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SELF-RATED HEALTH IN FORMER ATHLETES AND NON-ATHLETES: RELATIONSHIPS WITH AGE AND PARTICIPATION IN LEISURE TIME PHYSICAL ACTIVITY

Key words: former athletes, non athletes, leisure time physical activity, self-related health.

ABSTRACT

The analysis presented in this study focused on effects of past participation in competitive sports and current participation in leisure-time physical activity (LTPA) on self-rated health in two age categories (18-34 and 35-51 years). Anonymous survey covered 312 former athletes (FA) and 419 non-athletes (NA). The following data were collected: age, frequency, duration time and form of participation in LTPA, self-rated health (SRH-1) and self-rated health as compared to other persons from the same age group (SRH-2). Among females and males, a positive impact of participation in competitive sports on SRH-1 in older subjects and SRH-2 in younger and older respondents was noted. The beneficial impact of LTPA on SRH-1 and SRH-2 typically depended on the frequency and duration of exercise. Furthermore, it was more distinct in males rather than in females, in non-athletes rather than former athletes and also in older rather than younger subjects.

INTRODUCTION

Global self-assessments of health (single- and multi-item measures) have been used extensively as indicators of health status in epidemiological, sociological, and gerontological studies. The subjective health assessment reflects a person's integrated perception of health, including its biological, psychological and social dimensions that is inaccessible to any external observer. Therefore, subjective assessments of global health could be even more sensitive in health monitoring than external measures of health [23].

One of the most frequently used measures of self-rated health status (SRH) is a single-question asking respondents to rate their overall health on a scale from excellent to very poor [7]. Some authors also asked respondents: "How would you assess your general health status compared to that of others of the same age?" [6, 24].

During the last years many prospective studies have analysed the association between people's general evaluation of their own health (SRH) and subsequent mortality. The large majority of these studies have demonstrated that SRH is a powerful predictor of mortality, also after control for other measures of health such as medical diagnoses or functional ability [3, 4, 14, 24]. SRH has been shown to be strongly associated with mortality among adults in the USA [8, 13], Finland [16, 23], Sweden [34], Australia [22], the Netherlands [26], and Japan [37].

According to some authors adults with poorer SRH may be less engaged in preventive

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health practices which contribute to better health. In these studies a lower SRH among adults have been associated with poor health behaviours, such as cigarette smoking or lack of exercise [10, 25, 30, 39]. These unhealthy behaviours may cause individuals to rate their health more negatively and also have been shown to lead to increased mortality risks [28].

Analysis of associations between SRH and physical activity proves that among three types of physical activity, i.e. occupational physical activity, housework, and leisure time physical activity (LTPA), only LTPA plays a significant role in self-perception of health status among men or women [15]. An relationship between inactivity in leisure time and a negative SRH has been documented for females and males in the USA [27], Canada [1], and Poland [15, 41, 43], and for females in Korea [19].

Previous investigations have proved a positive relationship of SRH among adults with their participation in LTPA. However, it remains unclear if this association was modified by the subjects' age or their past participation in competitive sports. It is also little known about the effect of individual characteristics of LTPA, e.g. frequency, time and exercise intensity on SRH in persons at different age and different level of physical fitness.

This study examines the relationships between participation in LTPA and two measures of subjective health reported by younger and older former athletes (FA) and non-athletes (NA). The central question posed in the present study is whether the relationships between exercise and subjective health are more pronounced within age and gender subgroups, and whether they depend on past participation in competitive sports. We hypothesize that the relationship between LTPA and SRH will be notably stronger for older than younger persons and females than males. This prediction is based on Homans's exchange theory of investments and rewards [12]. Since social norms concerning exercise are likely to be weaker among older (rather than younger) persons and among women than men, older persons and women who do exercise are making special investments and should expect greater rewards (good health). We also suppose that past participation in competitive sports modified the influence of LTPA on former athletes' self-rated health.

The following research questions were formulated:

– Does past participation in competitive sports differentiate between SRH declared by younger and older respondents or between males and females?
– Does the association between SRH and LTPA occur independently of gender, age and past participation in competitive sports?
– Do individual variables which characterize LTPA affect SRH in younger and older subjects, females and males, FA and NA in a similar way?
– Which of the two employed SRH measures shows a stronger relationship with participation of the subjects in sports and LTPA?

METHODS

The research conducted in the spring and summer in the years 1997-2002 covered two groups: FA (n = 312) and a group of people with no professional sports experience – either in the past or at present – NA (n = 419). The definition of FA was taken from a previous study and was as follows: people who (in the past) took part in training and competition in sports clubs [35].

