Effects of the Curves™ Fitness & Weight Loss Program on Weight Loss and Resting Energy Expenditure

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Abstract

PURPOSE: The Curves fitness and diet program has become very popular among adult women with over 2 million women currently participating in the program. However, the efficacy of this program has yet to be examined. This study examined the efficacy of the Curves fitness and diet program on weight loss and resting energy expenditure (REE). **METHODS:** 123 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program. Based on baseline testing, subjects were randomly assigned to an exercise and no diet group (ND+E); an exercise and high calorie mixed diet (2,600 kcals/d for 2-wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E); or, a low calorie high carbohydrate (LC-HCHO+E), high protein (LC-HP+E), or very high protein (LC-VHP+E) diet. The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8-wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE. Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCHO+E diets and protein intake ranging from 50-63% on the LC-HP+E and LC-VHP+E diets. Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week. At 0, 2, 10, 10.4 and 14 weeks, body weight, body composition (DEXA), and REE measurements were obtained. Data were analyzed by repeated measures ANOVA and are presented as means ± SD changes from baseline for the ND+E, HCD+E, LC-HCHO+E, LC-HP+E and LC-VHP+E groups, respectively. **RESULTS:** After 10 weeks, subjects experienced significant (p<0.001) weight loss (-0.2±2; -1.1±3.2; -4.6±3.1; -4.5±4.1; -6.2±5.0 kg) and fat mass loss (-0.5±1.7; -0.5±2.0; -3.0±2.1, -3.2±2.8, -4.0±3.5 kg) which was maintained or continued during the maintenance phase (-0.1±1.8 -1.3±3.3; -5.1±3.5; -5.4±4.9; -6.3±5.4 kg weight; -0.9±1.7; -1.0±3.0; -3.5±2.8; -3.6±3.4, -4.6±4.1 kg fat). The majority of the weight loss was fat (76-100%). Weight loss was due in part to a significant gradual increase in REE during the study at week 10 (1.65±2.7 kcal/kg/d) and week 14 (1.94±2.8 kcal/kg/d). The greatest increase in REE occurred in the HCD+E group. **CONCLUSIONS:** The Curves fitness and weight loss program appears to increase REE and promote weight loss particularly when following one of the diet plans. Moreover, intermittent dieting following weight loss appears to be an effective way to maintain and/or promote weight loss as well as to increase REE.

Supported in part by Curves International, Inc., Waco, TX

Rationale

The Curves fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and fitness. Although the program has been based on sound rationale, the effects of following this program have not been studied. The purpose of this study is to examine the acute and chronic effects of Curves International fitness and diet program on weight loss, body composition, and resting energy expenditure in sedentary overweight females.

Experimental Design

Subjects

- 123 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program.
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subjects guidelines of Baylor University.

Diet Protocol

- Based on baseline testing, subjects were randomly assigned to one of the following groups:
  - an exercise and no diet group (ND+E);
  - an exercise and high calorie mixed diet (2,600 kcals/d for 2 wks at 55% C, 15% P, 30% F; 8 wks at 40% C, 30% P, 30% F; 4 wks at 55% C, 15% P, 30% F) group (HCD+E);
  - a low calorie high carbohydrate group (LC-HCHO+E);
  - a low calorie high protein group (LC-HP+E); or,
  - a low calorie very high protein (LC-VHP+E) diet group.
- The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8 wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE.
- Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCHO+E diets and protein intake ranging from 50-63% on the LC-HP+E and LC-VHP+E diets.

Training

- Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

Methods & Procedures

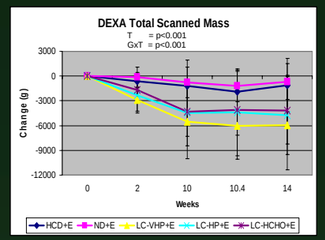
- Body weight, body composition (DEXA), and REE measurements were obtained at 0, 2, 10, 10.4 & 14 weeks.

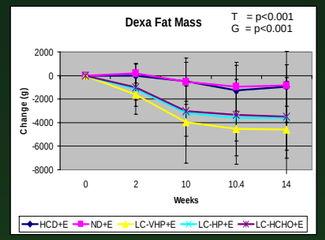
Statistical Analysis

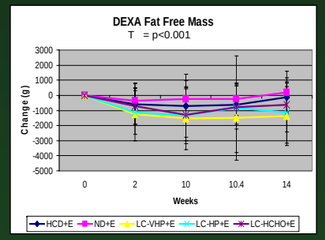
- Data were analyzed by repeated measures ANOVA analysis using SAS for Windows version 8.2 software *(Cary, NC)* and are presented as means ± SD from baseline for each diet group.

