Massachusetts State Police Academy

Physical Fitness Preparation Guide

2021

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1. **DISCLAIMER:**

This preparation guidance is intended to provide current and accurate physical fitness information that can be utilized in preparation for a recruit physical fitness program. It is offered as an informational aid only and is not intended to render individual, professional, or medical advice. Any discomfort, injuries, or questions regarding the capability of a person to perform any of the tests, programs, or activities set forth in this guide should be referred to the individual's medical practitioner. Consult your physician prior to starting a physical fitness training program.

2. **INTRODUCTION:**

Physical fitness preparedness is paramount to your success in completing a training regimen at the Massachusetts State Police Academy. **Statistics have shown that 74% of people that fail to successfully complete the training program leave within the first 48 hours citing; not being properly prepared to meet the physical demands of training and injuries relating to not being physically prepared to meet the physical demands of training.** In order to increase your chances of successfully completing the training program, it is essential to participate in a proper fitness routine before entering the State Police Academy.

3. **RECOMMENDATIONS:**

- **Setting Goals.**

Setting personalized goals should be based on your current physical fitness level. Goals should allow you time for gradual development and advancement. The time to start achieving goals is **NOW!** The following are some benchmarks and goals you should strive for prior to day one of a Recruit Training Troop.

- **Arriving day one at a healthy body weight**.

Arriving overweight or obese will exponentially reduce your chances of being successful. You should be ready to train day one without the burden of having to lose excess weight that may negatively impact your training. The only control you'll have while here at the academy is of your fitness level. Physical training should be something you enjoy and embrace each morning. You cannot out- train a bad diet. Your body needs proper fueling before and after training.

- **Cardiovascular and Respiratory Endurance**

Running will be an everyday occurrence, during physical training and after. Distances will range from three to five miles. In addition to daily runs, prepare for movement (running and walking) of 50 to 60 miles a week! You will run everywhere you go. To and from class, gym, chow hall, hole, etc… Don't set your goals to accomplish just the minimum standards as you'll be expected you give 100% effort at all times. A goal in your training regimen would be to accomplish a three mile run (without walking) at 8 minutes and 30 seconds a mile (25:30).

- **Upper Body Muscular Endurance**

The bench press and push-ups are two exercises that measure upper body muscular strength and endurance. At minimum, males should be able to perform 30 pushups in one minute and females should be able to perform 15 pushups. Males should be able to perform a bench press of 99% of their bodyweight and females at 59%. Example: A male that weighs 185lbs should be able to bench press 183lbs (185x.99). A female who weighs 140lbs should be able to bench press 82lbs (140x.59).

- **Anaerobic Power**

Sprinting is one form of high intensity anaerobic exercise. Sprint work can be broken up into repetitions measuring the intensity by time or distance. Depending on your fitness level, you can create a workout of sprints between 20 and 30 seconds long, giving maximum effort during the work period followed by a one to two minute rest between sprints. The number of sprints you complete in a workout will be determined by your fitness level. As your anaerobic conditioning improves, increase the intensity by increasing the number of sprints or decreasing the rest time between sprints. This type of anaerobic conditioning will help to better serve your aerobic capacity, where training only in the aerobic zone will decrease your anaerobic capacity. Prior to

arrival, males should be able to complete a 300 meter sprint in less than 59 seconds and females, 71 seconds.

4. Following these recommendations by setting goals and achieving the aforementioned benchmarks are no guarantee of individual success. Use it as a guide in planning your fitness regimen and start as soon as you can. Use this information to assist you in developing a personal fitness program in order to better prepare yourself for the training challenges and demands you will encounter during your training at the Massachusetts State Police Academy.

5. Below are some statistics of physical training tests performed by the 83rd RTT. These averages are of male and females of all ages. Included are 1.5 mile run times, max push-ups in one minute and max sit-ups in one minute.

Week 4
Sit-ups Average – 36
Push-ups Average – 41
1.5 Mile Run Average – 10:07

Week 17
Sit-ups Average – 40
Push-ups Average – 46
1.5 Mile Run Average – 9:46

Week 23
Sit-ups Average – 44
Push-ups Average – 56
1.5 Mile Run Average – 9:42

6. MENTAL PREPARATION:

The State Police Academy is as mentally demanding as it is physically demanding. Attending training at the State Police Academy is a very serious commitment that will affect you and your families.

The training is paramilitary in nature and intentionally stressful to prepare Trainees for future work in high stress situations.

You will be away from your family and friends for 24 weeks with very limited contact during the training week.

Below are actual comments recorded on exit interviews of Trainees who decided to leave the training program.

- **"Psychologically more difficult than I thought."**
- **"I feel I was pushed to the outer edge."**
- **"A lot stricter and tougher than I thought."**
- **"The training is more intense than anticipated."**
- **"For me, everything seemed to snowball on me, doing everything wrong, fell behind, got stressed out."**
- **"I've never been this stressed out in my life."**
- **"I am not psychologically fit to keep attending this program. I trained myself physically but not mentally."**

INTRODUCTION

Physical fitness preparedness will be paramount to your success in completing a training regimen at the Massachusetts State Police Academy. Statistics have shown that the majority of people that fail to successfully complete the training program fail as a result of not being properly prepared to meet the physical demands of training.

