

USING ATHLETE'S PLATE FOR EASY TRAINING/WEIGHT MANAGEMENT
WITH DANCERS

A THESIS

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ABSTRACT

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Purpose: The purpose of the study was to determine if Athlete's Plate for Easy Training/Weight Management used with dancers for 6 months would improve their body composition (decreasing body fat percentage and increasing lean muscle mass), bone mineral density (BMD), and resting metabolic rate (RMR). The purpose was also to determine if Athlete's Plate for Easy Training Weight Management would decrease fatigue and help dancers achieve regular menstruation status. **Method:** Thirteen dancers were recruited for the study and received nutrition education and consultations regarding Athlete's Plate. Data were collected using dual energy x-ray absorptiometry (DXA) scans, resting metabolic rate, food frequency charts, 3-day food and physical activity diaries, Body Image Spectrum, and a health questionnaire. The questionnaire included questions on demographics, health history, physical activity and dance activity history, food eating patterns, eating disorder risk assessment, and a fatigue assessment. **Results:** Decreases in fat mass, percentage of body fat, android fat, and android/gynoid (A/G) ratio, and an increase in total mass, lean mass, fat free mass, and gynoid mass were observed; however, there was no significant difference in body composition between the

initial and final assessments. There was a slight decrease in total BMD, and BMD in legs, trunk, spine, and pelvis, and an increase in BMD of arms and ribs; however none of these were significantly different between initial and final assessments. There was no significant difference between predicted basal energy expenditure and resting metabolic rate. There was a significant decrease in fatigue (*p-value 0.007*, $\alpha = 0.05$) between initial and final assessments. The food frequency showed dancers did not achieve the expected Athlete's Plate of half of their plate fruits and vegetables, 1/4 of their plate protein, and 1/6 to 1/4 of their plate complex carbohydrates; however, dietary intakes suggest they were moving in the direction of Athlete's Plate portions and content. Nine of 10 participants were eumenorrheic and 1 of 10 were oligomenorrheic at the initial assessment; there were no changes in their menstrual status at the end of the study.

Conclusion: There is potential for using Athlete's Plate to decrease fatigue and improve body composition in dancers; however, further research is needed.

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CHAPTER I

INTRODUCTION TO THE STUDY

Determining proper eating habits for dancers has been a concern for many years. Dancers are stereotyped as eating only lettuce to maintain their lean shape. Most dancers would state that such a notion is far from the truth; however, most dancers are not aware of what is an appropriate diet for them. There are several different ideas regarding proper diet for dancers including the high carbohydrate diet, the high fat diet, and diet books, such as *Diet for Dancers: A Complete Guide to Nutritional Weight Control* and *The Dancer's Way: The New York City Ballet Guide to Mind*. All these diets are based on personal opinions on which diet dancers should follow to maintain their aesthetic appearance; however, little research has been done to determine which diet would be best for them. ^(1,38,51,64,65,68)

Dancers are pressured to maintain thinness for their art form. Dancers are normally exposed to Thinness Related Learning (TRL), which is when individuals learn thinness promoting behaviors. ⁽¹⁶⁻²⁸⁾ This puts the dancer at a greater risk for eating disorders, nutrient deficiencies, and relative energy deficiency of sport (RED-S, formerly known as the female athlete triad). ^(18, 28, 29-30, 32, 33)

Nutrition education is an effective way to educate dancers about healthy eating and lifestyle habits. Forty-one percent of all dance companies provide some sort of

nutrition education for their professional dancers, and 85% of summer dance programs provide some sort of nutrition education; however, only 3 out of 23 used a health professional to deliver the education. ⁽¹¹⁰⁾

Purpose and Significance of the Study

The purpose of this study was to determine if Athlete's Plate for Easy Training/Weight Management when used with dancers for six months would improve body composition (decreasing body fat percentage and increasing lean muscle mass), bone mineral density (BMD), and resting metabolic rate. In addition, this study also determined if Athlete's Plate for Easy Training Weight Management would decrease fatigue and help dancers achieve regular menstrual status. Currently, there is little information about the type of diet that is beneficial for dancers. Many dietitians already recommend Athlete's Plate for dancers; however, there is not enough research to determine if it is beneficial for dancers. Dancing in general does not provide enough activity to support weight loss. Most dancers maintain their body size by consuming 70-80% of their recommended calories for their ideal body weight. They are at greater risk of developing relative energy deficiency of sport and low bone mineral density. This study will determine if dancers will benefit from using a diet that is already used by many athletes to remain aesthetically thin while maintaining good health.

Hypotheses

The following hypotheses have been tested in this study:

1. Athlete's Plate for Easy Training/ Weight Management diet will improve body composition (decrease in body fat percentage and increase in lean muscle mass), increase bone mineral density, and increase resting metabolic rate.
2. Athlete's Plate for Easy Training/ Weight Management diet will decrease fatigue.
3. Athlete's Plate for Easy Training/ Weight Management diet will cause dancers to achieve regular menstrual status.

Assumptions

The following assumptions were made during the course of the study:

1. Participants danced modern and/or ballet 2 times a week for at least 1 hour per session.
2. Participants answered the questionnaire and food frequency chart honestly.
3. Participants completed food diaries accurately and honestly.

Limitations

The following limitations are recognized in the current study:

1. Participants were primarily female.
2. Majority of the participants were college-age which affected stress and fatigue levels. It also was not a diverse population.

3. Majority of dancers were modern or a combination of modern and ballet, as opposed to having a modern group and a ballet group.
4. Body composition results may not be accurate for all dance forms.
5. Number of participants was small.
6. There may be some bias limitations filling out questionnaires.
7. Participants may not have completed the questionnaires or food diaries truthfully, accurately, or completely.
8. Compliance to the diet.
9. Compliance with dancing 2 days a week for at least 1 hour. The study began in October, and many dancers took a break from dancing during Christmas break for about 1 month.
10. Resting Metabolic Rate was not measured at the final assessment due to a shortage of metabolic gas tanks. The refills arrived too late to complete all the participants' metabolic rate before they left for the summer break.
11. Only one participant had oligomenorrhea, so the impact on menstrual status was not observed.

Definitions

Android/ gynoid (A/G) ratio- the ratio of android fat to gynoid fat as measured by DXA. ⁽¹²⁶⁾

Allegro- dance movements at a fast tempo. ⁽¹²⁷⁾

Android fat mass- fat located around the trunk and upper body. ⁽¹²⁸⁾

Amenorrhea- abnormal absence of menstruation for more than three consecutive months. ⁽⁴⁰⁾

Barre exercises- warm-up exercises done by dancers while holding on to a barre (handrail). ⁽¹²⁷⁾

Basal Energy Expenditure (BEE) - Also known as Basal Metabolic Rate (BMR), the energy needed to carry out the basic metabolic functions such as breathing, circulation, and digestion. ⁽¹³⁰⁾

Bone Mineral Density (BMD) - a measure of bone density which is used to see the strength of bones. ⁽¹²⁸⁾

Calorie (kilocalorie, kcal) - the energy needed for raising the temperature of 1 ml of water at 15 degree Celsius by 1 degree. ⁽¹³⁰⁾

Center floor exercises- dance combinations done on the floor without the support of a barre to help with balance. ⁽¹²⁷⁾

Dual energy X-ray absorptiometry (DXA) scan- a machine that produces x-rays to measure bone mineral density and body composition. ⁽¹²⁸⁾

Gynoid fat mass- fat mass located on the hips, thighs, and lower body. ⁽¹²⁸⁾

Gyrotonic- specialized yoga for dancers. ⁽⁵¹⁾

Hemolysis- the destruction of red blood cells. ⁽⁷¹⁾

Intensity of exercise- the percentage of maximum heart rate. ⁽¹⁾

Lipolysis- the breakdown of fat for a fuel source. ⁽¹⁾

Pescetarian – a person who eats fish but avoids meat and poultry. ⁽¹²⁹⁾

Phagocytes- a type of cell that engulfs particles or microorganism. Is a part of the immune system. ⁽¹²⁸⁾

Primary amenorrhea- failure to have menses occur by the age of 16. ⁽⁴⁰⁾

Relative energy deficiency of sport (RED-S) - formerly known as the female athlete triad, characterized by disordered eating, low bone mineral density, and menstrual disturbances. ⁽³⁰⁾

Secondary amenorrhea- when a woman who previously had menstruation stops having menstruation for 6 months or longer. ⁽⁴⁰⁾

Thinness Related Learning- when individuals learn thinness promoting behaviors. ⁽²⁸⁾

VO_{2max} - the measure of the maximum amount of oxygen an athlete can use. ⁽¹⁾

CHAPTER II

LITERATURE REVIEW

Introduction

The recommendations for nutrition intake for dancers are not conclusive. Lack of research and the culture of dance indirectly affects the health of the dancer. Dancers can maintain a healthy lifestyle while meeting the demands for dance. Unfortunately there is still a risk of dancers being undernourished due to lack of knowledge of healthy weight management techniques.

Body Composition of Dancers

Most dancers have normal body weight or are underweight, and there are only a few dancers who are considered overweight.⁽¹⁾ Body fat composition varies among dancers due to style of dance, level of experience, and sex of the dancer. There is not a significant difference in the body fat percentage between modern and ballet dancers at the collegiate level; however, professional dancers have a lower percent body fat.⁽²⁾ Female professional dancers vary between 11-18% body fat,⁽¹⁻¹⁰⁾ combined professional and collegiate have over 20% body fat,^(1, 11) with collegiate having between 15-20% body fat^(1, 2, 12) while adolescent dancers have about 15% body fat.^(1, 7, 13) When compared to Olympic elite athletes, dancers have either less or similar body fat percentages. Figure skaters have about 16% body fat, rhythmic gymnasts have about 17%, track runners have about 15%, and volleyball players and swimmers have about 18% body fat.^(1, 14) For

male dancers, professionals' body fat percentages range from 5 -15%, ^(1, 4, 7) pre-professional 8-12%, ^(1, 7) and collegiate 8%. ^(1, 15) Body fat percentage of male dancers is also similar to the body fat percentage of male athletes: cross country runners and marathoners have 8% body fat, skiers 10%, speed skaters 11%, swimmers 12%, volleyball players 13%, and wrestlers 9%. ^(1, 15) Differences in the range of body fat percentages in the different studies may be due to the methods of measurement. Hydrostatic weighing, bioelectrical impedance, or skin fold girth measurements were most commonly used.

The Risk of Eating Disorders

In the dance world, thinner bodies are essential for enhancing a dancer's performance. ^(16, 17) Dancers are frequently exposed to Thinness Related Learning (TRL) which puts them at greater risk for disordered eating, body dissatisfaction, and weight control behaviors compared to non-dancers. TRL occurs when individuals learn thinness promoting behaviors. Common learning experiences include the observation and discussion of dieting or food restricting from teachers and dance peers, the observation of social benefits that are related to dieting and body shape, and skin fold tests and regular weighing of dancers in classes. ⁽¹⁸⁻²⁸⁾ Dance itself is not an effective way to lose weight because it is a moderate to intense activity, with predominantly anaerobic activity; therefore food restriction is typically the method used by dancers to achieve low body weight and body fat percentage. ⁽²⁹⁾ This in turn puts the dancer at risk of relative energy

deficiency of sport (RED-S, formerly known as the female athlete triad) characterized by disordered eating, low bone mineral density, and menstrual disturbances. ^(29, 30)

Many dancers learn to focus on thinness or restricting food during dance class, ⁽³¹⁾ and those who struggle with perfectionism and low self-esteem are at higher risk of developing eating disorders. ^(18, 28, 32, 33) Mirrors used to help dancers improve their technique may affect how the dancer feels about his or her body image. Dancing without a mirror can encourage a more positive body image. ⁽³⁴⁾

Arcelus, Witcomb, and Mitchel conducted a recent study to determine how many dancers had eating disorders. The study looked at dancers in a variety of countries including: USA, UK, South Africa, Australia, Italy, Taiwan, Spain, Germany, Brazil, Switzerland, Portugal, Belgium, Turkey, and France. Dance styles include ballet, general dance, and Turkish dance. About 12% of all dancers had eating disorders. Ballet dancers had a higher prevalence of eating disorders (16.4%). 2% of all dancers and 4 % of ballet dancers had anorexia, 4.4% of all dancers and 2 % of ballet dancers had bulimia, and 9.5% of all dancers and 14.9% of ballet dancers had eating disorders not otherwise specified (EDNOS). ⁽¹¹⁹⁾

Dancers and Relative Energy Deficiency of Sport (RED-S)

Dancers are at an increased risk of developing relative energy deficiency of sport due to starting dance at a young age and large daily energy outputs. Many ballet dancers have poor bone mineral density due to poor diet and low body weight. Dance training has been associated with low body fat percentage, which will in turn affect menstrual

status and bone mineral density. ^(35, 36) Amenorrhea, irregular menstruation, and reduced energy consumption puts dancers at a greater risk of low bone mineral density and osteoporosis. ^(35, 37, 38) Irregular menstruation occurs in 60% of dancers and only in 5% of the non-athletic population. ⁽³⁹⁾ Energy intake, nutrient balance, increased BMI, and weight gain are effective ways to restore menstruation in individuals with menstrual disorders. ⁽⁴⁰⁻⁴²⁾

Individuals involved in sports that require low body weight have a greater risk of relative energy deficiency of sport. ^(30, 43) RED-S is associated with an energy intake of 30 kcal per kilogram lean body mass (LBM) per day or less minus energy expenditure. ⁽⁴⁴⁾ Doyle-Lucas, Akers, and Davy compared the physical and behavioral characteristics of elite ballet dancers to sedentary non-dancing controls. The study looked at the characteristics of RED-S and if subjects were receiving enough energy, and assessed dietary intake, physical activity, eating behaviors, body composition, bone mineral density, resting metabolic rate (RMR), and health and menstrual history. The participants filled out a health history questionnaire, a menstrual history questionnaire, 4-day diet recall, the three factor eating questionnaire, and the eating attitudes test (EAT-26). The health history questionnaire covered medical history as well as current physical activity. The three-factor eating questionnaire covered eating behaviors including dietary restraint or conscious control of food, lack of control of food, and perception of hunger. The eating attitudes test (EAT-26) is used to measure disordered eating. RED-S was more prevalent among dancers than among the sedentary group. Dancers tended to have

low energy intakes (1557 ± 89 vs. 2075 ± 163 kcal/day) and irregular menstrual status. The dancers started their menses one year later than the control group (14.9 ± 0.4 vs. 13.4 ± 0.3 years) and were more likely for it to be irregular or absent. Dancers' bone mineral density also was decreased compared with controls and not at a level of optimal bone health (1.16 ± 0.01 vs. 1.19 ± 0.02 g/cm³). Dancers had more disordered eating symptoms on the eating attitudes test (EAT-26). In addition, dancers had significantly lower resting metabolic rate compared to controls (1367 ± 27 vs 1454 ± 34 kcal/day, $p \leq 0.05$).⁽⁴³⁾

To and Wong compared bone mineral density in dancers with RED-S and eumenorrheic normal weight to eumenorrheic non-exercising controls. Bone mineral density of dancers with RED-S were not significantly different than controls. Dancers without the syndrome did show significantly greater bone mineral density in hips and tibia than controls.⁽⁴⁵⁾

Bone mineral densities of the femoral neck and L2-L4 of spine have a moderately positive correlation with muscular strength.⁽⁴⁶⁾ An increase in muscle mass is beneficial to bone mineral density. Athletes who regularly do weight bearing exercise generally have 5% to 15% greater total body bone mineral density and bone mineral density of the femoral neck and spine than non-athletes.^(44, 47, 48)

Friesen et al found that modern dancers had healthy body weight but a greater occurrence of disordered eating characteristics and menstrual dysfunction than non-dancers.⁽⁴⁹⁾ Modern dancers had increased femoral neck and lumbar spine bone mineral

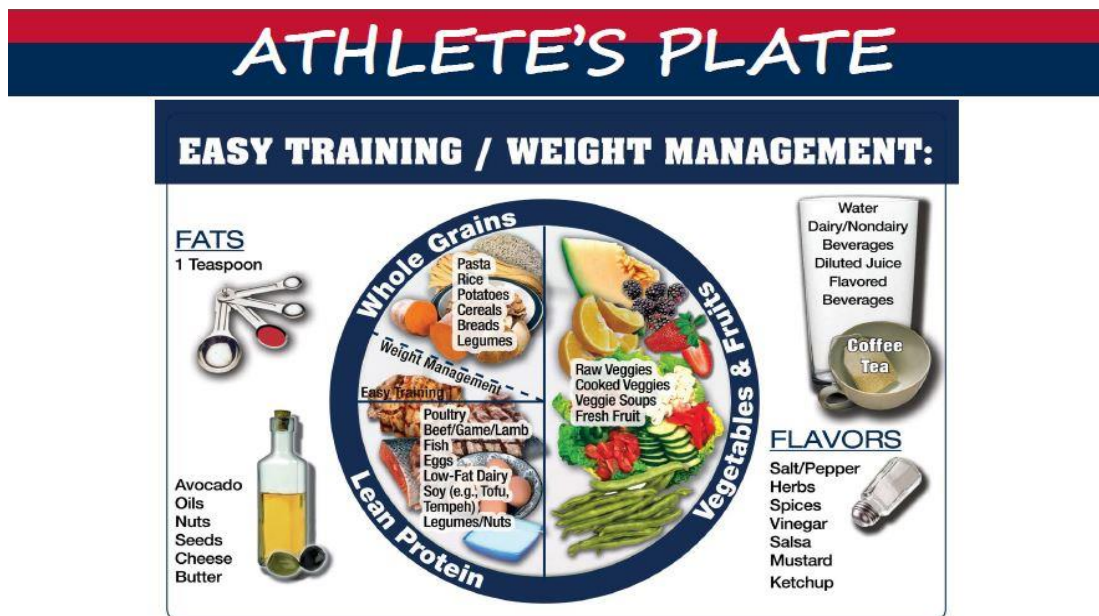
density due to mechanical loading and strength needed for modern dance. The purpose of the study was to see if modern dancers' bone mineral density and composition were different from controls. This study looked at the degree to which modern dancers had symptoms of RED-S. The participants completed a health history questionnaire, a 3-day diet recall, a dual energy X-ray absorptiometry (DXA) scan, and a strength test using the Keiser pneumatic resistance strength testing equipment. Dancers had decreased body fat compared with controls ($25.9\% \pm 4.2\%$ vs. $32.0\% \pm 5.9\%$, $p \leq 0.05$). Dancers' femoral neck and spine bone mineral densities were significantly greater than controls. Modern dancers generally have increased bone mineral density due to their greater amounts of lean mass than controls. They do not have low body mass as many ballet dancers do; therefore, they generally have greater bone mineral density. Energy intake was not significantly different between the dancers and the controls. Dancers had more reports of eating disorders (12.9% vs 0.0% , $p \leq 0.05$) and secondary amenorrhea (41.9% vs 13.3% , $p \leq 0.05$). There was not a significant difference between groups regarding upper and lower body strength when tested with the chest and leg press, but dancers were stronger when body mass was taken into account. Calcium and vitamin D intakes were lower than recommendations in dancers. Over half of the dancers used birth control which means menstrual irregularities may actually be greater.⁽⁴⁹⁾

Current Diet Recommendations

Many professional dancers start their careers as young as 16, a time when they are still growing. It is essential that a dancer's growth is not compromised and that he or she

has optimal health for optimal performance.⁽¹⁾ Forty percent of a dancer's fitness level is determined by genetics including body composition, flexibility, mobility of joints, strength, and endurance. This means the dancer has 60% control over his or her fitness through diet and exercise.⁽⁵⁰⁾ Diet and exercise are used for weight control in dancers. There is an emphasis on counting calories in many dance communities. Ballet dancers often consume 70-80% of their recommended calorie intake, and are normally underweight, averaging 10% to 12% below their ideal body weight.^(29, 53-57)

The Academy of Nutrition and Dietetics stand on nutrition for dancers is not clearly defined. There is a lack of research on which diet is appropriate for dancers, and if all dancers benefit from the same type of diet. It is assumed that dancers would be placed on a weight management diet similar to those used by other athletes who must maintain a certain body weight. *Sports Nutrition: A Practice Manual for Professionals* provides recommendations for similar athletes and might be the best resource for dietitians when providing nutrition counseling for these individuals. Athletes who are most similar to dancers are figure skaters and gymnasts. These individuals perform in high intensity sports that require bursts of energy for short periods of time, as well as strength, power, and flexibility, which is similar to the requirements for dance. Both gymnasts and figure skaters have similar nutrition guidelines. Their energy requirements are based on their individual goals, with carbohydrate intake of 3-7g/kg/d, protein intake of 1.2-1.7g/kg/d, and fats making up the remaining calories. Fats consumed should come from heart healthy fat sources.⁽⁵⁸⁾ This diet can be easily simplified through the United



The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program.
For educational use only. Print and use front and back as 1 handout.

Figure 1. Athletes Plate for Easy Training/Weight Management. Provides the recommended portion sizes recommended for athletes who are trying to maintain their weight.

States Olympic Committee, Athlete's Plate for Easy Training/ Weight Management (Figure 1). This diagram shows half of the plate as fruits and vegetables, the other half comprised of complex carbohydrates and proteins. The amount of complex carbohydrates depends on the amount of training. The more training the athlete does increases the complex carbohydrates intake from about 1/6 of the plate to about 1/4 of the plate. Protein is the remaining quarter portion of the plate. The diagram also shows the athlete is allowed ~1 tsp of added fat per meal. Beverages consumed can be either dairy/nondairy, water, or diluted juice. ⁽⁵⁹⁾

It is recommended for dancers to consume at least 30 kcal/kg fat free mass/ day, plus calories for exercise energy expenditure. ⁽⁶⁰⁾ For many females 30 kcal/kg fat free

mass/day may not be enough to meet reproductive needs; healthy adult dancers may need closer to around 45 kcal/kg fat free mass/day.⁽⁶¹⁾ The International Association for Dance Medicine and Science (IDAMS) recommends female dancers consume 45-50 kcal/kg fat free mass/day during heavy training and 50-55 kcal/kg fat free mass/day for male dancers.⁽⁵¹⁾ Most dancers may need 1800 to 3000 kcal/day depending on their activity level⁽⁶⁵⁾.

Table 1
Energy Consumption Among Professional Dancers

Dance Company	Kcalories Average	Kcalorie range
Ballet West (female)	1282	722-2043 ^(1, 8)
Cleveland Ballet (female) <i>n=34</i>	1358	550-2115 ⁽³⁾
American Ballet Theater Female <i>n=8</i> Male <i>n=7</i>	1673 2967	977-2361 1739-4104 ⁽⁴⁾
Four US national ballet companies (female) <i>n=79</i>	1894	650-3758 ⁽⁶²⁾

Table 2
Energy Consumption Among Dance Students

Dance Professional School	Kcalories/day Average	Kcalorie/day Range
California professional schools (female) <i>n=92</i>	1890	700-3000 ⁽⁵²⁾
Massachusetts professional schools (female) <i>n=14</i>	1776	784-2513 ⁽¹³⁾
Canada national schools 13-15yr females 16-18yr females 13-5yr male 16-18yr male	1867 1747 2382 2722 ⁽⁶³⁾	
USSR Bolshoi Female Male	3080 3240 ⁽⁶⁴⁾	

Many studies have been done to determine how much energy dancers consume. Tables 1 and 2 provide a summary of the energy intake among dancers. At the professional level the average energy consumption for females was between 1282 and 1894 kcal/day with the range from 550 to 3758 kcal/day. Professional male dancers consumed an average of 2967 kcal/day with a range of 1739 to 4104 kcal/day. In Table 2, adolescents' averages were considerably higher. The average kilocalories for female dance students range from 1747 to 3080 kcal/day, and for males 2382 to 3240 kcal/day. The wide range of calories consumed may be due to the number of hours of training, the availability of time for food consumption, and the individual's personal ideas about diet. These studies also show variability in the number of calories and in the composition of diet which indicates that dancers can maintain a proper weight and still consume plenty of nutrients. The USSR Bolshoi Ballet and the American Ballet Theater, two popular dance companies, had the greatest energy consumption among dancers. Their dancers consumed about 3 times more calories than other companies. Being that these are prestigious companies, this provides promising evidence that dancers can consume enough energy for performance and maintain their aesthetic appearance. The macronutrient distribution in the dancers' diets ranged greatly. Protein intakes ranged from 7-81% of their diet, carbohydrate intakes ranged from 26-82%, and fat intakes ranged from 10-62%. ⁽¹⁾

Currently there are no studies on macronutrient requirements for dancers. The current diet recommendations vary from basic adult nutrition to sports nutrition for

moderate intense activities with increased carbohydrate intake. ⁽²⁹⁾ Most recommendations for basic adult nutrition include 55-60% of a dancer's diet coming from carbohydrates, 20-30% from fat, and 12-15% from protein. ^(1, 38, 51, 64, 68)

Carbohydrates are essential for anaerobic exercise such as many dance moves. Nutrient dense foods such as whole grains, dairy, fruits, and vegetables instead of simple sugars are recommended as better carbohydrate sources. ^(64, 65) The amount of carbohydrates is dependent on the intensity in training. More intense training days will require more carbohydrate intake and may reach as much as 65% of total energy intake. ^(51, 64) Burke recommends dancers consume 3-5g/kg body weight in carbohydrates. ⁽⁶⁶⁾ International Association for Dance Medicine and Science recommends 6-10 grams/kg body weight in carbohydrates. To achieve this intake of carbohydrates, dancers should consume a high carbohydrate snack 1-2 hours before rehearsal or performance, and replenish their glycogen stores after dancing by consuming carbohydrates within 2 hours of exercise. ^(51, 64)

Fat consumption is important for dancers, especially during long rehearsals lasting up to 12 hours where high energy reserves are needed. ⁽⁵¹⁾ Fat is essential for hormone production, structure of cells, insulation of nerves, and absorption of fat soluble vitamins as well as provision of essential fatty acids. Consuming less than 20% of their diet from fat can impair a dancer's performance. ⁽⁶⁰⁾ Fat consumption in professional ballet dancers sometimes reaches 50% of their total diet. ⁽¹⁾ To achieve adequate amount

of fat intake, dancers should consume 1.2 g/kg body weight of fat each day; with less than 10% from saturated fat and <1% from trans fats. ⁽⁵¹⁾

Protein is important for repair of muscles that are broken down during long periods of training, as building blocks for cells, for formation of enzymes used in metabolism, for maintaining bone strength, and for maintaining proper immune function through the formation of phagocytes, mucosal membrane of the intestinal lining, and in the production of antibodies. ^(64, 130) Dancers should consume 1.2-1.7g protein/kg body weight or about 70g/day mainly from complete protein sources found in animal products or complementary plant proteins. ⁽⁶⁵⁾

Timing and content of meals need to be considered before rehearsals and performance. Meals consumed within 4 hours before dance should be low in fat and fiber to help with gastric emptying and digestive issues, and provide sufficient fluids. Dancers should consume 1-4 g carbohydrate/ kg body weight within 1-4 hours before exercise. They need to drink 5-7 ml/ kg body weight of fluid within 4hr before exercise, and if they are under-hydrated they should consume an additional 3-5 ml/kg 2 hours before exercise. A good way for dancers to know if they are hydrated or not is by the color of their urine. Urine that is clear indicates a good hydration status; however if it is dark in color the dancer is under-hydrated and needs to consume extra fluids. After one hour of exercise dancers need to consume 30-60 g (2-4 oz) carbohydrates each hour and 150-350 ml of fluid every 20 min. If a dancer is 110lbs (50kg), he or she would consume 250-350 ml (8.5-12 fl oz) 4 hours before exercise, an additional 150-250ml (5-8.5 fl oz) 2 hours

before exercise if he or she is under-hydrated, and then consume 150-350 ml (5-12 fl oz) with 30-60g (2-4 oz) of carbohydrate every 20 min. After exercise dancers need to consume 0.8 g carbohydrate/ kg body weight/ hr, 0.2-0.4 g protein/ kg body weight/ hr, and 450 ml of fluids for each lb body weight lost. Their first meal should be within 30 minutes of exercise, and again every 2 hours for 4-6 hours. ^(29, 60, 61, 67-70, 131)

On performance days, large meals should be consumed 4 hours before a performance and the last snack 1-2 hours before. Dancers should bring their own food on performance days to insure digestible food to avoid digestive issues. Many dancers also experience anxiety before performance and may not be hungry during the event. It is important to plan accordingly to insure adequate energy intake during these stressful times. If a dancer chooses not to eat or drink during performance, it is very important they consume a nutrient dense meal as soon as possible after the performance. ⁽²⁹⁾

There are several vitamins and minerals that are important for dancers. IADMS recommends dancers take a multivitamin each day to help fill in the gaps in their diet. ⁽⁵¹⁾ Table 3 lists some of the major vitamins that are important for dancers. Calcium and vitamin D are essential for bone formation, maintenance, and repair. Calcium can be taken in a supplement to insure dancers are getting sufficient amounts. Dancers may consider taking calcium supplements with magnesium as this aids calcium absorption. Phosphorus helps bone formation by aiding in the mineralization of soft osteoid bone. Protein and vitamin C are used to stimulate collagen formation, and vitamin K is important in the production of collagen. Collagen is an important part of cartilage,

connective tissue, and bone. Dancers need sufficient iron due to the increased rate of hemolysis, the destruction of red blood cells. ^(71, 72) Iron is a part of the red blood cell hemoglobin that is responsible for transporting oxygen throughout the body.

Table 3
Important Vitamins/Minerals for Dancers

Vitamin/Mineral	Purpose
Calcium	Bone formation
Vitamin D	Bone formation
Magnesium	Calcium absorption
Protein	Aid in collagen formation
Vitamin C	Aid in collagen formation
Vitamin K	Collagen production
Phosphorus	Bone formation, mineralization of soft osteoid one
Iron	Important part of hemoglobin in red blood cells

The daily recommendation for sodium is 2400mg for the average adult; however, it is recommended that dancers consume less (about 2000mg) to help prevent bloating. Active dancers also need 13-8 oz glasses of water a day to help replenish lean muscles and maintain hydration status. ⁽⁶⁵⁾

In addition to these recommendations, there are other considerations that need to be taken into account when planning nutrition for dancers. Dancers work all year as opposed to one season. They need a diet that will sustain their activities for the full year. Healthy eating habits will help speed up the healing process of injuries, illness, strengthen bones, and improve stamina and energy. When injured, many dancers cut back on the amount of food they eat. However, this is not recommended because when dancers are injured they also lose muscle mass. Dancers can decrease the amount of

carbohydrate and fat calories since they are not dancing; however, they will need to consume enough protein to heal the injury. When dancers try to lose weight by starving themselves, the weight lost is mainly water and muscle which will affect their performance. Dance does not support weight loss because it is primarily an anaerobic activity and does not promote increased energy consumption or utilization of fat for fuel unless dancing for long periods. Dancers work mainly on their legs which means this will be one of the last places they will lose weight and instead they tend to lose muscle in their shoulders, face, and upper body when they starve themselves. ⁽¹⁾

Eating sufficient calories is important for preventing a decrease in metabolic rate. Based on a dancer's greater fat free mass, his or her estimated resting metabolic rate (RMR) is expected to be greater than sedentary non-dancers; however, dancers tend to have lower resting metabolic rates than estimated due to their decreased energy intakes. ^(40, 53, 71)

There are a few obstacles dancers face concerning eating healthy. One of the major obstacles dancers face is time constraints. Lack of appetite occurs commonly with dancers who stay busy with long rehearsals, work, and school. With such busy schedules, stopping to eat is challenging, and repeated patterns of not eating will affect their appetite. Many dancers skip multiple meals due to their busy schedule, or they find themselves snacking throughout the day in between rehearsals and classes and rarely stop for a full meal. Some experts recommend that dancers should not eat a heavy meal at night as it may prevent them from being hungry in the morning causing them to skip

breakfast and affecting their energy for the rest of the day. Emotional eating is another obstacle for dancers. Dancers will be more likely to turn to unhealthy food during times they are having a sudden change in emotions, whether the emotion is happy, sad, or angry. Dancers desire certain roles, and try to meet the expectations of their director and themselves. These demands cause emotions that may affect the dancers' eating Behaviors.⁽⁵¹⁾

Some dancers need to gain weight. In these cases IDAMS recommends they consume about 300 more kcal/day. Once they reach a plateau, additional calories may be added. For weight loss, it is recommended decreasing up to 300 kcal/day but never decreasing below the dancer's resting metabolic rate.⁽⁵¹⁾ The National Weight Control Registry states that the key to losing weight is to get adequate amount of sleep, weighing in about once a week, eating breakfast, consuming a low fat meal plan (25% or less fat), keeping a food diary, eating consistently and on a routine schedule, and exercising regularly with intense exercise for about 1 hour each day.⁽⁷²⁾

The book *Diet for Dancers: A Complete Guide to Nutrition and Weight Control*, is a popular book about nutrition for dancers. The book was written in 1990 by Robin Chmelar and Sally Fitt, whose backgrounds are not in nutrition, but in dance and kinesiology. The book covers common nutritional topics, including the phenomenon of dieting and the struggles of body image. Chmelar and Fitt developed an exchange system to instruct dancers what they should be eating; however, this diet has not been evaluated to determine its effects on dancers. The authors provide exchanges for 1000, 1200, 1350,

1500, 1650, 1800, 2000, 2500, and 3000 calorie diets. Dancers can use equations to determine how many grams of carbohydrates they need to consume before performance. One hour before performance, it is suggested they multiply their body weight x 0.45. Two to three hours before performances they would multiply their body weight x 0.90(females) or 1.1(males). Four hours before performance they multiply their body weight x 1.8 (female) or 2.25 (male) (adapted from Sherman 1989). They also suggest the addition of aerobic exercise if the dancer is attempting to lose body weight and fat weight. They provided an 8 week plan to incorporate exercise 5 days a week with an increase in the amount of time for each workout over a period of days. The workouts begin with 15 minutes and increase to a full hour after 8 weeks. The workouts include several repetitions of 60% and 70% of max heart rate. The book did not show how to calculate the addition of calories for individuals who work out. It also failed to mention what is a safe range of calories for individuals who are trying to lose weight whether they exercised or not. ⁽¹⁾

Dance and the Need for Exercise

Dancing is an art form, but it also is considered a form of exercise. Based on the type of exercise, there are different fuel sources the body uses. The type of exercise performed has a different intensity or percentage of maximum heart rate. High intensity exercises such as weight lifting reach maximum intensity for a few seconds and use phosphocreatine for energy primarily. Glucose is used during anaerobic or aerobic glycolysis. Anaerobic glycolysis is used for medium duration exercises (about 1 hour)

with moderate to high intensity such as with allegro dance movements (dancing to moderate to fast tempo) with an intensity of 80% of maximum heart rate for a series of a few minutes. Running for about 25-30 minutes reaches 70% of maximum heart rate and uses aerobic glycolysis for energy. Fat is used for aerobic lipolysis (the utilization of fat as a fuel) for long duration and lower intensity exercises such as with running or jogging for longer than 30 minutes with a moderate intensity of about 60% of maximum heart rate. It normally takes a minimum of 30 min of low to moderate exercise for lipolysis to occur. ⁽¹⁾

Dancers are considered second to professional football players in terms of the demands needed. ⁽⁷³⁾ It requires strength, flexibility, joint mobility, cardiovascular endurance, fine motor coordination, and timing. Dancers tend to possess great flexibility, strength, coordination, and timing; however, their cardiovascular endurance tends to be limited. ^(1, 74, 75)

The US Department of Health and Human Services, Centers for Disease Control and Prevention recommends at least 150 min of aerobic activity each week. Adults should also do resistance training at least twice a week. ⁽⁷⁶⁾ Dance is composed of mainly anaerobic activities that require fast twitch muscles with high intensity movements for 30-60 seconds. Aerobic activity in ballet performance tends to be brief, up to 3 minutes; however, to see any cardiovascular benefits, aerobic activity should last for at least 20 minutes. This means dancers do not get aerobically trained through dance and are generally weaker than those who practice other forms of activity. ^(9, 38, 77)

Dancers must incorporate aerobic activity to strengthen their cardiovascular systems. Recommended activities include swimming, bike riding, fast walking, and hiking.⁽³⁸⁾ The metabolic costs of dancing are similar to walking on a treadmill for 3.2km/hr. This level of activity did not show any benefits in improving or maintaining health or cardiovascular fitness.⁽⁷⁸⁾

Several studies looked at the VO_{2max} of female professional, collegiate, and adolescent dancers, and compared them with female athletes (Table 4). VO_{2max} is the measure of the maximum amount of oxygen an athlete can use during exercise. Higher VO_{2max} indicates better utilization of oxygen. The dancer's VO_{2max} scores were similar to sedentary individuals (VO_{2max} of 44 ml/kg·min). Both professional dancers and dance students have low VO_{2max} compared to athletes.^(79, 80) The professional and collegiate dancers VO_{2max} range from 40 to 50ml/kg·min. Adolescent dancers were at 50 ml/kg·min. Modern dancers have higher VO_{2max} than ballet dancers.⁽⁸¹⁻⁸³⁾

Table 4
 VO_{2max} (ml/kg·min) of Dancers and Athletes

Athlete/Dancer	VO_{2max} (ml/kg·min)
Sedentary individuals	44
Professional and collegiate dancers $n>30$	40-50
Adolescent dancers $n=39$	50 ⁽⁸⁷⁾
Modern dancers $n>30$	40-60 ^(12, 81-83, 88)
Gymnasts $n>30$	55 ⁽⁸⁴⁾
Soccer players $n>30$	57 ^(84,85)
Volleyball players $n>30$	60
Speed skaters $n<30$	60
Middle distance runners $n<30$	69
Long distance runners $n<30$	70-80
Cross country skiing $n<30$	70 ⁽⁸⁶⁾ (6,8,12,81,82,87-89)

In terms of metabolism, individuals with faster metabolism oxidize calories faster while people with low metabolism store excess calories as fat. Metabolism occurs throughout the whole body; however, we have some control over muscle metabolism. Muscles can either oxidize glucose quickly for anaerobic processes or glucose and/or fat slowly for aerobic functions. Anaerobic processes become important in dance since many of the movements require high to moderate intensity, therefore dance is not necessarily a good activity for oxidizing fat. ⁽¹⁾ Ballet uses approximately 0.085 kcal/kg/min ⁽⁸⁹⁾, while modern burns 0.120 kcal/kg/min. ⁽⁹⁰⁾ In a ballet class at the American Ballet Theater that began with 28 minute barre exercise followed by 32 minutes center floor exercise, Cohen determined that the average calorie expenditure in one hour of dancing was 200 kcal for female and 300 kcal for males. ⁽⁸⁹⁾

