

Arizona Peace Officer Standards and Training

Basic Curriculum Lesson Plan

LESSON TITLE: PHYSICAL FITNESS - PHYSICAL CONDITIONING 8.3

SUBJECT:	Physical Conditioning
AZ POST DESIGNATION:	8.3.14
HOURS:	20
COURSE CONTENT:	<p>The development and demonstration of each participant's mental and physical condition, through structured exercise and classroom education. The value of physical fitness in law enforcement and the basic elements of strength training, aerobic conditioning, flexibility, nutrition and back injury prevention are emphasized. The hazards of tobacco and alcohol use are addressed and the participant receives the necessary skills and knowledge to prepare a lifetime personal fitness program.</p>
LEARNING ACTIVITIES:	<p>The physical fitness tests (fitness battery and POPAT) are administered. The student's achievement level is measured using the performance charts provided for each test. The goal is to improve the student's fitness level to minimize injury and enhance performance. Each student must pass POPAT as the graduation standard.</p>
PERFORMANCE OBJECTIVES:	<p>Upon completion of this course of instruction, students using notes, handouts and other support materials as references, within the allotted time, will:</p> <ul style="list-style-type: none">8.3.14.1 The trainee will receive instruction and participate in the instructor-led discussions of the following topics:<ul style="list-style-type: none">A. Contributing factors to overall health and fitness, including:<ul style="list-style-type: none">1. Regular exercise (aerobic and anaerobic).2. Body composition (weight control).3. Stress management.

4. Diet/nutrition (with emphasis on minimizing intake of fats).
 5. Periodic medical examinations.
 6. Tobacco use.
 7. Alcohol abuse.
- B. The relationship between health and fitness and various elements of job performance, including:
1. Absenteeism.
 2. On-the-job injuries.
 3. General overall productivity.
- C. Common health problems experienced by law enforcement officers, including:
1. Cardiovascular disorders.
 2. Low back injuries
 3. Substance abuse
- D. Physical conditioning factors and methods for evaluating each, including the following:
1. Cardiovascular endurance – 1.5-mile run.
 2. Flexibility – sit and reach test
 3. Muscular strength – bench press, leg press, vertical jump, etc.
 4. Muscular endurance – push ups, sit ups.
 5. Anaerobic power – 300-meter run.
 6. Speed and agility run – sprints, etc.

- E. Safe and effective exercises for each of the physical conditioning factors (instructor-led demonstration followed by trainee practice to achieve proper exercise techniques, including calculation and monitoring of “target” heart rate).

- F. The three (3) components of a safe and effective conditioning session:
 - 1. Warm-up.
 - 2. Conditioning period.
 - 3. Cool down.

- G. The meaning and significance of the following exercise principles:
 - 1. Specificity.
 - 2. Frequency.
 - 3. Duration.
 - 4. Overload.
 - 5. Progression.

- H. Methods for preventing low back injury (instructor-led demonstration followed by trainee practice to achieve proper exercise techniques), including proper techniques for:
 - 1. Lifting/carrying heavy objects.
 - 2. Dragging/pulling heavy objects.
 - 3. Pushing vehicles by hand.
 - 4. Safe and effective flexibility and strength exercises for preventing low back injury.

- I. The basic food nutrients and the general effects each has upon health and fitness.
 1. Proteins.
 2. Carbohydrates.
 3. Fats.
 4. Vitamins.
 5. Minerals.
 6. Water.

- J. Common foods that are particularly high or low in the different food nutrients.

- K. The long-term effects of alcohol abuse including addiction and chronic degenerative diseases such as:
 1. Cirrhosis of the liver.
 2. Damage to the nervous system.
 3. Atherosclerosis.
 4. Fetal alcohol syndrome.

- L. The short-term and long-term effects of tobacco use, including:
 1. Short-term effects: Constriction of the arteries, changes in blood chemistry, elevations in blood pressure and elevation of heart rate.
 2. Long-term effects: Addiction, cardiovascular disease, respiratory disease, cancer, etc.

