

PRO-HEALTH BEHAVIOURS IN TIME BUDGET OF EX-CYCLISTS

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Abstract The study involved 50 ex-cyclists at age 22–66, there were 17 women and 33 men. This survey-based study was performed using two standardized tools: Health Behaviour Inventory (IZZ) and The questionnaire on daily routines (chronocard). The most of the studied group (58%) undertook pro-health behaviours at the median level, 24% presented the maximum level of health behaviours, and the smallest studied group (18%) presented the minimum level of IZZ. It showed that gender didn't influence the health behaviour of ex-cyclists ($p = 0,784$). An amount of time for different activities (work/study, activities at home, relax, entertainment, physical activity and others) is different during each weekdays. The dominance in the time budget of ex-cyclists was work (study). The most of the leisure time, the studied group spent for amusements and the less for relax and physical activity. The dominance of the studied group were in median and minimum level of health behaviours with the most escalated behaviours in positive mental attitude and lower in nutritional habits, prophylactic behaviours and healthy habits. The studied group presented very restricted pro-healthy lifestyle.

Key words pro-health behaviours, time budget, ex-athletes, cycling

Introduction

In considerations regarding health these days, the lifestyle – to which at the end of the seventies of the 20th century a decisive role in the creation of health has been granted, in line with the concept of health fields included in the Lalonde Report – is significant. In the context of health it can be defined as “an interrelated system of behaviours (habits and actions) characteristic of an individual or a social group and being significant for health” (Heszen, Sęk, 2012). Pro-health behaviours foster health, in particular rational eating habits, physical activity, effective coping with psychological stress, avoiding psychoactive substances and risky sexual contacts and making use of preventive examinations. (Heszen, Sęk, 2012; Wojtyniak, Goryński, Moskalewicz, 2012). An important element of pro-health lifestyle is a systematic, recreational physical activity, adjusted to the individual needs and exercise capacity of a person. Being physically active from the young age fosters not only taking up various forms of physical activity in adulthood, but also the quality of life at elderly age (Rejeski, Mihalko, 2001). Research has also proved that the lack of physical activity is one of the basic problems of public health, touching upon whole societies, including

adults, children and teenagers. The factors which are considered as those limiting physical activity are a result of not only a progress in urbanization and automatization but also of ways of spending free time competitive to physical activity (television, Internet) (Wojtyniak, Goryński Moskalewicz, 2012). In addition to this, research indicates that a modification of a lifestyle is possible at each stage of life and can not only influence its quality, but decrease mortality and the necessity of professional health care as well. It is important to be at peace with your inner self, satisfy your needs, and at the same time obey the rules of a healthy lifestyle (Śmigielski, Bielecki, Dryga, 2013). Every stage of development determines different purposes and needs. A competitor in the course of his/her career is driven by competition. It is important for him/her to realize his/her dream and stand on the top step of the podium. The style of life he/she leads is determined by the sport discipline practiced. One is motivated and driven by the purpose, which is success.

Ending the professional career influences the whole life of a sportsperson. The changes are often drastic and irrevocably affect the lifestyle. It is very frequent for the physical and mental health of an individual to worsen in those who have retired (Bartoszewicz, Gandziarski, Lewandowska, Szymańska, 2014). As a consequence of the above, the psychosocial balance, being a result of the adjusting processes which become more and more difficult, is upset. It is very often a problem of finding a place in the new life role. A change of customs, habits, behaviours may lead to a decrease of the life satisfaction level, a feeling of emptiness and hopelessness, which, as a result, affects mental health causing malaise and unfriendly attitude towards the surrounding reality.

A changing lifestyle also contributes to a change in activities taken up so far. The amount of free time usually increases. The priorities of a competitor change as well. Due to the change of a lifestyle, determining the amount of free time of an individual, as well as the way in which it is spent, takes on a new meaning. J. Dumazedier emphasizes that „rest is an activity different from the duties related to work, family and society. Duties which are being given up foster the feeling of relaxation, increasing knowledge as well as spontaneity” (Dumazedier, 1974). In line with this rule, a life of a human should be based on maintaining harmony between work performed, other activities and rest. Taking into consideration budget analysis, it is also important to define free time “in its pure form, which means it is a natural element of a human existence. It is a part of their 24-hour time budget and it is free of any obligatory activities” (Kolny, 2016). It means performing active and passive tasks, resulting in the experience of satisfaction and pleasure. The free time is determined here by the state of mind, the result of which mainly emotional needs are satisfied.

Till 1965 time budget measurements in Poland were carried out only on narrow sociooccupational groups (railway workers, teachers, textile workers), but only since 1965 (after the unification of measurement methods by UNESCO) more representative researches have been carried out, taking into consideration civilizational, social and cultural conditions for spending free time among various groups and social environments (Bukowiec, 1990). Taking into account the time budget it is possible to precisely determine all the behaviours and activities taken up by a human in a given time. The data also enable determining the time of duration of a given activity and the frequency of its occurrence.

Purpose of work

The purpose of this work has been the assessment of pro-health behaviours in the context of time budget of ex-cyclists.

