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Original Article

Associations of self-rated health with different forms of leisure activities among ageing people

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Summary

Objectives: This study examined associations between self-rated health and specific forms of leisure activities – i. e. singing in a choir, art painting, playing music; art exhibitions, theatre, movies, concerts; religious events; studying and self-development; voluntary work – and investigated how confounding factors contribute to these associations among ageing people in Finland.

Methods: A postal survey was conducted in 2002 among men and women born in 1926–30, 1936–40 and 1946–50. The final 2,815 participants represented 66 % of the original sample drawn, stratified by age, gender, and municipality. Logistic regression analyses were used to investigate associations between specific forms of leisure activities and self-rated health.

Results: Going to art exhibitions, theatre, movies, and concerts among women and studying and self-development among men were significantly positively related to self-rated health, even after adjusting for socioeconomic status (SES), other sociodemographic variables, obesity, and health behaviours. Among women, active participation in religious events and voluntary work were negatively associated with self-rated health.

Conclusions: The association of leisure activities and good self-rated health may differ for genders due to their nature or meaning. Partial support was found for the assumption that leisure activities go together with better self-rated health among ageing people.

Keywords: Self-rated health – Leisure activities – Urban-rural – Ageing.

Several studies have shown that better self-rated health, one key measure of health status,[1] is associated with leisure participation. Associations have been found between self-rated health and membership in voluntary associations,[2] associational activity and religious involvement,[3–5] volunteer and increased volunteer hours,[6] social engagement (a cumulative index of social activities),[7] participation in clubs and associations,[5] and participation in group activities assessed by whether people attended a church service, charity group, sports club, self-help group or other local activity at least once a month.[8] Moreover, also high religious involvement,[9,10] leisure participation (the sum score of social, cultural, and religious activities),[11] and attendance at some specific cultural attributes[12] have been shown to predict survival.

Leisure activities have also been linked to various physical and mental health outcomes. It has been found that longitudinally greater overall activity results in greater happiness and better functioning among ageing people.[13] However, findings suggesting that the health effects of activity differ between gender. Consequently, the effects of leisure participation on health should be studied separately for men and women.[11]

Only a few studies have, so far, focused on exploring the association between self-rated health and leisure activities among ageing people.[5–8] Especially the use of varying and multiple indicators of leisure activities simultaneously has been rare. Furthermore, the possible impact of the living context, such as urban versus rural has not received much attention. However, in a recent study from the U.S., leisure activities were found to be at the highest level in rural areas.[14] Similarly, in Finland people living in the sparsely populated countryside have been noted to display the highest level of leisure activities.[15]

In studying associations between health and leisure activities such as religion, all common sociodemographic, social, and health behaviour variables should be controlled, as they all

are known to be determinants of health. Some of them, e. g. age, have proved to be confounders, others, e. g. health behaviour, either confounders or mediators.[10] We assume that both the adequacy of income and other indicators of SES as well as all sociodemographic factors should be similarly controlled. Based on recent findings,[16] the urban-rural dimension should also be included in the list of controls.

The present study investigated how leisure activities, defined as social, cultural or religious activities engaged voluntarily of one's own accord and solely with personal interests, are related to self-rated health among ageing people across the urban-rural continuum. Activities, as indicated later in detail, were chosen to be comparable with other studies. Activities indicating physical exercise or passive participation (e. g. watching TV, reading etc.) were excluded. Finally, associations between the leisure activities and the self-rated health were controlled for confounding factors such as socioeconomic status (SES), other sociodemographic variables, obesity, and health behaviours.

