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Leisure Activities and Well-Being among Older Adults with Possible Sarcopenia and Multimorbidity

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SUMMARY

Background: Participation leisure activities can improve well-being. However, research on leisure activities and perceived well-being among older adults with possible sarcopenia and multimorbidity is limited. The aims of the study were to explore the relationship between leisure activities and well-being among older adults with possible sarcopenia and multimorbidity.

Methods: A cross-sectional design was used to explore the relationship between leisure activities and well-being among older adults who have possible sarcopenia. Demographic questionnaire, the Leisure Time Physical Activity Scale, and the Well-being Visual Analogue Scale were used. Hierarchical regression analysis was used to evaluate the relationship with leisure activities and well-being among the demographic variables.

Results: A total of 241 participants were recruited. Age, occupation, exercise habits, weekly exercise frequency, and duration of each exercise were significantly correlated with overall participation in leisure activities for older adults with possible sarcopenia. Educational background, occupation, living conditions, and duration of exercise were found to be significantly correlated with the perceived well-being. Leisure activities were significantly correlated with well-being. Further, social activities were determined to be an effective predictor of well-being.

Conclusions: The leisure activities and well-being of older adults with possible sarcopenia and multimorbidity are significantly correlated. Patients who participate more frequently in leisure activities have greater perceived well-being. Participation in social activities is likely to generate strong feelings of well-being. Encouraging such patients to participate in leisure activities can enhance their perceived well-being.

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1. Introduction

Well-being is an important perception and is highly correlated with an active life for older adults.¹ Well-being is defined as a subjective feeling of life, physical health, positive emotions, and life enjoyment in an individual.² A decrease in well-being may affect the physical and mental health conditions for older adults. Further, aging may be accompanied by chronic diseases, or multimorbidity, which is defined as the presence of two or more diseases at the same time.³ Geriatric populations with multimorbidities may experience physical functional degeneration, falls, and poor quality of life, which cause a decrease or loss in the sense of well-being; the multimorbidities may even result in death.^{4,5} Previous studies also indicate that lower well-being might increase disability in multimorbidity patients and result in cognitive function decline and decreased social engagement.⁶ Past studies indicated that physical activity is associated with lower-limb muscles, higher well-being have more leisure activities with friends.^{7–10}

Leisure activities play a valuable role in the mental health of

older adults.¹¹ Leisure activities are defined as spontaneous, voluntary, and conscious activities carried out in one's free time outside of work based on an autonomous decision, resulting in feelings, experiences, and action.¹² These activities can provide physical and mental relaxation, entertainment, and personal development.^{4,8} Participation in leisure activities ultimately leads to physical and mental well-being. Most older adults are likely to participate in sedentary leisure activities, such as watching television and chatting, but also may engage in walking.¹³ Leisure activities not only improve physical function but also advance the mental health.^{2,13,18} The types of leisure activities are associated with gender, age, marital status and income.^{12,15} Education was a factor for selecting the leisure activities.^{16,17}

There are few studies that focus on the relationships among possible sarcopenia, leisure activities, and well-being in the geriatric population. The relationships among demographics, leisure activities, and well-being also have not been widely explored. Therefore, it is worthwhile to investigate the relationships among demographics, leisure activities, and well-being in patients with possible sarcopenia. The purposes of the study were to explore the relationship between leisure activities and well-being among older adults with possible sarcopenia and multimorbidity.

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2. Materials and methods

2.1. Study participants and data analysis

The study data were part of the baseline data of the project, “Resilience, nutrition and physical activity in sarcopenia older adults with cardiovascular disease-qualitative and quantitative longitudinal research,” funded by the Ministry of Science and Technology (MOST 106-2314-B-010-059-MY3). The data were collected at two hospitals in Taipei City, Taiwan between March to June, 2017. The inclusion criteria were (1) aged 65 years and above; (2) a diagnosis of possible sarcopenia; (3) two or more comorbid chronic diseases (e.g., hypertension, diabetes, ulcerative disease, skeletal joint disease); (4) clear consciousness; and (5) able to communicate orally in Chinese or Taiwanese. Psychiatric disease, dementia, cancer, or inability to communication were exclusion criteria. SPSS Statistics for Windows, version 20.0, was used for statistical analysis. Continuous variables are presented as mean (M) ± standard deviation (SD), and categorical variables are shown as number (n) and percentage (%). Independent t-tests, one-way ANOVAs, Pearson correlation analysis, and hierarchical regression analysis were used to evaluate the relationship between the leisure activities and well-being and possible sarcopenia in older adults. The two-tailed significance level was $p < .05$ in the study.