Material and methods

Researches were carried out at the turn of 2016 and 2017 on ex-cyclists as pilot schemes. They covered a group of 50 people who finished their professional careers. Among the examined, there were 17 women (33%) and 33 men (67%) at the age of 22–66 (the average age: 34.9). It was randomly selected group. The ex-cyclists were on the different levels during their sport's career. They were winners of the championships, Tour de Pologne. They competed in the Olympic Games. Their sports career lasted 2–25 years (the average: 11 years). The time since they have finished the sport's career 2–37 years (the average: 9.5 years). The examined have been divided into two groups. First group was an early adulthood (N = 33) (the average age: 26.6), the second group was middle adulthood and late adulthood (N = 17) (the average age: 51.0).

The diagnostic poll method was used, and the research tool were two standardized questionnaires: Inventory of Pro-health Behaviours and Questionnaire of Autoregistration of the daily activities – a chronocard.

The Inventory of Pro-health Behaviours is made up of 24 statements describing behaviours related to health. The statements can be categorized as follows: eating habits, preventive behaviours, positive attitude, health practices. The questionnaire enables obtaining the general score as well as a score in each of these categories. It also has norms in the standard ten scale, thanks to which it is possible to make a reference of the general score to the average score of the population of Poland. A high score (7–10) indicates the dominance of pro-health behaviours in the examined individual, while a low score (1–4) indicates the dominance of anti-health behaviours. Scores in the range of 5-6 indicate the existence of mixed behaviours (Juczyński, 2009).

Time budget of the examined has been described using the Questionnaire of Autoregistration of the daily activities – a chronocard. The time budget is based on a collation of a length of an activity and its consequence in a determined period of time, which is mainly a day and night or a week – the time budget includes at least three series of data: the kind of activity, the place of an activity over time and the duration of an activity (Bukowiec, 1990). Thanks to such a division, the similarities and differences among different social or demographic groups can be spotted. The examined noted down all their activities during day and night with an accuracy of 15 minutes over a period of 1 week.

The calculations have been made with the use of programmes Statistica 12 and SPSS 21. Test t and chi-square test with multiple comparisons have been used for the analyses of intergender differences (z tests for the proportion with Bonferroni correction, indicated in percentage tables with letters a and b). GLM has been used for the analyses of differences in the amount of time dedicated for various activities in the course of a week, and Pearson correlation analysis has been used for determining the relations between the variables. The materiality level adopted in statistical analyses has been determined to $\alpha = 0.05$.

Results

Pro-health behaviours have been assessed with the Inventory of Pro-health Behaviours. On the basis on the obtained data (Table 1) it has been shown that the majority of the examined (58%) displayed pro-health behaviours to the average extent, 18% presented a low level of the general index of pro-health behaviours and the minority of the examined (24%) declared a high level of such behaviours. No material differences in the existence of pro-health behaviours among men and women have been spotted ($p = 0.784$).

No material intergender differences in the level of pro-health behaviours have been discovered (Table 1).

Table 1. Level of pro-health behaviours per gender

Gender	Total		Results of the Inventory of Pro-health Behaviours					
			low		average		high	
	N	%	N	%	N	%	N	%
Women	16	32.0	2 _a	12.5	10 _a	62.5	4 _a	25.0
Men	34	68.0	7 _a	20.6	19 _a	55.9	8 _a	23.5
Total	50	100.0	9	18.0	29	58.0	12	24.0

$\chi^2(2) = 0.49$; $p = 0.784$; a, b – z tests for proportions with Bonferroni correction (values in rows with material differences have been marked: a, b).

Among the categories included in the Inventory of Pro-health Behaviours (Table 2), the examined have obtained the highest average in the category of positive attitude (22.51), then in the category of proper eating habits (20.86) and preventive behaviours (20.10), and the lowest score in the category of everyday pro-health practices (19.25). This implies that the examined predominantly display behaviours related to, among others, mental health, i.e. avoiding strong emotions and tensions, coping with stress. They pay less attention to the proper eating habits and preventive behaviours, e.g. gathering information about factors fostering keeping up good health and preventing the development of diseases or regular medical check-ups, and the least important are for them the daily pro-health practices in the form of the proper amount of everyday sleep and rest, recreational physical activity and limiting stimulants. The gender analysis of pro-health behaviours of the examined (Table 2) indicates that there have been no material differences between men and women, although women have obtained slightly higher average scores in all the categories of the Inventory of Pro-health Behaviours.

Table 2. Categories of pro-health behaviours of the examined per gender (M ± SD)

Pro-health behaviours	Total (N = 51)		Women (N = 17)		Men (N = 34)		Difference p
	M	SD	M	SD	M	SD	
Positive attitude	22.51	2.96	23.12	2.85	22.21	3.01	0.305
Preventive behaviours	20.10	4.04	21.18	3.56	19.56	4.21	0.180
Proper eating habits	20.86	4.32	21.53	3.68	20.53	4.62	0.441
Health practices	19.25	3.14	19.35	2.60	19.21	3.42	0.877
Inventory of Pro-health Behaviours – general index	82.73	9.36	81.18	8.10	81.50	9.81	0.189

Legend: M – mean; SD – standard deviation.

