Received: 30 March 2023 | Revised: 21 May 2023 | Accepted: 5 June 2023

DOI: 10.1002/hsr2.1347

ORIGINAL RESEARCH

Health Science Reports Open Access WILEY

The seasonal variation of physical activity and quality of life during the first wave of the COVID-19 pandemic in Finnish older golfers: A cross-sectional study

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Abstract

Background and Aims: The COVID-19 pandemic was associated with reduced physical activity and increased sedentary behavior. Golf is a health-enhancing outdoor exercise and is associated with low risk of viral transmission. The purpose of this study was to describe the seasonal differences in physical activity and quality of life during the first wave of COVID-19 pandemic in 2020 in Finnish older golfers.

Methods: Older golfers ($n = 325$) from eight golf clubs retrospectively responded to a questionnaire in summer 2020 on their physical activity and golf activity in winter 2019/20 (pre-COVID-19 winter season) and summer season 2020. In addition, they reported their quality of life after the first wave of pandemic in summer 2020. To evaluate the seasonal differences in physical activity, life quality and its association with golf activity, the data were analyzed using the Mann–Whitney *U* test, Wilcoxon signed-rank test, Spearman's correlation test, and linear regression analysis.

Results: Despite COVID-19 restrictions, golfers' physical activity increased by 24% ($p < 0.001$) during the COVID-19 restrictions in the summer of 2020. Moderate physical activity increased by 37% ($p < 0.001$), walking activity increased by 26% ($p < 0.001$), and sitting decreased by 21% ($p < 0.001$) compared with the pre-COVID-19 winter season. The full 18-hole golf round activity was positively associated with moderate physical activity both in the summer and winter season, and with walking in the summer season. Over 90% of golfers reported good quality of life during the 2020 summer restrictions.

Conclusion: In contrast to physical activity levels generally decreasing during the first wave of pandemic, physical activity levels in Finnish golfers increased, and these golfers reported a good quality of life. Golf can provide health enhancing physical activity and older golfers seems to be physically active throughout the year.

KEYWORDS

COVID-19, golf, life quality, older adults, physical activity, seasonal variation

1 | INTRODUCTION

Several recent studies have shown that the COVID-19 pandemic has been associated with reduced physical activity and increased sedentary behavior.[1,2] The benefits of a physically active lifestyle are well known for maintaining physical and mental health and improving quality of life (QoL).[3,4] Due to the first wave of COVID-19, Finland was in a state of emergency from March 16 to June 16, 2020, during which strict measures were taken to protect the population's health and safeguard the functioning of society and the economy. All national and municipal indoor leisure centers, swimming pools, and other sports facilities were closed during this time.[5] Even after the strict public measures were lifted, everyone over the age of 70 was recommended to continue avoiding physical contact as much as possible until June 23, 2020.[6] During this state of emergency, the Finnish Golf Union collaborated with health authorities to provide specific instructions for Finnish golf facilities and players, enabling people to gain the health benefits of golf while mitigating the risk of SarsCoV-2 transmission.[7] The instructions noted that outdoor facilities where maintaining a 2-m physical distance was possible could open, and added golf-specific measures, such as limiting the number of players per golf tee time, avoiding surface contact by removing bunker rakes, golf carts, and buggies, and eliminating handshaking or physical contact.[7]

To protect their health and comply with COVID-19 regulations, in Finland the general public had to find permitted ways to exercise and maintain physical activity. Outdoor sports where physical distancing was possible increased in popularity in Finland with reportedly over 146,000 golf players in 2020, which is >6% more than in 2019. Globally, golf participation increased during the pandemic, in contrast to most other sports. Those who started playing golf during the pandemic are reportedly more interested in health-enhancing exercise and outdoor activity in a golf course environment than prepandemic.[8] Golf is a sporting activity that enables the players to keep at least a 2-m social distance while on the golf course. Golf has been classified as a low-risk outdoor activity.[9] It is a health-enhancing physical activity that includes low-risk resistance activity and episodes of moderate to vigorous aerobic walking and swinging golf clubs which promotes physical fitness for all ages.[10–12] In addition, golf has been found to promote not only physical health benefits but also prevent mental health problems while increasing overall well-being.[12,13] Furthermore, because of the social aspect of playing golf, it may have a bigger positive impact on mental health and well-being compared with other popular sports for older adults.[14]

The purpose of this study was to describe the seasonal differences in physical activity and QoL during the first wave of the COVID-19 pandemic in Finnish older golfers. This study provides new information about the habitual physical activity of Finnish golfers aged 65 years and older during the pandemic and about seasonal variation in Finland.