Material and methods

Participants and data collection procedures

Data from the base-line survey collected in 2002 from the municipalities of the Päijät-Häme hospital district in southern Finland for the "Good Ageing in Lahti region" (GOAL) program were used. The aim of the program planned to be completed in 2012 is to promote the well-being and health of the ageing people in the region. GOAL entails a longitudinal cohort study, community diagnoses, and community-based health promotion programs, such as prevention interventions (e. g. type II diabetes prevention) and educational campaigns. The objectives of GOAL are to initiate evidence-based preventive measures, to facilitate health promotion, as well as to empower people to make healthy choices in life.[17, 18]

The rationale for the GOAL program was the fact that the proportion of aged citizens, 65 years and over, is currently already exceeding the rather high national average and by 2015 the comparison is estimated to be even more detrimental to the Päijät-Häme hospital district.[19] Prevention is the only way for the municipalities to meet the increasing challenges caused by the ageing population.

The sample, stratified by gender, age, and municipality, was drawn from the covering National Population Registry. The population targeted involved men and women born in 1926–30, 1936–40, and 1946–50, and living in any of the 14 municipalities of the hospital district. The baseline data set consisted of 2,815 participants representing 66 % of the target sample. The Ethical Committee of the Päijät-Häme hospital district approved of the cohort study, and a written consent form signed by all cohort participants was obtained.[17, 18] The subjects were aged 72–76, 62–66, and 52–56, respectively, at baseline. In addition, among the sample, 72 % were married or cohabiting, the education level was low (i. e. only 20 % had 13 years of education or more), and 50 % were already retired.[18]

The respondents were first contacted by letter to participate in the study. The data for this study were obtained from the responses to the mailed questionnaires. After a few weeks the subjects were also invited to visit their local health care centre where they were given another questionnaire to answer. The questionnaires covered topics on socioeconomic conditions, present and childhood living conditions, health, health behaviours, use of health care and social services, social networks, leisure-time activities, and lifestyle. During the visit blood samples were drawn and anthropometric measures were taken to identify risk factors for chronic diseases (e. g. total/HDL cholesterol, plasma insulin, blood pressure, BMI etc.).[17, 18] Descriptive information involving the socio-demographics and health behaviour of the participants has already been reported elsewhere.[16, 17]

Dependent variable

Self-rated health was defined by the answer to the question "Is your health generally good, rather good, average, rather poor or poor?" The outcome variable was coded 1 = good, 2 = rather good, 3 = average, 4 = rather poor, 5 = poor. From this item a dichotomous outcome variable was formulated (1 = good or rather good, 0 = average, rather poor or poor).

Independent and control variables

To obtain information of the leisure activities during the past 12 months the respondents were asked about their involvement in 1) hobbies (singing in a choir, art painting, playing music etc.), 2) cultural events (going to art exhibitions, theatre, movies, concerts), 3) participating in religious events, 4) engagement in studying and self-development, and 5) participating in voluntary work. The range of alternative answers was from "every day", "every week", "every month", "some times a year", "less frequently" up to "never". In the analysis the variables were dichotomised as "At least once a month" and "A few times a year or less". The rationale for using the chosen cut point in the dichotomisation was to have an adequate number of respondents in all examined groups.

For control purposes the following variables were also included in the analyses: age group, type of the living area (urban, rural population centre or sparsely populated countryside), marital status, basic education, self-perceived adequacy of in-

come after exclusion of necessary expenses, obesity, tobacco smoking, binge drinking, and physical exercise.

The marital status was dichotomised as follows: married or cohabiting persons were inserted into the first, and separated, divorced, widowed, and single persons into the second group. As the number of widowed and single persons was low, the categories were pooled for the analyses. Separated and divorced individuals were already grouped together in the questionnaire. Basic education was coded into two categories: lower education for those with only elementary education or less and higher for those with more than elementary education. The adequacy of income after exclusion of necessary expenses was divided into two categories: very and rather good adequacy into the first category, and average, rather poor, and very poor into the second.

Obesity as medical condition (body mass index > = 30) was calculated as measured weight (kg) divided by the square of height (m^2). Daily smokers included the persons who reported to smoke cigarettes, cigars or pipes on a regular daily basis and binge drinkers those who reported drinking at least six units of alcohol at a time once a week. Physical exercise in leisure time for at least for 30 minutes at a time (at least a little sweating and getting out of breath) was dichotomised: at least four times per week and not more than three times per week. The rationale for using this cut point was to differentiate clearly physically active people from others.