Purposive sampling has been conducted with the use of the easy access method [38]. An anonymous postal self-return survey included questions concerning socio-economic status, participation in competitive sports in the past (for FA only), health-related behaviours and self-rated health (SRH). The return rate for the questionnaires was 51%. This paper considers only this part of the material collected that concerned age, gender, and association between SRH and past participation in competitive sports, and between SRH and present participation in LTPA.

The following variables were considered:

– demographic: age (18-34 and 35-51 years) and gender,
– participation in LTPA with three defining categories: frequency of LTPA undertaken during the week preceding the survey, time spent on LTPA during the week preceding the survey, LTPA forms practiced on the day preceding the survey.

Reliability and validity of the mentioned measures of LTPA in previous studies [18, 29, 32] were assessed as satisfactory.

Global self-rated health (SRH) was assessed with the use of two questions:

– SRH-1: How do you rate your health in general? (very good, good, fair, poor, very poor) [5, 20, 21, 31, 44];
– SRH-2: What do you think of your own health condition compared to that of other men/women of your age? (better, the same, worse) [2, 11, 36].

The results of studies on participation of FA and NA in LTPA have been previously documented [40, 42]. The present study presents the results of age-related analysis of associations between SRH-1 and SRH2 and past participation of the subjects in competitive sports as well as between SRH-1 and SRH-2 and their current participation in LTPA.

Statistical analysis

Statistical analysis of the results was conducted by gender, age and participation (or the lack thereof) in competitive sports in the past. The chi square test (χ^2) (with Yates correction) was used to verify the research hypotheses, where the significance level for the relationship between two variables was defined as $p \leq 0.05$; $p \leq 0.01$ or $p \leq 0.001$. To assess the strength of the correlation between SRH-1 or SRH-2 and participation (or not) in competitive sports the Cramer's coefficient (V) was calculated. This coefficient ranges from 0 (no relationship between variables) to 1. The strength and direction of the association between the variables describing participation in LTPA and SRH-1 or SRH-2 were tested with Kendall's $\tau - c$ correlation coefficient. The value of this coefficient ranges between < 1 and 1 >, where $\tau = 0$ means no correlation between the tested variables, $\tau > 0$ – a positive correlation, and $\tau < 0$ – a negative correlation [33]. Statistica 7.0 Pl software package (StatSoft, Inc. Poland) was used to make calculations.

RESULTS

The results for self-rated health (SRH-1) according to gender, age and past participation (or the lack thereof) in competitive sports are presented in Table 1. Among females and males from age category of 18-34, no significant relationship between SRH-1 and past participation in competitive sports was revealed. This relationship was found, however, in the groups of 35-51-year-old women ($p < 0.01$) and men ($p < 0.001$), where FA reported positive (very good + good) SRH-1 more often than NA, while NA usually reported negative (fair + poor) SRH-1. However, the revealed relationship between SRH-1 and past participation in competitive sports was weak (Cramer's V test ≤ 0.30). No significant differences between SRH-1 reported by younger and older FA females or younger and older FA males were found, whereas age differentiated SRH-1 in NA females and males ($p < 0.00001$ and $p < 0.00001$, respectively). The observed negative relationship between age and SRH-1 in NA was of average strength (Cramer's V test: 0.31 – 0.50).

The analysis of the impact of past participation in competitive sports on self-rated health as compared with the peer group (SRH-2) revealed similar tendencies in younger and older respondents. In both age subgroups, FA females and males reported (significantly more often than NA) SRH-2 better than their peers (young females $p < 0.01$, young males $p < 0.01$, older females $p < 0.05$, older males $p < 0.00001$). The correlation strength between the studied characteristics ranged from weak (in the groups of younger and older females and younger males) to average (in the group of older males), (τ-c ≤ 0.30 and τ-c > 0.30-0.50, respectively). Age did not differentiate SRH-2 in the studied FA females, FA males, NA females and NA males (Table 2).

Frequency, duration time and the form of LTPA did not show a significant relationship with SRH-1 reported by younger FA and NA females and males as well as by older FA females. In other groups a significant relationship of SRH-1 with one or two variables which characterize participation in LTPA was observed. In the age group 35-51, a positive relationship between SRH-1 and frequency of LTPA and between SRH-1 and duration of time spent on LTPA was revealed for NA females and NA males (women: $p = 0.008$ and $p = 0.020$, respectively; men: $p = 0.002$ and $p = 0.004$, respectively). The observed relationship was stronger in men than in women. Furthermore, it was also proved that older FA males, who participate in LTPA in the form of sport activity, are characterized by higher SRH-1 as compared to those who practice less intensive forms of exercise (walking, gardening) ($p = 0.04$), (Table 3). Frequency, duration time and forms of participation in LTPA did not reveal a significant relationship with SRH-2 reported by the groups of younger FA

