LONG-TERM EFFICACY OF WOMEN PARTICIPATING IN THE CURVES FITNESS AND WEIGHT LOSS PROGRAM

CN Canon, JY Kresta, M Byrd, JM Oliver, M Mardock, S Simbo, Y Jung, M Koozehchian, D Khanna, B Lockhard, R Dalton, HK Kim, C Rasmussen, RB Kreider. Exercise & Sport Nutrition Lab, Texas A&M University, College Station, TX 77843

Abstract

The Curves fitness program involves a 30-minute circuit resistance-training program performed 3 days/week and an optional weight management program. While initial studies have shown this program to be highly effective (*Nutri Metab 6/1/23, 2009*), the long-term success rates of women participating in this program remains to be examined. This study examined the long-term efficacy of women participating in the Curves program from 6 months to 8 years on weight loss and maintenance. METHODS: Several long-time Curves franchise owners were invited to obtain consent from members of their clubs who had been a member for at least 6-months to participate in the study. Participants agreed to allow their weight and measurement member histories to be printed out and forwarded in an anonymous fashion to researchers. Member histories were examined to determine the amount, the time to peak weight and body fat loss (BIA), as well as length of time the weight loss was maintained. Participants were then stratified into length of involvement in the program as well as those who lost < 5%, 5-10%, and > than 10% body mass. Descriptive statistics were performed to determined percentage of members categorized by these groups. In addition, data were analyzed by ANOVA to examine differences among participants falling within these groups. RESULTS: Data were analyzed on 235 participants who were members for 36.9±22 months, initially weighed 179±40 lbs, had a percent body fat of 38.6±6%, and participated in an average of 329±230 workouts. Mean peak weight loss was 13.5±12 lbs corresponding to a weight loss of 7.3±5% and a fat loss of 3.4±2.6%. The average time to peak weight loss was 9.0±11 months and weight loss was maintained an average of 10.4±13 months. Participants who were members for 6-12 months (9%) lost 8.7±6 lbs and 2.6±1.5% fat; 1-2 years (26%) lost 13.3±13 lbs and 3.3±2.8% fat; 2-3 years (23%) lost 11.1±9 lbs and 3.0±2.0% fat; and, >3 years (41%) lost 16.2±13 lbs and 3.8±3.0% fat. When categorized by magnitude of weight loss, 42% of the participants lost less than 5% body mass (3.2±1.2%), 35% lost 5-10% body mass (7.0±1.3%), and 23% lost > 10% body mass (15.3±5%). Participants in these groups lost 5.6±2.4, 12.2±3.5, and 29.8±14.3 lbs and 2.3±1.7, 3.3±2.3, and 5.3±3.4% fat, respectively. It took them 5.0±5, 9.1±9, and 15.9±16 months to achieve the weight loss and it was maintained for 6.4±9, 9.9±10, and 15.9±16 months. Overall, 29% of this cohort maintained weight loss for more than 1-year (20.2±16 lbs, 10.2±7% weight, 25.2±16 months [range 12 – 74 months]). CONCLUSIONS: These findings support contentions that women following the Curves program are experiencing significant benefits in terms of weight loss and maintenance.

Supported 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 resistance-training program 3 times per week that involves performing two rotations through 14 hydraulic bidirectional exercises for 30-seconds interspersed with 30-seconds of low impact recovery calisthenics. The program is designed to promote general improvements in cardiovascular fitness, muscular strength and endurance, flexibility, and body composition.

Researchers in the Exercise & Sport Nutrition Laboratory at Texas A&M University have conducted extensive research on the effectiveness and safety of the Curves fitness program. Prior research has shown this program to be highly effective in controlled clinical trials (*Nutri Metab 6/1/2009*). The purpose of this study is to examine the long-term efficacy of women participating in the Curves program from 6 months to 8 years on weight loss and maintenance.

Experimental Design

Subjects

- Post-study results were obtained from 235 participants who were members for 36.9±22 months, initially weighed 179±40 lbs, had a percent body fat of 38.6±6%, and participated in an average of 329±230 workouts.
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subject guidelines of Texas A&M University.

Training Protocol

- Participants followed the Curves 30-min hydraulic resistance training circuit program interspersed with callisthenic exercises 3-d/wk and an optional weight management program.