2.2. Study measurements

Demographic and disease information questionnaires were used to evaluate the existence of multimorbidities. The Leisure Time

Physical Activity Scale (LTPA) (Ho, 1992)¹⁹ was used to assess the frequency of leisure activities. The LTPA assesses five types of leisure activities: recreational, hobbyist, fitness, learning, and social. The 30-item scale is answered using a 5-point (1–5) rating scale, for which a higher score indicates more frequent leisure activity participation. The Cronbach α value for the LTPA was 0.71 in the present sample. Self-perceived level of well-being was determined by the Visual analog scale (VAS), which also is used to assess other feelings, including emotions and attitudes. The rating scale is from 0 to 10, and a higher score indicates a higher level of well-being. Level of well-being was self-reported by participants. VAS is easier to understand for the older adults to self-answer. Therefore, scores over 7 were considered to be indicative of higher level of well-being, however, score under 5 were considered to be indicative of lower level of well-being. The method of assessment was referred the Neide²⁰ and Ian McDiwell²¹'s studies.

2.3. Research ethics

Taipei Veterans General Hospital approval the Institutional Review Board (IRB) statement of this study (IRB No: 2017-01-008BC), and informed consent were obtained, as well as written consent from participants, before the study was performed.

3. Results

A total of 241 participants were enrolled. As presented in Table 1, the largest percentages of the participants were males (51%); over 85 years old (42.7%); married (63.9%); elementary school education

Table 1
Analysis of demographic variables, leisure activities, and well-being (N = 241).

Variable	n (%)	Leisure activities		Well-being	
		M ± SD	t/Scheffe's F	M ± SD	t/Scheffe's F
Sex			.941		.710
① Male	123 (51)	0.83 ± 0.35		7.18 ± 2.14	
② Female	118 (49)	0.82 ± 0.39		7.28 ± 2.05	
Age			< .001 (① > ③)		.087
① ≤ 85	138 (57.2)	0.99 ± 0.42		7.48 ± 2.16	
② > 85	103 (42.7)	0.73 ± 0.33		6.88 ± 2.18	
Education level			.173		.004 (③ > ①)
① Under elementary school	116 (48.2)	0.82 ± 0.36		7.26 ± 2.07	
② Junior high school	22 (9.1)	0.74 ± 0.33		6.81 ± 2.26	
③ Senior high school	65 (27)	0.88 ± 0.44		6.82 ± 2.40	
④ College/graduate school	38 (15.7)	0.91 ± 0.39		7.95 ± 1.69	
Current employment status			.052		.021 (① > ③)
① Employed	9 (3.7)	1.11 ± 0.35		9.11 ± 1.17	
② Unemployed	43 (17.8)	0.78 ± 0.32		7.26 ± 1.92	
③ Retired	189 (78.4)	0.82 ± 0.38		7.13 ± 2.13	
Residential status			.249		< .001 (① > ②) (② > ③)
① Live with family spouse	199 (82.5)	0.87 ± 0.36		7.48 ± 1.89	
② Live in nursing home	19 (7.9)	0.66 ± 0.32		5.37 ± 2.17	
③ Live alone	23 (9.5)	0.90 ± 0.39		6.09 ± 2.31	
Exercise habits			< .001		.479
None	78 (32.4)	0.65 ± 0.30		7.09 ± 2.03	
Yes	163 (67.6)	0.91 ± 0.38		7.29 ± 2.13	
Exercise frequency (per week)			< .001 (③ > ①) (④ > ①)		.375
① 0 times	70 (29)	0.61 ± 0.28		6.94 ± 2.00	
② 1–2 times	28 (11.6)	0.75 ± 0.28		7.11 ± 2.44	
③ 3–5 times	36 (14.9)	0.97 ± 0.42		7.11 ± 2.29	
④ 6–7 times	107 (44.4)	0.93 ± 0.37		7.49 ± 1.99	
Exercise duration (per week)			< .001 (② > ①) (④ > ①) (③ > ①) (④ > ②)		.008 (④ > ①) (④ > ②)
① 0 minutes	70 (29)	0.61 ± 0.28		6.94 ± 2.00	
② 1–30 minutes	95 (39.4)	0.80 ± 0.36		7.06 ± 2.27	
③ 31–60 minutes	63 (26.1)	1.02 ± 0.35		7.43 ± 1.83	
④ > 60 minutes	13 (5.4)	1.15 ± 0.36		9.00 ± 1.73	

Note. Scheffe Post Hoc to compare the difference groups in a variable, use the symbol of “①” and “>” to indicate the difference.

level (48.2%); retired (78.4%); had a pension fund as their source of; had a family income of $\leq 30,000$ NTD (73.9%); and lived with their children (34.0%). Most exercised 6–7 times/week (44.4%), mainly for 1–30 minutes per session (39.4%).