Dancers who dance continuously for long periods of time will use the aerobic processes. Most dance, however, is anaerobic but may be beneficial for using fat as a fuel source. Since dance is mainly an anaerobic activity, it is believed that if aerobic training is excessive compared with anaerobic training, the dancer's anaerobic strength may be compromised. ⁽¹⁾

Lactic acid can be used to determine the anaerobic fitness level of dancers. The greater the amount of lactic acid, the greater the anaerobic capability. ⁽¹⁾ Schantz and Astrand measured lactic acid levels in female dancers of the Royal Swedish Ballet. During barre and center floor warm up, blood lactic acid concentration rose to only 3 mM/L (at rest lactic acid concentration remains at 1-2mM/L). During actual rehearsal,

lactic acid concentration averaged around 8.2 mM/L. The dancers then conducted a maximal treadmill run and lactic acid concentration averaged about 11.2mM/L.⁽⁹¹⁾ When comparing the lactic acid concentration buildup of dancers from several ballet companies, there is a range from 6-9 mM/L. For athletes, volleyball players generate about 8.2 mM/L, 10,000 meter runners generate 9 mM/L, and synchronized swimmers generate 12 mM/L.^(1, 91-94)

The demands of dance may limit the amount of outside exercise that can be performed by dancers.⁽¹⁾ Extra exercise may increase fatigue and cause an increased risk of injury; however, some suggest it will have the opposite effect and is actually very beneficial to the dancer for improving fitness parameters and reducing the risk of injury.^(1, 77) Overall, dancers are not as well conditioned as athletes and extra exercise will be needed for them to become stronger.^(13, 80) Dancers have lower anaerobic ability than other athletes and the dance exercise does not significantly improve muscular strength.^(77, 88) Modern dancers have greater anaerobic power than ballet dancers. Ballet dancers have decreased muscular strength with only 77% of weight predicted strength.⁽⁹⁵⁾ Their decreased muscular strength may be due to the smaller amount of muscle (only 38-43% of their body weight),⁽⁹⁶⁾ and the fact that they may have greater aerobic slow twitch muscle fibers; however some studies find they actually have less slow twitch muscles than fast twitch which may indicate a variation of muscle usage among dance companies and dance styles.^(9, 38, 77, 97, 98) Soloist ballerinas have greater

muscle strength than other members of the company, which is essential for the success of a dancer.⁽⁹⁹⁾

One hurdle is the thought that certain exercise activities may change the shape of the dancer's body, therefore only certain exercises are recommended.^(1,100) IADMS recommends adding long, slow distance aerobic exercises to help use calories and avoid exercises that could cause "bulking up" such as the elliptical and the stationary bike. Instead, they recommend conditioning programs such as yoga, Pilates, or gyrotonic (specialized yoga for dancers) to increase lean muscle mass.⁽⁵¹⁾ Despite these views, adding resistance training for hamstrings and quadriceps development lead to improved strength without interfering with the dancer's aesthetic appearance.^(101,102) Muscle strength is not correlated with changes in muscle size.⁽¹⁰³⁾ Instead strength training may involve changes in the nervous system in their role of increasing strength.^(104,105)

Many individuals believe that to lose weight, they must do low intensity, fat burning exercises; however, this is not necessarily true.⁽¹⁰⁶⁾ Burning fat during exercise does not necessarily affect the amount of body fat you lose.⁽¹⁰⁷⁾ High intensity workouts are correlated with low body fat percentage.⁽¹⁰⁸⁾ Tremblay et al. showed that individuals who did high intensity workouts have less body fat than those who did the lower intensity fat burning exercises.⁽¹⁰⁹⁾ Dance does make you stronger, however there are muscular imbalances where dancers do not work the opposite muscles and increase the risk of injury.⁽³⁸⁾

Nutrition Education

Doyle and Davy used nutrition education using three DVD lectures to pre-professional ballet dancers. They surveyed dancers to find out what nutrition topics they would like to learn more about. They also asked general questions about nutrition to see how much the dancers already knew. Some questions included “What do you think would make a nutrition lecture interesting to dancers?” “Do you think what you eat affects your dancing, and if so, how?” “What happens if you don’t eat enough calories, and how do you think it affects your dancing?” Many of the dancers were interested in increasing lean muscle and losing weight. The dancers were aware when they did not consume enough calories that they would feel more fatigue but will look skinnier. Majority of the participants wanted to learn how to eat better to improve their health and performance.⁽¹¹⁰⁾

The survey also found 41% of the companies provided nutrition education for professional dancers. If the artistic director saw a risk in one of his or her dancers, the dancer would be referred to receive individual nutritional counseling. Of all the summer dance programs surveyed, 85% stated they provide some sort of nutrition education; however, only 3 of 23 companies used a health professional to deliver the education.⁽¹¹⁰⁾

Nutrition education covered topics including sports nutrition, relative energy deficiency of sport (RED-S, formerly called the female athlete triad), and ways to adopt dietary habits. The program’s objective was to educate dancers about the relative energy deficiency of sport and the risks involved, educate the dancers about basic sports nutrition

to promote health and performance, and to provide dancers skills to incorporate into a healthy lifestyle. For the first lesson the dancers learned what aerobic and anaerobic exercise is, the three components of the relative energy deficiency of sport, the importance of adopting healthy eating habits, and the handout “Healthy Behaviors and the Female Athlete Triad: Being the Best You Can Be!” The second lesson covered what a calorie is and how many dancers should eat, the three macronutrients including how much dancers should eat of each, what foods they are found in, and what they provide in the body, the roles and sources of vitamin D, vitamin C, calcium, and iron in athletes, and they were provided handouts: “Nutrition Principles for Dancers: Learning the Basics” and “Application of Nutrition Principles.” The last lesson covered healthy daily habits, staying hydrated, meal planning, and they were provided the handout “Eating for Optimal Performance: What Should I Eat?”⁽¹¹⁰⁾

The participants completed a Sports Nutrition Knowledge and Behavior Questionnaire and a Food Frequency Questionnaire which were completed before and after the education program by both the treatment and control groups. Improvements in dietary intake and overall health were observed. Individuals showed an increase in nutrition knowledge, more awareness of RED-S, and increased self-efficacy in adopting a healthier diet.⁽¹¹⁰⁾

CHAPTER III

METHODOLOGY

Participants

Thirteen participants who danced ballet or modern at least 2 days a week for at least 1 hour for each season participated in the study. Dancers had to be at least 18 years old, male or female, and could not be pregnant or have any medical issues that would compromise their ability to perform exercise, or have a history of disordered eating. Individuals were not allowed to be using any medications that would compromise their ability to perform physical activity or any medications that might cause a change in appetite or alteration in the absorption or utilization of nutrients. Recruitment flyers describing the study were posted in the Texas Woman's University dance department, and a recruitment email was sent to the dance students. The primary investigator also visited a few dance classes to recruit individuals for the study. Interested participants contacted the principal investigator via phone or email to get more information regarding the requirements for the study. The principal investigator informed participants about initial informational meeting. An informed consent approved by the TWU's Institutional Review Board was signed prior to participation in the study (see Appendix B).

Overview of Procedures

This study was a 6 month randomized control trial that used nutrition education and nutrition counseling to help bring change in the dancer's current lifestyle. The study took

place at Texas Woman's University, Institute for Women's Health and educational classes were held in a classroom in the Dance-Gymnastic Laboratory Building and in the Institute for Women's Health. Participants completed a pre and post assessment which included a dual energy X-ray absorptiometry (DXA) scan, resting metabolic rate (RMR) measurement, body image analysis, and completion of a questionnaire and food frequency chart (see Appendices C, D, and E). Individuals were asked to complete food and physical activity diaries throughout the study (see Appendix F). Participants were a part of nutrition classes and were provided nutrition counseling during the study.

Initial Information Meeting

At the initial meeting, participants received all information concerning the study and asked any questions they may have concerning the study. Consent forms were provided and participants could return them to the principal investigator or could take them home to return to the PI within a week (see Appendix B). All participants were assigned a personal identification number once they return their consent forms. They then scheduled a time for their initial assessment which was scheduled before the first education class. Participants received the health questionnaire, food frequency chart, and diet recall/physical activity log form to fill out before their first scheduled assessment (see Appendices C, D, and F).

Assessments

All individuals' anthropometric data were collected through a dual energy X-ray absorptiometry (DXA) scan, weight on a digital scale, and height using a stadiometer. The height and weight were used for both the DXA scan and the resting metabolic machine.

For the DXA scan participants were asked to wear sports clothing or dance attire, such as spandex and a tight shirt. Loose fitting clothing or jeans were not recommended, and if individuals were not dressed properly they were given scrubs to wear for the scan. All jewelry or metal also had to be removed before the scan was performed. For the scan they were asked to lie supine on a padded table with their legs together secured with a strap for comfort. Their arms remained on their sides and they were asked to remain still as the scan read their body composition. The DXA scan provided bone mineral density (BMD), fat free mass (FFM), body mass index (BMI), weight, and percentage body fat. A registered technician performed all x-ray scan measurements.

For the RMR test, the participants were asked to fast overnight for 10-12 hours and refrain from exercise, smoking, and any substances that may interfere with their metabolic test. Their height and weight were typed into the RMR software to calculate a predicted basal energy expenditure (PreBEE). This predicted measurement was later used to compare with the resting metabolic rate. During the test they were asked to lie on their back awake for approximately 25-35 min in a quiet darkened room. They were covered with a canopy where they breathed room air for the duration of the test. Their carbon dioxide and oxygen consumed were measured to determine their resting metabolic rate.

The Body Image Spectrum was used to determine how the dancers viewed themselves in terms of their body image by pointing out the picture that best represented how they look and the image that represented how the dancers wished their body looked

like (see Appendix E). They were provided pictures based on their race and gender. The Body Image Spectrums available included Caucasian, African American, and Hispanic. Participants were then asked “which of these pictures do you look like?” and “which of these do you want to look like?” Participants then had to choose the picture that best represented their views on each question.

All participants filled out a health questionnaire, a food frequency chart, and 3-day diet recall/ physical activity log (1 weekend day and 2 week days) at the beginning (October/ November) and the end (April/May) of the 6 months (see Appendices C, D, and F). They also completed two more diet recalls/physical activity logs in December/January and February/March to keep the participants compliant. The health questionnaire contained demographic information, health history, dance and physical activity history, food intake patterns, a fatigue assessment, and an eating disorder assessment.

The fatigue assessment was weighed by points. Answers that were correlated with high fatigue were worth more points than answers with little to no fatigue. Based on the number of points, a score out of 100% was determined. The higher the percentage, the higher the fatigue level.

The eating disorder assessment was scored based on responses as well. Responses that indicate a high risk of eating disorder were given more points than responses with no risk of eating disorder. Based on the number of points, a score out of 100% was calculated. A percentage of 70% or greater indicated a high risk for an eating disorder.

The food frequency chart was used to determine if the Athlete's Plate's portion sizes were achieved. This was done by using the goodness-of-fit chi-square test to compare the participant's diet to the Athlete's Plate. The expected values were calculated by taking the total observed ounces consumed and dividing them among the different sections of the plate (25% from protein, 25% from complex carbohydrates, and 50% from fruits and vegetables). Analysis of the participant's fat intake was done by taking his/her consumption of fat intake in calories per day and comparing that to the recommended amount he/she should consume which is 10-30% of his/her total energy intake. Individuals who had an intake higher than the 30% were considered to not meet the fat recommendations for the Athlete's Plate. Dairy intake was based on the participant's consumption of the equivalent of 3 dairy servings per day.

The 3-day diary was analyzed by using the SuperTracker online software.⁽¹²⁴⁾ Each participant's caloric intake was calculated based on their resting metabolic rate and their activity levels. The protein was determined by taking 1.2-1.7g/kg body weight. Carbohydrates were determined by taking 3-7g/kg body weight, and fat was 10-30% of the individual's total calories. This information was typed into the software program in order to compare each participant's 3-day diary to what they ought to be consuming. The nutrient reports on the software provided recommended serving amounts for each food group based on the participant's recommended calorie intake. The reports also provided a breakdown of the amount of calories, protein, carbohydrates, fats, saturated fat, cholesterol, and the major vitamins and minerals. Copies of these reports were given to participants at

the nutrition consultations with the dietitian. The dietitian informed the participants that the software was based on MyPlate and not Athlete's Plate and that the portion sizes for carbohydrates would vary depending on their activity. The nutrient reports were used to determine the progress of participant's diet and aid as a tool for setting nutrition goals with the dietitian.

Nutrition Education

The individuals received nutrition education led by the dietitian during October/November. Participants attended three 45-60 min long classes during that month (see Appendix G). Topics covered included: 1. What is the Athlete's Plate for Easy Training/Weight Management (this covered the parts of the plate and basic information about each food group), 2. Basic Sports Nutrition (which discussed what to eat before, during and after workouts, some tips on how to incorporate good nutrition into their schedule along with snack tips, shopping tips, and cooking tips), and 3. Metabolism, micronutrients, and risks of not eating healthy (what metabolism is and what causes it to increase; the importance of consuming enough iron, vitamin D, and calcium; and the risks of not eating a healthy diet including the Relative Energy Deficiency in sport [RED-S], fatigue, and injury).

Nutrition Counseling

The participants met with the dietitian monthly for one-on-one consultation (total of 4 times from November through April) for 15-30 min each session to help them implement the changes they learned through a series of S.M.A.R.T. Goals (Specific Measurable

Attainable Realistic Timely) and to help with compliance. At the end of the 6 months all participants were reassessed to determine if there were improvements in body composition, eating habits, exercise, and overall dance performance.

Social Media

Throughout the study, participants were contacted via a Secret Facebook group to provide support and compliance. Each participant had access to this Secret Facebook group where they were encouraged by regular posts of food and fitness tips to help with their individual goals. The Facebook group was optional, and those who wished not to participate were contacted via email or phone to help with compliance.

Statistical Analyses

Data was analyzed with qualitative and quantitative statistics. The anthropometric data, parts of the questionnaire, and food frequency were analyzed using the dependent t-test. The Body Image Spectrum, parts of the questionnaire, and the food frequency was analyzed with chi-square. Qualitative data was collected through the analysis of demographic information, health history, food and physical activity history, body image analysis, and food diaries. Clinical nutrition judgment was used in the analysis of food frequency, nutrition consultations, body image spectrum, food diaries, and portions of the questionnaire which include eating habits and exercise patterns.

CHAPTER IV

RESULTS

Participants

In the fall of 2015, 19 participants were recruited for the study (15 female and 4 male). By the end of the study, 6 participants had dropped out (2 due to misunderstanding of the dance requirements of participating 1 hour of modern or ballet 2 times a week during the duration of the study, and 4 due to not having time for the study). By the end of the study, there were 13 participants (3 male and 10 female). The participants' ages ranged from 18-44. The participants indicated their ethnicity as follows: 7 participants were Caucasian, 3 were African American, 2 were Hispanic, and 1 was multiracial. The dancers' ballet and modern dance experience included: 3 participants focused on ballet, 2 participants focused on modern, and 8 participants focused on both ballet and modern. Of the 13 participants, 12 of them participated in other dance forms along with ballet and/or modern. Three participated in jazz, 4 in contemporary, 3 in tap, 3 in hip hop, 2 in Latin style dance, 1 in ballroom, and 1 in African. The participants averaged 8.04 hours ($SD=4.54$) a week devoted to ballet and/or modern dance at the initial assessment and 6.85 hours ($SD=5.74$) at the final. With all dance forms combined they averaged 15.27 hours ($SD=5.56$) during the week at the initial and 10.46 hours ($SD=4.15$) during the week at the final. The participants also initially exercised an average of 5.46 hours ($SD=6.72$) and 7.15 hours ($SD=7.36$) at the final assessment. One participant was a lacto-vegetarian and by the

end of the study became a lacto/ovo vegetarian. One participant was a pescetarian, and one participant became a vegetarian during the study; however, it was noted that the participant was not fully compliant with the vegetarian diet and did eat meat on occasion.

Anthropometric Data

Table 5
Anthropometric Data

Anthropometrics	Pre Assess	<i>SD</i>	Post Assess	<i>SD</i>	<i>p-value</i>
BMI (wt(kg)/ht (m ²))	23.78	4.04	23.78	4.19	1
% Body Fat	29.62	4.40	29.3	4.43	0.60 (two tail)
Total Mass (lbs)	149.24	36.92	150.89	39.35	0.35 (two tail)
Fat (lbs)	42.59	13.65	42.45	14.38	0.90
Lean (lbs)	100.83	24.98	102.31	27.38	0.22
BMC (lbs)	5.88	1.21	5.88	1.30	0.30
Fat Free (lbs)	106.66	26.15	108.17	28.65	0.21
Android (%)	27.02	8.71	26.57	8.66	0.69
Gynoid (%)	33.75	4.85	33.91	4.74	0.80
A/G ratio	0.80	0.25	0.78	0.24	0.40

Note: n=13

Table 5 shows the anthropometric data from the pre and post assessments. There were no significant differences in body composition including BMI, percentage body fat, total mass, fat mass, lean mass, BMC, fat free mass, android percentage, gynoid percentage, and A/G ratio from the pre to post assessments.

Bone Mineral Density

There was no significant difference in total bone mineral density and in the bone mineral density of the arms, legs, trunk, ribs, spine, or pelvis (Table 6).

Table 6
Bone Mineral Density

Bone	Pre Assess	<i>SD</i>	Post Assess	<i>SD</i>	<i>p-value</i>
BMD (g/cm ²)					
Total	1.2792	0.1485	1.2783	0.1561	0.4409
Arms	0.9182	0.1613	0.9332	0.1693	0.2016
Legs	1.311	0.1666	1.3016	0.1732	0.1576
Trunk	1.0857	0.1373	1.083	0.1440	0.3882
Ribs	0.9107	0.1157	0.9217	0.1276	0.1596
Spine	1.1695	0.1776	1.1494	0.1818	0.0827
Pelvis	1.2132	0.1806	1.195	0.1719	0.0756

Note: n=13

Resting Metabolic Rate

Table 7
Resting Metabolic Rate

	PreBEE (Kcalories)	<i>SD</i>	RMR (Kcalories)	<i>SD</i>	<i>p-value</i>
Dancers	1574	314.52	1565.76	381.17	0.85 (two-tail)

Note: N=13

The average predicted basal energy expenditure (PreBEE) was 1574 Kcalories and the resting metabolic rate RMR was 1565.76 Kcalories (Table 7). This shows there was no significant difference with the predicted basal energy expenditure (PreBEE) and the RMR (*p-value*= 0.85).

Body Image Spectrum

Initially, 92% (12 participants) were able to correctly identify their body image size and 7.7% (1 participant) saw him/herself bigger than what he or she actually was. At the post assessment 100% (13 participants) correctly identified their body image size.

At the initial assessment, 61.5% (8 participants) wanted to be thinner, 7% (1 participant) wanted to gain weight, and 30.8% (4 participants) did not want to change their size (Table 8). By the final assessment 30.8% (4 participants) wanted to be thinner, 7% (1 participant) wanted to gain weight, and 61.5% (8 participants) did not want to change their size. The chi-square test of independence did not show a significant difference between individuals who wanted to change their weight after receiving the intervention.

Table 8

Participants Desire to Change Their Size, Based on the Body Image Spectrum

	Number of Participants at Initial (%)	Number of Participants at Final (%)	Chi-Square value	Significance $\alpha \leq 0.05$
# wanted to change their size (wanted to be skinnier + wanted to gain weight)	9 (69.2%)	5 (38.5%)	0.1028	Not significant

Questionnaire

Eleven of the 13 participants completed all sections of the questionnaire for the initial assessment and 12 of the 13 participants completed all sections at the final assessment. Percentages are based on the number of participants who responded to that particular question. Initially, 25% (3 out of 12) of the participants ate less with less training, and 33.3% (4 out of 12) ate more with more intense training (Table 9). On performance day, 50% (6 out of 12) ate enough while 25% (3 out of 12) ate the same as any other day, 33.3% (4 out of 12) ate less during the whole day, 16.7% (2 out of 12) ate less during the whole day and ate a large meal after the performance, 0% (0 out of 12) avoided eating all day on

performance days, 16.7% (2 out of 12) avoided eating before the performance and then ate a large meal after the performance, and 8.3% (1 out of 12) ate a lot during the day to give them energy for their performance. The following responses were equated with eating enough on performance day: ate the same as any other day, ate less during the whole day and ate a large meal after the performance, and ate a lot during the day to give them energy for their performance.

Table 9
Participants Perception of Sports Nutrition and Their Weight

Assessment	Number of Participants at Initial (%)	Number of Participants at Final (%)	Chi-Square value	Significance $\alpha \leq 0.05$
Ate less with less training	3 out of 12 (25%)	3 out of 13 (23.1%)	0.2195	Not significant
Ate more with more training	4 out of 12 (33.3%)	7 out of 13 (53.8%)	0.0663	Not significant
Ate enough on performance day	6 out of 12 (50%)	10 out of 13 (76.9%)	0.1612	Not significant
Worries about gaining weight with sickness or injury	5 out of 12 (41.7%)	7 out of 13 (53.8%)	0.5425	Not significant
Satisfied with weight	6 out of 11 (54.5%)	6 out of 13 (46.2%)	0.5768	Not significant
Thought they were at ideal weight	5 out of 12 (45.5%)	3 out of 13 (23.1%)	0.2466	Not significant
Trying to change weight	5 out of 12 (41.7%)	7 out of 13 (53.8%)	0.6820	Not significant
Limits/restricts foods	6 out of 12 (50%)	8 out of 13 (61.5%)	0.6820	Not significant

At the final assessment, 23.1% (3 out of 13) of the participants ate less with less training and 53.8% (7 out of 13) ate more with more intense training. On performance day 76.9% (10 out of 13) ate enough with 23.1% (3 out of 13) ate the same as any other day,

15.4% (2 out of 13) ate less during the whole day, 23.1% (3 out of 13) ate less during the whole day and ate a large meal after the performance, 0% (0 out of 13) avoided eating all day on performance days, 7.7% (1 out of 13) avoided eating before the performance and then ate a large meal after the performance, and 30.8% (4 out of 13) ate a lot during the day to give them energy for their performance. Overall, the chi-square test of independence did not show a significant difference with the participants eating more or less with more or less training after they received the education.

Initially, 41.7% (5 out of 12) of the participants worried about food and weight gain when they are sick or injured. At the final assessment, 53.8% (7 out of 13) of the participants worried about food and weight gain when they were sick or injured. The chi-square test of independence did not show a significant difference in worrying patterns after the participants received the intervention.

Table 10
Participants Body Perception Prior to Current Study

Perception of Body	Number of Participants
Overweight	9 out of 13 (69%)
Underweight	2 out of 13 (15%)
Ideal weight	4 out of 13 (30.7%)

Note. The table shows all the different perceptions the participants had regarding their body weight anytime in the past prior to the study. Participants were allowed to respond with multiple answers.

In the body satisfaction section of the questionnaire, 54.5% (6 out of 11) were satisfied with their weight at the initial assessment and 46% (6 out of 13) were satisfied at the final (Table 11). In the past prior to the current study, 69% (9 out of 13) of the participants thought they were overweight, 15% (2 out of 13) thought they were underweight, and

Table 11
Current Body Perception

Perception	Number of Participants	Percentage
Satisfied with weight Initial Final	6 out of 11 6 out of 13	54.5% 46%
Thought they were overweight Initial Final	5 out of 12 10 out of 13	45.5% 76.9%
Thought they were underweight Initial Final	1 out of 12 0 out of 13	9% 0%
Thought they were at ideal weight Initial Final	5 out of 12 3 out of 13	45.5% 23%
Trying to lose weight Initial Final	4 out of 12 7 out of 13	36.4% 53.8%
Trying to maintain weight Initial Final	3 out of 12 4 out of 13	27.3% 30.7%
Trying to gain weight Initial Final	1 out of 12 0 out of 13	9% 0%
Doing nothing to their weight Initial Final	3 out of 12 2 out of 13	27.3% 15.4%

30.7% (4 out of 13) thought they were at an ideal body weight (Table10). Initially, 45.5% (5 out of 12) of the participants thought they were overweight, 9% (1 out of 12) thought they were underweight, and 45.5% (5 out of 12) thought they were at their ideal weight. At the final assessment, 76.9% (10 out of 13) thought they were overweight, 0% (0 out of 13) thought they were underweight, and 23% (3 out of 13) thought they were at their ideal

weight. In terms of changing their weight, at the initial 36.4% (4 out of 12) of the participants were trying to lose weight, 27.3% (3 out of 12) were trying to maintain their weight, 9% (1 out of 12) were trying to gain weight, and 27.3% (3 out of 12) were doing nothing to change their weight. At the end of the experiment 53.8% (7 out of 13) were trying to lose weight, 30.7% (4 out of 13) were trying to maintain their weight, and 15.4% (2 out of 13) were doing nothing to change their weight.

Table 12
Reasons for Wanting to Change Weight n=13

Reason for Weight Change	Number of Participants
Appearance	5 (38.5%)
Performance	8 (61.5%)
Health	2 (15.4%)

Note: This is a summation of reasons from both the pre and post assessment.

Table 13
Sources of Pressure for Achieving/ Maintaining a Lean Body Image n=13

Source of Pressure	Number of Participants
Dancer (themselves)	10
Media	4
Coach/ Dance Instructor	5
Parents	3
Friends	1

Note: Participants were allowed to have multiple answers on this question. This is a summation of responses from both the pre and post assessments.

The reasons for wanting to change their weight throughout the study were the following: 38.5% (5 out of 13) of the participants wanted to change their weight for appearance, 61.5% (8 out of 13) were doing it for sport/dance performance, and 15.4% (2 out of 13) did it for health (Table 12). 76.9% (10 out of 13) of the participants felt pressure to achieve/ maintain a lean body image. Of these who felt pressure, 100% (10 out

of 10) of them felt pressure from themselves. Forty percent (4 out of 10) of these participants felt pressure from media, 50% (5 out of 10) felt pressure from their coach/dance instructor, 40% (4 out of 10) felt pressure from their parents, and 10% (1 of 10) felt pressure from friends (Table 13).

Table 14
Weight Loss Methods Attempted in the Past n=13

Weight loss method	Number of participants
High protein/ low carb	3
Liquid supplements	3
Fasting	2
Very low calorie	2
Excessive exercising	2
Vegetarian diet	2
Counseling	1
Diet pills	1
Skipping meals	1

Note: Participants were allowed to have multiple answers for this question.

Only 53.8% (7 out of 13) of the participants tried diet methods to manage their body weight. 23% (3 out of 13) tried high protein diet/ low carbohydrate diet, or liquid supplements, 15.4% (2 out of 13) tried fasting, very low calorie, excessive exercise, or vegetarian diet, 7% (1 out of 13) tried nutrition counseling, diet pills, or skipping meals. 76.9% (10 out of 13) of the participants took supplements, and 69.2% (9 out of 13) took some type of sports supplement (primarily in the form of protein powder/drink or sports bar) (Table 14).

Initially 50% (6 out of 12) of the participants stated they limit or restrict their food to help control their body weight, and 38.5% (5 out of 13) limited or restricted food at the post assessment (Table 15). 58.3% (7 out of 12) stated they limit/restrict certain types of

Table 15
Foods Restricted

Foods Restricted	Number	Percentage
Limit/restrict food to control weight		
Initial	6 out of 12	50%
Final	5 out of 13	38.5%
Limit/restrict only certain types of food		
Initial	7 out of 12	58.3%
Final	8 out of 12	61/5%
Limit/Restrict		
Sweets		
Initial	7 out of 12	58.3%
Final	7 out of 13	53.8%
Fats		
Initial	4 out of 12	30%
Final	2 out of 13	15.4%
Fast Food		
Initial	7 out of 12	58.3%
Final	6 out of 13	46.2%
Sweetened Beverages		
Initial	6 out of 12	50%
Final	6 out of 13	46.2%
Alcoholic beverages		
Initial	6 out of 12	50%
Final	5 out of 13	38.5%
Red Meats		
Initial	3 out of 12	25%
Final	2 out of 13	15.4%
Carbohydrate rich foods		
Initial	2 out of 12	16.7%
Final	3 out of 13	23.1%
Other Meat		
Initial	0 out of 12	0%
Final	1 out of 13	7.7%
Dairy		
Initial	1 out of 12	8.3%
Final	1 out of 13	7.7%

foods at the initial assessment, with 58.3% (7 out of 12) limiting/restricting sweets, 30% (4 out of 12) fats, 58.3% (7 out of 12) fast food, 50% (6 out of 12) sweetened beverages, 50% (6 out of 12) alcoholic beverages, 25% (3 out of 12) red meats, 16.7% (2 out of 12) carbohydrate rich food, and 8.3% (1 out of 12) dairy. At the final assessment 61.5% (8 out of 12) stated they limit/restrict certain foods, with 53.8% (7 out of 13) limiting/ restricting sweets, 15.4% (2 out of 13) fats, 46.2% (6 out of 13) fast food, 46.2% (6 out of 13) sweetened beverages, 38.5% (5 out of 13) alcoholic beverages, 15.4% (2 out of 13) red meats, 23.1% (3 out of 13) carbohydrate rich food, 7.7% (1 out of 13) other meat, and 7.7% (1 out of 13) dairy.

Eating Disorder Risk

Based on the eating pattern section of the questionnaire, a score of 70% or higher would indicate a risk for an eating disorder. None of the participants were at risk for developing an eating disorder, and the average score on the pre-assessment for this questionnaire was 17.8% ($SD=9.54$) and for the post-assessment was 16.6% ($SD=11.97$). The scores ranged from 2% to 34.7% for the pre-assessment and from 5.1% to 49% for the post-assessment.

Fatigue

For the fatigue section of the questionnaire, all participants showed low fatigue for both the pre- and post-assessment. The average fatigue score for the pre-assessment was 16.0% ($SD=12.14$) and 10.3% ($SD=6.67$) for the post-assessment. The score range was from 4.4% to 42.1% for the pre-assessment and between 2.6% to 24.6% for the post-

assessment. There was a decrease in fatigue from the beginning of the study with a *p-value* of 0.007 ($\alpha=0.05$).

Menstrual Status

The females filled out the portion of the questionnaire that focused on menstruation. All females started menstruation by the age of 15, with 10% (1 out of 10) starting at the age of 10, 10% (1 out of 10) starting at the age of 11, 10% (1 out of 10) starting at the age of 12, 50% (5 out of 10) starting at age of 13, and 20% (2 out of 10) starting at age of 15. Seventy percent (7 out of 10) started their menstruation after they were involved in sports, competitions, or dance. Those who started before being physically active started menstruation at a young age of 10 or 13 (Table 16).

Table 16
Menstruation Patterns

	Number of Participants
Age of Menarche	
10	1
11	1
12	1
13	5
15	2
Menarche after involved in sports	7
Eumenorrhea	9
Oligomenorrhea	1
Cycle changes with increased activity	5
Uses birth control	4 (initial) 3 (final)
Uses birth control to regulate menstruation	3 (initial) 2 (final)
Had used birth control in the past but not currently using	2
Has a known reproductive abnormality	2

At the initial assessment, 90% (9 out of 10) of the female participants had eumenorrhea with 9-15 cycles per year. Ten percent (1 out of 10) of the females had oligomenorrhea with an average of 6 cycles per year. There was no change in the number of cycles for this participant by the end of the study. One of the participants became menopausal (age 44) and ceased to have a regular period. Fifty percent (5 out of 10) of the participants stated they had noticed changes with their cycle with increased physical activity. The most common changes included skipping cycles, having longer cycles, and alterations in blood flow. Forty percent (4 out of 10) of the female participants used birth control at the beginning of the study and 30% (3 out of 10) of the female participants used birth control to help regulate their periods. By the end only 30% (3 out of 10) used birth control and 20% (2 out of 10) of the female participants used it to regulate their period. 20% (2 out of 10) of the participants had used birth control in the past to regulate their cycle even though they were not currently using it.

Seventy percent (7 out of 10) of the female participants had seen a gynecologist in the past. One participant was diagnosed with Polycystic Ovarian Syndrome (PCOS), and one participant has low progesterone. The remaining participants did not have knowledge of any reproductive abnormalities. Eighty percent (8 of 10) of the participants stated they kept track of their menstrual cycle.

Food Frequency

Initially, 7.7% (1 participant) followed the portion percentages for Athlete's Plate and 15.4% (2 participants) at the final assessment. Despite the low number of

participants reaching the successful percentages of ounces for the Athlete's Plate, 69.2% (9 participants) showed improvements towards the correct portion sizes from the initial to the final assessment. 76.9% (10 participants) showed improvement in their protein portion, 53.5% (7 participants) showed improvement in their complex carbohydrates portion, and 76.9% (10 participants) showed improvement in their fruit and vegetable portions.

Fat intake was determined by comparing the total calories of fat consumed on the food frequency chart to their recommended fat intake. Their recommended fat intake was calculated by taking 10-30% of their total energy expenditure. Individuals whose fat intake was higher than 30% were considered to not be in line with the diet. Initially 76.9% (10 participants) had the correct fat intake, and 84.6% (11 participants) at the final. This showed that only 7.7% (1 participant) improved their fat intake over the course of the study.

Dairy intake was determined based on whether the participant consumed the recommended 3 serving equivalents of dairy each day. At the initial and the final assessment, 53.8% (7 participants) consumed the correct amount of dairy each day. 15.4% (2 participants) showed an improvement during the course of the study with 15.4% (2 participants) doing worse on their consumption.

3-Day Food Diary

The nutrient analysis of the food diary was completed using the USDA SuperTracker application available online. ⁽¹²⁴⁾ Participants submitted 1-4 food diaries

throughout the study. The nutrient analysis was used to help the participants determine their nutrient goals that they set with the dietitian. A large portion of the participants consumed less than their predicted calories, with a few consuming over their predicted amount. The dancers consumed an average of 1958 calories (Table 17). At the beginning of the study there were a few participants who were not getting enough protein in their diet; however, they increased the consumption during the duration of the study. By the end of the study, all participants consumed enough protein. On average the dancers took in 95.6g of protein/day. The participants consumed adequate amounts of carbohydrates throughout the study with an average of 219g/day. The fat intake was the most difficult for the participants to master. They were asked to aim for 10-30% of their caloric intake from fats; however, the average fat intake was 36.5% (80.2g) with a range of 22-60% of their caloric intake. It is recommended that the saturated fat be <10% of their caloric intake; however, the participants' average saturated fat consumption was 13.1% (28.8g) with a range of 7-23%.

Table 17
3-Day Food Diary Macronutrient Averages n=36

Macronutrient	Average Amount Consumed	<i>SD</i>
Calories	1958	421.54
Protein (g)	95.6	27.13
Carbohydrate (g)	219	62.44
Fat (%)	36.5	8.64
Fat (g)	80.2	27.33
Saturated Fat (%)	13.1	5.47
Saturated Fat (g)	28.8	13.90

Calculations were based on total number of food diaries completed throughout the study (35 total food diaries).

The micronutrients that the participants struggled with were calcium, potassium, magnesium, sodium, vitamin D, vitamin E, and vitamin K. Vegetable consumption was the most challenging for the participants. Overall, during the course of the study the nutrient analysis showed that the participants were making changes to their diets.

Nutrition Counseling

Table 18

Goals made with Dietitian

Goal	# of Participants
Increase vegetable intake	12
Increase milk/milk substitute/ calcium	9
Increase exercise	7
Increase weight bearing exercise	6
Increase cardio	2
Increase protein/ protein shakes/ protein bars	6
Increase fruit intake	6
Increase water consumption	5
Eat a variety of foods in diet	4
Meal planning	4
Decrease fat intake	4
Decrease the amount of sugary beverages/snacks	3
Eat enough carbohydrates	3
Maintaining healthy diet	3
Add a multivitamin/vitamin/supplement	2
Decrease body fat	2
Increase lean muscle	2
Tiredness	2
Mindful eating	1
Add more whole foods	1
Eat a balanced plate (Athlete's Plate)	1
Lose weight	1
Stretch regularly	1
Eat healthier on the weekend	1
Body image security	1
Eating evenly throughout the day	1
Pick healthier snacks	1
Eat more nuts	1

Participants met 1 to 4 times with the dietitian to help them make the dietary changes. During these sessions the participants set goals to work on until the next consult. Table 18 lists the goals set by the participants. The most common goal was to increase the consumption of vegetables, followed by increased consumption of milk/milk substitute/calcium supplement, and also by increased exercise. Most of the individuals were trying to increase weight bearing exercise as opposed to cardio training. There were also a few participants who set goals for increased protein, fruit, and water intakes.

CHAPTER V

DISCUSSION

Body Composition

The participants showed a slight change in body composition with a decrease in fat mass, percentage of body fat, android fat, and A/G ratio, and an increase in lean mass, bone mineral content, and total fat free mass. Though not significant, a longer study with further control on the participants' diet and larger number of participants may show more favorable results in changing body composition.

The dancers' body composition appeared to be different from previous research. In previous studies, body composition of collegiate dancers was 15-20% body fat for females and 8% for males. ^(1, 2, 12) In the current study, the dancers' body fat percentage averaged 29.3-29.6% with a range from 19.8% to 35.5%. The type of collegiate dance program may be a factor in the differences in body fat composition. Texas Woman's University dance department is focused on preparing their students for a job in dance education, while other universities may focus on getting their dancers to become professionals. Professional dancers in major companies typically dance 8-12 hours a day; however, the dancers in this study danced an average of 10-15 hours a week.

The change in body composition may indicate an increase in the size of dancers, and possibly a shift in what is considered to be an acceptable size. Muscular bodies are beginning to become more popular in the dance world, and this may be a contributing

factor in the acceptance of other body types. Dancers are now encouraged to participate in several dance forms which may also affect their appearance. Modern or tap dancers generally have a different body structure than ballerinas. Ballet is an art form that has strict traditions, which include the appearance of the dancer. Traditionally ballerinas are expected to remain thin in order to give the appearance of long lines through their arms and legs. In other dance forms, such as modern and tap, dancers do not have to fit in to a certain body size as long as the dancer can perform the art form with skill and is entertaining.

Risk of Eating Disorders

None of the participants showed signs of eating disorders; however, some were concerned with their body composition, body image, and weight loss. Sixty-nine percent of the participants thought they were overweight in the past, and 15% thought they were underweight. Education may be a key in changing the participants' perception. Initially 69.2% wanted to change their size and by the final assessment, only 38.5% wanted to change their size. Although the data did not show a significant change in perception, education may still be a good solution for some individuals. It is interesting that the individuals' answers on the questionnaire showed the opposite. There was an increase in body dissatisfaction and attempts at losing weight. This may be due to the weight gain on the scale which is due to the increase in lean mass. The lean mass gives the participants a thinner appearance but they will actually weigh more. It is possible that the participants may have not completely understood this principle which may explain why

they wanted to lose weight. Perhaps the participants may see the increase in body mass as a negative as many dance instructors advise their students to remain smaller to help with partnering. Lighter dancers can be lifted in the air by their partner with much greater ease which affects how the dancer will be cast for roles.

