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Article *in* Biology of Sport · December 2010

DOI: 10.5604/20831862.927495 · Source: DOAJ

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PHYSICAL ACTIVITY OF OFFICE WORKERS

Accepted for publication 1.08.2010

AUTHORS: Biernat E.[1], Tomaszewski P.[2], Milde K.[2]

[1] Warsaw School of Economics, Warsaw, Poland
[2] Józef Piłsudski University of Physical Education, Warsaw, Poland

Reprint request to:
Elżbieta Biernat,
SGH, Al. Niepodległości 162,
02-554 Warszawa, CWFiS.
e-mail: elzbieta.biernat@sgh.waw.pl
Phone: +48 22 6653839

ABSTRACT: Inactivity or insufficient physical activity is risk factor for metabolic or cardiovascular diseases. In most of cases the nature of work of office employees does not require high physical efforts and consists mostly of sitting but the reports on leisure activity of office workers are still lacking. Thus, the aim of the study was to assess physical activity of civil and local administration workers and bank officials. 293 randomly selected office workers took part in the study. They were recruited from employees of local (n=97) or civil (n=119) administration authorities or banks (n=77) and subjected to interviews with the use of IPAQ questionnaire (short version). Low physical activity was noted in about 70% of local administration employees, in almost 50% of bank officials and about 35% of workers employed in civil administration. Total daily time spent on sitting was on average 9.7±1.7 hour/day irrespectively of gender or group studied. Very low level of physical activity of Polish office workers may be a result of improper habits of spending spare time, low awareness of beneficial effects of physical activity and still insufficient promotion of healthy/active lifestyle in East-European countries.

KEY WORDS: physical activity level, IPAQ, officials, Poland

INTRODUCTION

Rapid progress of civilization almost completely deprives of the opportunity to movement and physical effort. It eliminates from the everyday work all these forms based on physical activity and simple physical effort, leaving mainly monotonous activities that unevenly load the individual parts and systems of the human body. This phenomenon pertains mainly to the office workers e.g. bank officials or people employed in civil/local administration. Depending on position occupied they perform simple physical activity or supervise various technical devices (computers, photocopiers, mobile phones etc.). Progressing miniaturization of these devices requires quicker and more precise movements that activate rather nervous than motoric processes. Additionally, development of computer and audiovisual technologies makes the everyday actions more intense by shortening their duration and containing more in one time. Consequences of these processes may result not only in sedentary life or increasing body size but as well in occurrence civilization diseases that more frequently appear at the earlier stages of life [28]. However progress in medical sciences made the average lifespan longer, there are some evidences that processes of growing old begin earlier, develop more rapidly than in preceding generations and the symptoms of civilization diseases manifest earlier [13,20,22,25,30,31]. Because of specificity of work performed, office workers are especially exposed to a risk of occurrence of such diseases [25] and that raises a problem of constructing programmed, intentional physical activity for this group of employees.

Preventive medicine, often helpless to well-known civilization diseases and especially to new health risks, calls for appreciation of importance of health prevention and health promotion [13,23,25,32].

It is thus justified to quantitatively assess not only total but as well everyday - low, moderate and vigorous habitual physical activity that will allow for an unbiased and relative appraisal of importance of these independent variables in health promotion and will help in constructing appropriate programs of physical activity.

It is commonly believed that nature of work of office employees does not require high physical efforts but there are still only suppositions about it since few data exist supporting that view. The are virtually no comprehensive studies pertaining to physical activity of office workers in particular, most of research conducted

TABLE I. CHARACTERISTICS OF THE GROUPS STUDIED

Group	Gender	Education		Age	BMI †
		Higher	Secondary	(mean ± SD)	(mean ± SD)
		n			
Local administration	Male	27	4	42.3±8.8	28.5±4.3
	Female	48	18	41.0±9.3	24.0±3.5
	Total	75	22	41.4±9.1	25.4±4.3
Civil administration	Male	41	4	35.3±8.6	25.9±3.4
	Female	64	10	34.0±8.9	22.5±3.9
	Total	105	14	34.5±8.8*	23.8±4.0*
Bank officials	Male	24	6	36.2±9.6	25.7±2.0
	Female	28	19	39.3±9.7	24.0±3.3
	Total	52	25	38.1±9.7*#	24.6±3.0

