State of California – Military Department
California Cadet Corps

CURRICULUM ON Wellness: Individual Fitness

Strand W3 Individual Fitness to You

Level 11

This Strand is composed of the following components:

A. Fitness and Testing
B. Physical Training
C. Facts about Fitness

Updated: 11 APR 2020

Table of Contents

OBJECTIVES

DESIRED OUTCOME (Self-Mastery)
The desired outcome of this unit is for students to learn a majority of the encumbered sciences application to bettering fitness, what fitness is, how to develop skills to combat conditions from not practicing fitness, and know the five components of fitness.

At the end of instruction each Cadet will be able to…:

1. Define Fitness and the terms used to describe it
2. Describe the immediate effects of exercise
3. Explain the concept of Aerobic Capacity (VO2Max) how it's measured, and why.
4. Measure your own Resting Heart Rate and HR after exercise.
5. Explain the stages of routines for workouts
6. Explain the relationship between balance, agility and coordination in everyday fitness activities
7. Explain the Healthy Fitness Zone
8. Demonstrate the assessment process for student and cadet fitness

A. Fitness and Testing

A1. Introduction to Fitness

There are five components to fitness:

- Muscular Endurance - Ability to use muscles continuously without tiring
- Flexibility - the range of motion of a given joint or muscle
- Body Composition – Percentage of fat and non-fat within a body
- Muscular Strength – amount of force a muscle can produce in a single maximum effort
- Cardiovascular Endurance - he ability of the heart, lungs and blood vessels to deliver oxygen to working muscles and tissues

These components work together to build the capacities required to gain from physical exertion. In this strand, we will look into what fitness consists of, how the components interact with each other to make you stronger, more powerful, and healthier. In the spirit of learning and executing fitness training, we must get comfortable with the terms commonly used in discussing fitness and exercise. Physical Fitness and exercise is a scientific discipline. **Fitness** consists of activity concepts and self-management skills that can lead to lifelong fitness - or a condition of being physically fit and healthy. Examples of this are working out, exercise, sports, walking, etc.

Video Stop:

- What is Fitness: Health & Skill Fitness Components PE
  - **https://www.youtube.com/watch?v=VNFLIaN0dok**

Establishing a mental connection to exercise, sport, and fitness plans is vital to successful outcomes. **Exercise/Sports Psychology** is the study of human behavior in all types of physical activity, including exercise for fitness and sport. The science and math calculations (physics) of physical activity and exercise is a specialization known as **Biomechanics - a** branch of Kinesiology that uses principles of physics to help us understand the human body in motion. **Kinesiology** is the study of the mechanics of human body movement. **Exercise Sociology -** Study of social relationships and interactions in Physical Activity, including sports. **Social interactions within sports, exercise, or sports teams is needed for success.**

Agility is the ability to move quickly or easily. **Coordination** is the ability to use different parts of the human body together smoothly and efficiently. **Balance** - to stay upright, or stay in control of body movement. **Reaction Time** is the amount of time it takes to move once you recognize the need to react.

- Video Stop: Sport Psychology: Overview & Introduction - Physical Education
  - **https://www.youtube.com/watch?v=zh1MNK5Ip_k**

There is a standard test for students to pass to determine their levels of fitness in different components within fitness. The **Fitnessgram** is a National fitness assessment that is essentially a report card for fitness of individual students ages 5-17+. More about this in Lesson A5.

Check on Understanding:

1. What are the five components of fitness?

2. Social interaction is part of fitness. Yes or No
3. What is the national report card for fitness?

A2. Immediate Effects of Exercise

The body is made up of a few vital organs, these include the brain, heart, kidneys, liver and lungs. One of the most vital organs in the human body is the heart. The heart is responsible for pumping the blood through the body; the more beats, the more blood is being circulated. During exercise, **heart rate** is increased, pumping blood through the body faster than when the body is at rest**.** Devices that track heart rate are common in today's lives with technology.

Class Challenge- Name as many Heart Rate Monitors-Fitbits, Smartwatches etc. as possible.
Resting Heart Rate (RHR)- is the number of times your heart beats per minute (bpm) while at complete rest.

- Take your resting heart rate while sitting in the class.

FIGURE 8.8 Use your first and second finger to find a pulse *(a)* at your wrist and *(b)* at your neck.

