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**LEVEL OF EDUCATION, MARITAL STATUS AND SOCIAL CONTACTS  
AS DETERMINANTS OF HABITUAL PHYSICAL ACTIVITY AMONG  
ELDERLY MEN**

INTRODUCTION

The determinants of physical activity (PA) include factors related to social environment, which may support or limit undertaking PA [1]. Finding social factors which determine participation in physical activity allows for a more effective structuring and carrying out of intervention programmes [2].

In their review study on the determinants of PA, Dishman and Sallis [3] indicated strong directly proportional relations of PA with the level of education. Other factors, which are often considered in studies of social determinants of PA, are marital status, place of residence and social contacts. Analysing changes in PA with age (9 years of longitudinal studies, subjects aged 16 to 94 years) Kaplan et al. [6] noted a significantly greater decrease of PA among people with lower education, single and socially isolated.

In a Canadian study of elderly people a statistically higher level of PA was noted among married people, not living alone, not living in nursing home, with higher education, higher income and maintaining contacts with other active people. Also a significant positive relation between the level of PA and physical health was noted [2].

In the study of residents of North Carolina aged over 65 it was found that a higher level of education is related to a longer active (independent) life expectancy [4]. As demonstrated in people over 80 years of age, people with higher education more often maintain functional independence in daily locomotive activities, and this, in turn, favours lower BMI values, lower risk of cardiovascular diseases and death [5].

Social activity, living with other people and a higher self-assessment of health turned out to be factors positively related with the lowered rate of death caused

by CVD and cancers in the study of men aged over 50 in Sweden [8]. The same study indicated also other causes of death related to living alone, low self-assessment of health and a lower level of physical and social activity. Also there, higher values of WHR were noted in men from lower social classes and groups [7].

The aim of the study was to verify whether such social factors as the level of education, marital status, living alone or with a spouse and maintaining social contacts with family and friends affect the level of habitual social activity (HPA) of men over 60 years of age.

METHODS

The study covered 137 not working men aged over 60 (mean age  $72.6 \pm 5.85$  years) living in Poznań (a city with a population of approx. 650 thousand).

To measure habitual physical activity (HPA) a Caltrac accelerometer (Muscle Dynamics, Inc., Torrance, CA) was used. The study took seven days. Energy expenditure (in kcal) related to HPA was determined (EE-PA) after the data on age, sex, height and weight of a subject were entered into the memory of the device. In the analysis of the results the values of EE-PA per day as well as per day and kg of body mass were considered (due to a significant effect of weight on the value of EE-PA).

In order to determine social factors a questionnaire was used. Information related to the following was obtained: level of education, marital status, living with other people, contacts with subjects' children, other relatives and friends.

In the statistical analysis the ANOVA Kruskal-Wallis test was used in order to compare many

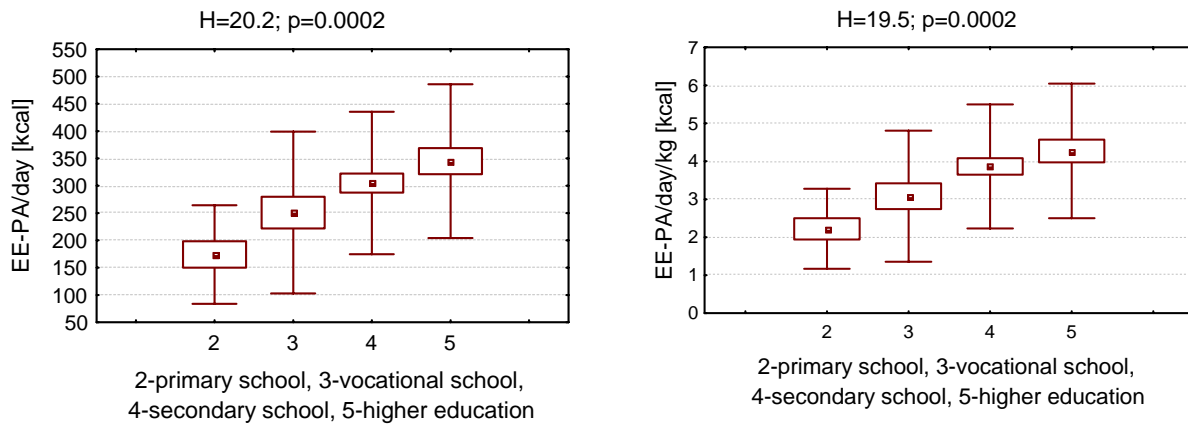
independent groups (value of the test H). For the comparison of two independent groups the Mann-Whitney test was used (value of the test Z).

