



Understanding pickleball as a new leisure pursuit among older adults

Jungsu Ryu, Hyunmin Yang, Amy Chan Hyung Kim, Kyung Min Kim & Jinmoo Heo

To cite this article: Jungsu Ryu, Hyunmin Yang, Amy Chan Hyung Kim, Kyung Min Kim & Jinmoo Heo (2018) Understanding pickleball as a new leisure pursuit among older adults, *Educational Gerontology*, 44:2-3, 128-138, DOI: [10.1080/03601277.2018.1424507](https://doi.org/10.1080/03601277.2018.1424507)

To link to this article: <https://doi.org/10.1080/03601277.2018.1424507>



Published online: 11 Jan 2018.



Submit your article to this journal [↗](#)



Article views: 161



View Crossmark data [↗](#)



Understanding pickleball as a new leisure pursuit among older adults

Jungsu Ryu^a, Hyunmin Yang^b, Amy Chan Hyung Kim^c, Kyung Min Kim^d, and Jinmoo Heo^e

^aDepartment of Career and Information Studies, University of Georgia, Athens, GA, USA; ^bDepartment of Recreation, Park, and Tourism Sciences, Texas A&M University, College Station, TX, USA; ^cDepartment of Sport Management, Florida State University, Tallahassee, FL, USA; ^dDepartment of Kinesiology and Sport Sciences, University of Miami, Coral Gables, FL, USA; ^eDepartment of Sport Industry Studies, Yonsei University, Seoul, Korea

ABSTRACT

For older adults, participating in leisure activities has psychosocial benefits, increases social interactions, and promotes well-being. Among various leisure activities, pickleball is an activity that fosters positive social interaction and health benefits in older adults. Pickleball is regarded as one of the fastest growing sports in the USA, and it is reported to be popular among people of all ages, especially among older adults. The purpose of this study was to gather demographic details of older pickleball participants and elucidate the psychosocial benefits of playing the sport, such as life satisfaction, optimism, and social integration. To this end, we gathered information from 153 older adults who competed in pickleball tournaments. Multivariate analysis of variance and Hotelling's T^2 test were used to compare the differences that emerged in experiential factors such as life satisfaction, optimism, and social integration among the different demographic characteristics. The results showed that life satisfaction was significantly different among the following three age groups: 50–59 years, 60–69 years, and ≥ 70 years. Results of Hotelling's T^2 test showed a significant difference in social integration between male and female participants. The test also revealed a significant difference in terms of life satisfaction between retired and employed participants. The results suggest that playing pickleball can be an enriching leisure activity for retirees and may help them cope with the transition that retirement typically entails.

Leisure has been recognized as an important contributor to older adults' well-being. Involvement in social (e.g., church related and social groups) and productive (e.g., volunteering and gardening) activities contributes to increased happiness, better physical functioning, and lower mortality rates in older adults (Glass, De Leon, Marottoli, & Berkman, 1999; Menec, 2003). Moreover, engagement in instrumental (e.g., cooking and housework) and high-demand leisure activities (e.g., swimming, woodworking, and gardening) are known to have positive effects on physical health, whereas low-demand leisure activities (e.g., reading, sewing, listening to music, and watching TV) are associated with better mental health status in later life (Everard, Lach, Fisher, & Baum, 2000).

Involvement in leisure activities has been regarded as a key determinant of life satisfaction (Sener, Terzioğlu, & Karabulut, 2007; Simone & Haas, 2013). Physical leisure activities, particularly, are known to offer psychological benefits to participants and enhance their well-being (Fernandez-Ballesteros, Zamarron, & Ruiz, 2001), quality of life (Leung & Lee, 2005; Lloyd & Auld, 2002), and life satisfaction (Melin, Fugl-Meyer, & Fugl-Meyer, 2003; Schnohr, Kristensen, Prescott, & Scharling,

CONTACT Jinmoo Heo  heoj@yonsei.ac.kr  Department of Sport Industry Studies, Yonsei University, Seoul, Korea

A revision submitted to
Educational Gerontology
December 29, 2017

© 2018 Taylor & Francis

2005; Wankel & Berger, 1990). With regard to the types of physical leisure activities, pickleball is regarded as a fast-growing sport among all age groups (NBC News, 2014), especially among older adults (Kent-Isaac, 2014) in America.

Pickleball, a combination of tennis, table tennis, and badminton, fosters positive social interactions and offers several health benefits to older adults. Pickleball is also an attractive and viable option for older adults who used to play racquet sports because it is played on courts that are typically smaller than the regulation tennis courts (Hyber, 2015). Moreover, pickleball relies on underhand-oriented strokes (this exerts less pressure on the elbow and shoulder), and the ball typically travels at moderate speeds (Shaffer, 2015). According to the Sport and Fitness Industry Association (2016), there are 930,000 core pickleball participants (above eight years of age) across the United States, and some tennis professionals even view pickleball as a threat to tennis, given the former's growing popularity (Shaffer, 2015).

