Older adults' self-reported physical activity and distance to and land use around reported physical exercise destinations

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Abstract

Little is known about older adults' physical exercise destinations. We studied associations between physical activity (PA) level and physical exercise destinations (total number and surrounding environment) in community-dwelling 75–85-year-old people living in Central Finland. Participants (N=901) reported the amount of at least moderate intensity PA and physical exercise destinations. Distance from home, land use and locations of sport facilities were defined using a geographic information system. General linear model showed that older adults with higher PA reported higher numbers of physical exercise destinations and destinations further away from home than those reporting lower PA. Binary logistic regression showed that higher PA increased the odds of reporting a distant destination identified as a sports facility and of reporting destinations located in residential, service, forest and water body areas respectively. Physical exercise destinations in different environments may attract older people to go out and be more physically active.

Keywords: sports facility, active aging, built environment, geographic information system

Introduction

Outdoor environments that enhance older people's physical activity ideally consist of diverse facilities, destinations and walking trails near home (Sugiyama et al., 2012). Specific physical exercise destinations may encourage older people to go outdoors and spend time in these locations. Sport and physical exercise destinations include, for example, outdoor and indoor sports facilities such as sports grounds, public parks, outdoor gyms, swimming halls and gyms (Gul et al., 2016).

Knowledge on the associations between older adults' physical activity levels and use of physical exercise destinations is quite sporadic and mostly focused on neighborhood environments (Bonaccorsi et al., 2020). The general idea is that older adults prefer easily accessible destinations near home which provide opportunities for physical and social activities, such as parks, trails and recreational centers, swimming halls and gyms (Chaudhury et al., 2016; Gough et al., 2021; Moran et al., 2014; Van Cauwenberg et al., 2018). Streets, local squares and parks have been reported as recreational physical activity locations (Liu et al., 2021). Reporting a range of physical exercise destinations correlated with accumulating higher PA (Kerr et al., 2012). For example, older people who reported outdoor exercise destinations or both indoor and outdoor physical exercise destinations accumulated more moderate-to-vigorous physical activity than those who reported only indoor physical exercise or no regular physical exercise destinations (Kerr et al., 2012).

Environmental factors of neighborhood, such as walkability, residential density, greenery, land use mix and access to destinations, have been positively associated with older adults' physical activity (Bonaccorsi et al., 2020). Furthermore, physical activity was higher among older people reporting destinations that attract them to move outdoors, such as nature, parks and services, especially when destinations were located further away from home (over 500m) (Portegijs et al., 2020). Older people may prefer to travel outside their neighborhood to use specific physical exercise destinations (McCormack et al., 2006). Among younger adults, those who participated in vigorous physical activity traveled further to use recreational destinations than those who didn't do any vigorous activities (McCormack et al., 2006). Going to physical exercise destinations further away from home may be related to environmental characteristics around these destinations (Liu et al., 2021; McCormack et al.,

2006; Vale & Pereira, 2016). There is limited understanding about how far from home older adults' physical exercise destinations are typically located and what type of land use is surrounding these destinations.

Online participatory mapping provides an inexpensive method with low participant burden and moderate data computation requirements while it accurately describes where people move (Hasanzadeh et al., 2017; Laatikainen et al., 2018; Portegijs et al., 2020; Schmidt et al., 2019). Self-reported destinations on an interactive map can provide representative descriptions of locations where people move around (Kestens et al., 2017). Online participatory mapping is also feasible in large interdisciplinary studies with extensive participant samples. Map-based questionnaires enable asking participants about motives for visiting the destination or the type of activity carried out there (Portegijs et al., 2021) and location data enables it to be combined with geospatial data on physical features of the environment (Rantanen & Kahila, 2009).

This research focuses on studying older adults' physical activity, physical exercise destinations of choice, and distance to and land use type around the physical exercise destinations. We study the associations between older people's physical activity level and the number of the self-reported physical exercise destinations, and their distance from home and land use type characteristics assessed based on a geographic information system.

