Performance Freediving International Standards and Procedures Manual

Part 2: Diver Standards

PERFORMANCE FREEDIVING INTERNATIONAL

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Contents

Revision History

Revision Number	Date	Changes
0719	07/01/2019	Initial Standards
0120	01/01/2020	4.12.1, 5.12.1, 7.12.1, 8.12.1 Content Replaced, note added
0720	07/24/2020	Changes affecting PFI standards for mid second quarter 2020 include reducing and correcting student to instructor ratios with Assistant Instructors, allowing the use of manikins to perform safety skills, increase the distance a safety buddy may be from the diver, change the method of coaching recovery breathing, established most skills as graduation requirements. Corrected minor formatting errors and typographical mistakes.
0121	01/01/2021	Corrected minor typographical errors.
0221	02/01/2021	No Changes.
0122	01/01/2022	4.7 Edited to reflect use of multiple Assistant Instructors. 4.13.3.a. Removed references to hard or soft kicks 5.1 Removed "Surface" from "Surface Safety Skills" 5.2 Paragraph replaced. 5.7 Section expanded upon. 5.12.3.d Text replaced. 5.13 Removed references to hard or soft kicks, added "Count" to each point. 5.13.5.c.v Replaced existing text with "Proper kick cycles to 20 Metres/66 Feet"

		5.14.4.i.v.3 Removed " – 6 strong kick cycles – 6 soft kick cycles – 5 seconds intermittent kicks". 5.14.4.i.v.4 Item Clarified, "Instructor Must:" section added. 8.12.2.b. Replace existing text with "Descend with appropriate kick cycles lasting 30 seconds.". 8.13.3.a.i. 1-3, 8.13.5.b.iv, Removed references to hard or soft kicks.
0123	08/25/2022	4. PFI "Basic Freediver" standard added, all subsequent standards renumbered. 5,6,7,8,9, Diver and leadership level standard sections rearranged and reformatted for consistency with International Training standards format. 7.3 Changed first aid, CPR and oxygen certification requirements in courses to reference the appropriate First Response courses.
0124	01/01/2024	2.5 Updated support materials

1. Snorkeler

1.1 Introduction

This entry level certification course is for individuals wishing to learn the basics of surface snorkeling or limited skin dives for the purpose of enjoying the underwater realm in a knowledgeable and comfortable manner.

1.2 Course Objectives

The objective of this course is to train individuals in the benefits, skills, techniques, and safety & problem management for snorkeling or limited skin diving to a depth no greater than 5 metre/16 Feet.

1.3 Program Prerequisites

1. Minimum age of 6.
2. Competent swimming skills.

1.4 Required Student Equipment

1. Mask, fins, snorkel, exposure protection, weight belt and weights appropriate for local environment.
2. The use of a snorkel vest is optional.

1.5 Support Materials

Student Materials:

1. *PFI Liability and Assumption of Risk* Form.
2. *PFI Medical Statement*.
3. *PFI Snorkeler* eLearning course.

Instructor Materials:

1. There are no required instructor materials for this course.

1.6 Qualification of Graduates

1. Upon successful completion of this course, graduates may engage in snorkeling or skin-diving activities with a buddy without direct instructor supervision and to depths no greater than 5 metre/16 Feet.
2. Upon successful completion of this course, graduates are qualified to enroll in the Freediver course.

1.7 Who May Teach

This course may be taught by any active PFI Freediver Instructor.

1.8 Student to Instructor Ratio

Classroom:

1. Unlimited, so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined water:

1. A maximum of eight students to one PFI Freediver Instructor (8:1).
2. A maximum of twelve students to one PFI Freediver Instructor (12:1 max) with the use of active status PFI Assistant Freediver Instructors.

Open Water:

1. A maximum of six students to one PFI Freediver Instructor (6:1).
2. Maximum of ten students to one PFI Freediver Instructor (10:1 max) with the use of active status PFI Assistant Freediver Instructors

1.9 Depth Restrictions

Open Water:

1. Maximum open water depth of 5 Metres/16 Feet.

Confined Water:

1. Minimum depth to not exceed student's ability to stand. Maximum depth of 5 Metres/16 Feet.

1.10 Recommended Course Minimums

Classroom time:

1. 1.5 Hours.

Confined water time:

1. 1.5 Hours.

Open water dive time:

1. 2.0 Hours (optional).

1.11 Knowledge Development Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Course Overview.
    b. Paperwork and Prerequisites.
    c. Equipment Requirements Check.
    d. Pool Protocols and Conduct.
    e. In-water Protocols and Conduct.
    f. Safety/Supervision Practices.
2. Equipment Options:
    a. Masks, Fins, Snorkels.
    b. Exposure Protection.
    c. Buoyancy Systems.
3. In-Water Environment:
    a. Local aquatic animal and plant life.
    b. Environmental conditions.
4. Safety & Problem Management for Snorkel/Skin Diving:
    a. Buddy contact.
    b. Cramp removal.
    c. Tired snorkeler/skin diver.

d. Surface signals.

5. In-Water Training Exercises:
    a. Equalization techniques.
    b. Communication.

1.12 Confined Water

To be certified as a PFI Snorkeler a student must demonstrate the following skills to the satisfaction of the PFI Instructor:

1. Watermanship Skills:
    a. Swim 25 metre/82 Feet without snorkeling gear.
    b. Tread water for a minimum of 1 minute without floatation.
    c. Prepare snorkeling equipment with minimal assistance.
    d. Successfully complete one of the following entries applicable to local environment:
        i. Reverse Walk In.
        ii. Seated Entry.
2. Mask and Snorkel use:
    a. Snorkel breathing with and without mask.
    b. Snorkeling clearing using blast and displacement methods.
    c. Partial mask clear at surface.
3. Buoyancy Device:
    a. Snorkel Vest inflation/ deflation (only required if snorkel vest is used).
4. Surface Swimming- use of fins:
    a. Proper fin use/flutter kick.
    b. Surface swim for 25 metre/82 Feet showing proper buddy contact.
    c. Dolphin kick (optional).
5. Optional Freedive (max depth 5 metre/16 Feet):
    a. Breathing techniques:
        i. 3-4 relaxed, deep breaths.
        ii. Final breath.

b. Surface dive.
c. Equalization.
d. Head down descent.
e. Complete body submersion.
f. Raised hand ascent method.
g. Displacement/blast method snorkel clearing.