- M. The nature and effects of other substances that have the potential for abuse, including:
 - 1. Caffeine.
 - 2. Steroids.
 - 3. Prescription medications.

DATE FIRST PREPARED:

August 1995

PREPARED BY:

Lt. William Louis and Officer Joe Wolfer, Phoenix P.D.

REVIEWED – **REVISED**:

Sgt. Angela Kwan, Phoenix P.D.

DATE: June 2002

REVIEWED – **REVISED**:

Sgt. Angela Kwan, Phoenix P.D.

DATE: March 2004

REVIEWED – REVISED:

Lt. Angela Kwan, Phoenix P.D.

DATE: August 2008

REVIEWED – REVISED:

Lt. Angela Kwan, Phoenix, P.D.

DATE: January 2010

REVIEWED – **REVISED**:

AZPOST (DocX)

DATE: April 2022

REVIEWED – REVISED:

DATE:

REVIEWED – REVISED:

DATE:

AZ POST – APPROVAL:

Richard Watling

DATE: January 2010

AZ POST – APPROVAL:

Lori Wait

DATE: April 2022

INSTRUCTOR REFERENCES:

The New Aerobics by Dr. Kenneth Cooper.

Interval Training by Edward Fox, Ph.D and Donald K. Mathews, D.P.E.

Stretching by Bob Anderson.

Understanding Nutrition by Eleanor Whitney and May Hamilton.

Pennsylvania State Police Fitness Assessment Manual by Jay Cochran (Commissioner), Pennsylvania State Police.

Police Fitness Concepts by Dean Nyhart (DPS), Physical Fitness Instructor School, 1986 – AZ POST.

The Aerobics Way and The Aerobics Program for Total Well Being by Kenneth Cooper M.D., M.P.H., 1977.

Your Blood Cholesterol Level – Handout by Boenringer Mannheim, Diagnostics.

2001 Cooper Manual by Kenneth Cooper M.D. (et. al).

CLASS LEVEL:

Student

TRAINING AIDS:

Stop watches, Cooper standards, POPAT manual, protocols (A-E), if used, and handouts (recruit notebook), if used.

INSTRUCTIONAL STRATEGY:

Interactive lecture, reading assignments, instructor demonstration, group discussion, problem solving and practical exercises.

SUCCESS CRITERIA:

Learning activities will have an objective practical/scenario pass/fail evaluation to assess student competency in this functional area.

COMPUTER FILE NAME:

8.3.14 Physical Conditioning

DATE RELEASED TO THE SHARE FILE:

May 27, 2022

I. INTRODUCTION

- A. Instructor(s) – (self) introduction.
- B. Preview of performance objectives.

II. INTRODUCTION TO WELLNESS

- A. Institute of Aerobics Research.
 - 1. Dr. Kenneth Cooper.
 - 2. Concept of preventive medicine.
 - 3. Total physical well being.
 - a. Exercise.
 - b. Rest.
 - c. Proper diet.
 - 4. Psychological.
 - a. Mental.
 - b. Spiritual.
- B. Major cause of death.
 - 1. Males:
 - a. All cardiovascular diseases. (Heart attack, stroke, congestive heart failure, etc.)
 - b. All cancers.
 - c. Accidents.
 - d. Chronic obstructive pulmonary disease. (Emphysema.)
 - e. Pneumonia and influenza.
 - 2. Females:

- a. All cardiovascular diseases. (Heart attack, stroke, congestive heart failure, etc.)
 - b. All cancers.
 - c. Chronic obstructive pulmonary disease.
 - d. Pneumonia and influenza.
 - e. Accidents.
- C. Law enforcement vs. the general population.
1. Studies by I.A.R. indicate that law enforcement personnel are far less fit than the general population.
 2. The average age of death for police officers is 59 years – approximately seven (7) years after retirement.
 3. Life span is based on their own conduct (excessive eating, drinking and too little exercise).
 4. The following are three (3) common health problems experienced by law enforcement personnel:
P. O. 8.3.14.1C
 - a. Cardiovascular disease.
 - b. Lower back injuries.
 - c. Substance abuse.
 5. Long-term effects of alcohol abuse:
P. O. 8.3.14.1K
 - a. Addiction.
 - b. Chronic degenerative diseases:
 - i. Cirrhosis of the liver.
 - ii. Damage to the nervous system.
 - iii. Atherosclerosis.
 - iv. Fetal alcohol syndrome.
P. O. 8.3.14.1M
 6. The nature and effects of other substances that have the potential for abuse:

- a. Caffeine.
 - b. Steroids.
 - c. Prescribed medications.
7. Fitness and age go together.
- a. Increased age – increased risk factors.
 - b. Studies show that the major causes of death while on duty or taking early retirement are cardiovascular in nature.
 - c. Studies indicate that age causes a definite increase in coronary risk factors.
 - d. Officers between the ages of 20-35 fared okay with norms, but officers over 35 were well below norms.
 - e. However, damage to the blood vessels, which leads to coronary heart disease, begins 15-20 years before the onset of the disease.
- D. Coronary heart disease. (Richard O. Keelor of the President’s Council on Physical Fitness.)
- 1. Sixty percent (60%) of all deaths in the U.S. result from diseases of the heart – diseases associated with physical inactivity.
 - 2. Primary risk factors:
 - a. Elevated blood cholesterol: More precisely, the ratio of high-density lipoprotein or HDL called “good cholesterol” to total cholesterol.
 - i. HDL – keeps the blood vessels clean. (Good Cholesterol.)
 - ii. LDL – low density lipoprotein or “bad cholesterol” carries fatty acids and builds up in the vessels. (Bad Cholesterol.)
 - iii. Normal levels:

<u>AGE</u>	<u>CHOLESTEROL</u>
Below 20	Below 150
Below 30	Below 180
30 and above	Below 200

- iv. Ratio of HDL to total cholesterol:

Male less than 4.0.
Female less than 3.5.

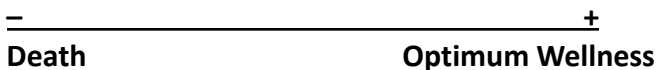
Example: Total cholesterol = 180
Total HDL = 30
 $180/30 = 6$

- b. Elevated blood pressure (hypertension):
- i. The force or pressure exerted on the material walls by the blood during contraction of the heart (systolic BP) and during relaxation of the heart (diastolic BP).
 - ii. There is a wide range for “normal” blood pressure – 140/90 is the value for borderline hypertension.
 - iii. High blood pressure usually has no symptoms.
- c. Smoking. **P. O. 8.3.14.1L**
- i. Short-term effects:
 - a) Constriction of the arteries.
 - b) Changes in blood chemistry.
 - c) Elevations in blood pressure and heart rate.
 - ii. Long-term effects:
 - a) Addiction.
 - b) Cardiovascular disease.
 - c) Respiratory disease.
 - d) Cancer.
 - iii. “Tobacco is the only product that when used as directed, results in death and disability” – Antonia Novello, M.D. and former Surgeon General of the United States.
- d. Diabetes (glucose).

- e. Sedentary lifestyle.
 - f. Family history – genetic link. Blood relatives with M.I – men, 55 years, and women, 65 years. (Cannot change.)
 - g. Obesity.
3. Secondary risk factors:
- a. Triglycerides.
 - b. Stress.

III. FITNESS JUSTIFICATION

- A. All of the listed primary and secondary risk factors for coronary heart disease can be affected by lifestyles, except family history.
- B. There are positive lifestyle factors between those who get the disease and those who do not:
 - 1. Regular activity.
 - 2. Moderate or no use of alcohol.
 - 3. Eating breakfast regularly.
 - 4. Maintenance of normal weight.
 - 5. Sleeping seven (7) to eight (8) hours per day.
 - 6. No smoking or chewing tobacco – the most significant change a smoker can make. It is the leading cause of premature death.
- C. The wellness continuum.