All participants experienced similar thinness related learning (TRL) as seen in previous studies.^(18-28, 31) One hundred percent of the participants felt pressure from themselves to achieve a low body weight. This pressure may be caused by them being exposed to the TRL from their coach/dance instructor, media, parents, and friends. Food restricting was also common which agrees with previous research.⁽³¹⁾

Relative Energy Deficiency of Sport (RED-S)

None of the dancers experienced any symptoms of Relative Energy Deficiency of Sport including amenorrhea, low bone mineral density, and low caloric intake. This may be due to the type of dance population that was observed. Dancers who have goals to become a professional may have an increased risk of RED-S compared to dancers who are dancing recreationally or with goals of becoming a dance educator. Previous studies stated that 60% of dancers had irregular menstruation;⁽³⁹⁾ however, in this study all the female dancers reached menarche by the age of 15, and the majority of the participants were eumenorrhic with only one participant with oligomenorrhea. Overall the dancers' bone mineral density was higher than average, and dancers consumed adequate calories. Previous studies suggested that dancers consumed fewer calories than recommended.⁽⁴³⁾ This was not true for the current study where the individuals consumed relatively close to

their recommended calories, protein, carbohydrates, and fat. This may be an indication that the dancer is moving towards healthier eating and lifestyle patterns than in years past. It is also important to note that the prevalence of malnutrition is more common in ballet dancers; however, this population was primarily modern or ballet and modern combined. The results may have been different if we looked at a ballet company that primarily focused on ballet.

Bone Mineral Density

The study did not find a significant difference in BMD after 6 months. It is important to note that some participants did see an improvement in BMD, while others had a slight decrease. This may be due to diet and resistance training exercise. We saw an increase in participants who incorporated weight bearing exercises, and an increase in arms and ribs BMD in participants who started incorporating upper body weight resistance training. The small improvement shows that there is the potential for benefits of resistance training for dancers to maintain BMD. Further research is needed to see the implications on the effects of the dancers' body image and body composition. The current study was not long enough to see the benefit of diet on BMD. Many of the participants had to establish the habit to consume adequate calcium, and a longer study may be needed to see improvements in bone mineral density. We did see a slight decrease in BMD within 6 months; however this was not significant. This decrease may be due to inadequate consumption of calcium especially for the individuals who were

very active. The decrease may also be an error in measurement on the DXA scan since there was a different technician who ran the scans at the initial and final assessment.

Resting Metabolic Rate

The RMR results were not significantly different from the predicted REE; however, it is important to note that there were 4 dancers with a higher metabolic rate than the predicted REE and 9 were only slightly less than the predicted. This is believed to be due to the amount of lean muscle mass. The individuals with more lean muscle mass had increased metabolic rates when contrasted with individuals with less. It is believed that if individuals significantly increased their lean muscle this will cause an increase in their metabolism. ⁽¹²⁵⁾

Food Frequency and 3-Day Diary

Previous studies suggested that dancers consumed fewer calories than recommended. ⁽⁴³⁾ This was not true for the current study where the individuals consumed relatively close to their recommended calories, protein, carbohydrates, and fat. The eating patterns appeared to improve after the participants received the nutrition education and met with the dietitian which agrees with previous studies. ⁽¹¹⁰⁾ During the course of the study the participants increased their consumption of fruits and vegetables. The participants that were not getting enough protein at the initial 3-day diary were reaching their protein requirements by the end of the study. Although the majority of the participants were not making all their plates according to the Athlete's Plate, many were

attempting to do at least one meal a day, and were moving towards the direction of the Athlete's Plate.

Currently many dietitians may use the MyPlate model with dancers. The MyPlate model is similar to the Athlete's Plate for Easy Training/ Weight Management except for the alterations in the complex carbohydrates and the restriction of fat. The question is whether dancers should use the MyPlate model, the Athlete's Plate model, or do they need a completely new plate model specifically designed for dancers. This question was not answered in this study; however it is important to note that even though the dancers in the study were not at the professional level they still had relatively high activity levels with an average of 10-15 hours a week of dancing and additional 5-7 hours a week of exercise. This equates to 15-22 hours a week of physical activity. With such high activity levels, the Athlete's Plate may well be a better option over the MyPlate model; however further studies are needed to determine if it would be ideal for dancers. It is possible that dancers may need a separate "Dancer's Plate." Dancers' activity levels can alter depending on the time of year and if there is a performance. When there is no performance they tend to just take class, which may be as little as 1 hour a day. During performance season however; they may have classes, rehearsal, and performances all in the same day. Each scenario would call for different nutritional needs that one plate model may not be able to depict for a dancer.

Fatigue

The one area that showed a significant decrease was concerning fatigue of dancers from the initial to final assessments. It is possible that this was caused by an increase in fruits and vegetables that help provide a healthy source of vitamins and minerals to regulate energy metabolism without the side effect of feeling “sluggish.” The participants also increased their protein intake which has a key role in their recovery after physical activity. The decrease in fatigue may have nothing to do with their diet at all, but be due to the fact that the initial assessment was during the middle of the school year and the final was done when the school year ended. Participants might have felt less stress because most of their performances, assignments, and tests were completed. There were also many variables in this study which may be a cause of error in this analysis. Meaning there is a possibility the participants may have not actually decreased in fatigue from the initial to the final. The current study did not have a way of correlating the food frequency chart with the fatigue level due to the low number of participants compliant with the diet. Further studies are needed to determine if there is a correlation between diet and fatigue.

Conclusion

Overall, the study showed there was a significant decrease in fatigue in the participants within 6 months. There were positive changes in body composition and an increase in intake of fruits, vegetables, and protein, however not significant. Future studies are needed to determine the effects on body composition of different types of

dancers if the diet is followed for a longer period. Future studies on the role of resistance training on body composition and body image of dancers may also show some promising results.

REFERENCES

1. Chmelar RD, Fitt SS. *Diet for Dancers: A Complete Guide to Nutrition and Weight Control*. Highstown, NJ: Princeton Book Company. 1990.
2. Chmelar RD, Fit SS, Schultz BB, et al. Body composition and the comparison of measurement techniques in different levels and styles of dancers. *Dance Research Journal*. 1988. Summer: 37-42.
3. Calabresse LH, Kirkendal DT, Floyd M, et al. Menstrual abnormalities, nutritional patterns, and body composition in female classical dancers. *The Physicians and Sports Medicine*. 1983. 11(2): 86-98.
4. Cohen JL, Segal KR, Witriol K, McArdle WD. Cardiorespiratory response to ballet exercise and the VO_{2max} of elite ballet dancers. *Med Sci Sports & Exer*. 1982. 14: 212-217.
5. Kirkendal DT, Calabrese LH. Physiologic aspects of dance. *Clinics in Sports Medicine*. 1983. 2: 525-537.
6. Micheli LJ, Gillespie WJ, Walaszek A. Physiologic profiles of female professional ballerinas. *Clinics in Sports Medicine*. 1984. 3:199-209.
7. Ryan AJ, Stephens RE. *The healthy dancer: Dance medicine for dancers*. Princeton, NJ: Dance Horizons/ Princeton book Company. 1989.
8. White LA. *Nutritional intake, percent body fat, and physical fitness among professional ballerinas*. 1982. Unpublished master's thesis. University of Utah, Salt Lake City.
9. Twitchett EA, Koutedakis Y, Wyon MA. Physiological fitness and professional classical ballet performance: a brief review. *Journal of Strength and Conditioning Research*. 2009. 23:2732-2740.
10. Yannakoulia M, Keramopoulos A, Tsakalakos N, Matalas AL. Body composition in dancers: the bioelectrical impedance method. *Med Sci Sports & Exer*. 2000. 32(1): 228-234.
11. Dolgener FA, Spasoff TC, St. John WE. Body build and body composition of high ability female dancers. *Research Quarterly for Exercise and Sport*. 1980. 51: 599-607.
12. Novak JP, Magil LA, Schutte JE. Maximal oxygen intake and body composition of female dancers. *European Journal of Applied Physiology and Occupational Physiology*. 1978. 39:277-282.

13. Clarkson PM, Feedson PS, Keller B, et al. Maximal oxygen uptake, nutritional patterns and body composition of adolescent female ballet dancers. *Research Quarterly for Exercise and Sport*. 1985. 56: 180-184.
14. Fleck SJ. Body composition of elite American athletes. *Amer J Sports Med*. 1983. 11:398-403.
15. Haviland WR. A physiologic profile of modern dancers. Unpublished master's thesis. Ohio University, Athens. 1978.
16. Jaycobi C, Hayward C, de Zwaan M, et al. Coming to terms with risk factors for eating disorders: an application of risk terminology and suggestions for a general taxonomy. *Psychological Bulletin*. 2004. 130: 19-65.
17. LeGrange D, Tibbs J, Noakes T. Implications of a diagnosis of anorexia nervosa in a ballet school. *International Journal of Eating Disorders*. 1994. 15: 369-376.
18. Anshel MH. Sources of disordered eating patterns between ballet dancers and non-dancers. *Journal of Sport Behavior*. 2004. 27:115-133.
19. Abraham S. Characteristics of eating disorders among young ballet dancers. *Psychopathology*. 1996. 29:223-239.
20. Ackard DM, Henderson JB, Wonderlich AL. The association between childhood dance participation and adult disordered eating and related psychopathology. *Journal of Psychosomatic Research*. 2004. 57:485-490.
21. Ringham R, Klump K, Kay W, et al. Eating disorder symptomatology among ballet dancers. *International Journal of Eating Disorders*. 2006. 39: 503-508.
22. Neumarker KJ, Bettel N, Bettel O, et al. The eating attitudes test: comparative analysis of female and male students at the public ballet school of Berlin. *European Child and Adolescent Psychiatry*. 1998. 7:19-23.
23. Neumarker K, Bettel N, Neumarker U, Bettel O. Age and gender related psychological characteristics of adolescent ballet dancers. *Psychopathology*. 2000. 33: 137-142.
24. Ravaldi C, Vannacci A, Zucchi, T, et al. Eating disorders and body image disturbances among ballet dancers, gymnasium users and body builders. *Psychopathology*. 2003. 36: 247-254.
25. Bettel N, Bettel O, Neumarker U, Neumarker KJ. Adolescent ballet school students: Their quest for body weight change. *Psychopathology*. 1998. 31: 153-159.
26. Dotti A, Fioravanti M, Balotta M, et al. Eating behavior of ballet dancers. *Eating and Weight Disorders*. 2002. 7:60-67.
27. Szmukler GI, Eisler I, Gillies C, Hayward ME. The implications of anorexia nervosa in a ballet school. *Journal of Psychiatric Research*. 1985. 19:177-181.

28. Penniment KJ, Egan SJ. Perfectionism and learning experiences in dance class as risk factors for eating disorders in dancers. *Eur Eat Disorder Rev.* 2012. 20:13-22.
29. Sousa M, Cavalho P, Moreira P, Teixeira VH. Nutrition and nutritional issues for dancers. *Science and Medicine.* 2013. Medical Problems of performing Arts. 2013. 119-123
30. Munday S. IOC Medical Commission to reveal new insights into the Female Athlete Triad. International Olympic Committee. January 17, 2014. Available at <http://www.olympic.org/news/ioc-medical-commission-to-reveal-new-insights-into-the-female-athlete-triad/221481> Accessed on April 21, 2015
31. Fairburn CG, Beglin SJ. Assessment of eating disorders: interview or self-report questionnaire? *International Journal of Eating Disorders.* 1994. 16: 363-370.
32. Thomas JJ, Keel PK, Heatherton TF. Disordered eating attitudes and behaviors in ballet students: examination of environmental and individual risk factors. *International Journal of Eating Disorders.* 2005. 38: 263-268.
33. Druss R, Silverman J. Body image and perfectionism of ballerinas. Comparison and contrast with anorexia nervosa. *General Hospital Psychiatry.* 1979. 1:115-121.
34. Radell SA, Adame DD, Cole SP, Blumenkehl NJ. The impact of mirrors on body image and performance in high and low performing female ballet students. *J Dance Med & Sci.* 2011. 15(3):108-115.
35. Sowers MR, Kshirsagar A, Crutchfield MM, Updike S. Joint influence of fat and lean body composition compartments on femoral bone mineral density in premenopausal women. *Am J Epidemiol.* 1992. 136: 257-65.
36. Kuennen MR. Risk factors for bone mineral degradation in young female dancers. *J Dance Med Sci.* 2005. 9:18-23.
37. Snow-Harter CM. Bone health and prevention of osteoporosis in active and athletic women. *Clin Sport Med.* 1994. 13:389-404.
38. Petterson JR. *Dance Medicine Head to Toe: Dancer's Guide to Health.* Highstown, NJ: Princeton Book Company. 2011.
39. Holschen JC. The female athlete. *Southern Medical Journal.* 2004. 97(9):852-828.
40. Lagowska K, Kapczuk K, Jeszka J. Nine-month nutritional intervention improves restoration of menses in young female athletes and ballet dancers. *J International Society of Sport Nutrition.* 2014. 11:52-61.

41. Mallinson RJ, Williams NI, Olmsted MP, et al. A case report of recovery of menstrual function following a nutritional intervention in two exercising women with amenorrhea of varying duration. *J Int Soc Sports Nutr.* 2013. 10:34.
42. Arends JC, Cheung MY, Barrack MT, Nattiv A. Restoration of menses with nonpharmacologic therapy in collegiate athletes with menstrual disturbances: a 5 year retrospective study. *Int J Sport Nutr Exerc Metab.* 2012. 22(2): 98-108.
43. Doyle-Lucas AF, Akers JD, Davy BM. Energetic efficiency, menstrual irregularity, and bone mineral density in elite professional female ballet dancers. *J Dance Med & Sci.* 2010. 14(4):146-154.
44. Nattiv A, Loucks AB, Manore MM. The female athlete triad. *Med Sci Sports Exerc.* 2007. 39(10):1867-82.
45. To W, Wong M. Does oligomenorrhea/ amenorrhea and underweight imply athlete triad syndrome in young female dancers? *Euro J Sport Sci.* 2011. 11(5): 335-340.
46. Snow-Harter CM, Bouxsein M, Lewis B, et al. Muscle strength as a predictor of bone mineral density in young women. *J Bone Miner Res.* 1990. 5:589-95.
47. Fechling PC, Alekel L, Clasey J, et al. A comparison of bone mineral densities among female athletes in impact loading and active loading sports. *Bone.* 1995. 17(3):205-10.
48. Risser WI, Lee EJ, LeBlanc A, et al. Bone density in eumenorrheic female college athletes. *Med Sci. Sports Exerc.* 1990. 22(5):570-4.
49. Friesen KJ, Rozenek R, Clippinger K, et al. Bone mineral density and body composition of collegiate modern dancers. *J Dance Med & Sci.* 2011. 15(1):31-36.
50. Paffenbarger RS, Olsen E. *Lifefit*. Champaign, IL, Human Kinetics Books. 1996.
51. Clarkson P. Nutrition fact sheet: fueling the dancer. *International Association for Dance Medicine and Science.* 2015.
52. Benson J, Gillien DM, Bourder K, et al. Inadequate nutrition and chronic calorie restriction in adolescent ballerinas. *Phys Sportsmed.* 1985. 13 (10): 79-90
53. Kaufman BA, Warren MP, Dominguez JE. Bone density and amenorrhea in ballet dancers are related to a decreased resting metabolic rate and lower leptin levels. *J Clin Endocrinol Metab.* 2002. 87(6):2777-83.
54. Bonbright JM. The nutritional status of female ballet dancers 15-18 years of age. *Dance Research Journal.* 1989. 21(2):9-14.
55. Dahlstrom M, Jansson E, Nordevang E, et al. Discrepancy between estimated energy intake and requirement in female dancers. *Clin Physiol.* 1990. 10(1): 11-25.

56. Calbrese LH, Kirkendal DT, Floyd M. Menstrual abnormalities, nutritional patterns and body composition in female classical ballet dancers. *Phys Sportsmed.* 1983; 11:86-98.
57. Stretatanski MF, Weber. Medical and rehabilitation issues in classical ballet: literature review. *American Journal of Physical Medicine and Rehabilitation.* 2002. 81:383-391.
58. Rosenbloom CA, Coleman EJ. *Sports Nutrition: A Practice Manual for Professionals 5th ed.* Academy of Nutrition and Dietetics. 2012.
59. United States Olympic Committee. Athletes Plate Easy. Resources and Fact Sheets. United States Olympic Committee. Available at: <http://www.teamusa.org/About-the-USOC/Athlete-Development/Sport-Performance/Nutrition/Resources-and-Fact-Sheets.aspx> Accessed on February 21, 2015.
60. Rodriguez NR, DiMarco NM, Langley S. Nutrition and athletic performance. *Med Sci Sports Exer.* 2009. 41(3):709-731.
61. Burke LM, Loucks Ab, Broad N. Energy and carbohydrate for training and recovery. *J Sports Sci.* 2004. 24(7): 675-685.
62. Hamilton LH, Brooks-Gunn J, Warren MP. Nutritional intake of female dancers: a reflection of eating problems. *International Journal of Eating Disorders.* 1986. 5: 925-934.
63. Bright-See E, Croy J, Brayshaw J, et al. Nutrition beliefs and practices of ballet students. *Journal of the Canadian Dietetic Association.* 1978. 39(4): 324-331.
64. Wadler GI, Lydon K, Rasminsky A, Holmes K. *The Healthy Dancer: ABT Guidelines for Dancer Health.* New York, NY: Ballet Theater Foundation. 2008.
65. Hamilton LH. *The Dancer's Way: The New York City Ballet Guide to Mind, Body, and Nutrition.* New York, NY: St. Martin's Griffin. 2008.
66. Burke L. *Practical Sports Nutrition.* Belconnen, Human Kinetics. 2007.
67. Mastin Z. *Nutrition for the Dancer.* Alton, Dance Books. 2009.
68. Sawka MN, Burke LM, Eichner ER, et al. Exercise and fluid replacement. *Med Sci Sports.* 2007. 39(2): 377-390.
69. Beelen M, Burke LM, Bala MJ, Van Loon LJC. Nutritional strategies to promote post exercise recovery. *Int J Sport Nutr Exerc Metab.* 2010. 20(6): 515-532.
70. Burke L, Deakin V. *Clinical Sports Nutrition.* Sydney, McGraw-Hill. 2006.
71. Carlson DL, Mawdsley RH. Sports anemia: a review of the literature. *Am J Sports Med.* 1986/ 14(2): 220-226.

72. Peeling. Dawson b, Goodman C, et al. Athletic induced iron deficiency: insights into the role of inflammation, cytokines and hormones. *Euro J Appl Physiol.* 2008. 103(4): 381-391.
73. Nicholas JA. Risk factors, sports medicine, and the orthopedic system: an overview. *J Sports Med & Phys Fit.* 1975. 3:243-259.
74. Hergenroeder AC, Brown B, Klish WJ. Anthropometric measurements and estimating body composition in ballet dancers. *Med Sci Sports Exerc.* 1993. 25(1): 145-150.
75. Classens AL, Beunen GP, Nuyts MM, et al. Body structure, somatotype, maturation and motor performance of girls in ballet schooling. *J Sports Med Phys Fitness.* 1987. 27(3):310-317.
76. Center for Disease Control and Prevention: Division of Nutrition, Physical Activity and Obesity. Physical Activity for Everyone: How much physical activity do you need? August 25, 2014. Available at <http://www.cdc.gov/physicalactivity/everyone/guidelines> Accessed on April 24, 2015.
77. Koutedakis Y, Jamurtas A. The dancer as a performing athlete: physiological considerations. *Sports Med.* 2004. 34 (10): 651-661.
78. Hagins M, Moore W, Rundle A. Does practicing hatha yoga satisfy recommendations for intensity of physical activity which improves and maintains health and cardiovascular fitness? *BMC Complementary and Alternative Medicine.* 2007. 7:1-9.
79. Koutedakis Y, Sharp NCC. *The fit and healthy dancer.* Cechester: John Wiley and Sons, 1999
80. Baldari C, Guidetti L. $\text{VO}_{2\text{max}}$, ventilator and anaerobic thresholds in rhythmic gymnasts and young female dancers. *J Sports Med Phys Fitness.* 2001. 41: 177-182.
81. Chmelar RD, Schultz BB, Ruhling RO, et al. A physiologic profile comparing levels and styles of female dancers. *Pys Sports Med.* 1988. 16 (7): 87-96.
82. Kirkendal DT, Calabrese LH. Physiological aspects of dance. *Clin Sports Med.* 1983. 2(3): 525-537.
83. Schantz PJ, Astrand P-O. Physiological characteristics of classical ballet. *Med Sci Sports Exerc.* 1984. 16 (5): 472-476.
84. Baxter-Jones A, Goldenstein H, Helms P. The development of aerobic power in young athletes. *J Appl Physiol.* 1993. 75(3): 1160-1167.

85. Al-Hazzaa HM, Almuzaini KS, Al-Rafae SA, et al. Aerobic and anaerobic power characteristics of Saudi elite soccer players. *J Sports Med Phys Fitness*. 2001. 41(1): 54-61.
86. Boileau RA, Mayhew JL, Riner WF, et al. Physiological characteristics of elite middle and long distance runners. *Can J Appl Sports Sci*. 1982. 7(3):167-172.
87. Clarkson PM, Freedson PS, Keller B, et al. Maximal oxygen uptake, nutritional patterns, and body composition of adolescent female ballet dancers. *Res Q Exerc Sport*. 1985. 56: 180-184.
88. Rimmer JH, Jay D, Plowman SA. Physiological characteristics of trained dancers and intensity level of ballet class and rehearsal. *Impulse*. 1994. 2:97-105.
89. Cohen JL, Potosnak L, Frank O, Baker H. A nutritional and hematologic assessment of elite ballet dancers. *The Physician and Sports Medicine*. 1985. 13(5): 43-54.
90. Wyon MA, Head A, Sharp NCC, et al. The cardiorespiratory responses to modern dance classes: differences between university, graduate and professional classes. *J Dance Med Sci*. 2002. 6(2): 41-45.
91. Schantz PG, Astrand PO. Physiological characteristics of classical ballet. *Med Sci Sports & Exer*. 1984. 16:472-476.
92. Vaughn R, Snell PG. Physiological variables between elite and good female 10,000 meter runners. *Med Sci Sports & Exer*. 1986. 18: S91.
93. Gleim GW, Small C, Liederbach MJ, et al. Anaerobic power of professional ballet dancers. *Med Sci in Sports and Exer*. 1984. 16: 193-194.
94. Puhl J, Case S, Fleck S, Van Handel P. Physical and physiological characteristics of elite volleyball players. *Research Quarterly for Exercise and Sport*. 1982. 53: 257-262.
95. Reid DC. Prevention of hip and knee injuries in ballet dancers. *Sports Med*. 1988. 6(5):295-307.
96. Yannakoulia M, Keramopoulos a, Tsakalakos N, et al. Body composition in dancers: the bioelectrical impedance method. *Med Sci Sports Exerc*. 2000. 32 (1): 228-234.
97. Dahlsrom M, Liljedahl ME, Gierup J, et al. High proportion of type I fibers in thigh muscle of young dancers. *Acta Physiol Scand*. 1997. 160(1): 49-55.
98. Brinson P, Dick F. *Fit to dance?* London: Calouste Gulbenkian Foundation. 1996.
99. Misigoj-Durakovic M, Matkovic BR, Ruzie L, et al. Body composition and functional abilities in terms of the quality of professional ballerinas. *Coll Antropol*. 2001. 25(2):585-590.

100. Franklin E. *Dynamic Alignment through Imagery*. Champaign IL: Human Kinematics. 1996.
101. Koutedakis Y, Cross V, Sharp NCC. The effects of strength training in male ballet dancers. *Impulse*. 1996; 4(3): 210-219.
102. Stalder MA, Noble BJ, Wilkinson JG. The effects of supplemental weight training for ballet dancers. *J Appl Sports Sci Res*. 1990. 4(3):95-102.
103. MacDougall JD, Elder GC, Sale DG, et al. Effects of strength training and immobilization on human muscle fibers. *Eur J Appl Physiol Occup Physiol*. 1980. 43 (1): 25-34.
104. Enoka RM. Neural adaptations with chronic physical activity. *J Biomech*. 1997. 30(5): 447-455.
105. Ploutz LL, Tesch PA, Biro RL, et al. Effect of resistance training on muscle use during exercise. *J Appl Physiol*. 1994. 76 (4): 1675-1681.
106. Clark N. *Nancy Clark's Sports Nutrition Guide Book 4th Ed.*_ Champaign, IL: Human Kinetics. 2008.
107. Zelasko C. Exercise for weight loss: What are the facts? *J Am Diet Assoc*. 1995. 95(22): 1414-1417.
108. Yoshioka M, Doucet E, St-Pierre S, et al. Impact of high intensity exercise on energy expenditure, lipid oxidation and body fatness. *Int J Obes Relat Metab Disord*. 2001. 25(3): 332-339.
109. Tremblay A, Depres J, Leblanc C, et al. Effect of intensity of physical activity on body fatness and fat distribution. *Am J Clin Nutr*. 1990. 51: 153-157.
110. Doyle-Lucas AF, Davy BM. Development and evaluation of an educational intervention program for pre-professional adolescent ballet dancers: nutrition for optimal performance. *J Dance Med & Sci*. 2011. 15(2): 65-74
111. Robson B. Bone health and female dancers: physical and nutritional guidelines. *International Association for Dance Medicine and Science*. 2010.
112. Johnston AM, Murison SD, Duncan JS. Factors influencing variation in basal metabolic rate include fat free mass, fat mass, age, and circulating thyroxine but not sex, circulating leptin, or triiodothyronine. *Am J Clin Nutr*. 2005. 82(5):941-948.
113. Benson JE, Gillien DM, Bourdet K, Loosli AR. Inadequate nutrition and chronic calorie restriction in adolescent ballerinas. *The Physician and Sports Medicine*. 1985. 13(10): 79-90.
114. Kvasova AP. Evaluation of a balanced diet for students at a ballet school. *Nutrition Abstracts Review*. 1975. 45: 885.
115. Micheli LJ, Gillespie WJ, Walaszek A. Physiologic profiles of female

- professional ballerinas. *Clinics in Sports Medicine*. 1984. 3:199-209.
116. Sherman WM. Pre-event nutrition. *Sports Science Exchange*. 1989. 1(12).
 117. Burke L. Practical Sports Nutrition. Champaign, IL: Human Kinetics. 2007.
 118. Wing R, Phelan S. Long term weight loss maintenance. *Am J Clin Nutr*. 2005. 82(1):222-225.
 119. Arcelus J, Witcomb GL, Mitchel A. Prevalence of eating disorders amongst dancers: a systematic review and meta-analysis. *Eur Eat Disorder Rev*. 2013. 92-101.
 120. Van Gyn GH. Contemporary stretching techniques: theory and application. *The dancer as athlete: the 1984 Olympic scietnif congress proceedings*. Champaign, IL. Human Kinetics. 1986: 109-116.
 121. Astrand P, Rohdal K. Textbook of work physiology: physiological bases of exercise, 3rd Ed. New York: McGraw-Hill International Edition. 1986.
 122. Chatfield SJ, Brynes W, Foster V. Effects of intermediate modern-dance training on select physiologic performance parameters. *Kines Med Dace*. 1992. 14(2): 13-26.
 123. Wuntas ME, Ortega RM, Garrido G. Influence of dietetic and anthropometric factors and of the type of sport practiced on bone density in different groups of women. *Euro J Clin Nutr*. 2003. 57(1):S58-S62.
 124. United States Department of Agriculture. Supertracker. Available at: <https://www.supertracker.usda.gov/>
 125. Janssen I, Ross R. Linking age-related changes in skeletal muscle mass and composition with metabolism and disease. *J Nutr Health and Aging*. 2005. 9(6):408-419.
 126. Aucouturier J, Meyer M, Thivel D, et al. Effect of android to gynoid fat ratio on insulin resistance in obese youth. *Arch Pediatr Adolesc Med*. 2009; 163 (9): 826-831.
 127. Grant G. Technical Manual and Dictionary of Classical Ballet. 3rd ed. Mineola, New York: Dover Publications, Inc. 1982.
 128. Nelms M, Sucher K, Lacey K, et al. Nutrition Therapy and Pathophysiology, 2nd ed. Belmont, CA: Brooks/ Cole Cengage Learning. 2011.
 129. Random House Dictionary. *Pescatarian*. Dictionary.com. 2016. Available at <http://www.dictionary.com/browse/pescetarian>.
 130. Mahan LK, Escott-Stump S, Raymond JL. Krause's Food and the Nutrition Care Process. 13th ed. St. Louise, Missouri: Elsevier. 2012.
 131. McArdle WD, Katch FI, Katch VL. Sports and Exercise Nutrition. 4th ed. Baltimore, MD: Lippincott Williams &Wilkins. 2013.

APPENDIX A

Institutional Review Board (IRB) Approval Letter



Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-896-3378
email: IRB@twu.edu
<http://www.twu.edu/irb.html>

DATE: September 29, 2015

TO: Ms. Stacie Ellis
Nutrition & Food Sciences

FROM: Institutional Review Board - Denton

Re: *Approval for Using Athlete's Plate for Easy Training / Weight Management with Dancers*
(Protocol #: 18419)

The above referenced study has been reviewed and approved at a fully convened meeting of the Denton Institutional Review Board (IRB) on 9/29/2015. This approval is valid for one year and expires on 9/28/2016. The IRB will send an email notification 45 days prior to the expiration date with instructions to extend or close the study. It is your responsibility to request an extension for the study if it is not yet complete, to close the protocol file when the study is complete, and to make certain that the study is not conducted beyond the expiration date.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. A copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any adverse events or unanticipated problems. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Shane Broughton, Nutrition & Food Sciences
Dr. Nancy DiMarco, Nutrition & Food Sciences
Graduate School



Institutional Review Board
Office of Research and Sponsored Programs
P.O. Box 425619, Denton, TX 76204-5619
940-898-3378
email: IRB@twu.edu
<http://www.twu.edu/irb.html>

DATE: September 2, 2016

TO: Ms. Stacie Ellis
Nutrition & Food Sciences

FROM: Institutional Review Board (IRB) - Denton

Re: *Extension for Using Athlete's Plate for Easy Training / Weight Management with Dancers*
(Protocol #: 18419)

The request for an extension of your IRB approval for the above referenced study has been reviewed by the TWU IRB (operating under FWA00000178) and appears to meet our requirements for the protection of individuals' rights.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. If subject recruitment is on-going, a copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

This extension is valid one year from September 29, 2016. Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any unanticipated incidents. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Shane Broughton, Nutrition & Food Sciences
Dr. Nancy DiMarco, Nutrition & Food Sciences
Graduate School

APPENDIX B

Consent Form

TEXAS WOMAN'S UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Using Athlete's Plate for Easy Training/ Weight Management with Dancers

Investigator's Name: Stacie Ellis, BS, RDN
Investigator's Academic Advisor: Nancy DiMarco, PhD, RD
Investigator's Phone: 254-449-3952
Investigator's email: sellis5@twu.edu
Academic Advisors Email: ndimarco@twu.edu

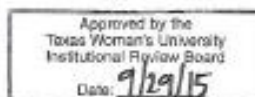
Explanation and Purpose of the Research

You are being asked to participate in a research study for Stacie Ellis's master's thesis. The purpose of the study is to determine if the Athlete's Plate for Easy Training/ Weight Management used on dancers for a period of six months would be beneficial or not for dancers age 18 and older. The nutrition plan uses a plate to illustrate portion sizes for each food group, similar to MyPlate. The study will look at the effects of the nutrition intake on body composition, resting metabolic rate, the individual's energy levels, and the effects on menstruation.

Participants will complete a pre and post assessment which includes a DXA Scan that reads body composition, resting metabolic rate measured, body image analysis, a questionnaire, and food frequency chart. The individuals will be asked to do a few food diaries throughout the study, and may participate in a nutrition education series and nutrition counseling during the study.

Research Procedures

- **Time Involvement:** The total time for the entire study is a maximum of 12 hours over the course of 7 months (from September 2015- March 2016). This will include 1-2 hours for pre-assessment, 1-2 hours for post assessment, 3 hours of nutrition education classes, 2 hours of nutrition counseling, and remaining 3 hours for filling out questionnaires, food frequency charts, and dietary recall diary. Time commitment is broken down as follows:
 - **Pre-assessment-1-2hours** (includes up to 1 hour for resting metabolic rate, approximately 20 minutes for DXA Scan, and remaining time going over paperwork and Body Image spectrum)
 - **Nutrition Education- 3 hours** (three 1 hour classes in the month of October) (treatment group only)
 - **Nutrition Counseling- 2 hours** (four 30 minute sessions with dietitian monthly from November-February)
 - **Post- assessment- 1-2hours** (includes up to 1 hour for resting metabolic rate, approximately 20 minutes for DXA Scan, and remaining time going over paperwork and Body Image spectrum)
 - **Paperwork-up to 3 hours** for filling out all questionnaires, food frequency charts, and dietary recalls throughout the course of the study.
- **Testing Requirements** Participants must be cleared by their physician to participate in physical activity. Participants must be a dancer of at least 18 years of age and dance regularly for at least 2 days a week in the form of ballet or modern for at least 1 hour each class/rehearsal.
- **Resting Metabolic Rate:** During this test, you will be asked to rest in the supine (on your back) for approximately 25-35 min in a quiet room. The test will be performed after a 10 to 12 hour



Participant's Initials _____ 1 of 4

overnight fast. You will be expected to wear a respirator mask that you will breathe through for the duration of the test. The mask may be uncomfortable. The purpose of this test is to estimate resting caloric expenditure over a 24 hour period. This test will take maximum of one hour to complete.

- **DXA Procedures:** Body composition will be determined by using a FDA-approved dual energy x-ray absorptiometry, the Lunar DXA. You will be asked to lie face up, fully clothed on a padded table for the total body scan. It is best to wear sports clothing or dance attire such as spandex and a tight shirt. Loose fitting clothing or jeans are not recommended. You will be asked to remove all jewelry or metal before the scan is performed. A registered technician will perform all x-ray scan measurements. This test can be completed in approximately 20 min.
- **Body Image Spectrum:** You will look at a series of pictures concerning your body image.
- **3 Day Dietary Records:** You will be asked to record all foods, beverages, and dietary supplements that you consume for 3 days (2 week days and one weekend day). The purpose for the dietary records will be to assess your total caloric consumption; carbohydrate, protein, and fat intake; and vitamin, mineral, and fluid consumption. This test can be completed in your own time and turned in at your appointment.
- **Food Frequency Chart:** You will be asked to state what foods you normally eat and how often.
- **Questionnaires:** You will be asked to complete a health questionnaire. These questionnaire will take approximately 30 minutes to complete. The purpose of the questionnaire is to identify current health related behaviors and goals, and provide a history of health, diet, and exercise.
- **Nutrition Education:** The participants will attend three 45-60 min long classes in one month at the beginning of the semester based on which treatment group they are assigned to.
- **Nutrition Counseling:** The participants will meet with the dietitian monthly (total of 4 times from month of November- February) for 15-30 min each session to help them implement the dietary and physical activity changes they learned through a series of SMART goals.

Potential Risks

Loss of Confidentiality: There exists the possibility of the loss of confidentiality as a potential risk of participation in this study. Confidentiality will be protected to the extent that is allowed by law. To minimize this risk, all data will be kept in a locked file cabinet in 011 Human Development Building, Texas Woman's University. Data collection forms will be coded with a numerical system rather than your name. A single identification form will be used to link names with numerical code. This will be the only way to connect data with a name. This form will be used to link names with numerical code. This will be the only way to connect data with a name. This form will be kept in a separate file than all other data in the principal investigator's office in TWU- Denton Institute of Women's Health. There is also a potential risk of loss of confidential in all email, downloading, and internet transactions.

There exists a possibility of certain changes and risks occurring during pre and post assessment tests, during education sessions, during individual consulting sessions, and during the participant's implementation of the nutrition and physical activity changes. They include coercion, muscular fatigue or soreness, skin irritation, risk of injury, emotional discomfort, radiation exposure, and embarrassment

Coercion: You may feel persuaded to do something you may not wish to do. Care will be taken to ensure that participants in this study will not infringe on students' rights. Participation in this study is voluntary and their student-status and academic grades/standing will not be affected in any way.

Approved by the
Texas Woman's University
Institutional Review Board
Date: 9/29/15

Participant's Initials _____
2 of 4

Emotional Discomfort in Sharing Personal Information: During the collection of personal information you may feel emotional uneasy. The investigative staff will be sensitive to those issues that may cause discomfort and try to make the participant feel as comfortable as possible without causing embarrassment to the participant.

Radiation Exposure: During the DXA scan, there will be a small amount of radiation exposure to each participant. The total amount of radiation that each participant receive during the study is 0.26 mrem (whole body) using the Lunar DXA scan. The radiation exposure for each participant will be approximately the same amount received during a 2 hour airplane flight and less than normal background radiation an individual is exposed to in one day. Radiation could be potentially harmful to fetus therefore women who become pregnant will not be able to participate in the study. Before the DXA scan the females will be asked their menstruation status. If absent or irregular, the participants will be asked if they are pregnant and to complete a pregnancy test before proceeding.

Embarrassment: During the body composition, the RMR assessment, and performance test you may feel embarrassed by the results. Individuals may also feel embarrassment when discussing body image during the Body Image Spectrum, and during the participation of education and counseling sessions. Only research team members will be present during testing. Other participants and outside visitors will not be allowed to view the testing session, except for with permission of the participant. The researchers will try to prevent any embarrassment issue that may occur prior to incident. The participant will be advised to let the researchers know at once if there is a problem of if they are uncomfortable. Each practitioner will be instructed to assist the participant in meeting their needs.

Risk of Eating Disorder: Due to the fact we are addressing dietary intake and exercise there is a risk of individuals developing disordered eating habits if unhealthy behaviors are adopted. All participants will be taught the components of the nutrition plan and will be monitored regularly by a dietitian through one on one counseling sessions to help identify such behaviors if they do occur.

The researchers will try to prevent any problem that could happen because of this research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research.

Participation and Benefits

Participation in this study is voluntary and as a participant you have the right to withdraw from the study at any time without penalty. Should you desire to withdraw from the study at any point, you are entitled to be informed of any data collected from you that has been analyzed at any time and point.