6. Problem Management:
    a. Assist with tired snorkeler/skin diver.
    b. Cramp removal.
    c. Surface signal for assistance.

1.13 Open Water (Optional)

A student can demonstrate the following skills to the satisfaction of the PFI Freediver Instructor.

The following are optional open water skills for the PFI Snorkeler certification:

1. Mask and Snorkel use:
    a. Snorkel breathing with and without mask.
    b. Snorkeling clearing using blast and displacement methods.
    c. Partial mask clear at surface.
2. Buoyancy Device:
    a. Snorkel Vest inflation/ deflation (only required if snorkel vest is used).
3. Surface Swimming- use of fins:
    a. Proper fin use/flutter kick.
    b. Surface swim for 25 metre/82 Feet showing proper buddy contact.
    c. Dolphin kick (optional).
4. Surface dives:
    a. Breathing techniques:
        i. 3-4 relaxed, deep breaths.
        ii. Final breath.
    b. Surface dive (duck dive).

c. Equalization.
d. Head down descent.
e. Complete body & equipment submersion.
f. Raised hand ascent method.
g. Displacement snorkel clearing.

5. Problem Management:
    a. Cramp removal with tired snorkeler assist.

1.14 Graduation Requirements

In order to successfully complete this course a student must:

1. Complete all of knowledge development and confined water sessions.
2. Complete all required skills.
3. Demonstrate mature and sound judgment concerning planning and execution.
4. Prepare snorkeling equipment with minimal assistance.
5. Successfully complete one of the following in-water entries applicable to local environment:
    a. Reverse Walk In.
    b. Seated Entry.

2. Introduction to Freediving

2.1 Introduction

This program is designed as an experience only program and is not intended to teach specific skills or provide certification. A respect for the safety and problem management of freediving should be relayed as well as an appreciation and excitement for furthering a participant's education in a proper full certification program.

2.2 Course Objectives

The objective of this course is to show and give examples of the benefits, skills, techniques, and safety & problem management for all facets of freediving and to provide an experience with basic level static apnea to a maximum of 2:00 minutes and/or a dynamic apnea of 25 metre/82 Feet.

2.3 Program Prerequisites

1. Minimum age 10 years.
2. Comfortable in the water.

2.4 Required Student Equipment

1. Mask.
2. Fins and Snorkel (optional).
3. Exposure protection (appropriate for local environment).
4. A timing device (optional).

2.5 Support Materials

Student Materials:

1. *PFI Medical Statement*.
2. *PFI Liability and Assumption of Risk* Form.

Instructor Materials:

1. *PFI Freediver* Instructor Manual.

2. *PFI Freediver* PowerPoint.

2.6 Qualification of Graduates

Upon successful completion of this course, graduates are qualified to enroll in the Safe Buddy or Freediver courses.

2.7 Who May Teach

This program may be taught by any active PFI Freediver Instructor.

2.8 Student to Instructor Ratio

Classroom:

1. Unlimited, so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined Water:

1. A maximum of eight students to one PFI Freediver Instructor (8:1).
2. A maximum of twelve students to one PFI Freediver Instructor (12:1 max) with the use of active status PFI Assistant Freediver Instructors.

2.9 Depth Restrictions

Confined Water:

1. Maximum confined water depth of 5 metre/16 Feet.

2.10 Recommended Course Minimums

Classroom time:

1. 1.5 Hours

Confined water time:

1. 2.0 Hours

2.11 Knowledge Development Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Course Overview.
    b. Paperwork and Prerequisites.
    c. Equipment Requirements Check.
    d. Pool Protocols and Conduct.
    e. In-water Protocols and Conduct.
    f. Safety/Supervision Practices.
2. History of Freediving:
    a. Origin and History of Freediving.
    b. Freediving Records and Competitions.
3. Why Freedive:
    a. Recreation.
    b. Photo/video.
    c. Marine harvest.
    d. Competition.
4. Equipment Introduction for Freediving:
    a. Basic to advanced equipment introduction.
5. Introduction to In-Water Environment:
    a. Local aquatic animal and plant life & environmental conditions.
6. Physics & Physiology of Freediving:
    a. Introduction to the physics and physiology of freediving.
7. Safety & Problem Management for the Freediver Course:
    a. Direct supervision.
    b. Hypoxia and blackouts.
    c. Introduction to static, dynamic and depth procedures.
    d. Safety signals and procedures for static apnea.

2.12 Confined Water

No certification exists for this program and no students' objectives are required except for instilling a respect and appreciation for safety procedures:

1. Prepare freediving equipment with the assistance of the instructor.
2. Basic elements of static and/or dynamic apnea.
3. Maximum of 3-4 static breath-holds with proper supervision.
4. Complete a maximum of 2:00 minute static apnea.
5. Dynamic apnea streamlining & kick technique with proper supervision.
6. Complete a maximum of a 25 metre/82 Feet dynamic apnea.
7. Complete all safety under the direct supervision and assistance of an instructor.

2.13 Graduation Requirements

There are no graduation requirements for this program.

