

PRE-CONSUMPTION CONDITIONING PROGRAM

**STANDARD OPERATING
PROCEDURES (SOP)**



1. INTRODUCTION

1.1 Background

Fire recruit training places substantial physiological demands on participants, particularly during the early weeks of recruit school. These demands include high levels of cardiovascular strain, muscular loading, heat exposure, and psychological stress. While such stressors are inherent to preparing individuals for the fire service, both anecdotal evidence and peer-reviewed literature consistently demonstrate that the **highest incidence of adverse medical events** (including exertional rhabdomyolysis, cardiovascular events, and heat illness) occurs during periods of abrupt increases in training load and physiological stress, such as the **at the beginning of recruit training**. Recruits entering the academy in a detrained or marginally prepared state are at the greatest risk of experiencing such untoward events.

Although recruits are required to successfully complete the Candidate Physical Ability Test (CPAT) prior to acceptance, there is often a substantial time gap between CPAT completion and the start of recruit school. During this interval, many recruits experience detraining, resulting in reduced aerobic fitness, diminished muscular endurance, and limited physiological reserve. As a result, the early stages of recruit school represent a **critical period of elevated risk**, particularly for individuals whose adaptive fitness capacity is insufficient to tolerate immediate exposure to high-volume or high-intensity physical training.

1.2 Program Rationale

The Pre-Consumption Conditioning Program is designed to address this early-phase risk through a **progressive, phased physiological on-ramp** rather than immediate exposure to high-stress physical training. Most conditioning or training programs follow a pyramid style structure, with overall fitness being at the foundation, followed by task specific training, then capped with specific skill practice. For a firefighter training program, that would mean that a minimal level of fitness would need to be achieved before progressing into firefighter specific conditioning in order to ensure safety and success of the recruits. To establish and/or verify a sufficient fitness foundation, the Pre-Consumption Conditioning Program consists of four structured phases:

- **Phase I** – (Day 1) General Fitness Screening and Risk Stratification
- **Phase II** – (Days 2 – 12) General Conditioning and Physiological Acclimation
- **Phase III** – (Days 13 – 15) Anaerobic Readiness Assessment
- **Phase IV** – (Days 16 – 21) Transition to Consumption Specific Training

This approach emphasizes:

- Early identification of recruits with elevated physiological risk
- Gradual development of cardiovascular, muscular, and connective tissue tolerance
- Screening for readiness prior to consumption specific training
- Protection against preventable medical events during early recruit training
- Preservation of training standards by reducing early attrition and injury
- Education of recruits regarding hydration, recovery, and warning signs of adverse events (e.g., dehydration, acute muscle injury)

The program begins with a **general fitness screening on Day 1**, which serves as the recruit's first structured physical training exposure and as a mechanism for risk stratification. This screening is not intended to punish or permanently exclude recruits, but rather to ensure that individuals entering recruit school possess sufficient baseline fitness to safely tolerate subsequent training demands.

1.3 Program Objectives

The objectives of this program are to:

1. Reduce the incidence of early adverse medical events during recruit school
2. Identify recruits with insufficient baseline fitness prior to high-stress training exposure
3. Promote personal accountability and pre-academy preparation
4. Improve overall recruit retention and long-term training success
5. Establish a defensible, standardized approach to early physical training

1.4 Overview

The Pre-Consumption Conditioning Program is a structured 21-day physiological on-ramp training program consisting of four phases as summarized in the Table below.

Summary of the Pre-Consumption Conditioning Program

Phase	Day(s)	Primary Purpose	Key Activities	Primary Risk Controlled
I	1	General fitness testing and risk stratification. Identify recruits at elevated risk prior to structured training.	• BMI & waist circumference • Push-up test • Prone plank test • 1.5-mile walk/run • Tier-based risk classification	Entry of severely detrained recruits into high-stress training
II	2 - 12	General conditioning and physiological acclimation. Build baseline aerobic capacity, muscular endurance, and tissue tolerance.	• Aerobic conditioning • Muscular fitness conditioning • Emphasize rotation (aerobic vs muscular fitness) • Weekend recovery (Days 6-7) • Encourage appropriate training intensity based on RPE*	Early musculoskeletal injury, heat illness, rhabdomyolysis
III	13 - 15	Anaerobic readiness assessment and fatigue resistance following initial training exposure.	• Weekend recovery (Days 13-14) • RAST assessment (Day 15)	Early withdrawal during firefighting-specific training
IV	16 - 21	Transition to consumption specific training.	• Progressive duration consumption drill intervals • Physical conditioning maintenance	Transition to high-intensity consumption drills

*Please refer to Appendix A for the RPE (Rating of Perceived Exertion) Scale

2. PHASE I (DAY 1)

GENERAL FITNESS SCREENING AND RISK STRATIFICATION

2.1 Purpose

The purpose of Phase I: **General Fitness Screening and Risk Stratification** is to identify recruits who may be at elevated physiological risk for adverse events during the early weeks of recruit school. This screening provides an objective assessment of current aerobic fitness and muscular endurance, which are foundational to safe participation in physical training and fireground activities.

The screening shall be conducted on Day 1 of the physical training program and shall serve as the recruit's first scheduled PT session. All screening assessments outlined in this document require minimal equipment and are able to be conducted by any fire training facility throughout the state of Alabama.

