

Leisure participation and health-related quality of life of community-dwelling elders in Hong Kong

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ABSTRACT

Background. Activity theory stresses the positive linkage of activity and quality of life (QOL) in individuals. This study aimed to explore the association between leisure participation and health-related QOL (HrQOL) of community-dwelling elders in Hong Kong.

Methods. A cross-sectional study was conducted over a 3-month period beginning August 2006. Persons aged 65 years or older were randomly selected from elderly health centres. Telephone interviews were then conducted by trained professionals. HrQOL was measured using Short Form-12 version 2. Subjects were asked about their participation in 18 types of leisure activities grouped in 4 categories, namely: recreational, cognitive, social, and productive. Frequency of such participation was measured on a 5-point scale. Its association with sociodemographic variables was examined using regression analysis.

Results. 269 participants completed the interview (response rate=77%). The most common daily leisure activities were watching television (99%), listening to the radio/music (57%) and reading (57%). Cognitive and social activities were positively associated with the physical and mental domains of HrQOL. Higher levels of participation in cognitive activity were associated with better physical functioning ($p<0.05$, 95% CI=0.144 to 1.667), role physical ($p<0.05$, 95% CI=0.047 to 1.594) and mental health ($p<0.05$, 95% CI=0.001 to 0.937). Participation in social activity was associated with better physical functioning ($p<0.05$, 95% CI=0.211 to 1.918). On the contrary, participation in recreational activity was only marginally related to social functioning ($p=0.055$, 95% CI= -1.89 to 0.02), role emotion ($p=0.059$, 95% CI= -1.27 to 0.02), and mental health ($p=0.053$, 95% CI= -1.26 to 0.01). Participation in productive activity was negatively associated with general health ($p<0.05$, 95% CI= -1.569 to -0.049).

Conclusion. From a primary care perspective, expanding the repertoire of leisure activities, in particular, cognitive and social activities, may contribute to better HrQOL for the elderly living in the community. Longitudinal studies are recommended to further examine the causal relationship of leisure participation and HrQOL.

Key words: Aged; Cross-sectional studies; Leisure activities; Quality of life

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INTRODUCTION

Activity theory

Activity theory stresses the importance of continuing

participation in various kinds of activity or occupations, and its association with the well being of individuals.¹ Being active is a crucial lifelong process and contributes to benefits in later life.² Different aspects including physical, mental, and

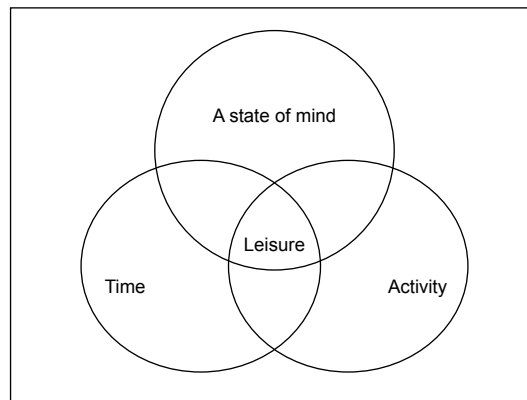


FIGURE 1. Definition of leisure

social functions are enhanced through participation in everyday activities despite the presence of illness, frailty or disability. This theory echoes the active ageing approach (promoted by the World Health Organization) that optimising opportunities for physical, mental, and social well being through active participation, in order to enhance healthy life expectancy, productivity, and quality of life in elderly people.³

Both the type and frequency of participation are important indicators of well being and quality of life. Frequent participation is associated with better health and quality of life. If an elder withdraws from routine and regular activity because of retirement, loss of significant others or migration, their health and quality of life may be threatened.¹ Different types of activity satisfy different individual needs. For example, playing card games and chess benefits cognitive function,⁴ and gatherings in churches and social centres nourish social relationships.⁵ These activities are regarded as leisure.