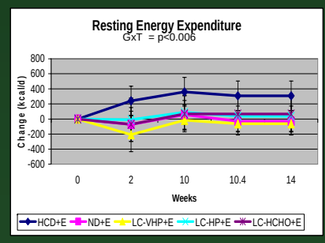
Results

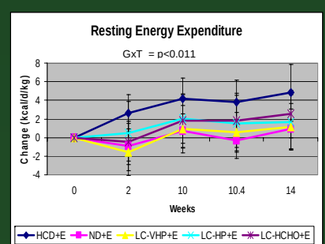
- After 10 weeks, subjects experienced significant (p<0.001) weight loss (-0.2±2; -1.1±3.2; -4.6±3.1; -4.5±4.1; -6.2±5.0 kg) and fat mass loss (-0.5±1.7; -0.5±2.0; -3.0±2.1, -3.2±2.8, -4.0±3.5 kg)
- Weight and fat mass loss were maintained or continued during the maintenance phase (-0.1±1.8 -1.3±3.3; -5.1±3.5; -5.4±4.9; -6.3±5.4 kg weight; -0.9±1.7; -1.0±3.0; -3.5±2.8; -3.6±3.4, -4.6±4.1 kg fat).
- The majority of the weight loss was fat (76-100%).
- Weight loss was due in part to a significant gradual increase in REE during the study at week 10 (1.65±2.7 kcal/kg/d) and week 14 (1.94±2.8 kcal/kg/d).
- The greatest increase in REE occurred in the HCD+E group.











Conclusions

- The Curves fitness and weight loss program appears to increase REE and promote weight loss particularly when following one of the diet plans.
- Intermittent dieting following weight loss appears to be an effective way to maintain and/or promote weight loss as well as to increase REE.

Funding

Supported by the Exercise & Sport Nutrition Laboratory, Baylor University and Curves International, Inc., Waco, TX

EFFECTS OF THE CURVES™ FITNESS AND WEIGHT LOSS PROGRAM ON MUSCULAR STRENGTH, MUSCULAR ENDURANCE, AND MAXIMAL AEROBIC CAPACITY

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Exercise & Sport Nutrition Lab, Center for Exercise, Nutrition & Preventive Health Research, Baylor University, Waco, TX 76798-7313

Abstract

PURPOSE: The Curves fitness and diet program has become very popular among adult women with over two million women currently participating in the program. However, the efficacy of this program has yet to be examined. This study examined the effects of the Curves fitness and diet program on muscular strength, muscular endurance, and maximal aerobic capacity. **METHODS:** 123 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8% body fat) participated in a 14-week exercise and diet program. Based on baseline testing, subjects were randomly assigned to an exercise and no diet group (ND+E); an exercise and high calorie mixed diet (2,600 kcal/d for 2-wks at 55% C, 15% P, 30% F; 8-wks 40% C, 30% P, 30% F; 4-wks at 55% C, 15% P, 30% F) group (HCD+E); or, a low calorie high carbohydrate (LC-HCHO+E), high protein (LC-HP+E), or very high protein (LC-VHP+E) diet. The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8-wks. Subjects then ingested 2, 600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE. Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCHO+E diets, and protein intake ranging from 50-63% on the LC-HP+E and LC-VHP+E diets. Subjects participated in a supervised 30-minute resistance training circuit program that was interspersed with callisthenic exercises and performed 3-d per week. At 0, 10, and 14 weeks, subjects performed 1RM bench press and leg press tests, an 80% of 1RM maximal repetition test on the bench press and leg press, and maximal cardiopulmonary exercise tests using the Bruce protocol. Data were analyzed by repeated measures ANOVA and are presented as means ± SD from baseline. **RESULTS:** Training significantly increased bench press 1RM (2.37±3.8 kg, p<0.006; 0.04±0.04 kg/kg, p<0.001) and leg press 1RM (15.5±38 kg, p<0.002; 0.27±0.39 kg/kg, p<0.001) representing about a 10-15% gain in strength. Overall, bench press lifting volume (80% weight x repetitions) was unchanged (9.1±126 kg, p=0.20; 0.3±1.4 kg/kg, p=0.6). However, significant interactions (p<0.05) were observed with the subjects in the ND+E group experiencing significantly greater gains in bench press lifting volume compared to other groups. Overall leg press lifting volume was significantly increased in all groups (325±1,521 kg, p=0.03; 4.1±14 kg/kg, p=0.006) with no significant differences among diet groups. Relative maximal oxygen uptake was significantly increased in all groups, primarily due to a reduction in body weight, with no differences observed between groups (1.6±3.5 ml/kg/min, p<0.002) which represented an approximately 7% increase in maximal aerobic capacity. In addition, resting heart (-4.2±14.0 bpm, p<0.01), systolic blood pressure (-3.2±13 mmHg, p<0.001), and diastolic blood pressure (-2.1±10 mmHg, p<0.03) decreased in response to training. **CONCLUSIONS:** The Curves fitness program promotes increases in muscular strength, muscular endurance, and maximal aerobic capacity while decreasing resting heart rate and blood pressure. These findings indicate that this program appears to be an effective and appropriate level exercise program for this population.