Theoretical background

The engagement of older adults in leisure activities can be understood using activity theory (Havighurst, 1963). Activity theory proposes that successful aging could be attributed to active social interactions and an active life (Diggs, 2008). It focuses specifically on the association between activity and well-being, especially the experience of life satisfaction (Lemon, Bengtson, & Peterson, 1972). According to activity theory, life satisfaction is directly related to both the amount of leisure and the degree of intimacy attached to the activity one participates in. Whereas frequent involvement in activities has been found to have positive effects on life satisfaction and the quality of life, the intimacy that participants associate with activities (e.g., formal, informal, or solitary activities) may or may not influence life satisfaction and quality of life in a positive manner (Rodríguez, Látková, & Sun, 2008). For instance, some studies report that solitary activities do not influence well-being (Litwin, 2000), whereas some studies note that solitary activities influence well-being in a positive manner (Everard et al., 2000). It has also been shown that informal social activities are more likely to be related to life satisfaction than formal and solitary activities (Lemon et al., 1972).

Studies so far have explored the benefits of physical leisure activities for older adults. Activities such as walking, gardening, and exercising have psychosocial benefits such as enhanced self-esteem, a sense of achievement, and increased life satisfaction (Ku, Fox, & Chen, 2016; Scott, Masser, & Pachana, 2015; Watson, Frederick, Harris, Carlson, & Fulton, 2015). However, studies have rarely explored the benefits of playing pickleball despite numerous favorable feedbacks from pickleball players, including socializing with other players (Newby, 2017), improved physical health (Driver, 2017), enjoyment, and camaraderie at in later life (Trager, 2017). It is also worth noting that the behavior of older adults participating in pickleball has not been studied empirically. Therefore, this study primarily aims to explore the demographic and behavioral characteristics of older pickleball participants and elucidate the psychosocial benefits of playing the sport, such as life satisfaction, optimism, and social integration.

Literature review

Life satisfaction

Various leisure activities have been shown to improve life satisfaction in older adults (Murphy, 2003; Sener et al., 2007; Simone & Haas, 2013). For example, by studying the behavior of retired men, Sener et al. (2007) revealed that leisure activities are one of the most effective predictors of life satisfaction for this demographic. Cruz-Ferreira, Marmeleira, Formigo, Gomes, and Fernandes (2015) examined the relation between life satisfaction and regular exercise using an experimental design, observing how creative dance, for example, enhances life satisfaction in older women. Life satisfaction has been extensively studied in the field of gerontology, especially the benefits of leisure as a way of enhancing older adults' quality of life (Mannell, 1999). Life satisfaction in older adults often unavoidably decreases due to factors such as retirement, widowhood, disconnected social

relationships, and loss of physical and psychological functions (Wanderley, Oliveira, Marques, Moreira, & Carvalho, 2015). Numerous studies have focused on the role of leisure in improving one's life satisfaction (McAuley et al., 2000). Studies also reveal that life satisfaction and aging are related in complex ways in that not all studies report a positive relationship between aging and life satisfaction (Gana, Bailly, Saada, Joulain, & Alaphilippe, 2013). Life satisfaction, moreover, appears to be a multifaceted experience, and a better understanding of the factors that contribute to life satisfaction is certainly needed. We, thus, hypothesized that the experience of life satisfaction differs based on demographic factors such as age, gender, employment status, and marital status among older adults who participate in playing pickleball.

Social integration

Social integration is the opposite of social isolation, which implies the lack of social ties. Social integration is critical for older people experiencing aging as it provides access to systems of norms, trust, social support, and resources (Bourdieu, 1986; Coleman, 1988; Putnam, 1995). Having more ties enables older people to gain more information, social support, financial connectedness, and cultural connectedness that can result in improved quality of life and well-being (Cornwell, Laumann, & Schumm, 2008; House, Landis, & Unberson, 1988). As per previous studies, participating in leisure activities enables older adults to attain greater levels of social integration (Burch, 2009; Toepoel, 2013; Van Ingen & Van Eijck, 2009). For instance, in a qualitative study that examined the contribution of leisure to the social lives of community-dwelling adults, participants reported that leisure offers a social outlet as they are able to interact and share with one another (Iwasaki, Messina, Shank, & Coyle, 2015). Furthermore, engagement in productive activities has been shown to significantly decrease social isolation among older people (Gardiner, Geldenhuys, & Gott, 2016). Overall, studies have shown that leisure activities are strong contributors to social integration for older adults. We hypothesized that the experience of social integration differs based on demographic factors such as age, gender, employment status, and marital status among older adults who play pickleball as a leisure engagement.

Optimism

Optimism, widely defined as the quality of having positive expectations for the future, was shown to be associated with greater levels of health and well-being (Forgeard & Seligman, 2012; Scheier & Carver, 1992) and a higher quality of life in old age (Gabriel & Bowling, 2004). Research has demonstrated that optimism is positively correlated with physical activity (Kersten, Cox, & Van Enkevort, 2016), and an increasing amount of evidence indicates that participation in physical activities promotes optimism. For example, Pavey, Burton, and Brown (2015) demonstrated that physical activity contributes to optimism in both young and middle-aged women. Moreover, Kavussanu and McAuley (1995) reported that individuals who were habitually involved in physical exercises were more likely to be optimistic than those who did not exercise regularly. In a qualitative study conducted by Yau and Packer (2002), older adults who had been practicing Tai chi for an average of more than 8 years reported feeling more optimistic as a result. Therefore, it is evident that participating in leisure activities promotes optimism of older adults. We investigated how dispositional optimism differs based on demographic factors such as age, gender, employment status, and marital status among older adults who participate in playing pickleball.

Purpose of the study

The purpose of this study is to examine how the psychosocial benefits (i.e., life satisfaction, optimism, and social integration) of playing pickleball differ based on the participants' demographic characteristics (i.e., age, gender, employment status, and marital status). Since findings from previous studies suggest that specific demographic factors are associated with psychosocial benefits for older adults, we hypothesized that the experience of life satisfaction, optimism, and social integration differs based on demographic factors such as age, gender, employment status, and marital status.