### RESULTS

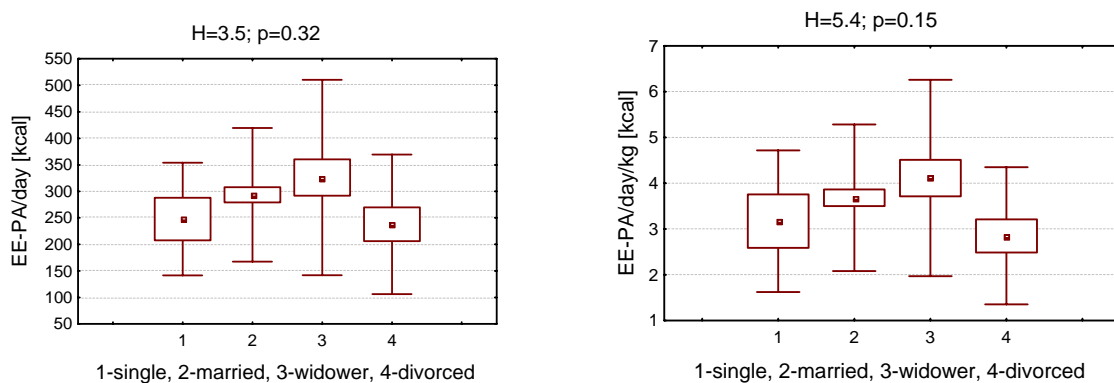
The level of education of the subjects statistically significantly affects ( $p=0.0002$ ) the level of HPA (Fig. 1). Men with higher education display a higher level of HPA. This relation is similar and also statistically significant ( $p=0.0002$ ) for EE-PA value per kg of body mass.

The marital status does not affect the level of HPA in a statistically significant way (Fig. 2). In the comparison of groups with different marital status no statistically significant differences were noted in the value of EE-PA per kg of body mass either.

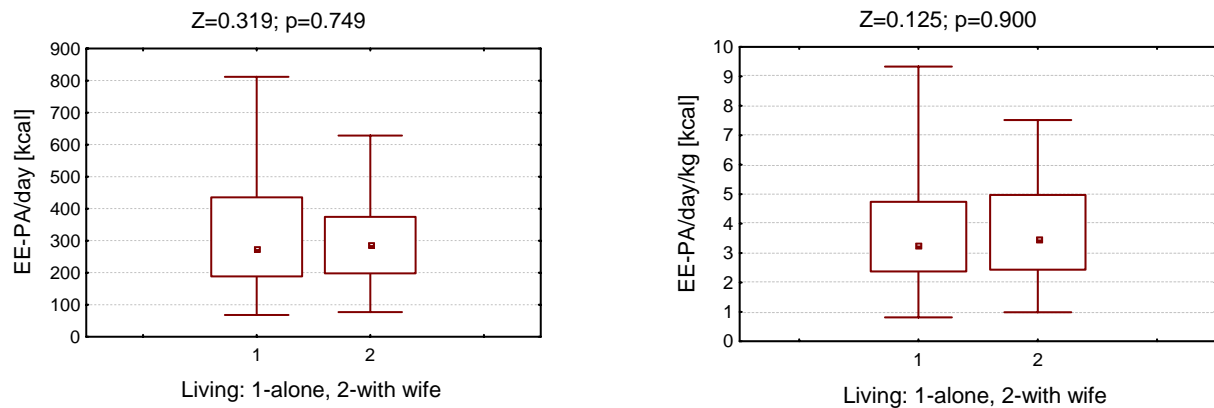
No statistically significant differences were noted (Fig. 3) in the level of HPA between men living alone and those living with their wives. Neither were the differences statistically significant for the value of EE-PA per kg of body mass.