All data with any personal identifiers will be destroyed within one year of the completion of the study. All identifiable data on paper will be shredded and data stored on the primary investigators computer and the IWH server will be deleted from the hard drive.

You will benefit from participation in this study by receiving 2 RMR readings and 2 DXA scans. You will be informed of your results following tabulation. Treatment groups will receive free nutrition education intervention and 4 free consultation sessions with a dietitian. Individuals who are not receiving education have the option of receiving the education after the data has been collected.

Approved by the
Texas Woman's University
Institutional Review Board
Date: 9/29/15

Participant's Initials _____
3 of 4

Questions Regarding the Study

You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study you should ask the researcher, the phone number is provided at the top of this form. If you have any questions about your rights as a participant in this research or the way this study has been conducted, you may contact the Texas Woman's University Office of Research and Sponsored Programs at (940) 898-3378 or via email at IRB@twu.edu.

Signature of Participant

Date

Some individuals will be placed in the control group throughout the study. This group will not be in the nutrition education classes or consults, however has the opportunity to receive the education and the 4 sessions with the dietitian after the data collection. If you are placed in this group would you like to be contacted about receiving the education and consultations after the data has been collected for the study?
(Circle one) Yes No

Individuals may be contacted regarding the study via email, phone, or Private group on Facebook. Please provide contact information below

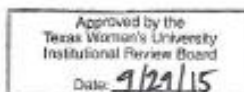
Email _____

Cell _____

Are you on Facebook Yes No

If so, could we add you to a private group that will be used to send messages and help individuals stay on track with their nutrition plan? Yes No

If you would like to receive a summary of the results of this investigation and copies of your DXA Scans and RMR results, please provide an address to which this summary should be sent:



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APPENDIX C

Pre and Post Questionnaires

Health Questionnaire

Demographic Information		
Participant Number:		Date:
Name of your University:		Date of Birth: Age:
Year in School (check one)		
<input type="checkbox"/> Freshman <input type="checkbox"/> Sophomore <input type="checkbox"/> Junior <input type="checkbox"/> Senior <input type="checkbox"/> Graduate student <input type="checkbox"/> Faculty/Staff		
Types of dancing you participate in (check all that apply)		
<input type="checkbox"/> Ballet <input type="checkbox"/> Jazz <input type="checkbox"/> Modern <input type="checkbox"/> Contemporary <input type="checkbox"/> Tap <input type="checkbox"/> Other: _____		
Race (check one)		
<input type="checkbox"/> Caucasian <input type="checkbox"/> African American/African <input type="checkbox"/> Hispanic <input type="checkbox"/> Asian <input type="checkbox"/> Multiracial <input type="checkbox"/> Other		
Primary source of nutrition information (check only one)		
<input type="checkbox"/> Magazines <input type="checkbox"/> Textbooks <input type="checkbox"/> Friends <input type="checkbox"/> Dietitian <input type="checkbox"/> Dance Teacher <input type="checkbox"/> Coach <input type="checkbox"/> Physician <input type="checkbox"/> Health food store <input type="checkbox"/> Parents <input type="checkbox"/> Athletic Trainer <input type="checkbox"/> Other medical professional <input type="checkbox"/> University course <input type="checkbox"/> Sports Nutrition Seminar		
Current Dance and Physical Activity Participation		
This section is for you to list your <u>current</u> dance and physical activities only.		
Section A: Current University Dance		
Dance class/rehearsals:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
Section B: Current Dance Activities Outside the University		
Dance class/rehearsals:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
Section C: Current University or Outside University Sports or activities (examples include being a part of a sports team, going to the gym, running, aerobics class, exercising via video, going on walks or hikes, bike riding, etc.)		
Physical Activity:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	

Detail of Current Dance and Physical Activity: Please list each dance or physical activity in which you are <u>currently</u> participating in on a very regular basis. For each activity please indicate the average length of each activity, the number of sessions per week, and the average intensity or class level.			
Activity (Dance class/ rehearsal, or physical activity)	Length of training/ practice per session	Sessions per week	Intensity and/or level if applicable
1.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
2.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
3.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate

			<input type="checkbox"/> hard <input type="checkbox"/> very hard
4.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____ _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
5.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____ _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
6.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____ _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

7.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
8.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
9.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

10.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
11.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
12.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

13.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
14.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
15.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

When practicing/training is shorter or less intense, do you usually compensate by eating less? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> I don't know
When practice/training is longer and more intense, you train twice a day, do you usually compensate by eating more? <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> I don't know
On days of a dance performance do you: <input type="checkbox"/> eat the same as any other day <input type="checkbox"/> eat less during the whole day <input type="checkbox"/> eat less during the day and eat a large meal after the performance <input type="checkbox"/> avoid eating all day on performance days <input type="checkbox"/> avoid eating before the performance and then eat a large meal after the performance <input type="checkbox"/> eat a lot during the day to give you energy for your performance
If you get injured or sick and need to take some time off from training, do you get worried about food and weight gain? <input type="checkbox"/> YES <input type="checkbox"/> NO
On a scale from 1 to 10, please indicate the intensity of your worries about food and weight train when you are injured or sick. (1= least worried, 10= most worried) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10

Past Dance and Physical Activity Participation		
Please list the dance or activities you participated in the past 5 years.		
Section D: Previous Dance Activities Outside the University		
Dance Activities:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
Physical Activity:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	

Body Weight Information		
Length of time at your current body weight ____ yr/mo	Lowest weight at your current height ____ lbs	Highest weight at your current height ____ lbs
How long have you been at your current height? _____ months/ years		
What do you consider to be your "ideal" weight? _____ lbs		
Do you gain or lose weight regularly to meet the demands or weight requirements for dance or sport? <input type="checkbox"/> YES <input type="checkbox"/> NO		

Did you experience any weight change during the past 12 month? <input type="checkbox"/> YES <input type="checkbox"/> NO If yes please indicate if you gained or lost weight and the amount (check one) <input type="checkbox"/> gained <input type="checkbox"/> lost <input type="checkbox"/> 0-2lbs <input type="checkbox"/> 3-5lbs <input type="checkbox"/> 6-8lbs <input type="checkbox"/> 9-11lbs <input type="checkbox"/> 12-14lbs <input type="checkbox"/> ≥15lbs
Are you satisfied with your current weight? <input type="checkbox"/> YES <input type="checkbox"/> NO
In the past , I used to think of myself. . . (check one) <input type="checkbox"/> very underweight (>10lbs) <input type="checkbox"/> slightly underweight(5-10lbs) <input type="checkbox"/> at an "ideal" weight <input type="checkbox"/> slightly overweight (<10lbs) <input type="checkbox"/> moderately overweight (10-20lbs) <input type="checkbox"/> very overweight (>20lbs)
Presently, I think of myself. . . (check one) <input type="checkbox"/> very underweight (>10lbs) <input type="checkbox"/> slightly underweight(5-10lbs) <input type="checkbox"/> at an "ideal" weight <input type="checkbox"/> slightly overweight (<10lbs) <input type="checkbox"/> moderately overweight (10-20lbs) <input type="checkbox"/> very overweight (>20lbs)
Which of the following are you currently trying to do about your weight? (check one) <input type="checkbox"/> lose weight <input type="checkbox"/> gain weight <input type="checkbox"/> maintain weight <input type="checkbox"/> I am doing nothing
If you are trying to change your weight, what is the primary reason ? (check one) <input type="checkbox"/> Sports/dance performance <input type="checkbox"/> Appearance <input type="checkbox"/> Health <input type="checkbox"/> Other (explain):
Do you feel pressure to achieve/maintain a lean body shape? <input type="checkbox"/> YES <input type="checkbox"/> NO
If you checked YES from whom do you feel pressure? (check all that apply) <input type="checkbox"/> Yourself <input type="checkbox"/> Coach/ Dance instructor <input type="checkbox"/> Friends <input type="checkbox"/> Parents <input type="checkbox"/> Media <input type="checkbox"/> other (explain):
On a scale of 1-10, please rate the intensity of pressure you feel to achieve/maintain a lean body shape? (1=least pressure, 10= highest pressure) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10

Please indicate whether you have ever used any of these methods to control your body weight (check all that applies). Also specify how many times (per week or month) and the length of time (month or years) you used each method				
Method	# times		Length of time used	
	per month	per week	# months	# years
<input type="checkbox"/> fasting				
<input type="checkbox"/> skipping meals				
<input type="checkbox"/> commercial weight loss programs				
<input type="checkbox"/> liquid supplements (ex: slim fast)				
<input type="checkbox"/> very low calorie diet (<1200 kcal/d)				
<input type="checkbox"/> self- induced vomiting				
<input type="checkbox"/> laxatives or diuretics				
<input type="checkbox"/> diet pills or "fat-burning" supplements				
<input type="checkbox"/> excessive exercise				
<input type="checkbox"/> low fat diet/ high carbohydrate diet				
<input type="checkbox"/> high protein diet/ low carbohydrate diet				
<input type="checkbox"/> vegetarian diet				

<input type="checkbox"/> nutritional counseling (ex: with a dietitian)				
Medical				
Have you ever been diagnosed with any of the following? Check all that apply)				
<input type="checkbox"/> scoliosis	<input type="checkbox"/> heart problems	<input type="checkbox"/> osteoporosis		
<input type="checkbox"/> low bone mass	<input type="checkbox"/> constipation	<input type="checkbox"/> anorexia nervosa		
<input type="checkbox"/> bulimia nervosa	<input type="checkbox"/> mononucleosis	<input type="checkbox"/> hypoglycemia		
<input type="checkbox"/> dehydration	<input type="checkbox"/> food allergies	<input type="checkbox"/> diarrhea		
<input type="checkbox"/> anemia	<input type="checkbox"/> low vitamin D levels	<input type="checkbox"/> low ferritin level/ iron		
depletion				
<input type="checkbox"/> high cholesterol/ blood lipids		<input type="checkbox"/> food intolerance (ex. Lactose, gluten)		
<input type="checkbox"/> diabetes mellitus, please specify: _____				
<input type="checkbox"/> GI problems, please specify: _____				
<input type="checkbox"/> thyroid problems, please specify: _____				
If you were diagnosed, which conditions were you treated for?				
<input type="checkbox"/> scoliosis	<input type="checkbox"/> heart problems	<input type="checkbox"/> osteoporosis		
<input type="checkbox"/> low bone mass	<input type="checkbox"/> constipation	<input type="checkbox"/> anorexia nervosa		
<input type="checkbox"/> bulimia nervosa	<input type="checkbox"/> mononucleosis	<input type="checkbox"/> hypoglycemia		
<input type="checkbox"/> dehydration	<input type="checkbox"/> food allergies	<input type="checkbox"/> diarrhea		
<input type="checkbox"/> anemia	<input type="checkbox"/> low vitamin D levels	<input type="checkbox"/> low ferritin level/ iron		
depletion				
<input type="checkbox"/> high cholesterol/ blood lipids		<input type="checkbox"/> food intolerance (ex. Lactose, gluten)		
<input type="checkbox"/> diabetes mellitus, please specify: _____				
<input type="checkbox"/> GI problems, please specify: _____				
<input type="checkbox"/> thyroid problems, please specify: _____				
How often do you get sick per year (ex. Common cold and/ or influenza)				
<input type="checkbox"/> 0 <input type="checkbox"/> 1-2 <input type="checkbox"/> 3 <input type="checkbox"/> >3				

Injury and Medical Assessment					
1. Please check any of the injuries listed below that you have experienced in your lifetime.					
2. For each injury you check please completed additional questions regarding the injury.					
Injury	Please check if the injury was diagnosed by a physician	When did the injury occur? Date (mo/yr)	What were you doing when the injury occurred	If you were doing physical activity (exc sport or dance) when the injury occurred, please specify what the activity was. Ex. basketball	Did the injury occur during practice, competition, or at a performance? (Practice means either training with team or on your own.
Anterior Cruciate Ligament (ACL)					
<input type="checkbox"/> Contact	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> Non-contact	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
Stress Fracture					
<input type="checkbox"/> Tibia	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> Femur	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> Foot	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> Spine	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
Other					
<input type="checkbox"/> Sprain, Strain, dislocation	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> tendinitis, tendinosis, bursitis	<input type="checkbox"/>	___/___	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other		<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance

<input type="checkbox"/> broken bone	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other	<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> Meniscal or Posterior Cruciate Ligament (PCL) injury	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other	<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance
<input type="checkbox"/> Iliotibial (IT) syndrome	<input type="checkbox"/>	<input type="checkbox"/> / <input type="checkbox"/>	<input type="checkbox"/> Sport <input type="checkbox"/> Dance <input type="checkbox"/> Other	<input type="checkbox"/> Practice <input type="checkbox"/> Competition <input type="checkbox"/> Performance

Eating Habits	
Are you a vegetarian?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If YES, please indicate type:	<input type="checkbox"/> vegan <input type="checkbox"/> lacto/ovo <input type="checkbox"/> lacto <input type="checkbox"/> other: _____
Are you hungry before your workouts?	<input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
Are you thirsty before your workouts?	<input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
Do you limit/restrict the amount of food you eat to control your weight?	<input type="checkbox"/> YES <input type="checkbox"/> NO
Do you limit/ restrict the types of food you eat to control your weight?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If YES, please check the groups of food you limit/restrict.	
<input type="checkbox"/> Dairy (milk, cheese) <input type="checkbox"/> Red Meat (beef, pork) <input type="checkbox"/> other meat/ protein (chicken, turkey, fish, eggs) <input type="checkbox"/> carbohydrate rich foods (bread, pasta, rice, potatoes) <input type="checkbox"/> sweets (ice cream, cookies, candy) <input type="checkbox"/> fats (butter, oil, cream sauces, salad dressings, mayonnaise, etc.) <input type="checkbox"/> fast food (hamburgers, hot dogs, fries, etc.) <input type="checkbox"/> sweetened beverages (soda, juices, energy drinks, etc.) <input type="checkbox"/> alcoholic beverages	
Do you currently experience changes in your appetite?	<input type="checkbox"/> YES <input type="checkbox"/> NO
If YES, please indicate the direction of change.	<input type="checkbox"/> increase <input type="checkbox"/> decrease
In general, how would you currently describe your calorie intake during this month?	<input type="checkbox"/> the same as usual <input type="checkbox"/> more than usual <input type="checkbox"/> less than usual
Do you take dietary/sport supplements	<input type="checkbox"/> YES, daily <input type="checkbox"/> YES, but not every day <input type="checkbox"/> NO
Please check all the dietary supplements you use.	
<input type="checkbox"/> multivitamin/mineral <input type="checkbox"/> iron <input type="checkbox"/> calcium <input type="checkbox"/> magnesium <input type="checkbox"/> vitamin E <input type="checkbox"/> B-complex vitamins <input type="checkbox"/> Vitamin C <input type="checkbox"/> vitamin A <input type="checkbox"/> herbals (ex: Echinacea, ginseng) <input type="checkbox"/> immune enhancers (ex: vitamin C+zinc) <input type="checkbox"/> other (please specify)	

Please check all the sports supplements you currently use?		
<input type="checkbox"/> protein powder/drink	<input type="checkbox"/> amino acids	<input type="checkbox"/> HMB
<input type="checkbox"/> sports bars (Luna, Powerbar, Cliff)	<input type="checkbox"/> glutamine	<input type="checkbox"/> creatine
<input type="checkbox"/> Sports drinks (ex: Gatorade, Powerade)	<input type="checkbox"/> Energy drinks (ex: Red bull)	<input type="checkbox"/> caffeine
<input type="checkbox"/> recovery drinks (Endurox, Power bar	<input type="checkbox"/> sodium bicarbonate or citrate	<input type="checkbox"/> anabolic steroids
<input type="checkbox"/> Liquid meal supplements(Boost, Ensure)	<input type="checkbox"/> Pro-hormones (andro, DHEA)	
<input type="checkbox"/> fat burners (ephedrine, green tea, ma huang, synphrine)		
<input type="checkbox"/> other please specify: _____		

Thoughts about your body, your eating patterns, your feelings. . .	
Please check one response for each of the following questions	
1.	I eat sweets and carbohydrates without feeling nervous. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
2.	I think that my stomach is too big. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
3.	I eat when I am upset. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
4.	I stuff myself with food. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
5.	I think about dieting. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
6.	I think that my thighs are too large. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
7.	I feel extremely guilty after over eating. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
8.	I think my stomach is just the right size. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
9.	I am terrified of gaining weight. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
10.	I feel satisfied with the shape of my body. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
11.	I exaggerate or magnify the importance of weight. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
12.	I have gone on eating binges where I have felt that I could not stop. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
13.	I like the shape of my buttocks. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
14.	I am preoccupied with the desire to be thinner. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
15.	I think about bingeing (overeating). <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
16.	I think my hips are too large. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never

	<input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
17.	I eat moderately in front of others and stuff myself when they're gone. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never

18.	If I gain a pound, I worry that I will keep gaining. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
19.	I have the thought of trying to vomit in order to lose weight. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
20.	I think that my thighs are just the right size. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
21.	I think my buttocks are too large. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
22.	I eat or drink in secrecy. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
23.	I think that my hips are just the right size. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never

Please check the answer that most applies to you for each of the following questions.	
1.	When I have eaten my quota of calories. I am usually good about not eating anymore. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
2.	I deliberately take small helpings as a means to controlling my weight. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
3.	Life is too short to worry about dieting. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
4.	I have a pretty good idea of the number of calories in common food. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
5.	While on a diet. If I eat food that is not allowed. I consciously eat less for a period of time to make up for it. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
6.	I enjoy eating too much to spoil it by counting calories or watching my weight. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
7.	I often stop eating when I am not really full as a conscious means of limiting the amount that I eat. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
8.	I consciously hold back at meals in order not to gain weight <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
9.	I eat anything I want, any time I want <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
10.	I count calories as a conscious means of controlling my weight. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
11.	I do not eat some foods because they make me fat. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
12.	I pay a great deal of attention to changes in my figure <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE

Please circle one response for each of the following questions	
13.	How often are you dieting in a conscious effort to control your weight? <div>1 2 3 4</div> <div>Rarely Sometimes Usually Always</div>
14.	Would a weight fluctuation of 5 pounds affect the way you live your life? <div>1 2 3 4</div> <div>Not at all Slightly Moderately Very Much</div>
15.	Do your feeling of guilt about overeating help you control your food intake? <div>1 2 3 4</div> <div>Never Rarely Often Always</div>
16.	How conscious are you of what you are eating? <div>1 2 3 4</div> <div>Not at all Slightly Moderately Extremely</div>
17.	How frequently do you avoid stocking up on tempting foods? <div>1 2 3 4</div> <div>Almost never Seldom Usually Almost always</div>
18.	How likely are you to shop for low calorie foods? <div>1 2 3 4</div> <div>Unlikely Slightly/unlikely Moderately likely Very likely</div>
19.	How likely are you to consciously eat slowly in order to cut down on how much you eat? <div>1 2 3 4</div> <div>Unlikely Slightly/unlikely Moderately likely Very likely</div>
20.	How likely are you to consciously eat less than you want? <div>1 2 3 4</div> <div>Unlikely Slightly/unlikely Moderately likely Very likely</div>
21.	On a scale of 0-5, where 0 means no restraint in eating (eating whatever and whenever you want, whenever you want it) and 5 means total restraint (constantly limiting food intake and never giving in), what number would you give yourself? <div>0</div> <div>Eat whatever you want, whenever you want it</div> <div>1</div> <div>Usually eat whatever you want, whenever you want it</div> <div>2</div> <div>Often eat whatever you want, whenever you want it</div> <div>3</div> <div>Often limit food intake, but often "give in"</div> <div>4</div> <div>Usually limit food intake, rarely "give in"</div> <div>5</div> <div>Constantly limiting food intake, never giving in</div>

Fatigue Assessment							
On the statements below give the impression on how you have felt in the past two weeks .							
1.	I feel tired.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
2.	I feel very active.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
3.	Thinking requires effort.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
4.	Physically I feel exhausted.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
5.	I feel like doing all kinds of nice things.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
6.	I feel fit.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
7.	I do quite a lot within a day.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
8.	When I am doing something, I can concentrate quite well.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
9.	I feel weak.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
10.	I don't do much during the day.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
11.	I can concentrate well.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
12.	I feel rested.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
13.	I have trouble concentrating.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
14.	Physically I feel I am in a bad condition						
	1	2	3	4	5	6	7

	Very True False	True	Somewhat True	Neutral	Somewhat False	False	Very
15.	I am full of plans. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
16.	I get tired very quickly. 1 Very True	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very False
17.	I have a low output. 1 Very True	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very False
18.	I feel no desire to do anything. 1 Very True	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very False
19.	My thoughts easily wander. 1 Very True	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very False
20.	Physically I feel in a good shape. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
21.	I feel my memory and concentration is impaired. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
22.	My muscles feel weak. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
23.	I feel unrefreshed and tired after a night's sleep. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
24.	I need a nap each day. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
25.	It is difficult for me to fall asleep. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
26.	I have difficulty staying asleep. 1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
27.	I wake up really early in the morning. Ex. 3am.						

	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
28.	I have slowness of thought.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
29.	I get confused/disoriented.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
30.	I have a hard time reasoning things out.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very

31.	I forget what word I am trying to say.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
32.	I have difficulty finding the right word.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
33.	I can only focus on one thing at a time.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
34.	I tend to lose my train of thought.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
35.	I am great at retaining information.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
36.	I have difficulty recalling information.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
37.	I have trouble expressing my thoughts.						
	1 Very True False	2 True	3 Somewhat True	4 Neutral	5 Somewhat False	6 False	7 Very
38.	I react to things fast.						
	1	2	3	4	5	6	7

	Very True False	True	Somewhat True	Neutral	Somewhat False	False	Very
39.	1	2	3	4	5	6	7
	Very True False	True	Somewhat True	Neutral	Somewhat False	False	Very
40.	1	2	3	4	5	6	7
	Very True False	True	Somewhat True	Neutral	Somewhat False	False	Very

Are you currently experiencing any problems with fatigue or tiredness ☐YES ☐NO
 If yes, when did the fatigue begin?

 If yes, what do you think is the cause of your fatigue?

When your problem with fatigue began, did it develop (check one)
☐ Rapidly- within 24 hrs ☐ Over 1 week ☐ Over 1 month
☐ Over 2-6 months ☐ Over 7-12 months ☐ Over 1-2 years
☐ Longer than 2 years ☐ had problems with fatigue since childhood or adolescences
☐ N/A- Not having problems with fatigue

In the past month, how many hours a week do you spend doing:
 household related activities? _____
 social-related activities? _____
 Work/school- related activities? _____

In the past 6 months, have you reduced the number of hours you previously spent on occupational, social, or family activities because of your health or problems with fatigue ☐YES ☐NO
 If yes, which activities did you cut back
☐ Occupational (work/school related)
☐ Social
☐ Family

If you rest does your fatigue go away entirely, partially, or does rest have no effect on your fatigue? (check one)
☐ Entirely ☐ Partially ☐ No effect
 If you said "entirely" or "partially", how long do you have to rest for your fatigue to entirely or partially go away? _____
 Will your fatigue return if you stop resting and start doing something? ☐YES ☐NO

Do you restrict your activity levels to avoid experiencing severe fatigue? ☐YES ☐NO

Does physical activity make you feel: ☐Worse ☐Better ☐Has no effect

In the past 6 months how often do you feel worse after engaging in activities that require physical or mental exertion (post-exertional malaise)? ☐ Never ☐ Seldom ☐ Often or usually ☐ Always
 If you answered "Never" or "Seldom", do you experience increased fatigue or worsening of symptoms after engaging in exercise? ☐YES ☐NO

<p>If you answered NO, is this because you</p> <p><input type="checkbox"/> Are not exercising <input type="checkbox"/> Exercise has no effect on symptoms <input type="checkbox"/> Exercise makes you feel better</p> <p>If you are not exercising, is this because</p> <p><input type="checkbox"/> Not interested <input type="checkbox"/> No time <input type="checkbox"/> Would like to but cannot because of fatigue</p> <p><input type="checkbox"/> Cannot because exercise makes symptoms worse</p>
<p>How would you describe the course of your fatigue</p> <p><input type="checkbox"/> Constantly getting worse <input type="checkbox"/> Constantly improving <input type="checkbox"/> Persisting (no change)</p> <p><input type="checkbox"/> Relapsing and remitting (having good periods with no symptoms and bad periods)</p> <p><input type="checkbox"/> Fluctuating (symptoms periodically wax and wane but never disappear completely)</p>
<p>Have you ever been diagnosed or treated for an eating disorder? <input type="checkbox"/> YES <input type="checkbox"/> NO</p> <p>If so please specify what type</p> <p>_____</p> <p>When did the problem begin</p> <p>_____</p> <p>Do you still have the eating disorder? <input type="checkbox"/> YES <input type="checkbox"/> NO: When did the problem stop?</p> <p>_____</p>
<p>How much sleep do you typically get each night? _____ hours _____ min</p>
<p>Do you typically wake up feeling</p> <p><input type="checkbox"/> very groggy <input type="checkbox"/> groggy <input type="checkbox"/> slightly groggy <input type="checkbox"/> rested <input type="checkbox"/> very well rested</p>
<p>In dance class/ rehearsal what is your energy level?</p> <p><input type="checkbox"/> Exhausted before class/rehearsal even starts</p> <p><input type="checkbox"/> Exhausted shortly after class/rehearsal starts</p> <p><input type="checkbox"/> Exhausted only the latter half of class</p> <p><input type="checkbox"/> Full of energy for majority of class/rehearsal</p> <p><input type="checkbox"/> Full of energy for entire class/rehearsal</p>

Menstruation History(females only)	
Have you ever had a menstrual period?	<input type="checkbox"/> YES <input type="checkbox"/> NO
How old were you when you had your first period	_____ years old
If you participate in sports, competitive activities, or dance did you have your first menstrual period before or after you began training for the activity?	<input type="checkbox"/> Before <input type="checkbox"/> After <input type="checkbox"/> Not applicable
In the past about how many times per year did you get your menstrual period	<input type="checkbox"/> 10-13 times per year <input type="checkbox"/> 6-9 times per year <input type="checkbox"/> 4-6 times per year <input type="checkbox"/> 1-3 times per year
Have you ever gone for more than 3 months without having a menstrual period (excluding pregnancy)?	<input type="checkbox"/> YES <input type="checkbox"/> NO

If you checked YES for the previous question please answer the following	
a. How old were you when you missed ≥ 3 menstrual periods	_____ years
b. How many months or years did you go without a menstrual period?	_____ months _____ years
c. Did you see a physician during this time period?	<input type="checkbox"/> YES <input type="checkbox"/> NO
d. Did the physician prescribe some form of contraception to regulate your menstrual periods?	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A
How many menstrual periods have you had in the: In the past 12 months? _____ In the past 6 months? _____	

Current Menstrual Status (females only)	
How would you describe the length of your menstrual cycle during this month (check one) <input type="checkbox"/> the same as always <input type="checkbox"/> shorter than usual <input type="checkbox"/> longer than usual	
How would you describe your last menstrual bleeding? (check one) <input type="checkbox"/> the same as always <input type="checkbox"/> lighter than usual <input type="checkbox"/> heavier than usual	
Currently, how would you describe your menstrual cycle? In order to determine the number of days your cycle lasts, begin with the first day of bleeding and count the number of days until the next month when you begin bleeding again <input type="checkbox"/> I am very regular (every 26-35 days) <input type="checkbox"/> I am somewhat regular (every 21-25 days) <input type="checkbox"/> I am very irregular (every 36-45 days) <input type="checkbox"/> I do not have a menstrual cycle (no cycle for longer than 3 months)	
Does your menstrual cycle change with your training <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Not applicable	
If you checked YES, choose all that apply:	<input type="checkbox"/> Longer cycle (>35 days) <input type="checkbox"/> Skipping a cycle <input type="checkbox"/> Shorter cycle (<21 days) <input type="checkbox"/> Heavier bleeding <input type="checkbox"/> Absence of 3 or more consecutive cycles <input type="checkbox"/> Other, please specify
Does your menstrual cycle change during your competition season: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Not applicable	
If you checked YES, choose one of the following:	<input type="checkbox"/> Longer cycle (>35 days) <input type="checkbox"/> Skipping a cycle <input type="checkbox"/> Shorter cycle (<21 days) <input type="checkbox"/> Heavier bleeding <input type="checkbox"/> Absence of 3 or more consecutive cycles <input type="checkbox"/> Other, please specify
Do you currently use contraception/birth control (ex: oral contraceptive pills, rings, implants)? <input type="checkbox"/> YES # years _____ <input type="checkbox"/> NO <input type="checkbox"/> Not applicable If YES, what are you using them for? <input type="checkbox"/> Birth control <input type="checkbox"/> Regulate cycle <input type="checkbox"/> Both <input type="checkbox"/> Other	

If NO, have you used contraception/birth control (ex: oral contraceptives pills, rings, implants) in the past? <input type="checkbox"/> YES #years _____ <input type="checkbox"/> NO, never used <input type="checkbox"/> N/A If YES, what did you use them for: <input type="checkbox"/> Birth control <input type="checkbox"/> Regulate cycle <input type="checkbox"/> Both <input type="checkbox"/> Other	
Have you ever been to a gynecologist? <input type="checkbox"/> YES <input type="checkbox"/> NO	
If you checked YES for the previous question, way any reproductive disorder identified/ diagnosed. more _____ _____ _____	<input type="checkbox"/> YES <input type="checkbox"/> NO If YES, please give details:
Do you currently monitor your menstrual cycle? <input type="checkbox"/> YES <input type="checkbox"/> NO	
If you checked YES for the previous question, how many months or years have you monitored your menstrual cycle? # _____ <input type="checkbox"/> years OR # _____ <input type="checkbox"/> months	

THANK YOU VERY MUCH FOR TAKING THE TIME TO FILL OUT THIS QUESTIONNAIRE.
 Please take a moment to fill in any questions you may have skipped.

Health Post Questionnaire

Demographic Information		
Participant Number:	Date:	
Name of your University:	Date of Birth:	Age:
Year in School (check one)		
<input type="checkbox"/> Freshman <input type="checkbox"/> Sophomore <input type="checkbox"/> Junior <input type="checkbox"/> Senior <input type="checkbox"/> Graduate student <input type="checkbox"/> Faculty/Staff		
Types of dancing you participate in (check all that apply)		
<input type="checkbox"/> Ballet <input type="checkbox"/> Jazz <input type="checkbox"/> Modern <input type="checkbox"/> Contemporary <input type="checkbox"/> Tap <input type="checkbox"/> Other: _____		

Current Dance and Physical Activity Participation		
This section is for you to list your <u>current</u> dance and physical activities only.		
Section A: Current University Dance		
Dance class/rehearsals:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
Section B: Current Dance Activities Outside the University		
Dance class/rehearsals:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
Section C: Current University or Outside University Sports or activities (examples include being a part of a sports team, going to the gym, running, aerobics class, exercising via video, going on walks or hikes, bike riding, etc.)		
Physical Activity:	Hours per week	# years
1.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
2.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
3.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
4.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	
5.	<input type="checkbox"/> 1-2 <input type="checkbox"/> 3-5 <input type="checkbox"/> 6-8 <input type="checkbox"/> >9	

Detail of Current Dance and Physical Activity: Please list each dance or physical activity in which you are <u>currently</u> participating in on a very <i>regular</i> basis. For each activity please indicate the average length of each activity, the number of sessions per week, and the average intensity or class level.			
Activity (Dance class/ rehearsal, or physical activity)	Length of training/ practice per session	Sessions per week	Intensity and/or level if applicable
1.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
2.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

3.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
4.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

5.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
6.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

7.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
8.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

9.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
10.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

11.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
12.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

13.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
14.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : <hr/>	<input type="checkbox"/> 1 <input type="checkbox"/> 6 <input type="checkbox"/> 2 <input type="checkbox"/> 7 <input type="checkbox"/> 3 <input type="checkbox"/> 8 <input type="checkbox"/> 4 <input type="checkbox"/> 9 <input type="checkbox"/> 5 <input type="checkbox"/> 10 <input type="checkbox"/> Other : _____	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard

15.	<input type="checkbox"/> <30 minutes <input type="checkbox"/> 30 minutes <input type="checkbox"/> 1 hour <input type="checkbox"/> 1 hour 30 minutes <input type="checkbox"/> 2 hours <input type="checkbox"/> 2 hour 30 minutes <input type="checkbox"/> > 2 hour 30 minutes, Please indicate amount : _____	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> Other : _____	<input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10	Dance level (if applicable) <input type="checkbox"/> beginner <input type="checkbox"/> Intermediate <input type="checkbox"/> advance <input type="checkbox"/> professional Physical Activity (for all response) <input type="checkbox"/> very easy <input type="checkbox"/> easy <input type="checkbox"/> moderate <input type="checkbox"/> hard <input type="checkbox"/> very hard
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When practicing/training is shorter or less intense, do you usually compensate by eating less?

☐ YES ☐ NO ☐ I don't know

When practice/training is longer and more intense, you train twice a day, do you usually compensate by eating more?

☐ YES ☐ NO ☐ I don't know

On days of a dance performance do you:

- ☐ eat the same as any other day
☐ eat less during the whole day
☐ eat less during the day and eat a large meal after the performance
☐ avoid eating all day on performance days
☐ avoid eating before the performance and then eat a large meal after the performance
☐ eat a lot during the day to give you energy for your performance

If you get injured or sick and need to take some time off from training, do you get worried about food and weight gain?

