



EFFECTS OF INTERMITTENT DIETING DURING RESISTANCE TRAINING IN WOMEN I: WEIGHT LOSS AND ENERGY EXPENDITURE



J Kresta, M Byrd, J Oliver, C Baetge, 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

Abstract

Dieting has been reported to reduce resting energy expenditure (REE) thereby increasing the prevalence of weight gain after weight loss. Intermittent dieting during a weight loss and exercise program may help minimize these adverse effects. **PURPOSE:** To examine the efficacy of diet cycling with varying macronutrient diet compositions during an exercise and weight loss program on weight loss, markers of health, and fitness. **METHODS:** 43 overweight and sedentary women (35±8 yr; 89±18 kg; 43±4% fat, 33±6 kg/m²) were assigned to a high carbohydrate (HC, n=23) or high protein (HP, n=20) 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 before repeating the 30-day diet. Diets were 45:30:25% or 30:45:25% carbohydrate, protein and fat, respectively, for the HC and HP groups, respectively. Subjects also participated in the Curves™ circuit training program 3-d/wk and walked briskly for 30-min 3-d/wk. Body mass, DEXA determined body composition, and REE data were at each testing interval. Data were analyzed by MANOVA with repeated measures and are presented as means ± SD changes from baseline after 1, 2, 3, 4, and 5 months, respectively. **RESULTS:** Training and dieting significantly decreased body mass (-2.4±2.2, -3.1±2.7, -4.2±3.3, -4.7±4.0, -5.1±4.5 kg, p=0.001); fat mass (-1.6±1.6, -2.5±1.9, -2.9±2.0, -3.5±2.8, -3.6±3.2 kg, p=0.001); lean tissue mass (-0.6±1.7, -0.7±1.9, -1.2±2.2, -0.9±2.2, -1.2±2.3 kg, p=0.004); and, percent body fat (-0.8±1.6, -1.5±1.7, -1.5±1.7, -2.2±2.2, -2.1±2.6%, p<0.001). Absolute REE values modestly decreased over time (-52±168, -94±223, -96±236, -78±210, -80±209 kcal/d, p<0.04) but were not significantly changed when accounting for weight loss (18.0±2.5, 17.9±2.3, 17.5±2.3, 17.6±2.2, 18.0±2.1, 18.0±2.2, kcal/d/kg, p=0.87). No significant differences were observed between diet groups. **CONCLUSION:** 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. In addition, no significant differences were observed between diets on weight loss when diets were 45:30:25% or 30:45:25% carbohydrate, protein, and fat, respectively.

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

- 43 overweight and sedentary women (35±8 yr; 89±18 kg; 43±4% fat, 33±6 kg/m²) 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=23) (45% CHO, 30% protein, 25% fat);
 - a high protein diet (HP, n=20) (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 then repeated the 30-day diet. 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 briskly for 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

- Training and dieting significantly decreased body mass (-2.4±2.2, -3.1±2.7, -4.2±3.3, -4.7±4.0, -5.1±4.5 kg, p=0.001); fat mass (-1.6±1.6, -2.5±1.9, -2.9±2.0, -3.5±2.8, -3.6±3.2 kg, p=0.001); lean tissue mass (-0.6±1.7, -0.7±1.9, -1.2±2.2, -0.9±2.2, -1.2±2.3 kg, p=0.004); and, percent body fat (-0.8±1.6, -1.5±1.7, -1.5±1.7, -2.2±2.2, -2.1±2.6%, p<0.001).
- Absolute REE values modestly decreased over time (-52±168, -94±223, -96±236, -78±210, -80±209 kcal/d, p<0.04), but were not significantly changed when accounting for weight loss (18.0±2.5, 17.9±2.3, 17.5±2.3, 17.6±2.2, 18.0±2.1, 18.0±2.2, kcal/d/kg, p=0.87).
- No significant differences were observed between diet groups.