Methods

Study design

This study is part of the Places of Active Aging project, which studies older people's exercise destinations and the physical environment around the destination. Participant data on health and function are derived from the "Active aging – resilience and external support as modifiers of the disablement outcome" (AGNES) cohort study. As described previously AGNES baseline data were collected from September 2017 to December 2018 (Rantanen et al., 2018). A random sample of 75-, 80-, and 85-year-old adults living in the city of Jyväskylä in Central Finland was drawn from the Digital and Population Data Services Agency in Finland (Rantanen et al., 2018). The inclusion criteria were being resident in the study area, living independently, being able to communicate and willing to

participate. At baseline, 1018 (Rantanen et al., 2018) respondents participated in structured interviews at their home and 908 of them participated in physical assessments in the research center, which included a map-based assessment. Of those who participated in map-based assessments, 901 participants located their physical exercise destinations on a digital map with the assistance of an interviewer (Portegijs et al., 2019, 2021). The interviewer assisted participants technically with the orientation on the map and navigation to desired location. Seven of the respondents were unable to locate physical exercise destinations due the lack of time, health problems or limited cognitive function. Altogether 883 participants reported physical activity and completed map-based assessment. Participants' home addresses were derived from the population register and addresses were geocoded using the Digiroad dataset (Finnish Transport Infrastructure Agency, 2019).

The study was conducted in accordance with the Declaration of Helsinki. The ethical statement has been provided by the Ethical Committee of the Central Finland Health Care District. Study participants gave a written informed consent at the start of the home interview.

Main measures

Physical activity time of at least moderate intensity was self-reported using the Yale Physical Activity Survey for older adults (Dipietro et al., 1993). Participants were asked about the frequency and the usual duration per occasion of performing vigorous intensity physical activity as well as walking for at least 10 min during the past month. Response categories for frequency were (0) not at all, (1) 1–3 times per month, (2) 1–2 times per week, (4) 3–4 times per week and (6) 5+ times per week and for activity duration (20) 10–30 minutes, (40) 30–60 minutes, (60) over 60 minutes. Using these frequency and duration categories daily minutes were computed using the following formula [(frequency*duration)/7] for each separate activity and then summed to create total time in at least moderate intensity physical activity (Portegijs et al., 2019). For subsequent analyses, the responses were dichotomized into higher physical activity (≥30min/day) and lower physical activity (<30min/day).

Information about physical exercise destinations was collected using the interactive online Maptionnaire ® tool (Mapita LTD, Espoo, Finland). Participants were asked to locate physical exercise destinations, which they had visited several times in the past month. Physical exercise destinations

included indoor sports facilities, and outdoor sports facilities and recreational areas. For each participant**,** reported outdoor and indoor physical exercise destinations were counted separately, and summed for the **total number** of reported physical exercise destinations. Participants were categorized into four groups according to **destination type**; only indoor physical exercise destinations, only outdoor physical exercise destinations, both destination types and no physical exercise destinations reported.

Participants' physical exercise destinations were linked to their home addresses using the geographic information system software ArcMap 10.6.1 (Esri Inc, Redlands, CA, USA). Distances between participants' homes and their located physical exercise destinations were computed as Euclidean distances (expressed in meters). The **maximal distance** from home to any of their physical exercise destinations was determined. For each participant, we used the distance of the most distant located physical exercise destination. Participants were categorized into four groups according to **distance** to only proximal physical exercise destinations (<1 km from home), only distant physical exercise destinations (>1 km from home), destinations at both distances, and no physical exercise destinations reported.

The data of land use (Finnish Environment Institute 2018) and Lipas sports facilities (Lipas sport facility database, 2018) was integrated with the participant data and the locations of reported physical exercise destinations. To characterize the predominant **land use type** around reported physical activity destinations we created 150-m buffer areas around each reported destination. According to Hasanzadeh et al. (2017), 130–150 m has been identified as a convenient estimation to indicate the surroundings of a single location. For the analyses, the original 49 land use classes of the Corine Land Cover dataset were reclassified into five land use types, which included natural and built environments: (1) residential areas, (2) services and sports and leisure facilities (3) industrial units, (4) agricultural and private garden areas, forest and semi-natural areas or marshes and bogs, (5) water bodies (Finnish Environment Institute 2018). For the analyses, we formed two variables for each land use type: reporting at least one proximal and at least one distant physical exercise destination at the respective land use type (yes/no).

