

The effect of 6-week recreational futsal training on body composition of non-athletic obese girls

Abstract

Developing effective exercise programs for the sedentary people is a strategy for decreasing obesity and is expected to help in eventually limiting obesity-associated long-term health and societal impact. The present study investigated performance effects six-weeks recreational futsal training (7v7) for healthy non-athletic obese girls in comparison with an inactive control group. Twenty-four obese girls college students (19–23 years) with $\%BF \geq 30$ were randomized into a futsal ($n=14$) and control group ($n=10$). Three weekly 30-minute training sessions were performed with a mean intensity of 60–75% of heart rate reserve. Body composition was measured using skinfold thickness (4-site), Weight, Circumference measures (2-site), Body mass index and percentage of body fat (BF%) was measured before and after six weeks of trial. Findings of this study showed that Weight, BMI, Circumference measures and percent body fat decreased significantly after 6 weeks in exercise group ($p < 0.05$) but not in the control group. In conclusion recreational futsal games is an effective type of training that appear to have the potential to create physiological adaptations and leading to significant decreases in percent body fat throughout as an activity to elevate the physical capacity non-athletic obese girls

Keywords: recreational futsal training, obesity, body composition

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Introduction

Many large observational studies have shown that physical activity and good fitness decrease the risk of coronary heart disease, cardiovascular disease, type 2 diabetes and mortality. Thus, it seems clear that an increase in leisure-time physical activity level and enhancement in cardiorespiratory fitness are ways to reduce the risk of death.^{1,2} Inactivity is nowadays one of the main causes of cardiovascular disease.³ It was found that a six-month-long inactivity in the Studies resulted in metabolic abnormalities such as an increase in fat mass and visceral fat, and an increase in fasting insulin level, fasting glucose level and small low-density lipoprotein particle number.⁴ The diverse range of activities carried out by humans for example sitting, standing, walking and talking and by undertaking voluntary physical activity contribute to the overall energy balance. However, physical activity is the only component of energy expenditure that can be modified behaviorally in a significant manner.⁵ Exercise interventions targeting a broad health response are highly relevant for women of all ages. Given that much of the world's population is inactive, the association with non-communicable diseases presents a major public health issue. Thus, it is a worldwide challenge to provide initiatives that will get inactive people to become active and increase life healthy in sedentary peoples. Therefore one of the basic items for program training plan is choosing fun activities to create sport situations and competitions that both obviates people's requirements and leads to the optimum utility and health.⁶ During the last decades, there has been an increasing interest in the physiological demands of football (soccer) match play and training. Numerous studies have investigated different aspects of the game.⁷ Researchers have studied the effects of recreational football training as a health-promoting activity for participants across the lifespan. This has important public health implications as over 400 million people play football annually.⁸ Results from the first randomized controlled trial, showed that football increased maximal

oxygen uptake and muscle and bone mass, and lowered fat percentage and blood pressure, in untrained men.⁹ In recent years, the physical loading during small-sided games has also been examined it was found that football training organized as small-sided drills aerobic fitness and intermittent endurance performance were elevated.¹⁰ The effect of a period of recreational football has also been examined in middle-aged untrained male and female subjects and compared with a similar period of running. they were found that recreational football training stimulated both the aerobic and anaerobic energy turnover during the training of untrained players was shown to be effective leading to significant cardiovascular and muscular adaptations as well as performance enhancements throughout a 12-week training period.^{8,10,11} In fact, recreation is the longest social system associated with sports, and this refers to the importance of recreational activities and group activities in comprehensive training programs. In this study, we did not focus on a training program that targeted mainly on continuous aerobic-based exercises, such as jogging or cycling over 30 minutes, as we felt that these may not be the exercises of choice for obese girls to continue over long periods of time. While it is desirable, and perhaps essential, to use some forms of structured exercise training as a medium to increase physical activity levels towards the management of obesity. While limited studies of football training effects have also been performed in women and men, this article reviews the current evidence linking recreational futsal training on sedentary obese girls.

Materials and methods

Subjects

Twenty-four obese, non-athletic Girls students from a state university aged 19–23 years, fat percentage ≥ 30 , were recruited for the investigation. The subjects were matched randomly assigned to a

futsal group (n=14) and control group (n=10). No group differences were present in pre-intervention values for age, body mass index and fat percentage. None of the participants were on any medication and none were smokers. None of the subjects as been involved in regular physical activity for at least 2 years.

Training intervention

The training group exercised 3 days in a week for 6 weeks. The recreational futsal consisted of ordinary seven-a-side(7v7) 30minute futsal training one a 40×20 m organized as 14-min of exercise two times interspersed with an intensity of 75% of HRR with 2-min rest periods. During the training sessions, HR was measured continuously with a HR monitor (Polar electro, Kempele finland) and the subjects were instructed on the use of the Polar watchers during the exercise sessions. The participants were taught to increase the intensity of exercise by increasing the speed of movement if their heart rates fell below the prescribed HR training zone. Similarly, the participants were instructed maintain and adjust their movement speeds when the target HR training zone was reached.

Research design

All measurements were conducted baseline and following 6 weeks of program training. Weight and height were measured (shoes off) to the nearest 0.1 kg and 0.1 cm, respectively with a balance beam scale and stadiometer. Body mass index (kg/m²) was calculated. Waist circumference was measured at the end of normal expiration over non-binding undergarments in a horizontal plane at the natural waist. Hip circumference was measured to the nearest 0.1 cm at the maximal circumference below the umbilicus. Skinfold thickness was measured using skinfold calipers at 4-sites (triceps, biceps, subscapular, supra-iliac) and we assed percentage body fat using skinfold thickness.¹² All skinfold and circumference measures were performed by an experience teste.