Methods & Procedures

- Several long-time Curves franchise owners were invited to obtain consent from members of their clubs who had been a member for at least 6-months to participate in the study. Pre and post-test assessments were obtained by club personnel and recorded on study cards.
- Participants agreed to allow their weight and measurement member histories to be printed out and forwarded in an anonymous fashion to researchers.
- A handheld BIA analyzer was used to assess body fat.
- Member histories were examined to determine the amount, the time to peak weight and body fat loss (BIA), as well as length of time the weight loss was maintained.
- Participants were stratified into length of involvement in the program as well as those who lost < 5%, 5-10%, and > than 10% body mass.

Statistical Analysis

- Descriptive statistics were performed to determined percentage of members categorized by these groups.
- Data were analyzed by ANOVA to examine differences among participants falling within these groups.

Results

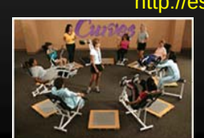
- Mean peak weight loss was 13.5±12 lbs corresponding to a weight loss of 7.3±5% and a fat loss of 3.4±2.6%.
- The average time to peak weight loss was 9.0±11 months and weight loss was maintained an average of 10.4±13 months.
- Participants who were members for 6-12 months (9%) lost 8.7±6 lbs and 2.6±1.5% fat; 1-2 years (26%) lost 13.3±13 lbs and 3.3±2.8% fat; 2-3 years (23%) lost 11.1±9 lbs and 3.0±2.0% fat; and, >3 years (41%) lost 16.2±13 lbs and 3.8±3.0% fat.
- When categorized by magnitude of weight loss, 42% of the participants lost less than 5% body mass (3.2±1.2%), 35% lost 5-10% body mass (7.0±1.3%), and 23% lost > 10% body mass (15.3±5%).
- Participants in these groups lost 5.6±2.4, 12.2±3.5, and 29.8±14.3 lbs and 2.3±1.7, 3.3±2.3, and 5.3±3.4% fat, respectively. It took them 5.0±5, 9.1±9, and 15.9±16 months to achieve the weight loss and it was maintained for 6.4±9, 9.9±10, and 15.9±16 months.
- 29% of this cohort maintained weight loss for more than 1-year (20.2±16 lbs, 10.2±7% weight, 25.2±16 months [range 12 – 74 months]).

Conclusions

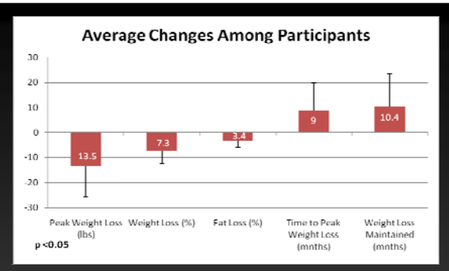
- Results support contentions that women following the Curves program are experiencing significant benefits in terms of weight loss and maintenance.

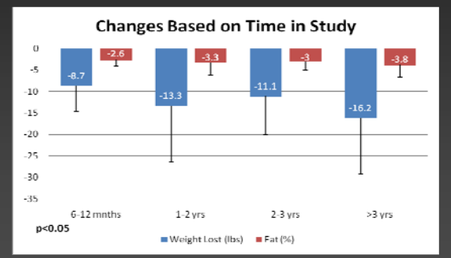
Funding

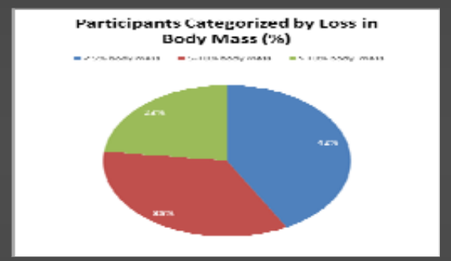
Supported by Curves International Inc., Waco, TX
http://esnl.tamu.edu