We identified **sports facilities** from secondary data source "Public geographical information system for sports facilities in Finland" (Lipas sport facility database, 2018). This database contains information on publicly maintained sports facilities (such as indoor and outdoor gyms, sports and swimming halls, neighborhood sports areas, ball and athletics fields and tennis courts etc.), routes for outdoor activities and recreation areas. The information and data of Lipas is produced by experts of municipal sport services and by associations for recreational areas and sports federations. If a reported physical exercise destination was located within 150 m of a sports facility, it was considered to be the respective maintained indoor or outdoor sports facility. For the analyses we formed two variables for each participant: reported at least one proximal and at least one distant physical exercise destination identified as maintained sports facility (yes/no).

Covariates

Age, sex, years of education, chronic conditions, cognitive function, and difficulty walking were considered as covariates in the analyses. Participants' age and sex were derived from the Digital and Population Data Services Agency recruitment. Education was described as years of full-time education (range from 0 to 33). Sociodemographics, such as gender, may affect older adults' physical exercise destination choices (Liu et al., 2021). During the home interview, self-reported chronic conditions were queried using a list of ten categories including 34 diseases (Rantanen et al., 2018). Number of chronic conditions was calculated as the sum of individual chronic conditions varying from 0 to 12 diseases. Cognitive function was measured using the Mini-Mental State Examination (MMSE) (Folstein et al., 1975). The MMSE score ranges from 0 to 30 and a higher score indicates better function. Difficulty in walking two kilometers was asked about with a 5-point response scale ranging from "no walking difficulty" to "unable even with help of another person". A dichotomous variable of difficulty walking 2 km was created (no difficulty vs. at least some difficulty or unable). Previous studies have shown that low physical functioning may decrease mobility outdoors (Kerr et al., 2012; Liu et al., 2021).

Statistical analyses

Descriptive characteristics of participants and values of the destination's features were compared between participants with lower and higher physical activity levels using Mann Whitney U test or Chi-square test. In addition, participants who reported physical exercise destinations were compared with those who did not report physical exercise destinations. Participant characteristics and environment features were reported as medians and interquartile ranges (IQR) or as percentages depending on variable distribution.

A general linear model was used to study associations between physical activity level and total number of physical exercise destinations and maximum distance from home to a reported destination. Separate analyses were conducted using the total number of physical exercise destinations and maximum distance from home as dependent variables. Analyses were first adjusted for age, sex and then difficulty walking, MMSE, chronic conditions and years of education. Logistic regression models were used to study the association between physical activity and reported distant physical exercise destinations located in residential areas, service areas, agricultural or forest areas and water bodies. In addition, logistic regression models were utilized to study associations between physical activity and reported distant physical exercise destinations identified as a sports facility. In these models, predominant land use type and sports facility variables were used as dependent variables and physical activity as an independent variable. Separate logistic regression models were run for each land use type variable and sports facility variable. Analyses were adjusted for age, sex, difficulty walking, MMSE, chronic conditions and years of education. SPSS Statistics for windows (version 26.0; IBM Corp., Armonk, NY, USA) was used for all statistical analyses and statistical significance was set at $p < 0.05$ in all tests.

Results

Overall, 89% percent of participants reported 1 to 8 outdoor physical exercise destinations and 47% 1 to 4 indoor physical exercise destinations, while 7% did not report any destinations for physical exercise. The 61 participants who reported not to use any physical exercise destinations were less physically active and had more difficulty walking than those who reported physical exercise destinations (median = 17.1 min, IQR = 22.9 vs. median = 34.3 min, IQR = 22.9; $p < 0.001$; 68.3% vs. 20.8%; $p < 0.001$, respectively), but they did not differ in any other variables. Table 1 shows descriptive characteristics of participants reporting lower (N = 412) and higher (N = 471) physical activity. Participants with lower physical activity were older, had fewer years of education, more walking difficulties, and diseases.

Those who had higher physical activity reported more physical exercise destinations than those with lower physical activity (median = 3.0, IQR = 2.0 vs. median = 2.0, IQR = 2.0; $p < 0.001$) (Table 1). The maximum distance of physical exercise destinations was longer for those who reported higher physical activity compared to those with lower physical activity (median = 3.4 km, IQR = 560 m vs. median = 3.1 km, IQR = 850 m; $p = 0.001$).