2.2 Guiding Principles

- The screening is non-punitive
- The screening does not permanently disqualify a recruit from the program
- The screening is intended to promote safety, preparedness, and informed decision-making
- Performance standards are based on age- and sex-adjusted normative data
- The screening emphasizes submaximal endurance, not maximal exertion

2.3 Screening Battery

The Initial Fitness Screening shall consist of testing the following four parameters: body composition; upper body muscular endurance; trunk/core muscular endurance; and aerobic fitness. The battery of tests must be performed in the order in which they are presented below.

2.3.1 Body Composition Screening: Body Mass Index (BMI) + Waist Circumference.

Body composition screening is used to identify recruits with elevated cardiometabolic risk that may predispose them to adverse events during the early phase of recruit training. This screening is not a stand-alone disqualification tool and shall not be used to determine job capability. It is intended solely to inform risk management and training oversight.

Components of Assessment

Body composition shall be evaluated using two measures: BMI and Waist Circumference.

These measures are interpreted together to provide an index of global mass load and abdominal fat distribution.

1. BMI

BMI is a global measure of body mass relative to height. It reflects overall loading on the cardiovascular and musculoskeletal systems *but does not distinguish between fat mass and lean mass*. Therefore, BMI should not be interpreted in isolation but rather, in addition to waist circumference. It is possible for extremely muscular individuals to have a high BMI, though their waist circumference may be normal/healthy.

Measurement Procedures:

- Measure body weight using a calibrated scale.
- Measure height using a wall-mounted stadiometer or equivalent device.
- Calculate BMI using the standard formula: $BMI = \frac{\text{weight (lb)} \times 703}{\text{height (in)}^2}$

2. Waist Circumference

Waist circumference provides an estimate of visceral (abdominal) fat, which is strongly associated with cardiovascular disease, metabolic disorders, and reduced heat tolerance.

Measurement Procedures:

- Use a flexible, non-elastic tape measure.
- Measurement should be taken on bare skin or light clothing.
- The recruit shall stand upright with feet together and abdomen relaxed.
- Place the tape measure horizontally around the abdomen at the level of the top of the iliac crest (hip bone), typically just below the navel. The tape must remain level and not drift upward or downward.
- Ensure the tape is snug but not compressing the skin.
- Record the measurement to the nearest 0.1 inch.
- Note: the threshold for risk scoring is based on the following waist circumference values:
 - The threshold cut-point for elevated risk in men is a waist circumference at or above 40 in
 - The threshold cut-point for elevated risk in women is a waist circumference at or above 35 in

Interpretation and Scoring

BMI and waist circumference **shall be interpreted together** to identify recruits who may warrant closer monitoring, counseling, or medical review. These values are not pass/fail criteria and should be used only to support informed training and safety decisions.

BMI Category	Waist Circumference	Risk Score
BMI < 30 kg·m ⁻²	Men: less than 40 in Women: less than 35 in	0
BMI 30-34.9 kg·m ⁻²	Men: less than 40 in Women: less than 35 in	1
BMI ≥ 35 kg·m ⁻²	Men: less than 40 in Women: less than 35 in	2
BMI < 30 kg·m ⁻²	Men: equal to or greater than 40 in Women: equal to or greater than 35 in	2
BMI 30-34.9 kg·m ⁻²	Men: equal to or greater than 40 in Women: equal to or greater than 35 in	4
BMI ≥ 35 kg·m ⁻²	Men: equal to or greater than 40 in Women: equal to or greater than 35 in	5

Confidentiality

All body composition measurements shall be conducted in a private and professional manner and documented as part of the recruit's health screening record.

2.3.2 Upper-Body Muscular Endurance Assessment: Push-Up Test (1 Minute)

The push-up test evaluates upper-body muscular endurance, particularly of the chest, shoulders, and triceps. This capacity is essential for pushing, supporting body weight, controlling equipment, and performing repetitive upper-body tasks during training.

Test Setup

- **The recruit begins in the standard push-up position with:**
 - **Hands placed slightly wider than shoulder width**
 - **Fingers facing forward**
 - **Body forming a straight line from shoulders through hips, knees, and ankles**
- **A fixed depth marker (e.g., 5-inch foam block) can be placed beneath the chest to standardize repetition depth.**

Test Administration

1. On the command to begin, the recruit performs as many correct push-ups as possible within 1 minute.
2. Recruits may rest only in the up position with elbows fully extended.
3. The instructor counts only repetitions performed with correct form.

Proper Repetition Standard

A repetition is counted only when:

- **The chest touches the depth marker on the downward phase.**
- **The elbows fully extend on the upward phase.**
- **The body remains in a straight line throughout the movement.**

Termination Criteria

The test ends when:

- The 1-minute time limit expires, or
- The recruit can no longer maintain correct form.

Instructor Monitoring

Instructors shall observe for:

- Sagging or piking of the hips
- Partial repetitions
- Excessive rest in the down position
- Signs of abnormal fatigue or distress

If a recruit shows symptoms (e.g., dizziness, disorientation, unusual pain), the test shall be stopped immediately.

Scoring

The score is the total number of correctly performed repetitions completed within 1 minute. Scores shall be compared to age- and sex-adjusted percentile norms.