The activities from the chronocard have been classified and listed under the following groups:

- I – work/study,
- II – time at home (tidying-up, getting dressed, packing, preparing and eating meals, time spent with own kids, minor home repairs, washing, ironing, toilet),
- III – rest (night sleep, walk, rest, day sleep, other),
- IV – entertaining activities, social life, consumption of cultural goods and religious practices (watching TV, time spent using the computer/Internet, conversations with family/friends, social life/meeting friends,

reading books/press, time spent with a partner/wife/husband, discos/family gatherings/concerts/ cinema, religious practices, telephone conversations, hobby),

V – participating in various forms of physical culture (cycling, running, swimming, gym, fartlek, tourist-recreational activities, watching sport events, morning and evening exercises),

VI – various activities (commuting, travelling, trips, shopping, business meetings, dealing with official matters, medical appointments, other).

Analysis were perform to compare the level of various activities during the week (Table 3) and free-time activities (Table 4) between the distinguished age groups.

Table 3. The differences in the level of various activities during the week between age groups

	df	F	p	Partial Eta-squared	Power observed (alfa = 0.05)
Age group	1	0.12	0.727	0.00	0.06
Error	48				
Day	5	0.87	0.500	0.02	0.31
Day × age group	5	0.86	0.510	0.02	0.31
Error	240				
Type of activity	6	226.55	<0.001	0.83	1.00
Type of activity × age group	6	0.77	0.595	0.02	0.30
Error	288				
Day × type of activity	30	6.98	<0.001	0.13	1.00
Day × type of activity × age group	30	0.89	0.631	0.02	0.84
Error	1,440				

Legend: df – degrees of freedom; F – value of analysis of variance; p – p-value; Partial Eta² – effect size.

There hasn't been observed any statistically significant relations between age group and activity level during the week. There has been observed a relation in all week's level of direct physical activities ($F_{6,288} = 226.55$; $p < 0.001$), and it has been observed that the level of variety activities is different during the week ($F_{30,1440} = 6.98$; $p < 0.001$) (Figure 1).

The activities such as: work/study, work/study at home, rest and entertainment were the most popular during the beginning of the week, especially the third day. At the end of the week these activities were on the lower level. The physical activity and various activities were at the same low level during all the week. The more detail information is included in the Appendix 1.

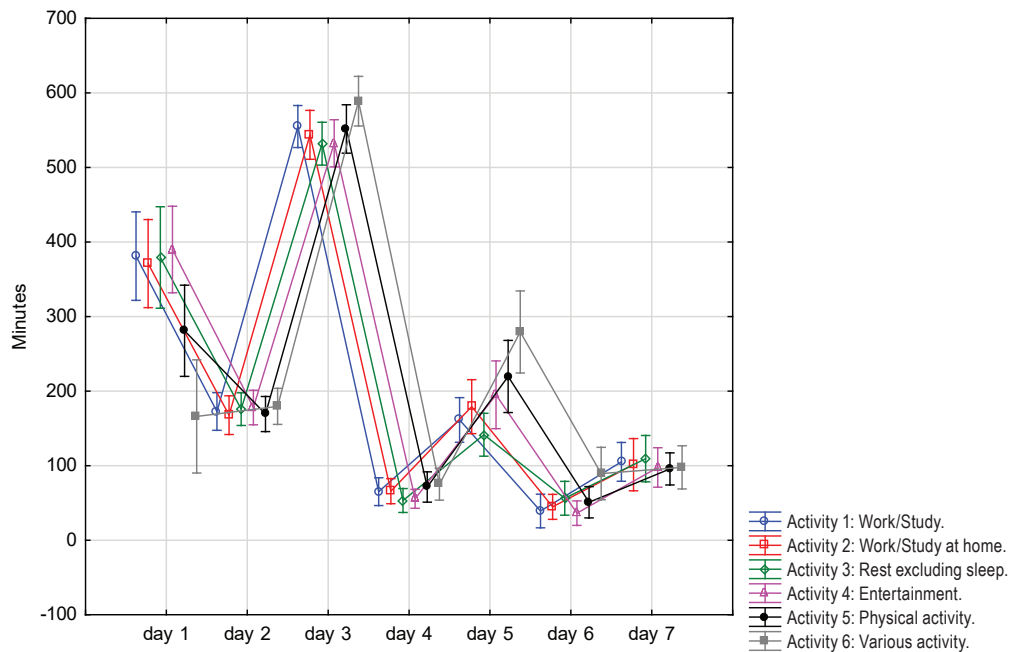


Figure 1. Variety of physical activities during the week

Table 4. The differences in the level of free-time activities between age groups

	df	F	p	Partial Eta-squared	Power observed (alpha = 0.05)
Age group	1	2.39	0.129	0.05	0.33
Error	48				
Day	5	12.10	0.000	0.20	1.00
Day × age group	5	0.63	0.677	0.01	0.23
Error	240				
Type of free-time activity	2	92.61	<0.001	0.66	1.00
Type of free-time activity*age group	2	1.95	0.148	0.04	0.39
Error	96				
Day × type of free-time activity	10	3.03	0.001	0.06	0.98
Day × type of free-time activity × age group	10	0.85	0.585	0.02	0.45
Error	480				

Legend: df – degrees of freedom; F – value of analysis of variance; p – p-value; Partial Eta² – effect size.

There has been no statistically significant relation between the age and the direct activities in the free time ($F_{2,96} = 1.95$; $p = 0.148$). There has been a relation in the level of direct activities independently of age ($F_{2,96} = 92.61$; $p < 0.001$) (Figure 2). Detailed comparisons were made with the Tukey post-hoc test (Table 5). It was also observed

that the level of various free-time activities changes during the week ($F_{10,480} = 3.03$; $p = 0.001$). Detailed results are presented in Figure 3 (the more detail information are in the Appendix 2 (NIR test)).