Leisure and health

Leisure has 3 distinct components: discretionary time, a particular kind of activity, and a state of mind.⁶ Leisure implies time to do something without obligation or duty, time to relax and play, and time to do what you desire. The value of leisure is enriched by participating in a particular activity. Leisure is strongly associated with a series of activities: doing what you enjoy and desire; a delightful activity that serves a purpose. Leisure also embraces the perception of the individual (a state of mind). It describes how people enjoy or get satisfaction from activity. A state of mind, combined with both time and activity constructs a

more holistic picture of leisure (**FIGURE 1**).⁶

Leisure is an indispensable domain of life for everybody at different ages. Everyone spends a significant portion of time in leisure. It balances the rhythm of life and influences health through complex, interrelated biopsychosocial mechanisms. Stimulation from leisure activity influences physiological responses of the body and the immune system and thus affects the hypothalamic-pituitary-adrenal axis.⁷ This protects health through a bearing on stress-responses to different stressful events in later life e.g. retirement, limitation in health capacity, bereavement. Moreover, appropriate stimulation promotes the survival or proliferation of new brain cells in the hippocampus. The brain possesses greater plasticity, its circuits of synaptic connectivity may become more healthy and efficient.^{4,8} The interaction of brain and behaviour may be health promoting. Leisure participation may contribute to mental, social, and cognitive health.

Engaging in enjoyable and meaningful leisure activities, both alone or with company, can buffer stressful conditions and help coping with disabilities.⁸ Leisure participation reduces levels of depression and loneliness,⁹ and enhance the capacity to cope with the challenges of ageing.¹⁰ Moreover, levels of social engagement affect the health of the elderly; low levels are an important predictor of mortality in later life.¹¹ A 14-year longitudinal study reported that high quality of social networking is associated with longer life expectancy.¹² Leisure participation is also important in the prevention of cognitive decline. Frequent participation in leisure activity is associated with reduced risk of dementia.^{13,14} Participation in cognitive activity is associated with a lower risk of

developing mild amnesic cognitive impairment, even after excluding cases with early stage of dementia.¹⁵

Gap of knowledge

While engaging in physical activity is advocated as a part of a healthy lifestyle, the contribution of social, cognitive, and productive activities towards active ageing is often neglected in health promotion. There is a need to generate local evidence on the benefits of leisure participation on the health of the elderly, as cultural and environmental factors may come into play. This study therefore aimed to examine the association between leisure participation and health-related quality of life (HrQOL), so as to develop relevant health promotion activities.

METHODS

Sampling and design

A cross-sectional survey was conducted in 18 elderly health centres (EHCs) from August to October 2006. The EHCs are primary care centres established in different districts by the Department of Health. They provide health assessment, health education, counselling, holistic curative treatment with allied health support to meet the health needs of the elderly aged 65 years or older. An annual assessment including a standardised health questionnaire (administered by nurses) and clinical examination (by primary care physicians) was carried out on the participants.

350 elderly people who received annual assessment in January to July 2006 were randomly selected. Those who had dementia, depression or impairment in basic activities of daily living, or were unable to communicate over the phone were excluded. Approval for the study was obtained from the Ethics Committee of the Department of Health.

Measurements

Two questionnaires—namely the Short Form-12 version 2 (SF12v2) and the Leisure Participation Questionnaire (LPQ)—were administered through telephone interviews by trained health professionals. Data from the most recent EHC health survey were also retrieved for analysis.

The Chinese version of SF12v2 was used.¹⁶ The SF12 is a popular generic measurement tool of HrQOL. It consists of 12 questions derived from the original 36-question format and can be completed in a few minutes.¹⁷ SF12v2 evolved to improve score precision and enable more comparability after translation and cultural adaptation.¹⁶ Content and criterion validity of the SF12 was demonstrated in a Chinese population.¹⁸ Eight domains of HrQOL including physical functioning, role-physical, role-emotional, bodily pain, general health perception, vitality, social functioning, and mental health perception are measured. They are rated on a Likert scale with 2 to 6 response choices by 12 items on behaviour functioning, perceived well being, disability, and general health perception.

Based on the International Classification of Functioning, Disability and Health by the World Health Organization¹⁹ and various studies on leisure participation,^{9,13-15} LPQ was initially designed to measure the extent of leisure participation of the elderly in Hong Kong. To add cultural relevance, leisure activities that are most popular for local elderly e.g. playing mahjong, gathering in a Chinese restaurant, and attending an elderly centre were included.²⁰ The preliminary LPQ was then validated by experienced medical, nursing, and research officers in the Elderly Health Service. Pilot tests were also administered to ensure that the question design and activity categorisation could be understood by the elderly.