1. Sit and take your heart rate by using the first and second fingers of your hand to find a pulse at your opposite wrist (your radial pulse) (figure 8.8a). Do not use your thumb. Practice so that you can locate your pulse quickly.
2. Count the number of pulses for one minute. Record your one-minute heart rate.
3. Take your resting (seated) heart rate again, this time counting the pulse at your neck (figure 8.8b). This is your carotid pulse. Use two fingers (index and middle) of either hand. Place the fingers on the side of your neck. Move until you locate the pulse. Press only as hard as necessary to feel the pulse; be careful not to press too hard.
4. Now take both your wrist and your neck pulse while you are standing. Repeat the pulse count (both wrist and neck) while sitting. Compare your results. Usually, your standing pulse is faster than your sitting pulse.
5. Take a partner's pulse while your partner takes your pulse (both standing). Compare your self-counted heart rate with your heart rate as determined by your partner. You may use different methods of counting, but use the same one as your partner when making comparisons.
6. As directed by your teacher, record your resting heart rate using the methods just described (Corbin, 2014)(p.165-166).

- Video Stop: How to check your pulse and heart rate
  - https://www.youtube.com/watch?v=BSlRvD-CZSo

The heart and lungs work together constantly to deliver oxygen to the brain and body. **Breathing**- is the process of taking air into and expelling it from the lungs. . **VO_2Max is Aerobic Capacity -** the ability of the cardiorespiratory system to provide oxygen during hard exercises over a specific amount of time. VO_2Max is measured in a treadmill test where the subject is brought to their maximum ability to exercise (walk or run), and their ability to take in oxygen is measured. Your aerobic capacity, which can be improved over time with exercise, determines how much exercise you're capable of – speed, endurance, calories burned.

- Video: VO2 Max Introduction & Overview: Exercise Physiology PE
  - https://www.youtube.com/watch?v=C-q_jA7BQtM

During exercise the body responds to the work exerted. **Sweating** (perspiration) is a bodily function that helps regulate your body temperature. Sweat is made of salty odorous fluid from the sudoriferous gland. The most common areas of sweating on the body include: armpits, face, palms of the hands, and soles of the feet. The appearance and feel of a person's skin as the result of exercise is **Flushed -** red and hot. **Burning Muscles** is the feeling of muscles burning, hardening, from being exhausted from work.

- Video Stop: What happens inside your body when you exercise?
  - https://www.youtube.com/watch?v=wWGulLAa0O0

Check on Understanding:

1. Name a device or type of device that tracks heartrate.
2. VO_2Max should happen every time you exercise. Yes or No? Explain the reason/purpose of VO_2Max testing.
3. Why does exercising get easier over time of continuous routine?

A3. Physical Education & Safety

Preparing and Performing Physical Activity Safely

Routine of Workout Schedules

Routine is important in fitness. A routine is a series of actions you regularly. Having a routine that you stick to gives consistency to your exercise, and builds your fitness. If you just exercise now and then, you won't get the *benefit* of routine exercise. How you do your exercise is important too. Follow these routines every time you exercise:

1) Warm up - A segment of exercise routine that is between 5- 10 minutes of very light cardio and stretching to the performance factor (EX: running: stretch your legs, throwing: stretch your shoulders and arms etc.)
2) Wear safe appropriate clothes - Always wear clothes/apparel fitting to the activity (EX: shorts/leggings, tank tops free of extra straps, shirts that are free of excessive holes, athletic shoes according to the physical activity)
3) Use Safety Equipment as needed - For many sports there is safety equipment required, like helmets, pads, gloves, mouth guards etc.

4) Follow ALL safety instructions for equipment - If your physical activity is using weight machines or equipment always follow the instructions and protocols on the side of the machine. If you are unaware or are unsure ask a professional about limiting/restricting self-injury.
5) Perform to/within Your Limits - Always perform your physical activity and exercises within your limits or to a comfortable limit.
    - This can be done by starting at low repetition and low set amounts and gradually increase; or starting at a lower weight and increasing slowly overtime.
6) Do not overdo it - DO not overdo it in any exercise. Pushing yourself is a good way to expand your health and person records but do not over exceed your limits it can result in serious injury or death.
7) Plan ahead - Always take into account your food and water preparedness. This means to have a stable amount of food/carbs to use before working out and to hydrate to help prevent passing out, extreme dehydration and serious injuries.
8) Cool Down - A segment of exercise routine that is between 5- 10 minutes of 50% performance ability of the physical activity that you just completed. This should include stretching to prevent muscles tightening up and added onset soreness.