Sex	Age (yrs)	≥ 50th Percentile	< 50th Percentile
Men	20–29	≥ 33 reps	≤ 32 reps
	30–39	≥ 27 reps	≤ 26 reps
	40–49	≥ 21 reps	≤ 20 reps
	50–59	≥ 15 reps	≤ 14 reps
	60+	≥ 15 reps	≤ 14 reps
Women	20–29	≥ 26 reps	≤ 25 reps
	30–39	≥ 21 reps	≤ 20 reps
	40–49	≥ 16 reps	≤ 15 reps
	50–59	≥ 12 reps	≤ 11 reps
	60+	≥ 12 reps	≤ 11 reps
Risk Score		0	1

Administrative Notes

- This is a submaximal endurance test, not a strength test.
- The goal is to assess the recruit's ability to sustain repeated upper-body work, not to push to complete muscular failure.

2.3.3 Trunk / Core Muscular Endurance Assessment: Prone Plank Hold

The prone plank hold assesses trunk and core muscular endurance, which is essential for spinal stability, load carriage, lifting tasks, and injury prevention during recruit training and fireground operations.

Test Setup

- The recruit lies prone on the floor.
- Elbows are positioned directly under the shoulders.
- Forearms are flat on the floor.
- Feet are placed hip-width apart.
- The body must form a straight line from shoulders through hips, knees, and ankles.

Test Administration

1. Instruct the recruit to assume the plank position with proper alignment.
2. Begin timing once the recruit is in the correct position.
 1. The recruit is to hold the position as long as possible while maintaining proper form.
 2. Provide verbal form corrections as needed during the test.

Termination Criteria

The test shall be stopped when any of the following occur:

- The hips drop below or rise above the neutral position.
- The back arches or rounds.
- Knees or hips touch the floor.
- The recruit voluntarily stops.

Instructor Monitoring

Instructors shall observe for signs of excessive fatigue or abnormal response, including:

- Tremors or inability to control posture
- Complaints of dizziness, nausea, or unusual discomfort
- Any behavior indicating loss of motor control

If concerning signs are observed, terminate the test immediately.

Scoring

- The score is the total time held in correct position, recorded in seconds.
- Performance shall be compared to age- and sex-adjusted normative percentiles for risk stratification.

Sex	Age (yrs)	≥ 50th Percentile	< 50th Percentile
Men	20–29	≥ 2:00 min	≤ 1:59
	30–39	≥ 1:54 min	≤ 1:53
	40–49	≥ 1:48 min	≤ 1:47
	50–59	≥ 1:31 min	≤ 1:30
	60+	≥ 1:19 min	≤ 1:18
Women	20–29	≥ 1:36 min	≤ 1:35
	30–39	≥ 1:24 min	≤ 1:23
	40–49	≥ 1:12 min	≤ 1:11
	50–59	≥ 1:00 min	≤ 0:59
	60+	≥ 0:48 min	≤ 0:47
Risk Score		0	1

Administrative Notes

- The prone plank is a submaximal muscular endurance test and is intended to induce failure while not compromising form.
- The objective is to evaluate the recruit's ability to maintain trunk stability under sustained load.

2.3.4 Aerobic fitness: 1.5-mile walk/run test

The 1.5-mile run/walk test is used to assess aerobic fitness. Performance on this test is a strong indicator of a recruit's ability to tolerate early training stress, heat exposure, and sustained physical work.

Course Setup

- The course distance shall be 1.5 miles and measured in advance.
- On a standard 400-meter track, the test equals 6 full laps.
- If conducted off-track, the route must be clearly marked and free of hazards and hills.

Test Administration

1. Ensure all recruits complete a standardized warm-up prior to testing.
2. Instruct recruits that they may run, jog, or walk, but must maintain continuous forward movement until the distance is completed.
3. Begin timing on the command to start.
4. Record each recruit's finish time to the nearest second.

Performance Requirements

- Continuous movement is required.
- Recruits may change pace as needed but shall not stop, kneel, sit, or stand still.
- Any recruit who stops moving forward must be documented and evaluated.

Instructor Monitoring

During the test, instructors must actively observe recruits for signs of abnormal physiological response, including but not limited to:

- Dizziness or loss of balance
- Chest pain or unusual discomfort
- Severe shortness of breath unrelieved by pacing
- Confusion or disorientation

Any recruit displaying concerning signs shall be *immediately removed* from testing and referred for medical evaluation.

Scoring and Interpretation

- The recruit's score is their completion time for the full 1.5 miles.
- Times shall be compared against age- and sex-adjusted percentile norms to determine risk category.

Sex	Age (yrs)	≥ 50th Percentile	20–49 Percentile	<20 Percentile
Men	20–29	≤ 12:08	12:09–14:13	>14:13
	30–39	≤ 12:51	12:52–14:52	>14:52
	40–49	≤ 13:53	13:54–15:41	>15:41
	50–59	≤ 14:55	14:56–16:43	>16:43
	60+	≤ 16:07	16:08–18:00	>18:00
Women	20–29	≤ 14:55	14:56–16:33	>16:33
	30–39	≤ 15:26	15:27–17:14	>17:14
	40–49	≤ 16:27	16:28–18:00	>18:00
	50–59	≤ 17:24	17:25–18:49	>18:49
	60+	≤ 18:16	18:17–19:21	>19:21
Risk Score		0	2	4

Administrative Notes

- This test is not intended to be competitive.
- The objective is to assess baseline aerobic capacity.
- Environmental conditions (heat, humidity) should be documented and considered when interpreting results.

2.4. Data Collection and Risk Classification Scoring System

Please see **Appendix B** for the data collection and risk classification form for the general fitness testing battery.