2 | MATERIALS AND METHODS

2.1 | Participant selection

Ten golf clubs were asked to help recruit participants for this cross-sectional study in summer 2020. Persons were asked to retrospectively respond to a questionnaire detailing their physical activity and golf activity in pre-COVID-19 winter season (November 2019 to March 2020) and summer 2020 (April to October 2020). In addition, the survey would assess their QoL after the first wave of pandemic in summer 2020. Those golf clubs were selected within the boundaries of special healthcare districts, such that the sample of participants for the study would be as representative as possible for different regions in Finland. Two of these clubs dropped out before the final recruitment phase. The recruitment process for golf clubs was conducted by telephone and participation of the clubs in the study was confirmed by e-mail.

To be included, the golfers from the selected golf clubs were required to be over 65 years old, to have a valid membership in at least one of the selected golf clubs, to have a green card, and play at a hobby level or compete only in a club or regional competitions. The participants were not allowed to participate in the Finnish Golf Association's National team during the study.

The invitation to participate and the electronic questionnaire were sent twice directly to the players' who were over 65 years old and fulfilled the inclusion criteria via personal emails, which were gathered from the membership systems of the selected golf clubs. In addition, the golf clubs were advised to add briefing about the study to their websites to increase the response rate.

2.2 | Questionnaire survey

The electronic questionnaire was composed of three parts as follows:

(i) background information,
(ii) self-reported life quality/QoL,
(iii) the activity levels playing and practicing golf as well as wider physical activity.

The survey utilized the international physical activity survey IPAQ[15] and the QoL was determined with the EUROHIS-QOL eight-item index.[16] The instructions on how to answer the questionnaires were explained in the online survey and each participant had an opportunity to contact the researcher if they did not properly understand the terms or questions in the survey.

2.3 | Background information

The background variables included age, sex (male, female), marital status (married, living together, divorced, widowed, dating, single,

other), employment status (retired, working <40 h/week, working >40 h/week) height and weight (Table 1).

The golf-specific variables included players' golf club membership, handicap value, the typical score for a full 18-hole golf round, and way of play (carrying clubs, a push/pull cart, riding a golf buggy/cart). The participants reported their full 18 and a half 9-hole golf round activities and practice activities, and wider physical activities retrospectively from the time of the restrictions in the summer season of 2020 and the pre-COVID-19 winter season.

2.4 | Physical activity

The participants self-reported their habitual physical activity using the International Physical Activity Questionnaire Short Version (IPAQ-SF) retrospectively both from the time of the restrictions in the summer season of 2020 and the pre-COVID-19 winter season. The IPAQ-SF includes the frequency and duration of walking activity (3.3 metabolic equivalent of tasks [METs]), moderate-intensity physical activity (>4.0 – <8 METs), vigorous-intensity physical activity (>8.0 METs), and sitting time. The IPAQ survey is a valid method for measuring physical activity in population-level studies, and the validity of the survey has also been found to be suitable for different age groups, for example, the older adults.[17]

2.5 | QoL

QoL was evaluated retrospectively from the time of the restrictions in the summer season of 2020 (April to October) with the EUROHIS-QOL 8-item index. The scale has been developed based on WHOQOL-Bref -scale, and this is a shortened version of it.[16] We modified the scale by focusing only on the overall QoL, daily living activity, self-esteem, and social relationships. Every question was scored on a Likert scale of 1 to 5 (1 = *very poor*, 2 = *poor*, 3 = *neither good or poor*, 4 = *good*, and 5 = *very good*). The total score of QoL was scored from the average of each factor.