† BMI was calculated on a basis of declared body height and body mass
* - significantly ($p<0.05$) different from respective category in local administration
\# - significantly ($p<0.05$) different from respective category in civil administration

on office employees were focused on determining energy expenditure in subjects with identified health risks [8,18], reduction of job-related musculoskeletal diseases [7] or their working ability and well-being [21,27]. In the context of alarming reports concerning low physical activity of Belarusian officials [24] it is justified to assess level of physical activity of Polish office workers and its possible effect on risk of occurrence of civilization diseases. The aim of the study was thus to assess physical activity of civil and local administration workers and bank officials employed in Polish institutions of public utility.

MATERIALS AND METHODS

Subjects. 293 randomly selected office workers took part in the study. They were recruited from employees of local (n=97) or civil (n=119) administration authorities or banks (n=77); detailed characteristics of groups studied was presented in Table 1.

Randomization procedure consisted of two stages: in the first stage 3 banks (Polish National Bank, Raiffeisen Bank, ING Silesia Bank) and 5 institutions of civil (Department of Regional Development, Department of Construction, Department of Work and Domestic Politics, Committee of Financial Supervision, Civil Aviation) or local (Municipal Councils of 5 Warsaw's districts) administration were selected from all Warsaw's institution of given sector. In the second stage, for about 20 employees from each of previously selected institution were randomly qualified for the study participation. The refusal rate was relatively low and varied between 3 - 5%.

Method. Polish version of short International Physical Activity Questionnaire (IPAQ) edited by us and officially approved by the IPAQ Committee as a national (Polish) version [33] was used in the study. The questionnaire consists of 7 questions pertaining to all kinds of physical activity related to job, everyday life and leisure and especially to the time spent on vigorous and moderate activities, on walking and sitting. Vigorous activities mean breathing much harder and faster than normal and may include heavy lifting, digging, aerobics, or fast bicycling. Moderate physical activities mean breathing and heart beating somewhat harder and faster than normal and may include carrying light loads, bicycling at a regular pace, or fast walk. Walking pertained to fulfillment of office duties, getting to work, shopping etc. Sitting time was recorded only on weekdays and pertained to time spent in sitting position at home, office, in means of public transport, car, during visiting friends, reading, watching tv. etc. Within the last 7 days only those activities were recorded which lasted at least 10 min without significant breaks. According to IPAQ recommendations the questionnaire was applied to subjects aged 15 – 69 years. All questions were asked of every person irrespectively of whether that person considered him/herself physically active or not.

Calculation of physical activity level. Weekly physical activity was computed by multiplying time (minutes of given activity in the reported week) by intensity (in MET units) corresponding to that activity: 8, 4 or 3.3 MET for vigorous, moderate and walking activities, respectively [33]. The total weekly activity was obtained by totalling those three kinds of activities and expressed in MET•min/week; in addition, the total time spent weekly on sitting was recorded. Basing on these, subjects were classified into three physical activity categories:

1. High - meeting any one of the two following criteria
   - Three or more days with vigorous activities totalling at least 1500 MET•min/week;
   - Seven or more days with any combination of vigorous, moderate or walking activities, totalling at least 3000 MET•min/week
2. Moderate - meeting any one of the three following criteria:
   - Three or more days with vigorous activities lasting at least 20 min each time;
   - Five or more days with moderate activities or walking lasting at least 30 min each time;
   - Five or more days with a combination of walking, moderate activities or vigorous activities, exceeding 600 MET•min/week
3. Low - Those individuals who not meet criteria for categories 2 or 3 are considered inactive.