☐ YES ☐ NO

On a scale from 1 to 10, please indicate the intensity of your worries about food and weight train when you are injured or sick. (1= least worried, 10= most worried)

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Body Weight Information		
Length of time at your current body weight _____ yr/mo	Lowest weight at your current height _____ lbs	Highest weight at your current height _____ lbs
How long have you been at your current height? _____ years		
What do you consider to be your "ideal" weight? _____ lbs		

Do you gain or lose weight regularly to meet the demands or weight requirements for dance or sport? <input type="checkbox"/> YES <input type="checkbox"/> NO
Did you experience any weight change during the past 12 month? <input type="checkbox"/> YES <input type="checkbox"/> NO If yes please indicate if you gained or lost weight and the amount (check one) <input type="checkbox"/> gained <input type="checkbox"/> lost <input type="checkbox"/> 0-2lbs <input type="checkbox"/> 3-5lbs <input type="checkbox"/> 6-8lbs <input type="checkbox"/> 9-11lbs <input type="checkbox"/> 12-14lbs <input type="checkbox"/> ≥15lbs
Are you satisfied with your current weight? <input type="checkbox"/> YES <input type="checkbox"/> NO
In the past , I used to think of myself. . . (check one) <input type="checkbox"/> very underweight (>10lbs) <input type="checkbox"/> slightly underweight(5-10lbs) <input type="checkbox"/> at an "ideal" weight <input type="checkbox"/> slightly overweight (<10lbs) <input type="checkbox"/> moderately overweight (10-20lbs) <input type="checkbox"/> very overweight (>20lbs)
Presently, I think of myself. . . (check one) <input type="checkbox"/> very underweight (>10lbs) <input type="checkbox"/> slightly underweight(5-10lbs) <input type="checkbox"/> at an "ideal" weight <input type="checkbox"/> slightly overweight (<10lbs) <input type="checkbox"/> moderately overweight (10-20lbs) <input type="checkbox"/> very overweight (>20lbs)
Which of the following are you currently trying to do about your weight? (check one) <input type="checkbox"/> lose weight <input type="checkbox"/> gain weight <input type="checkbox"/> maintain weight <input type="checkbox"/> I am doing nothing
If you are trying to change your weight, what is the primary reason ? (check one) <input type="checkbox"/> Sports/dance performance <input type="checkbox"/> Appearance <input type="checkbox"/> Health <input type="checkbox"/> Other (explain):
Do you feel pressure to achieve/maintain a lean body shape? <input type="checkbox"/> YES <input type="checkbox"/> NO
If you checked YES from whom do you feel pressure? (check all that apply) <input type="checkbox"/> Yourself <input type="checkbox"/> Coach/ Dance instructor <input type="checkbox"/> Friends <input type="checkbox"/> Parents <input type="checkbox"/> Media <input type="checkbox"/> other (explain):
On a scale of 1-10, please rate the intensity of pressure you feel to achieve/maintain a lean body shape? (1=least pressure, 10= highest pressure) <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10

Eating Habits
Are you a vegetarian? <input type="checkbox"/> YES <input type="checkbox"/> NO If YES please indicate type: <input type="checkbox"/> vegan <input type="checkbox"/> lacto/ovo <input type="checkbox"/> lacto <input type="checkbox"/> other: _____
Are you hungry before your workouts? <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
Are you thirsty before your workouts? <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
Do you limit/restrict the amount of food you eat to control your weight? <input type="checkbox"/> YES <input type="checkbox"/> NO
Do you limit/ restrict the types of food you eat to control your weight? <input type="checkbox"/> YES <input type="checkbox"/> NO

If YES, please check the groups of food you limit/restrict. <input type="checkbox"/> Dairy (milk, cheese) <input type="checkbox"/> Red Meat (beef, pork) <input type="checkbox"/> other meat/ protein (chicken, turkey, fish, eggs) <input type="checkbox"/> carbohydrate rich foods (bread, pasta, rice, potatoes) <input type="checkbox"/> sweets (ice cream, cookies, candy) <input type="checkbox"/> fats (butter, oil, cream sauces, salad dressings, mayonnaise, etc.) <input type="checkbox"/> fast food (hamburgers, hot dogs, fries, etc.) <input type="checkbox"/> sweetened beverages (soda, juices, energy drinks, etc.) <input type="checkbox"/> alcoholic beverages	
Do you currently experience changes in your appetite? <input type="checkbox"/> YES <input type="checkbox"/> NO If YES, please indicate the direction of change. <input type="checkbox"/> increase <input type="checkbox"/> decrease	
In general, how would you currently describe your calorie intake during this month? <input type="checkbox"/> the same as usual <input type="checkbox"/> more than usual <input type="checkbox"/> less than usual	
Do you take dietary/sport supplements <input type="checkbox"/> YES, daily <input type="checkbox"/> YES, but not every day <input type="checkbox"/> NO	
Please check all the dietary supplements you use. <input type="checkbox"/> multivitamin/mineral <input type="checkbox"/> iron <input type="checkbox"/> calcium <input type="checkbox"/> magnesium <input type="checkbox"/> vitamin E <input type="checkbox"/> B-complex vitamins <input type="checkbox"/> Vitamin C <input type="checkbox"/> vitamin A <input type="checkbox"/> herbals (ex: Echinacea, ginseng) <input type="checkbox"/> immune enhancers (ex: vitamin C+zinc) <input type="checkbox"/> other (please specify)	
Please check all the sports supplements you currently use? <input type="checkbox"/> protein powder/drink <input type="checkbox"/> amino acids <input type="checkbox"/> HMB <input type="checkbox"/> sports bars (Luna, Powerbar, Cliff) <input type="checkbox"/> glutamine <input type="checkbox"/> creatine <input type="checkbox"/> Sports drinks (ex: Gatorade, Powerade) <input type="checkbox"/> Energy drinks (ex: Red bull) <input type="checkbox"/> caffeine <input type="checkbox"/> recovery drinks (Endurox, Power bar) <input type="checkbox"/> sodium bicarbonate or citrate <input type="checkbox"/> anabolic steroids <input type="checkbox"/> Liquid meal supplements(Boost, Ensure) <input type="checkbox"/> Pro-hormones (andro, DHEA) <input type="checkbox"/> fat burners (ephedrine, green tea, ma huang, synphrine) <input type="checkbox"/> other please specify: _____	
Thoughts about your body, your eating patterns, your feelings. . . Please check one response for each of the following questions	
1.	I eat sweets and carbohydrates without feeling nervous. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
2.	I think that my stomach is too big. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
3.	I eat when I am upset. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
4.	I stuff myself with food. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
5.	I think about dieting. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never

6.	I think that my thighs are too large. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
7.	I feel extremely guilty after over eating. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
8.	I think my stomach is just the right size. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
9.	I am terrified of gaining weight. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
10.	I feel satisfied with the shape of my body. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
11.	I exaggerate or magnify the importance of weight. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
12.	I have gone on eating binges where I have felt that I could not stop. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
13.	I like the shape of my buttocks. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
14.	I am preoccupied with the desire to be thinner. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
15.	I think about bingeing (overeating). <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
16.	I think my hips are too large. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
17.	I eat moderately in front of others and stuff myself when they're gone. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
18.	If I gain a pound, I worry that I will keep gaining. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
19.	I have the thought of trying to vomit in order to lose weight. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
20.	I think that my thighs are just the right size. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
21.	I think my buttocks are too large. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
22.	I eat or drink in secrecy. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never
23.	I think that my hips are just the right size. <input type="checkbox"/> Always <input type="checkbox"/> Usually <input type="checkbox"/> Often <input type="checkbox"/> Sometimes <input type="checkbox"/> Rarely <input type="checkbox"/> Never

Please check the answer that most applies to you for each of the following questions.	
1.	When I have eaten my quota of calories. I am usually good about not eating anymore. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
2.	I deliberately take small helpings as a means to controlling my weight. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
3.	Life is too short to worry about dieting. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
4.	I have a pretty good idea of the number of calories in common food. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
5.	While on a diet. If I eat food that is not allowed. I consciously eat less for a period of time to make up for it. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
6.	I enjoy eating too much to spoil it by counting calories or watching my weight. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
7.	I often stop eating when I am not really full as a conscious means of limiting the amount that I eat. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
8.	I consciously hold back at meals in order not to gain weight <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
9.	I eat anything I want, any time I want <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
10.	I count calories as a conscious means of controlling my weight. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
11.	I do not eat some foods because they make me fat. <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE
12.	I pay a great deal of attention to changes in my figure <input type="checkbox"/> TRUE <input type="checkbox"/> FALSE

Please circle one response for each of the following questions	
13.	<p>How often are you dieting in a conscious effort to control your weight?</p> <p>1 2 3 4</p> <p>Rarely Sometimes Usually Always</p>
14.	<p>Would a weight fluctuation of 5 pounds affect the way you live your life?</p> <p>1 2 3 4</p> <p>Not at all Slightly Moderately Very Much</p>
15.	<p>Do your feeling of guilt about overeating help you control your food intake</p> <p>1 2 3 4</p> <p>Never Rarely Often Always</p>
16.	<p>How conscious are you of what you are eating?</p> <p>1 2 3 4</p> <p>Not at all Slightly Moderately Extremely</p>
17.	<p>How frequently do you avoid stocking up on tempting foods?</p> <p>1 2 3 4</p> <p>Almost never Seldom Usually Almost always</p>
18.	<p>How likely are you to shop for low calorie foods?</p> <p>1 2 3 4</p> <p>Unlikely Slightly/unlikely Moderately likely Very likely</p>
19.	<p>How likely are you to consciously eat slowly in order to cut down on how much you eat?</p> <p>1 2 3 4</p> <p>Unlikely Slightly/unlikely Moderately likely Very likely</p>
20.	<p>How likely are you to consciously eat less than you want?</p> <p>1 2 3 4</p> <p>Unlikely Slightly/unlikely Moderately likely Very likely</p>

21.	<p>On a scale of 0-5, where 0 means no restraint in eating (eating whatever and whenever you want, whenever you want it) and 5 means total restraint (constantly limiting food intake and never giving in), what number would you give yourself?</p> <p>0 Eat whatever you want, whenever you want it</p> <p>1 Usually eat whatever you want, whenever you want it</p> <p>2 Often eat whatever you want, whenever you want it</p> <p>3 Often limit food intake, but often "give in"</p> <p>4 Usually limit food intake, rarely "give in"</p> <p>5 Constantly limiting food intake, never giving in</p>
-----	--

Fatigue Assessment							
On the statements below give the impression on how you have felt in the past two weeks .							
1.	I feel tired.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
2.	I feel very active.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
3.	Thinking requires effort.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
4.	Physically I feel exhausted.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
5.	I feel like doing all kinds of nice things.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
6.	I feel fit.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
7.	I do quite a lot within a day.						
	1	2	3	4	5	6	7
	Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False

8.	When I am doing something, I can concentrate quite well.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
9.	I feel weak.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
10.	I don't do much during the day.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
11.	I can concentrate well.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
12.	I feel rested.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
13.	I have trouble concentrating.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
14.	Physically I feel I am in a bad condition	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
15.	I am full of plans.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
16.	I get tired very quickly.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
17.	I have a low output.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
18.	I feel no desire to do anything.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
19.	My thoughts easily wander.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
20.	Physically I feel in a good shape.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False

21.	I feel my memory and concentration is impaired.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
22.	My muscles feel weak.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
23.	I feel unrefreshed and tired after a night's sleep.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
24.	I need a nap each day.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
25.	It is difficult for me to fall asleep.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
26.	I have difficulty staying asleep.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
27.	I wake up really early in the morning. Ex. 3am.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
28.	I have slowness of thought.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
29.	I get confused/disoriented.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
30.	I have a hard time reasoning things out.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
31.	I forget what word I am trying to say.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
32.	I have difficulty finding the right word.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
33.	I can only focus on one thing at a time.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
34.	I tend to lose my train of thought.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
35.	I am great at retaining information.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False

36.	I have difficulty recalling information.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
37.	I have trouble expressing my thoughts.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
38.	I react to things fast.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
39.	I have good hand and eye coordination.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False
40.	I am easily irritated.	1	2	3	4	5	6	7
		Very True	True	Somewhat True	Neutral	Somewhat False	False	Very False

Are you currently experiencing any problems with fatigue or tiredness ☐YES ☐NO
 If yes, when did the fatigue begin?

 If yes, what do you think is the cause of your fatigue?

When your problem with fatigue began, did it develop (check one)
☐ Rapidly- within 24 hrs ☐ Over 1 week ☐ Over 1 month
☐ Over 2-6 months ☐ Over 7-12 months ☐ Over 1-2 years
☐ Longer than 2 years ☐ had problems with fatigue since childhood or adolescences
☐ N/A- Not having problems with fatigue

In the past month, how many hours a week do you spend doing:
 household related activities? _____
 social-related activities? _____
 Work/school- related activities? _____

In the past 6 months, have you reduced the number of hours you previously spent on occupational, social, or family activities because of your health or problems with fatigue ☐YES ☐NO
 If yes, which activities did you cut back
☐ Occupational (work/school related)
☐ Social
☐ Family

If you rest does your fatigue go away entirely, partially, or does rest have no effect on your fatigue? (check one)
☐ Entirely ☐ Partially ☐ No effect
 If you said "entirely" or "partially", how long do you have to rest for your fatigue to entirely or partially go away? _____
 Will your fatigue return if you stop resting and start doing something? ☐YES ☐NO

Do you restrict your activity levels to avoid experiencing severe fatigue? <input type="checkbox"/> YES <input type="checkbox"/> NO
Does physical activity make you feel: <input type="checkbox"/> Worse <input type="checkbox"/> Better <input type="checkbox"/> Has no effect
In the past 6 months how often do you feel worse after engaging in activities that require physical or mental exertion (post-exertional malaise)? <input type="checkbox"/> Never <input type="checkbox"/> Seldom <input type="checkbox"/> Often or usually <input type="checkbox"/> Always If you answered "Never" or "Seldom", do you experience increased fatigue or worsening of symptoms after engaging in exercise? <input type="checkbox"/> YES <input type="checkbox"/> NO If you answered NO, is this because you <input type="checkbox"/> Are not exercising <input type="checkbox"/> Exercise has no effect on symptoms <input type="checkbox"/> Exercise makes you feel better If you are not exercising, is this because <input type="checkbox"/> Not interested <input type="checkbox"/> No time <input type="checkbox"/> Would like to but cannot because of fatigue <input type="checkbox"/> Cannot because exercise makes symptoms worse
How would you describe the course of your fatigue <input type="checkbox"/> Constantly getting worse <input type="checkbox"/> Constantly improving <input type="checkbox"/> Persisting (no change) <input type="checkbox"/> Relapsing and remitting (having good periods with no symptoms and bad periods) <input type="checkbox"/> Fluctuating (symptoms periodically wax and wane but never disappear completely)
How much sleep do you typically get each night? _____ hours _____ min
Do you typically wake up feeling <input type="checkbox"/> very groggy <input type="checkbox"/> groggy <input type="checkbox"/> slightly groggy <input type="checkbox"/> rested <input type="checkbox"/> very well rested
In dance class/ rehearsal what is your energy level? <input type="checkbox"/> Exhausted before class/rehearsal even starts <input type="checkbox"/> Exhausted shortly after class/rehearsal starts <input type="checkbox"/> Exhausted only the latter half of class <input type="checkbox"/> Full of energy for majority of class/rehearsal <input type="checkbox"/> Full of energy for entire class/rehearsal

Menstruation History(females only)	
Have you ever had a menstrual period?	<input type="checkbox"/> YES <input type="checkbox"/> NO
In the past about how many times per year did you get your menstrual period	<input type="checkbox"/> 10-13 times per year <input type="checkbox"/> 6-9 times per year <input type="checkbox"/> 4-6 times per year <input type="checkbox"/> 1-3 times per year
How many menstrual periods have you had in the: In the past 12 months? _____ In the past 6 months? _____	

Current Menstrual Status (females only)	
How would you describe the length of your menstrual cycle during this month (check one)	
<input type="checkbox"/> the same as always <input type="checkbox"/> shorter than usual <input type="checkbox"/> longer than usual	
How would you describe your last menstrual bleeding? (check one)	
<input type="checkbox"/> the same as always <input type="checkbox"/> lighter than usual <input type="checkbox"/> heavier than usual	
Currently, how would you describe your menstrual cycle? In order to determine the number of days your cycle lasts, begin with the first day of bleeding and count the number of days until the next month when you begin bleeding again <input type="checkbox"/> I am very regular (every 26-35 days) <input type="checkbox"/> I am somewhat regular (every 21-25 days) <input type="checkbox"/> I am very irregular (every 36-45 days) <input type="checkbox"/> I do not have a menstrual cycle (no cycle for longer than 3 months)	
Does your menstrual cycle change with your training	
<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Not applicable	
If you checked YES, choose all that apply:	<input type="checkbox"/> Longer cycle (>35 days) <input type="checkbox"/> Skipping a cycle <input type="checkbox"/> Shorter cycle (<21 days) <input type="checkbox"/> Heavier bleeding <input type="checkbox"/> Absence of 3 or more consecutive cycles <input type="checkbox"/> Other, please specify
Does your menstrual cycle change during your competition season: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> Not applicable	
If you checked YES, choose one of the following:	<input type="checkbox"/> Longer cycle (>35 days) <input type="checkbox"/> Skipping a cycle <input type="checkbox"/> Shorter cycle (<21 days) <input type="checkbox"/> Heavier bleeding <input type="checkbox"/> Absence of 3 or more consecutive cycles <input type="checkbox"/> Other, please specify

Do you currently use contraception/birth control (ex: oral contraceptive pills, rings, implants)?	
<input type="checkbox"/> YES # years _____ <input type="checkbox"/> NO <input type="checkbox"/> Not applicable	
If YES, what are you using them for?	
<input type="checkbox"/> Birth control <input type="checkbox"/> Regulate cycle <input type="checkbox"/> Both <input type="checkbox"/> Other	
If NO, have you used contraception/birth control (ex: oral contraceptives pills, rings, implants) in the past?	
<input type="checkbox"/> YES #years _____ <input type="checkbox"/> NO, never used <input type="checkbox"/> N/A	
If YES, what did you use them for:	
<input type="checkbox"/> Birth control <input type="checkbox"/> Regulate cycle <input type="checkbox"/> Both <input type="checkbox"/> Other	
Have you ever been to a gynecologist? <input type="checkbox"/> YES <input type="checkbox"/> NO	
If you checked YES for the previous question, was any reproductive disorder identified/ diagnosed. more	<input type="checkbox"/> YES <input type="checkbox"/> NO If YES, please give details:

Do you currently monitor your menstrual cycle?	
<input type="checkbox"/> YES <input type="checkbox"/> NO	
If you checked YES for the previous question, how many months or years have you monitored your menstrual cycle?	
# _____ <input type="checkbox"/> years OR # _____ <input type="checkbox"/> months	

THANK YOU VERY MUCH FOR TAKING THE TIME TO FILL OUT THIS QUESTIONNAIRE.
Please take a moment to fill in any questions you may have skipped.

APPENDIX D

Food Frequency Chart

Food Frequency Questionnaire

For each food provided please place a "X" in the box to indicate how often, on average, you have eaten the specific amount of each food during the past 6 months (serving sizes indicated).

Food	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Meat and Fish (3 oz serving, size of deck of cards)									
Beef- roast, steak, etc.									
Beef burgers									
Pork									
Lamb									
Poultry									
Bacon									
Ham									
Luncheon meats, corned beef, spam									
Sausage, hot dogs (1 link)									
Savory pies ex. Meat pies (1 pie)									
Liver, liver sausage, liver pate									
Fried fish in batter									
Fish fingers, fish cakes									
White fish, fresh or frozen ex cod, tilapia, flounder									
Oily fish ex. Tuna, salmon, sardines									
Shellfish									
Bread group									
White bread/ rolls (1 slice/roll)									
Whole grain bread/rolls(1 slice/roll)									
Biscuits (1 ct)									

Food	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Crackers, crisp bread (1 oz)									
Porridge (1/2 cup)									
Cereal (1/2 cup)									
Oatmeal (1/2 cup)									
Grits (1/2 cup)									
Mashed potatoes (1/2 cup)									
Chips (1 oz)									
Roasted potatoes (1/2 cup)									
Potato salad (1/2 cup)									
White rice (1/2 cup)									
Brown rice (1/2 cup)									
White Pasta (1/2 cup)									
Whole grain pasta (1/2 cup)									
Pizza (1 slice)									
Dairy									
Sour cream (1 tbsp)									
Cream (1 tbsp)									
Low fat yogurt (6oz)									
Full fat yogurt (6oz)									
Greek yogurt (6oz)									
Dairy desserts (6oz)									
Cheese ex cheddar, brie, Edam (1 oz)									
Low fat cheese ex. Cottage cheese, low fat soft cheese (1oz)									

Food	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Eggs (1 ct)									
Quiche (1 slice)									
Low calorie, low fat salad cream dressing (1 tbsp)									
Mayonnaise (1 tbsp)									
Butter (1 tbsp)									
Margarine (1 tbsp)									
Margarine spray									
Low fat margarine (1 tbsp)									
Desserts snacks									
Cookies (1 ct)									
Cakes(1 slice)									
Pastries (1 ct)									
Pies, tarts, crumbles (1 slice)									
Sponge puddings (1/2 cup)									
Milk puddings (1/2 cup)									
Ice cream (1/2 cup)									
Chocolate(3 square pieces)									
Sweets, toffees, mints (3 pieces)									
Sugar added to tea, coffee, cereal (1 tsp)									
Crisps or other pocket snacks (1 serving)									
Peanuts or nuts (1 handful)									

Food	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Soups and condiments									
Vegetable soups (1 cup)									
Meat soups (1 cup)									
Sauces, gravy, white cheese, cheese sauce (1/4 cup)									
Tomato ketchup (1 tbsp)									
Pickles (1 ct)									
Jam, marmalade, jelly, honey (1 tsp)									
Peanut butter, nut butters (1 tbsp)									
Salad Dressing, non-cream based (1 tbsp)									
Beverages									
Tea									
Coffee (1 cup)									
Coffee, decaf (1 cup)									
Coffee whitener, ex coffee-mate (1 cup)									
Cocoa, hot chocolate (1 cup)									
Ovaltine, Horlicks (1 cup)									
Wine (5 oz)									
Beer (12 oz)									
Port, sherry, vermouth, liquors (1 shot)									
Spirits ex, gin, brandy, whisky, vodka (1 shot)									
Low calorie or diet soda (8 oz)									

Food	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Soda (8oz)									
Pure fruit juice (1/2 cup)									
Flavored fruit juice ex, Hawaiian Punch, Kool-aid, Sunny Delight (1/2 cup)									
Fruit (1 serving = 1 cup raw, 1 medium piece)									
Apples									
Pears									
Oranges, satsumas, mandarins									
Grapefruit									
Banana									
Grapes									
Melon									
Peaches, plums, apricots									
Strawberries, raspberries, kiwi									
Dried fruit ex raisins, prunes (3 tbsp)									
Vegetables (1 cup raw, ½ cup cooked, 1 medium piece)									
Carrots									
Spinach									
Broccoli									
Brussel sprouts									
Cabbage									
Peas									
Green beans, runner beans, broad beans									
Marrow, courgettes									
Cauliflower									
Parsnips turnips, swedes									
Leeks									
Onions									

Food	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day
Garlic									
Mushrooms									
Bell peppers									
Peppers									
Bean sprouts									
Sweet potatoes, yams									
Green salad, lettuce, cucumber, celery									
Watercress									
Tomatoes									
Sweetcorn									
Beet root									
Coleslaw									
Avocado									
Baked beans									
Dried beans, lentils, peas									
Tofu, soya meat, TVP, veggieburger									
Miscellaneous									
Fried food made at home									
Fried food eaten at restaurant/fast food									
Grilled or roast meat									

Are there any other foods you eat more than once a week? Yes No

If yes please list below.

What type of milk do you normally drink? (Select only the one used most often)

Whole milk
2% milk
1% milk
Skim milk
Dried milk
Almond milk
Soy milk
Rice milk
Coconut milk

How much milk do you drink each day, including with tea, coffee, cereals, etc.

None
1 cup (8oz)
2 cup
3 cup
4 cup
More than 4 cups

Do you normally eat breakfast cereal? Yes No

If yes, which brand and type of cereal, including muesli?

What kind of fat do you most often use when frying, grilling, or roasting? Select only one.

Butter
Lard/dripping
Vegetable oil
Solid fat (shortening)
Margarine
Cooking spray
None

If you use vegetable oil what kind do you use, ex canola, corn, sunflower, etc.)?

What kind of fat do you use with baking cakes? Select only one.

Butter
Lard/dripping
Vegetable oil
Solid fat (shortening)
Margarine
Cooking spray
None

What do you do with the visible fat or skin on meat and poultry? Select one answer

- Ate most of the fat
- Ate some of the fat
- Ate as little fat as possible
- Did not eat meat

How often do you add salt to food while cooking?

- Always
- Usually
- Sometimes
- Rarely
- Never

How often do you add salt to food at the table?

- Always
- Usually
- Sometimes
- Rarely
- Never

Did you use a salt substitute regularly? Yes No

If yes, what brand? _____

How many times a week did you eat the following foods

Vegetables (not including potatoes, corn, beans)	_____
Salads	_____
Fruit and fruit products	_____
Fish and fish products	_____
Meat	_____

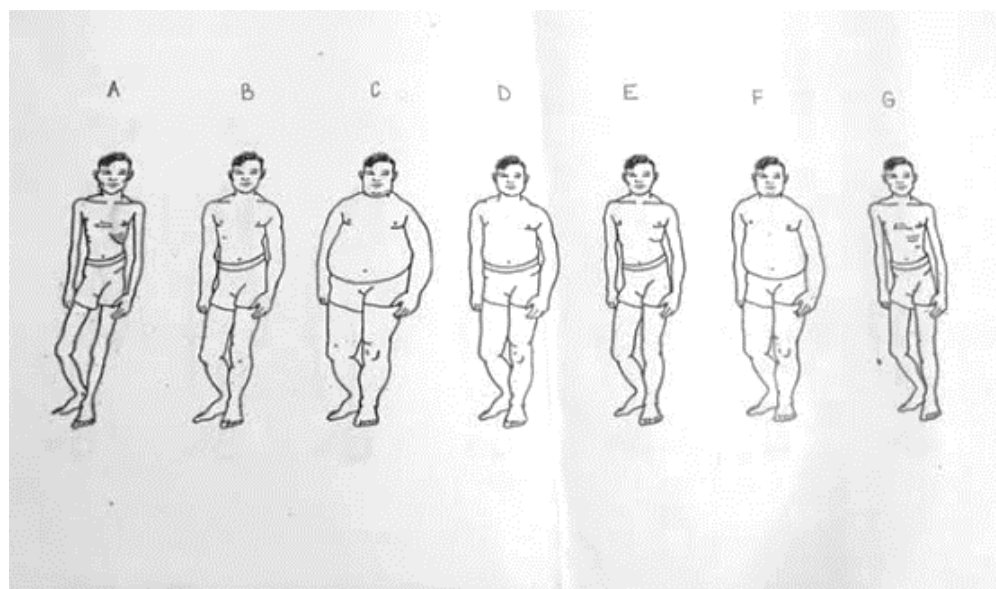
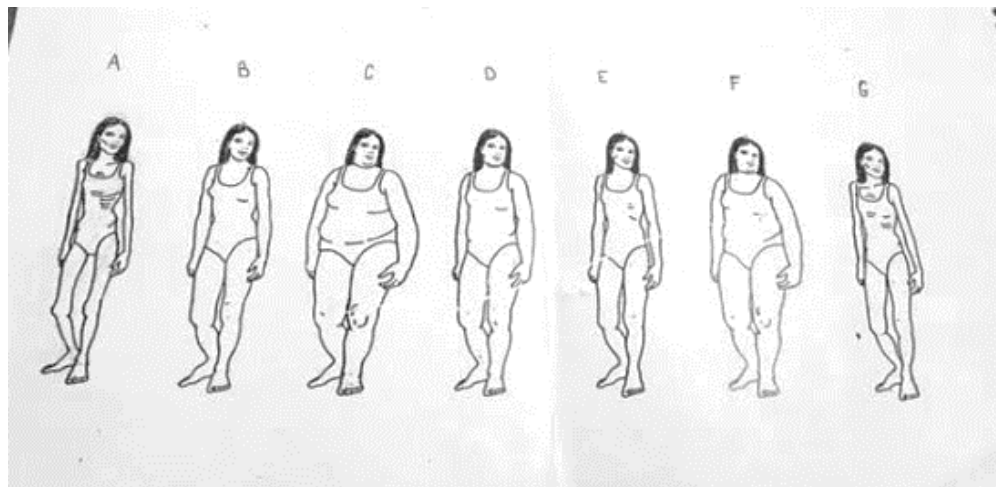
Do you take any vitamins, minerals, fish oils, fiber, or other supplements? Yes no

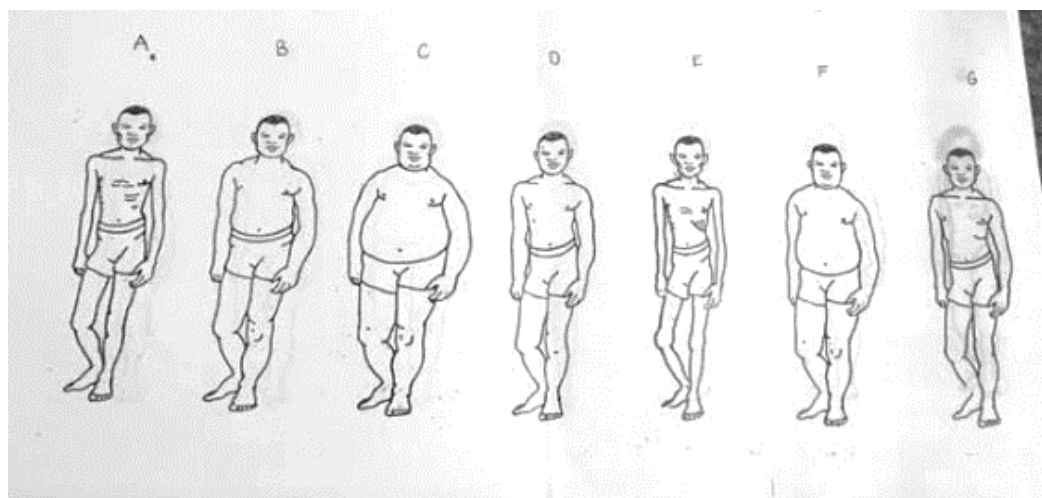
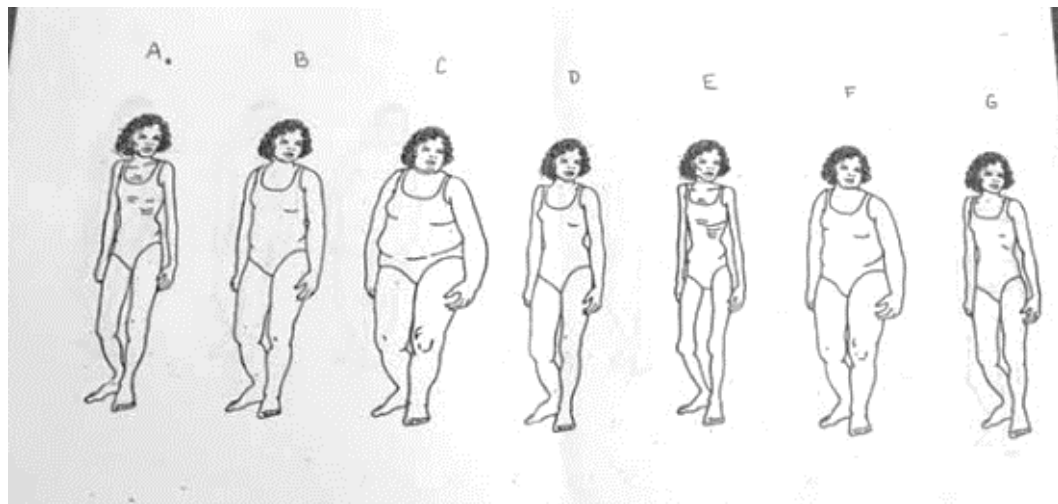
If so please list the below

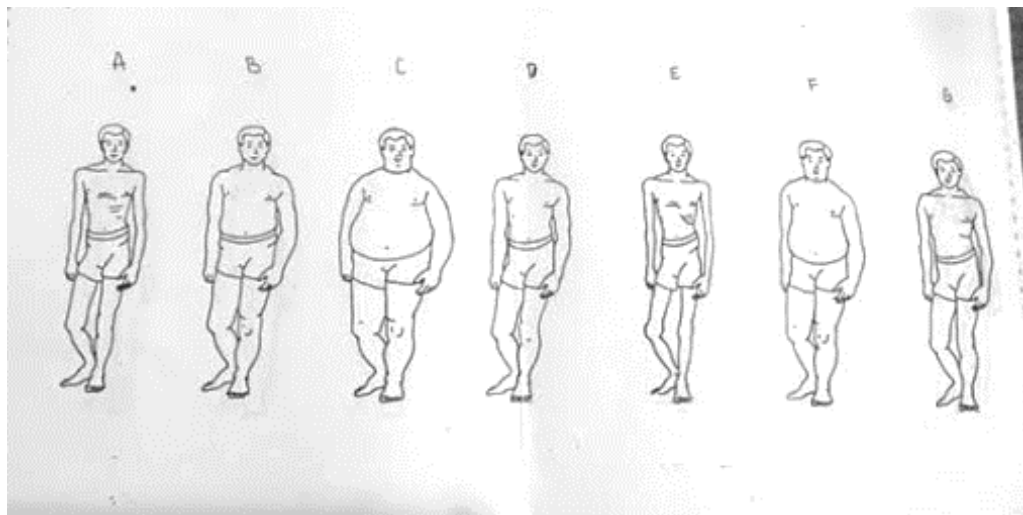
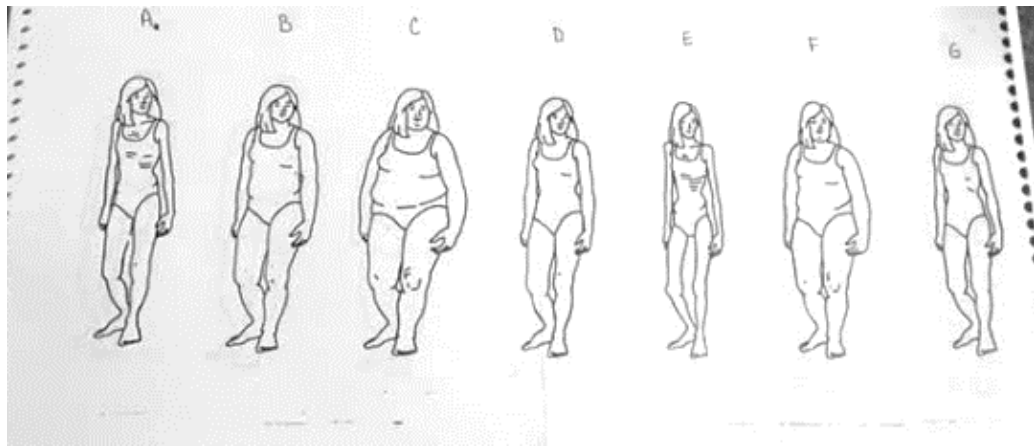
	Never or less than once/month	1-3 per month	Once a week	2-4 per week	5-6 per week	Once a day	2-3 per day	4-5 per day	6+ per day

APPENDIX E

Body Image Spectrum







APPENDIX F

3-Day Food and Physical Activity Diary

3 Day Food Diary Directions

Please record all food and drink, for 3 days, 2 week days and 1 day during the weekend. It is easiest to record correctly if recording is done directly after a meal or snack.

1. Describe the food accurately and give brand names if possible. For example: margarine (Blue Bonnet soft tub) 1 teaspoon levels with knife.

2. Please record any foods that state they are fortified with additional vitamin D or calcium.

3. State whether fruits and vegetables are fresh, canned (water pack, heavy or light syrup), cooked or frozen.

4. Record the amount of food eaten by using household measures such as cups, teaspoons, tablespoons, or weigh the food. For example: Whole milk $\frac{1}{2}$ cup or 4 ounces (oz) 2% cottage cheese or 4 level tablespoons

5. For meat every oz is about the size of a match box. 3 oz is about the size of a deck of cards. Keep in mind the bone takes up space. For example: Broiled pork chop with bone = 3 ounces, bone weight is 1 ounce, so total weight of pork chop is 2 ounces.

6. Describe sandwiches in detail.

For example: Bologna sandwich: 2 slices of whole wheat bread, 1 slice (1 ounce) bologna, 1 level tablespoon Kraft Mayonnaise (lite or regular), 1 lettuce leaf, 1 slice (1 ounce) Processed cheese (Kraft)

7. Be sure to record amounts of additional foods served with cereals or desserts, etc.

For example: Cereal: $\frac{1}{2}$ cup Rice Krispies (Kellogs), $\frac{1}{4}$ cup milk 2%, 2 level tablespoons Brown Sugar

8. Include how the food is prepared especially for meats, fish, poultry, eggs, and vegetables. Methods of preparation include boiling, roasting, baking, broiling, frying or steaming. When frying, be sure to mention the type of fat or oil used.

9. If eating out, describe food item well. Please record the name of popular fast food restaurants as we have nutrition information for all foods

10. Please include any vitamins and minerals you consume.



<http://remakemyplate.com/resources-tips-and-tools/size-it-up-portion-sizes/>

3 Day Food Diary

Date: Example

Time	Food/drink eaten	How hungry before meal (1=4, 1=very hungry, 2=hungry, 3=neutral, 4=satisfied, 5= full)	Mood before meal	How hungry after meal (1=4, 1=very hungry, 2=hungry, 3=neutral, 4=satisfied, 5= full)	Mood after meal
8:15am	1 cup cereal, 1 cup 1% milk, 1 large banana, 1 cup coffee with 1 tsp sugar	1	tired	4	Slightly awake
10:30	Granola bar	3	bored	4	Slightly happy
12:30	Sandwich- 2 slice whole wheat bread, slice of American cheese, 2oz of lean ham deli meat, lettuce, tomato, 2 tbsp mayo 1 oz Doritos chips 1 small cookie 1/2 cup apple sauce 8 oz water	2	annoyed	5	happy
2:00	1 fun size snickers bar, 8 oz water	3	happy	3	happy
5:00	16 oz Gatorade	3	Bored	4	Bored
6:00	3 oz chicken breast, 1 cup mash potatoes, 1 tsp butter, 1/2 cup canned green beans, 1/2 cup corn, 1 cup apple juice	2	tired	5	neutral
7:00	6oz cup of flavored Greek yogurt	3	Happy	4	happy
Time	Physical Activity	How long	Intensity		
2:30	Ballet- Advance level	1hr 30 min	low		
4:30	Gym- weights lower body and back	45 min	high		

3 Day Food Diary

Date:

Time	Food/drink eaten	How hungry before meal	Mood before meal	How hungry after meal	Mood after meal
Time	Physical Activity	How long	Intensity		

APPENDIX G

Lesson Plans

Lesson 1
Lesson Plan
Athletes Plate Images
Athlete's Plate Worksheet

Lesson 2
Lesson Plan
PowerPoint Presentation
Performance Nutrition Worksheet
Handouts and Recipes

Lesson 3
Lesson Plan
PowerPoint Presentation
Female Athlete Triad Handout
Smart Goals Worksheet

Lesson 1

Athlete's Plate for Easy Training/ Weight Management

Objective: To be able to design meals based on the Athlete's Plate model for Easy Training/Weight Management.

Materials

Athlete's Plate Diagrams

Design your Plate activity

Model food

Dry erase board and markers

Lesson

Begin class by asking "Can someone tell me what are the major food groups?" (Write answers on the board)

Then continue the discussion by going through each food group and have the class list out example foods for each group.

Ask general questions about the food groups such as, "How many of the food groups are we supposed to eat from each day?" "What happens if we do not eat from each food group?" "What is so special about each food group (go through each group specifically)?"

Pass out handout of Athlete's Plate for Easy training/ Weight Management.

Go over what it is and what makes it different from the other Athlete's Plates.

Go over the different parts of the plate.

Show example plates

Pass out "Design Your Plate" handout

Explain that each person will need to come up with 3 meals using the Athlete Plate model (breakfast, lunch, dinner)

Allow 10 min for activity

Go around the room and allow people to share what meals they came up with.

Homework: Participants must try to implement the Athletes Plate for at least one meal each day for the next week. They must keep a log of what they had for that meal each day. They are welcome to do more than one meal a day but need to do at least one.

ATHLETE'S PLATE

EASY TRAINING / WEIGHT MANAGEMENT:

Whole Grains

- Pasta
- Rice
- Potatoes
- Cereals
- Breads
- Legumes

Vegetables & Fruits

- Raw Veggies
- Cooked Veggies
- Veggie Soups
- Fresh Fruit

Lean Protein

- Poultry
- Beef/Game/Lamb
- Fish
- Eggs
- Low-Fat Dairy
- Soy (e.g., Tofu, Tempeh)
- Legumes/Nuts

FATS

1 Teaspoon

- Avocado
- Oils
- Nuts
- Seeds
- Cheese
- Butter

FLAVORS

- Salt/Pepper
- Herbs
- Spices
- Vinegar
- Salsa
- Mustard
- Ketchup

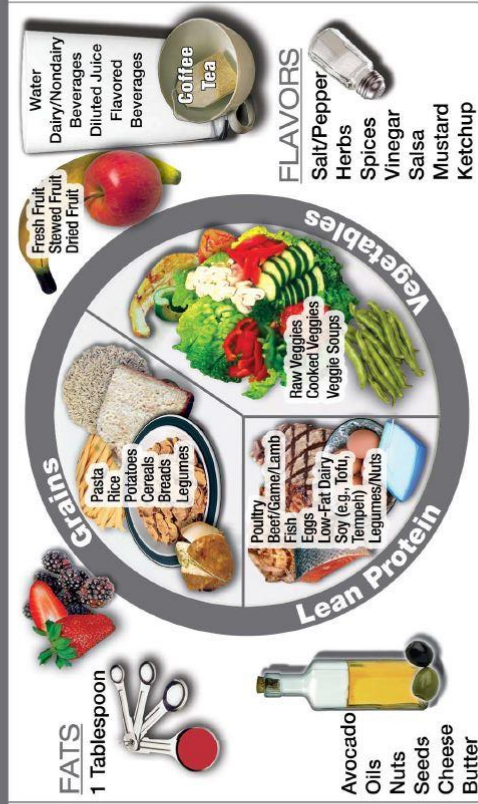
Beverages

- Water
- Dairy/Nondairy Beverages
- Diluted Juice
- Flavored Beverages
- Coffee
- Tea

The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program. For educational use only. Print and use front and back as 1 handout.

ATHLETE'S PLATE

MODERATE TRAINING:



The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCO) Sport Nutrition Graduate Program. For educational use only. Print and use front and back as 1 handout.

