

Gender differences and trends of attitude toward physical activity in population aged 25-64 years from 1988 to 2017

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Submitted: 20 May 2021; Accepted: 26 May 2021; Published: 01 June 2021

Citation: Gafarov VV, Panov DO, Gromova EA, Krymov EA, Gagulin IV, et al. (2021) Gender differences and trends of attitude toward physical activity in population aged 25-64 years from 1988 to 2017. *Medical & Clinical Research* 6(6): 555 - 563.

Abstract

The aim: To determine gender differences in the dynamic of attitude toward physical activity in an open population of 25-64 years over a long-term period - 29 years in Russia / Siberia (Novosibirsk).

Methods: Within the framework of the screening in 1988-89 under the WHO MONICA-psychosocial (MOPSY) program (n=1676, 49.5% males, mean age 44.1±0.4 years), in 2003-2005 under the international project HAPIEE (n=1650, 34.9% males, mean age 54.25±0.2 years), in 2013-2016 (n=975, 43.8% males, mean age 34.5±0.4 years) and 2016-2017 (n=663, 41.3% years 51.95±0.32 years) within the framework of the budgetary theme No. AAAA-A17-117112850280-2, random representative samples of men and women in one of districts in Novosibirsk were examined. Physical activity assessed by questionnaire proposed by MONICA-MOPSY protocol.

Results: Men were 2 times more likely than women to report that they did not need to do physical exercises in 1988. In 2013-2016, the proportion of young men and women who regularly did physical exercises increased significantly: 28.7% and 21.4%, respectively. In 2017, this trend continued among women but there were fewer men who regularly train. 59.9% of men and 73.1% of women aged 25-64 in 1988 reported “failed” attempts to exercise regularly. By 2017, the share of such men has not changed but for women it decreased to 7%. Women more often than men (30.3% vs 24.6%) spent their leisure time physically actively in 1988. By 2017, there was a tendency towards an increase in women aged 25-34 years with passive pastime to 21.1% and among men their share did not change. In 1988, the proportion of those who became less mobile during the year increased linearly with age, reaching 31.5% for men and 38.8% for women 55-64 years old. In 2017, the proportion of men and women who became less mobile decreased in comparison with 1988 and 2003 (11.6% and 22.2%, respectively; $p < 0.05$). In 1988, women more often than men considered themselves insufficiently active. In 2013-2017, individuals of both sexes began to report more often that they are physically more active than other people of their own age. Males aged of 25-44 years considered themselves as active more often than females. But in the older age groups there was an increase in physical activity among women.

Conclusions: There is an essential decline in physical activity with age but trends in self-rated levels of physical activity show a steady increase from 1988 to 2017, predominantly in women.

Keywords: Gender, Trends, Physical Activity

Introduction

Physical activity is a well-known factor affecting public health. A study of meta-analyzes, systematic reviews and large-scale surveys by the US Department of Health confirmed a significant benefit of physical activity for chronic noncommunicable diseases [1]. However, the effect of behavioral factors on health varies by gender. Thus, life expectancy among women with a favorable lifestyle is slightly higher than among men: 14 and 12.2 years,

respectively [2]. Such differences can be explained by the “low base” effect: the female sex is associated with insufficient physical activity [3], as well as affecting by other risk factors, which are more typical for men.

Previous evidence suggests that about 70% of CVD cases can be attributed to an increased level of risk factors [4]. Focusing on primary prevention through a healthy lifestyle can be important for

solving the economic problems associated with the treatment of CVD, as well as the significant costs of medical care for coronary artery disease, stroke. It was found that a healthy lifestyle is equally important for the primary prevention of coronary artery disease, and secondary, among those who have at least 1 clinical risk factor for CVD. This is an important public health signal that is consistent with previous work for men whose healthy lifestyles have prevented most CHD cases, even among those already receiving treatment for hypertension and hypercholesterolemia [5]. Adherence to a healthy lifestyle significantly reduces the burden of both CVD and CHD risk factors among the population, especially young women [4]. Gender effects in health promotion should also be considered. For example, regular physical activity is more beneficial for the female sex, since it is associated with a 40% reduction in the risk of CVD, while in men this decrease is about 30% [6]. At the same time, reduced physical activity and a sedentary lifestyle lead to negative health effects regardless of age or gender.

Big-data analysis (2 million participants) showed that by 2016 more than a quarter of the adult population is not getting enough physical activity [7]. Recognizing the strong relationship between physical activity and major noncommunicable diseases, WHO Members are taking action to increase the physical activity of the population. By 2030, it is planned to reduce the prevalence of insufficient physical activity by 15% as part of the global prevention strategy (WHO toolkit ACTIVE) [8]. Monitoring current levels and trends of physical activity is a necessary measure to evaluate preventive measures and identify high-risk groups.