Conclusions

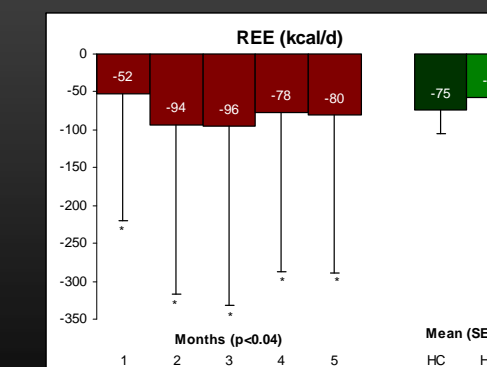
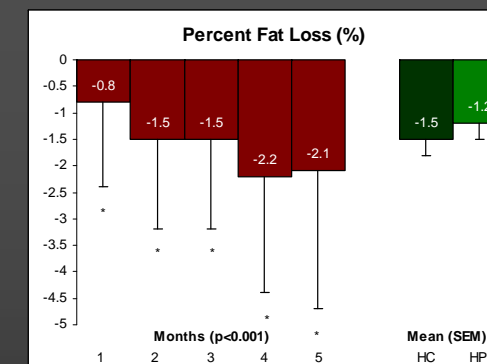
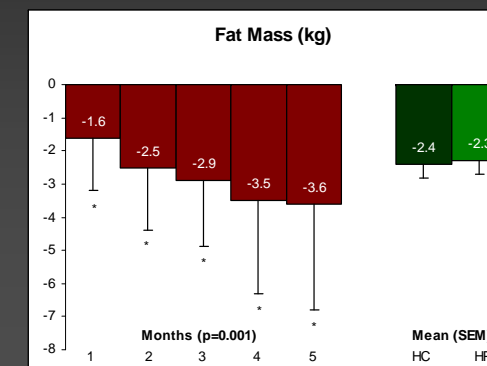
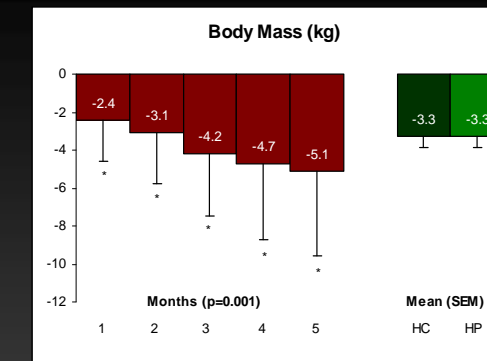
- Short-term diet cycling during a weight loss and exercise program may be an effective way to promote weight loss without associated reductions in REE.
- Preliminary findings indicate that the HP and HC diet approaches employed were equally effective.

Funding

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

Acknowledgements

We would like to thank Jean Gutierrez, 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.





EFFECTS OF INTERMITTENT DIETING DURING RESISTANCE TRAINING IN WOMEN II: HEALTH MARKERS

Exercise • Nutrition • Health • Performance



Exercise & Sport Nutrition Lab

M Mardock, J Kresta, M Byrd, J Oliver, C Baetge, S Simbo, Y Jung, M Koozehchian, D Khanna, B Lockard, R Dalton, H Kim, C Rasmussen, R Kreider.
Exercise & Sport Nutrition Laboratory, Texas A&M University, College Station, TX 77843

Abstract

Dieting has been reported to reduce resting energy expenditure thereby increasing the prevalence of weight gain after weight loss. Intermittent dieting during a weight loss and exercise program may help minimize these adverse effects.