In order to increase your chances of successfully completing the training program at the Massachusetts State Police Academy, it is essential to participate in a proper fitness routine before entering the State Police Academy.

It is recommended that you develop and participate in a personal fitness program that meets your individual needs. However, it is important that you adhere to sound guidelines and safe procedures when planning and participating in any fitness program. In preparation of attending the State Police Academy, and to optimize your safety during an exercise training program, some initial screening for important medical and health factors is necessary. The Physical Activity Readiness Questionnaire (PAR-Q) is recommended as a minimal standard for screening prior to beginning an exercise program. The PAR-Q is designed to identify the small number of adults for whom physical activity might be inappropriate and should have medical clearance prior to participating in an exercise program (See Appendix E). If after reading the following information you are still not sure how to properly train for increased physical activity, seek out the advice of a trained and certified fitness specialist.

This guide will provide you with current and accepted health and fitness information on various topics of physical fitness. These range from aerobic and strength conditioning to equipment and nutrition planning. Use the information to assist you in developing a physical fitness program in order to better prepare yourself for the training challenges and demands you will encounter at the Massachusetts State Police Academy.

PHYSICAL FITNESS

According to the President's Council on Physical Fitness and Sports, physical fitness is the ability to carry out daily tasks with vigor and alertness, without undue fatigue and with ample energy to engage in leisure time pursuits and to meet the above average physical stresses encountered in emergency situations.

Physical fitness may also be defined as an organic condition of the body which enables an individual to use his/her body in activities requiring strength, muscular endurance, cardio respiratory fitness, flexibility, coordination, agility, power, balance, speed and accuracy – without undue experience of fatigue or exhaustion.

STRETCHING & FLEXIBILITY (Appendix D)

Flexibility is defined as: the range or extent of motion possible within a given joint. Applying the term flexibility to muscles means that if your muscles are very elastic and pliable, stretching easily, then maximum joint flexibility will be available to you.

There are three basic types of stretching:

1. **Ballistic stretching** should be avoided. This involves stretching to your limit and performing repetitive, bouncing movements, usually quickly. This type of stretching may do more harm than good, increasing the risk of tiny muscle tears, soreness, and injury.

2. **Static stretching** is gradual stretching through a muscle's full range of motion until you feel resistance or the beginning of discomfort. You hold the maximum position for 10 to 30 seconds, relax, and then repeat this several times.

3. **Proprioceptive neuromuscular facilitation stretching** is more complicated. One type is called contract-relax stretching. Here you first contract a muscle against a resistance; usually provided by another person, and then relax into a static extension of the muscle.

Prior to and after each exercise session, all recruits will participate in a full body-stretching regimen. Stretching before and after physical exercise will help reduce the risk of injuries, enhance athletic performance and increase strength and aerobic power. Before stretching begins, each recruit will perform a short aerobic exercise (e.g. 60 side straddle hops). This will allow freshly oxygenated blood to engorge the muscle, thus increasing individual performance. Proper stretching will

increase flexibility. Increased flexibility will aid in the reduction of athletic injuries.

Some basic rules to follow for proper stretching are:

- Always warm-up by doing light aerobic movements for 5-8 minutes before engaging in a stretching routine
- Stretch before and after your actual workout
- Hold each stretch for 30-40 seconds
- Stretch for 10 to 15 minutes
- Stretch to the point of mild resistance
- Relax as you hold a stretch
- Do not hold your breath
- Do not lock out joints
- Stretching should be smooth and controlled – no bouncing
- Stop the stretch at the first sign of pain.

Participating in a proper stretching routine before and after your workout provides the following fitness advantages:

- Reduces injuries due to the tearing of muscle tissue
- Increases range of motion
- Increases muscular strength
- Promotes muscle relaxation
- Promotes faster recovery from soreness due to strenuous activity
- Promotes better circulation
- Makes strenuous activities like running, cycling, and swimming easier

FINDING YOUR TARGET HEART RATE

1) Find Resting Heart Rate (RHR) first thing in the morning.
2) 220 – age = MHR.
3) MHR – RHR = HR Reserve.
4) HRR x %training zone = IL.
5) IL + RHR = THR or Training Zone.

RHR=Resting Heart Rate
MHR=Maximum Heart Rate
HRR=Heart Rate Reserve
IL=Intensity Level
THR=Target Heart Rate
% Training zone refers the level you wish to workout.

50 % to 60 % is usually used for beginners and 65% to 80% used for athletes.