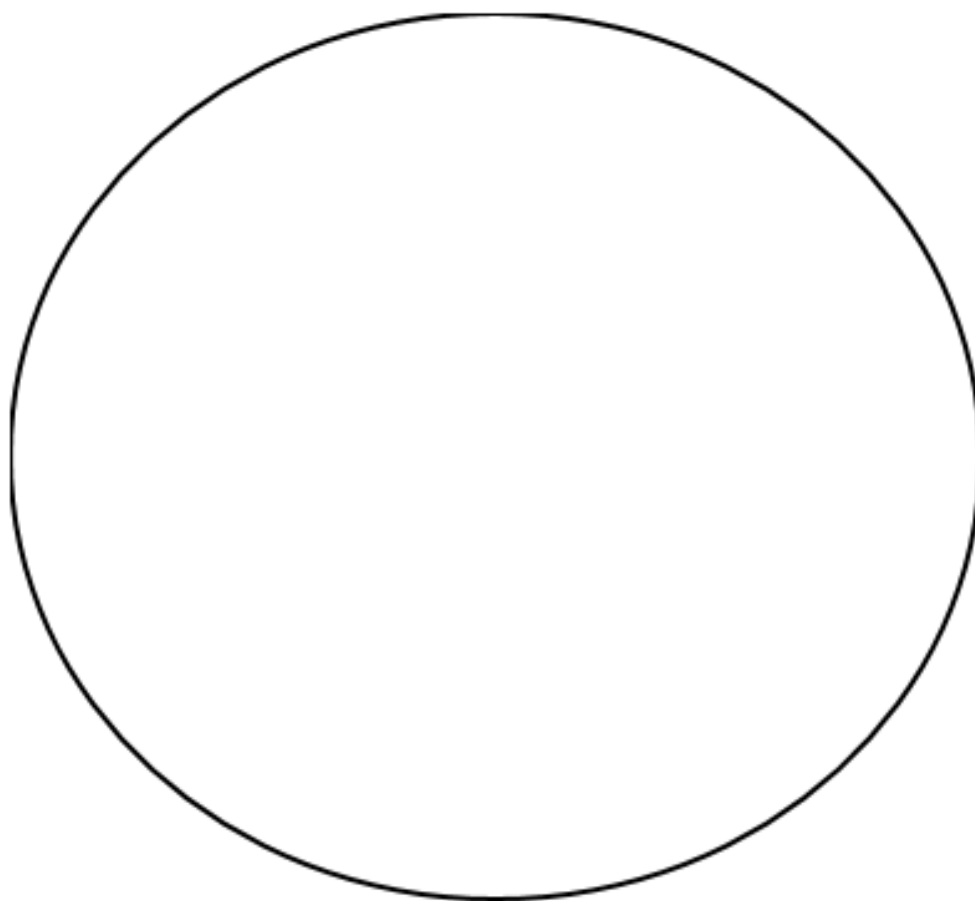
ATHLETE'S PLATE



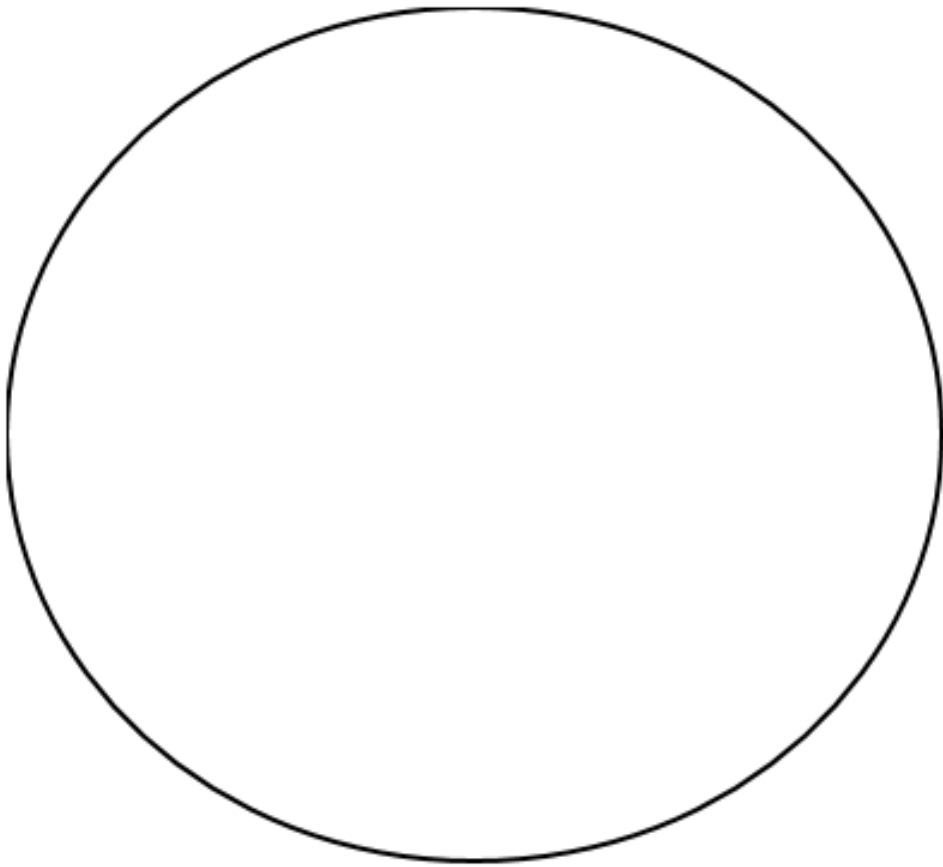
The Athlete's Plates are a collaboration between the United States Olympic Committee Sport Dietitians and the University of Colorado (UCCS) Sport Nutrition Graduate Program.
For educational use only. Print and use front and back as 1 handout.

Design Your Plate- Design three meals that meet the criteria for the Athlete's Plate. Be sure to include all parts of the plate, including beverages and condiments.

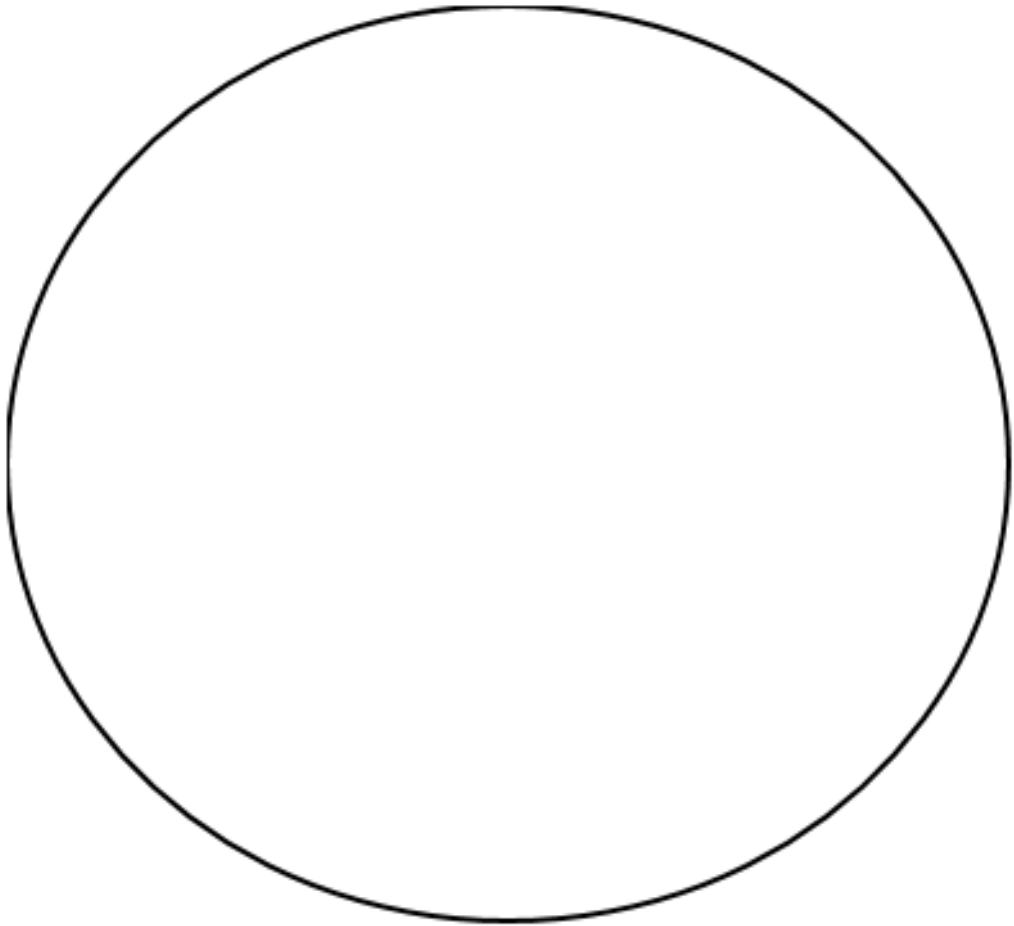
Breakfast



Lunch



Dinner



Lesson 2

Objective: Participants will be able to identify which foods to eat before, during, and after workouts/ rehearsals.

Materials

PowerPoint

PowerPoint presentation handout

Food models, wrappers, and pictures

Activity Handout

Lesson

Review the Athlete's Plate. Discuss the homework from Lesson 1.

ACSM brochure on protein

Recipes

Go over PowerPoint

Activity

Students will have several food items in front of them. They will need to write down which of the foods can be used for before workout, during, and after. We then will go over the answers together

Performance Nutrition

Before workouts/ Rehearsal

- Your last meal
 - 3-4 hours for large meal
 - 2-3 hours for smaller meal
 - 1-2 hours for blenderized meal
Smoothie, protein drink/shake



Before Workout/Rehearsal

- Pre-exercise meal
 - High carbohydrate
 - Low in fat & fiber
 - These slow down digestion
 - Moderate protein
 - Combine protein + carbohydrate
 - Plenty of fluids (16-20 oz)

Before workouts/rehearsal

- 30 minutes before
 - Also if working out early morning
 - High carbohydrate and small amount of protein
 - 5-10 oz water or sports drink



30 min Before meals

- Shake- protein powder with fruit and milk
- Energy bar
- Low-fat granola bar
- Non acidic Fruit (ex: banana)
- Plain bagel or dry cereal/granola mix



During workouts/class

- Carbohydrate-rich foods/drinks
 - they digest & provide energy fast
- Avoid fat, protein, & fiber
 - they digest & provide energy slow
- 100-300 calories of carbohydrates per hour, after the first hour of exercise
 - 30-60 grams of carbohydrate per hour

During Workout Snacks

- Energy bars
- Granola bars
- Plain bagels
- Peanut butter crackers
- Dry cereal/trail mix with minimal nuts
- High calorie shake (Ex: Muscle Milk Collegiate)
- Sports drink with snack



After Workouts/Rehearsal

2-Hour Window of Recovery

- **post-exercise** your body is able to effectively take up more nutrients
 - Blood flow to muscles are greater
 - Muscle cell is more likely to take up glucose
- **0-45 minutes**
 - Best time to eat a snack...muscles more sensitive to absorb nutrients
- **45 minutes - 2 hours**
 - Try to get a nice-size meal or larger snack
- Consume **plenty of carbohydrate, protein, & fluids** to replenish & refuel

Post workout example snacks

- Carb-Protein Replacement Shake
- Muscle Milk
- Energy bar & Gatorade
- Smoothie made with low-fat milk, fruit, and 1 scoop whey protein powder
- 16-20 oz low-fat chocolate milk
- Granola bar and 12 oz low-fat milk
- Yoplait Greek 2x Protein Yogurt and a string cheese



Importance of hydration

- **Pre-exercise**
 - 2-3 hours prior exercise: 16-20 oz fluid
 - 10 minutes prior exercise: 5-10 oz fluid
- **During-exercise**
 - Individualized to sweat rate
 - Every 15-20 minutes: 5-10 oz fluid
 - Water and sports drinks
 - Sports drinks especially after 1 hour of exercise and/or in very hot/humid conditions
- **Post-exercise**
 - 24 oz fluid for every pound lost
- Monitor urine color, odor, and volume to ensure adequate hydration
- Avoid sweetened beverages when trying to hydrate.



Dehydration Causes

- Muscle cramps
- Joint pain
- Dry mouth
- Fatigue
- Nausea
- Heat exhaustion
- Heat stroke
- Lightheadedness/headache
- Decreased performance
- Increased time to recover
- Increased muscle soreness
- Susceptibility to colds and sickness

Hydration and Cramping

- **Typical causes:**
 - Fatigue
 - Dehydration due to loss of electrolytes
- **Foods to improve/prevent cramping**
 - Sodium-rich or salty foods
 - High potassium foods
 - Bananas, strawberries, cantaloupe, raisins
 - Avocado, potatoes, beans, broccoli, spinach
 - Yogurt, milk, tomato juice, soybeans
 - Sports Drinks
 - Gatorade, Powerade
 - Excessive problems
 - Salt tablets and/or potassium supplement



Protein

- **Purpose:** Build/repair muscles, hair/nail growth, boosts immunity, RBC production
- **Lean meat**
 - Chicken, turkey, lean ham, lean red meat, fish, tuna, turkey bacon and turkey sausage
 - Take the skin off of meat
- **Eggs and egg whites**
- **Low-fat dairy products**
 - Milk, cheese, yogurt, cottage cheese
- **Whey protein powders and smoothies/shakes made with it...whey protein absorbs very quickly**
- **Nuts, seeds, peanut butter have some protein**



Eating on a busy schedule

- When you have free time come up with a list of go to foods:
 - Fast meals you can cook
 - Stock your pantry with essentials
 - Determine which fast food items you can buy
 - Determine which convenient store items you can buy
 - Stock your dance bag with easy snacks
 - Have healthy snacks available

Fill your bag with

- Protein bars
- Granola bars
- Trail mix
- Dried fruit
- Peanut butter crackers



Shopping tips

- Take time out each week to make a grocery list of items you will need
- Make a menu of what you will eat each day
- Look what you have in stock
- List what you need
- Buy foods in bulk when on sale
- Buy fruits and veggies in season
- Determine which grocery stores sell foods at a low cost
- Use coupons and price matching whenever possible
- Buy only what you need
- If you buy junk food, you will eat it. If it is not in your house you will not have to worry about it.



Performance Nutrition

With the food provided identify which foods can be eaten before, during, and after workouts. Some food items fit in more than one category.

Few Hours Before Workout
30 min Before Workout
During Workout
Post-workout

Breakfasts on the go

- Whole wheat bagel w/2 spoons peanut butter, banana & 1 bottle 2% milk
- Energy bar, banana & 1 bottle 2% milk
- Peanut butter & jelly sandwich on wheat bread, Yoplait 2x Protein Yogurt and 8 oz low-fat milk
- Peanut butter crackers, 1 cup trail mix, 1 bottle 2% milk
- Smoothie w/fruit, milk & whey protein powder
- Nature Valley Granola bar & add peanut butter on top, string cheese, 1 bottle 2% milk
- Quaker Oatmeal On-the-Go bar, Individual bag of nuts, 1 bottle 2% chocolate milk

Convenient Store

- Peanut butter crackers/peanut butter filled pretzels
- Individual bags of trail mix or nuts & a fruit
- Whole grain granola bars & string cheese/nuts
- Box of whole wheat crackers & string cheese
- Protein bar & banana/milk
- Turkey/ham and cheese sandwiches/wraps & baked chips/ fruit cups
- Yogurt & fruit parfaits & a bag of nuts
- Ready-to-drink Protein Shake & a fruit/granola bar
- Add milk/chocolate milk to any snack to increase calories and protein

10-Minute Dinners: 8 Healthy Recipes for Athletes

December 21, 2012 | Kait Fortunato

Sweet Potato Egg Boat

A microwaved sweet potato makes a sturdy, healthy carbohydrate base for eggs and spinach. Soften up the sweet potato in the nuker. While the sprout cooks, scramble the eggs with some spinach on the stovetop with a bit of garlic and olive oil. Place the egg mixture atop the potato, and *voila!* You're ready to set sail aboard the *S.S. Powerfood*.

English Muffin Pizza

This is a great meal—especially for children—that allows you to use leftover vegetables and protein (chicken, ground turkey, etc.). Combine with sauce and cheese and cook in the oven.

Turkey or Veggie Burgers

Healthy frozen varieties of these burgers can be microwaved or cooked on the stove in less than 10 minutes. Pair with a serving of microwavable frozen veggies or throw the patty on top of a salad.

Gordon's Frozen Fish Fillets

Most frozen food items should be left on ice indefinitely, but [Gordon's](#) has a line of grilled fish that makes a great backup plan for dinners on the go. The fish is low in calories, high in omega-3s, gluten-free and low in sodium. Wrap the fish in a whole-wheat tortilla and add a little salsa to build a delicious fish taco.

Rotisserie Chicken Stir Fry

While rotisserie is not the healthiest form of chicken, simply removing the skin drastically improves its nutritional value. Stir-fry it with some microwavable brown rice and frozen broccoli.

Paninis

Sandwiches can get boring after a while, but simply grilling them on the stove or a George Foreman grill can make a simple turkey and cheese taste like a delicious quesadilla. Use lean meats like turkey and ham, and add whatever healthy condiments and toppings you like. Avocado and sun-dried tomatoes are two of my favorites.

Omelets

Eggs are an incredibly easy, healthy source of protein. Most people associate them with breakfast, but there's no wrong time to eat these powerfully nutritious nuggets. An omelet makes a great dinner option. Simply mix in whatever veggies and protein you have available and serve with whole wheat toast.

Black Beans and Rice

Keep cans of low-sodium black beans in your pantry for a quick dose of protein that pairs well with individual servings of brown rice. Add a nutritious boost to the mix with frozen veggies, and top with plain yogurt for even more protein.

They're not all 10-minute dinners, but my STACK Meals of the Month provide you with quick, healthy meal ideas. Check out some of my recent recipes:

Easy Recipes for Athletes

These are a few simple low cost recipes for athletes to utilize after workouts, as a snack between classes, or for a main dinner menu. Due to time constraints and low budgets of the common athlete these recipes are easy and quick to prepare.

Granola Peanut Butter Balls

2 tablespoons honey
4 tablespoons peanut butter
2 cups granola
2 to 4 tablespoons milk, or as needed

In a large bowl, mix together the honey and peanut butter. Using a spatula, stir in the granola. Add enough milk to just moisten--you want it to stick together. Form into balls. Chill until ready to serve.

Blueberry Oatmeal Muffins

1 cup uncooked oatmeal. Instant, or regular
1 cup buttermilk (or 1 cup milk + 1 teaspoon white vinegar)
1 egg
_ to 1/3 cup sugar
_ to 1/3 cup oil
1 cup flour
1 teaspoon baking powder
_ teaspoon baking soda
1 teaspoon salt
1 to 1 _ cups blueberries, fresh or frozen

1. preheat oven to 400 degrees, prepare 12 muffin cups
2. In medium bowl, combine oatmeal, buttermilk, egg, oil, and sugar. Beat well; if time allows, let batter stand for 5-10 minutes for the oatmeal to soften.
3. In sm. Bowl, combine flour baking powder, baking soda, and salt (nutmeg and/or cinnamon if desired). Mix well, then combine with wet ingredients, stir until moistened.
4. Gently fold in blueberries
5. Fill muffin cups, Bake for 15-20 minutes or until toothpick inserted in the middle comes out clean and dry. Cool for five minutes, remove from pan.

Yield: 12 muffins
Total calories: 1600
Cal. Per muffin: 135
Carbohydrates- 18g
Protein 4g
Fat 5g

Oven Fried Chicken

Toast 5 oz.
2 to 4 Tablespoons olive or canola oil
2 egg whites or 1 egg
4 boneless, skinless chicken breast
Salt and pepper to taste

1. Heat oven to 400 degrees. Line pan with foil or line pan with rack this will result in crisper chicken
2. put toast in bag and crush

3. put crumbs in shallow dish and drizzle the oil over them; tossing well to distribute evenly
4. beat egg in bowl. Add seasoning
5. coat chicken with the egg mixture then place in crumbs. Sprinkle the crumbs over the flesh and press them in
6. gently shake off excess crumbs and place chicken in baking dish on rack
7. bake for 40 minutes, or until deep brown .

yield: 4 servings

Total calories- 1200
 Calories per serving: 300
 Carbohydrates 12g
 Protein 40g
 Fat 10g

Quick and Easy Chili

1 Pound lean ground beef or turkey
 1 16oz. can stewed tomatoes
 1 16oz. can beans, kidney or pinto
 1 package chili seasoning, hot or mild
 1 2/3 cup rice, uncooked
 Optional 1 green pepper chopped

1. Brown beef or turkey. Drain fat
2. add tomatoes, beans, chili seasoning, (and green pepper) . Bring to a boil, then reduce heat
3. Simmer for 5 to 50 minutes, depending on time
4. While chili is simmering, cook rice
5. Serve the chili ove rice

Yield: 6 servings

Total calories without rice: 1650
 Calories per serving without rice: 275

Carbohydrate – 20
 Protein - 24
 Fat - 11

Yield: 6 servings

Total calories without rice: 1650
 Calories per serving without rice: 275

Carbohydrate – 20
 Protein - 24
 Fat - 11

Homemade Sports Drink

_ cup sugar
 _ teaspoon salt
 _ cup hot water
 _ cup orange juice plus 2 tablespoons lemon juice
 3 1/2 cups cold water

NOTES: you can use other juices such as cranberry, grape, apple, etc.)

1. in the bottom of a pitcher, dissolve the sugar and salt in hot water.
2. Add juice and remaining water; chill
3. Quench your thirst!!

YIELD: 1 QUART

Total Calories: 200

Calories per 8 oz.: 50

Carbohydrates: 12

Sodium: 110 mg

Fruit Smoothie

_ cup low-fat yogurt (plain or flavored) or milk

1 cup fruit juice

_ cup to 1 cup fruit, fresh, frozen

1. Place all ingredients in a blender, cover, and whip until smooth

YIELD: 1 serving

Calories :220-290

Carbohydrates: 50-60

Protein: 5

Fats: 0-3

Texas Shake

10 oz. orange juice

1/3 cup low fat dry milk

1 banana

1 cup low fat yogurt

Blend with ice:

YIELD: 530 CALORIES

7% fat

21% protein

72% carbohydrate

Reference:

Clark, Nancy. Sports nutrition guidebook, 3rd ed. 2003.

Recipes for Georgia State Athletes
Chris Rosenbloom

Breakfast.....	2
Starters, Soups and Snacks.....	8
Salads and Sides.....	11
Main Even	15
Sweet Endings.....	22

Breakfast

Peanutty Energy Bars

Hand on: 15 minutes
Total time: 1 hour 15 minutes

Makes 16 squares

One-half cup salted dry-roasted peanuts
One-half cup roasted sunflower seeds
One-half cup raisins
2 cups uncooked old fashioned oatmeal
2 cups toasted rice cereal, such as Rice Krispies
One-half cup peanut butter (smooth or crunchy)
One-half cup packed brown sugar
One-half cup light corn syrup
1 teaspoon vanilla

In a large bowl, mix together the peanuts, sunflower seeds, raisins, oatmeal, and toasted rice cereal. Set aside.

In a medium microwaveable bowl, combine the peanut butter, brown sugar, and corn syrup. Microwave on high for 2 minutes. Add vanilla and stir until blended.

Pour the peanut butter mixture over the dry ingredients and stir until coated.

Spoon the mixture into an 8-inch by 8-inch pan coated with cooking spray. Press down firmly. (It helps to coat your fingers with margarine, oil, or cooking spray.)

Let stand for about an hour, then cut into squares. Refrigerate bars, loosely covered with plastic wrap.

From "Nancy Clark's Sports Nutrition Guidebook" 3rd edition by Nancy Clark (Human Kinetics \$18.95)

Per serving: 205 calories (percent calories from fat, 37), 6 grams protein, 29 grams carbohydrate, 2 grams fiber, 9 grams fat (1 gram saturated fat), 0 milligrams cholesterol, 152 milligrams of sodium.

Nutritional Bonus Points: The nuts and sunflower seeds boost the Vitamin E content, a potent antioxidant, to 15% of daily needs.

[Grocery List](#)

[Dry roasted peanuts](#)

[Sunflower seeds](#)

Raisins
Uncooked oatmeal
Rice Krispies
Peanut butter
Brown sugar
Light corn syrup
Vanilla
Cooking spray

In the Kitchen

Large Bowl
Medium Bowl
Measuring cups
Measuring spoons
Wooden stir spoon
8 x 8 pan
Plastic wrap

Fruitful Morning Muesli

Hand on: 5 minutes
Total time: 5 minutes

Makes 4 servings

2 cups quick or old fashioned oatmeal (uncooked)
2 cups unsweetened apple juice
1 and one-half cups fresh fruit (any combination of peaches, nectarines, or strawberries)
1 8-ounce carton of vanilla low-fat yogurt
2 Tablespoons chopped nuts (optional)

Combine all ingredients except nuts; mix well
Cover; refrigerator 8 hours or overnight
Serve cold; sprinkle with nuts, if desired. Refrigerate in airtight container up to 4 days.

Source: www.quakeroatmeal.com

Per serving (with nuts): 293 calories (percent calories from fat, 18), 10 grams protein, 53 grams carbohydrate, 5 grams fiber, 6 grams fat (1 gram saturated fat), 3 milligrams cholesterol, 45 milligrams of sodium.

Nutritional Bonus Points: This healthy breakfast cereal is lower in sugar, fat, and sodium than most store brands of muesli. The addition of yogurt gives you 493 milligrams of

potassium (10% of recommendation) and 135 milligrams of calcium (14% of recommendation).

Grocery List

Uncooked oatmeal
Unsweetened apple
juice
Fresh fruit
Low fat vanilla yogurt
(18 oz carton)
Chopped nuts

In the Kitchen

Large Bowl
Plastic wrap
Tupperware to store

Scrambled Egg and Salsa Sandwich

Pair this with a glass of juice

Hands on: 10 minutes
Total time: 10 minutes

Serves one

1 scrambled egg
1 teaspoon mild salsa or ketchup
One-quarter cup shredded cheddar cheese
1 small, whole-wheat pita pocket, cut in half

Fill pita halves with egg, salsa or ketchup, and cheese

From “The Complete Idiot’s Guide to Feeding Your Baby and Toddler” by Elizabeth Ward (Alpha Books, \$16.96)

Per serving: 328 calories (percent calories from fat, 40), 20 grams protein, 31 grams carbohydrate, 5 grams fiber, 15 grams fat (7 grams saturated fat), 229 milligrams cholesterol, 757 milligrams of sodium.

Nutritional Bonus Points: This high protein, high fiber breakfast also provides about 310 milligrams of calcium, about the same as a glass of milk.

Grocery List

Eggs
Mild salsa
Shredded cheddar cheese
Pita bread
100% Juice

In the Kitchen

Skillet (to cook egg)
Spatula
Paper plate
Two hands

Iced Café Latte

Hand on: 3 minutes
Total time: 4 minutes

Makes 2 servings

One 12-ounce can evaporated skim milk
4 teaspoons instant coffee
3 teaspoons sugar
Ice cubes

Combine evaporated milk, instant coffee, and sugar in 2-cup glass measure that is microwave safe. Microwave on high (100%) power for 1 minute; stir well. Pour over ice cubes.

Adapted from: www.cooksrecipes.com

Per serving: 165 calories (percent calories from fat, 2), 13 grams protein, 27 grams carbohydrate, 0 grams fiber, less than 1 gram fat (less than 0.5 grams saturated fat), 6 milligrams cholesterol, 197 milligrams of sodium.

Nutritional Bonus Points: This healthy version of a café latte provides half of your daily need for calcium. It also provides 15% of the daily need for potassium, a mineral needed for healthy blood pressure.

Grocery List

12 oz evaporated skim milk
Instant coffee
Sugar

In the Kitchen

Ice cubes
Pyrex measure cup
Mug
Spoon

Fruity Honey Smoothie

Hands on: 10 minutes
Total time: 10 minutes

Makes two large servings

1 cup frozen strawberries
1 banana
2 Tablespoons honey
1 cup fat-free milk
One-half cup plain or vanilla low-fat yogurt

In a blender combine all ingredients; process until smooth.

Modified from National Honey Board

Per serving: 225 calories (percent calories from fat, 8), 9 grams protein, 47 grams carbohydrate, 2.5 grams fiber, 2 grams fat (< 1 gram saturated fat), 6 milligrams cholesterol, 110 milligrams of sodium.

Nutritional Bonus Points: Naturally occurring sugars from fruit and dairy foods make this a high carb recipe, but there is less carb in one serving than in a large bagel. This smoothie also is a good source of vitamin C (strawberries) and calcium (dairy).

Grocery List

Frozen strawberries
Banana
Honey
Skim milk

Plain yogurt

In the Kitchen

Blender

Serving glass

Spoon

Measuring cup

Measuring spoon

Peach Smoothie

Hands on: 10 minutes

Total time: 10 minutes

Makes two 16-ounce servings or four 8-ounce servings

1 banana, peeled and cut into 3-equal pieces

One-half cup fresh or frozen raspberries

2 peaches, skin on, pitted and cut into chunks

1 cup vanilla low-fat yogurt

1 cup low-fat or skim milk

1 cup crushed ice

Place all ingredients in blender and blend until smooth.

Adapted from: The Working Parents Cookbook. Jeff and Jodie Morgan. San Francisco: Chronicle Books. 2004. \$22.95.

Nutritional Bonus Points: One serving provides about half of your daily need for calcium.

Grocery List

Bananas

Frozen raspberries

Peaches

Vanilla yogurt

Skim milk

In the Kitchen

Ice cubes

Measuring cup

Cutting knife

Blender

Serving glass

Starters, Soups and Snacks

Seven-Layer Tex-Mex Dip

Serve with your favorite baked chips or pita bread wedges

Hands On: 15 minutes

Total Time: 15 minutes

1 16-ounce can fat-free refried beans
One half cup salsa
1 cup fat free sour cream
1 cup shredded reduced fat cheddar cheese
2 medium tomatoes, chopped
1 medium avocado, seeded, peeled, and diced
2 Tablespoons sliced green onions
2 Tablespoons chopped black (ripe) olives

In a medium bowl, stir together the refried beans and salsa. Spread the bean mixture in a 9-inch platter or pie plate. Spread the sour cream on top of the bean layer. Then layer the shredded cheese, tomatoes, avocado, green onions and olives on top. Serve immediately or cover and refrigerate up to four hours.

Makes 16 servings.

From "Healthy Homestyle Cooking, by Evelyn Tribble (St. Martin's Press \$16.95)

Per serving: 80 calories (percent calories from fat, 30), 5 grams protein, 9 grams carbohydrate, 2 grams fiber, 3 grams fat (less than one gram saturated fat), 4 milligrams cholesterol, 193 milligrams of sodium.

Nutritional Bonus Points: By substituting fat-free and reduced fat ingredients you save 5 grams of fat and 50 calories per serving.

Grocery List

Refried beans

Salsa

Sour cream (fat free)

Shredded cheddar cheese

Tomatoes

Avocado

Green onion

Black olives
Baked chips

In the Kitchen

Medium bowl
Cutting knife
Paper plates
Stirring spoon
9x9 pan, pie dish
Plastic wrap
Serving spoon

Roasted Tomato Soup

Hand on: 15 minutes
Total time: 3 hours

Makes 6 servings, about three-quarters cup each.

8-10 ripe tomatoes (3 pounds), cut in half and seeded
1 and one-half teaspoons extra-virgin olive oil
2 red onions, chopped
1 clove garlic, minced
3 cups reduced-sodium chicken broth
3 tablespoons chopped fresh basil
Salt and pepper to taste

Preheat broiler. Coat a baking sheet with cooking spray. Place tomatoes on the prepared baking sheet, cut-side down. Broil until skins are blistered, about 10 minutes. Set aside to cool. Slip the skins off and chop tomatoes coarsely.

Heat olive oil in medium saucepan over medium-low heat. Add onions and cook, stirring often, for 5 minutes. Add garlic and cook, stirring until the onions are very soft, about 5 minutes longer. Stir in tomatoes and cook, stirring for 1 minute.

Transfer the mixture to a food processor or blender and process until smooth; return to the saucepan. Stir in broth and bring to a boil. Reduce heat to low and simmer for 5 minutes. Remove from heat and stir in basil. Season with salt and pepper. Cover loosely and refrigerate until chilled, two and half to three hours.

From "The Essential Eating Well Cookbook" edited by Patsy Jamieson (The Countryman Press \$29.95)

Per serving: 80 calories (percent calories from fat, 19), 4 grams protein, 14 grams carbohydrate, 3 grams fiber, 2 grams fat (less than one half gram saturated fat), 0 milligrams cholesterol, 298 milligrams of sodium.

Nutritional Bonus Points: One serving contains 7 milligrams of lycopene and provides 75% of the daily need for vitamin C.

Grocery List

Tomatoes
Olive oil
Red onion
Garlic
Chicken broth
Fresh basil

In the Kitchen

Cutting knife
Cutting board
Access to oven
Salt and pepper
Medium sauce pan
Stirring spoon
Food processor

Lazy Day Beef and Vegetable Soup

Hands on: 15 minutes
Total time: 6 to 9 hours

Makes 8 servings (1 and one-half cups each).

2 pounds beef round steak, trimmed of all fat and cut into half inch cubes
2 cans (14 ounces each) of low sodium beef broth
1 can (15 ounces) chickpeas, drained
1 can (14 and one-half ounces) diced tomatoes with garlic and basil, un-drained
1 cup water
1 teaspoon Mrs. Dash Classic Italiano Seasoning
One-half teaspoon pepper
2 cups frozen mixed vegetables
1 cup uncooked ditalini or other small pasta

Combine beef, broth, chickpeas, tomatoes, water, and seasoning in a 4 and one-half to 5 and one-half ounce slow cooker; mix well. Cover and cook on High for 5 hours or on Low for 8 hours (no stirring is necessary during cooking.)

Stir in mixed vegetables and pasta. Continue cooking, covered, 1 hour until beef and pasta are tender. Stir well before serving.

Modified from “Slow Cooker Beef Meals” National Cattleman’s Beef Association
(www.beef.org)

Per serving: 275 calories (percent calories from fat, 16), 4 grams protein, 32 grams carbohydrate, 5 grams fiber, 5 grams fat (2 grams saturated fat), 40 milligrams cholesterol, 443 milligrams of sodium.

Nutritional Bonus Points: By using low sodium beef broth and a salt-free seasoning the sodium was significantly reduced from the original recipe, which contained 1200 milligrams of sodium per serving. The beef provides almost one-third of your daily need for vitamin B12 and zinc; these two nutrients are needed for strong immunity and are found predominantly in meat.

Grocery List

Beef round steak

Beef broth

Chickpeas

Can of diced tomatoes

Ms Dash seasoning

Frozen mixed vegetables

Small pasta

In the Kitchen

Knife

Cutting board

Water

Pepper

Can opener

Slow cooker

Spoon

Bowls for serving

Salads and Sides

Spinach Salad with Warm Maple Dressing

Pair this salad with a bowl of soup and slice of crusty whole grain bread.

Hand On: 15 minutes

Total Time: 15 minutes

2 Tablespoons chopped pecans
1 10-ounce package of fresh spinach, torn or 12 cups of baby spinach
1 cucumber, peeled, seeded, and cut into one-quarter inch slices
2 teaspoons extra virgin olive oil
1 green onion, finely chopped
One-quarter cup cider vinegar
2 Tablespoons pure maple syrup
Salt and freshly ground pepper to taste
One-quarter cup smoked Gouda cheese

Toast pecans in a small dry skillet over low heat, stirring often, until fragrant, 2 to 3 minutes. Transfer to a small bowl and let cool. Toss spinach and cucumber in a salad bowl. Heat oil in a small skillet over medium-low heat. Add green onions and cook, stirring until softened, about 4 minutes. Add vinegar and maple syrup and bring to a boil. Season with salt and pepper. Immediately pour dressing over the spinach and cucumber. Toss well and sprinkle with cheese and toasted pecans.

Makes 4 servings, about 2 cups each.

From "The Essential Eating Well Cookbook, edited by Patsy Jamieson (The Countryman Press \$29.95)

Per serving: 122 calories (percent calories from fat, 50), 6 grams protein, 11 grams carbohydrate, 9 grams fiber, 7 grams fat (2 grams saturated fat), 9 milligrams cholesterol, 186 milligrams of sodium.

Nutritional Bonus Points: This nutrient rich salad has 146 micrograms (37% of the daily value), along with 100% of the daily value for vitamin A and 45% of vitamin C.

Grocery List

Chopped pecans

Fresh spinach

Cucumber

Olive oil

Green onion

Cider vinegar
Maple syrup
Gouda cheese

In the Kitchen

Salt and pepper
Measuring spoon
Measuring cup
Cutting knife
Skillet
Small bowl
Large salad bowl

Ambrosia Salad

Hand on: 10 minutes
Total time: 40 minutes

This makes a sweet ending to a meal.

Makes 4 servings

1 cup mandarin oranges, drained
1 cup mini-marshmallows
1 cup Stoneyfield Farms low fat vanilla yogurt
1 cup pineapple chunks, drained
One-half cup shredded coconut

Combine all ingredients and toss gently. Allow to rest in refrigerator for a least 30 minutes for best flavor.

Adapted From: www.stoneyfield.com (click on recipes)

Per serving: 217 calories (percent calories from fat, 18), 3 grams protein, 41 grams carbohydrate, 2 grams fiber, 4 grams fat (3 grams saturated fat), 4 milligrams cholesterol, 70 milligrams of sodium.

Nutritional Bonus Points: Using yogurt in place of sour cream, cuts the fat and calories in this salad. To jazz up the flavor, try blueberry or strawberry flavored yogurt.

Grocery List

Mandarin oranges
Mini marshmallows
Low fat yogurt (plain)

Pineapple chunks
Shredded coconut

In the Kitchen
Medium bowl
Can opener
Measuring cup
Plastic wrap

Waldorf Salad

Hands on: 25 minutes
Total time: 1 hour and 25 minutes

Makes 4 servings of 1 cup each

One half cup water
One quarter cup fresh lemon juice, divided
2 firm, ripe pears
1 Granny Smith apple
3 ribs celery, split lengthwise and cut into one-half inch pieces
1 cup seedless red or green grapes, halved
2 Tablespoons finely minced walnuts
Two-thirds cup low-fat or fat-free vanilla-flavored yogurt
2 Tablespoons low-fat mayonnaise
2 teaspoons sugar

Combine the water with 2 Tablespoons of the lemon juice in a medium bowl. Working with one piece of fruit at a time, core and dice pears and apple, and toss with the water mixture. Refrigerate for 10 minutes. Drain the fruit, place it in a large bowl, add the celery, grapes, and walnuts, and toss gently. Combine the yogurt, mayonnaise, the remaining two tablespoons of lemon juice and the sugar, and pour over the fruit mixture. Toss. Cover and chill for at least 1 hour before serving.

From "The Volumetrics Weight-Control Plan" by Barbara Rolls and Robert A. Barnett (Quill Publishers \$13.00)

Per serving: 173 calories (percent calories from fat,18), 4 grams protein, 35 grams carbohydrate, 4 grams fiber, 4 grams fat (less than one half gram saturated fat), 2 milligrams cholesterol, 128 milligrams of sodium.

