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APPLIED EXERCISE EDUCATION FOR INCREASING DAILY PHYSICAL ACTIVITY

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ABSTRACT

Aim: The aim of this study was to compare oral exercise education with both of oral and applied exercise education for increasing physical activity in healthy young students.

Method: Sixteen inactive medical faculty students aged 18-24 years old were participated voluntarily in this study. Participants were separated in two groups as oral exercise education (OE) or applied and oral exercise education (AOE) groups. Physical activities were recorded during seven days following the measurement of maximal oxygen consumption (VO_2max). OE was given during 30 minutes in both groups. Applied education was done during 15 minutes in AOE group. Recording of physical activity before and after education were compared in groups.

Results: Mean age, BMI and VO_2max levels were similar in two groups. Daily energy expenditure was higher when compared during three days before and after education in AOE group (428,1 (345,8-476,6) vs 525,8 (382,8-637,8) Kcal/day, p=0.01). Increased daily step count has been observed after education in AOE group (5858,8 (5038,1-8250,0) vs 8811,5 (6773,1-10755,4) step/day, p=0.01). Daily energy expenditure and daily step count were similar before and after oral exercise education in OE group.

Conclusion: Applied exercise education followed by the oral education can play increasing role of daily physical activity.

Key worlds: Physical activity, exercise, education method

INTRODUCTION

It has been known that regular physical activity decreases blood pressure, prevents obesity and reduces the risk of health problems including coronary artery disease, certain types of cancer, type 2 diabetes and osteoporosis (1). The term "physical activity" may consider being similar with the term of "exercise". But, physical activity covers body movements such as sitting, lifting, walking, running, etc. performed by skeletal muscles. However, exercise is considered as planned, intentional and continuous activities doing a particular purpose (2).

A difference has been determined for doing physical activity in terms of gender. Man have been found to be more physically active than woman (3). On the other hand, physical activity levels of overweight and obese subjects were found lower than the normal weight subjects (4, 5). In addition to factors such as gender or body weight, education methods could be taken into account for increasing the level of physical activity. Therefore, the aim of this study was to compare oral exercise education with the exercise education which was used both oral and applied methods in healthy young students.

METHODS

Sixteen healthy students (18-24 years old) of Trakya University Medical Faculty were participated voluntarily in this study. Daily program of all participants were similar and they stated that duration of exercise was less than 2,5 hours in a week at least one year. The study was approved by Local Ethical Committee of Trakya University. Written informed consents were taken from all participants.

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The subjects who have any disease related with musculoskeletal and cardiopulmonary system or subjects who have metabolic disorder were excluded from the study. Height and weight were measured. Body mass index (BMI) was calculated by dividing weight in kilograms by the square of height in meters (kg/m^2). Maximal oxygen consumption (VO_2max) was measured following the physical examination and electrocardiographic recordings.

Astrand Cycle Ergometer Test was performed for measuring VO_2max by using a computerized ergometer (Monark 894-E, Monark Exercise AB, Sweden). Pedal was ridden for 6 minutes against a suitable load. Heart rate was recorded until observed similar heart rates in two consecutive minutes, or until the difference becomes less than four at the last two minutes. Heart rate was monitored with a telemetric system (Polar 610i, Monark Exercise AB, Sweden) during the test. The values of VO_2max were calculated with the Modified Astrand Ryhming nomogram (6).

Physical activities were recorded during seven days following the measurements of VO_2max. A metabolic holter was attached to the waist of the subjects (Actical, Resipironics Inc. USA) for measuring physical activity. Subjects were asked to carry metabolic holter throughout seven days and holter was removed only when taking bath. Daily energy expenditure, step count and durations of physically activity were determined during seven days. The cut-point for moderate and vigorous physical activity intensity accepted at 1535 counts per minute (cpm) in accelerometer as defined in previous study (7).
Participants were separated in two groups as oral exercise education (OE) group or applied and oral exercise education (AOE) group. Oral education was given during 30 minutes in both groups at the 4th day of recording of physical activity. Oral education contained knowledge about descriptions and benefits of physical activity and exercise, and it contained an interview with a role model student who was physically active. In addition to oral education, applied exercise education was given for 15 minutes as a protocol in AOE group. The protocol comprised 3 minutes intervals in different speed and no grade (2,7 km/h, 4 km/h, 5 km/h, 6 km/h, 2,7 km/h respectively). Participants were done walking exercise in different speeds on the treadmill. Additionally, the speed of exercise with 40% of the VO_2max was suggested for each participant as the beginner level for exercise intensity in accordance with recommendations of American College of Sports Medicine (2). Recordings of physical activity in the first three days and last three days were compared in groups.