Our research complements these prior scientific reports. Evaluating a large number of people from the general population participating in screening over the years but with a common design, increases the generalizability and relevance required for epidemiological protocols based on research principles. Thus, the aim of our study was to explore gender differences in the dynamics of attitude toward physical activity in population aged of 25-64 years over a long-term period - 29 years.

Methods

The results of our study were obtained on the basis of a survey of the male and female population living in one of the districts of Novosibirsk. The examinations were carried out within the framework of screenings 1988-89, 1994-95, 2003-2005, 2013-2016 and 2016-2017.

Under the II screening of the WHO program «Multinational Monitoring of Trends and Determinants of Cardiovascular Disease - Optional Psychosocial Substudy» (MONICA-MOPSY) representative sample of residents aged 25–64 years was examined in 1988-1989 (n=1676, 49.5% males, mean age 44.1±0.4 years, response rate - 69.8%) [9].

In the course of another international project HAPIEE (Health, Alcohol and Psychosocial factors In Eastern Europe) persons aged

45-64 were examined in 2003-2005 (n=1650, 34.9% males, mean age 54.25±0.2 years, response rate – 66.5%) [10].

In the framework of the screening studies a random representative sample survey of the population aged 25-44 years conducted in 2013-2016 by the budget scientific research theme, Gov.Task № 01201282292 (n=975, 43.8% males, mean age 34.5±0.4 years, response rate – 71.5%).

Within the framework of the budget theme No. AAAA-A17-117112850280-2 a survey of persons aged 35-64 was carried out in 2016-2017 (n=663, 41.3% males, mean age 51.95±0.32 years, response rate – 73.6%). The study included residents of the same district of Novosibirsk as in 1994-95, 2003-2005 and 2013-2016.

All samples were formed on the basis of electoral lists of citizens using a table of random numbers. A random mechanical selection procedure was used. The general survey was carried out according to the standard methods accepted in epidemiology and included in the MONICA program. The methods were strictly standardized and complied with the requirements of the MONICA project protocol. Validation and processing of material according to the WHO MONICA-psychosocial program was carried out at the Information Collection Center of the MEDIS Institute in Munich, Germany (Institut für Medizinische Informatik und Systemforschung). Quality control was carried out in MONICA quality control centers: Dundee (Scotland), Prague (Czech Republic), Budapest (Hungary). The presented results were considered satisfactory.

The screening survey program included registration of socio-demographic data according to the standard epidemiological protocol of the WHO MONICA-psychosocial program: identification number, place of residence, full name, date of birth, date of registration, gender, marital status, educational level, and professional status.

An attitude toward physical activity were studied using the “Knowledge and Attitude to Own’s Health” scale proposed by the MOPSY protocol and adapted to the studied population [9]. The subjects were asked to answer the questions of the scale themselves according to the instructions placed on the scale. Individuals who did not complete the questionnaire were not included in the analysis.

Statistical analysis was performed using the SPSS software package version 11.5. The study participants were standardized by age groups in the analysis. To compare the indicators between screenings, the corresponding age groups were used. To check the statistical significance of differences between groups, we used: the chi-square test (χ^2). As a criterion of statistical significance the value of the chi-square was taken into account at a certain number of degrees of freedom. The reliability of analysis was accepted at a significance level of $p < 0.05$.

Results

To the question: “Do you do physical exercises (excluding at workplace)?” men are 2 times more likely than women to report that they do not need it, in 1988: 23.4% and 11.5% for men and women 25-64 years ($p < 0.001$). The proportion of such persons of both sexes increased with age (Table 1). The proportion of those who regularly do exercises was very small - 14%, and did not differ by gender, with the exception of the 45-54 age group, where the proportion of men was 5% more ($p < 0.05$). The same number of men and women - 2%, indicated that “according to doctors, physical exercises are contraindicated for them”. A much larger proportion of respondents reported “failed” attempts to exercise regularly (the total answer “I must, but I don’t do it” and “I tried, but unsuccessfully”): 59.9% of men and 73.1% of women 25-64 years old ($p < 0.001$). The proportion of such persons was higher in the younger age groups: 70.5% of men and 82.3% of women 25-34 years old ($p < 0.05$).