3. Safe Buddy

3.1 Introduction

This program is designed to educate uncertified Freedivers and/or water professionals, such as lifeguards, charter boat operators, and scuba professionals, in the safety and rescue techniques necessary for Freediving. The program does not include any instruction on increasing Freediving performances or improving form.

3.2 Course Objectives

The objective of this program is to increase Freediving safety awareness for uncertified Freedivers and to enhance their overall safety when diving within recreational Freediving limits.

3.3 Program Prerequisites

1. Minimum age of 10 for Junior Safe Buddy or 16 years for full Safe Buddy.
2. Competent swimming skills.
3. PFI Snorkeler/Skin Diver or equivalent skill level.

3.4 Required Student Equipment

1. Mask.
2. Fins.
3. Snorkel.
4. Wetsuit.
5. Weights and belts optional.
6. Timing device.
7. Any specialty equipment deemed necessary by the local environment or specifics of the training session such as lanyards.

3.5 Support Materials

Student Materials:

1. *PFI Liability and Assumption of Risk* Form.
2. *PFI Medical Statement*.

Instructor/Support Systems:

1. Optional manikin for rescue scenarios.
2. Basic Life Support (BLS)/First Aid support equipment.

3.6 Qualification of Graduates

Upon successful completion of this training session the participant receives a Safe Buddy certification, stating that the student has received safety training.

3.7 Who May Teach

This program may be conducted by any active PFI Freediver Instructor.

3.8 Student to Instructor Ratio

Classroom/Briefing:

1. Unlimited, so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined Water:

1. A maximum of eight students to one PFI Freediver Instructor (8:1).
2. A maximum of twelve students to one PFI Freediver Instructor (12:1 max) with the use of active status PFI Assistant Freediver Instructors.

Open Water:

1. There is no open water session for this course.

3.9 Depth Restrictions

Confined Water:

1. Maximum confined water depth of 10 metre/33 Feet.

3.10 Recommended Course Minimums

Classroom Time:

1. 1 Hour.

Confined Water Time:

1. 2.0 Hours.

3.11 Knowledge Development Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Course Overview.
    b. Paperwork and Prerequisites.
    c. Equipment Requirements Check.
    d. In water Protocols and Conduct.
    e. Safety/Supervision Practices.
2. Course Overview:
    a. Welcome.
    b. Objectives.
    c. Responsibilities:
        i. Conduct yourself in a safe and responsible manner as outlined by your training level.
        ii. Provide back-up safety according to your level if a situation or accident would require.
3. Paperwork and Prerequisites:
    a. Participant Information.
    b. Liability Form.
    c. Medical Form.
    d. Standard Safe Freediving Practice Statement of Understanding.
4. Equipment Requirements Check:
    a. Mask, fins, snorkel.
    b. Exposure protection for local environment.
    c. Weights and weight belt (optional).

d. Appropriate timing device.

5. Safety & Problem Management:
    a. Freediving Supervision:
        i. Direct Supervision.
        ii. One buddy up and one down.
        iii. Supervision for 30 seconds at the surface.
    b. Safety for Constant Ballast:
        i. Remain close enough to protect the airway.
        ii. Time your buddy's dive.
        iii. Know which direction they are heading while underwater.
        iv. 90% of LMC & BO happen at surface.
    c. Safety signals for Static:
        i. Agree on signal.
        ii. Watch for signal as you tap your buddy.
        iii. Watch for weak or no signals.
        iv. Watch for air release.
        v. The two chances rule.
        vi. Signals: 1 minute before; 30 seconds before; at announced time; every 15 seconds thereafter.
    d. Safety for Dynamic (Optional):
        i. Keep pace at surface with kickboard.
        ii. Watch body style.
        iii. Watch for air release.
    e. Recovery breathing:
        i. Static/Dynamic recovery breaths.
        ii. Constant ballast recovery breaths.
    f. Buoyancy for Safety:
        i. Buoyant at surface.
        ii. Never completely sink when exhaling to relaxed volume at surface.
    g. Buddy Separation:

i. At the surface.
ii. Gain height- give OK signal.
iii. Whistles.
iv. Call name.
v. Underwater.
vi. Call for assistance.
vii. Triangulate position.
viii. Search patterns.
ix. Dives within your limitations

h. LMC & Surface Blackout:
    i. Depth vs. Static Hypoxia.
    ii. Near Blackout/LMC/Samba:
        1. Signs and symptoms.
    iii. Assisting a near blackout at the surface:
        1. Provide support.
        2. Talk.
        3. Remove mask if possible.
    iv. Blackouts:
        1. Signs and symptoms.
    v. Assisting Blackouts at the surface:
        1. Link up.
        2. Remove mask.
        3. 3 blow/tap/talks.
        4. Artificial Respiration and Evacuation.
    vi. Surface response to underwater blackout.

3.12 Confined Water

To be certified as a Safe Buddy a student must demonstrate the following skills to the satisfaction of the PFI Instructor:

1. Responding to LMC's & BO's:

a. Assist ascending diver.
b. Assist with a simulated surface LMC as a safety:
    i. Physically support the Freediver.
    ii. Keep one hand on the chest above the waterline but below the chin.
    iii. Speak calmly to encourage the Freediver to breathe.
c. Respond to a simulated blackout at the surface:
    i. Place the Freediver on their back with the airway protected.
    ii. Securely support their head and body.
    iii. Blow, Tap, Talk 3 times.
d. Assist with a simulated underwater blackout:
    i. Physically support the Freediver.
    ii. Ensure proper hand placement.
    iii. Protect the airway.

