.212
Time spent standing	0.007	−0.163 to 0.177	0.010	−0.164 to 0.185
Time spent stepping	0.610	0.237 to 0.983	0.542**	0.134 to 0.950
Time spent at >75 SPM[1]	1.115	0.424 to 1.805	0.996*	0.222 to 1.770
Time spent sitting	0.000	−0.146 to 146	0.000	−0.149 to 0.150
Lonely dissatisfaction				
Number of steps	0.083	0.033 to 0.132	**0.078****	0.022 to 0.134
Time in upright position	0.124	0.039 to 0.208	0.119**	0.031 to 0.208
Time spent standing	0.110	0.005 to 0.215	0.115*	0.006 to 0.224
Time spent stepping	0.382	0.145 to 0.619	**0.357****	0.095 to 0.620
Time spent at >75 SPM[1]	0.663	0.221 to 1.104	0.613*	0.112 to 1.114
Time spent sitting	0.016	−0.077 to 0.109	0.016	−0.080 to 0.112

Note: Analysis of covariance, unadjusted and adjusted for age (nr), years in school (nr), and sex. Figures in bold indicate statistical significance when Bonferroni adjusted. Measures are the average for the number of valid days in the recording, time reported in hours, and number of steps in units of 1000. [1]Indicates stepping bouts with less than 10 steps excluded. SPM, steps per minute. PGCMS, Philadelphia Geriatric Center Morale Scale. * $p < 0.05$. ** $p < 0.01$.

social competence or social support.[43] Interpreted in relation to Lawton's model of good life,[44] environmental barriers can arise when behavioral competence is compromised, reducing the possibility of social interaction. This is perhaps most salient if everyday PA is viewed as a proxy for physical capability or ability to ambulate, making it a precursor for many of the sectors in Lawton's model and well-being older adults, which has been previously described.[45]

Everyday PA has also been described as positively associated with satisfaction in older adults, along with life satisfaction being higher on days of more than usual PA.[46] Further, emotional support and a physically active lifestyle have been described as the most important factors for satisfaction in older adults,[47] which may provide a clue as to why the lonely dissatisfaction factor was associated with the PA measures in this study.

In the current study, women spent more time standing than men. Differences between the sexes regarding time spent in household work that may include standing activities, has been described.[48] However, the sample is two small do draw any further conclusions concerning well-being/PA differences between sexes

The Attitude towards aging subscale and everyday PA associations may be explained by walking being an important reference point when assessing aging. PA has previously been described as one of the major factors for self-rated health in older adults.[49] According to Lawton's model of good life in older adults, self-rated health is, in turn, important for well-being.[44]

The Agitation subscale did not associate with any of the PA measures. Perhaps this is due to agitation being a temporary state that does not influence a person's PA pattern in a meaningful way. As such, this could be considered in planning further research and perhaps also in relation to interventions intended to handle agitation-related issues. It could also serve as relevant information in further study of PA and well-being in older adults.

Further, sedentary time measured as sitting time did not associate with PGCMS or any of the subscales. Similar results have been described before in accelerometer measurements of older adults, where well-being is uncorrelated with sedentary time; however, sedentary behavior seems to be associated with depression,[50] which indicates the necessity to differentiate between well-being and depression and associations with PA/sedentary behavior in older adults.

Results from the current study shed some light on associations between everyday PA and morale in very aged adults, and the attention that such associations should be given in policy making and planning for future nursing in this growing age group. This study is the first to investigate and suggest associations between morale measured by PGCMS and objectively measured everyday PA, and to find that even the very light PA of spending time in an upright position or simply standing without stepping is positively associated with morale. Thereby this study emphasizes that promotion of all PA however low intensity, or even standing, can be of important for morale in this age group.

Limitations

Using a cross-section convenience sample from a longitudinal study could introduce survivorship bias and could mean the sample is healthier or in other aspects not comparable to a cross-section from the general population. Further, the relatively small sample limited the statistical analyses; a larger sample would allow for stratified analyses that could provide more nuanced results, control for additional confounders, and avoid possible multiple-comparisons problems. Results of associations between sedentary behavior and morale should be interpreted with caution due to the limits of the measuring method, such as separating sleeping while sitting from active sitting behavior. Further research that specifically studies associations between well-being and sedentary behavior in older adults should implement complementary methods for data collection.

Conclusion

Time spent stepping at any intensity, particularly time spent stepping at >75 SPM, but also time spent in upright position or standning as part of everyday life, was related to morale in older adults. Specifically, the Lonely dissatisfaction and Attitude towards aging subscales displayed such associations, while the Agitation subscale displayed no associations with the PA measures. Further, no associations were found between morale and sedentary time. PA in the form of walking at any rate and in quantities well below current recommendations of PA, or even time spent standing, were related to higher morale. Especially, moderate PA (as time at >75 SPM) seems to have a strong positive relationship to morale. Promoting PA such as walking at any intensity or frequency, or even spending time standing, may be important for morale, or vice versa, or the influence may be bidirectional. This should be considered when planning and performing care for older adults, as well as in policy making.

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Appendix A

Appendix A

Appendix A
Philadelphia Geriatric Center Morale Scale (questionnaire form).

Agitation	Do little things bother you more this year?	Yes____ **No**____
	Do you sometimes worry so much that you can't sleep?	Yes____ **No**____
	Are you afraid of a lot of things?	Yes____ **No**____
	Do you get mad more than you used to?	Yes____ **No**____
	Do you take things hard?	Yes____ **No**____
	Do you get upset easily?	Yes____ **No**____
Attitude Toward Own Aging	Do things keep getting worse as you get older?	Yes____ **No**____
	Do you have as much energy as you did last year?	**Yes**____ No____
	As you get older do you feel less useful?	Yes____ **No**____
	As you get older, are things better than expected?	**Yes**____ No____
	Are you as happy now as you were when you were younger?	**Yes**____ No____
Lonely Dissatisfaction	Do you sometimes feel that life isn't worth living?	Yes____ **No**____
	Do you have a lot to be sad about?	Yes____ **No**____
	Is life hard for you most of the time?	Yes____ **No**____
	Are you satisfied with your life today?	**Yes** ____No____
	Do you feel lonely much?	Yes ____**No** ____
	Do you see enough of your friends and relatives?	**Yes**____ No____

Answer options in bold are one point on the total score/subscale score. The higher the score, the higher the morale.

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