

AN ANALYSIS OF RELATIONS BETWEEN A SELF-ASSESSMENT OF HEALTH AND ACTIVE LIFE-STYLE

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Abstract

Introduction: Hypokinesia – a deficit in mobile activity, is thought to be one of the main causes of the appearance and development of the so called ‘diseases of civilization’. Optimising the level of activity against the needs is a complex issue. It requires taking into account different kinds of activity, their determinants, and correlations with various lifestyles as well as the impact on health. A diagnosis of the relation between the various kinds of activity and health can constitute the starting point for implementing application methods.

Objective: The objective was to define the impact of the different kinds of activity on the various factors and components of the self-assessment of health.

Materials and methods: 154 men aged 30-60 were tested with the application of sociometric methods. The following questionnaires were applied: self-assessment of activity levels (SEWL) and self-assessment of health (SF-36). A statistical analysis of the results of the research included the computation of Spearman’s indicators of correlation between the level of the various kinds of activity and the factors and components of health. Participants of the research were divided into quartiles according to the level of their self-assessment of health. Statistical description was done and the ANOVA analysis was made of variants between the top and bottom groups with the aim to finding the differences pertaining to the various kinds of activity. In each case $p \leq 0.05$ was assumed as the level of the significance of differences.

Results: Significant correlations between the physical and mental components of health and the sports factor were observed. In case of health factors, the correlations were observed with regards to physical mobility, activity and health in general also in relation to sports factor. Statistically relevant were the relations between physical mobility and activity (SEWL indicator) and also activity (spare time indicator). The ANOVA analysis of variants showed the statistical importance of the differences between the top and bottom quartiles of health self-assessment with regards to sports indicator and SEWL indicator.

Conclusions: The results of the research lead to the conclusion that physical activity plays a significant role in shaping the self-assessment of health, both its physical and mental components. The deciding factor seems to be the activity of a sporting nature which most strongly influences factors of health such as physical mobility, activity and general well-being.

Key words: *hypokinesia, mobile activity, self-assessment of health*

Introduction

The common view these days is that one’s life style is the leading factor in shaping one’s health. One’s diet, reaction to stress, addictions and mobile activity are among the components of one’s lifestyle which have the strongest impact on health. The role of mobile activity seems to be of special significance. An appropriate level of mobile activity is not only beneficial to the morphological and functional indicators of one’s body, but is also seen as an integrator of a healthy life style (the so called behavioural immunology) (1,2).

The significant progress in technology that characterises contemporary civilization limits the natural mobile activity of man. The level of limitations is so high as to create a deficit in activity in relation to man’s biological needs which is known as hypokinesia (3,4). A consequence of hypokinesia is a decrease in the adaptive abilities of the body in relation to the environment. It is one of the main causes of diseases which have a joint name of ‘diseases of civilization’.

The writings are predominated by biomedical approach to the research on the activity and its effects correlation. The influence of various kinds and levels of strains on the individual morphological and functional indicators of the body are examined. This biomedical approach to the issues related to activity bring in important knowledge on the subject of the relation: activity (effort) – effect (a concrete one). A major characteristic of this approach is the spectacular results of the research. Global analyses (holistic) are decidedly rare. The problem of measuring the level of activity as well as its effects on health – from a holistic perspective, constitute a barrier (5). A precise measuring of activity is nowadays possible only in laboratories and relates to the strains of specific efforts (6,7). A natural consequence is the effect it has on the scale of the research and the exclusion of these types of methods (direct and indirect calorimetrics) in research on population (8). The sociometric techniques remain thus the tool utilised in the research of a larger scale.

As for measuring the level of health with the physical and mental aspects reflected, it is not possible without utilising this kind of technique.

Objective

The objective of this paper was to define the relations (effect) between various kinds of activity with the specific indicators and components of the self assessment of health.

Materials and methods

154 men aged 30-60, inhabitants of a few large towns of the Upper Silesia agglomeration, were tested. The choice of the participants of the research was purposeful. Because of the extent of the research programme that was assumed and which also encompassed the measuring of motorics, the people tested were characterised by a relatively good health (a lack of contraindications both absolute and relative for undergoing function tests).

To assess the level of activity the SEWL (subjective experience of work load) questionnaire was used (8). The arguments in favour of choosing this research tool were:

1. Approximate (European) cultural circle to where the questionnaire was originated.
2. Conceptual approach of the research tool's authors which takes into account the presently dominant kinds of activity: activity related to the job held, sporting activity in one's free time and activity within one's free time – excluding sports.
3. The simplicity and also the coherence of the questionnaire springing from the conceptual approach mentioned above.
4. The exactness and reliability of the tool, verified by its authors.