Statistical analysis

Values were shown as median (% 25-75). The SPSS [Statistical Package for Social Sciences) for Windows v. 21.0 (Serial no:10240642)] program was used for statistical analysis. Normal distribution was tested by the one-sample Kolmogorov Simirnov test. Mann-Whitney U test was used to evaluate the difference between the two groups. Wilcoxon signed-rank test was used for comparisons in group. A p value less than 0,05 was accepted as statistically significant.

RESULTS

Age (19,5 (19,0-21,0) year vs 21,0 (20,2-21,0) year; p=0,09), BMI (23,6 (21,3-26,6) kg/m^2 vs 22,2 (20,3-22,9) kg/m^2; p=0,19) and VO_2max (30,0 (25,0-36,2) $ml.kg^{-1}.min^{-1}$vs 34,0 (32,0-39,0) $ml.kg^{-1}.min^{-1}$; p=0,13) values were similar in OE and AOE groups.

The values of daily energy expenditure were not different after exercise than before exercise in OE group (p=0,07). However, a significant increase was observed after exercise in comparison to before exercise in AOE group (p=0,01) **(Figure 1).** Daily step count was found similar before oral education in comparison to after oral education in OE group (p=0.09). A significant increase was observed after education for daily step count in AOE group (p=0.01) **(Figure 2)**. Durations of moderate and vigorous physical activity was found similar before oral education in comparison to after oral education in OE group (p=0.07). A significant increase was observed following education for durations of physical activity in AOE group (p=0.04) **(Figure 3)**. When compare the measurements of two groups, daily energy expenditure, daily, step count, and durations of moderate and vigorous physical activity (>1535 cpm) was not different before and after education.