PURPOSE: To examine the efficacy of diet cycling with varying macronutrient diet compositions during an exercise and weight loss program on markers of weight loss, health, and fitness. **METHODS:** 43 overweight and sedentary women (35±8 yr; 89±18 kg; 43±4% fat, 33±6 kg/m²) were assigned to a high carbohydrate (HC, n=23) or high protein (HP, n=20) 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 before repeating the 30-day diet. Diets were 45:30:25% or 30:45:25% carbohydrate, protein and fat for the HC and HP groups, respectively. Subjects also participated in the Curves™ circuit training program 3-d/wk and walked briskly for 30-min 3-d/wk. Data were analyzed by MANOVA with repeated measures and are presented as means ± SD changes from baseline after 1, 2, 3, 4, and 5 months, respectively. **RESULTS:** Training and dieting significantly decreased resting systolic blood pressure (-1.0±8, -2.0±10, -1.5±10, -3.6±9, -3.7±7%, p=0.002), circumference of the waist (-4.1±6, -5.1±5, -5.6±6, -5.9±6, -5.0±7%, p=0.001) and hips (-1.1±4, -1.6±4, -1.7±4, -2.1±5, -2.8±6%, p=0.002), the waist to hip ratio (-2.9±6, -3.5±6, -3.9±6, -3.6±7, -2.1±7%, p = 0.048), and serum TG levels (-3.6±38, -9.12±32, -13.6±29, -9.9±28, -10.5±37, p=0.023). Total cholesterol and LDL levels also declined, but these changes were not significantly different. There were no significant changes in resting heart rate, diastolic blood pressure, glucose or HDL levels. No significant differences were observed between diet groups.

CONCLUSION: Short-term diet cycling during a weight loss and exercise program may be an effective way to promote changes in waist and hip circumference while markedly reducing TG levels. In addition, no significant differences were observed between diets on health markers when diets were 45:30:25% or 30:45:25% carbohydrate, protein, and fat, respectively.

Supported by Curves International, Waco, TX

Rationale

Energy-dense diets and physical inactivity have led to a worldwide epidemic of obesity. The alarming rise in the prevalence of obesity calls for the identification of weight loss

programs that utilize proven weight loss strategies to affect changes in markers of weight loss, health, and fitness. The Curves® Fitness and Weight Management Program is designed to promote and sustain weight loss in women while preserving fat free mass and resting energy expenditure (REE). The program involves cycling between periods of moderate calorie restriction (1,200-1,500 kcals/d) followed by periods of higher caloric intake (2,000-2,500 kcals/d). The Curves 30-minute circuit workout consists of performing 30s of resistance exercise on 13 bi-directional hydraulic resistance exercise machines interspersed with floor-based aerobic exercises, followed by stretching. Members are also encouraged to perform 30 minutes of walking on most days of the week. The purpose of this study was to examine the efficacy of diet cycling with varying macronutrient diet compositions during an exercise and weight loss program on markers of weight loss, health, and fitness

Experimental Design

- 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.
 - 43 overweight and sedentary women (35±8 yr; 89±18 kg; 43±4% fat, 33±6 kg/m²) participated in this study.
 - Subjects were assigned to a high carbohydrate (HC, n=23) or high protein (HP, n=20) diet group.
 - Diets involved consuming 1,200 kcal/d for 1-wk followed by a 1,500 kcal/d diet for 3-wks.
 - High carbohydrate diet (HC) consisted of 45% CHO, 30% PRO and 25% FAT
 - High protein diet (HP) consisted of 30% CHO, 45% PRO, and 25% FAT
- All subjects then ingested a 2,200 kcals/d maintenance diet for 4-wks consisting of 45% CHO, 30% PRO, and 25% FAT. This diet cycle was repeated for the duration of the study.
- Subjects participated in the Curves circuit training program 3-d/wk for the entire duration of the study. Subjects maintained an exercise heart rate between 60-80% of target heart rate using age-predicted maximal heart rate (220-age).
 - Subjects also walked briskly for 30-min 3-d/wk.

Methods & Procedures

- Resting systolic and diastolic blood pressures were assessed in the supine position after resting for 5 minutes

using a mercurial sphygmomanometer. Measurements were obtained at 0, 1, 2, 3, 4, and 5 months.