In the older age groups, by 2003, the proportion of women who believed that they did not need to do physical exercises decreased by 5-6%. The proportion of those men who did exercises regularly decreased from 22.3% to 14.3%, especially in the 55-64 age group. This caused an increase in the number of unsuccessful attempts in these age groups compared to 1988: 63.7% of men and 78.4% of women aged 45-64 years ($p < 0.001$). In general, the sex differences in the structure of responses remained the same.

In 2013-2016, the proportion of young men and women who regularly did physical exercises increased significantly: 28.7% and 21.4%, men and women aged of 25-44 years ($p < 0.001$). In the younger age group 25-34y, women did exercises almost as often as men: the difference was 3% ($p = 0.001$). This was reflected in a decrease in the frequency of unsuccessful attempts to exercise regularly with the exception of women 35-44 years where the proportion of “lazy” was still high - 74.5%. As in 1988, men were more likely than women to report that they did not need to exercise. Especially in the group of 35-44 years where the gender “gap”

exceeded 3-fold: 20.5% of men and 6.3% of women ($p < 0.001$).

The proportion of men who regularly did physical activity declined again in 2016-17 across all age groups to 1988 levels. Whereas women in older age groups showed an increase of up to 20.3% in the 45-54 age group and 26.5% among 55-64 years old. Then, for the first time, women began to engage in regular physical activity more often, ahead of men by an average of 5% (for persons 35-64 years old, $p < 0.001$). Otherwise, the structure of responses was the same as in the previous observation periods: women outnumbered men in unsuccessful attempts to exercise, but were inferior in the frequency of statements “I don’t need to exercise”.

The share of those for whom “according to doctors, physical exercise is contraindicated” was unchanged for 29 years, and did not exceed 2%.

Women more often than men (30.3% vs 24.6%) spent their leisure time physically active in all age groups in 1988, with the exception of the youngest age group 25-34 years old, where equality was observed (Table 2). The male and female population of older age groups was 2-2.5 times more physically active: 25-34 years - 16.2% and 15.2%, 55-64 years - 35.4% and 40.8%, for men and women, respectively (n.s.). In subsequent years, the proportion of the population with active leisure did not change significantly but in the older age groups of women there was a slight decrease in 2016-17 compared to 1988 to 25-27%. From 2013 to 2017, there was a prevalence of men with active leisure over women, reaching significant differences in 2016-17: 31.4% and 22.2% (for men and women aged of 35-64 years; $p < 0.05$).

The proportion of persons with passive leisure was 18% and 15.4% among men and women aged 25-64 in 1988. These levels varied in the range of 3-6%, subsequently but there was a tendency to increase among the female population aged 25-34 years to 21.1% by 2017. Despite a wider range of fluctuations in separate male age groups this type of leisure remained at the 1988 level.

Table 1: Gender differences in trends of attitude toward physical activity in population of 25-64 years depending on age

Attitude toward physical activity		25-34 years				35-44 years				45-54 years				55-64 years				25-64 years			
		M		F		M		F		M		F		M		F		M		F	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Do you do physical exercises (excluding at workplace)?																					
1. I don't need it	1988	40	19.7	17	9.4	47	23.7	16	7.9	44	25.4	26	14.6	39	26.4	20	15	170	23.4	81	11.5
2. Should, but I don't		98	48.3	97	53.6	81	40.9	102	50.2	59	34.1	83	46.6	49	33.1	56	42.1	292	40.1	341	48.5
3. Tried, but unsuccessfully		45	22.2	52	28.7	45	22.7	54	26.6	35	20.2	40	22.5	19	12.8	25	18.8	144	19.8	173	24.6
4. I do it regularly		19	9.4	15	8.3	23	11.6	30	14.8	31	17.9	23	12.9	33	22.3	26	19.5	107	14.7	95	13.5
5. According to doctors, physical exercise is contraindicated		1	0.5	0	0	2	1.0	1	0.5	4	2.3	6	3.4	8	5.4	6	4.5	15	2.1	13	1.9
Total		203	100	181	100	198	100	203	100	173	100	178	100	148	100	133	100	728	100	703	100
		$\chi^2=10.034$ df=4 $p<0.05$				$\chi^2=38.435$ df=4 $p<0.001$				$\chi^2=10.534$ df=4 $p<0.05$				n.s.				$\chi^2=19.681$ df=4 $p<0.001$			