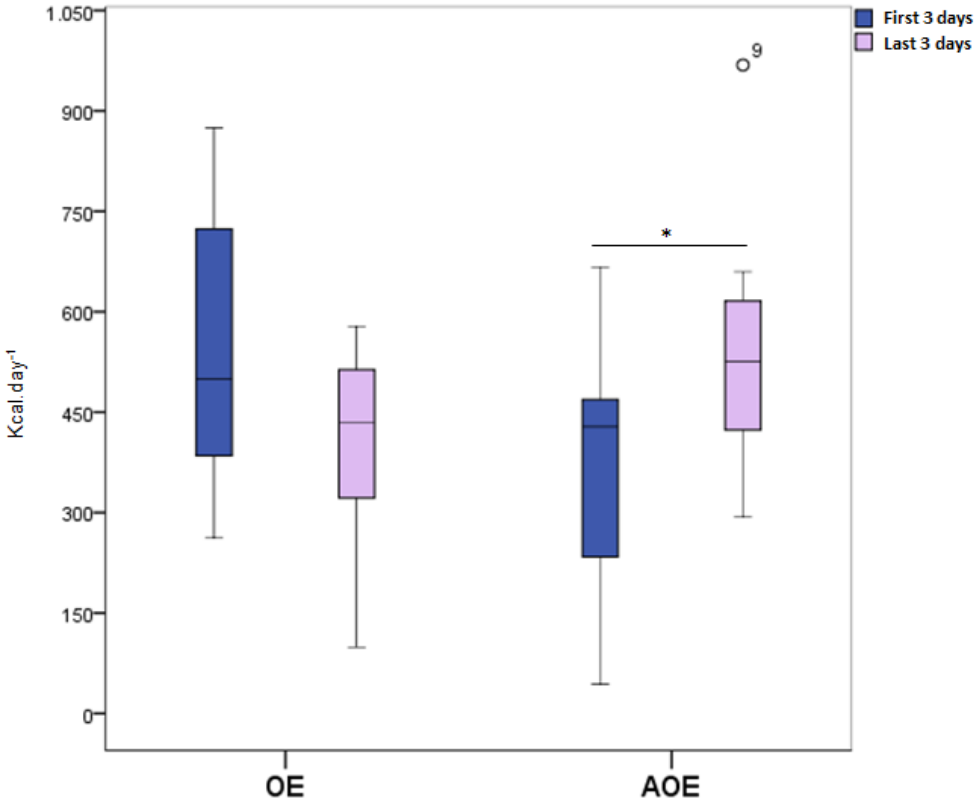

Figure 1. Comparison of daily energy expenditure in groups; *p=0,01.

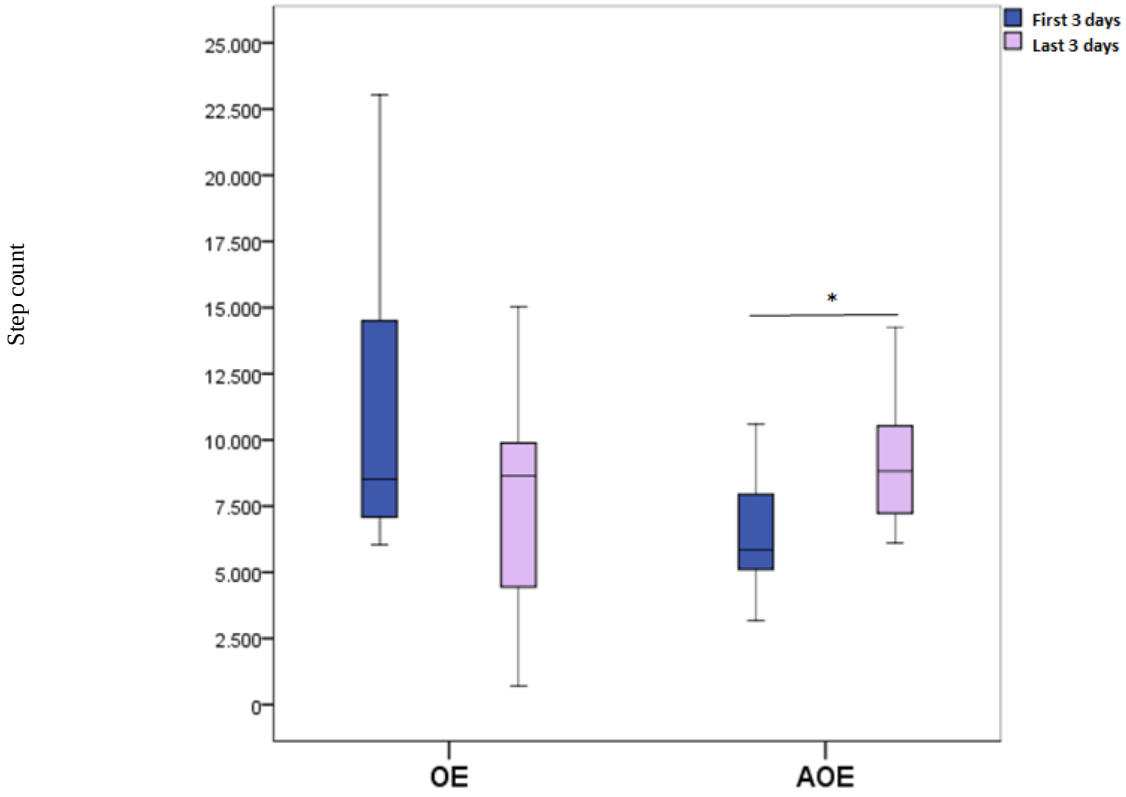

Figure 2. Comparison of daily step count in groups; *p=0,01.