Data collection. In every selected institution a written consent of the management was obtained for carrying out an interview. Subjects were interviewed by an experienced interviewer as it was shown that Polish respondents tended to overestimate the level of physical activity while self-completing the questionnaire [5]. According to IPAQ regulations, the research were conducted only in March and September (2006) that are considered not to affect habits related to motor activities. Recommended study period was favourable for Polish conditions since average monthly temperature and rainfall of both months is comparable. Additionally it is not a period of increased activity (holiday, feast or vacation) hence recorded physical activity may be regarded as habitual. However, because of increased activity usually noted during All Saint's Day and Halloween the whole week was excluded from the survey.

Interviewers' training. Interviewers, in total 8, were recruited from professional agencies and despite experience possessed, additionally subjected to one-day training course. After being informed about the purpose and study protocol, interviewers had to fill in 10 trial questionnaires on any persons. Reliability of collected data was analysed and discussed by survey's board members with every interviewer. At the end of the training course interviewers entered an exam consisting of carrying out an interview in instructor's presence; only those who positively passed the exam were enrolled into study.

Data analysis. Standard statistic procedures: means, standard deviations or percentages were used in data description. Chi-square function in logarithmic form [29] was used to assess differences between the frequencies, differences between mean values were determined by applying two-way ANOVA (sex×group) followed by the Newman-Keulus test (post-hoc); Pearson's correlation coefficient was used to assess relationships between the variables studied, the level of $p<0.05$ being considered significant.

RESULTS

Vigorous physical activity. The declared percentages pertaining to a given kind of activity, its frequency and time spent weekly on its performance were presented in Tables 2-4. Since the between-gender, within-group differences were insignificant common percentages were calculated. Practising vigorous activities was significantly more frequently declared by bank officials (48.1%) than by employees of either civil (26.9%) or local (18.6%) administration. Irrespectively of group studied those activities were most frequently practised 1-2 days a week (cf. Table 2). Additionally, time devoted to practising intense activities was differentiated as well. As compared to other groups, bank officials declared significantly more frequently (for about 40%) practising vigorous activities lasting less than 60 minutes a week.

It was also found that bank officials devoted significantly less ($p<0.01$) time during ordinary day to intense activities than local administration employees, mean values spent on vigorous activities being 5.3±1.6 and 10.8±1.9 min/day for bank and local administration employees respectively.

Moderate physical activity. Likewise for vigorous activity, no between-gender differences were found in case of moderate activities. Activities classified as moderate were not undertaken at all by nearly 50% of local and by 32.8% of civil administration employees ($p<0.05$); even less than 10% of bank officials declared practising no such activities ($p<0.001$). Moderate activities were mostly practised by bank officials for 3-6 days a week (44.2%), significantly more frequently than in civil (21.0%; $p<0.001$) and local (7.2%; $p<0.001$) administration employees. The moderate activities performed less than 60 minutes a week were significantly less frequently declared by civil administration employees than by bank or local administration workers, the percentages being 73.5%, 66.2% and 41.2%, respectively. Additionally, workers of civil administration significantly more frequently declared devoting more than 180 minutes to practising moderate activities compared to other groups of office workers (cf. Table 3).

The average time devoted daily to moderate activities in bank officials amounted to 8.1±2.2 min/day and was significantly shorter than those recorded in employees of local and civil administration; the values being 12.2±2.0 and 19.8±3.1 min/day, respectively.

TABLE 2. DECLARED FREQUENCIES AND TIME SPENT WEEKLY ON PRACTICING VIGOROUS ACTIVITIES BY OFFICE WORKERS STUDIED

Variable		Local administration (n=97)		Civil administration (n=119)		Bank officials (n=77)	
		n	%	n	%	n	%
Frequency	None	79	81.4	87	73.1	40	51.9$^{***\#\#}$
	1-2 days/week	16	16.5	24	20.2	28	36.4$^{**\#}$
	3-6 days/week	2	2.1	7	5.9	8	10.4*
	7 days/week	-	-	1	0.8	1	1.3
Weekly time	< 60 min	9	50.0	21	65.6	33	89.2$^{**\#\#}$
	> 60 min	9	50.0	11	34.4	4	10.8$^{**\#\#}$
	> 180 min	-	-	-	-	-	-