The purpose of the Risk Classification Scoring System is to integrate results from the Initial Fitness Screening battery into a **single, standardized risk determination** that informs training oversight, monitoring intensity, and, when necessary, recommend medical referral or deferral. This system is designed to prioritize physiological risk to training safety, rather than performance ranking or job capability.

Each assessment contributes a **numerical risk score**, with greater weight assigned to measures reflecting global cardiometabolic and aerobic capacity. Muscular endurance measures are included as monitoring indicators and are weighted accordingly.

2.4.1 Risk Score Assignment (Summary of each Scoring Table)

According to the scoring tables under each assessment in Section 2.3, risk scores shall be assigned as follows:

- Body Composition (BMI + Waist Circumference): Risk Score Range: 0–5 (under section 2.3.1.)
- Upper-Body Muscular Endurance (Push-Up Test): Risk Score Range: 0–1 (under section 2.3.2.)
- Trunk/Core Muscular Endurance (Prone Plank Test): Risk Score Range: 0–1 (under section 2.3.3.)
- Aerobic Fitness (1.5-Mile Run/Walk Test): Risk Score Range: 0–4 (under section 2.3.4.)

2.4.2 Total Risk Score Calculation and Classification

The Total Risk Score is then calculated by summing the individual risk scores from each assessment. A possible Total Risk Score will range from 0-11, with higher scores corresponding to a higher likelihood/risk of experiencing an untoward physical event throughout the training program.

Based on the Total Risk Score, recruits shall be classified into one of the following risk categories:

Total Risk Score	Risk Classification	Recommended Action
0-2	Tier 1	Cleared for full participation. May proceed with recruit training without restriction.
3-5	Tier 2	Elevated risk. Proceed with training under increased instructor observation and pacing oversight to monitor training tolerance.
6-11	Tier 3	High risk. Medical evaluation recommended prior to continued participation*. Potential recommendation for deferral.

** Medical evaluation shall be conducted by a licensed healthcare provider in accordance with Alabama Fire College medical policy.*

2.4.4 Interpretation Notes

- A single low score on a muscular endurance test (push-ups or prone plank) shall not independently result in Tier 3 classification.
- Higher Total Risk Scores typically reflect converging deficits in cardiometabolic load, aerobic capacity, and/or multiple fitness domains.
- The scoring system is designed to reduce subjectivity and ensure consistent application across instructors and training cycles.

2.4.5 Clinical Signs and Symptoms Override: Regardless of calculated risk score, any recruit displaying abnormal signs or symptoms during testing (e.g., chest pain, dizziness, loss of coordination, confusion, or excessive distress) shall be immediately removed from testing and referred for medical evaluation.

3. PHASE II (DAYS 2 – 12)

GENERAL CONDITIONING AND PHYSIOLOGICAL ACCLIMATION

3.1. Introduction

Phase II is designed to provide recruits with a structured period of general physical conditioning and physiological acclimation prior to exposure to high-intensity or task-specific training demands. Those with higher body fat and lower aerobic fitness are at high risk of experiencing musculoskeletal injury, heat illness, exertional rhabdomyolysis, and cardiovascular events when exposure to high-volume or high-intensity physical training. Phase II is intended to reduce these risks by allowing controlled physiological adaptation, particularly among those who are less trained, before more demanding activities are introduced. This phase also allows for close instructor supervision and evaluation of recruits' responses to physical training. Therefore, the primary objective of this phase is to establish a sufficient baseline of aerobic fitness, muscular endurance, and tissue tolerance to safely support subsequent testing and training later in the program.

During week 2 of Phase II, recruits will progressively don PPE across the week to promote acclimation to the gear. Recruits will repeat the same PT outline that occurs in week 1, but with the addition of turnout gear during the PT sessions. This will promote muscular and cardiovascular adaptation to the increased heat retention and movement restriction caused by turnout gear application alone, without the addition of weight bearing loads (i.e. an axe swing or a tire pull).

In addition to promoting physical adaptation, Phase II serves as a secondary screening and monitoring period. Recruits are observed across multiple supervised training sessions to identify individuals who demonstrate poor exercise tolerance, abnormal physiological responses, or difficulty self-regulating effort despite submaximal workloads. Indicators such as excessive fatigue, disproportionate soreness, delayed recovery, abnormal cardiovascular responses, or recurrent symptoms (e.g., dizziness, nausea, cramping) may signal elevated risk that is not apparent during a single fitness assessment.

The intensity used for this training needs to be based on RPE (Appendix A). RPE is a subjective, self-assessed measure of exercise intensity based on how hard the individual feels they are working based on their maximum possible effort. This effort is rated on a scale of 0 through 10, with 0 being resting and 10 being maximal possible effort.

3.2. Training Focus

During Phase II, training emphasizes:

- Progressive development of aerobic capacity, including improvements in cardiovascular efficiency and plasma volume
- Enhancement of muscular endurance and connective tissue tolerance through submaximal, full-body movements
- Reinforcement of pacing awareness and self-regulation to reduce excessive exertion
- Establishment of consistent training habits and recovery behaviors

Anaerobic power training, sprinting, and high-intensity interval work ***are intentionally excluded during this phase.*** All training is performed at submaximal intensity to prioritize adaptation and safety rather than performance.