18 leisure activities were categorised as: recreational, cognitive, social, and productive activities. Recreational activity mainly involved relaxation and entertainment. Cognitive activity involved active information processing as a central component. Social activity was whatever promoted interpersonal interactions, developed social identity, and regulated emotions. Productive activity involved organising and performing the required tasks, providing services, or generating products.

The frequency of leisure participation in the past 3 months was categorised into 'daily', '4 to 6 days per week', '1 to 3 days per week', '1 to 3 days per month', 'less than once per month or occasionally' or 'never', for which scores of 7, 5, 2, 1, 0.5, and 0, respectively, were assigned. Scores in 4 categories, namely recreational activity score (RAS), social activity score

TABLE 1
Socio-demographics of the elderly

Socio-demographics	No. (%)
Age (years)	
65-69	17 (6)
70-74	106 (39)
≥75	146 (54)
Mean (SD)	76 (5)
Gender	
Male	80 (30)
Female	189 (70)
Marital status	
Widowed/divorced/single	119 (44)
Married	150 (56)
Educational attainment	
No formal education	107 (40)
Primary level	96 (36)
Secondary level	49 (18)
Tertiary level	17 (6)
Living arrangement	
Living alone	49 (18)
Living with other	220 (82)
Comprehensive social security assistance recipient	
No	242 (90)
Yes	27 (10)

(SAS), cognitive activity score (CAS), and productive activity score (PAS) were treated as continuous variables in the data analysis.

The EHC health survey is a comprehensive and standardised instrument used annually by nurses to investigate sociodemographics, financial situations, psychosocial support, and lifestyle factors.

Statistical analysis

All descriptive statistics for continuous variables were presented as means and standard deviations (SD), and for categorical variables as absolute and relative frequencies or percentages. Regression analysis with enter method was used to examine the association between HrQOL (dependent variable) and the 4 categories of leisure participation (independent variables), after adjusting for age, sex, education, marital status, living arrangements, and receipt of comprehensive social security assistance (CSSA). Statistical significance was set at a 2-tailed

probability of <0.05.

RESULTS

269 elderly people completed the SF12v2 and LPQ through telephone interviews. The remaining 81 were excluded, because of failure to be contacted, communication barriers or refusal to participate. The response rate was 77% (269/350). The mean age of the subjects was 76 (SD, 5) years; 70% were female; 82% were living with family members; 56% were married; 40% had no education; and 10% were CSSA recipients (**TABLE 1**).

Pattern of leisure participation

Among different leisure activities, watching television (99%), listening to music/radio (57%), reading books/newspapers/magazines (57%), caring for pets/plants (38%) and gathering with people for meal or shopping (32%) were the most commonly everyday leisure activities (**TABLE 2**). In contrast, playing cards,

TABLE 2
Participation in 18 leisure activities among the elderly over the past 3 months

Leisure participation	No. (%) of elderly					
	None	<1 day/month or occasionally	1-3 days/month	1-3 days/week	4-6 days/week	Daily
Recreational activity						
Watching TV	1 (0.4)	0 (0.0)	0 (0.0)	0 (0.0)	2 (0.7)	266 (98.9)
Listening to music/radio	73 (27.1)	2 (0.7)	9 (3.3)	19 (7.1)	12 (4.5)	154 (57.2)
Cognitive activity						
Reading books/newspapers/magazine	86 (32.0)	1 (0.4)	3 (1.1)	15 (5.6)	12 (4.5)	152 (56.5)
Playing chesses	259 (96.3)	1 (0.4)	5 (1.9)	2 (0.7)	1 (0.4)	1 (0.4)
Playing cards	265 (98.5)	0 (0.0)	0 (0.0)	2 (0.7)	1 (0.4)	1 (0.4)
Playing mahjong	176 (65.4)	23 (8.6)	25 (9.3)	39 (14.5)	4 (1.5)	2 (0.7)
Using computer	247 (91.8)	1 (0.4)	2 (0.7)	6 (2.2)	1 (0.4)	12 (4.5)
Performing musical instruments/song	227 (84.4)	1 (0.4)	4 (1.5)	27 (10.0)	2 (0.7)	8 (3.0)
Writing/drawing for pleasure	216 (80.3)	2 (0.7)	7 (2.6)	28 (10.4)	4 (1.5)	12 (4.5)
Social activity						
Gathering with people for meal or shopping	14 (5.2)	10 (3.7)	30 (11.2)	109 (40.5)	20 (7.4)	86 (32.0)
Attending concert/performance	215 (79.9)	37 (13.8)	13 (4.8)	4 (1.5)	0 (0.0)	0 (0.0)
Attending exhibitions	193 (71.7)	54 (20.1)	21 (7.8)	1 (0.4)	0 (0.0)	0 (0.0)
Viewing sports	247 (91.8)	1 (0.4)	4 (1.5)	10 (3.7)	0 (0.0)	7 (2.6)
Participating in religious groups	218 (81.0)	7 (2.6)	13 (4.8)	29 (10.8)	0 (0.0)	2 (0.7)
Participating in elderly/community centres	145 (52.8)	5 (1.9)	60 (22.3)	39 (14.5)	7 (2.6)	16 (5.9)
Productive activity						
Doing voluntary work	244 (90.7)	7 (2.6)	7 (2.6)	7 (2.6)	1 (0.4)	3 (1.1)
Caring pets/plants	150 (55.8)	0 (0.0)	2 (0.7)	11 (4.1)	5 (1.9)	101 (37.5)
Making art/craft	248 (92.2)	3 (1.1)	5 (1.9)	4 (1.5)	3 (1.1)	6 (2.2)