2.6 | Statistical analysis

The results of the IPAQ-SF of the participants were processed for statistical analysis according to the protocol guidelines.[17] Mean and standard deviations were calculated for continuous variables. Frequencies and percentages were calculated for categorical variables. The normal distribution of the data were analyzed by the Kolmogorov–Smirnov test and visually observed from the histogram, which indicated that the data was nonnormally distributed. Mann–Whitney *U* test and Wilcoxon signed-rank test were used as nonparametric tests. To determine gender differences in physical activity level and QoL, the data were analyzed by Mann–Whitney *U* test. Wilcoxon signed-rank test was used to compare levels of physical activity before and during the pandemic. We conducted a linear regression and analysis for each dependent variable using the control variables (gender, age, 18-hole round activity, QoL). Bivariate correlations were computed by using Spearman's correlation test to examine the relationship between total physical activity (min/week) and QoL domains. The results were analyzed using IMB SPSS Statistics version 27.0 (IBM Corp.). In the statistical tests, a significance level of $p < 0.05$ and a confidence interval (CI) of 95% was used as the p value

3 | RESULTS

3.1 | Characteristics of study participants

Of the 10 golf clubs selected, eight participated. Three hundred and twenty-five out of 481 respondents who entered the survey returned the questionnaires. Two incomplete questionnaires were excluded and thus 323/481 (67%) questionnaires were used in the statistical analysis. The participants included 233 (72%) males and 90 (28%) females. The characteristics of all the participants are shown in Table 1. Almost all of the participants (95%, $n = 257$) played at least once per week during the summer season. The women played an average of 2.6 (SD 1.3) 18-hole rounds of golf every week; men were almost as active with 2.3 (1.4) full 18-hole rounds every week. During the summer season, 9-hole rounds were played less than 18-hole rounds, with women playing an average of 0.8 (SD 1.3) and men having 0.9 (SD 0.9) rounds per week. The most frequently reported (79%, $n = 253$) way to transport the golf clubs was using a push/pull cart regardless of season. Only a few participants (7%, $n = 24$) reported riding a golf buggy/cart in their rounds. In addition to playing, men practiced golf on average for 1.4 (SD 2.6) hours and women for 1.2 (SD 1.7) per week at the driving range or in the short-game area. During the winter season, women played overseas an average of 1.6 (SD 2.0) and men 0.8 (SD 0.8) 18-hole rounds per week. Women practiced golf on average for 0.6 (SD 1.0) hours and men for 0.7 (SD 1.5) per week at the indoor facilities.

3.2 | Physical activity

Women reported a median total physical activity of 7463 MET-min/week and men 6340 MET-min/week in the summer. In the winter season, women reported 6423 MET-min/week and men reported 4923 MET-min/week. In contrast to the wider population, women golfers were more active than male golfers both in the summer ($p = 0.045$) and in the winter seasons ($p = 0.017$). With the best available evidence[11] highlighting that golf can provide moderate to vigorous aerobic activity, >95% of participants reported playing at least once per week and would exceed World Health Organization minimum recommendations. 80% of participants ($n = 223$) achieved a high physical activity level in the summer season, and the majority (73%, $n = 201$) also in the winter season. The total amount of physical activity (min/week) was significantly different in terms of gender in the winter season

TABLE 1 Characteristics of the participants.

	Women (Mean ± SD)	Men (Mean ± SD)	All (Mean ± SD)	*p* value[a]
Age (years)	70 ± 3.6	71 ± 4.4	71 ± 4.2	0,393
Weight (kg)	67 ± 10	86 ± 13.3	81 ± 15	<0.001
BMI (kg/m^2)	25 ± 3.8	27 ± 3.8	26 ± 3.9	<0.001
Handicap value	27 ± 6.2	21 ± 7.6	23 ± 7.7	<0.001
Played years	21 ± 8.1	23 ± 9.7	22 ± 9.3	0,053
	Women (Total, %)	**Men (Total, %)**	**All (Total, %)**	***p* Value[b]**
Marital status				
Married	51 (57)	193 (83)	244 (76)	<0.001
Living together	9 (10)	16 (7)	25 (8)	
Divorced	11 (12)	8 (3)	19 (6)	
Widowed	11 (12)	12 (5)	23 (7)	
Dating	5 (6)	2 (1)	7 (2)	
Single	2 (2)	2 (1)	4 (1)	
Other	1 (1)	0 (0)	1 (0)	
Employment status				<0.001
Retired	89 (99)	215 (92)	304 (94)	
Working <40 h/week	1 (1)	10 (4)	11 (3)	
Working >40 h/week	0 (0)	8 (3)	8 (3)	

Note: *n* (total) = 323, *n* (women) = 90 (28%), *n* (men) = 233 (72%).