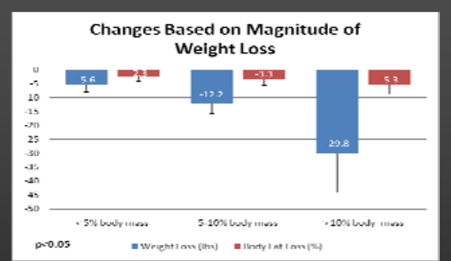


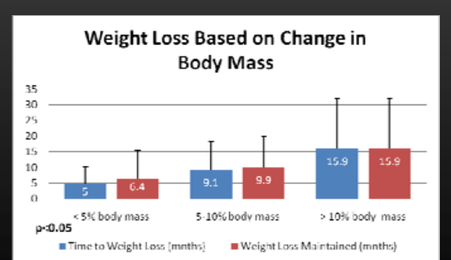
Exercise • Nutrition • Health • Performance
ESNL
Exercise & Sport Nutrition Lab











EFFECTS OF DIET CYCLING ON WEIGHT LOSS, FAT LOSS AND RESTING ENERGY EXPENDITURE IN WOMEN

JY Kresta, M Byrd, JM Oliver, C Canon, M Mardock, S Simbo, Y Jung, M Koozehchian, D Khanna, B Lockard, R Dalton, H Kim, C Rasmussen, R Kreider
Exercise & Sport Nutrition Lab, Texas A&M University, College Station, TX and Baylor University, Waco, TX

VISION 2020

Abstract

This study examined the efficacy of cycling diet phases in order to promote weight loss and maintenance of REE. 36 overweight and sedentary women (35±8 yrs, 200±42 lbs; 43±4% body fat, 33.4±66 kg/m^2) were assigned to a high carbohydrate (HC, n=17) or high protein (HP, n=19) diet group. During the first 30-days, subjects consumed 1,200 kcals/d for 1-wk followed by ingesting 1,500 kcals/d for 3-wks. Subjects then followed a 2,200 kcals/d maintenance diet for 4 wks and then repeated this pattern for a total of 5 months. Diets were 45% CHO, 30% PRO, and 25% F or 45% PRO, 30% CHO, and 25% F. Subjects participated in the Curves circuit training program 3-d/wk and walked for 30-min 3-d/wk. Data were analyzed by repeated measures MANOVA and are presented as means ± SD changes from baseline after 1, 2, 3, 4 and 5 months for the HC and HP groups, respectively. Significant time effects (p=0.001) were observed in weight loss, fat loss and percent fat with no differences between types of diets in weight loss (HP -7.3±1.3, HC -6.5±1.3 lbs, p=0.65; (HP -5.3±0.8, HC -5.1±0.9 lbs, p=0.85; -0.9±1.7, -1.5±1.8, -1.5±1.8, -2.2±2.2, -2.0±2.5%, p<0.01; Mean REE values did not change over time or between groups (-50.8±32.5; -52.7±34.4 kcals/d, p=0.97. Results suggest that following 30-day cycles of dieting and maintenance can promote weight loss without reducing REE.

Supported by Curves International

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 1,500 calories per day) followed by short periods of higher caloric intake (2,200 calories per day). The program is designed to promote a gradual reduction in body fat while increasing strength and muscle mass/tone.

Researchers in the Exercise & Sport Nutrition Laboratory at Texas A&M University have conducted extensive research on the effectiveness and safety of the Curves fitness program. Prior research has shown this program to be highly effective in controlled clinical trials (*Nutri Metab 6/1/2009*). However, the program may be even more effective with some additional nutritional interventions. The purpose of this preliminary study was to examine the efficacy of cycling diet phases during a weight loss and exercise program in order to determine if this is an effective strategy in promoting long-term weight loss and maintenance.

Experimental Design

Subjects

- 36 overweight and sedentary women (35±8 yr; 200±42 lbs; 43±4% body fat, 33.4±6 kg/m^2) participated in this study.
- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with the human subject guidelines of Texas A&M University.

Diet Protocol

- Based on baseline testing, subjects were assigned to:
  - a high carbohydrate (HC, n=17) (45% CHO, 30% protein, 25% fat);
  - a high protein diet (HP, n=19) (30% CHO, 45% protein, 25% fat)
- The diets involved consuming 1,200 kcal/d for 1-wk followed by ingesting 1,500 kcal/d for 3-wks. Then they followed a 2,200 kcal/d maintenance diet for 4-wks. They repeated this dietary cycle pattern for a total of 3 diet phases and 2 maintenance phases, equaling 5 months.

Training Protocol

- Subjects participated in a supervised 30-min hydraulic resistance training circuit program that was interspersed with recovery calisthenic exercises performed at 30-sec intervals, completed 3-d/wk for the entire duration of the study.
- Subjects walked 30-min 3-d/wk in addition to the circuit program for the entire duration of the study.