Older adults with higher physical activity more often reported both indoor and outdoor destinations for physical exercise and those with lower physical activity, only one of these (Figure 1a). There weren't statistically significant group differences in reporting indoor physical exercise destinations. Those with lower physical activity more frequently reported solely proximal physical exercise destinations than those who reported higher physical activity (Figure 1b). Whereas those who reported higher physical activity more frequently reported distant physical exercise destinations than did those who reported lower physical activity.

Participants reporting lower physical activity more frequently reported proximal physical exercise destinations in environments predominantly characterized by residential areas than those who reported higher physical activity (Figure 2a). The differences between groups were not statistically significant (p = 0.068). Whereas those who had higher physical activity more frequently reported proximal destinations in environments characterized by agricultural or forest areas, which was also

statistically significantly more often than in the low physical activity group. Both physical activity groups more frequently reported at least one distant physical exercise destination in environments predominantly characterized by service areas (Figure 2b). Distant destinations in environments predominantly characterized by residential, service, agricultural or forest and water bodies land use types were reported more often by those who had higher physical activity. There were no significant differences between physical activity groups in reporting destinations characterized by industrial land type.

Those who reported higher physical activity more often reported distant physical exercise destinations identified as sports facilities than did those who reported lower physical activity ($p < 0.001$) (Figure 2b). There were no group differences in reporting proximal sports facilities (Figure 2a).

Table 2 shows those with higher physical activity reported higher numbers of physical exercise destinations (b = 0.95, 95% confidence interval [CI] 0.75–1.14) and destinations further from home (b = 0.49, 95% CI 0.37–0.62) compared to older adults in the lower physical activity group. The associations weakened somewhat, but remained statistically significant after adjusting for age, sex, difficulty walking, MMSE, chronic conditions and years of education.

The logistic regression analysis showed that those who reported higher physical activity had over twofold higher odds for reporting at least one distant physical exercise destination identified as a sports facility compared to those who reported lower physical activity (Table 3). The association remained significant after adjusting for age, sex, difficulty walking, MMSE, chronic conditions and years of education.

Higher physical activity increased the odds for reporting more distant physical exercise destinations in environments characterized by residential areas (Odds ratio [OR] 1.71, 95% CI 1.23–2.39). Reporting higher physical activity showed twofold higher odds for reporting more distant physical exercise destinations in environments characterized by service, agricultural or forest areas and water bodies. Adjusting for difficulty walking, MMSE, chronic conditions and years of education, the associations were attenuated somewhat and rendered the association between physical activity and physical exercise destinations located in areas with predominantly water bodies non-significant.

Discussion

The main results showed that older people reporting higher physical activity reported more physical exercise destinations, and their destinations reported were located further from home compared to those with lower physical activity. In addition, higher physical activity increased the odds of reporting one distant physical exercise destination identified as a sports facility and of reporting destinations predominantly located in all types of land use. Proximal physical exercise destinations were more frequently reported at locations predominantly characterized by residential and agricultural or forest areas whereas distant destinations were located in service areas.

A previous study in working-age adults has shown that higher self-reported leisure time physical activity was associated with a higher amount of sports facilities in the neighborhood and visiting indoor and outdoor sports facilities more often (Kajosaari & Laatikainen, 2020). The current results showed similar associations among older adults. Older adults reporting higher physical activity reported more physical exercise destinations. Those who are physically more active may use a larger variety of indoor and outdoor physical exercise destinations whereas those who have lower physical activity may choose a specific location where they visit multiple times. In line with previous research (Kerr et al., 2012), older adults who reported higher physical activity more often reported both indoor and outdoor destinations than only one of them. Furthermore, it was previously suggested that different recreational destinations may promote older adults' physical activity (Barnett et al., 2017). In our study, older adults reported more outdoor physical exercise destinations than indoor physical exercise destinations. Participants were quite active which may affect choices of physical exercise destinations. Older people with lower activity or walking difficulties may not be able to access outdoor destinations and may prefer indoor destinations.