Methods

This is a descriptive, cross-sectional study that employs purposive sampling; adults over 50 years of age who play pickleball competitively formed the target population of this study. Participants were identified at four different pickleball tournaments: two regional-level tournaments, one national-level tournament, and one state-level senior games event. Data were collected across two states in the USA within a 3-month time frame. A questionnaire was distributed onsite at all four tournaments. The participants completed the questionnaire during breaks. The participants were informed that they were participating in a study, and they were generally enthusiastic about taking part in it. The following criteria were considered for identifying participants: (1) the ability to understand and write English, (2) being 50 years of age or older, and (3) experience participating in pickleball competitions at various levels. Participation in the study was strictly voluntary; respondents were also assured of data confidentiality and anonymity. Participants were also requested to provide the following information: (1) the number of hours they play pickleball per week, (2) their annual expenditure on pickleball equipment, and (3) the number of pickleball competitions they take part in annually.

Instruments

In addition to demographic details, self-reported levels of life satisfaction, optimism, and social integration were collected from the participants as outcome measures. The Satisfaction With Life Scale (SWLS) was used to measure global life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985) as its psychometric properties are suitable for use in older adults (Corrigan, Kolakowsky-Hayner, Wright, Bellon, & Carufel, 2013; Gana et al., 2013). The SWLS included five items, and respondents reported their perception of life satisfaction using a 5-point response scale (1 = *strongly disagree* through 5 = *strongly agree*) for each item, with higher scores representing greater life satisfaction. Sample items include “I am satisfied with my life” and “If I could live my life again, I would change almost nothing.” The Cronbach’s alpha for the scale was .82.

Optimism was measured using three items from Scheier and Carver’s (1985) Life Orientation Test (LOT). This scale has been widely used to determine the extent to which peoples’ expectations of their lives are positive. In older adults, LOT has been found to have well-established psychometric properties (Boehm & Kubzansky, 2012; Pietrzak & Cook, 2013). Optimism was assessed on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), with higher scores indicating higher levels of dispositional optimism. An example item is “Overall, I expect more good things to happen to me than bad.” The Cronbach’s alpha for the scale was .81.

To assess the level of social integration, the following question was used: “Not including attendance at religious services, how often do you attend meetings or programs of groups, clubs, or organizations that you belong to?” This question was derived from the Health and Retirement Study, which is an ongoing, national, longitudinal cohort study of older adults in the USA. This item was rated on a 6-point Likert-type scale. Descriptive anchors were 1 = *never*, 2 = *less than once a month*, 3 = *about once a month*, 4 = *two or three times a month*, 5 = *once a week*, and 6 = *more than once a week*, with a higher score indicating better social integration.

Data analysis

A one-way multivariate analysis of variance (MANOVA) was conducted to determine the differences according to age (50–59 years, 60–69 years, and 70+ years) in terms of life satisfaction, optimism, and social integration. Differences according to gender, occupational status, and marital status in the outcome variables were examined using Hotelling’s T^2 test. Gender was assigned 0 for male respondents and 1 for female respondents. The following factors were similarly assigned: employment status (0 = retired, 1 = employed) and marital status (0 = single, divorced, or widowed,

1 = married). For Hotelling's T^2 test, we used Bonferroni-adjusted alpha levels of .017 to correct for the increase in Type I errors from the multiple individual tests.

Results

Table 1 displays the demographic characteristics of the participants. The sample consisted of 153 older adults who competed in pickleball tournaments. The average age of the participants was 64.65 years ($SD = 7.40$, range = 50–85 years); 28% of the participants were between 50 and 59 years of age, 44.4% were between 60 and 69 years of age, and 27.5% were over 70 years of age. There were 63 males (41.2%) and 90 females (58.8%). The ethnic details of the participants are as follows: 86.9% Caucasians, 3.9% African Americans, 3.3% Hispanics, and 2.6% Asians. Education levels varied, but most respondents had a secondary education; 61% had a college education and 23% had attended graduate school. Of the participants, 78.8% were married and 71.7% were retirees. Participants indicated that they play pickleball approximately 9 h per week. They also revealed that they spent an average of \$232 on pickleball equipment in the previous year. The average number of competitions in which they participated during the previous year was 3.79, with a standard deviation of 4.03.

Table 2 shows a cross-tabulation of the participants' demographic and behavioral characteristics. In general, male, retired, and married participants between 50 and 59 years of age were likely to play more hours of pickleball during the week than participants who were classified under the other categories. Married male participants between 60 and 69 years of age displayed higher propensity to spend money on pickleball equipment than participants from the other categories. On average, male, retired, and married participants between 60 and 69 years of age participated in more pickleball competitions than the other participants.

A one-way MANOVA was performed to investigate the differences in life satisfaction, optimism, and social integration across the age groups. The results indicated significant differences according to age in the outcome variables (Wilks' $\lambda = .914$, $F = 2.26$, $p < .05$, multivariate $\eta^2 = .044$). An ANOVA was performed on each outcome variable as a follow-up test to the MANOVA. Significant differences in life satisfaction were found among the three age groups ($F = 4.31$, $p < .05$, partial

Table 1. Demographic and behavioral characteristics of the participants.