* – significantly different from local administration: * $p<0.05$; ** $p<0.01$; *** $p<0.001$
$^{\#}$– significantly different from civil administration: $^{\#}$ $p<0.05$; $^{\#\#}$ $p<0.01$

Walking. Walking was declared by all bank officials studied; the percentages observed in local and civil administration employees were slightly lower (Table 4). Declarations pertaining to number of days containing walking were distributed almost evenly in group of local administration employees, while in bankers walking performed 3-6 days a week predominated (62.3%). As much as 40.5% of office workers employed in local administration spent less than 60 minutes on walking during the last week, while in bankers and civil administration employees the percentages were significantly ($p<0.05$) lower and amounted to 24.7% and 14.5% respectively. As compared to local administration employees, respondents from two other groups declared significantly ($p<0.001$) more frequently spending from 60 to 240 minutes a week on walking; percentages of subjects declaring walking over 240 minutes a week were relatively lower.

This results were confirmed by the time spent on walking: civil administration employees declared walking on average 31±4.7 min/day while bankers about half this time (16±3.1 min/day) and office workers employed in local administration only 4±2.3 min/day ($p<0.001$).

Sitting. The results of the two-way ANOVA revealed no significant differences in total daily time spent on sitting; the mean value was 9.7±1.7 hour/day irrespectively of gender or group studied.

Level of physical activity. In each of the group studied no significant between-gender differences were observed. The percentages of subject classified into the categories of low, moderate or high physical activity were presented in Figure 1.

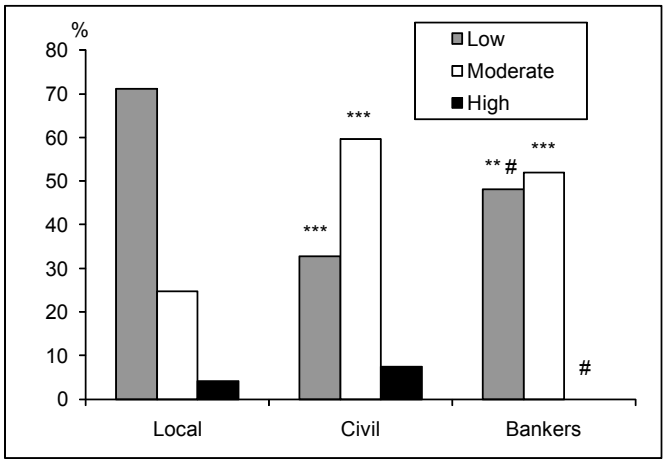

FIG. 1. PERCENTAGES OF LOCAL (N = 97) AND CIVIL (N = 119) ADMINISTRATION EMPLOYEES AND BANKERS (N = 77) CLASSIFIED INTO THE STANDARD CATEGORIES OF PHYSICAL ACTIVITY
* – significantly different from local administration: ** p<0.01; *** p<0.001
#– significantly (p<0.05) different from civil administration

TABLE 3. DECLARED FREQUENCIES AND TIME SPENT WEEKLY ON PRACTICING MODERATE ACTIVITIES BY OFFICE WORKERS STUDIED

Variable		Local administration (n=97)		Civil administration (n=119)		Bank officials (n=77)	
		n	%	n	%	n	%
Frequency	None	48	49.5	39	32.8*	6	7.8$^{***\#\#\#}$
	1-2 days/week	36	37.1	41	34.5	33	42.9
	3-6 days/week	7	7.2	25	21.0**	34	44.2$^{***\#\#\#}$
	7 days/week	6	6.2	14	11.8	4	5.2
Weekly time	< 60 min	36	73.5	33	41.2***	47	66.2$^{\#}$
	> 60 min	9	18.4	28	35.0*	23	32.4
	> 180 min	4	8.2	19	23.8*	1	1.4$^{\#\#\#}$