Different neighborhood environment factors have been associated with older people's physical activity (Barnett et al., 2017). The physical environment may encourage older people to go outdoors and visit different kinds of destinations (Sugiyama et al., 2012). When choosing a physical exercise destination, distance from home and type of land use around destinations may be relevant, but also, different kind of destinations use by older people regardless of environmental features. For

example, distance may affect the use of physical exercise destinations, as does the type of exercising possibilities at the destination. The distance to physical exercise destinations may be connected to the use of those destinations, and specific destinations may encourage people to travel further away from home (McCormack et al., 2006), which is in line with the present study. According to our study older adults may travel further for exercise purposes. When moving further away from home, older people may choose physical exercise destinations, which are important to them and in a pleasing environment potentially motivating them to be physically active. In our study, physically more active persons reported more distant physical exercise destinations. Physically active older adults can participate more easily in daily activities, they have better physical condition (Piercy et al., 2018) and their life-space may be greater (Portegijs et al., 2015). Regular physical activity may improve physical function and decrease the risk of developing cardiovascular and metabolic diseases (McPhee et al., 2016). In addition to environmental features, various individual-level factors may be associated with physical activity, such as age, sex, and self-rated health (Rai et al., 2019). In our study, older people reporting lower physical activity were older, had fewer years of education, had more walking difficulties and diseases, which may affect their destinations of choice, that is, they may favor destinations closer to home.

The neighborhood area is important for physical activity, especially for older adults (Chaudhury et al., 2016). The availability of recreational destinations and land use mix has been associated with older people's physical activity (Barnett et al., 2017). Parks and small green areas near home comprise a low-threshold to being physically active (Van Cauwenberg et al., 2015). According to a study by Kajosaari & Laatikainen, (2020), adults' green and built public spaces, such as parks and forests, were located closer to home compared to indoor and outdoor sports facilities. In our study, older people more frequently reported proximal physical exercise destinations predominantly characterized by residential and agricultural or forest land types, and more distant destinations were more often located in service-dominated areas. Different kinds of services may motivate older people to go out and be active (Barnett et al., 2017). Older people may use specific physical exercise destinations because these are near other services, and they can visit multiple destinations during the same trip. In our study, those with higher physical activity more frequently reported distant physical exercise destinations identified as sports facilities. Maintained sports facilities have surroundings and facilities that are built

for physical activity. Older people may be motivated to travel further from home to reach sports facilities where they can be physically active and participate in different sports. The built environment of green areas may be more important for physical activity than the built environment of sports facilities where individual factors, such as social support and self-efficacy, may have a greater role (Kajosaari & Laatikainen, 2020).

The strengths of this study include a population-based sample of older adults above 75 years that contributes relevant information on the association between physical activity and reported physical exercise destinations. By combining environmental datasets and subjective methods, such as a map-based questionnaire, we were able to study the environmental context where older people are active. Map-based questionnaires are a suitable way to study older adults' mobility (Laatikainen et al., 2018). This is one of the first studies looking at associations between older people's physical activity, physical exercise destinations and environmental features around these destinations. We had few missing data and participants had a relatively good health condition. Overall, study participants were relatively physically active.

The following limitations should be noted when interpreting results. Participants with lower physical activity had more walking difficulties than those with higher physical activity, which may be one reason why people with lower activity reported fewer destinations and destinations closer to home. This study was conducted in Finland and therefore generalization to different cultural and environmental contexts should happen with caution. Responsibility for updating the Lipas database lies with experts of municipal sports services and associations for recreational areas and sports federations, which may lead to inaccuracies regarding the sports facilities listed or delays in reporting changes.

In addition, there are a few limitations concerning variables. Physical activity and physical exercise destinations were both self-reported. Self-reported physical activity may be overestimated (Steene-Johannessen et al., 2016). Daily minutes of self-reported walking bouts and vigorous physical activity were summed and categorized to describe the overall physical activity level. Categorization of an originally continuous variable may result in loss of some information. Older adults reported only physical exercise destinations, which they had visited several times during the past month, and thus, excluding single visits. Distance from home to physical exercise destination was measured with the

Euclidean distance, which may underestimate actual distances (Shadid et al., 2009) but correlates well with driving distances (Boscoe et al., 2012). The accuracy of locating destinations should be also noted. Older adults located their physical exercise destinations on a digital map with the assistance of an interviewer. The accuracy of the located destinations is unknown and may to some extent affect the environmental analyses in the 150-m buffer area used around the participant's reported destinations. However, we took this into account by requiring a sufficiently detailed zoom level for locating destinations in the map-based questionnaire app.