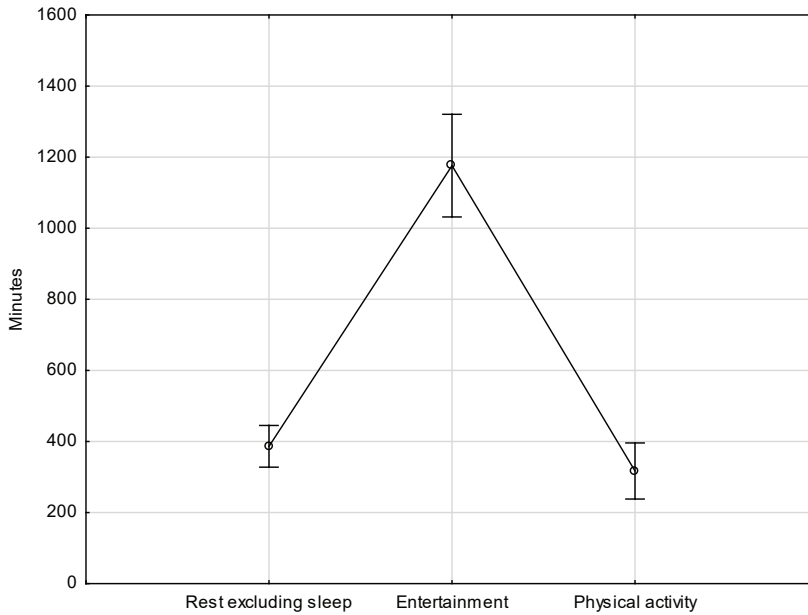


Figure 2. Amount of time spent on various free-time activities

Table 5. Tukey post-hoc test (p-value for differences between types of free-time activities)

Activity	Rest excluding sleep Mean = 380.60	Entertainment Mean = 1,136.4	Physical activity Mean = 318.70
1. Rest excluding sleep	–	<0.001	0.622
2. Entertainment			<0.001
3. Physical activity			–

The research group most of their all week's free time spent for entertainment. The least time of the all week's free time they spent for physical activity and rest excluding sleep.

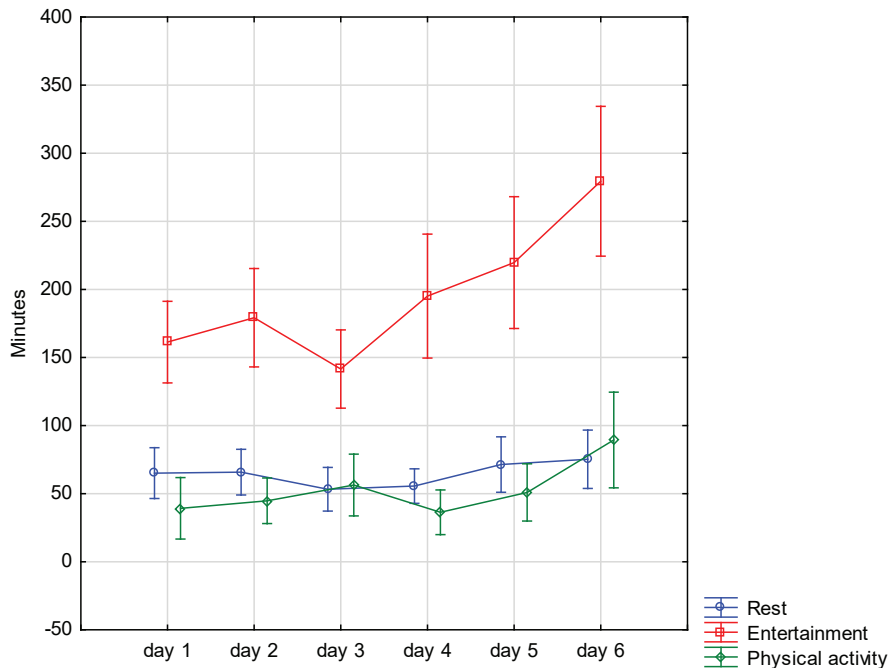


Figure 3. Amount of time spent on various free-time activities during the week

The conducted analyses have shown, that the research group spent most of their free time for entertainment, however that difference was seen especially on Friday and Saturday. It has been also seen that on Monday and Wednesday the examined spent the less of the all week's time for entertainment. The sooner the end of the week the more time for entertainment was spent. There was a decrease in the amount of time devoted to physical activity on Thursday, during the weekend the amount of time devoted to physical activity increased, especially on Saturday.

Due to the lack of statistically significant differences between the distinguished age groups, it was decided to perform a correlation analysis for all the subjects (Table 6).

Three statistically significant relations have been observed between the amount of time spent on various activities and the level of pro-health behaviours. An increase of positive attitude was accompanied by a decrease in the amount of time spent on rest (including night sleep). An increase of proper eating habits was accompanied by an increase of time spent on physical activity and an increase of preventive behaviours was accompanied by a decrease of time spent on various, other activities, e.g. commuting, shopping, dealing with official matters or medical appointments.