The SEWL questionnaire is comprised of sixteen questions (items) relating to one's occupation, the dominant body position at work, and physical strains at work. Further questions pertain to sports taken: the kind of sporting activities, time spent on doing them per week and per year, the respondent's self-assessment of sporting activity – in comparison to people of the same age and gender. The questionnaire is further enriched by questioned regarding activities in one's free time and the time spent daily for commuting that requires a physical effort (walking, cycling). The questions are 'closed', and the answers range in the scale of one to five allowing respondents to define the intensity of the activity's level. One's occupation and kind of sports (discipline) have been scaled over three levels – reflecting the level of energy burning. The domains (subscales) pertaining to the individual kinds of activities allow the researcher to calculate the following indicators: work, sports, free time without sports and the SEWL indicator which

comprehensively characterises the mobile activity of respondents (research participants). The scale of these indicators provides information on the level of the respondents' activity. A similar classification of activity was utilized in international research programs such as CINDI Program and WOBASZ Program (9).

The SF-36 questionnaire is a universally recognized and utilized tool, widely applied in research of various kinds: both these of diagnostic as well as these of experimental nature. The aim of the questionnaire is to measure the quality of life as connected to health. Two components of health are taken into account: a physical one (four health factors) and a mental one (also four health factors). Answers to the individual questions contained in the questionnaire are valued on a scale from 0 to 100. This span seems to be a chief asset of this tool, allowing the researcher to define, by way of reference to „percentage”, the level of both the various health factors (a sum of points obtained by answering questions pertaining to a particular factor – divided by the number of questions) as well as the components (a sum of points for individual factors – divided by four) (10,11).

The results obtained thus are then statistically analysed along the following stages:

- Firstly, indicators of Spearman's correlation between the individual health factors and components and the activity indicators were measured for all participants.
- Secondly, the participants of the research were diversified into quartiles – on the base of the level of their self-assessment of health (SF-36: global point values). The „extreme” quartiles (top and bottom ones) underwent further analysis, i.e. descriptive statistics were produced for the respondents contained in these quartiles.
- Finally, an analysis of ANOVA variants was done. The aim of this stage was a search for the difference in levels among the various kinds of activity (the SEWL questionnaire) between the respondents who showed the lowest and the highest self-assessment of health (SF-36).

Both the first and the last stage of the statistical analyses the level of significance was assumed at: $p \leq 0.05$.

Results of the research

To present all indicators of correlation between health components and factors and the indicators of kinds of activity does not seem necessary. Instead, only those indicators which were statistically significant seem relevant.

For the components of health these were:

1. A physical component of health – sporting indicator: $p=0.0396$

2. Mental component of health – sporting indicator:
p=0.0000

3. Mental component of health – SEWL indicator:
p=0.0000

For the factors of health these were:

1. Physical functioning – sporting indicator:
p=0.0000

2. Physical activity – SEWL indicator: p=0.0347

3. General Health – sporting indicator: p=0.0396

4. Energy / fatigue – sporting indicator: p=0.0099

5. Energy / fatigue – free time indicator: p=0.0382

6. Energy / fatigue – SEWL indicator: 0.0305.

The descriptive statistics of the bottom and top quartiles are presented in tables 1 and 2.

As mentioned above, the next step in the research was an analysis of variants which was aimed at finding any possible differences among the kinds of activities which could have an impact on one's self-assessment of health. The results are presented in table 3.

Table 3. *The differences in levels of activity among the participants whose self-assessment of health was the lowest and the highest*

Indicators regarding types of activity	Level of significance of differences
Work indicator	0.2872
Sporting indicator	0.0001*
Free time indicator	0.1175
SEWL indicator	0.0001*

*differences of statistical significance

Table 1. *Self-assessment of health of the respondents: SF-36*

Health components and factors	Quartile	N	Average	Minimum	Maximum	SD
Physical component of health	bottom	40	36.74	12.33	45.04	8.21
	top	40	55.61	52.81	67.23	3.34
Physical functioning	bottom	40	92.85	45.00	100	10.94
	top	40	96.86	75.00	100	5.57
Role limitations due to physical health	bottom	40	77.97	0.00	100	33.68
	top	40	95.35	50.00	100	12.51
Pain	bottom	40	71.61	32.50	100	20.66
	top	40	82.09	22.50	100	20.22
General health	bottom	40	58.53	25.00	79.17	14.26
	top	40	72.21	29.17	100	15.08
Mental component of health	bottom	40	62.98	17.50	85.10	12.38
	top	40	70.16	41.25	97.97	8.58
Energy / fatigue	bottom	40	52.50	20.00	90.00	14.32
	top	40	79.07	60	90	8.40
Emotional well-being	bottom	40	58.29	20.00	88.00	13.26
	top	40	100	100	100	0.00
Social functioning	bottom	40	75.28	22.50	100	18.31
	top	40	95.64	75	100	8.15
Role limitations due to emotional problems	bottom	40	61.51	0.00	100	34.63
	top	40	81.49	24	96	11.87