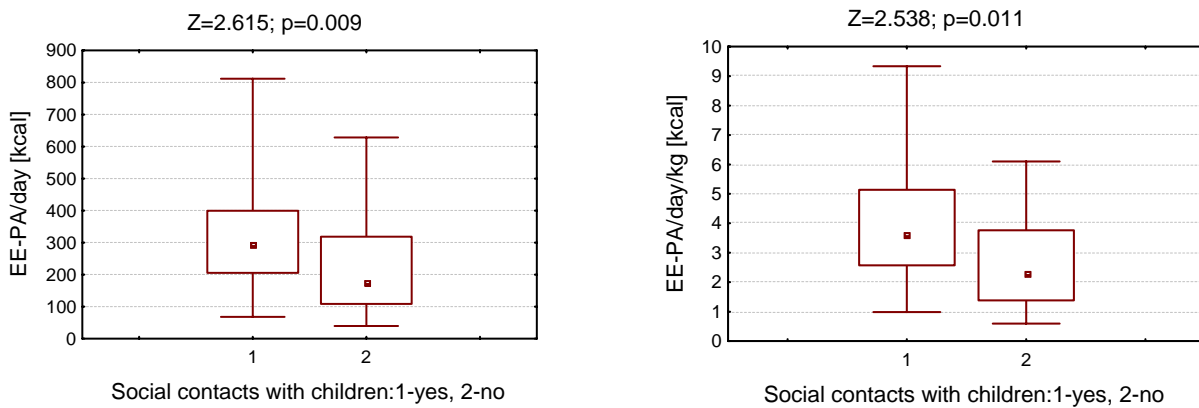
**Figure 1.** The level of HPA per day as well as per day and kilogram of body mass in men over 60 of various levels of education



**Figure 2.** The level of HPA per day as well as per day and kilogram of body mass in men over 60 by their marital status



**Figure 3.** The level of HPA per day as well as per day and kilogram of body mass in men over 60 living alone or with their wives



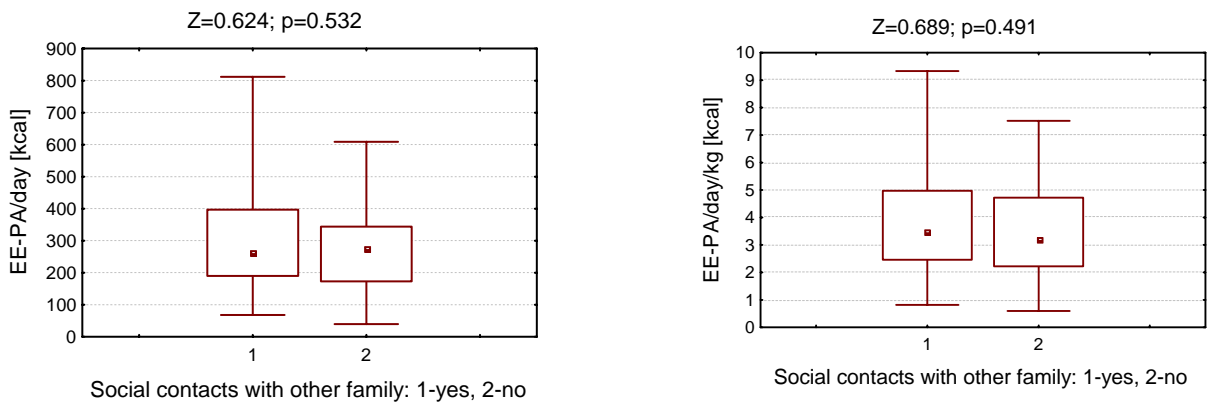
**Figure 4.** The level of HPA per day as well as per day and kilogram of body mass in men aged over 60 maintaining social contacts with their children or not

In the analysis of social contacts, contacts with subjects' children, other family members and friends were taken into consideration. In each case two categories of subjects were distinguished: those having regular social contacts and those not maintaining such contacts at all.