Statistical methods

The sample was stratified by age, gender, and living area to ensure that an adequate number of respondents were included in the sample also from the small rural municipalities. In the statistical calculations the data were corrected by a weighting variable so that the weighted data matched the populations of the municipalities. Table 1 describes the unweighted figures; Tables 2 to 4 show the results with the weighted figures.

Cross-tables with chi-square tests and logistic regression analyses were used to examine the associations between the different forms of leisure activities and self-rated health. The interactions of gender with activities were included in the adjusted model 4. We adopted the common practice of entering variables into the models by having the general societal conditions as the first to come in to be followed by acquired personal characteristics associating with material welfare. Obesity and health behaviours were the last to be entered into the models. Thus, we entered the sociodemographic factors first, to be followed by marital status and education, adequacy of income, and, finally, obesity and health behaviours. The variances explained (R^2 Nagelkerke) are also presented in Tables 3 and 4. The statistical analyses were performed using the SPSS 14.0 software package.

Results

Attendance at leisure activities

Table 1 shows the proportion of respondents who were involved at least once a month in various leisure activities, by gender and by the type of living environment. The results indicate that studying and self-development were the most common forms of leisure activities reported by the participants. Approximately a quarter (26 %) of the respondents reported that they had participated at least once a month in these activi-

Table 1. Attendance at least once a month in different forms of leisure activities in Päijät-Häme area, unweighted figures (%).

	Men Total (n = 1,222–1,265)	Urban (n = 523–540)	Rural population centre (n = 397–409)	Sparsely populated countryside (n = 296–310)	**Women** Total (n = 1,289–1,376)	Urban (n = 571–595)	Rural population centre (n = 433–472)	Sparsely populated countryside (n = 279–301)	**Total** (n = 2,529–2,641)
Singing in a choir, art painting, playing music	10.4	11.7	10.7	7.9	11.2	9.8	13.6	10.8	10.8
Art exhibitions, theatre, movies, concerts	9.0	14.0	5.1	5.6	13.9	18.0	12.0	9.1	11.6
Religious events	12.0	12.4	10.8	12.9	25.0	25.4	24.8	24.6	18.8
Studying and self-development	25.6	28.8	24.1	22.4	27.0	28.0	26.3	26.0	26.3
Voluntary work	10.2	9.9	11.8	8.8	14.5	14.0	15.1	14.6	12.4

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Table 2. Good self-rated health (%) according to different forms of leisure activities in Päijät-Häme area, weighted figures.

	Men Total	Urban	Rural population centre	Sparsely populated countryside	**Women** Total	Urban	Rural population centre	Sparsely populated countryside	**Total**
Singing in a choir, art painting, playing music									
A few times a year or less	45.4	46.4	43.0	47.0	50.9	52.2	52.9	43.7	48.2
At least once a month	47.3	37.9	56.5	58.8	50.7	51.6	43.3	66.7	49.3
p	0.691	0.193	0.082	0.346	0.961	0.921	0.168	0.045	0.742
Art exhibitions, theatre, movies, concerts									
A few times a year or less	45.3	44.7	45.0	46.6	47.8	49.1	48.8	43.2	46.6
At least once a month	53.0	56.8	32.0	66.7	66.2	67.5	62.7	66.7	61.2
p	0.114	0.054	0.202	0.100	0.000	0.000	0.045	0.039	0.000
Religious events									
A few times a year or less	45.1	45.4	43.8	46.2	53.0	55.6	51.8	48.7	48.9
At least once a month	50.4	49.1	51.2	52.6	41.5	41.9	45.4	34.0	44.3
p	0.245	0.604	0.362	0.462	0.000	0.002	0.242	0.064	0.069
Studying and self-development									
A few times a year or less	41.4	39.8	42.7	41.9	46.9	48.6	47.7	41.5	44.3
At least once a month	56.9	59.2	50.0	61.8	61.3	63.0	60.8	56.5	59.2
p	0.000	0.000	0.195	0.004	0.000	0.001	0.014	0.044	0.000
Voluntary work									
A few times a year or less	44.9	46.3	42.7	45.2	52.1	55.1	53.1	42.1	48.7
At least once a month	51.6	46.0	54.5	56.5	43.0	36.5	42.9	61.3	46.6
p	0.155	0.973	0.098	0.299	0.023	0.001	0.131	0.046	0.494