Abbreviation: SD, standard deviation.

[a]To determine gender difference, data were analyzed by Mann–Whitney *U* test.

[b]To determine gender difference, data were analyzed by χ^2 tests.

($p = 0.037$). There were also differences, both in the summer and winter seasons, in moderate physical activity ($p = 0.001$, $p = 0.027$) and walking activity ($p = 0.011$, $p = 0.006$), with women being more physically active than men. The physical activity of all participants in the summer and winter seasons is shown in Table 2. All participants increased their total physical activity, moderate and walking activity ($p < 0.001$), and sat less ($p < 0.001$) in the summer season as compared with the winter season. The association between physical activity (min/week) and age, gender, golf as well as QoL is displayed in Table 3. According to the analyses, gender and golf had statistically significant associations with moderate-intensity physical activity and walking activity, in both the summer and winter seasons.

3.3 | QoL

The average total of QoL for women was 4.4 (SD 0.6) and almost identical for men, 4.3 (SD 0.6). Almost all the participants (96%, $n = 239$) reported that their QoL was very good or good. Only one participant felt that their QoL had been poor. There was a significant positive correlation between participants' ratings of total QoL and their total physical activity in the summer season $r_s(280) = 0.167$, $p = 0.005$, and the winter season $r_s(280) = 0.180$, $p = 0.002$. The majority of the participants were fairly satisfied (25%, $n = 82$) or very satisfied (71%, $n = 230$) with their ability to perform their daily activities. Only a small proportion (4%, $n = 12$) felt that their ability to perform daily activities had deteriorated. The study revealed that women especially felt better ($p < 0.001$) in their abilities to perform daily activities.

4 | DISCUSSION

4.1 | Physical activity

To our knowledge, this is one of the first time the seasonal differences of physical activity during the COVID-19 pandemic, of golfers has been studied. This cross-sectional study revealed that playing golf increased in the summer season of 2020 during the COVID-19 pandemic and it increased physical activity in our cohort of golfers over the age of 65. Several recent meta-analyses and reviews have shown that pandemic was associated with reduced physical activity and increasing sedentary behavior.[18–21] Both incidental physical activity, such as participation in community activities, and reduction in participation in formal exercise, such as exercise classes, gyms, and other group activities were reduced due to COVID-19 related restrictions.[18,20,21] According to reviews, physical activity levels in older adults decreased, sitting time increased, and METs and step counts decreased, regardless of the country.[21] A different meta-analysis showed similar results with a significant decrease in physical activity among older adults, but three studies showed mixed results, which made it difficult to draw a reliable conclusion. Nevertheless, there is clear evidence that physical activity in this age-group decreased during the pandemic, while other age-groups did not experience significant changes.[20] The results of this study differ from other studies. Even though the recommendations for the elderly were to remain physically active and spend time outdoors in a safe manner, it seems that the physical activity level for the general population did generally decrease during the pandemic. The Finnish National Sports Council study reported that 38% of >60-year-olds had reduced their physical activity and if one considers older individuals, 75–85-year-olds, then 37%, reported reduced physical activity during the COVID-19 pandemic.[22,23] Similarly, other results in a Finnish study reported that >70-year-old physical activity was reduced by 34% during the first wave of the COVID-19 pandemic.[24] In addition to Finland, similar results were reported from other Nordic countries. A Swedish study reported reductions in social or physical activity by 55% of 68 years and above adults.[25] A recent systematic review of studies evaluating physical activity during the first wave of the COVID-19 pandemic indicated that the majority of the studies reported decreases in physical activity accompanied by

TABLE 2 Physical activity of all participants (min/week) in the summer season and in the winter season.