Overall, age, education level, current employment status, occupation, residential status, exercise habits, weekly exercise frequency, and weekly exercise duration were associated with significant differences in leisure activities and well-being. The number of leisure activities among patients aged 65–75 years was significantly higher than that among those more than 85 years of age. In terms of unemployed participants who had significantly lower levels of well-being than employed or retired participants. The well-being of patients who lived with their family was significantly higher than that among those who lived in a nursing home. Patients who taking more than 60 minutes exercise have a higher level of well-being.

Sex, age, education level, current employment status, occupation, source of income, residential status, exercise habits, weekly exercise frequency, weekly exercise duration were associated with significant differences in the overall leisure activities ($p < .05$) (Table 2). In the five subscales of the LTPA, women participated in significantly more fitness and social leisure activities than did men, whereas men participated in significantly more learning leisure activities than did women. With regard to age, patients aged 65–75 and 76–85 years participated in significantly more recreational and social lei-

sure activities compared to individuals above 85 years of age.

The hierarchical regression analysis demonstrated that education, current occupation, residential status, and weekly exercise duration had significant effects on well-being (Table 3). Model 1 was significant (F -value = 9.151, $p < 0.001$). After adding the total leisure activity score into Model 2, this model also was significant (F -value = 9.187, $p < 0.001$), indicating that total leisure activity had a significant positive effect on well-being.

The results of the hierarchical regression analysis of demographic and leisure activities as related to well-being showed that education, current occupation, residential status, and weekly exercise duration had significant effects on well-being (Table 4). Model 1 was significant (F -value = 9.151, $p < 0.001$). After adding the five types of leisure activities to Model 2, this model also was significant (F -value = 6.410, $p < 0.001$), indicating that social leisure activity had significant positive effects on well-being.

4. Discussion

In this study, we identified the relationship between well-being and leisure activities among older adults with possible sarcopenia. Determinants of leisure activities included age, occupation, and exercise habits. The frequency of participation in leisure activities showed a decline in older adults due to aging and a decrease in

Table 2
Analysis of demographic variables and LTPA ($N = 241$).

