

EXERCISE-INDUCED EXPRESSION OF MYOKINES IN ADOLESCENTS WITH SIMPLE OBESITY.

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INTRODUCTION

Myokines - biologically active proteins produce and secrete by skeletal muscles in response to physical activity (PA). They play a role in lipid and glucose metabolism, myogenesis and osteogenesis, thermogenesis activity. Exercise-induced expression of myokines in adolescents with simple obesity insufficiently studied.

AIM

The objective is to determine which intensity and duration of PA maximally change the level of myokines (interleukin-6 (IL-6), myostatin, decorin, irisin).

METHOD

26 children (10 male/16 female), age 15 [13;16] years, SDS BMI: +2.91 [2.24;3.29] were divided into two groups:

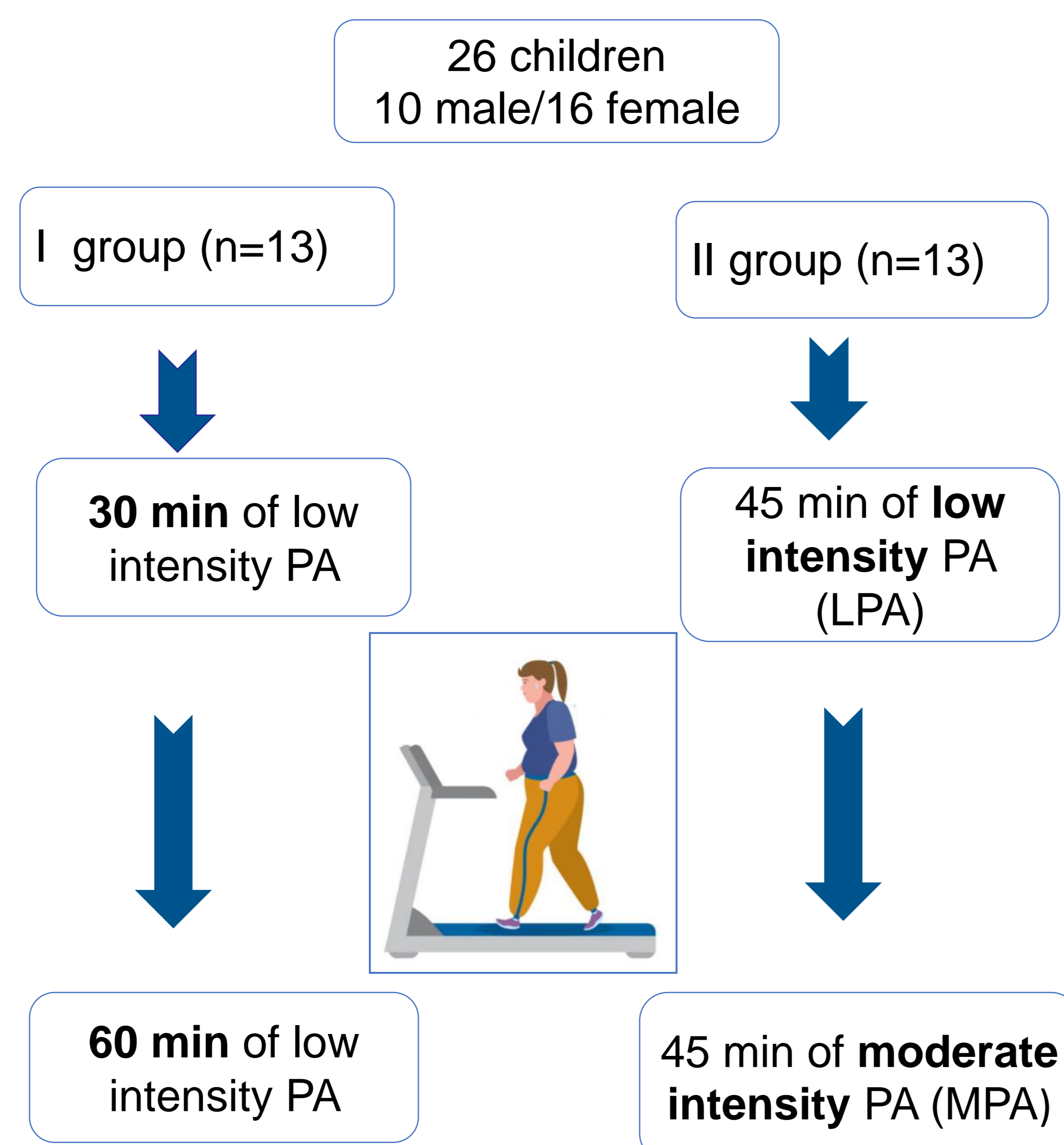
I (n=13) was performed PA (walking on a treadmill under heart rate control) duration 30 and 60 minutes at the same intensity (less than 3 metabolic equivalents (MET));

II (n=13) was performed PA of different intensity: low (LPA) — less than 3 MET and moderate (MPA) — 3-6 MET at the same duration of 45 minutes.

The groups were matched by age, sex, Tanner stages and basal levels of myokines.

Myokines in blood were measured before and after PA.

RESULTS



LPA (Low intensity physical activity) — less than 3 metabolic equivalents (MET).

MPA (Moderate intensity physical activity) — 3-6 MET.