Characteristic	
Mean age (years)	64.6
% Female	58.8
% Caucasian	88.1
% College educated	85.0
% Married	77.8
% Retired	71.7
Hours playing pickleball per week	9.9
Amount spent on pickleball equipment in the previous year (USD)	\$232.8
Number of competitions attended in the previous year	3.7

Table 2. Cross-tabulation of demographic and behavioral characteristics.

	Age			Gender		Occupational Status		Marital Status	
	50–59	60–69	70+	Male	Female	Retired	Employed	Married	Single/ Divorced/ Widowed
Hours playing pickleball/week	10.86	10.14	8.67	10.47	9.59	10.88	7.70	10.35	8.65
Amount spent on pickleball equipment in the previous year (USD)	\$204.26	\$268.74	\$205.21	\$270.67	\$205.67	\$233.85	\$233.75	\$257.51	\$127.86
Number of competitions attended in the previous year	2.83	4.51	3.58	4.26	3.45	3.96	3.40	3.92	3.28

Table 3. Descriptive statistics on outcome variables and MANOVA.

	50–59		60–69		70+		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Life satisfaction	3.96	0.52	4.21	0.56	4.32	0.65	4.31*
Optimism	4.07	0.53	4.23	0.57	4.23	0.73	1.01
Social integration	4.76	1.34	4.23	1.75	4.16	1.77	1.76

Wilks' $\lambda = .914$, $F(6, 294) = 2.26$, $p < .05$, multivariate $\eta^2 = .044$

Table 4. Hotelling's T^2 test results according to gender on outcome variables.

Variable	Males		Females		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Life satisfaction	4.08	0.62	4.23	0.56	2.60
Optimism	4.10	0.58	4.25	0.63	2.06
Social integration	3.93	1.77	4.67	1.52	7.54**

** $p < .01$.

Table 5. Hotelling's T^2 test results of employment status on outcome variables.

Variable	Retired		Employed		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Life satisfaction	4.24	0.59	3.98	0.55	5.94*
Optimism	4.20	0.65	4.16	0.52	0.13
Social integration	4.23	1.78	4.67	1.30	2.18

* $p < .05$.

Table 6. Hotelling's T^2 test results of marital status on outcome variables.

Variable	Married		Single/divorced/widowed		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Life satisfaction	4.20	0.55	4.05	0.72	1.82
Optimism	4.17	0.56	4.23	0.77	0.27
Social integration	4.25	1.65	4.78	1.66	2.53

$\eta^2 = .055$). A follow-up Tuckey's test indicated that participants in the oldest group (70+ years) reported significantly higher life satisfaction than those between 50 and 59 years of age. No significant differences were observed for either optimism or social integration (Table 3).

Results of Hotelling's T^2 test showed that a statistically significant difference existed between male and female participants in terms of social integration, with females scoring significantly higher than the males ($F = 7.54$, $p < .01$, Wilks' $\lambda = .93$, partial $\eta^2 = .06$). In terms of life satisfaction and optimism, no significant gender differences were observed (Table 4). In the context of employment status, Hotelling's T^2 test revealed significant differences between retired and employed participants in terms of life satisfaction ($F = 5.94$, $p < .05$, Wilks' $\lambda = .94$, partial $\eta^2 = .06$), with retired participants scoring higher than employed participants. However, the differences observed in terms of social integration and optimism between retired and employed participants were insignificant (Table 5). No significant differences were observed between married and single/divorced/widowed participants in terms of life satisfaction, optimism, or social integration (Table 6).

Discussion

This study aimed to explore the behavior of older adults (the demographic represents the largest segment of pickleball participants in the USA) who participate in pickleball tournaments. We explored the demographic characteristics of this group and the psychosocial benefits (i.e., life satisfaction,

optimism, and social integration) they derive from playing the sport. The results reveal that life satisfaction varies vastly with age and employment status. Most of the participants were retirees (71.7%) who were more satisfied with their lives than their employed counterparts. For instance, based on the information offered by the retired participants, it can be gathered that they play more hours of pickleball during the week and take part in a greater number of competitions compared to the other players who are employed. Nimrod (2007) demonstrated that engaging in a leisure activity strongly contributes to retirees' life satisfaction and helps them adapt better to retirement. Moreover, leisure has been shown to be a key life domain that assumed greater importance for people transitioning to a life of retirement (Hersch, 1991). Our results suggest that playing pickleball can be an influential leisure activity for retirees, and it may also be effective as a strategy to cope with the changes that a life of retirement entails. Spending time playing pickleball and competing in events may be ideal ways for retirees to spend their increased free time productively.

Previous studies have examined the changes that occur in life satisfaction with aging; however, results have been inconsistent. Some researchers concluded that life satisfaction generally declines in old age (Smith, Borchelt, Maier, & Jopp, 2002), whereas others insisted that age had no effect on life satisfaction (Hamarat, Thompson, Steele, Matheny, & Simons, 2002). Moreover, the results of our study are also inconclusive. We find that the oldest pickleball players (70+ years) are more likely to be satisfied with life than the younger players. While the oldest players spend less time and money on pickleball than participants from other age groups (i.e., 50–59 and 60–69 years of age), they nonetheless experience greater life satisfaction compared with the latter. This finding suggests that pickleball can effectively enhance life satisfaction in adults aged 70 and above. Our findings are in line with the literature available on this topic, in which the positive effects of physical activity on life satisfaction at an advanced age are clearly demonstrated. For example, a meta-analysis conducted by Netz, Wu, Becker, and Tenenbaum (2005) indicated that moderately intense activities and aerobic training are most beneficial for the psychological well-being of older adults. Frequent exercise has also been shown to contribute to improved life satisfaction in older adults (McAuley et al., 2000). Previous studies also reported that older adults experience lower levels of life satisfaction when their health deteriorates (Gwozdz & Sousa-Poza, 2010). Our findings imply that playing pickleball may help maintain or improve health during old age, and we suggest that future studies explore other related outcome variables, such as physical health, mental health, and subjective well-being.