Table 6. The correlations between amount of time spent on various activities in the week and pro-health behaviours

		Positive attitude	Preventive behaviours	Proper eating habits	Health practices	Inventory of Prohealth Behaviours
Work/Study	r	0.051	0.050	-0.101	-0.037	-0.022
	p	0.727	0.730	0.484	0.797	0.881
Work at home	r	0.092	0.141	-0.018	0.030	0.093
	p	0.524	0.328	0.901	0.834	0.521
Rest	r	-0.312	-0.228	-0.278	0.166	-0.273
	p	0.028	0.111	0.051	0.250	0.055
Rest excluding sleep	r	-0.186	-0.182	-0.096	0.054	-0.165
	p	0.196	0.207	0.507	0.709	0.251
Entertainment	r	-0.021	-0.009	0.002	-0.155	-0.062
	p	0.887	0.952	0.988	0.281	0.671
Physical activity	r	0.053	0.067	0.296	0.059	0.204
	p	0.715	0.644	0.037	0.685	0.156
Various activities	r	-0.010	-0.320	0.067	0.002	-0.111
	p	0.943	0.023	0.646	0.987	0.442
Free time (%)	r	-0.150	-0.094	-0.022	-0.008	-0.102
	p	0.299	0.516	0.878	0.956	0.480
Free time excluding sleep	r	-0.143	-0.041	0.057	0.015	-0.032
	p	0.321	0.777	0.694	0.919	0.824
Free time excluding sleep (%)	r	-0.054	-0.037	0.098	-0.084	-0.015
	p	0.711	0.801	0.496	0.564	0.916
Free time	r	-0.055	-0.018	0.136	-0.077	0.012
	p	0.704	0.902	0.347	0.596	0.934

Legend: r – Pearson correlation index; p – p-value.

Discussion

The results of own research indicate that the most of ex-cyclists declared an average (58%) and high (24%) level of pro-health behaviours. No material differences have also been discovered in the level of pro-health behaviours of men and women ($p = 0.715$). Among the analysed, four categories of pro-health behaviours (Juczyński, 2009), the examined have obtained the highest scores in the category of positive attitude (positive thinking, maintaining positive relations with other people, avoiding strong emotions and tensions), lower in the category of proper eating habits (regarding the kind and regularity of the consumed products) and the category of preventive behaviours (obeying doctors' recommendations, regular checkups, avoiding colds, obtaining health information). The lowest scores have been observed in the area of health practices (proper amount of sleep, recreational physical activity, body mass control, avoiding stimulants). No material differences have been observed between men and women in the above mentioned category of pro-health behaviours.

Low, different from the characteristics of health training level of participation in physical culture and limited scale of rational eating choices has been indicated in the research of M. Gacek (2011a) carried out on a group

of 240 doctors from Lesser Poland Voivodship at the age of 35–50 (Gacek, 2011b). The research, whose purpose was to assess the pro-health behaviours of doctors, was carried out on the whole territory of Poland in 2015. In the group of 523 active medical doctors at the average age of 49.16 ± 13.56 , 27.34% were indicated to display predominantly anti-health behaviours. It was additionally discovered that the risk of anti-health behaviours in the analysed group was increasing by 3.2% every year since the completion of the specialisation ($p < 0.01$). The results of the research showed that women displayed a higher level of pro-health behaviours than men ($p < 0.01$) (Bąk-Sosnowska, Kołodziej, Gojdzim Skypules-Plinta 2015). Women at around the menopausal age were observed to realize the assumption of a healthy lifestyle to a limited extent in rural and municipal areas, whereas some of the prohealth behaviours, especially the level of recreational physical activity, psychoactive substances usage and methods of coping in difficult situations differ depending on the place of residence (Gacek, 2011b). Another research on 75 women aged 36–50 proved that only 28% of the questioned confirmed that in their lifestyles there are some pro-health behaviours and 49% of the questioned was unable to state what kind of lifestyle they led. It turned out that pro-health attitudes and habits are understood in two ways. Younger women understand a healthy lifestyle from the perspective of proper eating and physical activity while those at the age of 36–50 find wellbeing, lack of addictions and regular physical activity a core of a healthy lifestyle (Kwilecki, 2011). A research carried out in 2016 regarding the lifestyle and pro-health behaviours on the rural areas of Subcarpathian region among 800 farmers aged 30–60 indicated that almost a half of the questioned (47%) displayed a low level of pro-health behaviours. Similarly to the case of the examined doctors, women showed a higher level of pro-health behaviours than men ($p < 0.001$) (Binkowska-Bury et al., 2016). Also, the lifestyle of teachers, the vocational group who participate directly in shaping pro-health behaviours and attitudes, significantly stands out from the pro-health model (Prażmowska, Dziubak, Morawska, Stach, 2011; Lauńska-Krzemińska, 2014). A research of Kaleta and others (Kaleta, Makowiec-Dąbrowska, Polańska, Dzikowska-Zaborszczyk, Drygas, 2009) also indicated that pro-health behaviours measured with the so called index of healthy lifestyle (not smoking, regular physical activity, proper body mass and daily fibre consumption) are not widespread. The random sample included professionally active residents of Łódź and Lublin Voivodships ($N = 442$). The carried out research indicated that only 3.5% men and 1.9% women lead a healthy lifestyle. A research of Reeves and Rafferty (2005) also indicates that pro-health behaviours in the American population are poorly represented as only 3% of adults meet the criteria of a healthy lifestyle (Gacek, 2011a). In the analysis of Berrigan and others (Berrigan, Dodd, Troiano, Krebs-Smith, Barbash, 2003), the healthy lifestyle recommendations, including not smoking, physical activity, fruit and vegetables consumption, limiting alcohol and fat consumption was obeyed by mere 5.9% of adults (Bäckmand, Kujala, Sarna, Kaprio, 2010).