* – significantly different from local administration: * p<0.05; ** p<0.01; *** p<0.001
$^{\#}$– significantly different from civil administration: $^{\#}$ p<0.05; $^{\#\#\#}$ p<0.001

TABLE 4. DECLARED FREQUENCIES AND TIME SPENT WEEKLY ON WALKING BY OFFICE WORKERS STUDIED

Variable		Local administration (n=97)		Civil administration (n=119)		Bank officials (n=77)	
		n	%	n	%	n	%
Frequency	None	13	13.4	7	5.9	-	-***
	1-2 days/week	28	28.9	18	15.1*	6	7.8***
	3-6 days/week	26	26.8	46	38.7	48	62.3$^{***\#\#\#}$
	7 days/week	30	30.9	48	40.3	23	29.9
Weekly time	< 60 min	34	40.5	13	14.5***	19	24.7*
	> 60 min	40	47.6	67	74.4***	56	72.7***
	> 180 min	10	11.9	10	11.1	2	2.6$^{*\#}$

* – significantly different from local administration: * p<0.05; ** p<0.01; *** p<0.001
$^{\#}$– significantly different from civil administration: $^{\#}$ p<0.05; $^{\#\#\#}$ p<0.001

High activity was noted only for 4% of respondents; however none of the bank officials has been classified as having high level of physical activity. Moderate physical activity predominated in civil administration employees (51.9%) while in local administration percentages for this category amounted only to 24.7%. As compared to two other groups, significantly ($p<0.01$) higher percentage of subjects classified as exhibiting low level of physical activity was noted for local administration employees. Detailed data concerning classification into categories of high, moderate or low activity was presented in Table 5. Taking into consideration qualification criteria to particular levels of physical activity it was stated that only 8% of civil administration employees performed three or more days with vigorous activities, totalling at least 1500 MET min/week; none of the bankers or local administration workers met this conditions. In every group studied, the most frequently practised activities were relatively low exacting efforts (regarded as moderate activity) consisting of five or more days with any combination of vigorous, moderate walking activities with total activity exceeding 600 MET min/week.

Body mass index (BMI) vs. age and physical activity. As determined by BMI, civil administration employees (42%) and bank officials (43%) had significantly more frequently normal body mass than workers of local administration (26%), the overweight being present in each group at approximately the same level (about 30%). Obesity was more frequently found in male than in female local administration employees (42 and 6%, respectively; $p<0.001$) while in workers of civil administration or banks the respective frequencies were decidedly ($p<0.001$) lower for both genders and varied between 0 and 9%. Despite relatively low correlation coefficients, in each group studied significant correlations were found between age and BMI, the respective coefficients being $r=0.345$, $r=0.375$ and $r=0.489$ for bankers, civil or local administration employees respectively. Additionally, BMI correlated negatively with physical activity expressed in MET min/week ($p<0.05$) but in bank officials only ($r=-0.658$); in none of the groups studied significant correlations were found for BMI and time spent on sitting.

DISCUSSION

The study was conducted among Warsaw's office workers, employees of banks and local or civil administration. The results concerning weight-height relations show that about 40% of civil administration employees and bank officials had normal body mass classified by BMI and 30% of all subjects studied had elevated BMI considered as overweight. The frequency of obese subjects was relatively low and not exceeded 10%, except for men employed in local administration where obesity was present in 42% of subjects. The percentages found in this study are decidedly lower than those reported for Americans where obesity was found to be present in 31% and overweight in 65% of adults [11] and for Canadian population where 15% of adults was regarded as being obese and 51% as overweight [15]. The exception is Amish population in which problem of overweight and obesity virtually does not exist [2].