3.3. The General Conditioning Program: Implementation

Phase II spans Days 2 through 12 of the Pre-Consumption Conditioning Program and utilizes standardized general conditioning training sessions with alternating emphasis to prevent repetitive stress on the same physiological systems. Training intensity is closely monitored using the Rating of Perceived Exertion (RPE) scale, and recruits are instructed to maintain a self-selected pace within prescribed limits.

Successful completion of Phase II prepares recruits for the Anaerobic Readiness Assessment (Phase III) by improving physiological resilience and reducing the likelihood of adverse responses to higher intensity demands.

Phase II emphasizes the rotation of two workout schemes. **Workout A** will focus on total body muscular conditioning in a circuit-format to also stimulate the cardiovascular system. **Workout B** will specifically focus on aerobic conditioning. The Table below provides a structured overview of the flow from Days 2 to 12.

Overall Program Flow Table

Day	Format	Focus	Gear
2	Workout A	Total-Body Muscular Conditioning	None
3	Workout B	Aerobic Conditioning	None
4	Workout A	Total-Body Muscular Conditioning	None
5	Workout B	Aerobic Conditioning	None
6	Active Recovery	Light movement / hydration emphasis	N/A
7	Active Recovery	Light movement / hydration emphasis	N/A
8	Workout A	Total-Body Muscular Conditioning	Helmet, gloves, boots
9	Workout B	Aerobic Conditioning	Helmet, gloves, boots
10	Workout A	Total-Body Muscular Conditioning	Helmet, gloves, boots, pants, coat
11	Workout B	Aerobic Conditioning	Helmet, gloves, boots, pants, coat
12	Workout A	Total-Body Muscular Conditioning	Helmet, gloves, boots, pants, coat, air pack

3.3.1 WORKOUT A – TOTAL-BODY MUSCULAR CONDITIONING

Workout B develops global muscular endurance and tissue tolerance using controlled, repeatable full-body circuits.

Session Structure

- 5 exercises/categories as follows:
 - Lower body exercise
 - Upper body push exercise
 - Upper body pull exercise
 - Core exercise
 - Rest
- 1 minute per exercise/category

- During each exercise, recruits should **work at their own pace** and perform as many repetitions as possible while maintaining a minimal RPE of 4 but not exceeding an RPE of 8
- There are 5 exercises/categories per circuit, so each circuit should take 5 minutes to complete
- Perform 3-4 circuits for a 15-20 minute workout

Session Structure Overview (1 movement from each category per round)

Exercise/Category	Examples
Lower Body	Bodyweight squats, lunges, step-ups
Upper Body Push	Push-ups, Incline push-ups
Upper Body Pull	Pull-ups, resistance band pulls
Core	Planks, Crunches, Sit-ups
Rest	Sitting or standing

Movements shall be rotated daily to minimize overuse injury risk.

3.3.2 WORKOUT B – AEROBIC CONDITIONING

Workout B is designed to improve aerobic capacity, plasma volume expansion, and cardiovascular stability, which are critical for tolerance to heat, load carriage, and sustained physical activity.

Program Days	Duration
Days 3, 5, 9, and 11	30–45 minutes

Intensity Standard

- RPE 6 / 10

Approved Modalities

- Brisk walking
- Easy jogging
- Walk/jog intervals
- Track- or road-based aerobic conditioning

3.4 Instructor Accountability

Instructors shall adhere strictly to this SOP. Any deviation from the Pre-Consumption Conditioning Program requires written approval from the Training Officer. Deviations resulting in injury or adverse medical events are subject to formal review.

4. PHASE III (DAYS 13 - 15)

ANAEROBIC READINESS ASSESSMENT

4.1. Introduction

Phase III is designed to evaluate each recruit's readiness to tolerate anaerobic and high-intensity physical demands that are characteristic of later stages of recruit training. Following completion of Phase II, recruits have undergone a period of general conditioning and physiological acclimation intended to improve aerobic fitness, muscular endurance, and overall exercise tolerance. Phase III builds upon this foundation by assessing the recruit's ability to generate and sustain high-intensity efforts under controlled conditions.

The primary assessment conducted during Phase III is the Running-Based Anaerobic Sprint Test (RAST), which provides an objective measure of anaerobic power and fatigue resistance. These physiological qualities have been shown to be important predictors of performance, injury risk, and successful completion of physically demanding training environments. Assessing anaerobic readiness at this point in the program allows for identification of recruits who may be at elevated risk when exposed to repeated high-intensity efforts.

Importantly, Phase III is not intended to serve as a punitive or exclusionary phase. Rather, it functions as a targeted screening tool to inform training progression, monitoring needs, and risk management strategies during subsequent phases of the program.

4.2. Justification for Anaerobic Readiness Assessment

Anaerobic power has been identified as an important physiological attribute associated with successful completion of physically demanding recruit training environments. Internal analysis of firefighter recruit performance data has demonstrated that relative mean power, measured during a Wingate-type anaerobic assessment, was strongly associated with successful completion of recruit school. Specifically, recruits with lower relative mean power values were substantially more likely to experience training attrition, injury, or failure to complete the program.

When recruits were grouped according to relative mean power levels, clear and meaningful differences in training outcomes were observed. Individuals in the lowest performance group demonstrated markedly higher rates of attrition compared to those in moderate and higher performance groups. Conversely, recruits with stronger anaerobic power demonstrated greater resilience to the physical demands of training and higher overall completion rates.