Supported in part by Curves International, Inc., Waco, TX

Rationale

The Curves International fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and muscle mass/tone. Although the program has been based on sound scientific rationale, the effects of women following this program have not been studied in detail. The purpose of this study is to examine the acute and chronic effects of Curves International fitness and diet program on weight loss, body composition, metabolism, and exercise capacity in sedentary overweight females.

Experimental Design

Subjects

- 123 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program.
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subject guidelines of Baylor University.

Diet Protocol

- Based on baseline testing, subjects were randomly assigned to:
  - an exercise and no diet group (ND+E);
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  - a low calorie high carbohydrate group (LC-HCHO+E);
  - a low calorie high protein group (LC-HP+E); or,
  - a low calorie very high protein (LC-VHP+E) diet group.
- The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8 wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal diet at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE.
- Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCHO+E diets and protein intake ranging from 50-63% on the LC-HP+E and LC-VHP+E.

Training Protocol

- Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

Methods & Procedures

- At 0, 10, and 14 weeks, subjects performed 1RM bench press and leg press tests, an 80% of 1RM maximal repetition test on the bench press and leg press, and maximal cardiopulmonary exercise tests using the Bruce protocol.

Statistical Analysis

- Data was analyzed by repeated measures ANOVA using SAS for Windows version 8.2 software (Cary, NC) and are presented as means ± SD from baseline for each diet group.

Results

- Training significantly increased bench press 1RM (2.37±3.8 kg, p<0.0006; .04±.04 kg/kg, p<0.001) and leg press 1RM (15.5±38 kg, p<0.002; 0.27±0.39 kg/kg, p<0.0001) representing a 10-15% gain in strength.
- Overall, bench press lifting volume (80% weight x repetitions) was unchanged (9.1±126 kg, p=0.20; 0.3±1.4 kg/kg, p<0.6).
- Significant interactions (p<0.05) were observed with the subjects in the ND+E group experiencing significantly greater gains in bench press lifting volume compared to other groups.
- Leg press lifting volume was significantly increased in all groups (325±1,521 kg, p=0.03; 4.1±14 kg/kg, p=0.006) with no significant differences among diet groups.
- Relative maximal oxygen uptake was significantly increased in all groups with no differences observed between groups (1.6±3.5 ml/kg/min, p<0.002) which represented an approximately 7% increase in maximal aerobic capacity.
- Resting heart (-4.2±14.0 bpm, p<0.01), systolic blood pressure (-3.2±13 mmHg, p<0.001), and diastolic blood pressure (-2.1±10 mm Hg, p<0.03) decreased in response to training with no differences observed among groups.

Conclusions

- The Curves fitness program promotes increases in muscular strength, muscular endurance, and maximal aerobic capacity, while decreasing resting heart rate and blood pressure.
- These findings indicate that this program appears to be an effective and appropriate level exercise program for this population.