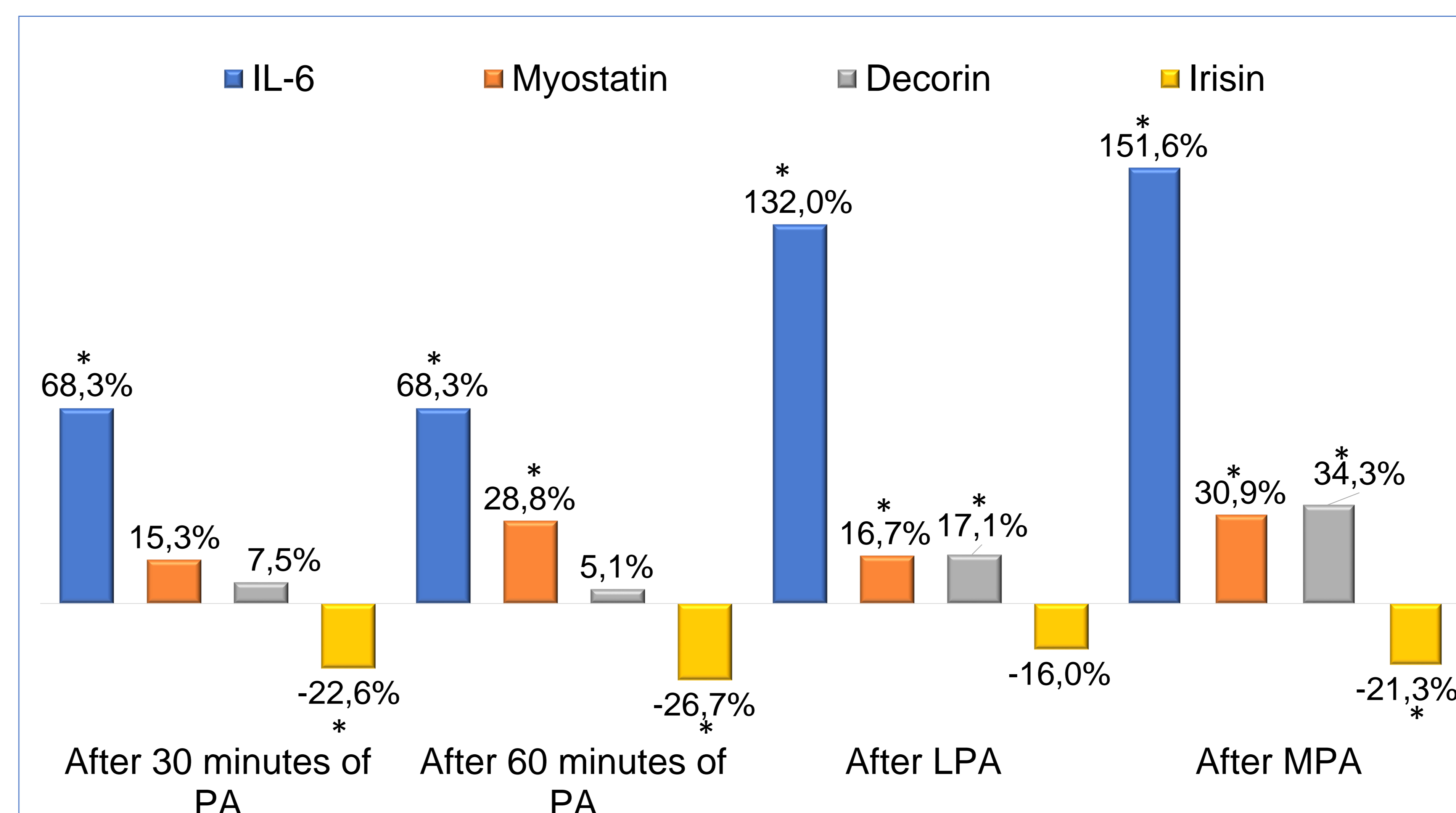
*MET= The ratio of the work metabolic rate to the resting metabolic rate.

One MET is defined as 1 kcal/kg/hour and is roughly equivalent to the energy cost of sitting quietly.

General patient data.

	I group (n=13)	II group (n=13)	P =
Age	14,6 [14; 15]	14,5 [13; 16]	>0.05
Sex (male/ female)	5/8	5/8	>0.05
Height	168,6 [164; 176,2]	169 [164,1; 174,7]	>0.05
Weight	90 [84,8; 100,7]	93 [88; 99]	>0.05
SDS BMI	2,8 [2,2; 3,2]	2,9 [2,7; 3,3]	>0.05
Tanner stages	4-5	4-5	
Basal levels of myokines			
IL-6, pg/ml	0,205 [0,141; 0,236]	0,256 [0,162; 0,344]	>0.05
Myostatin, ng/ml	22,19 [18,65; 23,06]	23,94 [21,53; 25,85]	>0.05
Decorin, ng/ml	3,89 [3,036; 4,469]	4,332 [4,043; 4,743]	>0.05
Irisin, mkg/ml	33,32 [22,516; 36,348]	31,896 [22,27; 34,8]	>0.05

Dynamic of myokine levels after PA of different duration and intensity.



* Significant difference (p<0,05) between basal level of myokine vs. level after PA.

CONCLUSIONS

The results demonstrate the effect of PA on myokines secretion in adolescents with obesity. MPA induced a maximum increase in the levels of IL-6, myostatin, decorin, while PA within 60 minutes led to a significant decrease serum levels of irisin.