The results also demonstrate that female participants are likely to experience more social integration than male participants. Our findings reveal that the women tend to play fewer hours of pickleball during the week, spend less on pickleball equipment annually, and participate in fewer pickleball competitions compared with the men. Despite this, women are more likely to have positive relationships with others. This finding reflects the propensity of female participants to attend more meetings, clubs, and organizations than males; it is also possible that playing pickleball can be used as an avenue to build social networks among older women. It supports the findings of previous studies that revealed the significance of positive social relations (1) in enabling people to adhere to physical activity plans and (2) on the intrinsic motivation to engage in physical activity (Nielsen et al., 2014). It also supports the view that a socially active life leads to successful aging, which in turn represents the stance of activity theory (Atchley, 1977; Diggs, 2008; Havighurst, 1961, 1963). Considering the health and social benefits of playing pickleball, it appears that practitioners as well as gerontologists and adult education workers can use pickleball as a viable means to ameliorate loneliness and encourage friendships among older women. Consistent with numerous studies, which argue that participation in various leisure activities is a strong predictor of social connectedness (Toepoel, 2013), this study demonstrates the feasibility of pickleball as a possible method of intervention to increase social integration. Building networks of support and reducing social isolation will then improve the quality of life and promote well-being of older adults (Abdullah, 2017; Kansky & Diener, 2017).

Our empirical study adds to the existing body of knowledge in the context of leisure pursuits among older adults. Our findings show that older adults expend a considerable amount of money and time on pickleball (9.9 h per week and \$232.8 per year). The results also strengthen the stance of

activity theory, which states that staying engaged in leisure and actively participating in social interactions predict healthy aging (Atchley, 1977; Diggs, 2008; Havighurst, 1961, 1963; Newman, Tay, & Diener, 2014). According to a study conducted by Nimrod and Shrira (2016), the association between leisure and well-being becomes more evident as people age. It appears that leisure may play a key role in coping with various aging-related risks at an advanced age (Nimrod, 2011).

The current study has several limitations that should be addressed. The study employed purposive sampling, and the sample group was relatively small (characterized by a high proportion of Caucasians with high education levels). Life satisfaction, optimism, and social integration are not the only relevant variables in the context of this study; new studies should test these findings using different variables. When the investigators administered the surveys onsite at various pickleball competitions, the participants often expressed how much they enjoyed the activity and outlined the health benefits of playing pickleball. However, such constructs were not assessed in our study, and other variables related to older adults' well-being should be explored further, including their physical and mental health and enjoyment. The cross-sectional study design limits the generalizability of the findings and precludes the possibility of drawing causal inferences among the variables. Further studies using a longitudinal design or in-depth interviews will enable a better interpretation of the relation between older adults' participation in pickleball and their sense of well-being. An additional concern is the use of a single item to assess social integration. Future studies should employ multiple items to validate additional survey instruments or consider using additional variables, such as perceived social support, social network activities, and social development activities.

Implications of the study

Despite these limitations, our findings contribute to the understanding of the behavior of older adults who play pickleball. Practitioners in adult education, social work, and gerontologists can discern pickleball participation patterns based on the age, gender, and employment status of older adults; they can also document the benefits that older adults derive from playing the sport. Pickleball can be recommended for retired older adults who are looking for a new activity to help improve life satisfaction. While people aged 70 and above may not be satisfied with life easily (Smith et al., 2002), pickleball programs can enhance their life satisfaction. Various pickleball organizations claim that the sport can be learned easily (Sunshine Coast Pickleball Association, 2016), which makes it especially accessible to older adults. Efforts have been taken to convert underutilized tennis courts into permanent pickleball courts throughout the country owing to the increasing popularity of pickleball (Esparrago, 2016). Pickleball can also be played on existing tennis courts by adjusting the nets and adding chalk lines on the courts. It is common for pickleball players to set up temporary pickleball courts on indoor basketball courts as well. To strengthen this trend, we encourage community centers and senior centers to secure pickleball equipment and design programs and competitions for various age groups. If further studies confirm that participation in pickleball is a healthy and beneficial leisure activity, municipalities may encourage and support the participation of all age groups; this may also lead to the proliferation of new pickleball courts.

We suggest the feasibility of pickleball as a new leisure pursuit and it also reflects the aspect of learning new activity in older adulthood. According to Merriam and Kee (2014), learning in older adulthood improves personal and community well-being as well as decreases dependence on government-funded social services. Field (2009) also emphasized the importance of adult education, indicating that lifelong learning significantly promotes social capital and well-being. In this regard, the current study sheds light on the possibility that pickleball can be utilized as a new community-based adult learning program which increase the overall well-being and provide educational opportunities of older adults.

While pickleball is not a well-known activity in academia, it has gained popularity in various communities in the USA. Considering the significant growth in the number of older adults playing pickleball as well as the various news articles that report the benefits of playing the sport, empirical

studies in the future should be conducted to further explore the relation between participation in pickleball and older adults' well-being. In this regard, the current study, which is a basic exploration of participation in pickleball based on demographic and behavioral characteristics among older adults, can encourage further research in this field.