Funding

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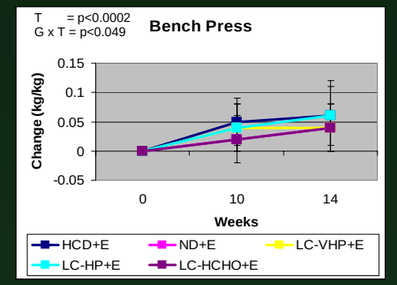

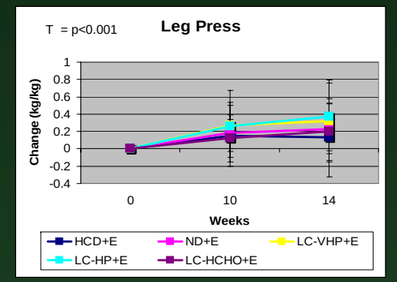

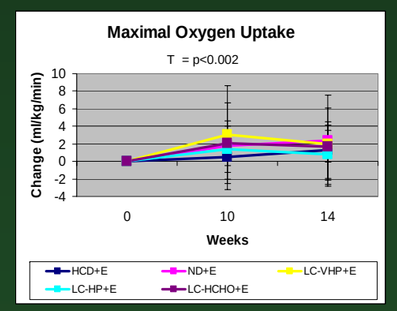

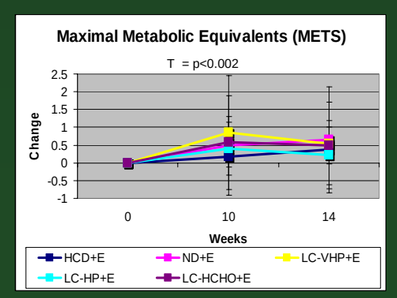

EFFECTS OF THE CURVES™ FITNESS AND WEIGHT LOSS PROGRAM ON MARKERS OF HEALTH

C. Rasmussen, R. Kreider, FACSM, C. Kerksick, B. Campbell, B. Slonaker, M. Greenwood, FACSM, J. Baer, E. Pfau, M. Grimstvedt, J. Opusunju, C. Wilborn, A. Thomas, L. Autrey, T. Magrans, B. Marcello, C. Mulligan, D. Rohle, L. Taylor, A. Vacanti, S. Ounpraseuth, P. Casey, R. Wilson.
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Abstract

PURPOSE: The Curves fitness and diet program has become very popular among adult women with over 2 million women currently participating in the program. However, the efficacy of this program has yet to be examined. This study examined the effects of the Curves fitness and diet program on general markers of health. **METHODS:** 123 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program. Based on baseline testing, subjects were randomly assigned to an exercise and no diet group (ND+E); an exercise and high calorie mixed diet (2,600 kcals/d for 2 wks at 55% C, 15% P, 30% F; 8-wks at 40% C, 30% P, 30% F; 4-wks at 55% C, 15% P, 30% F) group (HCD+E); or, a low calorie high carbohydrate (LC-HCHO+E), high protein (LC-HP+E), or very high protein (LC-VHP+E) diet. The diets involved consuming 1,200 kcal/d for 2-wks and 1,600 kcal/d for 8-wks. Subjects then ingested 2,600 kcal/d and 1,200 kcal/d at 3/2, 3/2, 5/2, & 10/0 day intervals in an attempt to maintain weight loss and REE. Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCHO+E diets and protein intake ranging from 50-63% on the LC-HP+E and LC-VHP+E diets. Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week. At 0, 2, 10, 10.4 and 14 weeks, subjects donated fasting blood samples as well as had waist and hip measurements determined. In addition, subjects reported any side effects associated with participating in the study to a research nurse on a weekly basis. Serum and whole blood samples were assayed for a comprehensive panel of biochemical markers to assess general clinical safety and the ratio of waist to hip measurements was calculated to assess general risk to cardiovascular disease. Data were analyzed by repeated measures ANOVA and are presented as means ± SD from baseline at week 2, 10, 10.4, and 14 of the study, respectively. **RESULTS:** Total cholesterol (-20.2±24; -11.6±26; -14.5±25; -7.2±25 mg/dl, p<0.001), LDL-c (-12.7±19; -8.1±22; -10.5±19; -6.7±21 mg/dl, p<0.001), and the ratio of total cholesterol/HDL-c (-0.16±0.5; -0.07±0.5; -0.09±0.5, -0.06±0.6, p<0.03) significantly decreased in all groups during the study with no significant differences observed among groups. Triglycerides and glucose levels also declined but these changes were not significantly different. Subjects also experienced a significant decrease in waist (-2.9±5; -5.9±5; -6.9±5, -7.0±5 cm, p<0.001), hip (-2.1±5; -4.0±5; -4.3±4, -4.7±5 cm, p<0.001), and the ratio of waist to hip measurements (-0.01±0.07; -0.02±0.05; -0.03±0.04, -0.03±0.04, p<0.001) which served to decrease the overall ratio for this age group from 0.84±0.05 (Very High Risk) to 0.81±0.05 (High Risk). No significant differences were observed in serum total protein, blood urea nitrogen, creatinine, BUN/creatinine ratio, uric acid, AST, ALT, CK, LDH, GGT, albumin, globulin, sodium, chloride, calcium, carbon dioxide, total bilirubin, alkaline phosphatase. Likewise, no significant differences were observed in hemoglobin, hematocrit, red blood cell counts, MCV, MCH, MCHC, RDW, white blood cell counts, neutrophils, lymphocytes, monocytes, eosinophils, or baosphils. No clinically significant side effects or adverse events were reported in weekly follow-up assessments. **CONCLUSIONS:** The Curves fitness and weight loss program promotes improvements in blood lipid profiles and a reduction in waist to hip ratio suggesting a reduction in risk to cardiovascular disease. Participation in this program does not appear to adversely affect general markers of clinical health status.