Operationally, these findings suggest that recruits with reduced anaerobic power may fatigue prematurely, lose movement quality under stress, and struggle to tolerate repeated high-intensity efforts such as sprinting, stair climbing, and rapid task transitions. Recruits with higher anaerobic power generally demonstrate improved tolerance to repeated high-intensity tasks and more effective recovery between efforts.

For these reasons, inclusion of the Running-Based Anaerobic Sprint Test (RAST) in Phase III provides a practical and field-appropriate method to assess anaerobic readiness prior to exposure to higher-intensity and repeated-effort training demands. RAST results are used to guide monitoring intensity, pacing recommendations, and workload progression rather than to serve as an exclusionary mechanism. This approach supports risk management while maintaining established training standards.

4.3. Assessment Focus

Phase III emphasizes:

- Objective evaluation of anaerobic power and fatigue resistance
- Identification of recruits who may require closer observation during high-intensity training
- Confirmation that recruits have developed sufficient physiological readiness to proceed to anaerobic power integration

Testing is conducted under standardized conditions following a defined recovery period to minimize the influence of residual fatigue and to ensure test safety and validity.

4.4. Implementation

Phase III occurs on Day 15, following a planned recovery period (Days 13-14). The RAST assessment shall be conducted as a dedicated testing session. Recruits are provided a standardized warm-up and are closely monitored throughout testing for any abnormal signs or symptoms. Results are used to classify anaerobic readiness and to guide monitoring intensity and progression during Phase IV.

Completion of Phase III indicates that a recruit has demonstrated sufficient readiness to safely participate in controlled anaerobic power training and prepares them for the increased physical demands associated with later stages of recruit training.

4.5. RAST Description

The RAST (AKA: Running-Based Anaerobic Sprint Test) measures a recruit's ability to produce high power repeatedly with short rest. This ability is critical for fireground tasks such as stair climbs, hose drags, victim carries, and tool operations performed under fatigue. Prior data from fire-service cohorts indicate that laboratory Wingate anaerobic performance is predictive of recruit success. Because Wingate testing is not feasible in the field, the RAST is used as a safe, effective, and low-cost substitute.

Equipment Required

- Flat 35-meter running lane
- Cones or tape to mark start and finish
- Stopwatch or timing gates
- Scale for body weight
- Calculator or spreadsheet

Test Setup

1. Measure and mark a 35-meter straight line.
2. Ensure recruits **complete a short warm-up:**
 - 5 minutes easy jog
 - Dynamic stretching
 - 2 easy practice sprints

RAST Test Administration

Each recruit performs:

- 6 all-out sprints
- Each sprint is 35 meters
- 10 seconds rest between sprints

Instructions to recruits:

- Start standing still behind the line.
- Sprint as fast as possible through the finish.
- Do not slow down early.
- Rest quietly during the 10-second break.

Instructor Actions:

- Start timing on “GO”.
- Call out the next “GO” exactly every 10 seconds.
- Record the time for each sprint.

Calculating Scores

Step 1 — For Each Sprint, Record the Time and Calculate to the Third Power (i.e., Sprint Time^3)

$\text{Sprint Time}^3 = \text{Sprint Time} \times \text{Sprint Time} \times \text{Sprint Time}$

Step 2 – Calculate Power for Each Sprint by Dividing the Constant of 1,225 by Sprint Time^3

$$\text{Power (Watts)} = \frac{1,225}{\text{Sprint Time}^3}$$

Instructors only need to plug numbers into a calculator or spreadsheet.

Step 3 — Calculate RAST Scores

Mean Power: Add all 6 power scores and divide by 6. Indicator of overall work ability.

Scoring and Interpretation

The values presented in the following table were derived from original research involving firefighter recruits at the Alabama Fire College program over a 2-year period, as well as literature-based cut points for mean power (W/kg).

Men (W/kg)	Women (W/kg)	Classification	Recommended Action
≥ 6.26	≥ 5.32	Category A	No action needed
5.66 – 6.25	4.81 – 5.31	Category B	Monitor Training Tolerance
< 5.65	< 4.80	Category C	Recommend close monitoring or deferral

Please see Appendix C for the Data Collection and Risk Scoring Form.

Safety Monitoring

Stop the test immediately if a recruit shows: Dizziness or loss of balance; Chest pain or abnormal shortness of breath; Confusion or visible distress

4.6. Relationship to Phase I Risk Classification

Phase III RAST classification is separate from the Phase I Total Risk Score. Phase I reflects baseline cardiometabolic and general fitness risk, while Phase III provides task-specific anaerobic readiness to guide Phase IV monitoring and training.

5. PHASE IV (DAYS 16 – 21)

TRANSITION TO CONSUMPTION-SPECIFIC TRAINING

5.1. Introduction

Phase IV is intended to provide a gradual transition from general physical conditioning into the task-based physical demands associated with fire consumption drills. This phase introduces recruits to repeated bouts of work that resemble the movement patterns, equipment handling, and work–rest structure of consumption training, while maintaining control over pacing, duration, and recovery. The goal of Phase IV is not to replicate full consumption drills, but to familiarize recruits with the types of physical stress they will encounter when consumption training begins, and to allow instructors to observe tolerance to this style of work prior to formal live-fire or SCBA-based training. Phase IV occurs after completion of Phase III (Anaerobic Readiness Assessment) and is informed by each recruit's RAST classification.