Acknowledgments

This work was supported by the Yonsei University Future-leading Research Initiative of 2017 (2017-22-0035).

References

- Abdullah, M. Q. (2017). Mental health and mental disorder: Promotion and prevention. *Psychology and Behavioral Science International Journal*, 7(2), 1–6. doi:10.19080/PBSIJ.2017.07.555708
- Atchley, R. C. (1977). *The social forces in later life*. Belmont, CA: Wadsworth.
- Boehm, J. K., & Kubzansky, L. D. (2012). The heart's content: The association between positive psychological well-being and cardiovascular health. *Psychological Bulletin*, 138(4), 655–691. doi:10.1037/a0027448
- Bourdieu, P. (1986). The forms of connectedness. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education*. New York, NY: Greenwood Press.
- Burch, W. R. (2009). The social circles of leisure: Competing explanations. *Journal of Leisure Research*, 41, 313–335.
- Coleman, J. (1988). Social connectedness in the creation of human connectedness. *American Journal of Sociology*, 94 (Supplement), S95–S120. doi:10.1086/228943
- Cornwell, B., Laumann, E. O., & Schumm, L. P. (2008). The social connectedness of older adults: A national profile. *American Sociological Review*, 73, 185–203. doi:10.1177/000312240807300201
- Corrigan, J. D., Kolakowsky-Hayner, S., Wright, J., Bellon, K., & Carufel, P. (2013). The satisfaction with life scale. *The Journal of Head Trauma Rehabilitation*, 28(6), 489–491. doi:10.1097/HTR.0000000000000004
- Cruz-Ferreira, A., Marmeleira, J., Formigo, A., Gomes, D., & Fernandes, J. (2015). Creative dance improves physical fitness and life satisfaction in older women. *Research on Aging*, 37(8), 837–855. doi:10.1177/0164027514568103
- Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. doi:10.1207/s15327752jpa4901_13
- Diggs, J. (2008). Activity theory of aging. In S. Loue, & M. Sajatovic (Eds.), *Encyclopedia of ageing and public health* (pp. 79–81). New York, NY: Springer.
- Driver, A. (2017, November 15). Pickleball: A fast-rising sport older adults can't get enough of. *Lifetime Daily*. Retrieved December 14, 2017, from <https://www.lifetimedaily.com/health-benefits-of-playing-pickleball/>
- Esparrago, L. (2016, July 13). New pickleball courts open for 'fun, friendship, fitness' for all. *The Lincoln Journal Star*. Retrieved from http://journalstar.com/news/local/new-pickleball-courts-open-for-fun-friendship-fitness-for-all/article_4c98d0fc-89b2-5fb0-a1d5-11bcc75fa9ac.html
- Everard, K. M., Lach, H. W., Fisher, E. B., & Baum, M. C. (2000). Relationship of activity and social support to the functional health of older adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 55 (4), S208–S212. doi:10.1093/geronb/55.4.S208
- Fernandez-Ballesteros, R., Zamarron, M. D., & Ruiz, M. A. (2001). The contribution of socio-demographic and psychosocial factors to life satisfaction. *Ageing & Society*, 21, 25–43. doi:10.1017/S0144686X01008078
- Field, J. (2009). *Well-being and happiness: Inquiry into the future of lifelong learning* (Thematic paper 4). Leicester, UK: National Institute of Adult Continuing Education. Retrieved December 26, 2017, from http://www.academia.edu/2550251/Well-being_and_happiness
- Forgeard, M. J. C., & Seligman, M. E. P. (2012). Seeing the glass half full: A review of the causes and consequences of optimism. *Pratiques Psychologiques*, 18(2), 107–120. doi:10.1016/j.prps.2012.02.002
- Gabriel, Z., & Bowling, A. (2004). Quality of life from the perspectives of older people. *Ageing and Society*, 24(5), 675–691. doi:10.1017/S0144686X03001582
- Gana, K., Bailly, N., Saada, Y., Joulain, M., & Alaphilippe, D. (2013). Does life satisfaction change in old age: Results from an 8-year longitudinal study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 68(4), 540–552. doi:10.1093/geronb/gbs093
- Gardiner, C., Geldenhuys, G., & Gott, M. (2016). Interventions to reduce social isolation and loneliness among older people: An integrative review. *Health & Social Care in the Community*. doi:10.1111/hsc.12367
- Glass, T. A., De Leon, C. M., Marottoli, R. A., & Berkman, L. F. (1999). Population based study of social and productive activities as predictors of survival among elderly Americans. *Bmj*, 319(7208), 478–483. doi:10.1136/bmj.319.7208.478