- Circumference measurements were obtained at 0, 1, 2, 3, 4, and 5 months utilizing a Golnick tensiometer.
- Fasting blood samples were obtained at 0, 1, 2, 3, 4, and 5 months and sent to Quest Diagnostics (Dallas, TX) for a complete metabolic panel analysis.

Statistical Analysis

Data were analyzed by repeated measures MANOVA using SPSS for Windows version 18 software (Chicago, IL) and are presented as means ± SD changes from baseline.

Results

- Training and dieting significantly decreased resting systolic blood pressure (-1.0±8, -2.0±10, -1.5±10, -3.6±9, -3.7±7%, p=0.002), circumference of the waist (-4.1±6, -5.1±5, -5.6±6, -5.9±6, -5.0±7%, p=0.001) and hips (-1.1±4, -1.6±4, -1.7±4, -2.1±5, -2.8±6%, p=0.002), the waist to hip ratio (-2.9±6, -3.5±6, -3.9±6, -3.6±7, -2.1±7%, p = 0.048), and serum TG levels (-3.6±38, -9.12±32, -13.6±29, -9.9±28, -10.5±37, p=0.023).
- Total cholesterol and LDL levels declined, but these changes were not significantly different.
- No significant changes were observed in resting heart rate, diastolic blood pressure, glucose or HDL levels.
- No significant differences were observed between groups.

Conclusions

Short-term diet cycling during a weight loss and exercise program may be an effective way to promote changes in waist and hip circumference while markedly reducing TG levels.

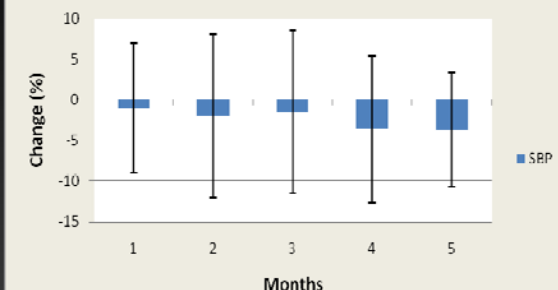
Acknowledgements

We would like to thank Dr. J.P. Bramhall for his medical expertise throughout this study.