5.2. Phase IV Objectives

During Phase IV, training sessions should emphasize:

- Repeated moderate-duration work periods
- Partner- or crew-based task rotation
- Movement patterns associated with firefighting tasks
- Structured rest periods to maintain nearly a 1:1 work to rest ratio
- Submaximal pacing and controlled effort
- Acclimation to heat and weight of turnout gear during intense work

Activities should be selected to reflect the physical nature of consumption drills without reproducing the full environmental or respiratory load associated with live-fire conditions. Recruits are meant to continue wearing turnout gear, without SCBA, during Phase IV. This ensures that all physiologic exposure occurs while under the fully encapsulating nature of the turnout gear to promote heat acclimation.

5.3 Program Overview

Duration

- Training Days: Days 16–19
- Recovery Days: Days 20–21 (Weekend recovery)

Phase IV consists of four structured training days followed by two planned recovery days prior to the initiation of consumption drills.

Phase IV Flow

Day	Primary Focus	Secondary Emphasis
16	Consumption Drill Intervals	Aerobic Conditioning
17	Consumption Drill Intervals	Muscular Conditioning
18	Consumption Drill Intervals	Aerobic Conditioning
19	Consumption Drill Intervals	Muscular Conditioning
20 & 21	Rest/Recovery	

5.4 Task-Based Work Block (Primary Component)

Phase IV consists of four consecutive training days (Days 16–19), followed by a planned recovery period prior to initiation of full consumption drills. These drills are meant to be completed in full turnout gear, without SCBA, allowing the recruits the chance to adapt to occupational specific tasks under the exposure of heat accumulation and the additional weight of turnout gear, without the restrictive breathing associated with SCBA.

Each training day follows the same general format but progresses with longer training intervals and longer rest periods. The exact drills used are at the discretion of the instructor, but should adhere to the following format:

- Day 16 – 1 minute of drills to 1 minute of rest
- Day 17 – 2 minutes of drills to 2 minutes of rest
- Day 18 – 5 minutes of drills to 5 minutes of rest
- Day 19 – 10 minutes of drills to 10 minutes of rest

In total, each training day should equate to 10 total minutes of drill practice (i.e. Day 16 would have 10, 1-minute work bouts). This structure introduces recruits to repeated bouts of task-based work at increasing duration, while preserving adequate recovery and observation opportunities.

5.4.1. Consumption Course Exposure

During each drill, recruits shall rotate through the established consumption course tasks as determined by instructional staff. Tasks may include, but are not limited to:

- Chops
- Tire pulls
- Bear crawls
- Tower climbs
- Tire drags
- Equipment carry cone course

Specific task sequencing, pacing, and rotation structure may be modified by instructional staff based on facility constraints, class size, and environmental conditions.

5.4.2. Intensity Guidance and Monitoring

Recruits shall be instructed to work at a controlled, self-regulated pace and avoid racing or competitive behavior. The objective is sustained task exposure rather than maximal output.

Instructors should monitor recruits for:

- Difficulty recovering between evolutions
- Deterioration in movement quality
- Excessive fatigue or distress
- Dizziness, nausea, confusion, or abnormal behavior

Recruit response during Phase IV should be considered in conjunction with information obtained during earlier phases, particularly Phase III anaerobic readiness results. Any recruit demonstrating concerning signs shall be removed from training and managed according to established medical and safety procedures.

5.4.3. Important Points

- The addition of turnout gear only applies to the primary component, not the conditioning block below
- The conditioning block (secondary component) is meant to be completed in standard PT gear

5.4.4. Environmental Conditions and Hydration

Environmental conditions (temperature, humidity, and heat index, when applicable) shall be documented during Phase IV sessions involving turnout gear exposure. Instructors shall ensure structured hydration opportunities are provided before and after each evolution. When environmental conditions are elevated, instructional staff may modify duration, rest intervals, or equipment layering to maintain safe operating parameters.

5.5 Conditioning Block (Secondary Component)

Secondary conditioning alternates by day to avoid excessive tissue stress. The secondary conditioning segment is to be completed without turnout gear to allow for heat recovery while continuing aerobic and muscular conditioning.

To be completed after task-based work:

Aerobic Conditioning (Days 16 and 18)

- 20–30 minutes
- Walking or easy jogging
- RPE $\leq$ 6/10

Muscular Conditioning (Days 17 and 19)

- 2 rounds
- 1 minute per station
- 2 minutes rest between rounds
- Stations (similar to Phase II):
 - Upper body push (push-ups, incline push-ups)
 - Upper body pull (band rows)
 - Core (plank hold)
 - Lower body endurance (step-ups, squats)

5.6 Rules for Phase IV

- No racing or competition
- Terminate efforts immediately if speed, coordination, or mechanics decline
- Progression during Phase IV occurs through **daily exposure and acclimatization**, not increased workload.
- Training to failure is prohibited
- Emphasis on movement quality and control

5.7 Intensity Standards and Monitoring

- Maximum allowable intensity: RPE 8 / 10
- Recruits must maintain self-selected pacing
- Instructors shall monitor for:
 - Delayed recovery between days
 - Excessive soreness or fatigue
 - Declines in movement quality
 - Abnormal signs or symptoms (e.g., dizziness, nausea, coordination loss, abnormal chest pain)

5.8 Use of RAST Classification During Phase IV

RAST classification from Phase III shall be used to inform monitoring intensity and instructional oversight, not participation.