	Summer (min/week) women[a]		Summer (min/week) men[a]		Summer (min/week) all[a]		Winter (min/week) women[a]		Winter (min/week) men[a]		Winter (min/week) all[a]		*p* Value summer[b]	*p* Value winter[b]	Mean Percetage (%)[c]	*p* Value[d]
PA																
Vigorous	214	(148–281)	257	(217–299)	246	(211–281)	282	(216–326)	250	(214–286)	258	(226–290)	0.105	0.425	−5	0.274
Moderate	603	(524–683)	452	(405–500)	494	(452–535)	386	(312–463)	288	(252–3259	315	(281–349)	0.001	0.027	36	<0.001
Walking	1011	(835–1187)	755	(665–846)	825	(743–907)	794	(635–953)	545	(477–613)	613	(545–679)	0.011	0.006	26	<0.001
Sitting	1576	(1433–1719)	1710	(1595–1824)	1673	(1581–1765)	1916	(1760–2071)	2056	(1931–2181)	2018	(1917–2117)	0.277	0.370	−21	<0.001
Total PA WoS	1828	(1594–2063)	1465	(1338–1593)	1565	(1451–1678)	1462	(1235–1691)	1082	(983–1181)	1186	(1090–1283)	0.006	0.007	24	<0.001

Note: *n* (total) = 281, *n* (women) = 77 (27%), *n* (men) = 204 (73%).

Abbreviations: PA, physical activity; Total PA Wos, total physical activity without sitting.

[a]Expressed in Mean (95% Confidence Interval).

[b]To determine gender difference, data were analyzed by Mann–Whitney *U* test.

[c]To compare the percentage change of PA before and during the pandemic.

[d]To compare levels of PA before and during the pandemic, data were analyze by Wilcoxon rank test.

TABLE 3 Coefficient showing the association between physical activity (min/week) and golfers' age, gender, golf, and Qol for the sample required.

	Vigorous		Moderate		Walking		Sitting	
	Summer β (95% CI)	Winter β (95% CI)	Summer β (95% CI)	Winter β (95% CI)	Summer β (95% CI)	Winter β (95% CI)	Summer β (95% CI)	Winter β (95% CI)
Age	−0.077	−0.050	−0.021	−0.001	0.027	0.005	0.074	0.028
Gender	0.018	0.012	−0.167*	−0.089	−0.144*	−0.185*	0.080	0.095
Golf 18	−0.067	0.082	0.388**	0.219**	0.188*	0.080	−0.054	−0.028
Qol	0.053	0.066	0.080	0.053	0.103	0.117	−0.004	0.016

Note: *n* (total) = 281, *n* (women) = 77 (27%), *n* (men) = 204 (73%).

Abbreviations: Golf 18, Summer season 18-hole golf round activity; Qol, World Health Organization Quality of Life.

*$p < 0.005$; **$p < 0.001$.

increases in sedentary behaviors.[1] In Alpine regions, the amount of physical activity levels and frequency of physical activity decreased during the first COVID-19 measures compared with prerestrictions.[25] However, golf and golf-related activities have proved popular on a global basis despite COVID-19 restrictions.[26] Moreover, older people in the United States have welcomed the increased engagement that outdoor exercise such as golf can provide, both for physical activity levels but as well for behavioral coping strategies during the COVID-19 pandemic.[27]

In Finland, golf was possible to be practiced safely within official restraint guidelines during the pandemic. The popularity of golf in Finland is evident in "golf round" activity data. In the Year 2018 (prepandemic) golfers played 2,907,115 golf rounds and the value increased only 1.6% from the previous year. During the pandemic, in the Year 2020, Finnish golfers played 4,127,226 golf rounds, 39% greater than in 2019[28] and of all the golfers in Finland, 28% were female and 72% were male,[8] which is similar to the gender breakdown in this study. There is no specific round activity value for golfers aged 65 years and older, but approximately 30% of all golf players in Finland are over 60 years old.[8] Considering their work-life situation, it seems they have more time to enjoy playing golf than younger players which can lead to higher round activity values during the playing season. Based on the results of this study, more than 90% of participants enjoyed the beneficial health effects of golf[10–12,14,29] by playing regularly at least once a week during the summer season. Previous researchers have demonstrated that using a nonelectronic (push or pull) cart during the round increases the intensity of playing compared with driving a golf buggy.[11] However, we should remember that using a golf buggy for health reasons allows more individuals to play golf, otherwise their health conditions would make it impossible. In Finland, and in many other countries, where the lockdown regulations in the first wave of the COVID-19 pandemic were very restrictuve, golf clubs were able to engage with policy makers and scientists to find a way to enable playing golf during the restrictions. According to this study, it seems that this enabled Finnish golfers aged 65 years and older to maintain or even increase physical activity levels during the first wave of the pandemic, in contrast to the general population where PA levels declined.