ties, and respondents in urban areas (men 29 %, women 28 %) showed the highest prevalence of activity among the different region groups.

Participating in religious events at least once a month was also relatively common (19 %), but the differences between the genders were striking (men 12 %, women 25 %). Among women visiting art exhibitions, going to the theatre, movies or concerts (14 %), participating in voluntary work (15 %), and singing in a choir, art painting, and playing music (11 %) were least often mentioned with the prevalence slightly varying by region. Singing in a choir, art painting, and playing music were more prevalent in the rural population centres (14 %) than in the other areas (10–11 %). Conversely, visiting art exhibitions and going to the theatre, movie, and concert were more common in the urban areas (18 %) than in the two rural areas (12 % and 9 %). The frequency of female voluntary work was relatively constant (14–15 %) in the different areas.

Among men, singing in a choir, practicing art painting, and playing music were uncommon in a sparsely populated countryside (8 %), the frequency being also relatively low (11 % and 12 %) in the other areas. Attendance at art exhibitions, theatre, movies, and concerts was even more uncommon among men in the two rural areas (5 % and 6 %). Voluntary work among men was, however, at the highest level in the rural population centres (12 %), but the difference was small compared to the other areas (9 and 10 %).

Good self-rated health

Table 2 indicates the prevalence (%) of good self-rated health broken down by various leisure activities by gender and type of living environment. The women visiting art exhibitions or going to the theatre, movies, and concerts at least once a month had a higher prevalence of good self-rated health than those with less frequent participation in these activities. Also the women who lived in a sparsely populated countryside and were singing in a choir, doing art painting or playing music at least once a month had a better self-rated health than their less frequently participating counterparts. Among men no statistically significant health differences were found between these groups.

Attendance at religious events was negatively associated with good self-rated health among urban women. A similar negative association among urban women was also found concerning voluntary work, whereas in a sparsely populated countryside the corresponding association was positive. Good self-rated health was more common among the respondents who reported of active studying and self-development. Only among men living in the rural population centres the association was not statistically significant.

Tables 3 (men) and 4 (women) indicate odds ratios (OR) of good self-rated health with various leisure activities with 95 % confidence intervals and R^2 (Nagelkerke), respectively. The results show that visiting art exhibitions and going to the theatre, movies, and concerts among women, and studying and self-development among men were statistically positively related to self-rated health, also after adjusting for the control variables. In contrast, active participation of women in religious events and voluntary work were negatively associated with self-rated health. Participation in voluntary work among men and engagement in studying or self-development among women slightly suggested good self-rated health, but the association attenuated, to some extent, after adjusting for the control variables. Interaction tests (results not shown in Tables) indicated that significant variations between the genders were found in self-rated health by voluntary work ($p = 0.002$) and religious events ($p = 0.002$).

The impact of area on the results was minor in Model 1 (figures not provided in Tables). Explained variance (R^2 Nagelkerke) information shown in the rows after odds ratios in Tables 3 and 4 indicates that age was more important among women (7–8 %) than among men (2–4 %) in Model 1. In all, the explained variances in the final models for the genders were lower for men (12–13 %) than for women (18–19 %). The difference is mainly due to the gender differences present in Model 1.