The own research of ex-cyclists indicates that during the week most of the time the examined spent on work and the least time on rest and physical activity. The research carried out on the medical doctors (Bąk-Sosnowska et al., 2015) also confirms that in their weekly time budget work is predominant. The results of the own research also show that with an increase of the proper eating habits the amount of time spent on physical activity increased too, and with an increase of time spent on preventive behaviours there was a decrease of time spent on various, other activities, e.g. commuting, shopping, dealing with official matters or medical appointments. As regards the increase in positive attitude, there was a corresponding decrease of time spent on rest (including night sleep).

Research in which ex-sportspeople, both professional and amateur took part, carried out in Canada in 2015, presented a picture of their behaviours in the psychological context. The results indicated that the lifestyles of sportspeople in the course of their careers were at less than optimal level (MacCosham, Patry, Beswick, Gravelle, 2015). However, after finishing their career, the sportspeople changed their behaviours and perception of the world. They were able to balance physical activity with other important aspects of their lives, decreasing at the same time the risk of rejection or the feeling of resignation in the surrounding environment. Research covering the risk of diseases after finishing professional career was carried out on 20 sportspeople (17 men and 3 women) at the average age of 52.4 ± 16.6 in 2015 in Italy. The questioned played different sports (sailing, football, cycling, combat sports, fencing, swimming and tennis). The results of the research showed that 10% of the examined population was facing the danger of depression, 25% led an unhealthy lifestyle and was fighting against obesity. The result of a "lack of sport" was not only a problem of an increased BMI level, but also depression or fears diminishing the quality of lives of the questioned (Stefani, Di Tante, Matan, Galanti, 2015). The next research carried out on 6 ex-sportspeople in individual sports disciplines picture life situations of sportspeople at the moment of finishing their professional careers. This research indicates that all sportspeople after finishing their sports career have displayed positive attitudes and the lifestyles they led were characterized by pro-health behaviours and frequent physical activity. While choosing a new career path, they were predominantly led by their sports experience (Rezende, Maciel, Carvalho, Cappelle, Campos, 2015). Other research also indicate that ex-sportspeople continue physically active lifestyle and lead a more pro-health lifestyle in comparison to other groups in the population and less frequently suffer from cancer (Sormunen et al., 2014).

Conclusions

The obtained results of research have enabled forming the following end conclusions:

1. In the examined group of ex-cyclists an average and high level of pro-health behaviours dominate, with the most frequent behaviours in the area of positive attitude and the least frequent (in the hierarchical order): positive attitude, proper eating habits, preventive behaviours and health practices. The examined group realizes a pro-active lifestyle to a limited extent.
2. The amount of time spent on various activities (work/study, home activities, rest, entertainment, physical activity and other activities) is different in particular days of the week. In the time budget of ex-cyclists, work and study dominate. The amount of these decreases proportionally towards the end of the week.
3. The most of their free time, the examined spent on entertainment, and the least on rest and physical activity.
4. With an increase of the level of proper eating habits there was an increase in the amount of time spent on physical activity.

Appendix 1. Planned comparisons

Day	(I) Activity	(J) Activity	The mean difference (I-J)	Standard error	Relevance b	95% confidence interval for the difference b	
						lower limit	upper limit
1	2	3	4	5	6	7	8
Day 1	work/study	work at home	208,480'	37,664	<0.001	132,751	284,210
		rest	-173,792'	37,682	<0.001	-249,557	-98,028
		rest excluding sleep	316,029'	33,307	<0.001	249,062	382,997
		entertainment	219,804'	34,918	<0.001	149,597	290,011
		physical activity	341,907'	34,935	<0.001	271,666	412,148
		various activities	275,976'	36,072	<0.001	203,449	348,503
	work at home	rest	-382,273'	16,546	<0.001	-415,541	-349,005
		rest excluding sleep	107,549'	14,458	<0.001	78,480	136,618
		entertainment	11,324	20,428	0.582	-29,749	52,396
		physical activity	133,427'	16,907	<0.001	99,433	167,420
	rest	various activities	67,496'	18,420	0.001	30,460	104,531
		rest excluding sleep	489,822'	11,677	<0.001	466,343	513,300
		entertainment	393,596'	20,624	<0.001	352,128	435,064
		physical activity	515,700'	17,813	<0.001	479,883	551,516
	rest excluding sleep	various activities	449,768'	21,120	<0.001	407,303	492,233
		entertainment	-96,225'	16,864	<0.001	-130,133	-62,318
		physical activity	25,878	14,367	0.078	-3,009	54,764
	entertainment	various activities	-40,053'	17,384	0.026	-75,007	-5,100
		physical activity	122,103'	18,691	<0.001	84,523	159,684
	physical activity	various activities	56,172'	20,264	0.008	15,428	96,916
Day 2	work/study	various activities	-65,931'	16,746	<0.001	-99,602	-32,261
		work at home	203,275'	36,924	<0.001	129,034	277,516
		rest	-172,714'	36,427	<0.001	-245,955	-99,472
		rest excluding sleep	305,250'	31,688	<0.001	241,537	368,963
		entertainment	191,863'	41,441	<0.001	108,540	275,186
		physical activity	326,266'	31,825	<0.001	262,278	390,253
	work at home	various activities	269,710'	35,134	<0.001	199,069	340,352
		rest	-375,989'	22,102	<0.001	-420,429	-331,550
		rest excluding sleep	101,974'	16,765	<0.001	68,266	135,682
		entertainment	-11,413	21,024	0.590	-53,685	30,860
	rest	physical activity	122,990'	14,885	<0.001	93,062	152,918
		various activities	66,435'	23,831	0.008	18,520	114,349
		rest excluding sleep	477,963'	12,643	<0.001	452,544	503,383
		entertainment	364,577'	23,087	<0.001	318,158	410,996
	rest excluding sleep	physical activity	498,980'	18,945	<0.001	460,888	537,071
		various activities	442,424'	26,569	<0.001	389,003	495,845
		entertainment	-113,387'	18,943	<0.001	-151,475	-75,299
	entertainment	physical activity	21,016	12,501	0.099	-4,120	46,152
		various activities	-35,539	20,008	0.082	-75,768	4,689
	physical activity	various activities	134,403'	22,087	<0.001	89,995	178,811
physical activity	various activities	77,848'	27,228	0.006	23,102	132,593	
physical activity	various activities	-56,555'	19,885	0.007	-96,537	-16,574	