4.2 | Seasonal variation in physical activity

Understanding how weather conditions affects physical activity can help policymakers and healthcare providers to adopt recommendations to mitigate its effect and provides different strategies during the different seasons of the year to avoid physical inactivity.[30] In this study, we investigated the physical activity levels of golf players aged 65 years and older in the summer season of 2020 during the pandemic and the previous winter season, which made analyzing seasonal variations possible. The participants in this study were already physically active before the pandemic and managed to maintain an active lifestyle and even increased their physical activity despite the restrictions. Walking and cycling for leisure were higher in 2020 compared with the previous 4 years, however, total walking levels were still substantially reduced in 2020.[31] It was observed that full 18-hole golf round activity exhibited a statistically significant positive effect on the amount of moderate physical activity during the summer season of the first wave of the COVID-19 pandemic and prepandemic winter seasons. In addition, the full 18-hole golf round activity was positively associated with summertime walking activity. Previous studies have demonstrated that one of the main reasons why older adults play golf is to be outside, enjoy exercise, and to be active while maintaining their physical capacity.[14] Usually, in Northern countries, both men and women are more physically active and less sedentary in summer compared with winter.[32] Additionally, seasonal variation in physical activity, and regional variation may influence physical activity. However, an accelerometer study from Sweden showed that there is no difference in physical activity between the south and north region of Sweden, which both have a climate similar to Finland.[33]

In our study, respondents were generally active in both seasons. Generally, golf is most popular in the spring and summer seasons in countries with four distinct seasons.[34] It seems that playing golf may motivate these over 65-year-olds to exercise and maintain their physical activity in the winter season when courses here are snow-covered. In Northern countries, there is a large variation in daylight and temperature between summer and winter which is why the more challenging conditions of winter make the outdoor activity more

difficult and high-risk, especially for older people.[32] Maintaining physical activity levels during the winter season not only likely improves their health, but also their golf proficiency, which may motivate players to maintain activity during the winter. In both the summer and winter seasons, almost all the participants achieved at least 1000 MET/min per week. The four distinctive seasons of the Finnish climate encourage people to find suitable activities to match the seasons. Depending on the latitude, the golf season lasts 6–8 months and during the winter season, cross-country skiing can be enjoyed for 4–6 months. It is evident that to maintain overall health and prevent chronic diseases and negative psychological effects, it was important to pursue an active lifestyle throughout the COVID-19 pandemic.[4] Our study shows that golf may have helped its players to stay physically active while reducing sedentary lifestyle behaviors during the COVID-19 pandemic.

4.3 | QoL

This study showed that the QoL of most of the participants remained good despite the lockdown restrictions. Older adults have been claimed to be particularly vulnerable to the negative health effects of social isolation and quarantines.[35] A Swedish study of older adults aged 65–99 years old found an association between the prepandemic burden of higher depressive symptom levels and with reductions in light-intensity PA during the first wave of the pandemic.[36] A previous study from Finland showed the association of good QoL and higher walking speed in older adults.[37] It seems that low walking speeds predict what amount of time people will spend walking.[38] Similarly, a recent study during the COVID-19 pandemic showed that walking speed indicates physical resources which are beneficial in maintaining good QoL in older adults.[22] Although there were no associations detected between round activity, moderate or walking activity, and QoL, there was a weak correlation between total QoL and total physical activity (min/week) both in the summer and winter seasons. Unfortunately, QoL was only asked during the pandemic, which prevents the comparison of changes in QoL before and during the pandemic. The results of this study differ from other more general reports on the impact of the COVID-19 pandemic has had, which indicated that older adults may have suffered decreased QoL associated with the pandemic. Results of a Finnish study reported that over 70-year-olds were more likely to practice total isolation than younger people.[30] Older adults also reported pandemic-related changes in social engagements; 55% reported having less contact with friends and feelings of loneliness increased by 21%.[23] In addition, similar results were reported in a Swedish study where 50% of 68 years and above adults reported psychological burden during the first wave of the pandemic.[25] Furthermore, in older adults, it is recognized that social participation and life satisfaction are strongly related.[2]