AEROBIC EXERCISE (Appendix A)

Aerobic exercise, also known as Cardiorespiratory and Cardiovascular exercise, is exercise that requires the use of large amounts of oxygen and use of large muscle groups in a continuous and rhythmic manner for a sustained period of time. Aerobic exercise provides a person with numerous benefits, including but not limited to:

- Decreased blood pressure
- Decreased body fat and tryglyceride levels
- Decreased risk of developing cardiovascular disease
- Increased bone density

Before engaging in any cardiovascular exercise, you should understand the four basic components to a cardiovascular program

- Mode
- Frequency
- Duration
- Intensity

Mode is the kind or type of activity you decide to participate in. Primary aerobic activities include brisk walking, running, swimming, and cross country skiing. Secondary aerobic activities could include stair climbing, racquetball and circuit course type weight training.

Frequency refers to how often you participate in a type of exercise. Under ideal conditions, aerobic exercise two days a week will maintain a person's current fitness level. However, in order to improve your aerobic conditioning level, 3-5 days of aerobic exercise is usually needed.

Duration refers to the amount of time you continuously perform an exercise. It is important to remember that in order for an exercise to be aerobic, it must involve continuous motion of the large muscles of the body. How long you exercise will depend on your individual physical conditioning goal. Normally 15 to 60 minutes of continuous activity is acceptable. Recent research has also shown the exercise duration could be quantified over a period of one day. Simply stated, aerobic fitness levels can improve with as little as 10 minutes of exercise duration, as long as the exercise is of an

aerobic mode and performed several times: Such as 3 to 4 times a day over a 5 day period.

Intensity refers to the difficulty of the exercise. With regards to aerobic conditioning, this does not mean harder, more intense levels are better. Moderate intensity levels are almost always more appropriate and enjoyable than high intensity workouts. Individuals that are just starting a fitness routine, suffer from or are recovering from an injury or illness, or are significantly overweight, should first consult with trained medical and fitness personnel before participating in even a low intensity aerobic exercise program.

To receive the maximum benefits from aerobic exercise, the intensity level should be maintained within your aerobic training zone. In general, individuals just starting an aerobic program, people that are at poor or very poor levels of fitness or people that are significantly overweight should calculate their training zone between 50-60% of their maximum heart rate (MHR). Individuals that are of average fitness levels should calculate an intensity level of between 65-80% MHR. Calculating your training zone can be done using three methods. One of the best and most precise methods of monitoring your training zone is by monitoring your actual heart rate. This can be done manually by taking your pulse or by use of an electronic heart rate monitor. Other more simplified, but less accurate methods are: The Borg Scale or rating of perceived exertion scale and the so-called "talk test": where you should be able to comfortably talk or take on a conversation while performing aerobic exercise.

6	
7	**Very, Very Light**
8	
9	**Very Light**
10	
11	**Fairly Light**
12	
13	**Somewhat Hard**
14	
15	**Hard**
16	
17	**Very Hard**
18	
19	**Very, Very Hard**
20	

Borg Scale of perceived exertion. Exercise between 11 & 15 are considered aerobic.

It is always important to gradually increase your duration, intensity and frequency over a period of time. In addition, the more aerobic training you participate in, the more important it is to cross train or change the mode of the exercise.

A warm-up stretching routine and cool-down stretching routine before and after aerobic exercise is also important to increase the benefits of aerobic exercise and decrease the chances of exercise related injuries.

RESISTANCE TRAINING (See Appendix B)

There are two types of muscular fitness needed for daily living and for physical performance:

- Muscular strength: This is the muscle's ability to generate maximum force in one contraction. (e.g. bench, 1 rep).
- Muscular endurance: This is the muscle's capacity to make repeated sub-maximal contractions without much fatigue. (e.g. pushups, reps).

The principles of muscular strength and endurance resistance training are:

- Overload - To increase strength or endurance, a higher workload than provided by daily activity must be imposed on the muscle.
- Progression - Successively higher workloads must be placed on the muscle to continue improvement.
- Specificity - Training effects are specific to the muscle, contraction joint angle, equipment, and demand placed on the muscle.
- Balance - All muscles should be equally worked.
- Regularity - The muscle must work against resistance 2 to 3 times a week consistently.
- Recovery - The same muscle should not be worked to exhaustion on 2 consecutive days to allow for its recovery.

When planning a weight-training program follow these steps:

- Develop a full body routine
- Perform the routine 2-3 times per week

- Start the program using lighter weight and gradually increase the resistance as strength improves
- Work large muscle groups before smaller muscle groups
- Alternate push with pull exercises
- Do multi-joint movements, such as bench press, before single joint movements, such as curls
- Work complimentary body segments during the same workout, such as chest and triceps, or back and biceps
- Seek trained professional advice

OVER-TRAINING

Over-training involves placing an excessive amount of stress on the body to a point where the body can no longer adapt and adjust, ultimately leading to a breakdown of the body. One of the most common causes of overtraining is doing too much too soon. It is important to remember that an increase in physical fitness comes from dedication over a long period of time. Training more than is necessary or desirable, engaging in exercise to an excessive degree, or engaging in an intensity level over your ability is neither wise, nor beneficial.