females and males and the group of older FA females. Furthermore, a positive relationship between SRH-2 and LTPA duration time was observed among younger NA respondents ($p = 0.02$) and between sport forms practiced by older female subjects ($p < 0.0001$). However, these relationships were weak (τ-c ≤ 0.30). SRH-2 in younger NA males depended positively on duration time spent on LTPA ($p = 0.05$). SRH-2 reported by FA males (aged 35-51) increased significantly with frequency ($p = 0.02$), duration time ($p = 0.01$) and intensity of the practiced LTPA form ($p = 0.04$). Analogous associations were also found in the older NA male group ($p = 0.004$, $p = 0.002$ and $p = 0.002$, respectively). The τ-c coefficient value revealed in the group of older FA males confirms that the relationship between the investigated variables was weak, whereas in the groups of younger and older NA it ranged from weak to average (Table 4).

Table 1. Self-rated health (SRH-1) according to subjects' gender, age and past participation in competitive sports (%)

Self-related health (SRH-1)	Women				Men			
	18-34 years		35-51 years		18-34 years		35-51 years	
	FA (n=74)	NA (n=97)	FA (n=63)	NA (n=123)	FA (n=80)	NA (n=69)	FA (n=95)	NA (n=130)
Very good	44.59	29.90	30.16	24.39	50.00	47.83	33.68	24.62
Good	45.95	60.82	55.56	39.84	43.75	43.48	52.63	34.62
Fair	9.46	8.25	11.11	33.33	3.75	7.25	11.58	36.92
Poor and very poor	0.00	1.03	3.17	2.44	2.50	1.45	2.11	3.85
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Groups:	λ^2	p	Cramer's V test		λ^2	p	Cramer's V test	
FA [a] – NA [a]	5.04	n.s.	0.17		1.08	n.s.	0.09	
FA [b] – NA [b]	10.86	**	0.24		19.79	***	0.30	
FA [a] – FA [b]	4.93	n.s.	0.19		6.87	n.s.	0.20	
NA [a] – NA [b]	21.39	*****	0.31		24.14	*****	0.35	

[a] 18-34 years, [b] 35-51 years; n.s. – statistically non-significant

Table 2. Self-rated health as compared to peers (SRH-2) according to subjects' gender, age and past participation in competitive sports (%)

Self-related health compared to that of others of the same age	Women				Men			
	18-34 years		35-51 years		18-34 years		35-51 years	
	FA (n=74)	NA (n=97)	FA (n=63)	NA (n=123)	FA (n=80)	NA (n=69)	FA (n=95)	NA (n=130)
Better	40.54	16.46	31.75	16.26	50.00	24.29	50.53	15.38
The same	56.76	78.35	57.14	75.61	47.50	70.00	43.16	74.62
Worse	2.70	5.15	11.11	8.13	2.50	5.71	6.32	10.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Groups:	λ^2	p	Cramer's V test		λ^2	p	Cramer's V test	
FA [a] – NA [a]	12.48	**	0.27		10.72	**	0.27	
FA [b] – NA [b]	7.10	*	0.20		32.17	*****	0.38	
FA [a] – FA [b]	4.38	n.s.	0.18		1.57	n.s.	0.09	
NA [a] – NA [b]	0.76	n.s.	0.06		3.06	n.s.	0.12	

[a] 18-34 years, [b] 35-51 years; n.s. – statistically non-significant

Table 3. Relationships between frequency, time and forms of participation in LTPA and self rated health (SRH-1)

Characteristics of participation in LTPA	Statistics	Women				Men			
		18-34 years		35-51 years		18-34 years		35-51 years	
		FA (n=74)	NA (n=97)	FA (n=63)	NA (n=123)	FA (n=80)	NA (n=69)	FA (n=95)	NA (n=130)
Frequency	λ^2	1.37	8.11	4.04	17.47	9.33	3.44	8.48	20.66
	p	n.s.	n.s.	n.s.	0.008	n.s.	n.s.	n.s.	0.002
	tau c	0,068	0.125	0.128	0.246	0.005	0.038	0.041	0.309
Duration	λ^2	1.12	8.98	8.75	14.98	8.40	5.30	9.05	19.37
	p	n.s.	n.s.	n.s.	0.020	n.s.	n.s.	n.s.	0.004
	tau c	0,091	0.145	0.017	0.273	–0.002	0.139	0.198	0.317
Forms	λ^2	2.36	5.81	10.28	3.29	10.50	6.03	13.11	9.53
	p	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.04	n.s.
	tau c	0.075	0.122	0.134	–0.003	0.068	0.007	0.261	0.216

n.s. – statistically non-significant

Table 4. Relationships between frequency, time and forms of participation in LTPA and self-rated health as compared to peers (SRH-2).

