



Edgerton Fire Protection District

Skill Drill #104 - Air Consumption Drill

Objective

The candidate, wearing a complete set of PPE and SCBA, shall consume a complete volume of air from their SCBA while in a condition of physical stress, so that their breathing rate will be increased. The objective is to obtain a better understanding of the individual work time, under fireground conditions, comparing the rate in minutes to pounds per square inch.

Introduction

The use of self-contained breathing apparatus is an essential tool of the trade in the modern fire service with which we all must know our limitations in its use. This endurance course is designed to identify the limitations of the wearer in a safe and effective training environment; although this program is not scientific in nature, it is a very basic program to measure the capabilities and limitations of our members using very basic tools and equipment which are readily available to most fire departments. Due to the physical nature of this exercise, no member shall be allowed to participate if a known medical condition exist which may contribute to further injury or risk. The objective of this training program shall be to identify the participant's personal limitations and physical capabilities in a safe and effective training environment.

MEDICAL STANDBY

Prior to performing any type of endurance training it is strongly recommended that a medical standby crew be on-site to provide medical evaluation and treatment in accordance with local EMS protocols. Medical standby crews shall consist of at least two BLS trained personnel with the necessary tools and equipment. ALS trained personnel with transport capabilities are preferred.

REHAB STATION

As with any strenuous training session, a rehab station should be setup to ensure proper rehabilitation of the participants prior to and after each evolution. Recommended rehab supplies should include as a minimum: Water cooler w/ ice, cups, some type of electrolyte replacement solution, proper cover from direct sunlight (i.e. tent) chairs or benches for participants.



Edgerton Fire Protection District

Skill Drill #104 - Air Consumption Drill

Course Overview

1. Each member is provided with one S.C.B.A.
2. Members are to go through the rehab station prior to the starting the evolution.
3. Vital signs and the starting S.C.B.A. pressure are documented.
4. Members will find a partner and get the appropriate tags for the accountability system.
5. Members will then proceed to staging area outside side A of the maze building.
6. Members are to notify Operations on the Red channel of their locations as they move from station to station.
7. After completing the course, members are to go back to rehab. Vital signs and the ending S.C.B.A. pressure will be documented here.

SCORING CRITERIA

Members are graded on their overall endurance (air consumption / minute) and the number of tasks/station completed.

Course Overview

See appropriate air consumption course skill sheet

HOW TO USE THESE RESULTS TO ENHANCE FIREFIGHTER PERFORMANCE AND SURVIVAL

Firefighters:

- By completing this program your firefighters will have a better understanding of his/her limitations when operating on the fireground.
- Participants will have an understanding of the signs and symptoms they personally experience once they become fatigued, this enables the firefighter to request rehabilitation prior to initiating additional labor-intensive tasks.

Company Officers/Incident Commanders

- Company Officers /Incident Commanders can use this information when considering assignments during fireground operations.
- High endurance members can be assigned more labor-intensive task without the fear of early fatigue.



Edgerton Fire Protection District

Skill Drill #104 - Air Consumption Drill

- Crew assignments and continuity of performance levels are enhanced by providing an equally balanced crew to perform a designated task reducing the potential of early exits due to a crewmember's early low-pressure alarm activation.

AIR SUPPLY LIMITATIONS

- **Physical condition of the user** - A firefighter in poor physical condition will undoubtedly expend his/her air supply at a faster rate compared to a firefighter in peak physical condition. Additionally, firefighters who are larger in physical stature have a tendency to consume air at a higher rate than firefighters with a lesser build.
- **Physical exertion levels** - The aforementioned endurance course is considered a moderate workload for the average firefighter. Physical exertion levels directly relate to the consumption rate of the working member, higher exertion levels will cause the firefighter to expend his/her air supply at a faster rate.
- **Emotional reactions** - Firefighters will react to situations in a variety of ways emotionally and physically. Firefighters who become excited or anxious while wearing an SCBA will experience an increase in their respiratory rate causing an increased consumption rate.
- **Condition of the SCBA** - SCBA's in poor repair or improperly fitted will leak and allow air to flow freely thereby reducing the members overall working time.
- **Starting pressure** - As stated, SCBA cylinders should be filled to their capacity before use to ensure adequate results.
- **Training and Experience Levels:** Members who are well trained and comfortable in the use of an SCBA have a tendency to control their breathing rates and overall consumption rate more appropriately. Prior to performing any type of endurance training, members should be provided with a detailed SCBA training course including confidence training to ensure optimal performance.

EXPANDING YOUR WORKING TIME:

During any type of endurance training, members should be encouraged to concentrate on their breathing techniques. Controlled breathing techniques will ensure optimum performance and prolonged operating times. Suggested breathing techniques include:

- **Nose Breathing:** Breathing in through your nose results in shorter breaths. Inhalation through your nose will usually fill the lungs to less than their capacity enabling the inhaled air to be utilized entirely.
- **Mouth Breathing:** Breathing in through your mouth results in a more rapid respiratory rate in which your body cannot take full advantage of oxygen before exhalation.



Edgerton Fire Protection District

Skill Drill #104 - Air Consumption Drill

In order to control your consumption rate, members should attempt to breathe in through their nose and exhale through their mouth. Members should be instructed to take in slow deep breaths to allow the air to be held in the lungs for maximum oxygen/carbon dioxide exchange. Exhalation should be out through the mouth in a controlled manner. **DO NOT ATTEMPT TO HOLD YOUR BREATH.**

As the member becomes more fatigued he/she will begin to breathe through his/her mouth in an effort to take in more air. Members should be instructed to inhale through their mouth, breathe in slow and deep, attempt to hold the air in their lungs for 3-4 seconds for maximum oxygen/carbon dioxide exchange. In order for optimal air exchange without holding their breath the process of breathing in through their mouth and out through their nose should be continued.

SUMMARY

The fire service has long been identified as a hazardous occupation in which an average of one hundred firefighters lose their lives each year. This program has been designed to provide a proactive approach to training firefighters to better understand their personal limitations in the use and operation of self-contained breathing apparatus in hopes of preventing the all too familiar trend of firefighter fatalities due to stress and/or overexertion on the modern fireground.

Material for this taken from the *S.C.B.A. Entrance For Fireground Survival* by Timothy E. Sendelbach.

Tes2- Training and Education Services - www.tes2training.com

Evaluator Talking Points:

- Did you encounter any difficulties?
- What did you learn from this drill?