Methods & Procedures

- DEXA body composition and REE measurements were obtained at 0, 1, 2, 3, 4, and 5 months.
- Subjects reported any side effects associated with participating in the study to a research associate on a monthly basis.

Statistical Analysis

- Data was analyzed by repeated measures MANOVA using SPSS for Windows version 11.5 software (Chicago, IL) and are presented as means ± SD changes from baseline for each diet group (HC and HP) after 1, 2, 3, 4 and 5 months of the study.

Results

- Significant time effects (p=0.001) were observed in weight loss across months 1, 2, 3, 4 and 5 with no differences between types of diets in weight loss (HP -7.3±1.3, HC -6.5±1.3 lbs, p=0.65).
- Significant time effects (p=0.001) were observed for fat loss across months 1, 2, 3, 4 and 5 with no difference between types of diets (HP -5.3±0.8, HC -5.1±0.9 lbs, p=0.85).
- Significant time effects at each monthly time point for decrease in percent body fat (-0.9±1.7, -1.5±1.8, -1.5±1.8, -2.2±2.2, -2.0±2.5%, p<0.01).
- No significant differences between diet groups in overall changes in REE (-50.8±32.5; -52.7±34.4 kcals/d, p=0.97) or changes in REE over the 5 month program (-52.2±165, -73.3±214, -63.5±217, -64.9±203, -56.2±189 kcals/d, p=0.49) indicating that subjects were able to lose weight without significant reductions in REE.

Conclusions

- Short-term diet cycling during a weight loss and exercise program may be an effective way to promote weight loss without associated reductions in REE.
- Preliminary findings indicate that the HP and HC diet approaches employed were equally effective.

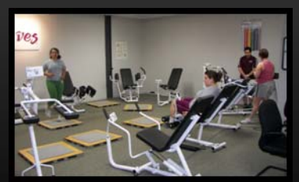
Funding

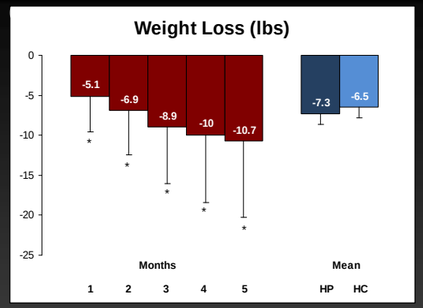
Supported by Curves International Inc., Waco, TX
http://esnl.tamu.edu

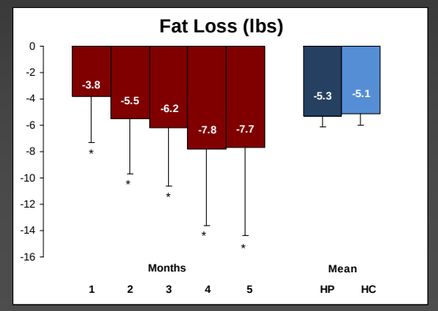
Acknowledgements

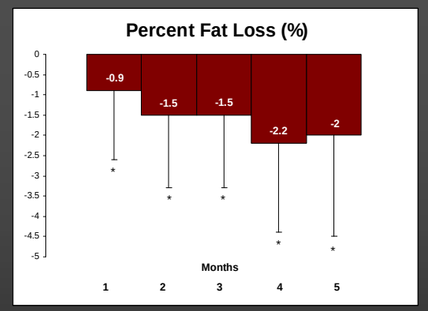
We would like to thank Jean Jitomir, Monica Serra, Jen Moreillon, Erika Deike, Geoffrey Hudson, and Mike Greenwood who assisted in data collection on the first cohort of subjects that participated in this study when the ESNL was located at Baylor University.