1. I don't need it	2003									70	23.0	53	9.6	51	18.8	47	9.0	121	21.0	100	9.3
2. Should, but I don't										109	35.9	242	43.7	89	32.7	196	37.7	198	34.4	438	40.8
3. Tried, but unsuccessfully										80	26.3	195	35.2	89	32.7	209	40.2	169	29.3	404	37.6
4. I do it regularly										43	14.1	53	9.6	39	14.3	58	11.2	82	14.2	11	10.3
5. It is contraindicated										2	0.7	11	2.0	4	1.5	10	1.9	6	1.0	21	2.0
Total										304	100	554	100	272	100	520	100	576	100	1074	100
									$\chi^2=38.537$ df=4 p<0.001				$\chi^2=19.174$ df=4 p<0.001				$\chi^2=159.819$ df=4 p<0.001				
1. I don't need it	2013	31	18.9	13	6.2	53	20.5	21	6.3									84	19.9	34	6.3
2. Should, but I don't		55	33.5	100	47.6	96	37.2	171	51.4									151	35.8	271	49.9
3. Tried, but unsuccessfully		28	17.1	41	19.5	37	14.3	77	23.1									65	15.4	118	21.7
4. I do it regularly		49	29.9	55	26.2	72	27.9	61	18.3									121	28.7	116	21.4
5. It is contraindicated		1	0.6	1	0.5	0	0	3	0.9									1	0.2	4	0.7
Total		164	100	210	100	258	100	333	100									422	100	543	100
	$\chi^2=17.836$ df=4 p=0.001				$\chi^2=44.042$ df=4 p<0.001												$\chi^2=58.310$ df=4 p<0.001				
1. I don't need it	2017	15	21.1	14	14.3	27	32.9	18	13.0	39	32.2	17	11.3	81	29.6	49	12.7				
2. Should, but I don't		33	46.5	50	51.0	25	30.5	43	31.2	26	21.5	57	37.7	84	30.7	150	38.8				
3. Tried, but unsuccessfully		11	15.5	21	21.4	23	28.0	48	34.8	33	27.3	36	23.8	67	24.5	105	27.1				
4. I do it regularly		11	15.5	13	13.3	7	8.5	28	20.3	23	19.0	40	26.5	41	15.0	81	20.9				
5. It is contraindicated		1	1.4	0	0	0	0	1	0.7	0	0	1	0.7	1	0.4	2	0.5				
Total		71	100	98	100	82	100	138	100	121	100	151	100	274	100	387	100				
	n.s.				$\chi^2=15.732$ df=4 p<0.01				$\chi^2=22.909$ df=4 p<0.001				$\chi^2=29.892$ df=4 p<0.001								

Throughout the study (1988-2017) about half of the population did not have a definite type of leisure in terms of physical activity and gave the answer: “different ways”. In young groups such mixed leisure was more common, reaching 60-70% in 2013 and 2017.

The proportion of people with a lack of leisure time was stable for 29 years and did not exceed 4% for men and 6% for women, with the exception of 2003, when 11.8% of the male and 16.7% of the female population of older age groups reported that they had no leisure time (p <0.001).

In young age groups of 25-34 and 35-44 years, the proportion of people who believed that they became more active (mobile) during the year was equivalent to those who became less mobile (Table 3). Their proportion did not exceed 15% in 1988 and did not differ by gender. Among people aged 45 and over, the proportion of those who became less mobile increased significantly, reaching 31.5% for men and 38.8% for women 55-64 years, although gender differences did not have statistical significance (n.s.).

The same trends were found in 2003-2005 among men and women aged 45-64 years. In comparison with 1988, the proportion of

respondents who reported a decrease in mobility increased. Among women aged 55-64 years this indicator reached 42.1%, although the sex differences did not have statistical differences.

On the contrary, in 2013 the share of those who became more active increased. In the youngest group of 25-34 years old, their proportion exceeded the less mobile by 10%, without differing in sex. In 2017, the proportion of people with increased physical activity decreased slightly in the 35-44 age group (17.4% for men and 15.3% for women; ns), approaching the indicators of 1988, but in older age categories their number exceeded the same indicators of previous years by 2-3 times. Significant gender differences were found in the 55-64 age group, in which the proportion of men and women who became less mobile decreased in comparison with 1988 and 2003 (11.6% and 22.2%, respectively; p<0.05).

Comparing their level of physical activity with people of their age (Table 4), women more often than men considered themselves insufficiently active (combined answer: somewhat more passive and much more passive) in 1988. This gender gap was evident in the youngest (21.8% and 10.8%; p<0.05) and the oldest age group (20.5% and 14.8% - for women and men, respectively;

p=0.68). Among the population aged 25-64 in 1988, the proportion of those men who consider themselves more active was 3-fold higher compared to passive and 2-fold higher for women. In 2003, men aged 45-54 years less often than women reported that they were physically more passive than their peers (6.3% and 12.8%; p<0.05). In the older age group, gender differences disappeared.