2. Static Apnea:
    a. Demonstrate basic elements of static safety including:
        i. Timing and safety signals.
        ii. Recovery coaching.
    b. Problem management for Static:
        i. Simulated LMC scenario.
        ii. Simulated BO scenario.
        iii. Complete a full static apnea rescue with BLS egress.
3. Dynamic Apnea (optional):
    a. Demonstrate basic elements of dynamic safety including:
        i. Buddy positioning.
        ii. Recovery coaching.
    b. Demonstrate problem management for dynamic apnea including:
        i. Simulated LMC scenario.
        ii. Simulated BO scenario.
        iii. Complete a full dynamic apnea rescue with BLS egress.
4. Constant Ballast:

a. Demonstrate basic elements of constant ballast safety including:
    i. Recovery coaching.
    ii. Position and proximity.
b. Problem management for constant ballast:
    i. Simulated LMC scenario at surface.
    ii. Simulated BO scenario at surface.
    iii. Surface response to underwater blackout.
    iv. Rescue Tow with unconscious diver.
    v. Airway control and in-water BLS management.
    vi. Egress and victim removal/transport.

3.13 Graduation Requirements

In order to successfully complete the Safe Buddy program Freedivers must:

1. Attend all knowledge sessions and confined water sessions.
2. Demonstrate proficiency in in-water training sessions.
3. Demonstrate proficient rescue techniques in rescue scenarios.
4. Demonstrate mature and sound judgment concerning planning and execution.

4. Basic Freediver

4.1 Introduction

This beginning certification course is for individuals wishing to learn the fundamentals of proper breath hold diving for the purpose of increasing underwater awareness and enjoyment. An introduction to open water Freediving skills and techniques to depths no deeper than 10 metre/33 Feet are practiced with the program also encompassing static and optional dynamic apnea as introductory or stand-alone disciplines.

4.2 Course Objectives

The objective of this course is to train individuals in the benefits, skills, techniques, safety and problem management for beginning Freediving to a depth of 10 metre/33 Feet, with basic level static apnea development of 1:00 minute at a minimum and an optional dynamic apnea development of 10 metre/33 Feet.

4.3 Program Prerequisites

1. Minimum age of 10 for Junior Basic Freediver or 16 years for Basic Freediver.
2. Competent swimming skills.
3. PFI Snorkeler or equivalent skill level.

4.4 Required Student Equipment

1. Mask, Fins, Snorkel.
2. Exposure protection appropriate for local environment.
3. Weight belt and weights appropriate for local environment.
4. Timing device (preferred freediving computer or depth gauge).

4.5 Support Materials

Student Materials:

1. *PFI Medical Statement*.
2. *PFI Liability and Assumption of Risk* Form.
3. *PFI Freediver* Manual or eLearning.

Instructor Materials:

1. PFI Freediver Instructor Guide.

4.6 Qualification of Graduates

1. Upon successful completion of this course, graduates may engage in buddy supported freediving activities appropriate for the environment without direct supervision of an instructor to depths no greater than 10 metre/33 Feet.
2. Upon successful completion of this course, graduates are qualified to enroll in the Freediver or Intermediate Freediver programs.

4.7 Who May Teach

This course may be taught by any active PFI Basic Freediver Instructor. The PFI Basic Freediver Instructor may use active status PFI Assistant Instructors to increase student ratios.

4.8 Student to Instructor Ratio

Classroom:

1. Unlimited, so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete learning.

Confined Water:

1. A maximum of eight students to one PFI Basic Freediver Instructor (8:1).
2. Maximum of twelve students to one PFI Basic Freediver Instructor (12:1 max) with the use of active status PFI Assistant Instructors.

Open Water:

1. A maximum of six students to one PFI Basic Freediver Instructor (6:1).
2. A maximum of ten students to one PFI Basic Freediver Instructor (10:1 max) with the use of active status PFI Assistant Instructors.

4.9 Course Structure and Duration

General Execution:

1. No more than 2 in-water sessions per day.

2. Training sessions must be completed during daylight hours, or under conditions that simulate daylight conditions.
3. All skills are to be briefed, practiced, evaluated, and debriefed by the PFI Basic Freediver Instructor or PFI Assistant Freediver Instructor.
4. During all skills, students will act in a buddy team (buddy A – diver, buddy B – safety) during all skills to promote team freediving.

Confined Water Execution:

1. Students must complete a minimum of 1 confined water session.
2. Maximum confined water depth of 10 Metre/33 Feet.
3. Students should, where applicable, treat the confined water as an 'open water environment' and employ all protocols consistent with open water freediving.

Open Water Execution:

1. Students must complete a minimum of 1 open water session.
2. The maximum depth may not exceed 10 Metre/33 Feet.

Course Structure:

1. PFI Allows Instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The suggested number of total course training hours is 9.

4.10 Administrative Requirements

1. Collect the course fees from all the students.
2. Ensure the students have the required equipment.
3. Communicate the schedule to the students.
4. Have the students complete:
    a. *PFI General Liability and Express Assumption of Risk* Form
    b. *PFI Medical History* Form

4.11 Knowledge Development Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Participant and Staff Introductions.
    b. Course Overview.
    c. Paperwork and Prerequisites.
    d. Equipment Requirements Check.
    e. Classroom, Confined and Open Water Protocols and Conduct.
    f. Safety/Supervision Practices.
2. History of Freediving.
3. Safety & Problem Management:
    a. Freediving supervision:
        i. Direct Supervision.
        ii. One buddy up and one down.
    b. Safety for depth freediving:
        i. Being prepared.
        ii. Remain close enough to protect the airway.
        iii. Time your buddy's dive.
        iv. Know which direction they are heading while under.
        v. Rule of 9's.
    c. Safety and signals for static apnea:
        i. Signal Agreement.
        ii. Proper Signaling.
        iii. Two strikes rule.
        iv. Air release (loss of airway control).
        v. Target time and signals.
        vi. Exiting static apnea.
        vii. Loss of Motor Control (LMC)/Blackout (BO).
    d. Safety for dynamic (optional):
        i. Safety Positioning.
        ii. Watch body style.
        iii. Loss of airway control.

iv. Loss of Motor Control (LMC) /Blackout (BO).

e. Loss of Motor Control (LMC) and Blackout:
    i. Depth Hypoxia vs. Apnea Hypoxia.
    ii. Near Blackout, LMC, and Samba.
    iii. Assisting an LMC at the Surface.
    iv. Blackouts.
    v. Assisting Blackouts at the surface.

f. Buddy separation:
    i. At the surface.
    ii. Underwater.