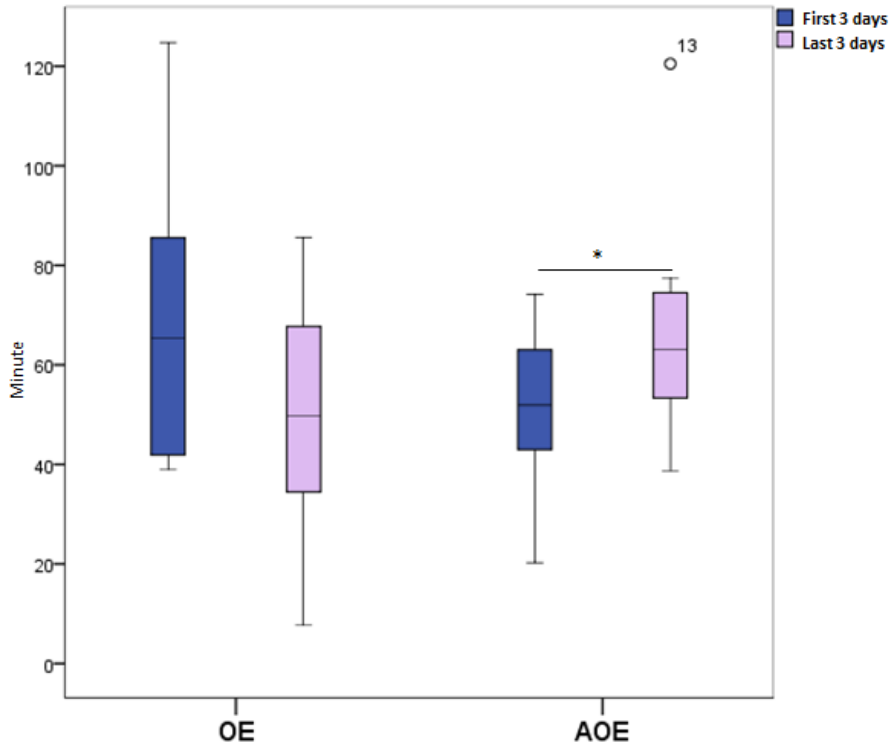

Figure 3. Comparison durations of moderate and vigorous physical activity (>1535 cpm) in groups; *p=0,04.

CONCLUSIONS

Two different type of exercise education methods were compared in physically inactive young students in this study. The result of our study demonstrated that daily energy expenditure, daily step count, and durations of moderate and vigorous physical activity increases at the young subjects who were experienced applied and oral exercise education. It has been known that method is one of the key ingredients for increase the motivation of the students. The other factors are shown as student, teacher, content, and environment (8). The students were the same class and education was given by the same person (Karaca A.) in the same place in this study. However, we could not investigate the experiential background, cultural orientation, and interests of the students.

Daily step count and daily energy expenditure were increased in AOE group but we could not found significant change on these measurements in OE group in the present study. Exposing the experimental process was the main difference between two groups. Experiential learning was reported as one of the good contributor method that induces the student motivation. Experiential learning includes cognitively, affectively, and behaviorally processes and it is created through the transformation of experiences (8). Applied exercise education could result in enhance the transformation of experience on physical activity and exercise in the AOE group in this study. Similarly, Alahmadi et al. (9) demonstrated in a previous study that, one day exercise training increases intensity of physical activity of overweight and obese subjects during three days following exercise. In addition, Sidney et al. (10) demonstrated that, energy expenditure of young subjects increases in accordance with the physical activity level.

Moderate intensity exercise is determined to improve the amount of time spent on activities (11). We recommended 40% of VO_2max to the subjects in this study. It could be accept as beginner level exercise for the students who were not physically active. It has been stated that even 40% of VO2max provides benefits to subjects who have low fitness level (12). Further studies in different intensities can be helpful to understand optimum intensity for improve physical activity.

Physical activity levels of medical faculty students were found as medium level in a previous study which was used a physical activity questionnaire (13). However, Savcı et. al. (14) reported that physical activity level of medical faculty students were low level. We have not used a physical activity questionnaire in this study. However, subjects have been classified as physically inactive because of the duration of exercise was less than 2,5 hours in a week at least one year (15).

In summary, listening the benefits of exercise and seeing a role model was not effective as the experiences the exercise affectively, and behaviorally. Applied exercise education for a short time period may be effective method to motivate the young students who were physically inactive. Experiential learning, as an education method, for increasing the physical activity should be taken into account.

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