- 1. Determining where you fall along the wellness continuum.
 - a. How you feel.
 - b. How you look.
 - c. Physician’s examination.

- d. Others.
 - 2. Influencing (changing) your position along the continuum.
 - a. Position is temporary and acquired.
 - b. Position can change suddenly/traumatically or slowly/subtly.
 - 3. What can be done to improve your position on the wellness continuum?
- D. Dr. Kenneth H. Cooper's 12 Ways to Improve the Odds for a Lifetime of Good Health – these are contributing factors leading to overall health and fitness: **P. O. 8.3.14.1A**
- 1. Stop drugs, smoking and chewing tobacco.
 - 2. Limit alcohol.
 - 3. Exercise regularly.
 - 4. Eat less animal fat, cholesterol and sodium.
 - 5. Eat more complex carbohydrates and drink more water.
 - 6. Achieve and maintain ideal body weight.
 - 7. Take appropriate supplements including calcium and antioxidant vitamins.
 - 8. Fasten safety belts.
 - 9. Limit sunlight exposure or wear sunblock.
 - 10. Get immunizations.
 - 11. Obtain good prenatal care.
 - 12. Get regular medical checkups and self exams.
- E. Quality of life.
- 1. Physical fitness improves one's quality of life.
 - 2. Physical fitness improves self-esteem and self-confidence. (Command presence.)
- F. Goal setting to improve quality of life. (Lifestyle of fitness.)

1. Must be measurable and obtainable.
 2. Identify intrinsic and extrinsic motivators.
 - a. Personal challenges.
 - b. Health reasons.
 3. Set short-, mid- and long-term goals. (Write them down.)
 4. Identify factors, obstacles or excuses and address those to meet your goals.
- G. Two (2) components of physical fitness:
1. Health related:
 - a. Absolute strength. (Define - Ability to generate a maximum force of one (1) time. Define - Exert force repeatedly over a period of time.)
 - b. Dynamic strength (endurance).
 - c. Flexibility.
 - d. Cardiovascular endurance.
 - e. Body fat composition.
 2. Motor related:
 - a. Coordination.
 - b. Agility.
 - c. Power.
 - d. Balance.
 - e. Speed.
 - f. Accuracy.
 3. A motor-related component makes an individual successful in motor skills performance endeavors (firearms, tactical driving and obstacle course). (POPAT measures motor-related components.)

4. A health-related component makes an individual fit, functional and productive in everyday living.
5. General health components are far more important to wellness and quality of life.
6. The physical fitness test you take here at the academy measures the general health components.

7. Job relatedness.

P. O. 8.3.14.1B

- a. Readiness to perform the emergency function.
 - i. A physically-fit person can go from rest to exercise, sustain the exercise and recover significantly better than the unfit person.
 - ii. In law enforcement, this is a critical reason to stay fit for life.
 - iii. Psychological studies done on high levels of activity, which could be similar to police emergencies, show an unfit officer is a high risk to himself/herself and others in his/her care.
- b. Trainability.
 - i. Improved mental capacity and ability to learn.
 - ii. Tests show a high correlation between aerobic capacity and test performance.
- c. Survivability.
 - i. Research done on heart attack victims shows physically-fit people have a higher survival rate than unfit people.
 - ii. This also applies to other trauma.
- d. Fatigue tolerance and accident prevention.
 - i. Physically-fit people can work longer and harder with less fatigue than unfit people.
 - ii. Fit people use less sick leave.
- e. Stress management.

- f. Physiologically as one becomes fit, one's physiological mechanisms for managing and handling stress are greatly enhanced.
- g. Response options.
 - i. The more physically fit the officer, the less force necessary in most cases.
 - ii. A physically-fit officer has more options and more time to use these options before progressing to deadly force.
- h. Endurance.
 - i. Physical fitness and endurance are synonymous.
 - ii. Endurance is an extremely valuable tool for police officers from physical confrontations to rescues.