4. Breathing:
    a. Respiratory muscles:
        i. Diaphragm.
        ii. Intercostals.
        iii. Subclavian (scalene).
    b. Correct breathing cycles:
        i. Normal ventilations.
        ii. Ventilations.
        iii. Purging.
        iv. Peak Inhalation.
        v. Recovery breathing.
    c. Recovery breathing:
        i. What is Recovery Breathing:
            1. Six most important breaths.
            2. Upper chest.
            3. Gas exchange and maintains cerebral blood circulation.
            4. Cleansing VS Hook breaths; 6 Cleans VS 3 Hook + 3 Cleans.
        ii. Static/Dynamic recovery breaths:
            1. 6 Cleansing breaths.
        iii. Constant Weight recovery breaths:

1. 3 Hook breaths; held for 3 seconds at full inhalation.
2. 3 Cleansing breaths.

d. Anxiety stimulus:
    i. Causes:
        1. Physical Stress.
        2. Physiological Stress.
        3. Psychological Stress.
    ii. Stress Reduction:

5. Equipment for Freediving:
    a. Masks:
        i. Volume.
        ii. Fit.
        iii. Materials and types.
        iv. Maintenance.
    b. Fins:
        i. Blade length.
        ii. Materials and types.
        iii. Maintenance.
    c. Snorkels:
        i. Features.
        ii. Placement.
        iii. Submersion protocol.
        iv. Maintenance.
    d. Exposure protection.
    e. Wetsuits:
        i. Features.
        ii. Materials and types.
        iii. Maintenance.
    f. Hoods:
        i. Materials and types.

ii. Equalizing.

g. Gloves:
    i. Features.
    ii. Materials and types.

h. Socks:
    i. Features.
    ii. Materials and types.

i. Timing devices:
    i. Waterproof Timers.
    ii. Features of watches.
    iii. Features of freediving computers.

j. Weight systems:
    i. Materials and Types.
    ii. Weights.
    iii. Placement.
    iv. Buckles.
    v. Accessories and maintenance.

k. Buoyancy systems:
    i. Snorkeling vests features and types.

l. Lines, flags and floats.
    i. Diver Below Flag.
    ii. Alpha Flag.
    iii. Floats & Lines.

m. Accessory freediving equipment:
    i. Freediving knives and placement.
    ii. Lights and markers.
    iii. Goodie bags and stringers.

n. In-Water Environment:
    i. Local aquatic animal and plant life.
    ii. Local environmental conditions.

1. Water type.
2. Temperature and thermoclines.
3. Visibility.
4. Wind, waves and currents.
5. How to assess and plan accordingly.

iii. Local freediving procedures:

1. Boat/shore freediving.
2. In-water procedures.
3. Entry/exit procedures.

6. Physics & Physiology of Freediving:

a. Pressure & volume changes:

i. Boyle's Law and its effects on a Freediver.

ii. Pressure and Body Air Spaces:

1. Pressure on rigid air space:

a. Sinuses.

b. Ears.

2. Pressure on semi-rigid airspaces:

a. Lungs.

b. Stomach/gastrointestinal.

iii. Pressure and Equipment Air Spaces:

1. Mask and goggles.
2. Wetsuit compression:

b. Equalization Techniques – body:

i. Equalizing Ears & Sinuses:

ii. Methods of Equalization:

1. Frenzel.
2. Valsalva.
3. Swallowing, Yawning, Jaw Thrust.

iii. Equalizing Issues:

1. Ears vs sinuses.

2. "Noisy" ears and unequal equalizing.
3. Frequency.
4. Losing air during equalization.

iv. Masks:

1. Frequency.
2. Recapturing air upon ascent.

c. Pressure Related Injuries – barotrauma:

i. Barotitis Media:

1. Symptoms.
2. Causes.
3. Treatment.

ii. Sinus Squeeze:

1. Symptoms.
2. Causes.
3. Treatment.

iii. Perforated Eardrum:

1. Symptoms.
2. Causes.
3. Treatment.

iv. Reverse Block:

1. Symptoms.
2. Causes.
3. Treatment.

v. Mask Squeeze:

1. Symptoms.
2. Causes.
3. Treatment.

d. Buoyancy:

i. Archimedes Principle.

ii. Three States of Buoyancy:

1. Positive – Safety/technique.
2. Neutral – 10 metre/33 Feet.
3. Negative – Safety/technique.

iii. Things that effect buoyancy:

1. Lung volume.
2. Wetsuits.
3. Weights.
4. Body type.
5. Salt vs fresh.

iv. Buoyancy Checks:

1. Surface 'collar bone' rule of thumb.
2. Slight positive at 5 metre /16 Feet on first level exhalation.
3. Neutral at 10 metre/33 Feet.

e. Types & causes of blackouts:

i. Insufficient oxygen to the brain to support higher function.

ii. Recovery Blackout:

1. 90% - Critical hypoxia or Pulmonary Dump.
2. Insufficient recovery breathing.
3. Blood pressure disruption.

iii. Ascent Blackout:

1. 10% (9% & 0.9%) – Critical hypoxia or 'Vacuum Effect'.
2. Rapid lung volume expansion and rapid drop in partial pressures.