<u>Determining the Physical Education and Physical Activity Best for You</u>

- Step 1: Determine Your Personal Needs
    - Self-Assess
        - What do you want to improve?
        - How Fast/ Quickly?
        - How often do you want to exercise?
        - What is your Moderate vs Vigorous Exercise time limits?
            - Moderate Suggested is 60 minutes a day
            - Vigorous suggested at least 20 minutes per day
- Step 2: Consider your Program Options
    - Design your program around what you are willing to do/continue or enjoy. Include your Current Lifestyle, and 1-3 vigorous components to focus on or add to your program. You can combine them as needed for a weekly schedule.
        - Current Lifestyle Activities: Walking to and from School, Physical Education Class/Physical Training
        - Vigorous Activities (that you are willing to do/enjoy): Jogging, Aerobic Dance, Zumba, Cardio kickboxing, etc.
        - Vigorous recreation: Hiking, Rock Climbing, Ice skating, Snowboarding, Skiing etc.
        - Vigorous Sports: Tennis, Pickelball, Volleyball, Soccer, Hockey etc.
        - School: Before-school recreation and after-school sports
- Step 3: Set Goals
    - SMART Goals!

- Examples:
  - I will walk 5 days every week for at least 30 minutes each
  - I will replace my soda intake with only drinking water every day
  - I will prepare and pack my lunch with heath items instead of ordering out 5 days a week.
    - Activity: Write three SMART Goals that could be applicable to the Physical Activity plan you are building.

- Step 4: Structure your program
  - Write down a two-week plan including your vigorous activities
  - Example Chart:

Week 1				Week 2			
Day	**Activity**	**Time**	**Completed**	**Day**	**Activity**	**Time**	**Completed**
Monday	Aerobics class	60 mins					
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday							
Sunday							

- Step 5: Keep a log/record and Evaluate your program
  - Log your chart and fill it in based on what you complete over two weeks and then when you create your program modify what you need to
  - Example Modifications: longer time amounts, different activities, higher amounts of weights (reps & sets).

Check on Understanding:

1. What steps can you take to make exercise activities fun and safe?
2. What are the 5 steps to designing your activity program?
3. What does SMART stand for in SMART goals?

4. What is the best vigorous exercise? Why?
5. Not all exercise needs a warmup and cool down. (T/F)

A4. Healthy Fitness Zone (HFZ)

The Healthy Fitness Zone represents levels of fitness ranges. The standards within the HFZ are organized by gender and age. Based on their performance in the Fitnessgram test area exercises, a student is graded on where they fit into the HFZ.

- These zones are arranged in a chart for ages 5-17+
- The charts are found at this link https://pftdata.org/files/hfz-standards.pdf
    - Review the chart for your specifics
- The components of the Fitnessgram are Aerobic Capacity and Body Composition

FitnessGram Healthy Fitness Zones Scores

- **Healthy Fitness Zone** - scores show sufficient fitness for good health.
- **Needs Improvement (NI)**- scores indicate that if the student continues to track at this level there is the potential for future health risks; does not meet the standard.
- **Needs Improvement – Health Risk** - (NI-Health Risk) - low scores that do not meet standards for Aerobic Capacity and Body Composition

Check on Understanding:

1. What are the two components of the Fitnessgram?
2. What does NI-HR mean?
3. What does HFZ mean?

A5. Fitness Assessments: Cadet Physical Fitness Test & Fitnessgram

Cadets in the California Cadet Corps take the Physical Fitness Test twice a year. The CACC PFT is taken from the FitnessGram, with a couple changes. In Cadet Corps, we only do the 1-Mile Run, not the Pacer. And we only do pushups, not the flexed arm hang. **The CACC PFT is fully explained in Cadet Regulation (CR) 3-12.**

Activities measured for fitness Zones

- Abdominal Strength-
    - Measured by Curl ups
    - CDE PFT Curl Up-

      https://www.youtube.com/watch?v=uPQpernkK4w&list=PLC79E97B55E313A20&index=3

- Flexibility-
    - Measured by the Trunk Lift, the Back Saver Sit & Reach, and the Shoulder Stretch
    - CDE PFT Trunk Lift-
    - https://www.youtube.com/watch?v=PvYI3iPUHpY&list=PLC79E97B55E313A20&index=4

- CDE PFT Backsaver Sit & Reach

- https://www.youtube.com/watch?v=d_NL2Pke4NM&list=PLC79E97B55E313A20&index=7

- CDE PFT Shoulder Stretch
  https://www.youtube.com/watch?v=Vue_8KqEmkQ&list=PLC79E97B55E313A20