Some signs of overtraining are:

- Loss of appetite
- Sudden dramatic loss in weight
- Cold or flu like symptoms
- Difficulty sleeping
- Changes in mood, depression or irritability
- Constant sore, aching or injured joints and muscles

It is best to design a training program that allows the body to recover. A few tips to follow that will help you prevent overtraining problems are:

- Never have two hard days in a row. A hard day would be one that places the body in the upper levels of your training zone (75-85% MHR or 1RM)
- Don't increase your intensity level by more then 10% a week
- Allow your body the time to adapt to your training routine
- Rest and maintain a regular sleep schedule

DETERMINE YOUR BODY COMPOSITION

One of the greatest misconceptions in regards to a diet and exercise program is that weight loss indicates a successful program. Since weight loss is not always an indication of loss of body fat, body composition should be used in its place. Body composition has proven to be a more accurate and reliable method of determining overall fitness levels, in addition to determining an individual's risk to many types of health-related diseases. The three most common ways to determine body composition are:

Body Fat Percent
Body Mass Index or BMI
Waist to Hip Ratio

Body Fat Percent:

Probably one of the most well known methods of determining body composition is body fat percent. Body fat percent is determined by various methods. The most common of methods is by using a device called a "body fat caliper." By measuring folds of skin with subcutaneous fat at various locations of the body, an average percentage of body fat can be calculated. Other methods such as Hydrostatic Weighing, Ultrasound and Bioelectric Impedance are also available. However, these methods are often times cumbersome and expensive and usually achieve similar results as the fat caliper method.

With all body fat calculation methods, it is important to remember that a margin of error exists, and even the most accurate results are estimated calculations and dependent on numerous factors. As a result, body fat percent should be used more for the purpose of result comparison over a period of time to determine the effectiveness of your fitness program, rather than a single measurement to determine average body fat percent.

Maximum Desirable Body Fat Levels (± 2%)			
Male		Female	
Age	% Body Fat	Age	% Body Fat
:S 24	15%	:S 20	17%
25-27	17%	20-22	18%
28-29	18%	23-25	19%
30-32	19%	26-29	20%
33-39	20%	> 30	22%
> 40	22%		

(Durnin et al 1985, Katch & McArdle 1973, Durnin & Rahaman 1967, Royal College of Physicians 1983.

Body Mass Index (BMI)

Since BMI is a measurement of an individual's "mass," rather than body fat or weight alone, it is considered a more reliable predicator to the development of chronic diseases, such as high blood pressure, heart disease and diabetes. BMI is calculated by obtaining a ratio between your weight and height. A BMI 2'30 dramatically increases an individual's risk of developing one of the above health disorders.

To calculate your BMI use the following equation:

$$BMI = \frac{\text{Weight}_{lbs} \div 2.2}{[(\text{Height}_{inches}) \times (.0254)]^2}$$

BMI Norms*	
Emaciated	Less than 15.0
Severely underweight	15.0 to 16.9
Underweight	17.0 to 18.9
Normal weight	19.0 to 24.9
Overweight	25.0 to 29.9
Obese	30 to 39.9
Severely obese	40.0 or more

* Information taken from: Whitney E,S Rolfes, Understanding Nutrition, 6th ed. NY: West Publishing Co.,1993 p255

Waist to Hip Ratio:

Location of where body fat accumulates is also an important predictor of various types of disease. Regardless if you are overweight or not, increased fat distribution viscerally or primarily around the waist is an independent risk factor for diseases such as diabetes and stroke.

A ratio consisting of measurements from the narrowest point of the waist and the widest point of the hips determines your risk.

Male at risk above **.8***
Female at risk above **.9***

* Pentz, Jane, Nutrition for professionals, 5th ed. MA: LMA Publishing, 1999 p99

TRAINING LOGS (Appendix C)

Training logs are used to ensure improvement in cardiorespiratory (aerobic), muscular strength and/or muscular endurance conditioning. This is accomplished by helping to:

- Remember and record the details of each workout session
- Monitor the frequency of workout sessions
- Receive adequate rest and recovery between workouts
- Keep track of progress

After an aerobic workout, always record the frequency, intensity (exercise heart rate), and duration of each workout session. During weight training, always record the amount of weight, sets, and reps for each workout session.

Included in this guide book is an example of a training log record sheet for cardiorespiratory, strength and/or muscular endurance training.

NUTRITION

Hydration and fluid replacement:

Water is your most important nutrient. Although it contains no calories, water is essential for life. Water makes up 60% of your total body weight and 70% of your muscles. It serves as a transport mechanism for nutrients, gases, and waste products. It is also involved in the heat regulating functions of the body. Without water, your body cannot work at top levels and you may harm yourself. If you are not properly hydrated during a workout, you may encounter cramping and dehydration. Proper hydration is essential for top performance.

Thirst is an unreliable indicator to hydrate. If you feel thirsty, your body has already approached a level of dehydration. The feeling of thirst should be considered a warning indicating increased body heat and approaching heat illness. At the point of feeling thirsty, you should stop any physical activity and immediately replace body fluids, preferably with cool clear water.