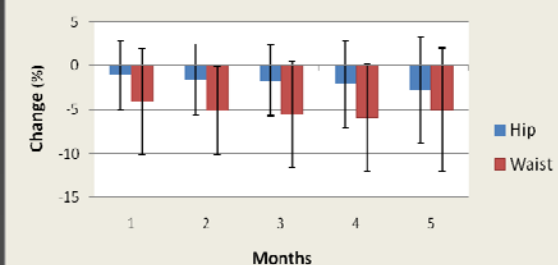
Funding

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

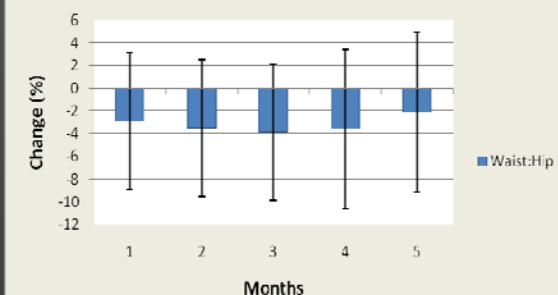
Change in Systolic Blood Pressure



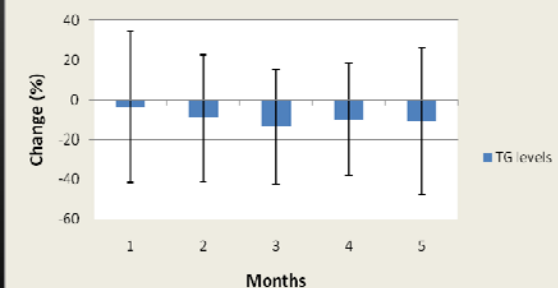
Change in Waist and Hip Circumference



Change in Waist-to-Hip Ratio



Change in Triglyceride Levels





EFFECTS OF INTERMITTENT DIETING DURING RESISTANCE TRAINING IN WOMEN III : FITNESS

Mike Byrd, J Kresta, J Oliver, C Baetge, M Mardock, S Simbo, Y Jung, M Koozehchian, D Khanna, B Lockard, R Dalton, H Kim, C Rasmussen, and Richard B. Kreider, FACSM. Exercise & Sport Nutrition Lab, Texas A&M University, College Station, TX 77843-4243

Abstract

38 sedentary overweight women (35±8 yrs, 85±19 kg; 43±4% fat, 33±6 kg/m²) were assigned to a high carbohydrate (HC: n=20) or high Protein (HP: n=18) diet group. During the first 30 days, subjects consumed 1,200 kcal/d for 1-wk, followed by 1,500 kcal/d for 3-wks. Subsequently, subjects followed a 2,200 kcal/d maintenance diet (4 wks) before repeating the 30-day cycle. Diets were 45:30:25% or 30:45:25% CHO:Pro:Fat respectively, for HC and HP groups respectively. Subjects participated in the Curves® circuit training program (3-d/wk). Body composition, resting heart rate, blood pressure, peak VO₂, GXT max time, 1RM strength, and lift volume tests were obtained at 0, 3, and 6 months. Data were analyzed by MANOVA with repeated measures and are presented as means ± SD from baseline after 3 and 6 months respectively. Training and dieting decreased total body mass (-4.1±3.4, -5.2±4.9 kg; p=0.001), fat mass (-2.7±2.1, -3.5±3.4 kg; p=0.001), lean mass (-1.2±1.9, -1.2±1.9 kg; p=0.001), SBP* (-3.6±10, -2.9±10%; p=0.08), DBP* (-1.7±14, -3.5±14%; p=0.14); and increased peak VO₂ (9.7±17, 11.7±19%; p=0.001), time-to-peak VO₂ (39.7±49, 45.0±65 sec. diff; p=0.001), leg press 1RM (13.8±24, 14.5±23%; p=0.002), and bench press 1RM (6.7±10, 5.1±12%; p=0.03). The HP diet was more effective in lowering resting HR compared to the HC diet (p=0.03). Neither upper nor lower body lifting volume was significantly improved. Results revealed that short-term diet cycling during a weight loss and exercise program may be an effective way to improve body composition, promote favorable hemodynamic changes, and improve VO₂, as well as upper/lower body strength.

Supported in part by Curves International Inc. Waco, TX

Rationale

Dieting has been reported to reduce resting energy expenditure, thereby increasing the prevalence of weight gain after weight loss. Intermittent dieting during a weight loss and exercise program may help minimize these adverse effects. Researchers in the ESNL have been conducting ongoing studies to assess the safety and efficacy of the Curves fitness and weight loss program. The Curves program involves performing a 30-minute hydraulic resistance circuit training program 3-d/wk. HC and HP diets are offered for weight loss clients. Subjects follow a Phase I diet for 1 week (1,200 kcals/day), Phase II (1,500 kcals/day) for 3 weeks, then Phase III (2,200 kcal/d) for 4 wks before repeating the 30 day weight loss cycle. Results of initial studies have shown that the program promotes weight loss, and improves markers of health and fitness. Theoretically, participants who followed the higher protein diets may experience greater benefits. Hence, the purpose of this study was to examine the efficacy of diet cycling with varying macronutrient diet compositions during an

exercise/weight loss program on selected markers of health and fitness.

Experimental Design

Subjects

- 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.
- 38 overweight sedentary women (35±8 yrs, 85±19 kg; 43±4% fat, 33.6±6 kg/m²) participated in the study.
- A carbohydrate tolerance questionnaire was utilized as a screening tool for randomization purposes.