IV. STRESS AND FITNESS

- A. A stress mechanism occurs no matter what the source of stress is. The body will respond in the same manner.
 - 1. When confronted with a stressful situation, our adrenal glands secrete powerful hormones.
 - 2. This causes increases in blood pressure, heart rate, respiration as well as others, which get us ready for confrontation (fight) or escape (flight).
 - 3. Chronic stress of any kind can leave us susceptible to illness. Among the stress-related conditions are:
 - a. Low back pain.
 - b. Ulcers.
 - c. Insomnia.
 - d. High blood pressure.
 - e. Loss of appetite.
 - f. Overeating.
 - g. Anxiety.

- h. Rash.
- i. Headaches.
- j. Indigestion.
- k. Chronic fatigue.
- l. Sexual dysfunction.
- m. Irritability.
- n. Heart palpitations.

B. Reducing stress.

1. Exercise, even though it is a form of stress, causes many beneficial changes in the body.
2. Exercise is a controllable type of stress that can be turned on and off at the beginning and end of the exercise.
3. Not only does moderate exercise reduce stress, it also reduces chances of cardiovascular heart disease (cardiovascular events).
4. Studies show that a police officer at a low fitness level has a 25 times greater chance of dying from a cardiovascular event than from violent death.
5. The unfit officer is less able to respond fully to strenuous physical activity.
6. Hopefully, the material we have just covered will explain to you why we have fitness testing.

V. DIET AND NUTRITION – ESSENTIAL DIETARY COMPONENTS

P. O. 8.3.14.11

A. Carbohydrates.

1. Simple (glucose).
2. Complex:
 - a. Glycogenolysis – the process by which liver glycogen is converted to glucose and transported in the blood for use by the muscles.
 - b. Glycogen – the state in which the body stores glucose.

3. Function of carbohydrates:
 - a. A major source of energy – four (4) calories per gram.
 - b. Spares the breakdown of proteins.
 - c. Fuel for CNS and the brain.
 - d. Major source of fiber.
 4. Where do they come from?
 - a. Simple – sugar, honey, molasses (ose-ending for sugars) and refined/processed grains. **P. O. 8.3.14.1J**
 - i. High glycemic index .
 - ii. Very low in fiber and nutrients.
 - b. Complex – breads, cereals, rice, spaghetti, macaroni, potatoes, beans, etc.
 - i. Low glycemic index.
 5. Diet deficiency in carbohydrates rapidly depletes muscle and liver glycogen (hypoglycemia) and adversely affects performance of intense short-term exercise as well as in prolonged submaximal exercise.
 6. Carbohydrates should provide 55%-60% of total daily calories (most should be from complex).
- B. Fats.
1. Types of fats:
 - a. Simple (triglycerides).
 - i. Storage fat.
 - ii. Makes up 98% of your body fat.
 - b. Compound fats – lipoproteins transport fat in the blood.
 - c. Derived fats (from simple and compound).
 - i. Cholesterol produced by the liver.

- ii. From .5 grams to 20 grams per day.
- 2. Functions of fats:
 - a. Energy source and reserve nine (9) calories per gram.
 - b. Protection of major organs.
 - c. Thermo-regulation.
 - d. Absorption of fat-soluble vitamins (A, D, E and K).
- 3. Where do they come from?
 - a. Cooking oils, butter, meats, whole milk, cheese, nuts, etc.
 - P. O. 8.3.14.1J**
 - b. Saturated fats:
 - i. Solid at room temperature – animal products, coconut oil, palm oil, etc. (liver turns saturated fat into cholesterol).
 - ii. Elevates LDL cholesterol.
 - c. Polyunsaturated fats:
 - i. Liquid at room temperature – vegetable oils (corn, safflower, soybean, etc.).
 - ii. Lowers both LDL and HDL levels.
 - d. Monounsaturated fats:
 - i. Vegetable oils (canola, peanut and olive), avocados and most nuts.
 - ii. Lowers LDL and may raise HDL levels.
 - e. A normal diet should contain 20%-30% fat.
 - i. Weight loss should include budgeting your fat intake.
 - ii. Limit to 10%-20% to lose weight.
- C. Proteins.