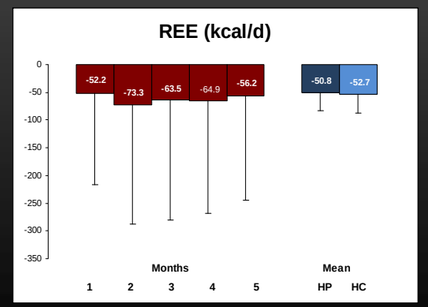
Exercise • Nutrition • Health • Performance
ESNL
Exercise & Sport Nutrition Lab











EFFECTS OF HIGH CARBOHYDRATE OR HIGH PROTEIN ENERGY-RESTRICTED DIETS COMBINED WITH RESISTANCE-EXERCISE ON WEIGHT LOSS AND MARKERS OF HEALTH IN WOMEN WITH SERUM TRIGLYCERIDE VALUES ABOVE OR BELOW MEDIAN VALUES

JM Oliver, JY Kresta, M Byrd, C Canon, M Mardock, S Simbo, P Jung, B Lockard, D Khanna, M Koozehchian, C Rasmussen, C Kerksick, R Kreider.
Exercise & Sport Nutrition Lab, Texas A&M University, College Station, TX 77843

Abstract

Background: A diet high in protein has been shown to have beneficial effects on weight loss and triglyceride (TG) levels when combined with exercise. Recent research has also shown that a diet high in protein in the absence of exercise promotes more favorable results for individuals above the median TG (mTG) levels (>133 mg/dL). The purpose of this study was to determine if women with TG above median values experience greater benefits to a diet and circuit resistance-training program.
Methods: 442 apparently healthy sedentary obese women (48±12 yrs, 64±3 in, 201±39 lbs, 45±5 % fat) completed a 10-wk exercise and diet program. All subjects participated in Curves circuit training (30-minute hydraulic resistance exercise interspersed with recovery floor calisthenics performed at 30-seconed intervals 3 days/wk) and weight loss program (1,200 kcal/d for 1 wk; 1,600 kcal/d for 9 wks). Subjects were randomly assigned to a high protein or high carbohydrate isocaloric diet. The high protein (HP) group (n=200) consumed 30% fat, 55-63% protein, and 9-15% carbohydrate diet while the high carbohydrate (HC) group (n=242) consumed 30% fat, 55% carbohydrate, and 15% protein diet. Pre and post measurements included standard anthropometric measurements including dual energy X-ray absorptiometry (DEXA), as well as resting energy expenditure (REE), metabolic blood analysis, and blood pressure. Subjects were stratified into a lower or higher TG group based on the mTG value observed (125 mg/dL). Data were analyzed by MANOVA with repeated measures and are presented as means ± SD percent changes from baseline.
Results: Fasting serum TG levels differed between groups stratified based on mTG levels (<mTG 86±24 vs >mTG 204±84 mg/dL, p=0.001). Time effects were observed in all anthropometric measurements including waist and hip, as well as weight loss, fat mass and percent body fat. Subjects on the HP diet experienced greater reductions in weight than those on the HC diet (HP -3.1±3.4%; HC -2.3±2.5%, p=0.005) and fat mass (HP -1.7±3.1%; HC -1.3±2.0%, p=0.006). No differences were seen in any measures in subjects with > mTG. However, a Time x Diet x mTG interaction was observed in changes in hip circumference. Subjects in the HP diet with <mTG experienced a greater reduction in hip circumference (-2.7 ± 4.8%) than those with >mTG levels (-2.4 ± 4.8%, p=0.029) while subjects in the HC diet with >mTG experienced a greater reduction in hip circumference (-3.4 ± 4.8%) than those with <mTG levels (-1.9 ± 3.4%, p=0.029). Time effects were also observed in systolic and diastolic blood pressures, REE, cholesterol, high density lipoprotein (HDL), low density lipoprotein (LDL) and uric acid. While no time effects were observed with changes in TG, subjects on the HP diet experienced a significantly greater reduction (p=0.048) in TG levels (-5.6 ± 34.0%) than those on the HC (2.0 ± 36.5%) while subjects with >mTG, also experienced a greater reduction (p=0.02) in TG levels (-12.3 ± 29.8%) than those with <mTG (9.1 ± 39.4%).
Conclusion: Results reveal that diet combined with circuit training promotes decreases in waist and hip circumference, weight loss, fat mass and body fat percentage while concomitantly reducing blood pressure, cholesterol and uric acid, and increasing resting energy expenditure. A HP diet promotes greater reductions in weight loss, fat mass and TG levels. Greater reductions in TG levels were experienced by individuals with mTG levels > 125 mg/dL. While a HP diet promotes greater reductions in TG, individuals with TG levels > 125 mg/dL experience greater reductions regardless of diet.