Diet Protocol

- Based on baseline testing, subjects were assigned to one of two groups:
 - a high carbohydrate (HC) (45% CHO, 35% protein, 25% fat), or
 - a high protein diet (HP) (30% CHO, 45% protein, 25% fat).
- Both diets involved consuming 1,200 kcal/d for 1 wk, 1,500 kcal/d for 3-wks, and 2,200 kcal/d maintenance diet (4 wks) before repeating the Phase I & II 30-day weight loss cycle.
- Subjects were required to maintain the 60 day cycling for 6 months.

Training Protocol

- Subjects participated (3-d/wk) in a supervised 30-min resistance circuit training program that was interspersed with calisthenic exercises for the entire duration of the study.

Methods & Procedures

- Body composition (DEXA), RHR, BP, GXT VO₂ max, GXT time-to-peak, 1RM BP, 1RM LP, and BP/LP lift volumes were obtained at 0, 3, and 6 months.

Statistical Analysis

- Data were analyzed by MANOVA with repeated measures using SPSS for Windows version 16 software (Chicago, IL) and are presented as means ± SD change from baseline for each group at 3 and 6 months.

Results

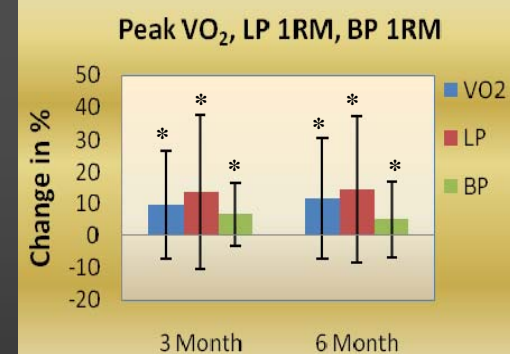
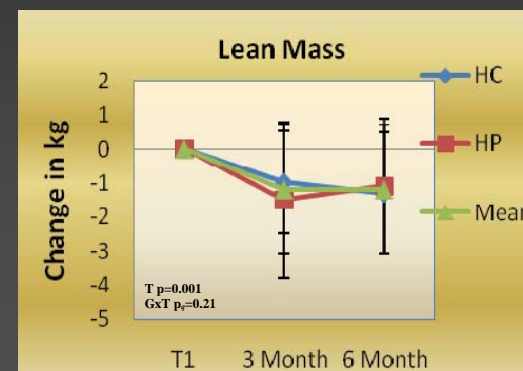
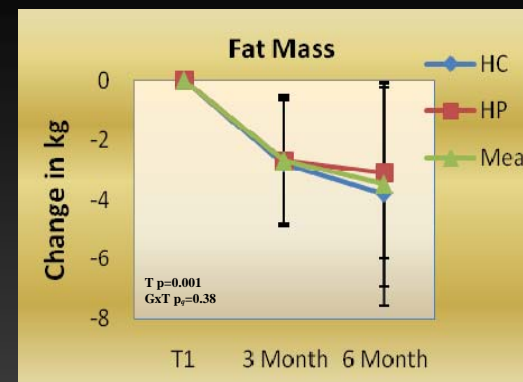
- At 3 & 6 months from baseline respectively, subjects experienced significantly decreased total body mass (-4.1±3.4, -5.2±4.9 kg; p=0.001), fat mass (-2.7±2.1, -3.5±3.4 kg; p=0.001), lean mass (-1.2±1.9, -1.2±1.9 kg; p=0.001), SBP* (-3.6±10, -2.9±10%; p=0.08), DBP* (-1.7±14, -3.5±14%; p=0.14); and increased peak VO₂ (9.7±17, 11.7±19%; p=0.001), time-to-peak VO₂ (39.7±49, 45.0±65 sec. diff; p=0.001), leg press 1RM (13.8±24, 14.5±23%; p=0.002), and bench press 1RM (6.7±10, 5.1±12%; p=0.03) as a result of training & dieting. (* SBP & DBP delta values reported)
- The HP diet was more effective in lowering resting HR compared to the HC diet (p=0.03).
- Neither upper nor lower body lifting volume was significantly improved.