playing chess, making arts/crafts, using a computer, viewing sports, and doing voluntary work were the least popular; over 90% of the elderly had not participated in any of these activities during the past 3 months.

In the cognitive activity category, reading books/newspapers/magazines (36%), playing mahjong (20%), and writing/drawing for pleasure (16%) were commonly participated during the past 3 months. In the social activity category, gathering with people for meal or shopping (95%), attending elderly/community centres (47%), and attending exhibitions (28%) were the most regular activities in the past 3 months (TABLE 2).

Association between Short Form-12 version 2 and Leisure Participation Questionnaire

In terms of category scores, CAS and SAS were

positively associated with several domains of HrQOL, whereas PAS yielded negative associations. High CAS was associated with good physical functioning ($p < 0.05$, $B = 0.91$, 95% CI = 0.144-1.667), role physical ($p < 0.05$, $B = 0.83$, 95% CI = 0.047-1.594) and mental health ($p < 0.05$, $B = 0.47$, 95% CI = 0.001-0.937) [TABLE 3]. In other words, a CAS increase of 10 was associated with score increases of 9.1 in physical functioning, 8.3 in role physical, and 4.7 in mental health.

High SAS was associated with good physical functioning ($p < 0.05$, $B = 1.06$, 95% CI = 0.211-1.918) [TABLE 4]. SAS was marginally associated with social functioning ($p = 0.082$, $B = 0.71$, 95% CI = 0.090-1.501). In other words, an SAS increase of 10 was associated with score increases of 10.6 in physical functioning and 7.1 in social functioning. However, a high PAS was significantly associated with poor general health ($p < 0.05$, $B = 8.1$, 95% CI = -1.569 to -0.049). A PAS

TABLE 3
Association of Short Form-12 version 2 domains and the cognitive activity scores (CAS)

Domains	CAS			
	B	SE	p Value	95% CI
Physical functioning	0.906	0.387	0.020	0.144-1.667
Role physical	0.834	0.386	0.032	0.074-1.594
Bodily pain	0.583	0.404	0.150	-0.212-1.378
General health	0.583	0.404	0.150	-0.212-1.378
Vitality	0.331	0.326	0.311	-0.312-0.974
Social functioning	0.292	0.362	0.420	-0.421-1.005
Role emotion	-0.052	0.244	0.831	-0.533-0.429
Mental health	0.469	0.238	0.050	0.001-0.937

TABLE 4
Association of Short Form-12 version 2 domains and the social activity scores (SAS)

Domains	SAS			
	B	SE	p Value	95% CI
Physical functioning	1.064	0.433	0.015	0.211-1.918
Role physical	0.709	0.435	0.104	-0.148-1.565
Bodily pain	0.602	0.453	0.185	-0.290-1.495
General health	-0.191	0.374	0.611	-0.927-0.546
Vitality	0.541	0.365	0.140	-0.178-1.261
Social functioning	0.706	0.404	0.082	-0.090-1.501
Role emotion	0.031	0.274	0.909	-0.509-0.571
Mental health	0.280	0.268	0.298	-0.248-0.808

increase of 10 was associated with a score decrease of 8.1 in general health (TABLE 5).