Conclusions

In the current study, older adults reporting higher physical activity used a larger variety of physical exercise destinations (i.e., locating in different types of land use and type of sports facility) and destinations located further away from home than did those with lower physical activity. Proximal destinations located in residential and forest areas may be important especially for those with lower activity and walking difficulties. Especially among older people with higher physical activity, willingness to travel further away from home and to physical exercise destinations in various land use types indicates the importance of these destinations to the persons visiting them. Information on physical exercise destinations and surrounding environments could help to create a more comprehensive picture of older adults' activity behavior outside the home and the meaning of activity locations. Further research is needed to study how specific physical exercise modes affect older adults' destination choices. In addition, it will also be interesting to find out how older adults' physical activity and use of physical exercise destinations change over time.

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Table 1. Descriptive characteristics and reported physical exercise destinations of participants with higher vs. lower physical activity (*N* = 883)

	Lower physical activity[a] *N* = 412 Median (IQR)	Higher physical activity[b] *N* = 471 Median (IQR)	*p* value
Age (years)	79.4 (4.8)	76.0 (4.5)	**0.003**[c]
Chronic conditions (n)	4.0 (3.0)	3.0 (2.0)	**<0.001**[c]
MMSE score	28.0 (3.0)	28.0 (3.0)	**0.017**[c]
Education (years)	10.0 (6.0)	11.0 (6.0)	**0.004**[c]
Number of reported exercise destinations	2.0 (2.0)	3.0 (2.0)	**<0.001**[c]
Maximum distance to reported exercise destinations (km)	3.1 (0.9)	3.4 (0.6)	**0.001**[c]
Men, % (n)	39.8 (164)	45.6 (215)	0.088[d]
Difficulty walking, % (n)	51.1 (208)	18.1 (85)	**<0.001**[d]

IQR, interquartile range; MMSE, Mini-Mental State Examination
[a] Lower physical activity, <30 min/day
[b] Higher physical activity, ≥30 min/day
[c] Mann-Whitney U test
[d] Chi-Square test

Table 2. The association between physical activity level and the number of and maximum distance to reported physical exercise destinations (*N* = 883)

	Number of physical exercise destinations				Maximum distance to physical exercise destinations (km)			
	Crude[a]		Fully adjusted[b]		Crude[a]		Fully adjusted[b]	
	b	95% CI	b	95% CI	b	95% CI	b	95% CI
Higher physical activity (vs. Lower physical activity)	**0.95**	**0.75**–**1.14**	**0.74**	**0.54**–**0.94**	**0.49**	**0.37**–**0.62**	**0.36**	**0.23**–**0.49**
Age	-0.01	-0.04–0-01	0.01	-0.02–0.04	**-0.04**	**-0.06**–**-0.02**	**-0.02**	**-0.04**– **-0.00**
Men (vs. Women)	**0.35**	**0.16**–**0.54**	**0.40**	**0.21**–**0.59**	-0.07	-0.19–0.06	-0.03	-0.16–0.09
Difficulty walking (vs. No difficulty walking)			**0.47**	**0.25**–**0.67**			**0.41**	**0.26**–**0.56**
MMSE score			**0.09**	**0.05**–**0.13**			**0.04**	**0.01**–**0.07**
Chronic conditions			-0.05	-0.10–0.01			-0.01	-0.04–0.03
Years of education			0.02	-0.01–0.04			0.01	-0.01–0.02

Note. Values in bold; If the 95% CI does not contain the value 0, $p < 0.05$. b = Regression coefficient, CI = confidence interval
General linear models adjusted for [a]age, sex, [b]age, sex, difficulty walking, MMSE, chronic conditions and years of education. Higher physical activity, ≥30 min/day; lower physical activity, <30 min/day.