Avoid beverages containing caffeine and alcohol, because they increase urine production and add to dehydration.

CARDIAC DRIFT & HYDRATION

Despite the accuracy of electronic heart rate monitors, a phenomenon known as cardiac drift can throw a wrench into the works. Cardiac drift is the tendency of the heart to avoid a constant rate of functioning. As a result of cardiac drift the heart rate may rise slowly throughout your workout even if your pace remains constant. This increase can amount to as much as 20 beats per minute. Apparently, staying well hydrated can minimize the effects of cardiac drift.

Dr. Janet D'Arcy

Nutrition - food choices - menu planning:

The American diet contains too many processed foods (particularly sugar) which add extra calories that can lead to unwanted weight gain. A proper diet can curb nutrition related diseases including heart disease, stroke and obesity. Add more fruits and vegetables, especially greens, lean meats, nuts and seeds to your meal plan. Limit your intake of processed foods. Processed foods tend to have a long shelf life with many added ingredients. Replace processed foods with whole foods. Whole foods do not have an ingredient list and are usually perishable within a week's time.

Three key components to proper nutrition are variety, moderation, and nutrient dense food choices. Individuals should practice menu planning and avoid fast food meals of convenience. If you invest time in planning ahead for your day by packing a lunch or having fruits and vegetables on hand, you avoid the urge to grab the first thing that you see when you are hungry. Avoiding sugar dense meals can help you maintain constant energy levels throughout the day.

Breakfast is an important meal of the day and provides the jump-start your body needs to begin the day. Choices should include foods high in complex carbohydrates and fiber and low in refined and added sugar. Increase fluid intake to hydrate the body and avoid everyday consumption of coffee or other caffeine containing beverages as they tend to dehydrate the body.

Supplement healthy snack choices for the traditional high sugar containing ones. Better snack choices may include the following:

Traditional	Healthy Alternative
Donut	Sweet Potato
Chips	Almonds, cashews
Pizza slice	Cheese
Candy bar	85% Dark Chocolate
Soda	Water or seltzer water
Cookies	Fresh Fruit, berries

SUPPLEMENTS

The consumption of performance-enhancing supplements, protein powders, amino acids, plant extracts, herbal supplements and other non-food substances is perhaps the trendiest area of sports nutrition. Athletes and laypersons believe that these supplements will give them a competitive edge when, in fact, they may be harmful to both health and performance.

The types of supplements used by athletes are continuously changing. There is a wide range of substances used. Substances are often marketed without any supportive scientific data to indicate the potential benefits or possible harmful side effects. Food and performance supplements are NOT regulated by the Federal Food and Drug Administration as many people believe. In fact, there is no independent or federally sanctioned agency that regulates the purity and safety of food supplements. Therefore, the Massachusetts State Police Academy does not recommend, endorse or encourage the use of any performance enhancing supplements.

Drug use:

The use of anabolic steroids and other performance-enhancing drugs such as testosterone, growth hormone, insulin and erythropoietin are not only very dangerous, but illegal. Any positive performance results from taking these drugs are usually short lived and are more than often accompanied by serious side effects and can even have fatal results.

Do not take any drug, in any form, which is not recommended or prescribed by a licensed medical practitioner. Be aware of people that offer you any substance that they claim will enhance your sports performance. Seek the advice of a physician or other licensed medical practitioner if you have questions.

OVERUSE INJURIES

Overuse/Inflammatory conditions may develop slowly and become chronic or may come and go before settling in. Signs and symptoms of overuse injury may include one or several of the following:

Aching	Tingling		
Pain	Cracking		
Diminished Coordination	Tenderness	Decreased Joint Movement	Swelling
Decreased Strength	Numbness		

It is important to be aware of your body and what it is telling you. Continuing a training program while injured will not speed or increase your fitness results and could possibly lead to a long term disability.

Physical training is intrinsically linked with injury prevention. We recognize that a lack of physical fitness is one of the primary causes of injury. Muscular imbalance, improper timing because of poor neuromuscular coordination, a lack of ligamentous, tendonous and muscle strength, lack of flexibility and inadequate muscle bulk are among the major causes of injury directly attributable to insufficient or improper physical conditioning.

PREVENTING OVERUSE INJURIES:

The Six "**S**" Approach to analyzing the cause of overuse injuries from running:

Shoes: Footwear is a runner's most important piece of equipment**.** Footwear is designed to protect the bottom of the foot and provide flexibility and/or stability to the foot. Shock absorption and energy return are both key functions of footwear.

Go to a reputable shoe store with competent staff. Go to different stores and try on several pairs. Take your old shoes with you. They will tell an experienced sales person a lot about the way you wear your shoes. Take a pair of socks that you think you might wear with your shoes to get the proper fit. Remember that sneakers do not "break-in". For length, there should be a space the width of your thumbnail between the end of the toe box and the tip of your longest toe on your longest foot. Make sure you can freely wiggle your toes. The heel should feel snug, but comfortable. Get your feet measured every time you buy new shoes. Aging and injury can change your size.