1. Come from lean meats, fish, poultry, eggs, milk products, peanut butter, nuts, soy-based products, etc. **P. O. 8.3.14.1J**

2. Functions of proteins:

a. Build and repair body tissues.

b. Regulate body functions:

i. Growth.

ii. Digestion.

c. Help fight infections.

d. Supply energy – four (4) calories per gram, especially when glycogen stores are depleted.

e. A normal diet should contain 12%-15% protein – .8 grams per kg of body weight (athletes 1-1.5 gm/kg body weight).

D. Vitamins and minerals. (Discuss sports drinks.)

1. Come from a balanced diet.

2. Women need more calcium and iron.

3. Anti-oxidants:

a. Vitamins A, C and E. (And the mineral selenium.)

b. Help to neutralize free-radicals that may cause cancer and heart disease.

E. Water.

1. The average person needs eight (8) to 10 cups per day or divide your weight in half ($\frac{1}{2}$) and that is how many ounces you should drink. (Example $180 \text{ lbs}/2=90$ ounces of water.)

2. For every pound of body weight lost through sweat, replenish with 16 ounces of water.

VI. PHYSICAL CONDITIONING FACTORS

P. O. 8.3.14.1D

A. Physical conditioning factors and methods for evaluating each, including the following:

1. Cardiovascular endurance – 1.5-mile run.

2. Flexibility – sit and reach test.
 3. Muscular strength – bench press, leg press, vertical jump, etc.
 4. Muscular endurance – push ups, sit ups.
 5. Anaerobic power – 300-meter run.
 6. Speed and agility run, sprints, etc.
- B. Safe and effective exercises for each of the physical conditioning factors (instructor-led demonstration followed by trainee practice to achieve proper exercise techniques, including calculation and monitoring of “target” heart rate). (Demonstrate and practice for trainees.) **P. O. 8.3.14.1E**
- C. The three (3) components of a safe and effective conditioning session: **P. O. 8.3.14.1F**
1. Warm-up.
 2. Conditioning period.
 3. Cool down.
- D. The meaning and significance of the following exercise principles: **P. O. 8.3.14.1G**
1. Specificity.
 2. Frequency.
 3. Duration.
 4. Overload.
 5. Progression.
- E. Methods for preventing low back injury (instructor-led demonstration followed by trainee practice to achieve proper exercise techniques), including proper techniques for: **P. O. 8.3.14.1H**
1. Lifting/carrying heavy objects.
 2. Dragging/pulling heavy objects. Handout (Addendum C)
 3. Pushing vehicles by hand.

4. Safe and effective flexibility and strength exercises for preventing low back injury.

VII. EXERCISE INJURY PREVENTION AND TREATMENT

- A. A fatigued body structure is more prone to injuries.

1. Fatigue to a structure occurs when asked to sustain a workload over a mechanically unsound foundation.
 - a. Cushion inserts.
 - b. Orthotics.
2. Proper running shoes. Handout (Addendum B)
3. Stretching.
4. Special exercises.
5. Taping – wrapping, etc.
6. Adjusted running stride or gait. (180 - 190 steps per minute.)
7. Watch where you are going.
 - a. When running on uneven surfaces, give yourself several yards behind the runner ahead of you.
 - b. Upright posture – opens the airway and diaphragm.
8. Use equipment safely.

- B. Treatment.

1. Stop exercising immediately when an injury occurs. Explain exercise pain vs. injury pain.
2. Verbally report an injury to the class instructor immediately and in writing as soon as possible to the class sergeant.
3. Rest.
4. Ice (48 to 72 hours). (Heat can be applied after 72 hours to generate blood flow for healing.)
5. Compression.

6. Elevation.
7. If you have an exercise question, injury or diet problem, request a meeting with the physical fitness coordinator or the proficiency skills supervisor.
 - a. The request should be in writing.
 - b. State exactly what the problem is.

VIII. CONCLUSION

- A. Review of performance objectives.
- B. Final questions and answers.
- C. Instructor closing comment(s).