- Gwozdz, W., & Sousa-Poza, A. (2010). Ageing, health and life satisfaction of the oldest old: An analysis for Germany. *Social Indicators Research*, 97(3), 397–417. doi:10.1007/s11205-009-9508-8
- Hamarat, E., Thompson, D., Steele, D., Matheny, K., & Simons, C. (2002). Age differences in coping resources and satisfaction with life among middle-aged, young-old, and oldest-old adults. *The Journal of Genetic Psychology*, 163(3), 360–367. doi:10.1080/00221320209598689
- Havighurst, R. J. (1961). Successful aging. *The Gerontologist*, 1, 8–13. doi:10.1093/geront/1.1.8
- Havighurst, R. J. (1963). Successful aging. In R. Williams, C. Tibbitts, & W. Donahue (Eds.), *Processes of aging: Social and psychological perspectives* (pp. 299–320). New York, NY: Atherton Press.
- Hersch, G. (1991). Leisure and aging. *Physical & Occupational Therapy in Geriatrics*, 9(2), 55–78. doi:10.1080/J148v09n02_04
- House, J. C., Landis, K. R., & Unberson, D. (1988). Social relationships and health. *Science*, 241, 540–545.
- Hyber, J. (2015, July 6). Pickleball keeps seniors active. *The StarTribune*. Retrieved from <http://www.startribune.com/pickleball-keeps-seniors-active/311902351/>
- Iwasaki, Y., Messina, E., Shank, J., & Coyle, C. (2015). Role of leisure in meaning-making for community-dwelling adults with mental illness: Inspiration for engaged life. *Journal of Leisure Research*, 47(5), 538–555.
- Kansky, J., & Diener, E. (2017). Benefits of well-being: Health, social relationships, work, and resilience. *Journal of Positive Psychology and Wellbeing*, 1(2), 129–169.
- Kavussanu, M., & McAuley, E. (1995). Exercise and optimism: Are highly active individuals more optimistic? *Journal of Sport and Exercise Psychology*, 17, 246–258.
- Kent-Isaac, A. (2014, July 31). Pickleball: A game for seniors that's sweeping the nation! *Bloom Magazine*. Retrieved from <http://www.magbloom.com/2014/07/pickleball-a-game-for-seniors-thats-sweeping-the-nation/>
- Kersten, M., Cox, C. R., & Van Enkevort, E. A. (2016). An exercise in nostalgia: Nostalgia promotes health optimism and physical activity. *Journal of Psychology & Health*, 31(10), 1166–1181. doi:10.1080/08870446.2016.1185524
- Ku, P. W., Fox, K. R., & Chen, L. J. (2016). Leisure-time physical activity, sedentary behaviors and subjective well-being in older adults: An eight-year longitudinal research. *Social Indicators Research*, 127(3), 1349–1361. doi:10.1007/s11205-015-1005-7
- Lemon, B. W., Bengtson, V. L., & Peterson, J. A. (1972). An exploration of the activity theory of aging: Activity types and life satisfaction among in-movers to a retirement community. *Journal of Gerontology*, 27(4), 511–523. doi:10.1093/geronj/27.4.511
- Leung, L., & Lee, P. S. N. (2005). Multiple determinants of life quality: The roles of internet activities, use of new media, social support, and leisure activities. *Telematics and Informatics*, 22(3), 161–180. doi:10.1016/j.tele.2004.04.003
- Litwin, H. (2000). Activity, social network, and well-being: An empirical examination. *Canadian Journal on Aging*, 19, 343–362. doi:10.1017/S0714980800015038
- Lloyd, K. M., & Auld, C. J. (2002). The role of leisure in determining quality of life: Issues of content and measurement. *Social Indicators Research*, 57, 43–71.
- Mannell, R. C. (1999). Older adults, leisure, and wellness. *Journal of Leisureability*, 26(2), 3–10.
- McAuley, E., Blissmer, B., Marquez, D. X., Jerome, G. J., Kramer, A. F., & Katula, J. (2000). Social relations, physical activity, and well-being in older adults. *Preventive Medicine*, 31(5), 608–617. doi:10.1006/pmed.2000.0740
- Melin, R., Fugl-Meyer, K. S., & Fugl-Meyer, A. R. (2003). Life satisfaction in 18- to 64-year-old Swedes: In relation to education, employment situation, health and physical activity. *Journal of Rehabilitation Medicine*, 35(2), 84–90.
- Menec, V. H. (2003). The relation between everyday activities and successful aging: A 6-year longitudinal study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 58(2), S74–S82. doi:10.1093/geronb/58.2.S74
- Merriam, S. B., & Kee, Y. (2014). Promoting community wellbeing: The case for lifelong learning for older adults. *Adult Education Quarterly*, 64(2), 128–144. doi:10.1177/0741713613513633
- Murphy, H. (2003). Exploring leisure and psychological health and wellbeing: Some problematic issues in the case of Northern Ireland. *Leisure Studies*, 22(1), 37–50. doi:10.1080/02614360306570
- NBC News. (2014, March 18). *Pickleball: The fastest-growing sport in America*. Retrieved from <http://www.nbcnews.com/watch/nightly-news/pickleball-the-fastest-growing-sport-in-america-199360067605>
- Netz, Y., Wu, M. J., Becker, B. J., & Tenenbaum, G. (2005). Physical activity and psychological well-being in advanced age: A meta-analysis of intervention studies. *Psychology and Aging*, 20(2), 272–284. doi:10.1037/0882-7974.20.2.272
- Newby, J. (2017, April 17). Older adults gravitate to pickleball. *Pensacola News Journal*. Retrieved December 14, 2017, from <http://www.pnj.com/story/sports/outdoors/breathe/2017/04/17/older-adults-gravitate-pickleball/100311912/>
- Newman, D. B., Tay, L., & Diener, E. (2014). Leisure and subjective well-being: A model of psychological mechanisms as mediating factors. *Journal of Happiness Studies*, 15(3), 555–578. doi:10.1007/s10902-013-9435-x
- Nielsen, G., Wikman, J. M., Jensen, C. J., Schmidt, J. F., Gliemann, L., & Andersen, T. R. (2014). Health promotion: The impact of beliefs of health benefits, social relations and enjoyment on exercise continuation. *Scandinavian Journal of Medicine & Science in Sports*, 24(S1), 66–75. doi:10.1111/sms.12275
- Nimrod, G. (2007). Retirees' leisure: Activities, benefits, and their contribution to life satisfaction. *Leisure Studies*, 26(1), 65–80. doi:10.1080/02614360500333937