Variable	Recreational	Hobbyist	Fitness	Learning	Social
	$M \pm SD, t/\text{Scheffe's } F$	$M \pm SD, t/\text{Scheffe's } F$	$M \pm SD, t/\text{Scheffe's } F$	$M \pm SD, t/\text{Scheffe's } F$	$M \pm SD, t/\text{Scheffe's } F$
Sex	.897	.647	.005	< .001	.002
① Male	2.29 \pm 0.83	0.69 \pm 0.55	0.12 \pm 0.30	0.81 \pm 0.63	0.76 \pm 0.74
② Female	2.28 \pm 0.74	0.66 \pm 0.57	0.24 \pm 0.38	0.41 \pm 0.69	1.06 \pm 0.71
Age	.001	.226	.003	.483	< .001
① ≤ 85	2.52 \pm 0.52	0.80 \pm 0.57	0.33 \pm 0.47	0.67 \pm 0.80	0.83
② > 85	2.06 \pm 0.83	0.63 \pm 0.54	0.12 \pm 0.28	0.65 \pm 0.65	0.65 \pm 0.63
Education level	.650	.337	.360	< .001	.006
① Under elementary	2.49 \pm 0.74	0.71 \pm 0.65	0.12 \pm 0.25	0.18 \pm 0.45 (③ $>$ ①)	1.16 \pm 0.86
② Junior high	2.27 \pm 0.80	0.55 \pm 0.50	0.20 \pm 0.32	0.34 \pm 0.53 (③ $>$ ②)	0.90 \pm 0.68
③ Senior high	2.28 \pm 0.91	0.67 \pm 0.47	0.26 \pm 0.52	0.66 \pm 0.72 (④ $>$ ①)	1.25 \pm 0.81
④ College/graduate	2.22 \pm 0.84	0.81 \pm 0.63	0.16 \pm 0.25	0.89 \pm 0.57 (④ $>$ ②)	0.98 \pm 0.73
Employment status	.138	.712	.187	< .001	.001
① Employed	2.56 \pm 0.65	0.79 \pm 0.44	0.39 \pm 0.45	0.80 \pm 0.79 (① $>$ ②)	1.71 \pm 0.90 (① $>$ ③)
② Unemployed	2.45 \pm 0.75	0.63 \pm 0.50	0.17 \pm 0.37	0.19 \pm 0.47 (③ $>$ ②)	0.66
③ Retired	2.23 \pm 0.79	0.68 \pm 0.58	0.17 \pm 0.34	0.71 \pm 0.69	0.84 \pm 0.73
Source of income	.164	.516	.561	< .001	.025
① Salary	2.64 \pm 0.67	0.68 \pm 0.51	0.17 \pm 0.29	0.51 \pm 0.69 (② $>$ ③)	1.18 \pm 0.68
② Pension fund	2.18 \pm 0.80	0.65 \pm 0.58	0.15 \pm 0.34	0.85 \pm 0.69	0.78 \pm 0.71
③ Friends and family	2.37 \pm 0.76	0.72 \pm 0.55	0.21 \pm 0.36	0.35 \pm 0.58	1.05 \pm 0.75
Residential status	.022	.988	.101	< .001	.006
① Live with family	2.42 \pm 0.79 (① $>$ ②)	0.65 \pm 0.54	0.18 \pm 0.37	0.79 \pm 0.72 (① $>$ ②)	0.95 \pm 0.81 (① $>$ ③)
② Nursing home	1.74 \pm 0.89	0.69 \pm 0.65	0.02 \pm 0.08	0.88 \pm 0.65	0.28 \pm 0.37
③ Live alone	2.49 \pm 0.72	0.72 \pm 0.47	0.28 \pm 0.32	0.67 \pm 0.71	0.91 \pm 0.78
Exercise habits	< .001	.035	.001	.111	.002
None	1.79 \pm 0.76	0.56 \pm 0.52	0.08 \pm 0.26	0.52 \pm 0.62	0.71 \pm 0.65
Yes	2.52 \pm 0.68	0.72 \pm 0.57	0.23 \pm 0.38	0.67 \pm 0.71	1.00 \pm 0.76
Exercise frequency (per week)	< .001	.106	< .001	.144	.001
① 1–0 times	1.70 \pm 0.73 (② $>$ ①)	0.56 \pm 0.53	0.03 \pm 0.12 (③ $>$ ①)	0.49 \pm 0.60	0.64 \pm 0.59 (④ $>$ ①)
② 1–2 times	2.17 \pm 0.72 (③ $>$ ①)	0.62 \pm 0.41	0.16 \pm 0.26 (④ $>$ ①)	0.51 \pm 0.62	0.78 \pm 0.69
③ 3–5 times	2.47 \pm 0.70 (④ $>$ ①)	0.83 \pm 0.62	0.31 \pm 0.53	0.77 \pm 0.74	0.98 \pm 0.70
④ 6–7 times	2.63 \pm 0.00 (④ $>$ ②)	0.71 \pm 0.58	0.24 \pm 0.37	0.67 \pm 0.73	1.09 \pm 0.80
Exercise duration (per week)	< .001	.091	< .001	.002	< .001
① 0 minutes	1.70 \pm 0.73 (② $>$ ①)	0.56 \pm 0.53	0.03 \pm 0.12 (③ $>$ ①)	0.49 \pm 0.60 (③ $>$ ①)	0.64 \pm 0.59 (③ $>$ ①)
② 1–30 minutes	2.35 \pm 0.70 (③ $>$ ①)	0.66 \pm 0.57	0.16 \pm 0.31 (④ $>$ ①)	0.51 \pm 0.64 (③ $>$ ②)	0.89 \pm 0.75 (④ $>$ ①)
③ 31–60 minutes	2.73 \pm 0.60 (④ $>$ ①)	0.78 \pm 0.55	0.31 \pm 0.43 (③ $>$ ②)	0.84 \pm 0.75	1.11 \pm 0.73
④ > 60 minutes	2.73 \pm 0.56 (③ $>$ ②)	0.84 \pm 0.56	0.47 \pm 0.56 (④ $>$ ②)	0.97 \pm 0.86	1.46 \pm 0.88

Note. Scheffe Post Hoc to compare the difference groups in a variable, use the symbol of "①" and ">" to indicate the difference.