The RAS was only marginally related to social functioning ($p=0.055$, $B= -0.94$, 95% CI= -1.89 to 0.02), role emotion ($p=0.059$, $B= -0.62$, 95% CI= -1.27 to 0.02) and mental health ($p=0.053$, $B= -0.63$, 95% CI= -1.26 to 0.01) [TABLE 5]. An RAS increase of 10 was associated with a score decrease of 9.4 in social functioning, 6.2 in role emotion, and 6.3 in mental health (TABLE 6).

DISCUSSION

Leisure participation of the elderly

In the United States, watching television is the most frequent leisure activity the elderly participate in,²¹ and comprise the greatest proportion of viewers compared to other age groups.²² In a local survey, 98% of the elderly indicated that watching television

was their most common leisure activity.²⁰

In our study, most elderly preferred participation in recreational rather than social and cognitive activities. The prevalence of social and cognitive activity participation was very low (TABLE 2). In view of the sedentary and solitary nature of recreational activities, the social and cognitive benefits from active leisure participation may have been underrated. For the sake of their health, it would be helpful to encourage the elderly to adopt a more active and diverse repertoire of leisure participation.

Apart from reading books/newspapers/magazines for leisure, playing mahjong was the most regular cognitive activity for the elderly. It is the most culturally relevant cognitive activity in the Chinese community and can be played by those who are illiterate. It involves calculation, decision making, and judgement, as well as a certain degree of luck. The complexity, variation, and excitement

TABLE 5
Association of Short Form-12 version 2 domains and the recreational activity scores (RAS)

Domains	RAS			
	B	SE	p Value	95% CI
Physical functioning	0.22	0.53	0.677	-0.82-1.26
Role physical	-0.45	0.53	0.397	-1.48-0.59
Bodily pain	-0.47	0.55	0.393	-1.55-0.61
General health	-0.25	0.45	0.580	-1.14-0.64
Vitality	-0.60	0.44	0.176	-1.47-0.27
Social functioning	-0.94	0.49	0.055	-1.89-0.02
Role emotion	-0.62	0.33	0.059	-1.27-0.02
Mental health	-0.63	0.32	0.053	-1.26-0.01

TABLE 6
Association of Short Form-12 version 2 domains with the productive activity scores (PAS)

Domains	PAS			
	B	SE	p Value	95% CI
Physical functioning	0.238	0.456	0.602	-0.660-1.136
Role physical	0.130	0.454	0.775	-0.765-1.026
Bodily pain	0.077	0.473	0.871	-0.855-1.008
General health	-0.809	0.386	0.037	-1.569 to -0.049
Vitality	-0.081	0.382	0.832	-0.833-0.671
Social functioning	-0.091	0.423	0.829	-0.924-0.741
Role emotion	0.024	0.285	0.933	-0.538-0.586
Mental health	-0.300	0.279	0.283	-0.849-0.249

attract even the very old. Moreover, playing mahjong appears beneficial to cognitive function in people with dementia. In a 16-week intervention study, cognitive function of elderly persons with mild to moderate dementia (i.e. having digit forward and verbal memory deficits) maintained improvements for at least a month.²³ Cultural relevance should therefore be taken into account when promoting cognitive activities to the elderly.

Other than gathering with people for meal or shopping, participating in elderly or community centre activities was the most regular form of social leisure in our elderly. District Elderly Community Centres and Neighbourhood Elderly Centres provide a comprehensive range of social and community support to healthy, frail, and vulnerable elderly living in the community. These centres help the elderly lead a healthy, respectable, and meaningful life. As over 50% attendees did so for social support on a regular basis (**TABLE 2**), the role of these centres should be

strengthened, as a means of providing a platform for social networking and support for the elderly.