Table 3. Odds ratios (95% CI) for reporting at least one distant physical exercise destination identified as a sports facility and according to predominant land use type for those with higher physical activity (vs. lower physical activity) (*N*=883)

Dependent variable	Crude[a]		Fully adjusted[b]	
	OR	95% CI	OR	95% CI
Sports facility	**2.51**	**1.87–3.36**	**2.07**	**1.51–2.82**
Residential areas	**1.71**	**1.23–2.39**	**1.55**	**1.08–2.21**
Service areas	**2.12**	**1.59–2.82**	**1.81**	**1.33–2.47**
Agricultural or forest areas	**2.17**	**1.62–2.91**	**1.63**	**1.19–2.24**
Water bodies	**2.14**	**1.44–3.17**	1.46	0.97–2.21

Note. Values in bold; If the 95% CI does not contain the value 1, $p < 0.05$. Lower physical activity as a reference category. Logistic regression model adjusted for [a]age, sex, [b]age, sex, difficulty walking, MMSE, chronic conditions and years of education. Reporting distant physical exercise destination in industrial land use type was too rare to compute valid logistic regression, and thus omitted from the table.

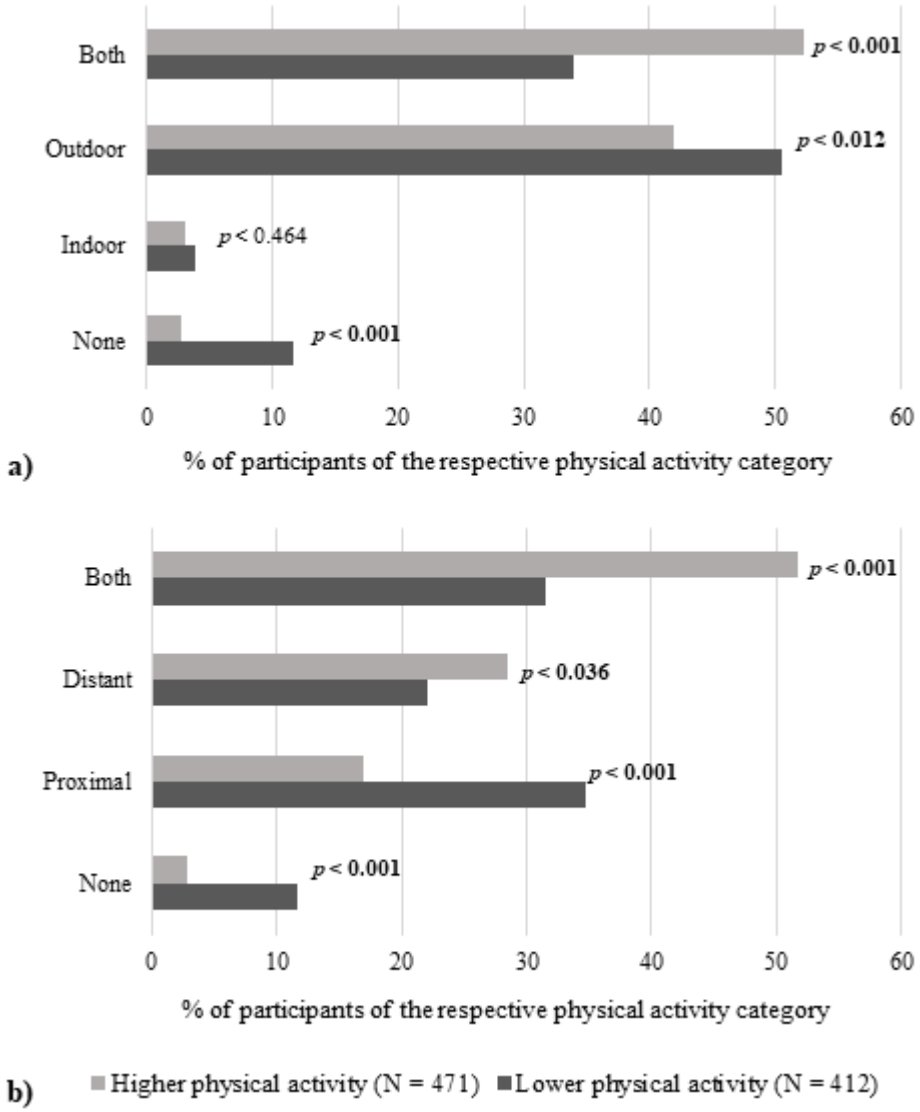

Figure 1. Proportions of participants reporting physical exercise destinations by (a) type and (b) distance according to physical activity group (%; *N* = 883). Statistical significance between physical activity groups in Chi-square test are indicated in the figure.