7. Aquatic adaptations:
   a. Bradycardia.
   b. Splenic contractions.
   c. Blood shunt (peripheral constriction).
8. In-Water Training Exercises:
   a. Confined Water Skills & Techniques.
   b. Open Water Skills & Techniques.
   c. Communications.

4.12 Confined Water

To be certified as a PFI Basic Freediver. students must demonstrate the following skills to the satisfaction of the PFI Instructor:

1. Watermanship and Stamina (May be completed in open water. If done in open water, must be completed prior to any other open water skills):
    a. A distance swim of 200 Metre non-stop using mask, snorkel, and fins.
    b. Tread water for 10 minutes without flotation.
    c. Blast Clear a flooded snorkel without removing head from water.

Note: If an exposure suit is worn for any of the above skills, the wearer must be neutrally buoyant at the surface.

2. Open Water Freedive Simulation:
    a. Breathe up.
    b. Descent with proper head position.
    c. Equalizing at the surface and on the way down to the bottom of the pool.
    d. Relaxed bottom kicking for 10 seconds.
    e. Ascent with proper head position.
3. Assist with a simulated surface LMC as a safety:
    a. Physically support the Freediver.
    b. Keep one hand on the chest above the waterline but below the chin.
    c. Speak calmly to encourage the Freediver to breathe.
4. Respond to a simulated blackout at the surface:
    a. Protect airway with "head sandwich".
    b. Place Freediver on their back into the "dosey-doe" position.
    c. Remove their mask.
    d. Blow, Tap, Talk 3 times.
    e. 2 simulated rescue breaths.
5. Assist with a simulated underwater blackout:
    a. Recognize Freediver underwater signaling for assistance.
    b. Freedive, take control of the Freediver asking for assistance.
    c. Recognize blackout before surfacing.

d. Protect the airway with a "head sandwich".
e. Place Freediver on their back into the "dosey-doe" position.
f. Remove their mask.
g. Blow, Tap, Talk 3 times.
h. 2 simulated rescue breaths.

6. Self-rescue and buddy rescue skills:
    a. Flooded mask ascent:
        i. Fully flood at depth in deep end of pool.
        ii. Ascent and recovery breathe in a controlled manner.
    b. Remove weight belt and ascend:
        i. Remove weight belt at depth in deep end of pool.
        ii. Ascend holding belt low at their side with buckle end down.
        iii. Perform proper recovery breathing.
        iv. Replace weight belt at the surface with right hand release.
    c. Respond to a simulated surface LMC as a Safety
        i. Physically support the Freediver.
        ii. Keep one hand parallel to the water, above the water, but below the chin.
        iii. Speak calmly to encourage the Freediver to breathe.
        iv. Maintain control until the Freediver regains control.
    d. Respond to a simulated blackout at the surface:
        i. Place the Freediver on their back with the airway protected using a "head sandwich".
        ii. Securely support the Freediver's head with a "dosey-doe".
        iii. Blow, tap, talk 3 times.
        iv. Maintain control until the Freediver regains control.
7. Static and Dynamic Apnea
    a. Static apnea:
        i. As a breath-holder student must complete a minimum of 4 consecutive static breath-holds.
            1. Vent – hold ratio.

a. 1 minute – 30 seconds
b. 2 minutes – 1 minute
c. 3 minutes – 2 minutes
d. 4 minutes – 2:30 minutes

ii. Complete a minimum 1:00 static apnea, not exceeding 2:30, without any hypoxic symptoms and demonstrating proper recovery breathing.

iii. As a safety student must complete:

1. Buddy supervision.
2. Timing and safety signals.
3. Recovery breathing and support assistance.

b. Dynamic apnea (optional):

i. As a breath-holder student may complete a minimum of 3 dynamic performances:

1. Vent – distance ratio:

a. 1 minute – 10 minutes.
b. 2 minutes – 10 minutes + turn
c. 2 minutes – 25 minutes

2. Streamlining and kicks appropriate for dynamic.
3. Complete a minimum 10 metre/33 Feet dynamic apnea, not exceeding 25 metre/82 Feet, without any hypoxic symptoms and demonstrating proper recovery breathing.
4. As a safety student must complete:

a. Surface safety with floatation.
b. Recovery breathing and surface support assistance.

4.13 Open Water

To be certified as a PFI Basic Freediver a student must demonstrate the following skills to the satisfaction of the PFI Basic Freediver Instructor as follows:

1. Open Water Training Sessions:
   a. A minimum of one (1) open water session must be completed.
2. Weighting and Buoyancy:

a. Establish positive buoyancy at the surface – collarbone at water level on peak inhalation and airway above water level on relaxed (first level) exhalation.

3. Fin Use:
    a. Introduce proper flutter kick.
    b. Dolphin kick (optional).
4. Free Immersion Warm-up Dives:
    a. Complete a minimum of four (4) free immersion style freedives as a warm-up, reaching a minimum of 5 metre/16 Feet without barotrauma or hypoxic symptoms.
        i. Breathe up properly.
        ii. Remove snorkel.
        iii. Descend using double or single leg descents.
        iv. Ensure proper head position.
5. Complete four constant weight dives, reaching a minimum of 5 metre /16 Feet without barotrauma or hypoxic symptoms:
    a. Surface breathing and preparation.
    b. Remove snorkel.
    c. Double leg, or single leg raised entry.
6. Demonstrate proper descent procedures:
    a. Stay within arm's reach of the descent line.
    b. Face line during descent.
    c. Maintain proper head neutral position.
    d. Equalize frequently with arm tucked.
    e. Descend at approximately 1 metre/3 Feet a second.
    f. Practice kick-cycle speed and depth determination.
    g. Utilize line for an effective bottom turn.
7. Demonstrate proper ascent procedures:
    a. Maintain proper neutral head position.
    b. Recapture expanding air from mask if possible.
    c. 2 metre/6 Feet exhalation prior to surfacing.
    d. Proper recovery breathing.