Supported in part by Curves International, Inc., Waco, TX

Rationale

The Curves International fitness and weight loss program has become a very popular means of promoting health and fitness among women. The program involves a 30-minute circuit training program and a weight management program involving periods of moderate caloric restriction (1,200 to 1,600 calories per day) followed by short periods of higher caloric intake (2,600 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and muscle mass/tone. Although the program has been based on sound scientific rationale, the effects of women following this program have not been studied in detail. The purpose of this study is to examine the acute and chronic effects of Curves International fitness and diet program on weight loss, body composition, metabolism, general markers of health, and exercise capacity in sedentary overweight females.

Experimental Design

Subjects

- 123 sedentary women (38.7±8 yr; 93.2±19 kg; 44.8±4.8 % body fat) participated in a 14-wk exercise and diet program.
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Diet Protocol

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- Diets were standardized with 30% dietary fat with carbohydrate intake ranging from 40-55% on the HCD+E and LC-HCO+E diets and protein intake ranging from 50-63% on the HP and VHP.

Training Protocol

- Subjects participated in a supervised 30-min resistance training circuit program that was interspersed with calisthenic exercises and performed 3-d per week.

Methods & Procedures

- At 0, 2, 10, 10.4 and 14 weeks, subjects donated fasting blood samples as well as had waist and hip measurements determined.
- Subjects reported any side effects associated with participating in the study to a research nurse on a weekly basis.
- Serum and whole blood samples were assayed for a comprehensive panel of biochemical markers to assess general clinical safety and the ratio of waist to hip measurements was calculated to assess general risk to cardiovascular disease.

Statistical Analysis

- Data was analyzed by repeated measures ANOVA using SAS for Windows version 8.2 software (Cary, NC) and are presented as means ± SD from baseline for each diet group at week 2, 10, 10.4, and 14 of the study, respectively.

Results

- Total cholesterol (-20.2±24; -11.6±26; -14.5±25; -7.2±25 mg/dl, p<0.001), LDL-c (-12.7±19; -8.1±22; -10.5±19; -6.7±21 mg/dl, p<0.001), and the ratio of total cholesterol/HDL-c (-0.16±0.5; -0.07±0.5; -0.09±0.5, -0.06±0.6, p<0.03) significantly decreased in all groups during the study with no significant differences observed among groups.
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- No significant differences were observed in serum total protein, blood urea nitrogen, creatinine, BUN/creatinine ratio, uric acid, AST, ALT, CK, LDH, GGT, albumin, globulin, sodium, chloride, calcium, carbon dioxide, total bilirubin, alkaline phosphatase.
- Likewise, no significant differences were observed in hemoglobin, hematocrit, red blood cell counts, MCV, MCH, MCHC, RDW, white blood cell counts, neutrophils, lymphocytes, monocytes, eosinophils, or baosphils.
- No clinically significant side effects or adverse events were reported in weekly follow-up assessments.

Conclusions

- The Curves fitness and weight loss program promotes improvements in blood lipid profiles and a reduction in waist to hip ratio suggesting a reduction in risk to cardiovascular disease.
- Participation in this program does not appear to adversely affect general markers of clinical health status.

Funding

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