1	2	3	4	5	6	7	8
Day 3	work/study	work at home	203,382'	38,864	<0.001	125,242	281,523
		rest	-152,718'	40,831	<0.001	-234,815	-70,622
		rest excluding sleep	325,971'	35,891	<0.001	253,808	398,135
		entertainment	237,683'	43,145	<0.001	150,935	324,431
		physical activity	322,883'	37,121	<0.001	248,247	397,520
	work at home	various activities	269,813'	43,857	<0.001	181,633	357,993
		rest	-356,101'	18,276	<0.001	-392,848	-319,353
		rest excluding sleep	122,589'	15,295	<0.001	91,837	153,342
		entertainment	34,300	18,459	0.069	-2,814	71,415
		physical activity	119,501'	14,842	<0.001	89,659	149,343
	rest	various activities	66,430'	18,746	0.001	28,739	104,122
		rest excluding sleep	478,690'	10,756	<0.001	457,064	500,316
		entertainment	390,401'	17,550	<0.001	355,114	425,689
		physical activity	475,602'	19,366	<0.001	436,664	514,539
		various activities	422,531'	20,03	<0.001	382,258	462,805
	rest excluding sleep	entertainment	-88,289'	14,802	<0.001	-118,049	-58,528
		physical activity	-3,088	14,402	0.831	-32,045	25,869
		various activities	-56,159'	17,879	0.003	-92,106	-20,211
	entertainment	physical activity	85,201'	19,466	<0.001	46,061	124,340
		various activities	32,130	20,127	0.117	-8,338	72,598
physical activity	various activities	-53,070'	21,486	0.017	-96,270	-9,871	
Day 4	work/study	work at home	211,974'	32,203	<0.001	147,226	276,723
		rest	-142,447'	40,465	0.001	-223,806	-61,087
		rest excluding sleep	334,421'	31,531	<0.001	271,024	397,818
		entertainment	194,906'	40,348	<0.001	113,782	276,031
		physical activity	353,668'	32,277	<0.001	288,770	418,565
	work at home	various activities	292,375'	35,948	<0.001	220,097	364,653
		rest	-354,421'	19,181	<0.001	-392,986	-315,855
		rest excluding sleep	122,447'	13,470	<0.001	95,364	149,529
		entertainment	-17,068	29,584	0.567	-76,551	42,416
		physical activity	141,693'	14,795	<0.001	111,947	171,440
	rest	various activities	80,401'	17,430	<0.001	45,356	115,446
		rest excluding sleep	476,867'	14,727	<0.001	447,257	506,477
		entertainment	337,353'	26,625	<0.001	283,821	390,885
		physical activity	496,114'	16,684	<0.001	462,569	529,659
		various activities	434,822'	20,645	<0.001	393,312	476,332
	rest excluding sleep	entertainment	-139,514'	23,326	<0.001	-186,414	-92,615
		physical activity	19,247'	9,117	0.040	0,915	37,579
		various activities	-42,045'	13,913	0.004	-70,019	-14,072
	entertainment	physical activity	158,761'	24,911	<0.001	108,674	208,848
		various activities	97,469'	27,898	0.001	41,376	153,562
physical activity	various activities	-61,292'	14,495	<0.001	-90,437	-32,148	