Nutritional Bonus Points: This slimmed down version of a holiday favorite is also rich in potassium and magnesium, two minerals that help control blood pressure.

Grocery List

Lemon juice

Pears

Apple

Celery

Red/green grapes

Walnuts

Vanilla yogurt

Low fat mayonnaise

Sugar

In the Kitchen

Water

Measuring spoon

Cutting knife

Cutting board/ surface

Medium bowl

Small bowl

Plastic wrap

Honey-Mustard, Peanut, Apple, and Pepper Slaw

Hands on: 15 minutes

Total time: One hour and 15 minutes

Makes 6, three-quarters cup servings.

4 cups shredded cabbage

1 red bell pepper, seeded and cut into julienne strips

1 green bell pepper, seeded and cut into julienne strips

1 medium red apple, cored and chopped

1 cup salted peanuts

3 tablespoons peanut oil

3 tablespoons Dijon mustard

3 tablespoons honey

1 clove garlic, minced

2 teaspoons, Balsamic vinegar

In a large bowl, combine cabbage, red and green peppers, apple, and peanuts. In a jar with a screw-top lid, place peanut oil, mustard, honey, garlic, and vinegar. Screw lid on tightly and shake vigorously until mixed well. Pour over slaw and toss to coat. Chill for 1 to 3 hours.

From: www.peanut-institute.org (click on Recipes)

Per serving: 275 calories (percent calories from fat, 59), 8 grams protein, 22 grams carbohydrate, 4.5 grams fiber, 18 grams fat (2.8 grams saturated fat), 0 milligrams cholesterol, 286 milligrams of sodium.

Nutritional Bonus Points: One serving of the slaw is high in fiber and provides 100% of your daily need for vitamin C and 25% of your need for vitamin A.

Grocery List

Cabbage
Red bell pepper
Green bell pepper
Red apple
Salted peanuts
Peanut oil
Dijon Mustard
Honey
Garlic
Balsamic vinegar

In the Kitchen

Measuring spoons
Measuring cups
Cutting knife
Cutting board
Large mixing bowl
Air tight jar
Stirring spoon

Main Event

Parmesan topped salmon

Hands on: 10 minutes
Total time: 30 minutes

Serves 4

Serve this dish with whole grain brown rice and steamed broccoli.

Vegetable oil spray
4 salmon fillets (about 4 ounces each)
1 Tablespoon plus 1 teaspoon of light mayonnaise

1 medium garlic clove, minced
Dash of white pepper
2 Tablespoons shredded Parmesan cheese
One-half teaspoon paprika

Preheat oven to 375 degrees F.

Lightly spray a shallow roasting pan with vegetable oil spray. Rinse the fish and pat dry with paper towels. Place the fish in the pan. In a small bowl, stir together the mayonnaise, garlic, and white pepper. Lightly spread on each fillet. Sprinkle with the Parmesan cheese and paprika.

Bake for 15 to 20 minutes or until the fish flakes easily when tested with a fork.

From "American Heart Association No-Fad Diet" by American Heart Association
(Clarkson Potter/Publishers, \$24.95)

Per serving: 235 calories (percent calories from fat, 57), 23 grams protein, less than 1 gram carbohydrate, less than 1 gram fiber, 14 grams fat (3 grams saturated fat), 70 milligrams cholesterol, 147 milligrams of sodium.

Nutritional Bonus Points: Don't let the 57% of calories from fat scare you away from this heart-healthy dish. The fat contains both omega-3-fatty acids and monounsaturated fats. Salmon is also a good source of the B-vitamins niacin and B12, and the antioxidant, selenium.

Grocery List

Salmon fillets (4)
Light mayonnaise
Garlic
White pepper
Parmesan cheese
Paprika
Brown rice

In the Kitchen

Cooking spray
Measuring spoon
Shallow pan
Paper towels
Access to oven
spatula

Turkey Burritos

Makes 6 servings (serving size: 1 burrito)

Hands on: 30 minutes

Total time: 35 minutes

Cooking spray
One-half cup chopped onion
2 garlic cloves, minced
1 pound ground turkey breast or shredded chicken breast
One-half cup water
3 tablespoons bottled salsa
2 teaspoons dried oregano
2 teaspoons ground cumin
1 and one half teaspoons chili powder
1 (4.5-ounce) can chopped green chilies, undrained
6 (8-inch) flour tortillas
1 cup (4 ounces) shredded reduced-fat Mexican blend cheese

Heat a large nonstick skillet coated with cooking spray over medium heat. Add chopped onion and minced garlic, and cook for 3 minutes or until onion and garlic are tender, stirring frequently. Add ground turkey breast or shredded chicken, and cook mixture for 10 minutes or until the turkey is browned, stirring to crumble. Stir in the water and the next 5 ingredients (water through chopped green chilies). Cover mixture and cook for 5 minutes over medium heat.

Warm flour tortillas according to the package directions. Spoon 2 and one half tablespoons Mexican blend cheese down the center of each tortilla. Top each tortilla with one-half cup turkey mixture; roll up.

From: Cooking Light Magazine, November, 2003

Per serving: 329 calories (percent calories from fat, 30), 24 grams protein, 32 grams carbohydrate, 4 grams fiber, 11 grams fat (3 grams saturated fat), 63 milligrams cholesterol, 513 milligrams of sodium.

Nutritional Bonus Points: This flavorful low-fat version of a classic Mexican dish is also a good source of fiber and vitamin C.

Grocery List

Onion

Garlic

Ground turkey (1 lb)

Salsa

Dried oregano

Ground cumin

Chili powder
4.5 oz can of green chiles
Mexican blend cheese
tortillas

In the Kitchen

Cooking spray
Cutting knife
Water
Measuring spoons
Nonstick skillet
Stirring utensil
Access to microwave
Serving spoon

Lemon-Barbecued Chicken

Add a side of deli potato salad and green salad

Hands on: 15 minutes
Total time: 45 minutes

Two and one-half pounds frying chicken, quartered, skinned, all visible fat removed
Dash paprika
Dash cayenne pepper
One-quarter cup fresh lemon juice
One-quarter cup honey
1 Tablespoon sesame seeds, toasted

Preheat broiler. Rinse chicken and pat dry. Season chicken lightly with paprika and cayenne pepper. Combine lemon juice and honey in small saucepan, mixing thoroughly. Heat over medium heat until warm and set aside 2 tablespoons. Coat chicken pieces with about half of the rest of lemon-honey mixture. Place chicken on broiler rack. Broil 4 to 5 minutes from the heat for 15 minutes. Baste occasionally with remaining lemon-honey mixture. Turn pieces over, baste and broil 15 minutes longer or until tender. Combine sesame seeds with the reserved 2 tablespoons lemon-honey mixture. Spoon over chicken just before serving. This may also be cooked on a charcoal or gas grill.

Serves 4

From: The American Heart Association website at www.deliciousdecisions.org

Per serving: 360 calories (percent calories from fat, 40), 35 grams protein, 19 grams carbohydrate, 0.5 grams fiber, 16 grams fat (4 grams saturated fat), 106 milligrams cholesterol, 100 milligrams of sodium.

Nutritional Bonus Points: The only sodium in this recipes comes from the naturally occurring sodium in the chicken. Compare this recipe at 100 milligrams of sodium per serving with a similar portion of KFC at 1,150 milligrams of sodium.

Grocery List

2.5 lb of chicken
Paprika
Cayenne pepper
Lemon juice
Honey
Sesame seeds

In the Kitchen

Access to oven
Cutting knife
Cutting surface
Small sauce pan
Serving spoon
Tongs (to turn chicken)
Aluminum foil

Pita Pizza

Hands on Time: 20 min
Total Time: 35 min
3 whole wheat pita breads, split
One and one-half cups marinara sauce
1 Tablespoon olive oil
1 cup sliced zucchini
1 cup chopped broccoli
1 cup diced red peppers
Three-quarters pound ground turkey (extra lean)
2 ounces part-skim mozzarella cheese

Preheat the oven to 350 degrees. Spread some of the marinara sauce on each pita bread pizza. Place all pizzas on a cookie sheet. Heat the oil in a skillet over medium-high heat. Add the zucchini, broccoli, and peppers and sauté for 10 minutes. Remove the vegetables from the skillet and place on all the pizzas. In the same skillet, brown the turkey meat until no pink remains. Divide the turkey evenly over each pizza. Sprinkle cheese on each pizza and bake for 5 minutes until the cheese melts.

Makes 6 servings

From: "200 Healthy Recipes in 30 Minutes or Less." Robyn Webb (Small Steps Press, \$16.95)

Per serving: 242 calories (percent calories from fat, 27), 20 grams protein, 25 grams carbohydrate, 4.5 grams fiber, 7 grams fat (2 grams saturated fat), 28 milligrams cholesterol, 493 milligrams of sodium.

Nutritional Bonus Points: The peppers and broccoli make this recipe rich in vitamin C (100% of daily need) and vitamin A (43% of daily need), and the whole wheat pita is a whole grain food high in fiber.

[Grocery List](#)

[Pita bread](#)

[Marinara sauce](#)

[Olive oil](#)

[Zucchini](#)

[Broccoli](#)

[Red peppers](#)

[Ground turkey](#)

[Mozzarella cheese](#)

[In the Kitchen](#)

[Cookie sheet](#)

[Access to oven](#)

[Spoon](#)

[Skillet](#)

[Spatula](#)

[Aluminum foil \(for easy clean up\)](#)

Macaroni Chili

Hands on: 15 minutes

Total time: 35 minutes

Makes 6 servings

12 ounces of lean ground beef

Three quarters cup chopped onion

1 glove garlic, minced

1 15.5 ounce can red kidney beans, rinsed and drained

1 8-ounce can tomato sauce

1 8-ounce can stewed tomatoes (with juices) chopped

Three-quarters cup macaroni

One-quarter cup water
2 teaspoons chili powder
1 teaspoon ground cumin
One-third cup finely shredded reduced fat sharp cheddar cheese

In a large skillet, cook the ground beef, onions, and garlic until the beef is browned, stirring occasionally. Drain and discard the fat and juices. Stir in the beans, tomato sauce, tomatoes (with juices) macaroni, water, chili powder, and cumin. Bring to a boil, then reduce the heat. Cover and simmer for 10 minutes. Stir well, cover and simmer about 10 minutes more until the macaroni is tender but firm. Sprinkle with the cheese. Cover and heat over low heat just until the cheese is melted.

From: "Healthy Homestyle Cooking." Evelyn Tribble (Rodale Press, \$27.95)

Per serving: 290 calories (percent calories from fat, 37), 20 grams protein, 26 grams carbohydrate, 6 grams fiber, 11 grams fat (5 grams saturated fat), 44 milligrams cholesterol, 466 milligrams of sodium.

Nutritional Bonus Points: This family friendly recipe is high in fiber (thanks to the beans) and lower in fat than the traditional beef macaroni casserole.

Grocery List

Lean ground beef
Onion
Garlic
15 oz can of red kidney beans
8 oz tomato sauce
8 oz stewed tomatoes
Macaroni
Chili powder
Ground cumin
Shredded Cheddar cheese

In the Kitchen

Water
Skillet
Spatula
Cutting knife
Cutting board
Serving bowls

Mango Mango Salad with Chicken

Hand on: 20 minutes

Total time: 50 minutes

Makes 6 servings

One-third cup reduced fat mayonnaise
3 green onions, chopped
2 cups cooked chicken breast, diced
2 cups ripe mango, chopped
1 green bell pepper, seeded and chopped
2 Tablespoons canola oil
1 Tablespoon apple cider vinegar
1 Tablespoon lemon juice
1 teaspoon sugar
Lettuce leaves

Combine the mayonnaise and green onions in a small bowl, cover and chill. Combine the chicken, mango, and bell pepper in a large bowl. Combine the oil, vinegar, lemon juice, and sugar in a container with a tight lid. Shake well. Add the mayonnaise and green onion and stir well. Pour the dressing over the salad, toss well, cover and chill for 30 minutes. To serve, spoon 1 cup of salad onto a plate lined with a lettuce leaf.

From "The New Soul Food Cookbook for People with Diabetes, by Fabiola Demps Gaines and Ronice Weaver (American Diabetes Association \$14.95)

Per serving: 212 calories (percent calories from fat, 47), 12 grams protein, 16 grams carbohydrate, 2 grams fiber, 11grams fat (1.7 grams saturated fat), 35 milligrams cholesterol, 352 milligrams of sodium.

Nutritional Bonus Points: This salad is rich in vitamin C from both the mango and the bell pepper.

Grocery List

Low fat mayonnaise
Green onions
Chicken breast
Mango
Green bell pepper
Canola oil
Apple cider vinegar
Lemon juice
Sugar
Lettuce

In the Kitchen

Cutting knife

Cutting board

Measuring spoons

Measuring cups

Small bowl

Large bowl

Tupperware container

Serving spoon

Baked Chicken Cutlets

Hands on: 10 minutes

Total time: 40 minutes

Makes six servings

One-half cup Italian seasoned dry bread crumbs

3 Tablespoons grated Parmesan cheese

One-quarter teaspoons garlic powder

6 boneless chicken breasts (about one and three-quarters pounds)

One-quarter cup light butter or margarine, melted

Preheat oven 425 degrees F.

Combine bread crumbs, cheese, and garlic powder. Dip chicken in melted margarine, then bread crumb mixture, coating each piece of chicken well.

On baking sheet, arrange chicken. Bake about 30 minutes or until chicken reaches internal temperature of 170 degrees F.

From: www.takecontrol.com

Per serving: 306 calories (percent calories from fat, 50), 30 grams protein, 7 grams carbohydrate, 0.4 grams fiber, 17 grams fat (4 grams saturated fat), 86 milligrams cholesterol, 338 milligrams of sodium.

Nutritional Bonus Points: One serving of chicken is a good source of the B-vitamin, niacin (70% of daily need).

Grocery List

Bread crumbs

Parmesan cheese
Garlic powder
Boneless chicken breasts
Light butter or margarine

In the Kitchen

Measuring spoons
Measuring cups
Access to oven
Small bowl
Paper plate
Baking sheet
Aluminum foil (for easy clean up)

Sweet Endings

Chocolate-Dipped Dried Fruit

Hands on: 20 minutes
Total time: 35 minutes

6 ounces good quality bittersweet (not unsweetened) chocolate, finely chopped, and divided
1 pound mixed dried fruit, such as apricots, figs, peaches, pears, apples, and/or pineapple

Melt 4 ounces of chocolate in a double broiler over hot water (or in a microwave on low in 30-second bursts). Stir often to ensure even melting.

Remove the top pan from the double broiler and wipe the bottom dry (or remove bowl from microwave). Stir in the remaining 2 ounces of chocolate, in 2 additions, until thoroughly melted and smooth.

Line a baking sheet with wax paper. Dip each piece of dried fruit halfway into the chocolate, letting the excess chocolate drip off, then place the fruit on the wax paper. When all the fruit is dipped, refrigerate until the chocolate has set, at least 15 minutes. Serve at room temperature. Makes about 5 dozen pieces. Keep the fruit in a tightly covered container in the refrigerator for up to one week.

Source: The Essential Eating Well Cookbook. Patsy Jamieson, Editor. The Countryman Press, Woodstock, Vermont. 2004. \$29.95

Nutritional Bonus Points: This tastes great and is a good source of antioxidants.

Grocery List

Bittersweet chocolate

Dried fruit

In the Kitchen

Double boiler (sauce pan and heat resistant bowl)

Stirring spoon

Baking sheet

Wax paper

Toothpicks

Refrigerator

Tupperware (for storage)



ACSM Information On...

PROTEIN INTAKE FOR OPTIMAL MUSCLE MAINTENANCE

Resistance training is an important part of a complete exercise regimen. Consuming the appropriate amount and type of protein to maintain and build muscle is just as important.

A Complete Physical Activity Program

A well-rounded physical activity program includes aerobic exercise and strength training exercise, but not necessarily in the same session. This blend helps maintain or improve cardiorespiratory and muscular fitness and overall health and function. Regular physical activity will provide more health benefits than sporadic, high intensity workouts, so choose exercises you are likely to enjoy and that you can incorporate into your schedule.

ACSM's physical activity recommendations for healthy adults, updated in 2011, recommend at least 30 minutes of moderate-intensity physical activity (working hard enough to break a sweat, but still able to carry on a conversation) five days per week, or 20 minutes of more vigorous activity three days per week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation.

Examples of typical aerobic exercises are:

- Walking
- Running
- Stair climbing
- Cycling
- Rowing
- Cross country skiing
- Swimming

In addition, strength training should be performed a minimum of two days each week, with 8-12 repetitions of 8-10 different exercises that target all major muscle groups. This type of training can be accomplished using body weight, resistance bands, free weights, medicine balls or weight machines.

What is Protein?

In the human body, proteins are a part of every cell and tissue, including our muscle. Our bodies are constantly recycling proteins on a daily basis. The proteins that we eat in our diet can be used to replace broken down proteins in order to maintain balance.

Proteins contain essential and non-essential amino acids. Amino acids are the building blocks for all our proteins in the body. Essential amino acids are those that our body cannot make on its own and thus, these amino acids must come from the foods we eat. A complete protein is named just that because it will contain all of the essential amino acids our body needs to repair and grow. These proteins sources are animal-based and include meat, poultry, fish, eggs and cheese. Foods like rice and dry beans also contain protein, but may not have all the essential amino acids our bodies need. However, when combined together, these two foods can provide adequate amounts of all the essential amino acids.

Protein can be found in relatively high concentrations in the following foods:

- meats, poultry, and fish
- legumes (dry beans and peas)
- tofu
- eggs
- nuts and seeds
- milk and milk products (cheese and yogurt)
- grains, some vegetables and some fruits (provide only small amounts of protein relative to other sources)

Protein intake from animal sources rather than plant-based sources tend to have better absorption rates. However, even vegetarians can achieve adequate protein intake when a variety of plant sources are included ensuring intake of all essential amino acids.

Here are some practical protein equivalents in common foods:

- One cup of milk has eight grams of protein
- One cup of soy milk has about seven grams of protein
- One egg has six grams of protein
- A three ounce piece of meat has about 21 grams of protein
- One cup of dry beans has about 16 grams of protein
- An eight ounce container of yogurt has about 11 grams of protein

Recommended Intakes of Protein

In general, it is recommended that 10-35 percent of your daily energy intake comes from protein. If you consume 2,000 calories per day, this would work out to be between 200 to 700 calories of protein per day. The recommended daily intakes (RDIs) can also be calculated by a person's body weight. The Academy of Nutrition and Dietetics recommends that the average individual should consume 0.8 grams of protein per kilogram or 0.35 grams per pound of body weight per day for general health. So a person that weighs 75 kg (165 pounds) should consume an average of 60 grams of protein per day. Since there are approximately four calories per gram of protein, 60 grams of protein would result in the intake of 240 calories.

Muscle mass is built when the net protein balance is positive: muscle protein synthesis exceeds muscle protein breakdown. Research shows muscle protein turnover is the greatest after working out. Additionally, it has been shown that muscle mass increases over time when resistance exercise (i.e. weight lifting, body weight exercises, etc) is combined with nutrient intake.

However, as we age, we need to increase our protein intake. Around 50 years of age, we need to increase the protein in our diets to one gram per kilogram of our body weight to maintain muscle mass. People that exercise regularly also need to eat more protein than the recommended daily intake.

To increase muscle mass in combination with physical activity, it is recommended that a person that lifts weights regularly or is training for a running or cycling event eat a range of 1.2-1.7 grams of protein per kilogram of body weight per day, or 0.5 to 0.8 grams per pound of body weight. Consequently, the same 75 kilogram individual should increase their protein intake to 75 grams (300 calories) to 128 grams (512 calories) in order to gain muscle mass. This level of intake can generally be met through diet alone and without additional protein and amino acid supplementation.

When Should I Consume My Protein?

The process of protein turnover is increased with resistance training and can remain elevated for up to 48 hours in people beginning a new resistance training program. Therefore it is important to provide enough energy including protein so there is a sufficient pool of amino acids available to repair and build new muscle. Of course, you do not want to exercise on an empty stomach. In fact, exercising in an unfed state leads to an increase in protein loss making it more difficult for the body to both repair and build muscle.

Research suggests there are several benefits to pre-exercise protein supplementation. Pre-exercise protein supplementation helps to improve body composition by increasing resting energy expenditure up to 48 hours after exercise. This is important because it suggests that pre-exercise protein ingestion will not only help increase lean muscle mass and thus strength, but will also simultaneously reduce fat mass. However, the most scientifically

supported and most significant benefits of consuming protein prior to exercise may be improved recovery and hypertrophy. This is thought to occur because of improved amino acid delivery.

Protein supplementation after exercise may have a more profound impact on skeletal muscle hypertrophy. Several studies have demonstrated that protein ingestion following an acute bout of resistance training stimulates muscle protein synthesis for up to three hours. In contrast, failing to eat after exercise may limit protein synthesis and therefore limit potential progress in lean muscle tissue development. Research actually suggests there may be an "anabolic window" such that protein intake within an hour of exercise has the greatest influence on resistance training adaptations.

What Proteins Should I Consider?

Whey protein is beneficial in supporting muscle adaptations due to its rapid absorption rate in addition to casein that has a slower and more sustained rate of amino acid absorption over a few hours. Branched chain amino acids are similarly beneficial and have been shown to aid in recovery from exercise with respect to not only protein synthesis but also aiding in replacing our muscle glycogen and delaying fatigue associated with exercise. Generally, naturally occurring animal proteins contain 2:1:1 ratio of leucine, isoleucine and valine. These proteins have been identified as providing optimal support of muscle adaptations with exercise training. In order to meet the recommended RDA a consumption of approximately 45 mg/kg/day of leucine and 22.5 mg/kg/day of isoleucine and valine is suggested.

Summary

Protein supplementation has been shown to improve muscle building with regular exercise training. A diet based on the current protein intake recommendations may be achieved through a balanced diet and does not require additional supplementation. The benefits of resistance training and protein timing are not limited to sports performance or improving physique but can also delay the onset of age-related muscle loss and help preserve muscle mass and strength in the elderly helping to maintain independence and quality of life.

Slaying Active Pays Off!

Those who are physically active tend to live longer, healthier lives. Research shows that moderate physical activity—such as 30 minutes a day of brisk walking—significantly contributes to longevity. Even a person with risk factors like high blood pressure, diabetes or even a smoking habit can gain real benefits from incorporating regular physical activity into their daily life.

As many dieters have found, exercise can help you stay on a diet and lose weight. What's more – regular exercise can help lower blood pressure, control blood sugar, improve cholesterol levels and build stronger, denser bones.

The First Step

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Prior to Exercise

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ACSM Information On...

Selecting and Effectively Using Sports Drinks, Carbohydrate Gels and Energy Bars

Depending upon the length of your workout or competition, performance and endurance are primarily limited by loss of body fluids, drop in blood sugar levels, and depletion of muscle carbohydrate stores. All three can hinder performance. Sports drinks, carbohydrate gels and energy bars can help restore your body's fluids and carbohydrate levels.

A COMPLETE PHYSICAL ACTIVITY PROGRAM

A well-rounded physical activity program includes aerobic exercise and strength training exercise, but not necessarily in the same session. This blend helps maintain or improve cardiorespiratory and muscular fitness and overall health and function. Regular physical activity will provide more health benefits than sporadic, high intensity workouts, so choose exercises you are likely to enjoy and that you can incorporate into your schedule.

ACSM's physical activity recommendations for healthy adults, updated in 2011, recommend at least 30 minutes of moderate-intensity physical activity (working hard enough to break a sweat, but still able to carry on a conversation) five days per week, or 20 minutes of more vigorous activity three days per week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation.

Examples of typical aerobic exercises are:

- Walking
- Running
- Stair climbing
- Cycling
- Rowing
- Cross country skiing
- Swimming

In addition, strength training should be performed a minimum of two days each week, with 8-12 repetitions of 8-10 different exercises that target all major muscle groups. This type of training can be accomplished using body weight, resistance bands, free weights, medicine balls or weight machines.

SPORTS DRINKS

Sports drinks make an excellent fuel and hydration choice because they are a mix of carbohydrates and water. For exercise lasting anywhere from 60 minutes to several hours, drinking carbohydrate beverages significantly boosts endurance performance compared to drinking water. According to some research, you can expect an improvement in endurance of about 20 percent or more in workouts lasting over 90 minutes.

Most sports drinks offer a blend of carbohydrate sources, such as the sugars sucrose, glucose, fructose and galactose. A few beverages may also add maltodextrin, a complex carbohydrate comprising several glucose units. Some research suggests that sports drinks offering a blend of carbohydrates, such as glucose and sucrose, rather than a single carbohydrate source may improve the amount of carbohydrate that eventually gets to the muscles as fuel. By offering your intestinal tract different sugars, carbohydrate absorption is improved since different sugars are absorbed through different routes. This means more carbs make it to your muscles as fuel for

exercise or sports performance. Sports drinks also come with added electrolytes. Sodium, the electrolyte lost in the greatest amount in your sweat, helps maintain fluid balance in the body, promote the uptake of fluid in your intestines and improve hydration.

SPORTS DRINK CONSIDERATIONS:

- Most commercial sports drinks supply a blend of sugars: four to nine percent solution, or 13 to 19 grams of carbs, per eight ounces.
- Drinking one-and-a-half to four cups per hour (more if you have heavy sweat losses) will provide you with both the fluid and carbs you need for endurance.
- Choose a beverage flavor you enjoy to encourage you to drink appropriate amounts.
- Fitness waters do not provide enough carbohydrate to boost endurance, but they can keep you hydrated.
- Drinking before and after exercise is also an important factor in maintaining proper hydration levels.

CARBOHYDRATE GELS

Carbohydrate gels come in small, single-



serve packets, making them portable fuel that you can store in your pocket. Simply tear off the top at the perforation and squeeze the gel into your mouth. Gels consist of sugars and maltodextrins which are easily digested. Many gels come with added electrolytes that, as in sports drinks, help maintain fluid balance. Some gels also have additions, such as ginseng and other herbs, amino acids, vitamins, and co-enzyme-Q10. Research does not support that these ingredients have any performance benefit, but they probably are present in amounts that are too small to present any risk. Some gels also contain caffeine in varying amounts. Check the label and consult the manufacturer's website for specific content, as some gels have as much caffeine as a half cup of coffee, which may cause nervousness in those not accustomed to this stimulant.

CARBOHYDRATE GEL CONSIDERATIONS:

- Most carb gel packs contain 100 calories, or 25 grams of carbohydrates.
- Try to consume one to three packets for every hour of exercise.
- Gels come in a variety of flavors, including vanilla and strawberry. Find one you enjoy and swallow them down with four to eight ounces of water.

ENERGY BARS

There are many kinds of energy bars available for purchase, including high-protein bars and bars marketed specifically to women. High-carbohydrate bars make great choices for carbohydrate fueling both before and during a long workout. These bars typically provide about 70 percent of their calories from carbohydrates like sugars (brown rice syrup and sucrose) and grains (oats and rice crisps).

Glycemic index refers to how quickly these carbohydrates get into the circulation. Bars with high glycemic index, best during a workout, rapidly release carbohydrates into the blood stream, giving the muscles a quick injection of fuel. Bars with low glycemic index, best before exercise, result in a slower release of sugar into the circulation, creating sustained energy.

Carbohydrates are digested and appear in the circulation at different rates, which can make predicting the glycemic index of a bar based on its ingredients challenging. The protein and fat content of energy bars also affect absorption. Most bars have high glycemic index, despite their use of various grains and other complex carbohydrates as major ingredients.

ENERGY BAR CONSIDERATIONS:

- Select a bar with about 25-40 grams of carbohydrate and less than 15 grams of protein.
- Check the label for fat content because some bars are high in fat, which slows digestion, and is not helpful in exercising.
- Eat one bar about an hour prior to a long workout.
- If you are exercising for more than an hour, eat one high-carb bar per hour of exercise and drink plenty of water.

FRUITS

Real food, such as fruit, can also be used for fueling a workout. Fruit, whether dried or fresh, supplies a shot of carbohydrate that is well digested. Dried fruit can be easily transported and stored.

FRUIT CONSIDERATIONS:

- Most fruits provide about 15 grams of carbohydrate per serving. A serving of dried fruit equals about 1/4 cup, or the equivalent, of fresh fruit (two nectarine halves or four dried plums).
- Aim for one to two servings before a workout and two to three fruit servings every hour of running.
- Be sure to consume with plenty of water to stay hydrated.

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ACSM Information On...

Selecting and Effectively Using Hydration for Fitness

Water is the most essential component of the human body as it provides an important role in the function of cells. Important functions of water include transportation of nutrients, elimination of waste products, regulation and maintenance of body temperature through sweating, maintenance of blood circulation and pressure, lubrication of joints and body tissues, and facilitation of digestion. More than half of the human body is composed of water, and it is impossible to sustain life without it.

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In addition, strength training should be performed a minimum of two days each week, with 8-12 repetitions of 8-10 different exercises that target all major muscle groups. This type of training can be accomplished using body weight, resistance bands, free weights, machine balls or weight machines.

WATER LOSS

Exercise produces an elevation in body temperature, which depends on the intensity and duration of exercise, environmental conditions, clothing worn, and metabolic rate. In order to get rid of the excess heat, your body secretes sweat, which is primarily composed of water and electrolytes such as sodium. The evaporation of sweat is the primary mechanism of heat loss during exercise.

Exercise can lead to substantial water and electrolyte loss from sweat leading to dehydration and, in cases of excessive fluid intake, hyponatremia (low sodium in the blood). However, considerable variability exists from person to person with regard to sweat loss. Therefore, the fluid and electrolyte requirements needed for the athlete are variable from person to person as well. If water and electrolytes are not replaced from these losses, the athlete will have a decrease in performance and perhaps an adverse effect on his or her overall health.

FLUID BALANCE

Thirst is a signal that your body is headed toward dehydration. Therefore, it is

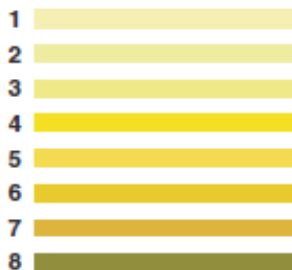
important to drink before you feel thirsty and to drink throughout the day. Thirst is not a good indicator of hydration and should not be used to monitor hydration status.

One way to check your hydration status is to weigh yourself before and after exercise. The before-exercise measurement is best as a nude weight first thing in the morning after urinating. Comparing your body weight before and after exercise can be used to estimate your sweat loss and your fluid requirements. Any weight loss is likely from fluid loss, so drinking enough to replenish these losses will maintain hydration. The table below shows us that over a one percent loss in body weight indicates dehydration and over five percent indicates serious dehydration. These fluid losses need to be replaced.

% Body Weight Change

Well Hydrated	-1 to +1%
Minimal Dehydration	-1 to -3%
Significant Dehydration	-3 to -5%
Serious Dehydration >	-5%

Another way to check hydration status is the urine color test. A large amount of light-colored urine means you are well hydrated. The darker the color, the more dehydrated you are.



DEHYDRATION

Dehydration is the loss of fluids and salts essential to maintain normal body function. Dehydration occurs when the body loses more fluids than it takes in. Dehydration can lead to:

- Muscle fatigue
- Loss of coordination
- Inability to regulate body temperature
- Heat illness (e.g., cramps, heat exhaustion, heat stroke)
- Decreased energy and athletic performance

Moderate caffeine intake does not affect hydration status or urine output. However, alcohol will increase your urine output and decrease hydration.

Enhancing palatability of a fluid will help to encourage fluid consumption. This can be done with proper flavoring, proper salt (sodium) content and drinking a cold beverage (15-21 degrees Celsius).

SPORTS BEVERAGES

Carbohydrates within a sports beverage help to replenish your sugar (glycogen) stores and electrolytes help to accelerate rehydration. Sports beverages for use during prolonged exercise should generally contain four to eight percent carbohydrate, 20-30 meq/L of sodium, and 2-5 meq/L of potassium. The need for carbohydrates and electrolytes within sports beverages increases with prolonged activity.

Carbohydrate consumption helps to sustain and improve exercise performance during high-intensity exercise longer than one hour as well as lower-intensity exercise for longer periods. You should ingest one-half to one liter of a sports drink each hour to maintain hydration. Also, sports drinks should not exceed a carbohydrate concentration of eight percent.

HYDRATION BEFORE EXERCISE

Check your hydration status before exercise because there is a wide variability in fluid needs for each person.

- Drink 16-20 fluid ounces of water or sports beverage at least four hours before exercise.
- Drink 8-12 fluid ounces of water 10-15 minutes before exercise.

Consuming a beverage with sodium (salt) and/or small meal helps to stimulate thirst and retain fluids.

HYDRATION DURING EXERCISE

- Drink 3-8 fluid ounces of water every 15-20 minutes when exercising for less than 60 minutes.
- Drink 3-8 fluid ounces of a sports beverage (5-8 percent carbohydrate with electrolytes) every 15-20 minutes when exercising greater than 60 minutes.

Do not drink more than one quart/hour during exercise.

HYDRATION GUIDELINES AFTER EXERCISE

Obtain your body weight and check your urine to estimate your fluid losses. The goal is to correct your losses within two hours after exercise.

- Drink 20-24 fluid ounces of water or sports beverage for every one pound lost.

OVERHYDRATION

Overhydration, also called water intoxication, is a condition where the body contains too much water. This can result in behavioral changes, confusion, drowsiness, nausea/vomiting, weight gain, muscle cramps, weakness/paralysis and risk of death.

In general, overhydration is treated by limiting your fluid intake and increasing the salt (sodium) that you consume. If overhydration is suspected, you should see your doctor for appropriate lab tests and treatment. You should not consume more than one liter per hour of fluid.

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Lesson 3

Objective: The participants will have a better understanding of metabolism, micronutrients and risks of poor nutrition and will be able to prepare SMART Goals for themselves.

Materials

PowerPoint

PowerPoint slides

Smart Goal Sheet

Lesson

Go over PowerPoint

Activity

Have participants prepare Smart Goals for them to work on the next few weeks.

Begin scheduling consulting sessions.



Nutrition 101

Metabolism, Micronutrients, and Risks of not Eating healthy

Metabolism and diet

- Metabolism—the process by which your body converts what you eat and drink into energy. It is all the chemical processes in the body.
- Dancers typically have lower metabolism
- High metabolism is favorable
 - Eating regularly increases metabolism
 - Fasting— slows it down
 - Lean muscle increases metabolism
 - To increase lean muscle you must consume plenty of protein and do weight-bearing exercise.

Metabolism– The Big Picture

- Metabolism is all the chemical process in the body
- Many nutrients are needed to help metabolize other nutrients
 - C: Carbs are needed to build muscle
 - B vitamins are needed to metabolize carbs, proteins, and fats
 - Minerals are needed to act as co-factors for enzymes
- This is why we cannot avoid eating certain food groups
 - Each food group have specific nutrients that are needed in our diet.

- Grains– B vitamins, iron, fiber, carbs
- Protein– protein, phosphorus, B vitamins, zinc, selenium
- Dairy– calcium, phosphorus, riboflavin, beta carotene, carbohydrates, protein
- Fruit– vitamins C, folate, potassium, carbohydrates, fiber
- Vegetables– vitamin A, C, E, K, folate, fiber



Micronutrients

Vitamin	Functions	Sources
A	Healthy teeth, skin and eyes	Eggs, meat, milk, cheese, dark green leafy vegetables, carrots, cod liver
B	Helps body use food energy, digest proteins, function of central nervous system, digestion and metabolism	Lean meats, eggs, fish, dairy products, soybeans, yeast, bran, fortified cereals, whole grains. <i>Note: there are a variety of B vitamins, this is a summary.</i>
C	Helps immune system, helps connective tissue, helps blood clot	Citrus fruits, green peppers, strawberries, tomatoes, broccoli, sweet and white potatoes, cantaloupe
D	"Sunshine vitamin" - helps absorb calcium (for healthy bones and teeth)	Dairy products, fish, soybeans, sunlight
E	Prevents body against damage from free radicals, helps form red blood cells (to carry oxygen)	Whole grains, corn, nuts, seeds, olive, soybean, green leafy vegetables, vegetable oils (sunflower oil, soybean oil)
K	Helps clotting, strong bones	Cabbage, cauliflower, spinach, soybeans

Micronutrients

Mineral	Functions	Sources
Calcium	Formation of bones and teeth, fluidity of nerve function and muscular activity	All dairy products, green leafy vegetables, legumes
Iron	Part of hemoglobin which carries oxygen in the blood to the body, vital part of system that produces energy in the body	Meat (especially red meats), poultry, fish, legumes, dried fruits, whole grains, leafy vegetables. <i>Note: iron in meat is better absorbed by the body.</i>
Magnesium	Bone strength, synthesis of proteins, muscle and nerve function	Fruits, legumes, whole grains, dark green vegetables, seafood
Phosphorus	Muscle and nerve function	Cheese, poultry, dairy products, vegetables, legumes, bananas

Adapted from Davis, 1997; Minnesota, 1998; NIH, 2001

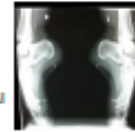
Anemia and Iron



- › Iron deficiency is common among women
- › Iron is important
 - › Transportation of oxygen throughout the body
 - › Low Iron means body can't get oxygen
- › Eat Iron rich foods to prevent
 - › Red meat, leafy greens, nuts, whole grains
 - › May need supplement



Calcium, Vitamin D and Bones



- › Many dancers have low bone mineral density
 - › Calcium and Vitamin D are essential for this
- › Consume 3 servings of dairy a day
 - › Everyday you do not consume enough your body removes calcium from the bones and they get weaker.
- › Vitamin D is needed to help build bones
 - › 20 minutes of sunlight a day
 - › Or supplement

Relative Energy Deficiency in Sport IRED-S

- › Formerly called Female Athlete Triad
 - › Disordered eating
 - › Poor nutritional decisions
 - › Common in dancers
 - › Amenorrhea
 - › Irregular or absent periods
 - › Common in dancers
 - › Osteoporosis
 - › Low bone mineral density, risk of fracture
 - › Strength training helps prevent osteoporosis
 - › High force movements (weight bearing) are more effective than low force movements (aerobic) with bone density



Relative Energy Deficiency in Sport



Other Risks of Unhealthy Diet

- › Affects performance
- › Risk of injury
- › Delay recovery from workouts and injury
- › Risk of deficiency
- › Fatigue

Make Goals for Yourself

- › You are now ready to implement what you learned.
- › Take some time to write a SMART Goal for yourself.



ACSM Information On...