As it was mentioned, the highest values of BMI were observed in local administration employees and this group of office workers was also characterized by the lowest levels of physical activity. Local administration workers were also older by about 7 and 3.5 years from civil administration employees and bankers respectively. In contrast to data presented by Ainswort et al [1] in this study no correlation was found between education and BMI or level of physical activity. However, in each of the group studied positive correlations were found between age and BMI. It was also found that BMI correlated to some extend with some components of physical activity, namely bank employees having spent more time in sitting position and exhibiting lower levels of physical activity had higher values of BMI. The average time of sitting was almost the same in each group studied (9.7 hours a day) and was higher from those reported for Swedish population aged 20–69 years where the time spent in sitting position amounted to 6.9 hours a day [10]. In the context of long-standing traditions of healthy living and health promotion widely spread in Scandinavian countries the relatively low time of sitting is not surprising.

TABLE 5. PERCENTAGES OF LOCAL (N=97) OR CIVIL (N=119) ADMINISTRATION EMPLOYEES AND BANKERS (N=77) CLASSIFIED INTO THREE LEVELS OF PHYSICAL ACTIVITY

Group	Gender	Level of physical activity					
		High		Moderate			Low
		a	b	c	d	e	f
Local administration	Male (n=31)	-	-	6	-	29	65
	Female (n=66)	-	6	6	3	11	74
Civil administration	Male (n=45)	7	4	2	4	56	27
	Female (n=74)	1	4	-	8	50	36
Bank officials	Male (n=30)	-	-	10	3	37	50
	Female (n=47)	-	-	6	-	47	47
Total (n=293)		1	3	4	4	38	49

Legend: a - Three or more days with vigorous activities totalling at least 1500 MET•min/week; b - Seven or more days with any combination of vigorous, moderate or walking activities, totalling at least 3000 MET•min/week; c - Three or more days with vigorous activities lasting at least 20 min each time; d - Five or more days with moderate activities or walking lasting at least 30 min each time; e - Five or more days with a combination of walking, moderate activities or vigorous activities, exceeding 600 MET•min/week; f - lowest level of physical activity, not meeting any one of previous conditions.

Low level of physical activity was noted in about 70% of local administration employees in about 50% of bank officials and about 35% of workers of civil administration. These findings are to some extend in accordance with results obtained for Belarusian office workers [24] in which low levels of physical activity were noted even more frequently and pertained to 83% of workers aged up to 39 years and increased to almost 100% in subjects aged 50 years or more. Additionally, very low level of physical activity was noted in 17% of employees aged up to 39 years. The prevalence of subjects classified as having low level of physical activity may be a result of improper habits of spending spare time, low awareness of beneficial effects of physical activity, still insufficient promotion of healthy/active lifestyle or simply lack of time that could be devoted to leisure activities. It may be thus supposed that similar tendencies would be present in the rest of developing countries from Eastern Europe.

Moderate physical activity was noted in on average 46% of office workers. Relatively lower percentages were observed in teachers of Warsaw's University of Physical Education where almost 40% of male and 23% of female teachers were classified as exhibiting moderate physical activity and decidedly lower for teachers of Warsaw School of Economics, the percentages being 28 and 17% for males and females respectively [4]. Although relatively high percentage of subjects exhibiting moderate (sufficient) physical activity, only on average 4% of office workers studied were classified as having high level of physical activity. In above-mentioned study of University teachers, high physical activity was noted in 61% male and in 42% female teachers from Warsaw School of Economics and respectively in 53% and 63% physical education teachers. Despite of such low percentage of subjects exhibiting high physical activity level, average intensity of efforts observed in this category (4327.4±957.3 MET min/week, median=4444) was higher than intensity recorded among residents of 12 European countries (2514 MET min/week); [9].