Discussion

The aim of the current study was to investigate how leisure activities relate to self-rated health among ageing people and to find out possible confounding factors (socioeconomic status (SES), other sociodemographic variables, obesity, and health behaviours) contributing to these associations. Briefly, studying and self-development among men, and going to art exhibitions, theatre, movies, and concerts among women proved to be the main forms of leisure activities associated with good self-rated health. In addition, among men participation in voluntary work and among women engagement in studying and self-development were mildly associated with good self-rated health. On the contrary, participating in voluntary work and religious events associated negatively with self-rated health among women. The living area exerted only a minor influence on the associations.

In the present study it was found that religiously active women showed a lower level of good self-rated health than non-active women. As self-rated health associates negatively with mortality, the result indirectly contrasts with the meta-analytic finding (42 studies) by McCullough et al.,[10] entailing

Table 3. Odds ratios (OR), 95 % confidence intervals and R2 (Nagelkerke) for good self-rated health by different forms of leisure activities in Päijät-Häme area, men, weighted figures.

	Model 1	Model 2	Model 3	Model 4
Singing in a choir, art painting, playing music				
A few times a year or less	1	1	1	1
At least once a month	1.11 (0.77–1.61)	1.02 (0.70–1.49)	1.09 (0.73–1.60)	1.06 (0.71–1.58)
R^2 (Nagelkerke)	0.016	0.043	0.097	0.120
Art exhibitions, theatre, movies, concerts				
A few times a year or less	1	1	1	1
At least once a month	1.33 (0.90–1.96)	1.06 (0.71–1.61)	1.07 (0.70–1.63)	1.02 (0.66–1.57)
R^2 (Nagelkerke)	0.017	0.041	0.095	0.118
Religious events				
A few times a year or less	1	1	1	1
At least once a month	1.36 (0.94–1.95)	1.26 (0.87–1.83)	1.37 (0.93–2.01)	1.23 (0.82–1.83)
R^2 (Nagelkerke)	0.019	0.046	0.099	0.121
Studying and self-development				
A few times a year or less	1	1	1	1
At least once a month	**1.82 (1.41–2.35)**	**1.64 (1.26–2.14)**	**1.60 (1.22–2.10)**	**1.52 (1.15–2.01)**
R^2 (Nagelkerke)	0.039	0.060	0.108	0.129
Voluntary work				
A few times a year or less	1	1	1	1
At least once a month	1.33 (0.92–1.93)	1.37 (0.93–2.01)	**1.57 (1.06–2.34)**	1.47 (0.98–2.20)
R^2 (Nagelkerke)	0.019	0.050	0.103	0.124

Significant associations ($p < 0.05$) are shown in bold type.
Model 1: Adjusted for age group (52–56, 62–66, 72–76) and area.
Model 2: Adjusted for age group (52–56, 62–66, 72–76), marital status, basic education, and area.
Model 3: Adjusted for age group (52–56, 62–66, 72–76), marital status, basic education, adequacy of income, and area.
Model 4: Adjusted for age group (52–56, 62–66, 72–76), marital status, basic education, adequacy of income, obesity (BMI >= 30), daily smoking, binge drinking, physical exercise, and area.

that religious involvement significantly associates with lower mortality. In addition, religious involvement among people aged 15–64[4] and attendance at religious services among the elderly[5] have been shown to be associated with better self-rated health.

The inconsistency mentioned above may well be only a study artefact. We employed only a single generalised measure of religious activity, participation in religious events. Lack of consistency in the results may be due to the measurements used. Other studies, for example that of Hyyppä and Mäki,[4] have used more specific measures, i. e. attendance at church service, visiting religious summer meetings, and membership in a religious association. Other dimensions used in other studies include e. g. public religious involvement, private religious activities, religious beliefs, religious motivation, and religious coping.[10] As multiple dimensions of religious involvement were not measurable in this study, "religious events" may denote an involvement but not social sharing, for example attendance at church service without friends or relatives. How much face-to-face social interaction is included in the responses in general remains unexplained. On the other hand, participating in a ceremony entails sharing of religious cultural values and membership in a group, e. g. the congregation.