Conclusions

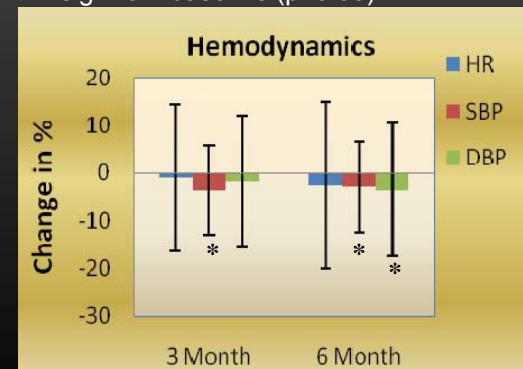
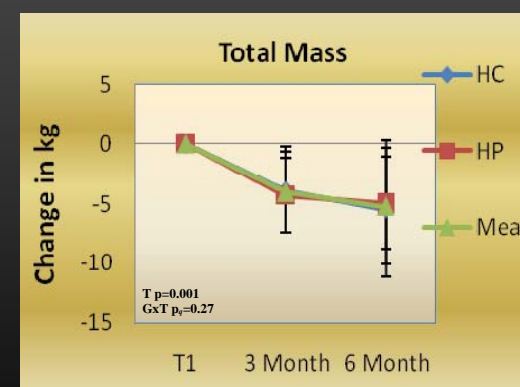
- The Curves fitness and weight loss program promotes favorable changes in markers of health and fitness regardless of macronutrient profile selection.
- Although changes in RHR appear more beneficial in the HP group, there were no significant differences between diets in weight loss, body composition, or other markers of health and fitness in this population when prescribed diets contained a protein content of 30 or 45%.

Funding

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



* = sig. from baseline (p≤0.03)





EFFECTS OF INTERMITTENT DIETING DURING RESISTANCE TRAINING IN WOMEN III: QUALITY OF LIFE

C Baetge, JY Kresta, M Byrd, JM Oliver, M Mardock, S Simbo, Y Jung, M Koozehchian, D Khanna, B Lockard, R Dalton, H Kim, C Rasmussen, and R Kreider, FACSM Exercise & Sport Nutrition Lab, Texas A&M University, College Station, TX 77843

Exercise • Nutrition • Health • Performance



Exercise & Sport Nutrition Lab

Abstract

Dieting has been reported to reduce resting energy expenditure (REE) thereby increasing the prevalence of weight gain after weight loss. Intermittent dieting during a weight loss and exercise program may help minimize these adverse effects. **PURPOSE:** To examine the efficacy of diet cycling with varying macronutrient diet compositions during an exercise and weight loss program on weight loss, markers of health, and fitness. **METHODS:** 43 overweight and sedentary women (35±8 yr; 89±18 kg; 43±4% fat, 33±6 kg/m²) were assigned to a high carbohydrate (HC, n=23) or high protein (HP, n=20) 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 before repeating the 30-day diet. Diets were 45:30:25% or 30:45:25% carbohydrate, protein and fat, respectively, for the HC and HP groups, respectively. Subjects also participated in the Curves™ circuit training program 3-d/wk and walked briskly for 30-min 3-d/wk. The SF-36 Quality of Life (QOL) long-version psychosocial inventory was obtained at each testing interval. Data were analyzed by MANOVA with repeated measures and are presented as percent change from baseline after 1, 2, 3, 4, and 5 months respectively. **RESULTS:** Training and dieting improved Physical Functioning (6.4, 8.3, 9.5, 10.7, 9.5%, p<0.001); Role-Physical (9.8, 9.5, 11.0, 6.9, 10.1%, p=0.05); Role-Emotional (4.7, 7.9, 11.2, 10.4, 10.8%, p=0.001); Vitality (11.4, 10.5, 11.0, 10.5, 10.5%, p=0.04); Mental Health (10.8, 11.7, 11.9, 12.6, 10.0%, p=0.004); Bodily Pain (5.1, 5.2, 5.8, 5.9, 8.1%, p=0.014); and General Health (6.9, 8.9, 7.6, 7.1, 7.4%, p=0.04). However, no significant differences were seen in Social Functioning (1.8, -0.6, -3.0, -3.0, -1.2%, p=0.31). In addition, no significant differences were observed between diets on QOL when diets were 45:30:25% or 30:45:25% carbohydrate, protein, and fat, respectively. **CONCLUSION:** Short-term diet cycling during a weight loss and exercise program improves markers of QOL. Diet had no influence when both diets were greater than 30% protein.