In 2013, individuals of both genders began to report more often that they are physically more active than other people the same age (combined answer: I am somewhat more active and

significantly more active). But men indicated this more often than women, especially in the group of 25-34 years: 45.7% and 38.9% (p<0.001). In 2017, the proportion of such men decreased slightly in the 35-44y age group. Because of what gender differences have decreased. But in the older age groups there was an increase in physical activity among both sexes. For the first time, women were ahead of men in the frequency of responses about increased activity in comparison with their peers: 45-54 years - 37.8% and 55.8% (n.s.), 55-64 years - 46.3% and 49% (p<0.01).

Table 2: Gender differences in trends of attitude toward physical activity in population of 25-64 years depending on age

Attitude toward physical activity		25-34 years				35-44 years				45-54 years				55-64 years				25-64 years							
		M		F		M		F		M		F		M		F		M		F					
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%				
How do you spend your leisure time?																									
1. Physically active (gardening, exercising, walking, cycling, running, etc.)	1988	33	16.2	28	15.2	33	16.7	65	32.0	58	33.7	65	35.9	52	35.4	53	40.8	179	24.6	214	30.3				
2. Different ways		116	56.9	114	62.0	125	63.1	97	47.8	80	46.5	73	40.3	72	49.0	53	40.8	396	54.5	341	48.2				
3. Physically passive (lying, sitting, watching TV, reading, writing, making something, etc.)		48	23.5	31	16.8	36	18.2	30	14.8	31	18.0	29	16.0	16	10.9	17	13.1	131	18.0	109	15.4				
4. I have no leisure		7	3.4	11	6.0	4	2.0	11	5.4	3	1.7	14	7.7	7	4.8	7	5.4	21	2.9	43	6.1				
Total		204	100	184	100	198	100	203	100	172	100	181	100	147	100	130	100	727	100	707	100				
		n.s.				$\chi^2=17.733$ df=3 p<0.001				$\chi^2=7.678$ df=3 p=0.069				n.s.				$\chi^2=16.525$ df=3 p=0.001							
1. Physically active	2003									60	19.7	147	26.5	70	25.7	163	31.3	130	22.6	310	28.9				
2. Different ways										151	49.7	225	40.6	109	40.1	173	33.3	260	45.1	398	37.1				
3. Physically passive										64	21.1	112	20.2	54	19.9	75	14.4	118	20.5	187	17.4				
4. No leisure										29	9.5	70	12.6	39	14.3	109	21.0	68	11.8	179	16.7				
Total										304	100	554	100	272	100	520	100	576	100	1074	100				
										$\chi^2=9.131$ df=3 p<0.05				$\chi^2=11.658$ df=3 p<0.05				$\chi^2=19.546$ df=3 p<0.001							
1. Physically active	2013	30	18.4	36	16.9	43	16.4	40	12.0									73	17.2	76	13.9				
2. Different ways		99	60.7	125	58.7	162	61.8	201	60.2									261	61.4	326	59.6				
3. Physically passive		30	18.4	48	22.5	49	18.7	82	24.6									79	18.6	130	23.8				
4. No leisure		4	2.5	4	1.9	8	3.1	11	3.3									12	2.8	15	2.7				
Total		163	100	213	100	262	100	334	100									425	100	547	100				
		n.s.				n.s.												n.s.							
1. Physically active	2017									12	16.9	10	10.2	25	30.5	34	24.8	49	40.5	42	27.5	86	31.4	86	22.2
2. Different ways										39	54.9	70	71.4	33	40.2	70	51.1	53	43.8	71	46.4	125	45.6	211	54.4
3. Physically passive										19	26.8	16	16.3	18	22.0	30	21.9	16	13.2	36	23.5	53	19.3	82	21.1
4. No leisure										1	1.4	2	2.0	6	7.3	3	2.2	3	2.5	4	2.6	10	3.6	9	2.3
Total										71	100	98	100	82	100	137	100	121	100	153	100	274	100	388	100
		n.s.				n.s.				n.s.				$\chi^2=7.350$ df=3 p=0.080				$\chi^2=8.927$ df=3 p<0.05							

Table 3: Gender differences in trends of attitude toward physical activity in population of 25-64 years depending on age