8. Respond to a simulated surface LMC as a Safety:
    a. Physically support the Freediver.
    b. Keep one hand parallel to the water, above the water, but below the chin.
    c. Speak calmly to encourage the Freediver to breathe.
    d. Maintain control until the Freediver regains control.
9. Respond to a simulated blackout at the surface:
    a. Place the Freediver on their back with the airway protected using a "head sandwich".
    b. Securely support the Freediver's head with a "dosey-doe".
    c. Blow, tap, talk 3 times.
    d. Maintain control until the Freediver regains control.
10. Assist with a simulated underwater blackout:
    a. Recognize Freediver underwater signaling for assistance.
    b. Freedive, take control of the Freediver asking for assistance.
    c. Recognize blackout before surfacing.
    d. Protect the airway with a "head sandwich".
    e. Place Freediver on their back into the "dosey-doe" position.
    f. Remove their mask.
    g. Blow, Tap, Talk 3 times.
    h. 2 simulated rescue breaths.

4.14 Graduation Requirements

In order to successfully complete the course students must:

1. Successfully complete all the knowledge development, confined water, and open water training sessions.
2. Demonstrate mature and sound judgment concerning planning and execution.
3. Achieve a passing score of 80% on the final exam and show 100% knowledge comprehension.
4. Successfully complete all confined and open water skills

Instructors Must:

1. Submit certifications to PFI Headquarters within 7 days of course completion date for processing.

5. Freediver

5.1 Introduction

This is the entry-level certification course for individuals wishing to learn the fundamentals of proper breath hold diving for the purpose of increasing underwater awareness and enjoyment. An introduction to open water Freediving skills and techniques to depths no deeper than 20 metre/66 Feet are practiced with the program also encompassing static and dynamic apnea as introductory or stand-alone disciplines.

A pool only certification may be issued to those not wishing to participate in open water training.

5.2 Course Objectives

The objective of this course is to train individuals in the benefits, skills, techniques and safety and problem management for entry level Freediving to a depth of 20 metre/66 Feet, with basic level static apnea development of 1:30 minutes at a minimum and an optional dynamic apnea development of 25 metre/82 Feet.

5.3 Program Prerequisites

1. Minimum age of 10 for Junior Freediver or 16 years for Freediver.
2. Competent swimming skills.
3. PFI Snorkeler or equivalent skill level.

5.4 Required Student Equipment

1. Mask, Fins, Snorkel.
2. Exposure protection appropriate for local environment.
3. Weight belt and weights appropriate for local environment.
4. Timing device (preferred freediving computer or depth gauge).

5.5 Support Materials

Student Materials:

1. *PFI Medical Statement*.

2. *PFI Liability and Assumption of Risk* Form.
3. *PFI Freediver* Manual or eLearning.

Instructor Materials:

1. *PFI Freediver* Instructor Manual
2. *PFI Freediver* Instructor Guide

5.6 Qualification of Graduates

1. Upon successful completion of this course, graduates may engage in buddy supported freediving activities appropriate for the environment without direct supervision of an instructor to depths no greater than 20 metre /66 Feet.
2. Upon successful completion of this course, graduates are qualified to enroll in the Freediver Coaching, Intermediate Freediver, Open line Diving and Specialty Freediver programs.
3. Divers may be certified with a Freediver-Pool Only certification after successfully completing all knowledge Development and Confined Water training sessions. There is no open water training necessary for this level of certification and divers at this level are not certified for any open water activities.

5.7 Who May Teach

This course may be taught by any active PFI Freediver Instructor. The PFI Freediver Instructor may use active status PFI Assistant Instructors to increase student ratios.

5.8 Student to Instructor Ratio

Classroom:

1. Unlimited, so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete learning.

Confined Water:

1. A maximum of eight students to one PFI Freediver Instructor (8:1).
2. A maximum of twelve students to one PFI Freediver Instructor (12:1 max) with the use of active status PFI Assistant Freediver Instructors.

Open Water:

1. A maximum of six students to one PFI Freediver Instructor (6:1).

2. A maximum of ten students to one PFI Freediver Instructor (10:1 max) with the use of active status PFI Assistant Freediver Instructors.

5.9 Course Structure and Duration

General Execution:

1. No more than 2 in-water sessions per day.
2. Training sessions must be completed during daylight hours, or under conditions that simulate daylight conditions.
3. All skills are to be briefed, practiced, evaluated, and debriefed by the PFI Freediver Instructor or PFI Assistant Freediver Instructor.
4. During all skills, students will act in a buddy team (buddy A – diver, buddy B – safety) during all skills to promote team freediving.

Confined Water Execution:

1. Students must complete a minimum of 1 confined water session with 2 recommended.
2. Maximum confined water training session of 10 Metre/33 Feet for confined water skills, 20 Metre/66 Feet for open water skills for Freediver Deep Pool Only certification.
3. Students should, where applicable, treat the confined water as an 'open water environment' and employ all protocols consistent with open water freediving.

Open Water Execution:

1. Students must complete a minimum of 1 open water session with two recommended.
2. Training depth must be between 10 to 20 Metre/33 to 66 Feet; the maximum depth may not exceed 20 Metre/66 Feet.

Course Structure:

1. PFI Allows Instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The suggested number of total course training hours is 16.

5.10 Administrative Requirements

1. Collect the course fees from all the students.
2. Ensure the students have the required equipment.
3. Communicate the schedule to the students.