1	2	3	4	5	6	7	8	
Day 5	work/study	work at home	111,604*	35,616	0.003	39,993	183,215	
		rest	-270,731*	42,735	<0.001	-356,656	-184,806	
		rest excluding sleep	209,541*	34,604	<0.001	139,964	279,118	
		entertainment	61,248	45,156	0.181	-29,545	152,041	
		physical activity	230,031*	34,709	<0.001	160,245	299,818	
		various activities	185,218*	32,727	<0.001	119,416	251,020	
	work at home	rest	-382,335*	17,910	<0.001	-418,346	-346,325	
		rest excluding sleep	97,937*	16,221	<0.001	65,322	130,551	
		entertainment	-50,357	29,961	0.099	-110,597	9,884	
		physical activity	118,427*	15,456	<0.001	87,351	149,503	
		various activities	73,614*	15,174	<0.001	43,105	104,123	
	rest	rest excluding sleep	480,272*	13,806	<0.001	452,512	508,031	
		entertainment	331,979*	29,057	<0.001	273,555	390,402	
		physical activity	500,762*	17,586	<0.001	465,404	536,120	
		various activities	455,949*	20,503	<0.001	414,724	497,174	
	rest excluding sleep	entertainment	-148,293*	27,660	<0.001	-203,907	-92,679	
		physical activity	20,490	14,393	0.161	-8,448	49,428	
		various activities	-24,323	15,537	0.124	-55,563	6,918	
	entertainment	physical activity	168,783*	27,446	<0.001	113,599	223,968	
		various activities	123,971*	28,780	<0.001	66,105	181,836	
	physical activity	various activities	-44,813*	13,744	0.002	-72,446	-17,179	
	Day 6	work/study	work at home	-13,462	41,601	0.748	-97,106	70,183
			rest	-422,888*	44,816	<0.001	-512,996	-332,779
			rest excluding sleep	90,847*	40,502	0.030	9,413	172,281
entertainment			-113,347*	54,759	0.044	-223,446	-3,247	
physical activity			76,658	46,421	0.105	-16,677	169,993	
various activities			68,360	44,291	0.129	-20,694	157,414	
work at home		rest	-409,426*	19,559	<0.001	-448,753	-370,099	
		rest excluding sleep	104,308*	15,063	<0.001	74,021	134,595	
		entertainment	-99,885*	33,510	0.005	-167,261	-32,509	
		physical activity	90,119*	20,512	<0.001	48,877	131,362	
		various activities	81,822*	19,472	<0.001	42,671	120,972	
rest		rest excluding sleep	513,734*	13,675	<0.001	486,238	541,231	
		entertainment	309,541*	31,183	<0.001	246,843	372,239	
		physical activity	499,545*	23,164	<0.001	452,971	546,120	
		various activities	491,248*	22,654	<0.001	445,700	536,796	
rest excluding sleep	entertainment	-204,193*	30,604	<0.001	-265,726	-142,661		
	physical activity	-14,189	19,901	0.479	-54,202	25,824		
	various activities	-22,487	18,146	0.221	-58,971	13,998		
entertainment	physical activity	190,004*	35,180	<0.001	119,270	260,739		
	various activities	181,707*	32,156	<0.001	117,053	246,361		
physical activity	various activities	-8,298	22,741	0.717	-54,022	37,427		

Legend: * The mean difference is statistically significant 0.05; b The corrections for multiple comparisons.

Appendix 2. Fisher NIR test (p-value for differences between types of free-time activities)

Day	Type of activity	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}	{9}	{10}	{11}	{12}	{13}	{14}	{15}	{16}	{17}	{18}
{1}	Rest excluding sleep	62.400	152.90	46.500	62.200	176.20	48.200	55.900	133.10	53.200	55.100	189.00	40.800	72.400	211.30	47.800	72.600	273.90	82.200
{2}	Entertainment	-	<0.001	0.391	0.991	<0.001	0.444	0.726	<0.001	0.620	0.694	<0.001	0.244	0.589	<0.001	0.431	0.582	<0.001	0.286
{3}	Physical activity			<0.001	<0.001	0.209	<0.001	<0.001	0.286	<0.001	<0.001	0.052	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001
{4}	Rest excluding sleep				0.397	<0.001	0.927	0.612	<0.001	0.718	0.643	<0.001	0.758	0.163	<0.001	0.944	0.159	<0.001	0.054
{5}	Entertainment					<0.001	0.450	0.734	<0.001	0.627	0.702	<0.001	0.248	0.582	<0.001	0.437	0.575	<0.001	0.281
{6}	Physical activity						<0.001	<0.001	0.020	<0.001	<0.001	0.490	<0.001	<0.001	0.059	<0.001	<0.001	<0.001	<0.001
{7}	Rest excluding sleep						0.678	<0.001	0.020	0.787	0.710	<0.001	0.690	0.192	<0.001	0.983	0.188	<0.001	0.067
{8}	Entertainment							<0.001	<0.001	0.884	0.966	<0.001	0.415	0.373	<0.001	0.662	0.368	<0.001	0.156
{9}	Physical activity									<0.001	<0.001	0.003	<0.001	0.001	<0.001	<0.001	0.001	<0.001	0.006
{10}	Rest excluding sleep										0.918	<0.001	0.503	0.300	<0.001	0.771	0.295	<0.001	0.118
{11}	Entertainment											<0.001	0.440	0.351	<0.001	0.694	0.345	<0.001	0.144
{12}	Physical activity												<0.001	<0.001	0.229	<0.001	<0.001	<0.001	<0.001
{13}	Rest excluding sleep													0.089	<0.001	0.706	0.087	<0.001	0.026
{14}	Entertainment														<0.001	0.185	0.991	<0.001	0.597
{15}	Physical activity															<0.001	<0.001	0.001	<0.001
{16}	Rest excluding sleep																0.181	<0.001	0.064
{17}	Entertainment																	<0.001	0.604
{18}	Physical activity																		<0.001

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