Running shoes should be replaced every 300-400 miles if you run on hard surfaces and every 500 miles if you run on soft surfaces. Investing in the proper footwear can cost upwards of $75.00 – $90.00. Be cautious of purchasing bargain footwear. This footwear is often inferior in design and may not be appropriate for athletic training use.

Surface: Choose blacktop roads, without defects, whenever possible. If you run on a track be sure to change direction approximately every four laps. Run on even soft surfaces whenever possible to enhance shock absorption and to avoid injury.

Speed: Too many people try doing too much, too soon. Avoid increasing running mileage more than 10% a week. Use progression with speed and distance of training.

Structure: Your predisposed body composition. Address limitations and accommodate for leg length discrepancy, flat feet, bunions, etc.

Strength: Muscle balance over muscle imbalance. Stronger muscles provide more power for running up inclines. Equally important, they offer better shock absorption, hence injury protection when running downhill.

Stretch: Increased flexibility. If stretching is done properly, it prepares the muscle for imposed demands and reduces injury.

Reducing pain and injury:

Immediate care of overuse injuries is kept simple by using the **R.I.C.E.** principle. **R.I.C.E.** is an acronym for **R**est, **I**ce, **C**ompression and **E**levation.

These techniques reduce further trauma to the injured area, decrease blood flow and keeps swelling of effected area to a minimum.

**NSAIDs (non-steroidal anti-inflammatory drugs) such as Advil, Motrin or Acetaminophen may also aid in reducing signs and symptoms.*

** It is recommended that you obtain the advice of a physician before taking any type of medication.*

Please remember: this information is not intended as a substitute for medical treatment. Consult a physician or health care professional if the injury does not resolve.

CLOSING

Understanding the personal benefits and barriers of exercise and developing the skills and resources for regular physical activity are important in maintaining a planned approach to exercise. What motivates one person to become and remain physically active will differ from another. **The Health & Fitness Unit at the Massachusetts State Police Academy wants you to succeed.** It is hoped that by providing you with the previous information you will have the basics to initiate or modify your current physical fitness training program. The physical challenges you will encounter at the State Police Academy are great. The more you prepare yourself for this challenge, the greater chance you will have to successfully complete the recruit training program at the Massachusetts State Police Academy.

APPENDIX A

Cardiovascular Prescription

Recommended Cardiovascular Training Program Using Heart Rate.

Factor	Low Fitness level Very Poor & Poor	Average Fitness Level Fair & Good	High Fitness Level Excellent & Superior
Frequency (Days/Week)	3	3 or 4	5
Duration (Minutes at THR)	10-30	15-45	30-60
Intensity (% HR Reserve)	50-60	60-70	70-85
Mode* (Type of Exercise)	Walk, Swim, Cycle	Walk, Jog, Run, Swim, Cycle	Jog, Run, Swim, Cycle

* Other activities such as cross country skiing, roller-blading, rowing and stair climbing may also be used.

Over a sixteen (16) week period, gradual increases in duration and intensity should be made. Increases should take place only after completion of a full week or two of continuous training. No more than a 10% increase is recommended at a time. Remember that aerobic benefits are measured by monitoring heart rates and not necessarily duration and intensity alone. Even though you may increase duration, frequency and intensity, your "target heart rate" should always stay in your designated training zone during your training.

APPENDIX B

Weight Training Exercises

MUSCLE GROUPS	NO WEIGHTS	FREE WEIGHTS	RESISTANCE MACHINES
BACK (UPPER) Lattissimus Dorsi	Pull-up	Dumbbell row	Lat pull-down
LEGS (TOP FRONT)	Squats	Squat	Leg extension
CHEST Pectoralis	Push-ups	Bench press	Seated chest press
LEGS (TOP BACK) Hamstrings	Lunge	Lunges	Leg curl
SHOULDERS Deltoids	Dip	Seated press	Shoulder press
WAIST-STOMACH Abdominal	Crunches	Crunches w/weights	Ab machine
ARMS (UPPER FRONT) Biceps	Chin-up	Bicep curl	Curl machine
CALVES Gastrocnemius	Heel raise	Heel raise w/weights	Calf raise machine
ARMS (UPPER BACK) Triceps	Dips	Tricep extension	Tricep press-down