Rationale

Researchers in the Exercise & Sport Nutrition Laboraty at Texas A & M have conducted extensive research on the effectiveness and safety of the Curves fitness and weight loss program on markers of health in several populations of women. The program involves a 30-minute circuit resistance-training program using 14 hydraulic bidirectional exercises for 30-seconds interspersed with 30-seconds of low impact recovery calisthenics. The program is designed to promote general improvements in cardiovascular fitness, muscular strength and endurance, flexibility, and body composition.

We have previously shown that the high protein Curves weight loss program consisting of 30% fat, 55-63% protein, and 9-15% carbohydrate to have beneficial effects on weight loss and triglyceride levels when combined with the Curves fitness program (FASEB 2010). Recent research has also shown that a diet high in protein in the absence of exercise promotes more favorable results for individuals above the median TG (mTG) levels (>133 mg/dL). The purpose of this study was to determine if women with TG above median values experience greater benefits to a diet and circuit resistance-training program.

Experimental Design

- Subjects were informed as to the experimental procedures and signed informed consent statements in adherence with human subject guidelines.
- 442 apparently healthy sedentary obese women (48±12 yrs, 64±3 in, 201±39 lbs, 45±5 % fat) participated in this study.
- Subjects were stratified based on baseline median triglyceride levels (125 mg/dL); those with > 125 mg/dL (n = 219), those with < 125 mg/dL (n = 223)
- Subjects were also randomly assigned to one of two diet groups:
  - a high carbohydrate (HC - 30% fat, 55% carbohydrate, and 15% protein diet; n = 242);
  - a high protein diet (HP - 30% fat, 55-63% protein, and 9-15% carbohydrate; n = 200)
- The diets involved consuming 1,200 kcal/d for 1-wk and 1,600 kcal/d for 9 wks.
- Subjects participated in a supervised 30-min resistance circuit training program that was interspersed with calisthenic exercises and performed 3-d per week for the entire duration of the study.

Methods & Procedures

Body mass, DEXA body composition, anthropometic measurements, resting blood pressures, and fasting blood samples were obtained at 0 and 10 weeks.

Statistical Analysis

Data were analyzed by MANOVA with repeated measures using SPSS for Windows version 17.0 software (Chicago, IL) and are presented as means ± SD % change from baseline for each group (HP, HC, <mTG, >mTG) at week 10 of the study.

Results

- Fasting serum TG levels differed between groups stratified based on mTG levels (<mTG 86±24 vs >mTG 204±84 mg/dL, p=0.001)
- After 10 weeks, subjects on the HP diet experienced greater reductions in weight than those on the HC diet (HP -3.1±3.4%; HC -2.3±2.5%, p=0.005) and fat mass (HP -1.7±3.1%; HC -1.3±2.0%, p=0.006).
- Subjects in the HP diet with <mTG experienced a greater reduction in hip circumference (-2.7 ± 4.8%) than those with >mTG levels (-2.4 ± 4.8%, p=0.029)
- Subjects in the HC diet with >mTG experienced a greater reduction in hip circumference (-3.4 ± 4.8%) than those with <mTG levels (-1.9 ± 3.4%, p=0.029).
- While no time effects were observed with changes in TG, subjects on the HP diet experienced a significantly greater reduction (p=0.048) in TG levels (-5.6 ± 34.0%) than those on the HC (2.0 ± 36.5%)
- Subjects with >mTG, also experienced a greater reduction (p=0.02) in TG levels (-12.3 ± 29.8%) than those with <mTG (9.1 ± 39.4%).

Conclusions

- Diet combined with circuit training promotes decreases in waist and hip circumference, weight loss, fat mass and body fat percentage while reducing blood pressure, cholesterol and uric acid, and increasing resting energy expenditure.
- A HP diet promotes greater reductions in weight loss, fat mass and TG levels.
- Greater reductions in TG levels were experienced by individuals with mTG levels > 125 mg/dL.
- While a HP diet promotes greater reductions in TG, individuals with TG levels > 125 mg/dL experience greater reductions regardless of diet.

Funding

Supported by Curves International Inc., Waco, TX
http://esnl.tamu.edu

Exercise • Nutrition • Health • Performance
ESNL
Exercise & Sport Nutrition Lab