- Endurance-
  Measured by Push-Ups, Flexed Arm Hang

  - CDE PFT Push-Up
  - CACC only does the push-up
  - https://www.youtube.com/watch?v=5_D3bacZ7u0&list=PLC79E97B55E313A20&index=5

- Aerobic Capacity-
  Measured by One mile run or 20m Pacer test
  - 1-mile run
  - CDE PFT PACER (not an option for CACC PFT)

  - https://www.youtube.com/watch?v=_XJAtUKjxk4&list=PLC79E97B55E313A20&index=6

- Body Composition-
  - Measured by
    - Skinfold Test- a pair of calipers used to form and measure the thickness of skinfolds in order to estimate the amount of body fat
    - Bioelectric Impendence Analyzer – a floor scale-like device that sends an electronic signal through the body and gives a reasonably accurate fat percentage.
      - Video Stop: Body Fat Percentage- Bioelectrical Impedance Analysis- BIA
      - https://www.youtube.com/watch?v=sA1-_Qtz3KU
      - CDE PFT Body Mass Index BMI

https://www.youtube.com/watch?v=na0NDBjFFQs&list=PLC79E97B55E313A20&index=2

FitnessGram- is a physical fitness "report card," an educational assessment and reporting of data of America's young healthy fitness zone ranges. **It shows the finalized assessment of what health range an individual is in.**

- Video Stop: Introducing FITNESSGRAM 10.0 - By The Cooper Institute
  - https://www.youtube.com/watch?v=Xt_1l5BRmNg

FitnessGram Study Guide available at:
http://tcatitans.org/common/pages/DisplayFile.aspx?itemId=9289647

Healthy Fitness Zone standards for each activity:

1. Aerobic Capacity 1-Mile Run

Boys		Girls	
Age	Range	Age	Range
10	11:30-9:00	10	12:30-9:30
11	11:00-8:30	11	12:00-9:00
12	10:30-8:00	12	12:00-9:00
13	10:00-7:30	13	11:30-9:00
14	9:30-7:00	14	11:00-8:30
15	9:00-7:00	15	10:30-8:00
16	8:30-7:00	16	10:00-8:00
17	8:30-7:00	17	10:00-8:00

2. Abdominal Strength- Curl-Ups

Boys		Girls	
Age	Range	Age	Range
10	12-24	10	12-26
11	15-28	11	15-29
12	18-36	12	18-32
13	21-40	13	18-32
14	24-45	14	18-32
15	24-47	15	18-35
16	24-47	16	18-35
17	24-47	17	18-35

3. Upper Body Strength Endurance - Pushups

Boys		Girls	
Age	Range	Age	Range
10	7-20	10	7-15
11	8-20	11	7-15
12	10-20	12	7-15
13	12-25	13	7-15
14	14-30	14	7-15
15	16-35	15	7-15
16	18-35	16	7-15
17	18-35	17	7-15

4. Flexibility
   a. Back Saver Sit and Reach (lowest score from both left and right sides)

Boys		Girls	
Age	HFZ Standard	Age	HFZ Standard
ALL	8	10	9
		11-14	10
		15+	12

   b. Trunk Lift

Boys		Girls	
Age	Range (in inches)	Age	Range (in inches)
ALL	9-12	ALL	9-12

   c. Shoulder Stretch

Boys		Girls	
Age	HFZ Standard	Age	HFZ Standard
ALL	Touch Fingertips Left and Right	ALL	Touch Fingertips Left and Right

5. Body Composition

    a. The Cadet Corps doesn't record body composition for the Cadet PFT. You will encounter it when doing the school Fitnessgram in 5th, 7th, and 9th grades, but not in CACC.
    b. BMI Ranges

Boys		Girls	
Age	Range	Age	Range
13	23-15.1%	13	24.5-14.9%
14	24.5-15.6%	14	25-15.4%
15	25-13.2%	15	25-16%
16	26.5-16.6%	16	25-16.4%
17	27-17.3%	17	26-16.8%

Check on Understanding:

1. For the Cadet PFT, can cadets choose between the 1-Mile Run and the Pacer? Yes/No
2. Which exercises measure flexibility?
3. What are two ways to determine/calculate BMI?

REFERENCES

- Corbin, C., & Le Masurier, G. (2014). Fitness for life (6th ed.). Champaign, IL: Human Kinetics.