- Category A: Full participation as prescribed
- Category B: Increased monitoring of recovery and pacing
- Category C: Heightened observation, reinforcement of pacing, and discretion to limit strenuous work bouts within prescribed bounds

RAST classification shall not be used to exclude recruits from Phase IV unless a recruit decides to defer at their own will.

5.8.1. Documentation of Modifications

Any modification to work exposure, pacing guidance, or monitoring intensity based on Phase III RAST classification shall be documented in the recruit's training record. RAST classification status is intended to guide instructor oversight and workload management and shall not serve as an automatic exclusion criterion from Phase IV participation.

5.9 Transition to Consumption Drills

Completion of Phase IV indicates that recruits have been exposed to:

- Repeated task-based work
- Progressive turnout gear loading
- Structured work–rest cycling
- Instructor-observed tolerance to early consumption-style demands

WEEK 4: A planned recovery period shall be observed prior to initiation of full consumption drills and live-fire training.

Appendices

Appendix A

Rating of Perceived Exertion Scale

Rating	Interpretation of Rating
0	At rest, sitting
1	Very low/light effort
2-3	Low/light effort
4-5	Moderate effort
6-7	High intensity or vigorous
8-9	Very high intensity
10	Maximal possible effort

Appendix B

Phase I – Initial Fitness Screening Data Collection & Risk Scoring Form

Recruit Name: _____ Recruit ID #: _____

Date of Testing: _____ Location: _____

Assessor Name(s): _____

BMI Result: _____ **Waist Circumference Result:** _____

BMI Category	Waist Circumference	Risk Score
BMI < 30	Below Threshold	☐ 0
BMI 30–34.9	Below Threshold	☐ 1
BMI ≥ 35	Below Threshold	☐ 2
BMI < 30	At/Above Threshold	☐ 2
BMI 30–34.9	At/Above Threshold	☐ 4
BMI ≥ 35	At/Above Threshold	☐ 5

Body Composition Risk Score (0-5): _____

Push-Ups Result: _____ <table border="1"> <tr> <th>Category</th><th>Risk Score</th></tr> <tr> <td>≥ 50th Percentile</td><td>☐ 0</td></tr> <tr> <td>< 50th Percentile</td><td>☐ 1</td></tr> </table> Push-Ups Risk Score (0-1): _____	Category	Risk Score	≥ 50th Percentile	☐ 0	< 50th Percentile	☐ 1	Prone Plank Result: _____ <table border="1"> <tr> <th>Category</th><th>Risk Score</th></tr> <tr> <td>≥ 50th Percentile</td><td>☐ 0</td></tr> <tr> <td>< 50th Percentile</td><td>☐ 1</td></tr> </table> Prone Plank Risk Score (0-1): _____	Category	Risk Score	≥ 50th Percentile	☐ 0	< 50th Percentile	☐ 1	1.5-Mile Run/Walk Result: _____ <table border="1"> <tr> <th>Category</th><th>Risk Score</th></tr> <tr> <td>≥ 50th Percentile</td><td>☐ 0</td></tr> <tr> <td>20th – 49th Percentile</td><td>☐ 2</td></tr> <tr> <td>< 20th Percentile</td><td>☐ 4</td></tr> </table> 1.5-Mile Run/Walk Risk Score (0-4): _____	Category	Risk Score	≥ 50th Percentile	☐ 0	20 th – 49 th Percentile	☐ 2	< 20 th Percentile	☐ 4
Category	Risk Score																					
≥ 50th Percentile	☐ 0																					
< 50th Percentile	☐ 1																					
Category	Risk Score																					
≥ 50th Percentile	☐ 0																					
< 50th Percentile	☐ 1																					
Category	Risk Score																					
≥ 50th Percentile	☐ 0																					
20 th – 49 th Percentile	☐ 2																					
< 20 th Percentile	☐ 4																					

Total Risk Score Calculation and Final Classification

TOTAL RISK SCORE (0–11): _____

- ☐ Tier 1 – Cleared for Full Participation (Total Score 0–2)
- ☐ Tier 2 – Elevated Risk: Monitor Training Tolerance (Total Score 3–5)
- ☐ Tier 3 – High Risk: Medical Review / Deferral Recommended (Total Score ≥ 6)

Assessor Attestation

I certify that testing was administered in accordance with SOP guidelines.

Assessor Signature: _____ Date: _____

Appendix C

Phase III – RAST Data Collection & Risk Scoring Form

Recruit Name: _____ Recruit ID #: _____

Date of Testing: _____ Location: _____

Assessor Name(s): _____

Calculate Power for Each Sprint and RAST Mean Power

Sprint #	Time (sec)	Time ³ (sec)	Power (Watts) = $\frac{1,225}{\text{Time of Sprint}^3}$
1			
2			
3			
4			
5			
6			
Sum of Power Scores			
Mean Power (Sum of Power Scores ÷ 6)			

Classification

Men (W/kg)	Women (W/kg)	Classification
≥ 6.26	≥ 5.32	Category A
5.66 – 6.25	4.81 – 5.31	Category B
< 5.65	< 4.80	Category C

Risk Score Based on Classification:

- ☐ Category A – Cleared for Full Participation
- ☐ Category B – Elevated Risk: Monitor Training Tolerance
- ☐ Category C – High Risk: Heightened Observation

Assessor Attestation

I certify that testing was administered in accordance with SOP guidelines.

Assessor Signature: _____ Date: _____