- Nimrod, G. (2011). The impact of leisure activity and innovation on the well-being of the very old. In L. W. Poon, & J. Cohen-Mansfield (Eds.), *Understanding the well-being in the oldest old* (pp. 240–257). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511920974.015
- Nimrod, G., & Shrira, A. (2016). The paradox of leisure in later life. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 71(1), 106–111. doi:10.1093/geronb/gbu143
- Pavey, T. G., Burton, N. W., & Brown, W. J. (2015). Prospective relationships between physical activity and optimism in young and mid-aged women. *Journal of Physical Activity and Health*, 12(7), 915–923. doi:10.1123/jpah.2014-0070
- Pietrzak, R. H., & Cook, J. M. (2013). Psychological resilience in older US veterans: Results from the national health and resilience in veterans study. *Depression and Anxiety*, 30(5), 432–443. doi:10.1002/da.22083
- Putnam, R. D. (1995). Turning in, turning out: The strange disappearance of social connectedness in America. *Political Science & Politics*, 28, 664–683.
- Rodriguez, A., Látková, P., & Sun, -Y.-Y. (2008). The relationship between leisure and life satisfaction: Application of activity and need theory. *Social Indicators Research*, 86, 163–175. doi:10.1007/s11205-007-9101-y
- Scheier, M. F., & Carver, C. S. (1985). Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychology*, 4(3), 219–247. doi:10.1037/0278-6133.4.3.219
- Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research*, 16, 201–228. doi:10.1007/BF01173489
- Schnohr, P., Kristensen, T. S., Prescott, E., & Scharling, H. (2005). Stress and life dissatisfaction are inversely associated with jogging and other types of physical activity in leisure time: The Copenhagen city heart study. *Scandinavian Journal of Medicine & Science in Sports*, 15(2), 107–112. doi:10.1111/j.1600-0838.2004.00394.x
- Scott, T. L., Masser, B. M., & Pachana, N. A. (2015). Exploring the health and wellbeing benefits of gardening for older adults. *Ageing & Society*, 35(10), 2176–2200. doi:10.1017/S0144686X14000865
- Sener, A., Terzioğlu, R. G., & Karabulut, E. (2007). Life satisfaction and leisure activities during men's retirement: A Turkish sample. *Aging and Mental Health*, 11(1), 30–36. doi:10.1080/13607860600736349
- Shaffer, B. (2015, December 3). *Pickleball sees growth among aging demographic*. Retrieved from <http://clubandresortbusiness.com/2015/12/03/pickleball-sees-growth-among-aging-demographic/>
- Simone, P. M., & Haas, A. L. (2013). Frailty, leisure activity and functional status in older adults: Relationship with subjective well-being. *Clinical Gerontologist*, 36(4), 275–293. doi:10.1080/07317115.2013.788114
- Smith, J., Borchelt, M., Maier, H., & Jopp, D. (2002). Health and well-being in the young old and oldest old. *Journal of Social Issues*, 58(4), 715–732. doi:10.1111/1540-4560.00286
- Sport & Fitness Industry Association. (2016). *Pickleball participation report 2016*. Retrieved from https://www.sfia.org/reports/507_Pickleball-Participation-Report-2016
- Sunshine Coast Pickleball Association. (2016, September 9). *Level-play and player ratings*. Retrieved from <http://www.sunshinecoastpickleball.org/schedule-and-links.html>
- Toepoel, V. (2013). Ageing, leisure, and social connectedness: How could leisure help reduce social isolation of older people? *Social Indicators Research*, 113(1), 355–372. doi:10.1007/s11205-012-0097-6
- Trager, C. (2017, July 1). Pickleball is a passion many seniors are picking up. *Newsday*. Retrieved December 14, 2017, from <https://www.newsday.com/long-island/pickleball-is-a-passion-many-seniors-are-picking-up-1.13770479>
- Van Ingen, E., & Van Eijck, K. (2009). Leisure and social connectedness: An analysis of types of company and activities. *Leisure Sciences*, 31, 192–206. doi:10.1080/01490400802686078
- Wanderley, F. A. C., Oliveira, N. L., Marques, E., Moreira, P., Oliveira, J., & Carvalho, J. (2015). Aerobic versus resistance training effects on health-related quality of life, body composition, and function of older adults. *Journal of Applied Gerontology*, 34(3), 143–165.
- Wankel, L. M., & Berger, B. G. (1990). The psychological and social benefits of sport and physical activity. *Journal of Leisure Research*, 22(2), 167–182.
- Watson, K. B., Frederick, G. M., Harris, C. D., Carlson, S. A., & Fulton, J. E. (2015). US adults' participation in specific activities: Behavioral risk factor surveillance system—2011. *Journal of Physical Activity and Health*, 12(S1), S3–S10. doi:10.1123/jpah.2013-0521
- Yau, M. K. S., & Packer, T. L. (2002). Health and well-being through T'ai Chi: Perceptions of older adults in Hong Kong. *Leisure Studies*, 21(2), 163–178. doi:10.1080/026143602110138850