Centers for Disease Control and Prevention - American College of Sports Medicine recommends for keeping health 150 min of moderate physical activities per week or performing such activities at least 30 min a day [9]. Results of this study show that 49% of office workers meet these criteria. However, these results cannot be regarded as satisfactory, especially when compared to results obtained for Swedes [10] or Norwegians aged 30-39 years [3] among who 75% and 57% respectively meet ACSM recommendations. The results of Californian study [14] show that 22% of respondents declared meeting recommended criteria for moderate activity (30 or more minutes a day with moderate activities, at least 5 days a week) and 37% meeting those regarded as intense activity (30 minutes a day with vigorous activities, 2-3 days a week). In complete opposition to these findings are results of study performed among Columbian women [12] only 5% of them declared practicing moderate or vigorous activities lasting at least 30 min a day, 5or more days a week, 16% were classified as irregularly active i.e. practicing moderate or intense activities lasting at least 10 min without brakes but not meeting the criterion of regularity. Finally, overwhelming majority of Columbian women were classified as completely inactive, since 80% of them declared practicing no activity at all. The results presented in this study and other reports concerning activity of office workers are not optimistic. As reported by Rafikova [24] only 17% of public administration workers perform physical activity regularly, 69% occasionally and 14% of them avoid any physical activity.

As demonstrated by Centers for Disease Control and Prevention - American College of Sports Medicine, practicing vigorous activities increase maximum O2 uptake and that in turn may decrease the risk of heart diseases [16] or mortality [6]. It was also shown that training effects are most pronounced while practised with high intensity (at least 80% of VO2max) and duration lasting no less than 30 minutes [17]. It is thus of importance to assess structure and frequency of the activity performed. The results of presented study shows that 86% of Polish office workers performed no intense activities at all. It is surprisingly high percentage, since almost half of that amount of Swedes (47% of females and 40% of males) declared practising no vigorous activities [10]. Intense activities were significantly less frequently practised by local administration employees (18%) as compared to other groups studied. Additionally, employees of local administration declared less frequently practising those activities 3-6 days a week. The highest percentage of subjects performing vigorous activities was observed in bankers (46%), but the time devoted for this kind activity was on average shorter than declared by the local administration employees. Similar tendencies were also noted in case of moderate activities; as compared to other groups of office workers local administration employees least frequently declared performing moderate activities during last week and less frequently practised it 3-6 days a week. Bank officials in turn, declared practising moderate activities most frequently and more frequently than other groups performed it 3-6 days a week. Average time spent on moderate activities recorded in this study amounted to 13.6 min/day in males and 13.9 min/day in females and was comparable to those reported by Ekelund et al. [10] for Swedish males (12.1 min/day) and somewhat lower than obtained for females (20.4 min/day).

Walking was most frequently declared and performed more than 240 min/week by bank officials. Average time of walking recorded for all groups studied was 20.5 min/day in males and 24.6 min/day in females and that indicates that recommended limits of physical activity (at least 30 minutes daily) are predominantly fulfilled with this kind of activity.

Summing up, highest values of BMI were observed in office workers having spent more time on sitting and exhibiting lowest levels of physical activity. This is partly in line with the stand of Saris et al. [26] who claims that along with obesity the sedentary nature of work is increasing mostly because of the common use of desktop computers and as it was shown that obese subjects have

a tendency to sit for over 2.5 h/day more than lean individuals [18]. In turn, low level of physical activity and high BMI values recorded in local administration employees may be explained by their age exceeding on average 41 years. The level of physical activity of Polish office workers was distinctly lower than observed in highly-developed countries and slightly higher than those recorded for communities exhibiting lower social and economic development as e.g. Belarus or Columbia. The percentages of Polish office workers meeting the recommended by ACSM criteria were also lower than in developed countries. All these discrepancies may by probably attributed to emphasis that is put in developed countries on public health and health-related education, to enhanced promotion of physical activity and efforts that are aimed at minimizing sedentary way of live. The fact that most of the working and leisure time Polish office workers spend in sitting position (over 3 hours more as compared to other countries) does not induce optimism, especially in the context of increasing prevalence of civilization diseases, worse common health and work ability among office workers lacking habitual physical activity [8]. Moreover, it is estimated that by 2010 more than half of the workforce from developed countries will be working at computers [28]. Hence, the assessment of physical activity of office workers and its systematic monitoring is of the utmost importance not only for themselves but for their employers as well.

Funding source

This work was supported by grant No. AWF-DS 86 of the Polish Ministry of Science and Higher Education and Rector of Warsaw School of Economics funds.

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