Supported by Curves International, Waco TX

Rationale

The Curves International fitness and weight loss program has become a popular means of promoting weight loss in women while, as well as improving markers in quality of life. The program involves cycling between periods of moderate caloric restriction (1,200-1,500 kcals/d) followed by periods of higher caloric intake (2,000-2,500 kcals/d). It also includes a 30-minute circuit resistance-training program 3 times per week. Participants perform two rotations through 14 hydraulic bidirectional exercises for 30-seconds, interspersed with 30-seconds of low impact recovery calisthenics. Furthermore, the program helps in promoting 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 weight loss and fitness program in contributing to improving quality of life. The purpose of this study was to examine the efficacy of diet cycling with varying macronutrient diet compositions during an exercise and weight loss program on weight loss, markers of health, and fitness.

Experimental Design

Subjects

- 43 overweight and sedentary women (35±8 yr; 89±18 kg; 43±4% fat, 33±6 kg/m²) were assigned to a high carbohydrate (HC, n=23) or high protein (HP, n=20) group.
- Subjects were informed as to the experimental procedures and signed a consent statement 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.
- They were also encouraged to walk briskly for 30-min a day on non-resistance training days.

Dieting Protocol

- 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 before repeating the 30-day diet.
- Diets were 45:30:25% or 30:45:25% carbohydrate, protein and fat, respectively, for the HC and HP groups, respectively.

Methods & Procedures

- Subjects were recruited to participate in this study through flyers, newspaper ads, and radio advertisements.
- Body weight, height, and anthropometric measurements were obtained using standard procedures
- All measurements through the study were obtained by lab personnel.
- The SF-36 Quality of Life (QOL) long-version psychosocial inventory along with other questionnaires, were obtained at each testing interval.

Statistical Analysis

- Data were analyzed by MANOVA with repeated measures and are presented at baseline and after 1, 2, 3, 4, and 5 months respectively.

Results

- Training and dieting improved Physical Functioning (6.4, 8.3, 9.5, 10.7, 9.5%, p<0.001); Role-Physical (9.8, 9.5, 11.0, 6.9, 10.1%, p=0.05); Role-Emotional (4.7, 7.9, 11.2, 10.4, 10.8%, p=0.001); Vitality (11.4, 10.5, 11.0, 10.5, 10.5%, p=0.04); Mental Health (10.8, 11.7, 11.9, 12.6, 10.0%, p=0.004); Bodily Pain (5.1, 5.2, 5.8, 5.9, 8.1%, p=0.014); and General Health (6.9, 8.9, 7.6, 7.1, 7.4%, p=0.04).
- No significant differences were seen in Social Functioning (1.8, -0.6, -3.0, -3.0, -1.2%, p=0.31) and none were observed between diets on QOL when diets were 45:30:25% or 30:45:25% carbohydrate, protein, and fat, respectively.

Conclusions

- Short-term diet cycling during a weight loss and exercise program improves markers of QOL. Diet had no influence when both diets were greater than 30% protein.