Attitude toward physical activity		25-34 years				35-44 years				45-54 years				55-64 years				25-64 years					
		M		F		M		F		M		F		M		F		M		F			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
Has your physical activity (mobility, sports exercise, etc.) changed over the past 12 months?																							
1. I have become more active	1988	25	12.3	26	14.2	20	10.1	30	14.9	11	6.4	12	6.9	12	8.1	9	7.0	70	9.6	78	11.2		
2. No changes		153	75.0	132	72.1	156	78.4	143	71.1	128	74.9	119	68.0	90	60.4	70	54.3	531	72.8	471	67.6		
3. I have become less mobile		26	12.7	25	13.7	23	11.6	28	13.9	32	18.7	44	25.1	47	31.5	50	38.8	128	17.6	148	21.2		
Total		204	100	183	100	199	100	201	100	171	100	175	100	149	100	129	100	729	100	697	100		
		n.s.				n.s.				n.s.				n.s.				$\chi^2=4.759$ df=2 p=0.093					
1. More active	2003					25				8.2	49	8.8	25	9.2	30	5.8	50	8.7	79	7.4			
2. No changes										204	67.1	345	62.3	147	54.0	271	52.1	351	60.9	616	57.4		
3. Less mobile										75	24.7	160	28.9	100	36.8	219	42.1	175	30.4	379	35.3		
Total										304	100	554	100	272	100	520	100	576	100	1074	100		
										n.s.				n.s.				n.s.					
1. More active	2013	48	29.3	64	30	56	21.5	68	20.6									104		24.5	132	24.3	
2. No changes		83	50.6	106	49.8	168	64.4	192	58.2											251	59.1	298	54.9
3. Less mobile		33	20.1	43	20.2	37	14.2	70	21.2											70	16.5	113	20.8
Total		164	100	213	100	261	100	330	100											425	100	543	100
		n.s.				$\chi^2=4.951$ df=2 p=0.084												n.s.					
1. More active	2017	12	17.4	15	15.3	16	19.5	26	19	15	12.4	22	14.4	43	15.8	63	16.2	189	69.5	247	63.7		
2. No changes		48	69.6	59	60.2	49	59.8	91	66.4	92	76	97	63.4	189	69.5	247	63.7	40	14.7	78	20.1		
3. Less mobile		9	13	24	24.5	17	20.7	20	14.6	14	11.6	34	22.2	40	14.7	78	20.1	272	100	388	100		
Total		69	100	98	100	82	100	137	100	121	100	153	100	272	100	388	100						
		n.s.				n.s.				n.s.				$\chi^2=6.136$ df=2 p<0.05				n.s.					

Table 4: Gender differences in trends of attitude toward physical activity in population of 25-64 years depending on age

Attitude toward physical activity		25-34 years				35-44 years				45-54 years				55-64 years				25-64 years			
		M		F		M		F		M		F		M		F		M		F	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
How do you rate your physical activity in comparison with other people the same age?																					
1. Much more active	1988	10	4.9	6	3.4	12	6	19	9.4	27	15.8	27	15.2	13	11.5	24	18.2	68	9.3	76	10.8
2. Somewhat more active		43	21.1	27	15.1	53	26.5	52	25.6	36	21.1	43	24.2	33	22.3	31	23.5	167	22.9	153	21.8
3. Same as others		129	63.2	107	59.8	111	55.8	98	48.3	85	49.7	80	44.9	76	51.4	50	37.9	403	55.4	342	48.8
4. Somewhat more passive		17	8.3	36	20.1	21	10.6	27	13.3	18	10.5	25	14.0	15	10.1	19	14.4	71	9.8	109	15.6
5. Much more passive		5	2.5	3	1.7	2	1	7	3.4	5	2.9	3	1.7	7	4.7	8	6.1	19	2.6	21	3.0
Total		204	100	179	100	199	100	203	100	171	100	178	100	144	100	132	100	728	100	701	100
		$\chi^2=12.44$ df=4 p<0.05				n.s.				n.s.				$\chi^2=8.73$ df=4 p=0.068				$\chi^2=13.669$ df=4 p<0.01			
1. Much more active	2003									36	11.8	59	10.6	29	10.7	65	12.5	65	11.3	124	11.5
2. Somewhat more active										64	21.1	134	24.2	62	22.8	124	23.8	126	21.9	258	24
3. Same as others										185	60.9	290	52.3	162	59.6	287	55.2	347	60.2	577	53.7
4. Somewhat more passive										13	4.3	50	9	15	5.5	30	5.8	28	4.9	80	7.4
5. Much more passive										6	2	21	3.8	4	1.5	14	2.7	10	1.7	35	3.3
Total										304	100	554	100	272	100	520	100	576	100	1074	100
										$\chi^2=11.743$ df=4 p<0.05				n.s.				$\chi^2=10.633$ df=4 p<0.05			