Table 2. *Activity of the respondents: SEWL*

Indicator of activity	quartile	N	Average	Minimum	Maximum	SD
Work indicator	top	40	2.88	1.75	4.5	0.64
	bottom	40	2.66	2.00	3.88	0.43
Sporting indicator	top	40	2.79	1.50	4.25	0.76
	bottom	40	3.20	1.00	4.75	1.01
Free time indicator	top	40	2.44	1.00	3.75	0.71
	bottom	40	2.69	1.00	4.00	0.65
SEWL indicator	top	40	2.64	0.00	3.75	0.71
	bottom	40	2.85	1.91	3.63	0.47

Discussion

To optimize the strain in relation to one's individual needs is not a problem easy to solve. It constitutes a challenge not only to the representatives of sciences such as physical education or medicine, but to at least the same degree concerns social sciences (pedagogy, psychology, history, sociology, economics). The grounds for this view is La Londe's so called health field where one's life style is currently seen as the leading factor shaping one's health (12).

Any preventive practices, including modelling one's life style, should be preceded by a diagnosis. When it comes to activity, it should be preceded by questions concerning the correlations between its different kinds and levels and the components and factors of health. The research results presented here constitute an effort in explaining the nature of these correlations.

As mentioned before, the richness of mobile activities of man (any kind of activity) is the reason why it is not possible to precisely measure it in all its aspects (5). Assessing activity requires to some extent a reductionist approach. The starting point for the research was a selection of the group of respondents (individuals who were relatively healthy), which according to its authors made the exclusion of one of the disruptive variables (illness) possible. The variable could strongly influence both the self-assessment of health as well as the level of any kind of activities. This choice was also entirely in accordance with a holistic approach where it is health (not illness) and the multiplication of its resources is a central point of interest (13). Also reducing activity to the level of kinds (and not specific activities) – contained in the SEWL questionnaire, allowed for a reduction in the number of variables. Moreover, the questionnaire eliminates two kinds of activity: expressive (mimic) and personal which in comparative research seem to have an only slight impact on one's self-assessment of health.

An analysis of the correlation of health components and factors with activity let researches define possible relations. The results of the research unambiguously emphasize the importance of an overall mobile activity (the SEWL indicator) to the mental component of health. A decisive role is played by the activity factor (energy), which correlates positively (on a statistically significant level) with sporting indicator, free time indicator and the SEWL indicator. On the other hand, the statistical significance of the correlation: sporting indicator – physical component of health seems to indicate that this kind of activity has not a major impact on one's self-assessment of physical health. A sporting activity most strongly influences physical functioning and general health. The first connection appears to be quite obvious. It is further confirmed by the results of the research pertaining to the motoric efficiency of people who do sports as compared with people who are

non-active (14-16). A correlation between the sporting indicator and the self-assessment of health indicator (general health) shows close connections: activity – fitness – physical and mental state understood as an efficiency of the positive feedback mechanism.

Descriptive statistics concerning the groups which were being compared indicate a slightly higher level of mobile activity at work among people who displayed a low self-assessment of health (tab. 2.). An analysis of variants did not provide a definite difference between these groups that would be statistically significant (tab. 3). This leads to the conclusion that physical effort related to one's occupation does not diversify the respondents as far as men's self-assessment of health is concerned. Also any type of activity in one's free time but one which does not constitute a sporting activity (higher among people with a higher assessment of their own health – tab. 2) did not diversify the respondents (tab. 3). This can be explained by the low (an analogy to the subliminal stimuli) and similar among the two groups level of intensity of efforts which constitute the type of activity under question. The decisive factor for a higher self-assessment of health, in light of the research presented here, seems to be a mobile activity of sporting nature. Doing sports is also a decisive factor in shaping the pool of general activity (the SEWL factor) which has a beneficial effect on health (tab. 3). This is confirmed by earlier research in which doing sports was recognized as a sufficient variable that diversifies the respondents in the context of self-assessment of health (17).

A reduction of physical activity in activities indispensable to the existence of the human kind, which is an effect of the development of technology, must bring (from the viewpoint of the biology of the body) a need for compensating action. Currently it takes the form of any kind of recreational activity, starting with sports, though gardening or active tourism, and finally to any kind of activities which are commonly identified as of sporting nature. There are some conventional, individually set limits to the needs in this respect. Setting these limits is not an easy task. It seems a certain continuum, analogical to health continuum (18). The adequacy displayed in a positive feedback in the relation: a level of activity - health seems significant. Too intense physical activity, which is detrimental to health on mass scale, is a marginal phenomenon. The most important problem from the point of view of a whole population seems to be the level of intensity that would be optimal to one's health. In light of the research an activity of sporting nature meets this criterion – both for the physical and mental component of health. It confirms the argument that: „The psyche and the body are so closely intertwined as to allow the statement that a psychological phenomenon which would not be accompanied by a somatic phenomenon is not

possible, just like there is no somatic phenomenon without a psychological one" (19).