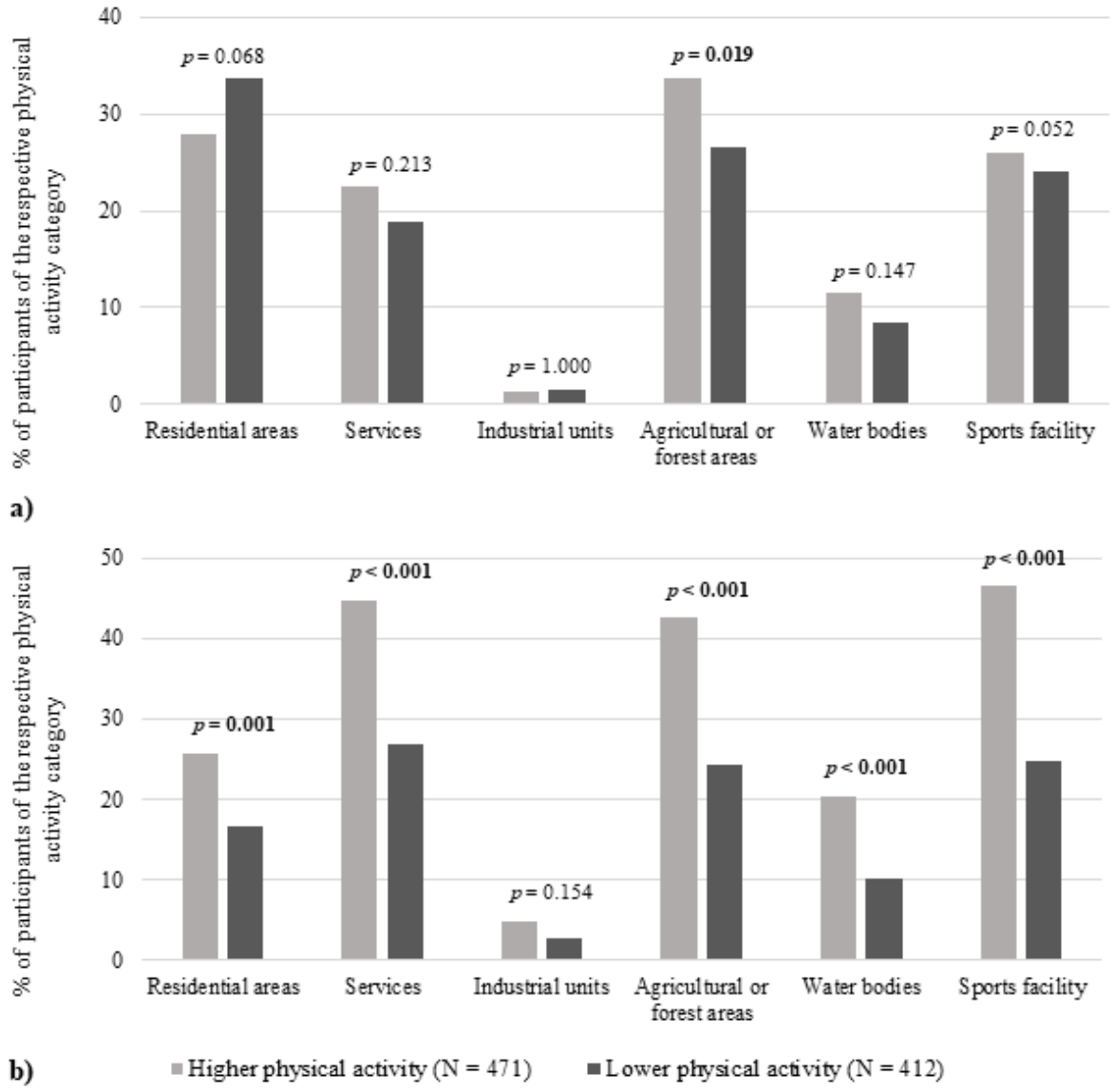

Figure 2. Proportion of participants reporting at least one (a) proximal and (b) distant physical exercise destination in predominant land type or identified as sports facility according to physical activity group (N = 883). Statistical significance between physical activity groups in Chi-square test are indicated in the figure.