# PEAC 125 – Fitness for Collegiate Life

Topic: Strength

1. Content:
   1. Definitions
   2. Benefits of Strength Training
   3. Types of Strength Training
   4. Overload Principle
   5. Recommended amount of Strength Training.
2. Definition:
   1. The Cooper Institute defines Strength as, “The ability of a muscle or group of muscles to generate force at a specified velocity.”
   2. Strength can also be defined as: Force = Mass x Acceleration (velocity)
   3. Hypertrophy: Increase in the size of muscle fibers.
   4. Atrophy: Decrease in the size of muscle fibers.
   5. Isometric Exercise: Strength exercise with little or no movement. (i.e. The Plank)
   6. Isotonic (dynamic) Exercise: Exercise through the full range of motion.
   7. Eccentric: Lengthening of the muscle.
   8. Concentric: Shortening of the muscle.
   9. Set: A group of repetitions.
   10. Repetition: Performing the specific exercise one time.
3. Benefits of Strength Training:
   1. Optimal performance in daily activities (walking, running, lifting…).
   2. Improved posture.
   3. Increase resting metabolism.
   4. Lower risk of injury.
   5. Improves personal appearance, self-image and psychological well-being.
   6. Increase in lean body mass
   7. Lower body fat.
4. Types of Strength Training:
   1. Weight Training: Exercises performed with the use of weights and bars as resistance.
      1. Free Weights: This type of training requires the individual to balance the weight while performing the exercise. Several benefits of using free weights include; variety of exercises, cost and portability.
      2. Machines: The use of machines in strength training has several advantages: muscle specificity, safety, resistance variability, and time.
   2. Body Weight Exercises: Strength training that can be done simply with the use of the individual’s personal body weight. This type of strength training can be done anywhere with little or no equipment, costs virtually nothing and includes a large variety of exercises for several muscle groups.
   3. Plyometrics: Explosive, dynamic movements. This is a form of training for power and strength. (i.e. Box jumps)
5. Overload Principle:
   1. Simply stated the Overload Principle is increased resistance (intensity) over time. This can be done in several ways:
      1. Increase resistance
      2. Increase repetitions
      3. Decrease rest period between sets
      4. Increase the total volume of the workout
6. Strength Training Recommendations: *ACSM, 2010*
   1. A warm-up is recommended due to the fact that a warm-up increases blood flow and oxygen to the muscles preparing them for work.
   2. A minimum of 2-3 days per week is recommended with at least a 48 hour separation between workouts of the same muscle group.
   3. Intensity varies with the type of strength training being done. Weight training exercises should be done at 80% of 1RM. Body weight training is done over 3-5 sets that are timed with rest periods in between. Plyometric exercises are done with sets/reps or timed.