Characteristics of participation in LTPA	Statistics	Women				Men			
		18-34 years		35-51 years		18-34 years		35-51 years	
		FA (n=74)	NA (n=97)	FA (n=63)	NA (n=123)	FA (n=80)	NA (n=69)	FA (n=95)	NA (n=130)
Frequency	λ^2	7.20	4.89	2.18	5.81	7.78	4.61	11.70	15.45
	p	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.02	0.004
	tau c	0.042	0.151	0.030	0.151	0.017	0.158	0.118	0.288
Duration	λ^2	6.03	12.03	1.79	3.80	7.63	13.81	12.39	16.75
	p	n.s.	0.02	n.s.	n.s.	n.s.	0.05	0.01	0.002
	tau c	0.103	0.271	–0.067	0.129	0.022	0.241	0.204	0.302
Forms	λ^2	4.61	1.72	1.86	23.38	3.44	6.74	10.21	16.44
	p	n.s.	n.s.	n.s.	0.0001	n.s.	n.s.	0.04	0.002
	tau c	0.202	0.019	0.083	0.077	0.034	0.281	0.230	0.295

n.s. – statistically non-significant

DISCUSSION

The aim of the present study was to determine the effect of past participation in competitive sports and current participation in LTPA on self-rated health among females and males from two age groups (18-34 and 35-51 years).

In a number of countries studies have found that the majority of people rate their health as good and that assessments of fair or poor health increase with age while ratings of excellent health decrease [30]. The present study also revealed that both FA and NA, females and males, rate their health as very good/good. However, a notable decrease in SRH-1 with age was observed only among NA females and males, whereas in the groups of FA females and males this tendency was statistically non-significant. Self-rated health as compared to peers (SRH-2) also proved that regardless of gender and age, the FAs, more often than NAs, rated their health as better than their peers'. This means that participation in competitive sports in the past might be a factor contributing to the stabilization of high self-rated health ratings among females and males within the age range of 18-51 years.

In the present study, SRH-1 and LTPA were independent in all younger groups and in the group of 35-51-year-old FA women. Among 35-51-year-old NA females and males and FA males, a high SRH-1 was significantly positively related with one or two variables which characterize LTPA. Our results are consistent with findings of studies conducted by other authors among adult non-

athletes. A study carried out among men and women (aged 20-64) shows that the level of physical activity was significantly related to subjective health (SRH-1). Moreover, exercise was much more strongly related to SRH-1 among older rather than among younger respondents [27]. The determinants of SRH-1 were examined in a comprehensive population study of 9,408 men aged 20-61 and 9,152 women aged 20-56. In this study leisure time physical activity and workload were positively associated with SRH. Similarly to our study, the relationship between LTPA and SRH-1 was also strong among men but far weaker among women [9]. Gender-related differences in relationships between SRH-1 and LTPA might be partially explained with the results of investigations carried out by Undén and Elofsson [44]. While investigating the effect of different factors on SRH-1 in a randomly selected population of 8,200 men and women aged > 17 years in Sweden, these authors showed that physical activity and social interaction played a more crucial role when judging health among men, whereas satisfaction with work/economy and illness level played a more crucial role when judging health among women.

In the author's own research, SRH-1 (among FA men, aged 35-51) and SRH-2 (among NA females, aged 35-51 and NA and FA males, aged 35-51) showed a significantly positive relationship with participation in sport-related forms of LTPA. Also Lamb et al. [17] found that participants in sports had better perceptions of health than a matched sample of non-participants.

Among the FA subjects, a positive relationship between one of LTPA characteristics and SRH-1 or SRH-2 was found only in the group of males aged 35-51 years. SRH-1 and SRH-2 in all the studied NA groups depended on LTPA. This points to a stronger effect of present LTPA on SRH in NA than in FA group.

Of the two employed measures of self-assessment of health status, it is SRH-2 which showed the dependency on LTPA more often than SRH-1. A positive effect of LTPA on SRH-2 was observed, in particular, with respect to NA, males and subjects aged 35-51.

The following conclusions may be drawn:

1. Past participation in competitive sports was related to higher SRH-1 in females and males aged 35-51 and to higher SRH-2 in females and males aged 18-51.
2. Younger NA females and males reported significantly higher SRH-1 than older NA females and males. However, these differences were not observed in FA subjects.
3. The beneficial effect of LTPA on SRH-1 or SRH-2 was mainly conditioned by the frequency and length of exercise.
4. A positive effect of participation in LTPA on SRHs was particularly strong in the case of SRH-2 and, typically, concerned males, NA and subjects aged 35-51.

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