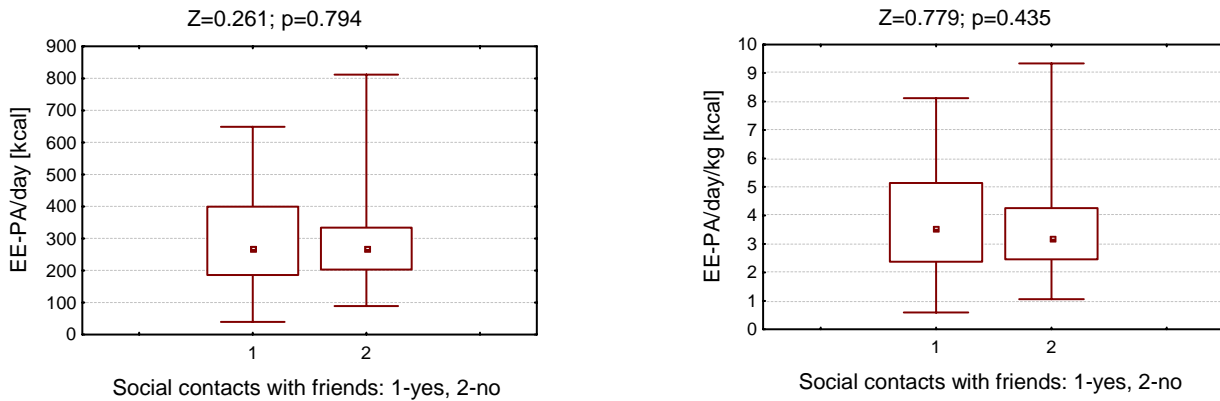
Maintaining social contacts with their children (Fig. 4) turned out to be the factor which significantly determined the level of HPA of the subjects, both in terms of EE-PA per days ( $p=0.009$ ), and per day and kg of body mass ( $p=0.011$ ). Men maintaining social contacts with their children were characterised by a higher level of HPA.

Maintaining social contacts with other family members (apart from children – for those who have them) does not seem to have an effect on the value of HPA, as the differences noted are statistically insignificant (Fig. 5).

Also maintaining contacts with friends turned out to be a factor which did not affect in a statistically significant way the level of HPA of the subjects both in absolute numbers and per kg of body mass (Fig. 6).



**Figure 5.** The level of HPA per day as well as per day and kilogram of body mass in men aged over 60 maintaining social contacts with other family members (apart from children – for those who have them) and in those not maintaining these contacts



**Figure 6.** The level of HPA per day as well as per day and kilogram of body mass in men aged over 60 maintaining social contacts with friends and in those not maintaining these contacts

## DISCUSSION

The results of the tests confirmed a significant role of the level of education as a factor which is strongly reflected in the level of PA. Like in studies by other authors [2, 3, 6] men with higher education were characterised by the highest level of PA.

The marital status and living with a wife do not affect the level of PA of the subjects, which is different as compared with results of other studies [2, 6].

Also in terms of social contacts with the family (with the exception of children) and friends, a lower level of PA in men not maintaining such contacts was not noted, as the results of other studies show [3, 6]. Maintaining social contacts with the subjects' children favours an increased level of PA. This may be explained by the circumstances in which spending time with friends or family (often people at a similar age to the

subjects' age) does not require undertaking PA (in particular of the locomotive type that is possible to register by the device used in the study to measure EE-PA). On the other hand, meetings with children, and what often follows with grandchildren, usually cannot be confined to remaining in one place.

The results of the study confirmed a significant role of the level of education as a factor which is strongly reflected in the level of undertaken PA. Other results did not confirm the views found in the literature on the significant relations of PA of elderly men with such social factors as marital status, living with a wife and maintaining social contacts. The explanation of the results which are to some extent surprising remains in the area of speculation and would require further research (strictly focused on these issues and more detailed).

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