Health-related quality of life with social and cognitive activities

Social and cognitive activities were associated with better HrQOL, especially in physical functioning, role physical, mental health and social functioning. These associations were independent of age, gender, education, marital status, receipt of welfare, and living arrangements. Similar findings were reported in a cross-sectional study of leisure time physical activity and HrQOL in French adults, especially if recommended levels of physical activity were attained.²⁴

To a certain extent, our study provided evidence in a local context that higher levels of leisure participation (especially cognitive and social activities) can contribute to better HrQOL. Two

explanations are possible. (1) Leisure is a source of fun and pleasurable experiences, whether pursued alone or in groups. The cumulative effects of these experiences can build up a life-long positive emotional state and enhance creative adaptation to life changes.^{5,8} Leisure participation can provide 2 effective sources of relief from stressful life events. The first source is derived from social nature and the creation of friendships and companionship when participating in social activity. Social support and networks were built up to protect the health of the elderly.⁵ Another source relates to the development of self-determination. Leisure participation provides a good opportunity to exercise control and freedom. This can facilitate a stable capacity for self-determination during the unexpected and uncontrolled event.⁸ The self-determination provides a buffer for physical and mental health arising from the stresses of life. (2) The elderly are healthier and happier when their lives are filled with purposeful activity or occupations. These can be in the domains of work, leisure and activities of daily living. Individuals engage in such activities across their lifespan, and are essential for survival as well as health.²⁵ Regular physical activity is known to be a protective factor in health promotion and disease prevention, especially for cardiovascular disease and diabetes mellitus.^{26,27} Regular social and cognitive activities can also be beneficial in different domains of health and HrQOL.^{4,9} Lack of social and cognitive stimulation affects psychosocial health and quality of life in old age.

Health-related quality of life with recreational and productive activities

In contrast to social and cognitive activities, recreational activities including watching television and listening to music/radio were marginally associated with poor social functioning, role emotion, and mental health; whereas productive activities were associated with poor general health. These associations were independent of age, gender, education, marital status, receipt of welfare, and living arrangements.

Some activities were harmful to health; watching television was positively associated with obesity and type II diabetes.²⁸ Our study also found that higher levels of participation in watching television and listening to music/radio may even threaten the social and mental domains of HrQOL. This may be due to

the home-based, sedentary, and isolated nature of such activities.

Regarding productive activities, our results differed somewhat from several other studies, which reported positive influences on health as a result of such participation. Participation in charitable activities (including voluntary work) was significantly associated with high life satisfaction in the elderly. Productive engagement was an important pathway to good health in later life.²⁹ Our discrepant results may be due to the low prevalence of productive activities in our samples, such that any positive effects of productive activities could not manifest themselves or be detected.

Limitations and recommendations

Due to limitation of our study design, we could not demonstrate the causal relationship between HrQOL and leisure participation. According to activity theory, active leisure participation can contribute to better health of the elderly. However, it is also possible that the elderly who participate in leisure activities are in better health than those who do not; ability to participate (attend church or elderly centres) requires certain amount of physical and mental fortitude. Health limitations including sensory deficit, lack of energy, and presence of acute or chronic diseases may constrain the ability to participate.³⁰ This study was therefore targeted at persons with acceptable physical and mental functions; those with major depression, dementia/cognitive impairment, impaired activities of daily living, or were wheelchair bound were excluded. Yet owing to the small sample size, potential confounders (e.g. current fall or hospital admission, physical activity levels, and objective physical health) were not adjusted for in the regression analysis. Such factors may influence the willingness and ability to participate in leisure and perceive HrQOL. Longitudinal studies with larger sample sizes are recommended to further assess the causal relationship with some of these relevant factors.

Another limitation could be selection bias. The subjects were those who volunteered from members in EHCs and females seemed more health conscious. Their lifestyles and participation may differ from that of males. Modification of the sample frame by stratifying the characteristics (e.g. gender and/or age) and recruitment from a community setting should be

considered for future studies.

Moreover, only the frequency and types of leisure participation were measured; motivation, emotional support, and satisfaction were not considered. These subjective factors may contribute to understanding the psychosocial mechanisms linking leisure participation and HrQOL. Examination of leisure participation should adopt a more holistic perspective. Qualitative studies are indicated to assess personal perceptions and values placed on leisure participation, and how they affect the health of individuals.

CONCLUSION

Active leisure participation especially cognitive and social activities may contribute to better HrQOL in the elderly. However, solitary and sedentary activities (watching television, listening to music/radio, and caring pets/plants) are the most commonly participated. Promotion of active participation in diversified leisure activities should be emphasised. Cognitive and social activities should also be promoted.

Further studies are recommended to examine the causal relationship and mechanisms linking leisure participation and HrQOL, using longitudinal designs with larger sample sizes as well as quality measures of leisure participation.

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