Conclusions

1. The level of a self-assessment of physical and mental health is strictly connected with physical activity.
2. In view of the research presented here, a physical activity of sporting nature is the kind of activity which is most beneficial for shaping the components of health.

References

1. Blair SN, Jacobs DR (Jr), Powell KE. Relationships between exercise or physical activity and other health behaviors. *Public Health Reports* 1985; 100(2): 172-80.
2. Drabik J. Aktywność, sprawność i wydolność fizyczna jako mierniki zdrowia człowieka. Gdańsk: AWF, 1997.
3. Kuński H. Elementy zdrowotnej rekreacji fizycznej osób w wieku średnim. Warszawa: IWZZ, 1985.
4. Buss DM. Psychologia ewolucyjna. Gdańsk: Gdańskie Wydawnictwo Psychologiczne, 2001.
5. Jethon Z. Fizjologiczne mechanizmy aktywności fizycznej w działaniu na zdrowie. *Wiadomości Lekarskie* 2002; (supl. 1): 170-7.
6. Kłossowski M. Przegląd i charakterystyka metod oceny poziomu aktywności fizycznej oraz jej wpływu na organizm człowieka. In: Aktywność fizyczna. Drugie warsztaty antropologiczne. Warszawa: AWF, 1999: 7-22.
7. Szeklicki R. Metody pomiaru aktywności fizycznej. *Wych Fiz Sport* 2000; 3: 3-20.
8. Baecke JAH, Burema J, Frijters JER. A short questionnaire for the measurement of habitual physical activity in epidemiological studies. *Am J Clin Nutr* 1982; (36): 936-42.
9. Drygas W, Kwaśniewska M, Szczesńska D, Kozakiewicz K, Głuszek J, Wiercińska E, Wyrzykowski B, Kuriata P: Ocena poziomu aktywności fizycznej dorosłej populacji Polski. Wyniki programu WOBASZ. *Kardiologia Polska* 2005; 63(6) (supl. 4): 1-5.
10. Ware JE, Sherbourne CD. The MOS 36-item short form health survey (SF-36). *Med Care* 1992; (30): 473-83.
11. Ware JE Jr, Kosinski M, Keller SD. SF-36: Physical and Mental Summary Scales: A User's Manual. Boston: The Health Institute, New England Medical Center, 1994.
12. Opatz JP. A primer of health promotion. Creating healthy organization cultures. Washington: Oryon Publications Inc., 1985.
13. Dolińska-Zygmunt G. Orientacja salutogenetyczna w problematyce zdrowotnej. Model Antonovsky'ego. In: Dolińska-Zygmunt G., ed. Podstawy psychologii zdrowia. Wrocław: Wyd. Uniwersytetu Wrocławskiego, 2001: 18-31.
14. Knapik A, Saulicz E, Plinta R, Miętkiewicz-Cieplý E. The influence of systematic physical activity on spine functional efficiency – based on triplaned flexibility test. *Annales Academiae Medicae Silesiensis* 2005; Vol 59; (6): 476-80.
15. Knapik A, Plinta R, Saulicz E, Gnat R. The influence of physical activity on fat tissue distribution and physical capacity in mid-aged men. *Annales Universitatis Mariae Curie-Skłodowska* 2005; XVI, 211: 438-42.
16. Knapik A, Plinta R, Saulicz E, Gnat R. Systematyczna aktywność ruchowa a sprawność układu krążeniowo-oddechowego. In: Niebrój L., Kosińska M., ed. Health care: professionalism and responsibility. Katowice: ŚAM, 2005: 171-80.
17. Knapik A, Plinta R, Saulicz E, Kuszewski M. Physical activity and self-perceived health status based on SF-36 Questionnaire. *Annales Universitatis Mariae Curie-Skłodowska* 2005; XVI, 211: 433-7.
18. Dolińska-Zygmunt G. Teoretyczne podstawy refleksji o zdrowiu. Podstawy psychologii zdrowia. In: Dolińska-Zygmunt G., ed. Podstawy psychologii zdrowia. Wrocław: Wyd. Uniwersytetu Wrocławskiego, 2001: 11-8.
19. Everly GS (Jr), Rosenfeld R. Stres. Przyczyny, terapia i auto-terapia. Warszawa: PWN, 1992.

Received: August 04, 2008

Accepted: January 30, 2009

Published: February 02, 2009

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