Statistical analysis

Data were presented as mean ±SD. Change within and between the exercise group and the control group pre- and post- training for anthropometric and body composition variables were analysts. Using a T-Test. to compare the effect of exercise training in the futsal group with the control group in controlling pre-training percent body fat and BMI as dependent T-test, dependent T-test was also used to examine for significant differences in selected variables between these 2 group. Significance was set at P<0.05. Data were analysts using the Statistical package (SPSS, version 14.0 chicago.IL, USA) Software.

Results

Table 1 shows body composition and anthropometric Subject characteristics measures of participants who completed the study. Percent body fat decreased significantly (35.37±1.74 v 33.02±1.68) from baseline to post-treatment in the futsal group (p<0.05). Statically significant decline after 6-weeks futsal training, expressed as mean changes, were observed for body weight (69.88±6.11 v 65.5±6.15), body mass index (27.25±1.87Vs 25.27±3.9) in the futsal group. A significant decrease in circumference measures was observed in the futsal group (p<0.05). But not in the control group, after training. The dependent-samples T-Test analysis show that after the 6 weeks, the futsal group had a significant lower fat percentage, BMI and circumference measures than the control group.

Table 1 Body composition and anthropometric characteristics of the FG and CG at baseline and the end of training

	FG (n=14)		CG (n=10)	
	Pre	Post	Pre	Post
% body fat	35.37±1.87	33.2±1.68*	35.63±1.67	35.25±1.70+
Weight (kg)	69.88±6.11	65.5±6.15*	69.09±4.62	69.10±9.9+
Waist circumference (cm)	87.5±13.6	85.8±13.2*	85.2±11.4	86.7±13.1+
Hip circumference (cm)	110.5±13.3	108.7±12.3*	109.3±10.1	108.7±10.2+
BMI (kg/m ²)	27.25±1.87	25.27±3.9*	27.41±1.84	27.4±4.03+

Data were presented as the Mean value± Standard Deviation
BMI, body mass index; CG, control group; FG, futsal
+P≤0.05, Post-FG vs Post CG

*P≤0.05, Pre-FG vs Post-FG

Discussion

The present study examined the effect of 6-week of recreational futsal training in untrained obese girls. We found that Recreational activity, three times per week, lead to improvement in body composition for untrained girls after 6 weeks. In our study showed that regular futsal training was effective to improved body composition by decreasing of BMI and total body weight in obese girls, this findings agreement with previous study.^{13,14} We observed a decreasing significantly in percent body fat in exercise group (35.37±1.74 v 33.02±1.68) and no changes in control group. In agreement, marked improvement were observed for a group of middle-aged men performing regular football training consisting of small-sided games, but in that study most of the subjects had prior experience with football.^{8,10} Regular recreational football training influences body composition. Loss of body fat in middle-aged men was in the range of 1–3 kg following 3 months of training, corresponding to a reduction in fat percentage of 1–3%.⁸

Recently researches have shown that it is essential to use some forms of structured exercise training as a medium to increase physical activity levels towards the management of obesity.¹⁵ Recreational sports led to increase the hormone functional in whole body organs and effect on the cardiovascular, respiratory and nervous system.¹⁶ Using of recreational match play of physical activities that an appeal to obese girls. This will allow them to develop their own preferences and choices for the types of physical activities over the long haul, which can help reduce the incidence of sedentary behaviors in their lifestyles and leads to keeping individual interest and motivation for continuing a long time activity and also it has good influences on health and improves body composition of inactive subjects.^{5,7,8} Kenapli studied a 12-week of recreational football on 25-45 year-old men. Results of this research showed that football practice has decreased body mass (-1/6±1/8 to 1/5±2/1), adipose tissue (2/0±1/ 5 to 1/5±1/6), and has increased pulse variable which matches the results of this paper. For the untrained girls in the present study showed the futsal training to be effective in decreasing waist circumference throughout the 6-week training period. Such adaptations in the body composition to exercise are often observed when untrained subjects are starting a period of endurance and recreational training such as recreational tennis, aerobic dance, walking swim, volleyball.^{14,18-20} The recreational football was intermittent with activity changes every 4s and consisted of multiple

intense action with runs, backwards/sideways runs, shots and turns interspersed by low-intensity recovery periods.^{7,21} The similar research was found that football training organized as small-sided drills stimulated both the aerobic and anaerobic energy turnover during the training.^{22,23} In summary, futsal training appears, to be effective in stimulating to performance development throughout a 6-week training period and to cause decreasing significant body composition including BMI, weight, waist and hip circumference, percent body fat on obese girls without prior experience with futsal.

Conclusion

Our study describes in details a recreational training within a 6-week period. Suggesting that futsal games appear to have the potential to create physiological adaptation and improved body composition with regular training for obese girls without prior experience. Futsal practice can be recommended as physical activity may be necessary for obese population to achieve greater energy expenditure essential to prevent further weight gain. We incorporated recreational futsal game, to keep the program varied, interesting and fun, and be able to provide adequate aerobic benefits. We recommend that future studies look into activity and issues of inactive people surrounding adherence to the various types of exercise intervention programs.

Acknowledgments

None.

Conflicts of interest

The author declares there are no conflicts of interest.

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