Table 3
Results of hierarchical regression analysis and demographics (*N* = 241).

Input variable	Model 1			Model 2		
	Unstandardized coefficient		Standardized coefficient	Unstandardized coefficient		Standardized coefficient
	<i>B</i>	Standard error	Beta	<i>B</i>	Standard error	Beta
(Constant)	8.694	.727		7.887	.770	
Education level	.197**	.073	.168**	.172*	.072	.147*
Current employment status	-.608*	.254	-.149*	-.531*	.252	-.130*
Residential status	-.325***	.082	-.242***	-.325***	.081	-.242***
Weekly exercise duration	.382**	.146	.159**	.169	.161	.071
Total leisure activity score				1.095**	.382	.194**
<i>R</i> ²		.134			.164	
ΔR^2		.134			.029	
<i>F</i> -value		9.151***			9.187***	

* *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.

Table 4
Results of hierarchical regression analysis of demographic and leisure activities toward well-being (*N* = 241).

Input variable	Model 1			Model 2		
	Unstandardized coefficient		Standardized coefficient	Unstandardized coefficient		Standardized coefficient
	<i>B</i>	Standard error	Beta	<i>B</i>	Standard error	Beta
(Constant)	8.694	.727		7.096	.882	
Education level	.197**	.073	.168**	.232**	.084	.197**
Current employment status	-.608*	.254	-.149*	-.398	.255	-.098
Residential status	-.325***	.082	-.242***	-.289***	.081	-.215***
Weekly exercise duration	.382**	.146	.159**	.081	.175	.034
Recreational				.212	.190	.080
Hobbyist				-.153	.245	-.041
Fitness				.173	.391	.029
Learning				.135	.232	.044
Social				.706***	.195	.249***
<i>R</i> ²		.134			.200	
ΔR^2		.134			.066	
<i>F</i> -value		9.151***			6.410***	

* *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001.

physical function and strength. These findings were in line with those of previous studies.^{4,8,14} In addition, older adults in Taiwan usually lack time for fitness leisure activities due to family events. For instance, women tend to have more social leisure activities, such as spend time with relatives and grandchildren, than fitness leisure activities. These results are consistent with those of Ku (2016)¹³ and Lin YC et al. (2010).²² This finding may be explained by the need for women to take more responsibility for housework or the family.

Learning leisure activities were associated with marital status, education level, employment status, and sources of income in the study. The findings were consistent with those of previous studies.^{8,12,14-16} Comparison with previous studies, those with a higher education level take part in more learning and social leisure activities. They may show more enthusiasm about participating in various activities and establish interpersonal networks or a social life that can improve mental health and well-being. Being on a pension scheme was also a significant factor in the lives of these older adults; some older adults may still need financial assistance from their family, which may affect their ability to participate in certain leisure activities. Older adults may feel more secure when their finances are stable and they have more time and a better environment in which to participate in leisure activities, which can enable them to obtain stability, dignity, and self-affirmation, increasing their levels of well-being.

Well-being was associated with employment status, living situation, and exercise duration, which is consistent with past re-

searches.^{10,13,21} Comparison with previous studies, older adults with living family may have more opportunities to participate in leisure activities and also have family support may have higher perceived well-being. Engaging in exercise also improves well-being, and physical and mental health, which is consistent with past research.²³ Any type of leisure activity plays an important role for older adults because it can help them to develop a social network, and promote well-being, including physical and mental health. Better economic status was shown to be significantly associated with well-being in earlier studies,^{14,21} a result that was not found in the current study. One explanation is that our participants were recruited in Taipei City, which has a better economic status than many other cities, which might have older residents who are dependent on a pension after retirement and also have economic support from their children. In short, the key points of the study found that patients who participate more frequently in leisure activities have greater perceived well-being. In addition, social activities were determined to be an effective predictor of well-being.

There were several limitations in this study. First, cross-sectional correlation study was used in this study that does not track longitudinal follow-up study for possible sarcopenia older adults. Second, participants were eligible for possible sarcopenia older adults and did not included over 65 years older adults and other age group. Third, participants were possible sarcopenia older adults and multimorbidity, the representativeness of the samples was insufficient, therefore, the results was not inference to normal older

adults population. Therefore, all older adults should be investigated their leisure activities and well-being in future studies. In addition, related interventions design and qualitative interview study should be adopted to gain an in-depth understanding of real experiences and feelings of the participants.

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Declaration conflicts of interest

All of the authors declare that there were no conflicts of interest.

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