Engagement with nature can support health and well-being among older adults.[39] The impact of the closing and reopening of golf courses in the United Kingdom during the COVID-19 pandemic was investigated and positive correlations were observed between golf course activity and a sense of belonging, enjoyment, and wellbeing after the reopening.[26] When the transition from quarantine restrictions to being able to play outdoor golf, significant improvements were observed in sense of belonging and life satisfaction.[26] Additionally, in the United States, older people have described golf as a behavioral coping strategy[27] and golf was described to be great for mental health during a pandemic.[39] Playing golf allows players to be socially interactive while keeping a physical distance during the game. One of the main reasons why older people play golf is to enjoy the company of fellow players; additional values such as "improves my social network" and "enriches my life" has been related to golf.[14] Thus, it seems that playing golf may have represented a safe way for older adults to enjoy social interactions with other golfers during the first wave of the COVID-19 pandemic.

4.4 | The cost of playing golf in Finland

The cost of playing golf varies between countries. The perceptions regarding the expense and accessibility of golf for the lower socioeconomic group can affect participation.[29] In Finland, the cost of playing golf is arguably reasonable. People can play golf by paying a green fee at different courses or buy an annual pass for the whole season for a very affordable price. The price levels of golf in Finland are comparable with other popular sports, like skiing. The accessibility of playing golf is influenced by the level of golf development and nowadays in Finland golf is a regular hobby among other sports.

4.5 | Study limitations

The players of the selected clubs may not necessarily represent all Finnish golfers over the age of 65. The small sample size should be considered when evaluating the results. The retrospective study method should be considered when evaluating the results. The seasonal variation in physical activity should be considered when evaluating the results. This type of survey may include survey response bias. Those who are active are pleased to participate in a survey that is directly related to their interests. The study is limited by its self-reported design, that is, the cross-sectional study design makes it impossible to infer a causal relationship. To increase the reliability of the research results, it would be beneficial to have been able to utilize not only the questionnaire but also other data collection methods.

5 | CONCLUSION

Our results suggest that during the COVID-19 pandemic, golfers aged 65 years and older were physically active both in the summer season of 2020 and the previous winter season. Besides seasonal variation, it seems that golf helped maintain and even increase

physical activity in golfers aged >65 years, despite the restrictions during the summer season. In addition, the quality of life of these golfers was maintained at a good level during the summer season and the pandemic despite COVID-19 restrictions that negatively affected quality of life in wider populations. Golf can be a good way for over 65-year-olds to enjoy moderate physical activity, the outdoor environment and social connections which may help maintain their quality of life.

AUTHOR CONTRIBUTIONS

Julia Kettinen: Data curation; formal analysis; methodology; writing—original draft; writing—review and editing. **Mika Venojärvi**: Methodology; resources; writing—original draft; writing—review and editing. **Andrew Murray**: Writing—review and editing. **Heikki Tikkanen**: Methodology; resources; writing—original draft; writing—review and editing.

ACKNOWLEDGMENTS

The authors thank all participants and golf clubs.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest, except Andrew Murray, who is a medical advisor to The R&A, a global governing body for golf.

DATA AVAILABILITY STATEMENT

All data analyzed during this study are included in this published article.

ETHICS STATEMENT

An ethical review was performed and approved according to the institutional requirements at the University of Eastern Finland. The participants provided their written informed consent to participate in this study.

TRANSPARENCY STATEMENT

The lead author Julia Kettinen affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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How to cite this article: Kettinen J, Venojärvi M, Murray A, Tikkanen H. The seasonal variation of physical activity and quality of life during the first wave of the COVID-19 pandemic in Finnish older golfers: a cross-sectional study. *Health Sci Rep*. 2023;6:e1347. doi:10.1002/hsr2.1347