Moreover, active participation in religious events may also be interpreted as search for solace for an impairing health status. It is self-evident that finding solace is valuable for coping with ill-health. However, according to the data used in the present study, approximately two thirds of the respondents consider religion important for them, but only less than one third of them were active in religious events. On the contrary, nearly every one of those who were active in religious events considered that religion is important for them (figures not given in Tables). This indicates that people use different methods to fulfil their spiritual needs.

The present results concerning voluntary work are partly in accordance with, e. g., those of Morrow-Howell and collaborators.[6] The results of this study are, however, strongly gendered. Participation in voluntary work signifies poorer self-rated health among women, but the pattern is reverse among men, even though the results were not statistically significant in all models examined. This suggests that the volunteer role (i. e. type of organisation) has significance in this respect.[6]

The nature of voluntary work could explain the gender dif-

Table 4. Odds ratios (OR), 95 % confidence intervals and R2 (Nagelkerke) for good self-rated health by different forms of leisure activities in Päijät-Häme area, women, weighted figures.

	Model 1	Model 2	Model 3	Model 4
Singing in a choir, art painting, playing music				
A few times a year or less	1	1	1	1
At least once a month	0.96 (0.67–1.36)	0.88 (0.61–1.26)	0.87 (0.60–1.26)	0.79 (0.53–1.18)
R^2 (Nagelkerke)	0.065	0.082	0.157	0.180
Art exhibitions, theatre, movies, concerts				
A few times a year or less	1	1	1	1
At least once a month	**2.05 (1.48–2.83)**	**1.78 (1.27–2.50)**	**1.61 (1.14–2.27)**	**1.53 (1.06–2.20)**
R^2 (Nagelkerke)	0.086	0.095	0.163	0.185
Religious events				
A few times a year or less	1	1	1	1
At least once a month	**0.75 (0.58–0.97)**	**0.73 (0.56–0.95)**	**0.69 (0.52–0.91)**	**0.60 (0.45–0.81)**
R^2 (Nagelkerke)	0.073	0.091	0.158	0.183
Studying and self-development				
A few times a year or less	1	1	1	1
At least once a month	**1.57 (1.23–2.02)**	**1.36 (1.04–1.77)**	1.29 (0.98–1.69)	1.33 (1.00–1.77)
R^2 (Nagelkerke)	0.079	0.089	0.156	0.181
Voluntary work				
A few times a year or less	1	1	1	1
At least once a month	0.73 (0.52–1.01)	**0.72 (0.51–1.00)**	0.71 (0.51–1.00)	**0.62 (0.43–0.90)**
R^2 (Nagelkerke)	0.077	0.097	0.164	0.191

Significant associations ($p < 0.05$) are shown in bold type.
Model 1: Adjusted for age group (52–56, 62–66, 72–76) and area.
Model 2: Adjusted for age group (52–56, 62–66, 72–76), marital status, basic education, and area.
Model 3: Adjusted for age group (52–56, 62–66, 72–76), marital status, basic education, adequacy of income, and area.
Model 4: Adjusted for age group (52–56, 62–66, 72–76), marital status, basic education, adequacy of income, obesity (BMI >= 30), daily smoking, binge drinking, physical exercise, and area.

ferences in health. Voluntary work may have different meanings for men and women. Moreover, among women activity in religious events and voluntary work (e. g. care giving) may be a compensatory method to overcome the absence of role-identity or meaningful relationships. In a previous study it was found that a volunteer can protect older people with role-identity absences. The people with role-identity absences have less purpose in life.[20]

Although it was not possible to examine the volunteer role in the present study, it has been shown in other reports that the most popular voluntary organisations in Finland among the elderly pensioners are religious, social, and health organisations. Furthermore, organisational activities, especially voluntary religious activity and parish work, are more common among ageing people than among younger age groups in Finland.[21] This may indicate that the elderly in the current study are active in social and health organisations, since these organisations offer support and care for health problems (i. e. organisations of patients or self-help groups).