Sample resistance training program

EXERCISE	REPS / SETS	DAYS	MUSCLE GROUP
1. Leg Extension	8-12 / 2-3	MWF	Lower Leg (thigh)
2. Leg Curl	8-12 / 2-3	MWF	Lower Leg (hamstring)
3. Calf / Toe Raise	8-12 / 2-3	MWF	Lower Leg (calf)
4. Pullover / Bent Rows	8-12 / 2-3	MWF	Back
5. Bench Press	8-12 / 2-3	MWF	Chest
6. Dumbbell Overhead Press	8-12 / 2-3	MWF	Upper Back / Shoulders
7. Shoulder Shrugs	8-12 / 2-3	MWF	Shoulders
8. Triceps Extension	8-12 / 2-3	MWF	Upper Arm (back)
9. Biceps Curl	8-12 / 2-3	MWF	Upper Arm (front)
10. Wrist Curls	8-12 / 2-3	MWF	Lower Arm (forearms)
11. Ab Crunch (50% max)	3 sets	MWF	Abdominal / Stomach
1. Push Ups (50% max)	3 sets	T / Th	Back / Chest / Arm
2. Pull Ups (50% max	3 sets	T / Th	Back / Arms
3. Abdominal Crunch (50% max)	3 sets	T / Th	Abdominal / Stomach

***NOTE**: 50% max refers to the maximum amount of repetitions you can perform in one minute.

Remember goal-setting guidelines for both dynamic and absolute strength is about eight (8) weeks in order to see a significant one-category change. A category change is a 10% increase in either maximum repetitions or your maximum amount of weight you can lift in one repetition. Over a 16 week period a two-category increase is expected.

APPENDIX C
CARDIOVASCULAR TRAINING LOG

Wk.	Date: Exercise Info	Mon. / /	Tues. / /	Wed. / /	Thur. / /	Fri. / /	Sat. / /	Sun. / /
____	Activity							
	Duration							
	Level/Dist.							
	Exer. HR							
	Weight							
____	Activity							
	Duration							
	Level/Dist.							
	Exer. HR							
	Weight							
____	Activity							
	Duration							
	Level/Dist.							
	Exer. HR							
	Weight							
____	Activity							
	Duration							
	Level/Dist.							
	Exer. HR							
	Weight							
____	Activity							
	Duration							
	Level/Dist.							
	Exer. HR							
	Weight							

*** Refer to Appendix A for recommended modes of exercise.**

Name (print): _____

Signature: _____

Date: _____

APPENDIX C continued
STRENGTH TRAINING LOG

Wk.	Exercise	Date	Mon. / /	Tues. / /	Wed. / /	Thur. / /	Fri. / /	Sat. / /	Sun. / /
____		Weight							
		Sets							
		Reps							
____		Weight							
		Sets							
		Reps							
____		Weight							
		Sets							
		Reps							
____		Weight							
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____		Weight							
		Sets							
		Reps							
____		Weight							
		Sets							
		Reps							
____		Weight							
		Sets							
		Reps							
____		Weight							
		Sets							
		Reps							

*** Refer to Appendix B for recommended modes of exercise.**

Name (print): _____

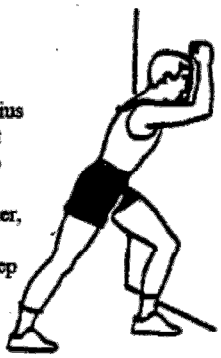
Signature: _____

Date: _____

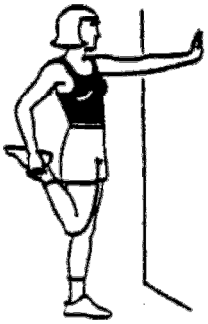
APPENDIX D

The Basic stretching session

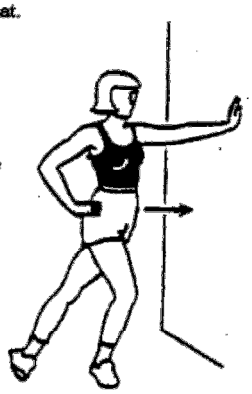
1. NECK STRETCH. Tilt head to right, keeping shoulders down. Place right hand on left side of head. Gently pull head toward right shoulder for 10 to 30 seconds. Switch sides and repeat.



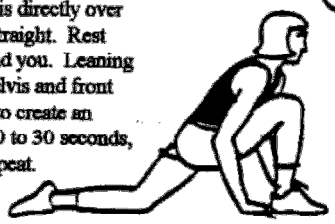
2. CALF STRETCH (for gastrocnemius and soleus musces). Stand 2 to 3 feet froma wall, with feet perpendicular to wall and lean against it for 10 to 30 seconds. Keep feet parallel to each other, make sure rear heel stays on floor. Switch legs and repeat. Variation: keep rear knee slightly bent during stretch.



3. THIGH STRETCH (for quadroceps). Placing left hand against wall for balance, grab right ankle with right hand and pull heel gently toward buttocks for 10 to 30 seconds. Do not arch back. Switch sides and repeat.



4. OUTER THIGH STRETCH (for inoubial band). Placing left hand against wall for balance, place left foot behind and beyond right foot. Bend left ankle and lean into wall. Hold for 10 to 30 seconds, then switch and repeat.