1. Much more active	2013	33	20.1	25	11.7	37	14.3	44	13.2						70	16.5	69	12.6			
2. Somewhat more active		42	25.6	58	27.2	84	32.4	97	29						126	29.8	155	28.3			
3. Same as others		75	45.7	75	35.2	105	40.5	132	39.5						180	42.6	207	37.8			
4. Somewhat more passive		12	7.3	46	21.6	29	11.2	49	14.7						41	9.7	95	17.4			
5. Much more passive		2	1.2	9	4.2	4	1.5	12	3.6						6	1.4	21	3.8			
Total		164	100	213	100	259	100	334	100						423	100	547	100			
		$\chi^2=22.053$ df=4 p<0.001				n.s.									$\chi^2=19.119$ df=4 p<0.001						
1. Much more active	2017					8	11.3	7	7.1	10	12.2	27	19.6	3	2.5	23	15	21	7.7	57	14.7
2. Somewhat more active						20	28.2	28	28.6	21	25.6	50	36.2	53	43.8	52	34	94	34.3	130	33.4
3. Same as others						32	45.1	42	42.9	45	54.9	50	36.2	52	43	63	41.2	129	47.1	155	39.8
4. Somewhat more passive						11	15.5	16	16.3	5	6.1	9	6.5	9	7.4	14	9.2	25	9.1	39	10
5. Much more passive						0	0	5	5.1	1	1.2	2	1.4	4	3.3	1	0.7	5	1.8	8	2.1
Total						71	100	98	100	82	100	138	100	121	100	153	100	274	100	389	100
						n.s.				n.s.				$\chi^2=15.812$ df=4 p<0.01				$\chi^2=8.855$ df=4 p=0.065			

Discussion

In our study, men are 2 times more likely than women to report that they do not need to exercise. The proportion of such persons of both sexes increased with age. The proportion of those who regularly exercise was very small - 14%, and did not differ by gender in 1988. In subsequent years, there was a multidirectional gender dynamics in the frequencies of regular charging. In 2013-2016, the proportion of young men and women who regularly did physical exercises increased significantly: 28.7% and 21.4%, respectively. In 2017, this trend continued among women, but the proportion of regular men in all age groups dropped to 1988 levels. Then, for the first time, women began to engage in regular physical activity more often, ahead of men by an average of 5%.

But a much larger part of the respondents reported “failed” attempts to exercise regularly (the total answer was “I must, but I don’t do it” and “I tried, but unsuccessfully”): 59.9% of men and 73.1% of women 25-64 years old in 1988. By 2017, the share of such men did not change, and women dreamed of 7%. The same number of men and women - 2%, indicated that “according to doctors, physical exercises are contraindicated for them”, this proportion has been unchanged for 29 years.

According to recent studies in developed countries, 51% of the adult population adhere to the recommendations for aerobic exercise, and only 23% - for strength [11]. This significantly outstrips the tendencies of physical activity in the studied population [12].

Globally, 23.4% of the male and 31.7% of the female population are physically inactive [7]. In the period from 2001 to 2016, these levels did not change significantly. However, within 15 years, the physically inactive female population in Latin America, the Caribbean, South Asia and high-income European countries has

reached 43%. Among men, the proportion of physically inactive and living in western or eastern Asia, Oceania, central and southern Africa was 12-17% [7]. In high-income countries, the trend of an increase in the number of physically inactive men over 15 years was similar to that of women. But this level was 10% lower compared to women.

With regard to age groups, a number of researchers report that the frequency of physical inactivity in the groups of 30-39 years old and 40-49 years old is 2 times higher in comparison with the age groups of 50-69 years old [3]. In our study, similar but less pronounced associations were observed in 2016-17. In the earlier periods of observation, the absence of regular physical exercise among the youngest as well as age groups is characteristic. If, within the framework of physical activity, the forms of leisure are taken into account, then similar age tendencies are indeed present in our study.

Women more often than men (30.3% vs 24.6%) spent their leisure time physically actively in 1988. The male and female population of the older age groups were 2-2.5 times more physically active. In subsequent years, the share of the population with active leisure did not change significantly, but among women 45-64 years old there was a slight decrease in 2016-17 compared to 1988 to 25-27%. From 2013 to 2017, there was a predominance of men with active leisure over women, reaching significant differences in 2016-17. The proportion of persons with passive leisure initially averaged 15-18%, but by 2017 there was a tendency to increase among the female population of 25-34 years old to 21.1%, and among men their share did not change.

