

## RUTGERS FITNESS HEALTHY WEIGHT GAIN GUIDELINES

The goal of weight gain should be to increase lean body mass (LBM) and to minimize gains in body fat. LBM consists of muscle tissue, connective tissue and bone density.

1. Increase in LBM is best accomplished through specific weight training programs in combination with increased caloric intake.
  - Caloric intake should be increased by 500 calories/day to ensure adequate energy for recovery from weight training sessions.
  - Minimum caloric intake should be approximately 1200-1500 for women and 1800-2000 for men depending on weight and activity levels (ACSM). Dietary intake below these minimum levels may be deficient in essential nutrients and may require supplementation such as an anti-oxidant rich multivitamin.
  - For an estimate of daily caloric intake see the Resting Metabolic Rate formula on page 2.
  - **Metabolic testing offered through Rutgers Recreation will give you your resting metabolic rate and a more accurate number for daily caloric consumption.** Please see <http://recreation.rutgers.edu/fitness>
2. Increased dietary calories should be made up of appropriate percentages of protein, carbohydrate and fat to ensure gains in lean muscle mass. The following percentages of total caloric intake are recommended (ACSM):
  - Protein = 10-15%
  - Carbohydrates = 55-60%
  - Fat = 25-35%
  - Protein intake should increase in proportion to greater caloric consumption (NSCA). An easy calculation for recommended grams of protein is  $(.8) \times (\text{Body Weight in kg})$  for minimum consumption and  $(1.7) \times (\text{Body Weight in kg})$  for maximum consumption.
3. Consume 4-6 balanced and nutritious meals per day.
  - Try to space meals evenly throughout the day, every 3-4 hours, and never skip meals, especially breakfast.
  - Your breakfast should include complex carbohydrates, from fiber-rich multi-grains, and slow digesting proteins such as casein (milk protein) and albumin (egg protein) for sustained energy.
  - Plan to be successful by packing meals that are readily available such as energy bars and meal replacement shakes.
  - Replace junk food snacks that are high in fat with more nutrient-rich, energy dense foods such as fruit, yogurt, trail mix, and low fat chocolate milk. By consuming healthier, smaller meals more frequently, you will train your body to burn off excess calories for energy instead of storing them in the form of body fat.
  - **Vitabot Online Nutritional Counseling, offered through Recreation, can help you analyze your current eating habits and give you suggestions for how to improve them.** <http://recreation.rutgers.edu/fitness>
4. Pre-workout meals should include a greater amount of complex carbohydrates for sustained energy during your workout.
  - These meals should be eaten 45 minutes to an hour before your workout to ensure proper digestion and limit gastric distress (upset stomach).
  - Current research indicates that your pre-workout meal should also include some protein if your goal is to increase lean body mass. A 4:1- 2:1 ratio of carbohydrates to protein is optimal for maintaining blood glucose levels during your workout and minimizing gastric distress.
5. Post-workout meals should include a 3:2 carbohydrate to protein ratio for optimal recovery.
  - These meals should be eaten as soon as possible after a workout. Don't let more than 45 minutes pass between the end of your workout and your post-workout meal.
  - This meal should include fast digesting carbohydrates and proteins, such as whey protein, for quicker absorption. During this critical window of time, your muscles more easily store glycogen (sugar stored in muscles) and whey protein will provide you with important branched-chain amino acids and glutamine to promote quick recovery and the rebuilding of skeletal muscle (NSCA).

6. Stay properly hydrated for electrolyte balance, digestion of food, and thermo-regulation (body temperature). Staying hydrated will help prevent muscle cramps, maintain optimal cardiovascular function, and help keep you feeling full between meals.
  - It is recommended to consume 8-10, eight ounce glasses of water each day (USDA).
  - 16oz of fluid should be consumed 2-3 hours pre-workout and 8-16oz just before the workout.
  - During workouts, a trip to the water fountain every 15 minutes is a good rule of thumb. Sports drinks can be used for intense exercise sessions lasting more than 60 minutes.
  
7. Exercises performed should concentrate on compound rather than isolation movements.
  - Compound exercises are functional multi-joint movements that elicit a greater hormonal response and require more than one muscle group to be performed therefore, stimulating more muscle tissue to grow.
  - Examples of compound exercises are squats, deadlifts, lunges and push-presses. Also included are the Olympic lifts such as the snatch and the clean and jerk, and their respective supplemental lifts including front squats, power cleans, snatch balance, and various pulls (USAW, NSCA).
  - Compound exercises should be performed at the beginning of your workout when you are fresh, since they require the most energy to execute correctly, and isolation type single-joint movements should be left to the end of the training session when fatigue starts to set in.
  - **The trainer on duty can teach you Olympic lifts in the Power Gym. Recreation personal trainers can design a program for you based on your current fitness level and goals.** <http://recreation.rutgers.edu/fitness>
  
8. Periodically change the weight, type of exercise, number of sets, repetitions and rest time for hypertrophy (muscle growth) to occur and to minimize the risk of overtraining.
  - In general, for muscle growth to occur, 2 to 4 sets should be performed per exercise with 6 - 12 repetitions per set.
  - Rest time should be 30 to 90 seconds between sets, depending on your level of fatigue. Fatigue will depend on the intensity and total volume of the workout.
  - If 6 repetitions cannot be completed, lower the weight. If 12 repetitions do not lead to fatigue, increase the resistance.
  - The load should be 80% of your one rep max for substantial physiological adaptations to occur (ACSM). Each set should be done with a resistance load that will elicit muscle failure but will not hinder correct form and technique.
  - Utilize a controlled, fluid movement throughout a full range of motion with a tempo of 3 seconds when initiating movement (concentric contraction) and 2 seconds when returning the weight to the starting position (eccentric contraction). This will ensure a safe and effective weight lifting technique.
  
9. Adequate rest is essential for proper recovery. This will allow for greater adaptations such as muscle growth to occur.
  - At least 48 hours should be given for one muscle group or movement pattern to recover from a bout of exercise before it is repeated.
  - If you are still sore, do not work that muscle group again until soreness is undetectable.
  - Consequences of overtraining can be severe and include chronic injury, decreased immune response and even muscle atrophy (loss of lean body mass)!

### **Estimated Resting Metabolic Rate (RMR) and Caloric Requirements (Harris-Benedict Equation):**

Males:  $RMR = 66 + (13.8 \times \text{weight in kg}) + (5 \times \text{height in cm}) - (6.8 \times \text{age})$

Females:  $RMR = 655 + (9.6 \times \text{weight in kg}) + (1.8 \times \text{height in cm}) - (4.7 \times \text{age})$

To estimate your daily caloric requirements, multiply RMR by the factor that best represents your activity level:

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|-------------------|--------------------|-----------------|----------------------|
| 1) Bed rest = 1.2 | 2) Sedentary = 1.3 | 3) Active = 1.4 | 4) Very Active = 1.5 |
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ACSM = American College of Sports Medicine  
 NSCA = National Strength & Conditioning Association  
 USDA = U. S. Department of Agriculture  
 USAW = United States of America Weightlifting