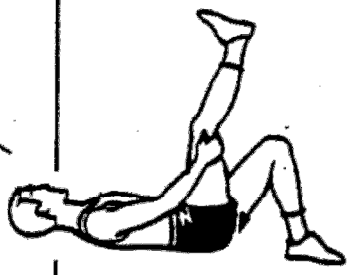


5. HIP STRETCH (for hip flexor). From a kneeling position, bring right foot forward until knee is directly over ankle; keep right foot straight. Rest left knee on floor behind you. Leaning into front knee,lower pelvis and front of left hip toward floor to create an easy stretch. Hold for 10 to 30 seconds, then switch legs and repeat.

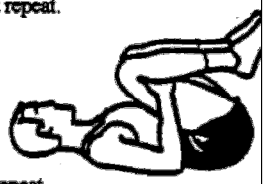
6. BUTTERFLY STRETCH (for adductor muscles in groin). Sit on floor, bringing heels together neear groin and holding feet together. Have a partner gently push your legs down; hold for 5 seconds. Try to bring your knees upward as partner provides resistance. Relax, then have partner gently push down again for a greater stretch. Repeat. You can do the first part without a partner, simpy by lowering your knees as far as possible.

7. SPINAL TWIST 9for back and sides). Sit with right leg straight out, and left knee bent, with left foot placed on the outside of right knee. Bend right elbow and place it on outside of upper left thigh, just above knee, to kieep that leg stationary. Place left hand behind you, slowly turn head to look over left shouldeer, and twist upper body toward left arm. Hold for 10 to 30 seconds. Switch sides and repeat.

8. CROSSOVER STRETCH (for lower back). Lying on back, bend left knee at 90° and stretch arms out to sides. Place right hand on left thigh and pull that bent knee over right leg. Keeping head on floor, turn to look toward outstretched left arm. Pull bent left nee toward floor, keep shoulders flat on floor. Hold for 10 to 30 seconds, then switch sides and repeat.



9. THIGH STRETCH (for hamstrings). Lie on back with both knees bent. Grasp behind the right thigh with both hands and pull toward chest. Slowly straighten leg, keeping foot relaxed. Hold for 10 to 30 seconds, then lower leg, switch legs, and repeat.



10. LUMBAR STRETCH (for lower back). Lying on back, clasp one hand under each knee. Gently pull both knees toward chest, keeping lower back on floor. Hold for 10 to 30 seconds, relax, then repeat.

APPENDIX E

MASSACHUSETTS STATE POLICE ACADEMY
PHYSICAL ACTIVITY READINESS QUESTIONNAIRE (PAR-Q)

The PAR-Q is a simple screening tool used to identify individuals who should obtain physician clearance before participating in a physical fitness activity program. The PAR-Q was developed in Canada and is used throughout North America. The most recently revised version appears below.

Yes	No	
_____	_____	1) Has your doctor ever said that you have a heart condition and that you should only do physical activity recommended by a doctor?
_____	_____	2) Do you feel pain in your chest when you do physical activity?
_____	_____	3) In the past month, have you had chest pain when you were not doing physical activity?
_____	_____	4) Do you lose your balance because of dizziness or do you ever lose consciousness?
_____	_____	5) Do you have a bone or joint problem that could be made worse by a change in your physical activity?
_____	_____	6) Is your doctor currently prescribing drugs (for example, water pills or beta-blockers) for your blood pressure or heart condition?
_____	_____	7) Do you know of any other reason why you should not do physical activity?

If you answered *YES* to any of these questions, vigorous exercise and exercise testing should be postponed until medical clearance is obtained.

Note:

This questionnaire applies only to those 15-69 years of age.

- If you have a temporary illness, such as a fever, or are not feeling well at this time, you may wish to postpone the proposed activity.
- If you are pregnant, you are advised to consult with your physician before exercising.
- If there are any changes in your status relative to the above questions, please bring this information to the immediate attention of a physician.

Name: _____ Signature: _____

Please Print

Department: _____ Date: _____

APPENDIX F

SAMPLE PHYSICAL TRAINING SCHEDULE

Physical Training Protocol
Week Four

Time	Monday	Tuesday	Wednesday	Thursday	Friday
0700-0715	Warm Up & Stretch	Warm Up & Stretch	Warm Up & Stretch	Warm Up & Stretch	Warm Up & Stretch
0715-0815-	**Class Run - 3 Miles** **Upper body Calisthenics**	**Class Run - 3 Miles** Lower Body **Calisthenics**	**Defensive Tactics Circuit**	**Calisthenics Circuit** **Class Run**	**Class Run and Sprints** **Calisthenics**
0815-0830	Cool Down & Stretch	Cool Down & Stretch	Cool Down & Stretch	Cool Down & Stretch	Cool Down & Stretch

- Weather will be a determining factor on outside activity. Safety will be paramount in all physical fitness training.
- Staff members will ensure recruits are properly hydrating at all times.
- Any recruit sustaining an injury will report immediately to the Medical staff.
- Week Four P.T. plan will consist primarily of continuation of the Cardiovascular Endurance building phase (2-4 mile runs in class formation).
- The runs will be led by a member of the Health and Fitness staff.