Throughout the study (1988-2017), about half of the population did not have a definite type of leisure in terms of physical activity

and gave the answer: “anything can happen”. Such mixed leisure activities were more common in young groups. The proportion of people with a lack of leisure time was stable for 29 years and did not exceed 4% for men and 6% for women.

High levels of low physical activity are associated with global urbanization trends [13]. It is emphasized that interventions aimed at increasing physical activity among the population are most justified. Although 80% of countries have a national physical activity policy / plan, only 56% actually implement it [13]. Lack of effectiveness in the implementation of these measures may be due to other risk factors that are not taken into account. Recent studies have shown that physical inactivity is associated not only with female sex, but with psychosocial factors such as unemployment and low social support - living alone [3]. A large population cohort study in Norway on the Nord-Trøndelag Health Study (HUNT) showed that an undeveloped social network and physically passive leisure activities are associated with an increased risk of overall and CVD mortality [14]. These results suggest new components of healthy lifestyles and potential new directions for public health interventions.

As evidence accumulates on new risk factors, lifestyle indicators may be revised and updated to reflect the current evidence base [15]. For example, prolonged sitting time, as the equivalent of passive leisure, can be a risk factor for dysmetabolic alterations [16, 17] and all-cause mortality [18].

In 1988, there was a linear increase in persons of both sexes who became less mobile during the year with aging, reaching 31.5% for men and 38.8% for women 55-64 years, although gender differences did not have statistical significance (n.s.). A decrease in mobility was noted in 2003-2005 among men and women aged 45-64 years.

On the contrary, in 2013 the proportion of those who became more active within 12 months increased. In the youngest group of 25-34 years old, their proportion exceeded the less mobile by 10%, without differing in sex. In 2017, with observations, they were observed in the older age categories. In the 55-64 age group, the proportion of men and women who are less mobile decreased in comparison with 1988 and 2003 (11.6% and 22.2%, respectively; $p < 0.05$).

In 1988, comparing their level of physical activity with other people the same age, women more often than men considered themselves to be insufficiently active, especially in the youngest and oldest age groups. In 2013-2017, individuals of both sexes began to report more often that they are physically more active than other people the same age. Men aged 25-44 years indicated this more often than women. But in older age groups, there was an increase in physical activity in women, who outstripped men in the frequency of responses about increased activity in comparison with their peers.

A healthy lifestyle is associated with a significant reduction in the incidence of coronary artery disease and clinical risk factors for CVD, including diabetes, hypertension and hypercholesterolemia, especially in young women. It was found that adherence to a healthy lifestyle for the prevention of coronary heart disease in young women is associated with a lower risk of developing a number of diseases at an older age, including myocardial infarction, stroke, sudden heart attack, and death. Thus, promoting adherence to a healthy lifestyle can not only significantly reduce the burden of cardiovascular disease, but also be a simple and important strategy for reducing overall morbidity and premature death in young and middle-aged women. Primary prevention offers enormous potential for future reduction in the incidence of cardiovascular events, especially in young women [4].

The primacy of a healthy lifestyle for certain gender groups and the general population should not be formed solely for the control of weight or blood pressure, cholesterol and glucose levels. Stress management, increased social interactions, and favorable behavioral patterns influence many other risk pathways and provide significant additional health benefits. In light of previous research showing the impact of lifestyle choices, it's time to prioritize these most basic and fundamental behaviors to reduce the health and economic burden of cardio metabolic disease.

The Heart Associations clearly emphasize that lifestyle is critical to promoting cardiovascular health regardless of blood pressure, cholesterol, glucose or obesity levels. This shift in focus from disease prevention to health promotion represents a “quiet revolution”. It is a radical disassociation from the view of lifestyle as a toolkit of target achievement and recognition of the relevance of lifestyle as a primary goal for health.

Conclusions

Men were more likely than women to report that they did not need to exercise, but they were more likely to do it regularly. The trend towards an increase in regular exercise in 2013-2017 continued among women but not men.

The majority of respondents reported “failed” attempts to exercise regularly. Women outnumbered men in unsuccessful attempts.

Women more often than men spent their leisure time physically active in 1988. But from 2013 to 2017, there was a prevalence of men with active leisure time over women: 31.4% and 22.2%, respectively. Throughout the study (1988-2017), about half of the population did not have a definite type of leisure in terms of physical activity and did have “different ways”.

There is an essential decline in physical activity with age but trends in self-rated levels of physical activity show a steady increase from 1988 to 2017.

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