The associations of self-rated health with attendance at art exhibitions, theatre, movies, and concerts were different for men than for women in the present study. The frequency in attendance at art exhibitions, theatre, movies, and concerts was related to health among women, but not among men. On the contrary, the associations of singing in the choir, art painting, and playing music with self-rated health were lacking among both men and women, which was unexpected, but suggests that leisure time activities positively related to health vary by context. Singing in the choir or art painting are more active cultural activities requiring more effort and energy than going to the theatre or museum. It could have been expected that having more active hobbies results in a better health. However, the indicators may also overlap, and it is not clear what exactly makes the attendance at art exhibitions, theatre, movies, and concerts more special compared to singing in the choir, art painting, and playing music.

Nevertheless, the present results confirm only partly the findings concerning positive associations of cultural activities to health reported by e. g. Konlaan[12] who, unlike us, could also make a causal inference. Our results are partly in accordance with those of Poortinga[22] who found that health behaviour has a limited effect on the associations between high civic participation (involving two or more organisations or clubs) and poor self-rated health. We found that obesity and current

health behaviours were not major contributors in the relationship between participation and health. In this study, after adjusting obesity and health behaviours the association was statistically significant only with voluntary work among women; among men the association was almost significant.

The measuring of studying and self-development is always complicated. The present index indicated that positive health association is strong among men, but among women the association disappeared after adjusting for background variables. It is difficult to interpret exactly what kind of activities this indicator includes. More specific and detailed measures of these activities are obviously needed. It is plausible that studying also includes social interactions. Among Finnish adults it is common to study in groups in non-formal adult education institutes.[11] As the quality of social ties has been found more important than the participation as predictor of good old age,[23] the present results can also be interpreted so that men benefit slightly more from studying than women, as the quality of social ties in study groups is higher among studying men compared to studying women.

Strengths and limitations of the study

We employed a relatively large and regionally representative sample. Thus, the confidence intervals are quite small after multiple adjustments. Several background variables known to be related to health were controlled when the relation between leisure activities and self-rated health was examined. The perceived adequacy of income is very valuable, as this factor has been found to be a strong correlate of self-rated health. Also more conventional SES and sociodemographic variables were used as important indicators of self-rated health among the subjects.[16] Finally, also obesity and health behaviours were examined as background variables. However, their effect was quite unimportant in the present study. The type of the dwelling region did not greatly contribute to the results, which may be regarded as significance of the results.

On the down side, the design of the study is cross-sectional. Therefore causal inferences on the relation between the measured activities and self-rated health could not be made. The present findings may reflect reverse causation so that healthy persons may be active – not that active persons may remain healthy. In the follow-up analyses of the GOAL -project it will be possible to study the issue of causality. The association between self-rated health and the personal importance of each type of leisure activity will also be a significant topic for the future research. Furthermore, non-response was tolerable. Although we have no direct information of the persons not participating, it is likely that their conditions were worse than those of the respondents, which is apt to downplay the real associations. Moreover, it is conceivable that different types of activities may have different health benefits. For example, solitary activities may entail psychological benefits, and social and productive activities may bring physical benefits.[13] We were, however, unable to access these benefits on the basis of our data. In addition, the dichotomisation of the variables may be inadequate to measure the associations between the forms of activity and self-rated health due to loss of some reliable information.

Conclusion

In the present study support was found to the assumption that some leisure activities are associated with good self-rated health. The results indicate that significant associations vary by gender, and some associations are negative among women. The association of leisure activities and good self-rated health may differ for men and women due to their nature (i. e. type of volunteer work) or to their meaning (i. e. meaning of religious activity). Despite the lack of information on causal inferences, the present results are significant for health and prevention policy. The policy makers should create more possibilities for ageing and elderly people to participate in significant leisure activities in order to enhance their health. Thus, leisure activities should be considered an important element of health promotion programs.

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