ASSOCIATION OF PHYSICAL ACTIVITY WITH METABOLIC SYNDROME AND ITS COMPONENTS IN LITHUANIAN URBAN POPULATION

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Background

The problem is of outstanding importance, since insufficient physical activities (PA) are a dominant risk factor for noncommunicable diseases, such as cardiovascular diseases, diabetes and cancer [1]. Metabolic syndrome (MS) is a cluster of conditions that occur together, increasing risk of noncommunicable diseases [2].
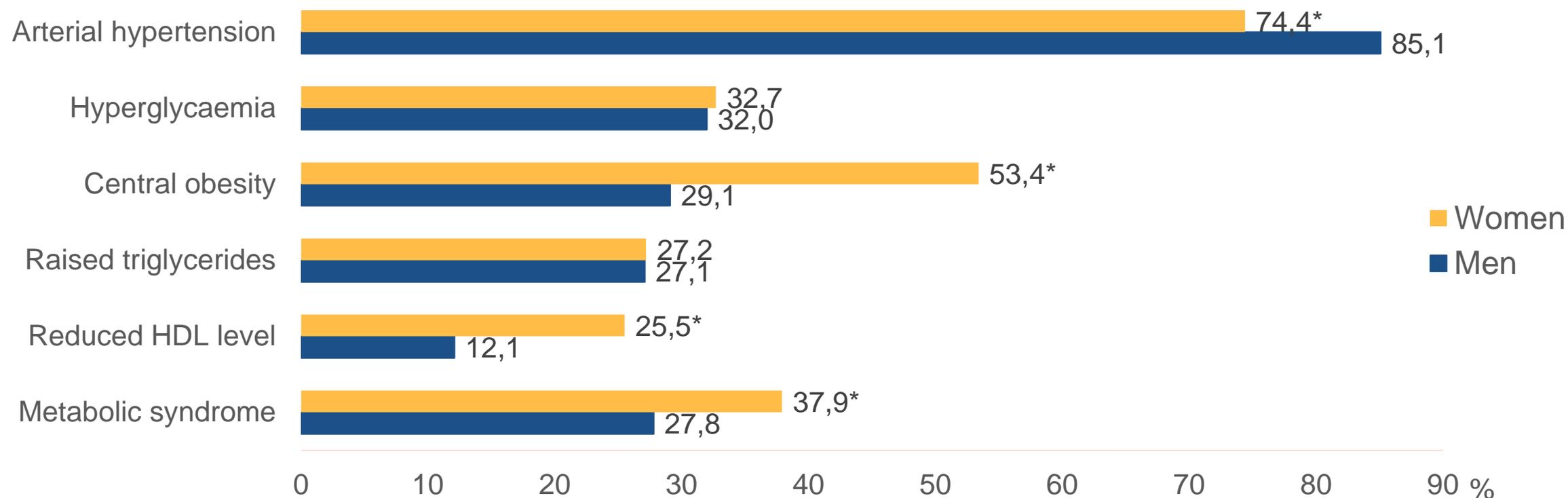
Aim

The aim of this study was to evaluate the association of PA with MS and its components.

Methods

- The study presents data from the survey conducted within the framework of the international project Health, Alcohol and Psychosocial Factors in Eastern Europe (HAPIEE) [3].
- A random sample of 6752 participants (3051 men; 3701 women) aged 45–72 years were selected for statistical analysis.
- MS components were evaluated according to ATP III criteria [2].
- PA was determined by the mean length of time spent per week during leisure time in winter and summer for walking, moderate and hard work like gardening and other PA. The respondents were categorized into three tertiles according to their PA in leisure time: 1st tertile (physically inactive; ≤10 hours/week), 2nd tertile (moderate physically active; 10.5–20.0 hours/week) and 3rd tertile (physically active; >20 hours/week).
- Multivariable logistic regression analysis was performed to determine the independent associations between the PA and MS and its components expressed as odds ratio (OR) with 95% CI (data adjusted for age, education level, smoking status).

Results

Metabolic syndrome and its components according to sex

Component	Women	Men
Arterial hypertension	74.4*	85,1
Hyperglycaemia	32,7	32,0
Central obesity	53,4*	29,1
Raised triglycerides	27,2	27,1
Reduced HDL level	25,5*	12,1
Metabolic syndrome	37,9*	27,8

Legend: ■ Women (orange) ■ Men (blue)

Axis: 0 10 20 30 40 50 60 70 80 90 %

* P < 0.001, in comparison with men.

Metabolic syndrome components were evaluated according to ATP III criteria: hyperglycaemia (concentration of fasting glucose ≥6.1 mmol/l), arterial hypertension (systolic/diastolic BP≥130/85 mmHg), central obesity (waist circumference >102/88 cm, for men/women), raised triglycerides (TG) level (TG≥1.7 mmol/l), reduced high density lipoprotein (HDL) cholesterol level (<1.04/1.3 mmol/l for men/women).

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Results

The association of physical activity (95% CI) with metabolic syndrome and its components (1)

PA level	Metabolic syndrome	Arterial hypertension	Central obesity	Hyperglycaemia	Reduced HDL level	Raised triglycerides
Men	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Physically inactive	1	1	1	1	1	1
Moderate physically active	0.78 (0.64-0.95)*	0.91 (0.71-1.16)	0.75 (0.62-0.91)*	0.81 (0.67-0.97)*	0.70 (0.54-0.91)*	0.90 (0.74-1.09)
Physically active	0.60 (0.49-0.73)**	0.75 (0.59-0.96)*	0.61 (0.50-0.74)**	0.60 (0.49-0.72)**	0.59 (0.45-0.77)**	0.90 (0.74-1.09)

* - P < 0.05; ** - P < 0.001. Data adjusted for age, education level, smoking status. Multivariable logistic regression analysis.

Results

The association of physical activity (95% CI) with metabolic syndrome and its components (2)

PA level	Metabolic syndrome	Arterial hypertension	Central obesity	Hyperglycaemia	Reduced HDL level	Raised triglycerides
Women	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Physically inactive	1	1	1	1	1	1
Moderate physically active	0.82 (0.69-0.97)*	0.95 (0.79-1.14)	0.87 (0.74-1.03)	0.83 (0.70-0.98)*	0.87 (0.73-1.05)	0.94 (0.79-1.12)
Physically active	0.81 (0.69-0.97)*	1.01 (0.84-1.22)	0.81 (0.69-0.95)*	0.84 (0.71-0.99)*	0.94 (0.79-1.13)	0.85 (0.71-1.01)

* - P < 0.05; ** - P < 0.001. Data adjusted for age, education level, smoking status. Multivariable logistic regression analysis.

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Conclusion

Physical activity is related to a lower metabolic syndrome risk among men and women aged 45–72 years. As the FA increases, the values of the MS components decrease lumbar circumference and blood glucose levels in men and women, AH and low HDL levels decrease only in men, and triglyceride levels were not associated with FA.

References

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