The Female Athlete Triad

The Female Athlete Triad is a health concern for active women and girls who are driven to excel in sports. It involves three distinct and interrelated conditions: disordered eating (a range of poor nutritional behaviors), amenorrhea (irregular or absent menstrual periods) and osteoporosis (low bone mass and microarchitectural deterioration, which leads to weak bones and risk of fracture).

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FEMALE ATHLETE TRIAD CAUSES

Exercise alone does not put someone at risk for developing the Triad; however, an energy deficit, in which caloric intake doesn't match energy expenditure, is a risk factor.

All women face societal pressure that "thin is in." A young woman or girl who is determined to achieve a lean appearance or athletic success may attempt to excel through compulsive dieting and exercise. (Such athletes are typically goal-oriented perfectionists.) This misguided approach may lead to disordered eating, menstrual dysfunction and lower-than-normal bone mass formation.

WHO IS AFFECTED?

Anyone may be affected, but women and girls participating in activities which emphasize leanness are at especially high risk. These activities can include:

- Gymnastics
- Ballet
- Diving
- Figure skating
- Aerobics
- Running

Weight class sports associated with

disordered eating in athletes, including males, are:

- Wrestling
- Rowing
- Martial arts

DISORDERED EATING

In response to pressure to lose weight, women and girls may practice unhealthy weight-control methods, including restricted food intake, self-induced vomiting, consumption of appetite suppressants and diet pills, and use of laxatives and compounds to increase urination. Specific eating disorders are anorexia nervosa and bulimia.

Many girls and women hide or deny their eating disorders due to embarrassment, shame, fear of losing control of their dieting and a mistaken belief that excessive weight loss enhances performance.

WARNING SIGNS OF EATING DISORDERS

- Excessive leanness or rapid weight loss;
- Preoccupation with weight, food, mealtime rituals and body image;
- Avoiding team meals, or secretive eating;
- Wide fluctuations in weight;

- Daily vigorous exercise in addition to regular training sessions;
- Stress fractures (i.e. microfractures of bones that may progress to complete fractures);
- Yellowing of the skin;
- Soft baby hair on the skin;
- Frequent sore throats despite no other signs of respiratory illness (self-induced vomiting);
- Chipmunk-like cheeks from swollen parotid glands (self-induced vomiting);
- Many dental cavities and/or foul breath (self-induced vomiting);
- Fatigue, light-headedness or dizziness; and
- Depression or low self-esteem.

EATING DISORDERS CAN BE FATAL

Eating disorders are serious, chronic medical and psychological illnesses. Individuals with untreated chronic anorexia or bulimia may die prematurely from heart problems, blood electrolyte (i.e., salt) disorders, suicide or other health problems. If these disorders are recognized early, however, treatment may be effective.

AMENORRHEA

An unbalanced diet, inadequate caloric intake relative to exercise level and excessive training may predispose females to menstrual abnormalities. Any female who hasn't started menstruating by age 16, misses three consecutive periods or has periods that occur at intervals of greater than 35 days should be evaluated by a physician. Before attributing menstrual abnormalities to exercise, other conditions – such as pregnancy, abnormalities of the reproductive organs or thyroid disease – must be ruled out.

OSTEOPOROSIS

Osteoporosis refers to low bone mass and fragility of the skeleton. Low estrogen levels and other hormonal changes, which accompany irregular or absent menstrual periods, may predispose females to osteoporosis, especially in their teens and twenties when bone mass is accumulating. A 20-year-old woman without menses during her critical teenage growth period may have bone mass typical of a 70-year-old woman, predisposing her to stress fractures and fractures later in life. Adequate nutrition fosters good bone formation. Calcium requirements for teenage girls and young women with normal menses is 1,200 mg

per day. Females with irregular or absent menses require 1,500 mg of calcium and 400 mg of Vitamin D per day.

PREVENTING THE FEMALE ATHLETE TRIAD

Emphasis or pressure to achieve unrealistically low body weight should be avoided by coaches, parents, athletic administrators and health professionals. Out-of-competition "weigh-ins" should be discouraged. Rules governing sports should be examined, and rules encouraging excessive leanness should be eliminated or revised. Athletes and coaches should be encouraged to look for warning signs of eating disorders.

EARLY RECOGNITION AND TREATMENT

Although individuals with disordered eating or amenorrhea may deny nutritional or health problems and are reluctant to seek care, medical attention is mandatory. An athlete should be reminded that medical care and proper nutrition may enhance performance. If an eating disorder or amenorrhea is suspected, the involved individual should be strongly encouraged or required to seek medical attention. If the individual refuses, the concerned coach, friend or parents should consult with a physician directly. Treatment of the Triad often requires intervention via a team approach, including a physician, nutritionist, psychologist, and the support of family, friends, teammates and coaches.



STAYING ACTIVE PAYS OFF!

Those who are physically active tend to live longer, healthier lives. Research shows that moderate physical activity – such as 30 minutes a day of brisk walking – significantly contributes to longevity. Even a person with risk factors like high blood pressure, diabetes or even a smoking habit can gain real benefits from incorporating regular physical activity into their daily life.

As many doctors have found, exercise can help you stay on a diet and lose weight. What's more – regular exercise can help lower blood pressure, control blood sugar, improve cholesterol levels and build stronger, denser bones.

THE FIRST STEP

Before you begin an exercise program, take a fitness test, or substantially increase your level of activity, make sure to answer the following questions. This physical activity readiness questionnaire (PAR-Q) will help determine if you're ready to begin an exercise routine or program.

- Has your doctor ever said that you have a heart condition or that you should participate in physical activity only as recommended by a doctor?
- Do you feel pain in your chest during physical activity?
- In the past month, have you had chest pain when you were not doing physical activity?
- Do you lose your balance from dizziness? Do you ever lose consciousness?
- Do you have a bone or joint problem that could be made worse by a change in your physical activity?
- Is your doctor currently prescribing drugs for your blood pressure or a heart condition?
- Do you know of any reason you should not participate in physical activity?

If you answered yes to one or more questions, if you are over 40 years of age and have recently been inactive, or if you are concerned about your health, consult a physician before taking a fitness test or substantially increasing your physical activity. If you answered no to each question, then it's likely that you can safely begin exercising.

PRIOR TO EXERCISE

Prior to beginning any exercise program, including the activities depicted in this brochure, individuals should seek medical evaluation and clearance to engage in activity. Not all exercise programs are suitable for everyone, and some programs may result in injury. Activities should be carried out at a pace that is comfortable for the user. Users should discontinue participation in any exercise activity that causes pain or discomfort. In such event, medical consultation should be immediately obtained.



AMERICAN COLLEGE
of SPORTS MEDICINE
LEADING THE WAY

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GOAL:

S

M

A

R

T

Specific	<ul style="list-style-type: none"> • What do I want to accomplish? • Why do I want to accomplish this? • What are the requirements? • What are the constraints? 	
Measurable	<ul style="list-style-type: none"> • How will I measure my progress? • How will I know when the goal is accomplished? 	
Achievable	<ul style="list-style-type: none"> • How can the goal be accomplished? • What are the logical steps I should take? 	
Relevant	<ul style="list-style-type: none"> • Is this a worthwhile goal? • Is this the right time? • Do I have the necessary resources to accomplish this goal? • Is this goal in line with my long term objectives? 	
Time-Bound	<ul style="list-style-type: none"> • How long will it take to accomplish this goal? • When is the completion of this goal due? • When am I going to work on this goal? 	

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APPENDIX H

Raw Data

RMR Data

PrBEE	RMR
1418	1360
1462	1407
1351	1309
1281	1313
1507	1461
1468	1450
1406	1482
2142	2285
1380	1288
1399	1179
1490	1474
2256	2065
1902	2282

t-Test: Paired Two Sample for Means

	<i>PrBEE</i>	<i>RMR</i>
Mean	1574	1565.769
Variance	98921.33	145287.2
Observations	13	13
Pearson Correlation	0.92296	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.19605	
P(T<=t) one-tail	0.423926	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.847852	
t Critical two-tail	2.178813	

Bone Mineral Density

Total pre	Total post
1.697	1.707
1.386	1.377
1.213	1.205
1.177	1.162
1.277	1.279
1.115	1.076
1.265	1.282
1.291	1.286
1.2	1.211
1.199	1.198
1.393	1.414
1.187	1.227
1.23	1.194

t-Test: Paired Two Sample for Means

	<i>Total pre</i>	<i>Total post</i>
Mean	1.279230769	1.278308
Variance	0.022056192	0.024379
Observations	13	13
Pearson Correlation	0.990909558	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.151951496	
P(T<=t) one-tail	0.440874999	
t Critical one-tail	1.782287556	
P(T<=t) two-tail	0.881749999	
t Critical two-tail	2.17881283	

Bone mineral density did not significantly increase

Arms pre	arms post
1.326	1.398
0.942	0.923
0.803	0.792
0.811	0.782
0.965	0.923
0.862	0.804
0.916	0.912
0.966	0.983
0.857	0.881
0.835	0.881
1.113	1.149
0.669	0.853
0.871	0.851

t-Test: Paired Two Sample for Means

	<i>Arms pre</i>	<i>arms post</i>
Mean	0.918153846	0.933231
Variance	0.026017641	0.028656
Observations	13	13
Pearson Correlation	0.929097048	
Hypothesized Mean Difference	0	
Df	12	
	-	
t Stat	0.866504848	
P(T<=t) one-tail	0.201603333	
t Critical one-tail	1.782287556	
P(T<=t) two-tail	0.403206666	
t Critical two-tail	2.17881283	

Arm bone density did not significantly increase

	legs	
legs pre	post	
1.734	1.757	
1.334	1.322	
1.201	1.192	
1.31	1.287	
1.262	1.292	
1.098	1.074	
1.223	1.279	
1.346	1.284	
1.267	1.247	
1.216	1.192	
1.559	1.546	
1.292	1.24	
1.201	1.209	

t-Test: Paired Two Sample for Means

	<i>legs pre</i>	<i>legs post</i>
Mean	1.311	1.301615
Variance	0.027768667	0.029987
Observations	13	13
Pearson Correlation	0.982678768	
Hypothesized Mean Difference	0	
Df	12	
t Stat	1.048095526	
P(T<=t) one-tail	0.157623122	
t Critical one-tail	1.782287556	
P(T<=t) two-tail	0.315246244	
t Critical two-tail	2.17881283	

leg bone density did not significantly increase

trunk pre	trunk post
1.478	1.484
1.167	1.147
1.063	1.059
0.92	0.935
1.127	1.13
0.94	0.899
1.079	1.043
1.076	1.117
0.983	1.015
1.034	1.017
1.093	1.144
1.103	1.103
1.051	0.986

t-Test: Paired Two Sample for Means

	<i>trunk pre</i>	<i>trunk post</i>
Mean	1.085692308	1.083
Variance	0.018860897	0.020726
Observations	13	13
Pearson Correlation	0.972895438	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.290614088	
P(T<=t) one-tail	0.388153941	
t Critical one-tail	1.782287556	
P(T<=t) two-tail	0.776307881	
t Critical two-tail	2.17881283	

trunk bone density did not significantly increase

	ribs	
ribs pre	post	
1.194	1.206	
0.909	0.92	
0.87	0.877	
0.785	0.81	
0.909	0.902	
0.813	0.766	
0.91	0.91	
0.903	0.908	
0.832	0.886	
0.837	0.852	
0.938	1.038	
1.1	1.117	
0.839	0.79	

t-Test: Paired Two Sample for Means

	<i>ribs pre</i>	<i>ribs post</i>
Mean	0.910692	0.921692
Variance	0.013389	0.016284
Observations	13	13
Pearson Correlation	0.955466	
Hypothesized Mean Difference	0	
Df	12	
t Stat	-1.03916	
P(T<=t) one-tail	0.159607	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.319214	
t Critical two-tail	2.178813	

No significant difference in ribs

spine pre	spine post
1.67	1.664
1.255	1.194
1.078	1.11
0.955	0.965
1.184	1.233
1.107	1.005
1.176	1.126
1.279	1.297
0.985	1.028
1.117	1.072
1.197	1.163
1.061	1.035
1.14	1.05

t-Test: Paired Two Sample for Means

	<i>spine pre</i>	<i>spine post</i>
Mean	1.169538462	1.149385
Variance	0.031544769	0.033034
Observations	13	13
Pearson Correlation	0.962788368	
Hypothesized Mean Difference	0	
Df	12	
t Stat	1.477250499	
P(T<=t) one-tail	0.082683224	
t Critical one-tail	1.782287556	
P(T<=t) two-tail	0.165366447	
t Critical two-tail	2.17881283	
No significant difference in spine		

pelvis pre	pelvis post
1.703	1.663
1.338	1.31
1.245	1.199
1.02	1.03
1.301	1.29
0.95	0.943
1.199	1.129
1.134	1.201
1.141	1.126
1.183	1.143
1.203	1.242
1.126	1.124
1.228	1.135

t-Test: Paired Two Sample for Means

	<i>pelvis pre</i>	<i>pelvis post</i>
Mean	1.213154	1.195
Variance	0.03261	0.029561
Observations	13	13
Pearson Correlation	0.971851	
Hypothesized Mean Difference	0	
Df	12	
t Stat	1.533098	
P(T<=t) one-tail	0.075592	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.151183	
t Critical two-tail	2.178813	
No significant difference in pelvis		

Body composition

% fat pre	%fat post
35.4	35.5
32.2	31.1
32.9	33.1
27.2	30.5
27.8	27.8
31.4	31.9
34.2	34.4
26.9	27.7
33.3	31.8
29.9	27.2
22.8	19.8
20.7	23.8
30.4	26.3

t-Test: Paired Two Sample for Means

	<i>% fat pre</i>	<i>%fat post</i>
Mean	29.62308	29.3
Variance	19.32026	19.60833
Observations	13	13
Pearson Correlation	0.878684	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.535971	
P(T<=t) one-tail	0.300886	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.601772	
t Critical two-tail	2.178813	

No significant difference in % body fat

Total mass pre	total mass post
244.9	252
138.3	145.6
119.1	116.1
127.5	136.7
147.3	147.3
135	142.9
125.5	123.3
181.2	186.5
144.3	138
127.3	128
197.46	202.22
124	126.3
128.2	116.7

t-Test: Paired Two Sample for Means

	<i>Total mass pre</i>	<i>total mass post</i>
Mean	149.2354	150.8938
Variance	1362.818	1572.285
Observations	13	13
Pearson Correlation	0.989539	
Hypothesized Mean Difference	0	
Df	12	
t Stat	-0.96865	
P(T<=t) one-tail	0.175919	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.351839	
t Critical two-tail	2.178813	

No significant difference in mass

fat lbs pre	fat lbs post
83.7	86.2
42.6	43.5
37.5	36.8
33.4	40.2
39.2	38.2
40.7	44
41.3	40.7
47	49.8
46.3	42.2
36.6	33.5
43.26	38.5
24.6	28.8
37.5	29.4

t-Test: Paired Two Sample for Means

	<i>fat lbs</i> <i>pre</i>	<i>fat lbs</i> <i>post</i>
Mean	42.58923	42.44615
Variance	186.3512	206.841
Observations	13	13
Pearson Correlation	0.957654	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.124526	
P(T<=t) one-tail	0.45148	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.902961	
t Critical two-tail	2.178813	
No significant difference		

lean lbs pre	lean lbs post
152.5	156.8
89.8	96.3
76.6	74.4
89.1	91.3
102.1	99.4
89.1	93.8
79.4	77.7
127.4	129.8
92.6	90.5
85.7	89.6
146.64	155.71
94	92.1
85.9	82.5

t-Test: Paired Two Sample for Means

	<i>lean lbs pre</i>	<i>lean lbs post</i>
Mean	100.8338	102.3008
Variance	623.7759	749.7473
Observations	13	13
Pearson Correlation	0.992197	
Hypothesized Mean Difference	0	
Df	12	
t Stat	-1.30362	
P(T<=t) one-tail	0.108409	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.216817	
t Critical two-tail	2.178813	

No significant difference in lean

BMC pre	BMC post
8.8	8.9
5.9	5.8
4.9	5
5	5.2
6	6.1
5.2	5.1
4.8	4.9
6.8	6.9
5.4	5.4
5	4.8
7.56	8.01
5.5	5.5
4.9	4.8

t-Test: Paired Two Sample for Means

	<i>BMC pre</i>	<i>BMC post</i>
Mean	5.827692	5.877692
Variance	1.470636	1.688803
Observations	13	13
Pearson Correlation	0.993668	
Hypothesized Mean Difference	0	
Df	12	
t Stat	-1.08711	
P(T<=t) one-tail	0.14917	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.29834	
t Critical two-tail	2.178813	

No significant difference in BMC

fat free lbs pre	fat free lbs post
161.3	165.7
95.7	102.1
81.5	79.3
94.1	96.5
108.1	105.5
94.3	98.9
84.2	82.6
134.2	136.7
98	95.8
90.7	94.5
154.2	163.72
99.5	97.6
90.8	87.3

t-Test: Paired Two Sample for Means

	<i>fat free lbs pre</i>	<i>fat free lbs post</i>
Mean	106.6615	108.1708
Variance	683.8959	820.8358
Observations	13	13
Pearson Correlation	0.992833	
Hypothesized Mean Difference	0	
Df	12	
t Stat	-1.3204	
P(T<=t) one-tail	0.105666	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.211332	
t Critical two-tail	2.178813	

no significant difference in fat free lbs

android %fat pre	Android %fat post
48.1	47.7
25.5	24.3
28.7	31
25.1	32.9
19.9	21
30.7	28.8
31.9	29.9
29.6	30.3
28.8	27.6
25.3	20.8
22.1	17.5
8.8	13.6
26.7	20

t-Test: Paired Two Sample for Means

	<i>android %fat pre</i>	<i>Android %fat post</i>
Mean	27.01538	26.56923
Variance	75.85808	75.02731
Observations	13	13
Pearson Correlation	0.897711	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.409438	
P(T<=t) one-tail	0.344716	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.689432	
t Critical two-tail	2.178813	

no significant difference in android

gynoid %fat pre	gynoid %fat post
34.2	34.9
38.4	36.7
39.7	38.7
31.1	32.7
33.1	34.5
34.3	36.5
38.7	40.4
28.6	29.4
38.7	36.4
35.3	33.9
25.4	21.8
25.6	30.2
35.6	34.7

t-Test: Paired Two Sample for Means

	<i>gynoid %fat pre</i>	<i>gynoid %fat post</i>
Mean	33.74615	33.90769
Variance	23.53936	22.4941
Observations	13	13
Pearson Correlation	0.893223	
Hypothesized Mean Difference	0	
Df	12	
t Stat	-0.26242	
P(T<=t) one-tail	0.398722	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.797445	
t Critical two-tail	2.178813	

No significant difference in Gynoid

A/G ratio pre	A/G ratio Post
1.41	1.37
0.66	0.66
0.8	0.73
0.81	1.01
0.6	0.61
0.89	0.79
0.82	0.74
1.03	1.03
0.74	0.76
0.72	0.61
0.87	0.8
0.34	0.45
0.75	0.58

t-Test: Paired Two Sample for Means

	<i>A/G ratio pre</i>	<i>A/G ratio Post</i>
Mean	0.803077	0.78
Variance	0.060173	0.057467
Observations	13	13
Pearson Correlation	0.91915	
Hypothesized Mean Difference	0	
Df	12	
t Stat	0.851886	
P(T<=t) one-tail	0.205478	
t Critical one-tail	1.782288	
P(T<=t) two-tail	0.410957	
t Critical two-tail	2.178813	

no significant difference in A/G ratio

	BMI	
BMI pre	Post	
35	35.9	
23.2	24.2	
21.3	20.7	
20.6	22	
22.2	21.6	
18.9	19.8	
25.2	24.8	
25.4	26.1	
23.3	22.1	
22.6	22.6	
22.3	22.6	
25.3	22.9	

t-Test: Paired Two Sample for Means

	<i>BMI pre</i>	<i>BMI Post</i>
Mean	23.775	23.775
Variance	16.32386	17.55659
Observations	12	12
Pearson Correlation	0.965113	
Hypothesized Mean Difference	0	
Df	11	
t Stat	-9.3E-16	
P(T<=t) one-tail	0.5	
t Critical one-tail	1.795885	
P(T<=t) two-tail	1	
t Critical two-tail	2.200985	

No significant difference in BMI

Other	Race		Dance styles participating in (initial)	Dance styles participating in (final)	Which do y
	caucasian		modern, ballet,	modern	d
	caucasian		modern, contemporary, ballet	modern	g
	caucasian		ballet, modern, jazz, rehearsal	modern, rehearsals	d
	caucasian		Modern	modern, ballet	g
african	African american		ballet, modern, african	ballet, modern, hip hop, chinese	g
ballroom	caucasian		tap, jazz, ballet, rehearsal	ballet, tap	g
	caucasian		modern, ballet, tap, contemporary	modern, ballet, tap, contemporary	g
	Hispanic		modern	modern	g
flamenco, zumba, latin dance forms	Hispanic		modern, zumba	modern, latin dance, contemporary	b
	multiracial		ballet modern	ballet modern, fo klorico	B
	caucasian		ballet, modern, jazz	ballet ,modern, jazz, contemporary	d
hip hop, krump, housing liturgical	African american		hip hop, ballet, litertigal	hip hop, tap, acrobatics	d
hip hop	african american		ballet	ballet, hip hop	b

|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

fatigue post	Have you e	How old wif	If you part	In the past	post	Have you e	How old w	How many	Did you se	Did the ph	How many	post
2.6	yes	15	after	6-9x	4-6x	yes	18	6 mo	yes	yes	6	6
24.6	yes	12	after	10-13x	10-13x	no					12	12
13.2	yes	13	after	10-13x	10-13x	no					12	2(menopa
1.75	yes	13	after	6-9x	10-13x	no					9	12
7	yes	13	before	10-13x	10-13x	no					12	12
7.9	yes	15	after	6-9 x	10-13x	yes	21	4 mo	yes	yes	10	12
10.5	yes	13	before	10-13x	6-9x	no					9	12
5	no											
19.3	yes	11	after	10-13x	10-13x	no					10	11
8.8												
6.1	yes	10	before	10-13x	10-13x	no					12	12
8.8	yes	13	after	10-13x	6-9x	yes	20	3-4mo	yes	no	15	10
16.67	no											

How many post		How would post		How would post		Currently, post		Does your post		If you check abscons of skipping a c		Does your
4	3	same	shorter	same	lighter	very irregu	donot ha	yes		yes		yes
6	6	same	same	same	lighter	very regula	very regula	no		no		no
6	6	same	shorter	same	lighter	very regula	very regula	no		no		no
6	6	same	same	same	same	somewhat	somewhat	no		no		no
6	6	longer	same	heavier tha	ssame	very regula	very regula	no		no		no
5	6	shorter tha	same	heavier tha	heavier tha	very irregu	very irregu	yes		yes	longer, ski	yes
5	6	same	longer	same	same	very regula	somewhat	yes		yes	longer, ski	longer, ski not applica
5	5	same	same	same	same	very regula	very regula	yes		yes	skipping c	yes
6	6	same	shorter	same	lighter	somewhat	somewhat	no		no		no
12	6	longer	shorter	heavier	same	irregular	very regula	yes		no	skipping cycle	no

post	if you ched post	Do you cur post	if yes, wat	post	If NO, have you	any reprod	Do you cur	If you checked YES for
yes	skipping cy	yes, 6 year	regulate cy	regulate, birth control	yes	yes, PCOS	yes	1-6 years
NA		yes, 6 year	birth control	birth control	yes	no	no	
no		yes	birth control	birth control	yes	no	no	
no		no	no	no	no	no	yes	2 years
no		no	no	no	yes	no	yes	1-3 year
yes	skipping cy	no	yes, 2 years, regulate cycle	yes	yes	no	yes	4 months? years
yes	longer, skip	no		no	no	no	yes	1 year
yes	skipping cy	no			no	no	yes	8-10 years
not applicable		yes	regulate cy	regulate cycle	yes		yes	2-3 years
no		no	yes, 1 yr to regulate period and b	yes	yes	no	yes	7-13 years

t-Test: Paired Two Sample for Means

	<i>Eating pattern pre</i>	<i>Eating pattern post</i>
Mean	17.76666667	16.58333
Variance	90.95151515	68.26697
Observations	12	12
Pearson Correlation	0.542051884	
Hypothesized Mean Difference	0	
Df	11	
t Stat	0.477184669	
P(T<=t) one-tail	0.321285281	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.642570562	
t Critical two-tail	2.20098516	

no significant difference in the change in eating patterns

t-Test: Paired Two Sample for Means

	<i>fatigue pre</i>	<i>fatigue post</i>
	15.9533333	
Mean	3	10.285
	147.400333	48.3215181
Variance	3	8
Observations	12	12
	0.88852127	
Pearson Correlation	3	
Hypothesized Mean Difference	0	
Df	11	
	2.90310602	
t Stat	5	
	0.00718254	
P(T<=t) one-tail	2	
	1.79588481	
t Critical one-tail	9	
	0.01436508	
P(T<=t) two-tail	3	
t Critical two-tail	2.20098516	

P value 0.05

The diet showed a decrease in
fatigue

	before	After	
want to be skinner	8	4	12
want to be larger	1	1	2
ant to be the same	4	8	12
	13	13	26
Expected	6	6	
	1	1	
	6	6	

Chi square 0.263597

no significant difference between how the dancers felt before and after the education

wants to change	9	5	14
wants to stay the same	4	8	12
	13	13	26
Expected			
	6.461538	6.461538	
	6	6	
Chi Square	0.102825		

	Initial	final	
ate less with less train	3	3	6
didn't	9	10	19
	12	13	25
expected	6	3.12	
	9.12	9.88	
chi square	0.219498		not significant
ate more with more train	4	7	11
didn't	8	6	14
	12	13	25
expected	8.8	5.72	
	6.72	7.28	
chisqu	0.066254		not significant
Ate well for performance	6	10	16
didn't	6	3	9
	12	13	25
expected	7.68	8.32	
	4.32	4.68	
chi square	0.161178		not significant
worry about wt gain with sick or injury	5	7	12
doesn't	7	6	13
	12	13	25
expected	5.76	6.24	
	6.24	6.76	
chi square	0.542541		not significant
	Before	after	
Were not satisfied with weight	5	7	12

were satisfied with weight	6	6	12
	11	13	24
expected	5.5	5.958333	
	5.5	6.5	
chi square	0.576773	not significant	
thought to be not at ideal wt	6	10	16
thought to be at ideal wt	5	3	8
	11	13	24
expected	7.333333	8.666667	
	3.666667	4.333333	
Chi square	0.246566	not significant	
were trying to change their weight	5	7	12
were not trying to change their weight	6	6	12
	11	13	24
expected	5.5	6.5	
	5.5	6.5	
chi square	0.682046	not significant	
Limit or restricts their food	6	5	11
does not limit or restrict food	6	7	13
	12	12	24
	5.5	5.5	
	6.5	6.5	
chi square	0.682046		

111		Observed	expected		observe-expected^2/expected		
	Pro	31	80.4075		30.35912	athletes pl	not ok
	starch	72.65	80.4075		0.752287	fat	ok
	fruit veg	218	160.815		20.3347	dairy	not ok
	Total	321.65			51.4461		
106							
	Pro	47	61.4625		3.408114	athletes pl	not ok
	starch	45.35	61.4625		4.22392	fat	not ok
	fruit veg	153.5	122.925		7.604886	dairy	not ok
	Total	245.85			15.23192		
107							
	Pro	239	447.42		97.08752	athletes pl	not ok
	starch	162.68	447.42		181.2098	fat	not ok
	fruit veg	1388	894.84		271.788	dairy	ok
	Total	1789.68			550.0853		
112							
	Pro	85	347.575		201.3952	Athletes Pl	not ok
	starch	158.3	347.575		103.0714	fat	ok
	fruit veg	1149	695.15		296.3099	dairy	ok
	Total	1390.3			600.7764		
205							
	Pro	48	80.2425		12.95546	athletes pl	not ok
	starch	98.97	80.2425		4.370742	fat	ok
	fruit veg	174	160.485		1.138145	dairy	ok
	Total	320.97			18.46435		
108							
	Pro	372	186		186	athletes pl	not ok
	starch	264	186		32.70968	fat	ok
	fruit veg	108	372		187.3548	dairy	not ok
	Total	744			406.0645		
109							
	Pro	15.5	53.7825		27.24957	Athletes pl	not ok
	starch	35.65	53.7825		6.126775	fat	ok
	fruit veg	164	107.565		29.60916	dairy	not ok
	Total	215.15			62.9855		
110							
	Pro	117.5	94.83		5.419476	athletes pl	not ok
	starch	75.82	94.83		3.81082	fat	ok
	fruit veg	186	189.66		0.07063	dairy	ok
	Total	379.32			9.300926		

204									
	Pro	61	352.75		241.2985		athlets pla	not ok	
	starch	194	352.75		71.44313		fat	not ok	
	fruit veg	1156	705.5		287.6687		dairy	not ok	
	Total	1411			600.4103				
105									
	Pro	53.5	118.5375		35.68387		athlets pla	not ok	
	starch	102.65	118.5375		2.129391		fat	ok	
	fruit veg	318	118.5375		335.6346		dairy	ok	
	Total	474.15			373.4479				
102									
	Pro	34	43.2		1.959259		athletes pl	ok	
	starch	52.8	43.2		2.133333		fat	ok	
	fruit veg	86	86.4		0.001852		dairy	ok	
	Total	172.8			4.094444				
101									
	Pro	13	66.575		43.11349		athletes pl	not ok	
	starch	69.3	66.575		0.111538		fat	ok	
	fruit veg	184	133.15		19.41962		dairy	not ok	
	Total	266.3			62.64465				
202									
	Pro	43.5	117.85		46.90643		athletes pla	not ok	
	starch	123.9	117.85		0.310585		fat	ok	
	fruit veg	304	235.7		19.79164		dairy	ok	
	Total	471.4			67.00866				

	observed	expected		observe-expected^2/expected			improvement
Pro	59.5	79.1075		4.859894	athletes pl	ok (alpha 0.01 for all)	protein
starch	96.98	79.1075		4.015315	fat	ok	starch
fruit veg	160	158.215		0.020139	dairy	not ok	fruit
Total	316.43	316.43		8.895347			fat
				improved			dairy
Pro	47.5	57.375		1.699619	Athletes pl	ok	protein
starch	58	57.375		0.006808	fat	ok	starch
fruit veg	124	114.75		0.745643	dairy	not ok	fruit
Total	229.5			2.45207			fat
				improved			dairy
Pro	224.5	370.545		57.56154	athletes pl	not ok	protein
starch	143.68	370.545		138.8974	fat	not ok	starch
fruit veg	1114	741.09		187.645	dairy	ok	fruit
Total	1482.18			384.104			fat
				improved			dairy
Pro	68.5	276.2		156.1886	athletes pl	not ok	protein
starch	140.3	276.2		66.86752	fat	ok	starch
fruit veg	896	552.4		213.7237	dairy	ok	fruit
Total	1104.8			436.7798			fat
				improved			dairy
Pro	38.5	114.15		50.13511	athletes pl	not ok	protein
starch	70.1	114.15		16.99871	fat	ok	starch
fruit veg	348	228.3		62.75992	dairy	ok	fruit
Total	456.6			129.8937			fat
				worse			dairy
Pro	70	131.2125		28.5565	athletes pl	not ok	protein
starch	74.85	131.2125		24.21059	fat	ok	starch
fruit veg	380	262.425		52.67745	dairy	not ok	fruit
Total	524.85			105.4445			fat
				improved			dairy
Pro	31.5	69.6375		20.88629	athletes pl	not ok	protein
starch	87.05	69.6375		4.353906	fat	ok	starch
fruit veg	160	139.275		3.084011	dairy	ok	fruit
Total	278.55			28.32421			fat
				improved			dairy
Pro	66.5	139.075		37.87259	athletes pl	not ok	protein
starch	139.8	139.075		0.008779	fat	ok	starch
fruit veg	350	278.15		18.55985	dairy	ok	fruit
Total	556.3			56.43622			fat

				worse					dairy
Pro	13.5	131.5625		105.9478	athletes pl	not ok			protein
starch	128.75	131.5625		0.060125	fat	not ok			starch
fruit veg	384	263.125		55.52785	dairy	ok			fruit
Total	526.25			161.5357					fat
				improved					dairy
Pro	59.5	116.8675		28.16035	athletes pl	not ok			protein
starch	71.97	116.8675		17.24847	fat	ok			starch
fruit veg	336	233.735		44.74354	dairy	ok			fruit
Total	467.47			90.15236					fat
				improved					dairy
Pro	56	74.075		4.410471	athletes pl	not ok			protein
starch	28.3	74.075		28.28688	fat	ok			starch
fruit veg	212	148.15		27.51821	dairy	not ok			fruit
Total	296.3			60.21556					fat
				worse					dairy
Pro	35	80.95		26.0828	athletes pl	not ok			protein
starch	54.8	80.95		8.447468	fat	ok			starch
fruit veg	234	161.9		32.10877	dairy	not ok			fruit
Total	323.8			66.63904					fat
				worse					dairy
Pro	140.5	155.0825		1.362253	athletes pl	not ok			protein
starch	129.68	155.0825		4.162269	fat	ok			starch
fruit veg	350	310.065		5.143451	dairy	not ok			fruit
Total	620.13			10.66797					fat
				improved					dairy

ints				pre		post		
yes			followed a	1	7.70%	2	15.40%	
no- more starch percentage			followed f	10	77%	11	84.60%	
yes			followed d	7	53.80%	7	53.80%	
same- ok								
same- not ok			improve a thlets plate				not improved	
			prote in	10	76.90%	3		
yes			starch	7	53.80%	8		
yes			fruit and v	10	76.90%	3		
yes			fat	1	7.70%	12		
yes			dairy	2	15.40%			
same- not ok			overall	9	69.20%			
yes								
yes								
yes								
same-not ok								
same-ok								
yes								
yes								
yes								
same-ok								
same-ok								
no-worse								
no-worse								
no-worse								
same-ok								
same-ok								
yes								
yes								
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no-worse								
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no-worse								
same-ok								

same-ok								
yes								
yes								
yes								
same-not ok								
yes								
yes								
no								
yes								
same-ok								
same-ok								
no-worse								
no-worse								
no-worse								
same-ok								
no-worse								
yes								
no-worse								
eys								
same-ok								
same-not ok								
yes								
no-worse								
yes								
same-ok								
no-worse								

	calories	protein	carbohydrate	fat%	fat g	sat fat %	sat fat g
	1741	58	240	33	63.84	10	19.34
	2018	73	255	38	85.20	19	42.60
	1776	77	110	60	118.40	23	45.39
	1876	47	289	28	58.36	13	27.10
	2678	152	316	30	89.27	10	29.76
	2153	103	244	37	88.51	11	26.31
	1820	98	208	34	68.76	12	24.27
	2295	114	229	41	104.55	14	35.70
	1477	77	211	24	39.39	10	16.41
	1718	90	224	28	53.45	7	13.36
	1549	95	163	35	60.24	10	17.21
	2083	115	219	38	87.95	7	16.20
	1382	70	162	36	55.28	12	18.43
	2178	108	170	51	123.42	15	36.30
	2011	115	209	33	73.74	12	26.81
	2478	132	240	40	110.13	16	44.05
	2673	102	408	26	77.22	8	23.76
	2122	88	294	31	73.09	12	28.29
	1794	100	183	42	83.72	12	23.92
	1939	107	217	33	71.10	11	23.70
	2645	99	313	40	117.56	16	47.02
	2403	98	255	41	109.47	17	45.39
	1194	49	146	37	49.09	12	15.92
	1651	82	185	37	67.87	14	25.68
	1657	45	238	35	64.44	11	20.25
	2436	109	190	51	138.04	13	35.19
	1448	71	222	22	35.40	8	12.87
	2012	64	164	57	127.43	37	82.72
	2156	129	243	30	71.87	8	19.16
	1421	71	184	28	44.21	8	12.63
	2908	149	325	35	113.09	13	42.00
	1440	119	151	27	43.20	10	16.00
	1998	128	156	46	102.12	13	28.86
	1624	98	149	34	61.35	17	30.68
	1785	118	153	38	75.37	17	33.72
Average	1958.25714	95.6	219	36.45714	80.17	13.08571	28.77
SD	421.54	27.13	62.44	8.64	27.33	5.47	13.90

	Eating disorder risk pre	Eating disorder risk post
	18.4	10.2
	21.4	25.5
	7.1	8.2
	19.4	15.3
	9.2	13.3
	34.7	15.3
	2	5.1
	12.2	12.2
	30.6	18.4
	13.3	18.4
	21.4	21.4
	23.5	35.7
		49
average	17.76667	19.07692
SD	9.53685	11.97547

	fatigue pre	fatigue post
	4.4	2.6
	42.1	24.6
	13.2	13.2
	6.1	1.75
	13	7
	24.5	7.9
	8.77	10.5
	0.87	5
	28.9	19.3
	9.6	6.1
	13	8.8
	27	16.67
		8.8
average	15.95333	10.17077
SD	12.14085	6.66816

Modern Pr ballet pre assess total													
9	4	6	4	9	4.5	modern pc ballet post Total	other dance	total pre	total post	exercise pre	exercise pc	7	7
4.5	4	6	4	4	4.5	1.5	4.5 13	14.5	22	19	3	4	4
4.5	6	10.5	1.5	9	9	8.5	3	1	7	2.5	2	4	4
4.5	4.5	4.5	4.5	4.5	4.5	4.5	2		19	9	0	4	4
7.5	6	13.5	3	3	4.5	7.5	5		6.5	4.5	2	16	16
8	11	19	3	3	4.5	7.5	6	5.5	18.5	7.5	4	24	24
3	3	3	3	3	4.5	3	3	2	25	13	1.5	1	1
	10	10	4.5	4.5	4.5	4.5	15.5	2	3	5	18.5	9.5	9.5
4.5	3	7.5	6	6	6	12	6	6	25.5	10.5	21.5	4	4
4.5	1	5.5	4.5	4	4.5	8.5	12	5	13.5	17	6	1.5	1.5
3	4.5	7.5	19.5	3	19.5	22.5	19	3	17.5	11.5	5	6	6
	3	3	4	4	4	4	4	2	26.5	24.5	0	16	16
7.5	7.5	7.5	0	0	0	0	0	7	7	4	3	0	0
5.6	5.388888889	8.038462	6.55	3.357143	6.846154	8.545455	5.222222	8	7.5	8	4.5	0	0
2.18327	3.295619989	4.543592	4.781039	1.375811	5.73507	5.560821	4.154148	15.26923	10.46154	5.461538	7.153846	7.153846	7.153846
								8.305659	6.504683	6.722046	7.355227	7.355227	7.355227