4. Have the students complete:
    a. *PFI General Liability and Express Assumption of Risk* Form
    b. *PFI Medical History* Form

5.11 Knowledge Development Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Participant and Staff Introductions.
    b. Course Overview.
    c. Paperwork and Prerequisites.
    d. Equipment Requirements Check.
    e. Classroom, Confined and Open Water Protocols and Conduct.
    f. Safety/Supervision Practices.
2. History of Freediving.
3. Safety & Problem Management:
    a. Freediving supervision:
        i. Direct Supervision.
        ii. One buddy up and one down.
    b. Safety for depth freediving:
        i. Being prepared.
        ii. Remain close enough to PROTECT THE AIRWAY!
        iii. Time your buddy's dive.
        iv. Know which direction they are heading while under.
        v. Rule of 9's.
    c. Safety and signals for static apnea:
        i. Signal Agreement.
        ii. Proper Signaling.
        iii. Two strikes rule.
        iv. Air release (loss of airway control).

v. Target time and signals.
vi. Exiting a static apnea
vii. Loss of Motor Control (LMC)/Blackout (BO).

d. Safety for dynamic (optional):
i. Safety Positioning.
ii. Watch body style.
iii. Loss of airway control.
iv. Loss of Motor Control (LMC) /Blackout (BO).

e. Loss of Motor Control (LMC) and Blackout:
i. Depth Hypoxia vs. Apnea Hypoxia.
ii. Near Blackout, LMC, and Samba.
iii. Assisting an LMC at the Surface.
iv. Blackouts.
v. Assisting Blackouts at the surface.
vi. Responding to Bailouts and Blackout below surface.

f. Buddy separation:
i. At the surface.
ii. Underwater.

4. Breathing:
a. Respiratory muscles:
i. Diaphragm.
ii. Intercostals.
iii. Subclavian (scalene).

b. Correct breathing cycles:
i. Normal ventilations.
ii. Ventilations.
iii. Purging.
iv. Peak Inhalation.
v. Recovery breathing.

c. Recovery breathing:

i. What is Recovery Breathing:
    1. Six most important breaths.
    2. Upper chest.
    3. Gas exchange and maintains cerebral blood circulation.
    4. Cleansing VS Hook breaths; 6Cleans VS 3Hook + 3 Cleans.
ii. Static/Dynamic recovery breaths:
    1. Cleansing breaths.
iii. Constant Ballast recovery breaths:
    1. Hook breaths; held for 3 seconds at full inhalation.

d. Anxiety stimulus:
    i. Causes.
        1. Physical Stress.
        2. Physiological Stress.
        3. Psychological Stress.
    ii. Stress Reduction.

5. Equipment for Freediving:
    a. Masks:
        i. Volume.
        ii. Fit.
        iii. Materials and types.
        iv. Maintenance.
    b. Fins:
        i. Blade length.
        ii. Materials and types.
        iii. Maintenance.
    c. Snorkels:
        i. Features.
        ii. Placement.
        iii. Submersion protocol.
        iv. Maintenance.

d. Exposure protection.
e. Wetsuits.
    i. Features.
    ii. Materials and types.
    iii. Maintenance.
f. Hoods:
    i. Materials and types.
    ii. Equalizing.
g. Gloves:
    i. Features.
    ii. Materials and types.
h. Socks:
    i. Features.
    ii. Materials and types.
i. Timing devices:
    i. Waterproof Timers:
        1. Features of watches.
        2. Features of freediving computers.
j. Weight systems:
    i. Materials and Types.
    ii. Weights.
    iii. Placement.
    iv. Buckles.
    v. Accessories and maintenance.
k. Buoyancy systems:
    i. Snorkeling vests features and types.
l. Lines, flags and floats:
    i. Diver Below Flag.
    ii. Alpha Flag.
    iii. Floats & Lines.

m. Accessory freediving equipment:
    i. Freediving knives and placement.
    ii. Lights and markers.
    iii. Goodie bags and stringers.
n. In-Water Environment:
    i. Local aquatic animal and plant life.
    ii. Local environmental conditions:
        1. Water type.
        2. Temperature and thermoclines.
        3. Visibility.
        4. Wind, waves and currents.
        5. How to assess and plan accordingly.
    iii. Local freediving procedures:
        1. Boat/shore freediving.
        2. In-water procedures.
        3. Entry/exit procedures.

6. Physics & Physiology of Freediving:
    a. Pressure & volume changes:
        i. Boyle's Law and its effects on a Freediver.
        ii. Pressure and Body Air Spaces:
            1. Pressure on rigid air space:
                a. Sinuses.
                b. Ears.
            2. Pressure on semi-rigid airspaces:
                a. Lungs.
                b. Stomach/gastrointestinal.
        iii. Pressure and Equipment Air Spaces:
            1. Mask and goggles.
            2. Wetsuit compression.
    b. Equalization Techniques – body:

i. Equalizing Ears & Sinuses.
ii. Three methods of Equalizing and most preferred:
    1. Frenzel.
    2. Valsalva.
    3. Swallowing, Yawning, Jaw Thrust.
    4. Frequency.
    5. Losing air during equalization.
iii. Equalizing Issues:
    1. Ears vs sinuses.
    2. "Noisy" ears and unequal equalizing.
iv. Masks:
    1. Frequency.
    2. Recapturing air upon ascent.

c. Pressure Related Injuries – barotrauma:
    i. Barotitis Media:
        1. Symptoms.
        2. Causes.
        3. Treatment.
    ii. Sinus Squeeze:
        1. Symptoms.
        2. Causes.
        3. Treatment.
    iii. Perforated Eardrum:
        1. Symptoms.
        2. Causes.
        3. Treatment.
    iv. Reverse Block:
        1. Symptoms.
        2. Causes.
        3. Treatment.

v. Mask Squeeze:
    1. Symptoms.
    2. Causes.
    3. Treatment.

d. Buoyancy:
    i. Archimedes Principle.
    ii. Three States of Buoyancy:
        1. Positive – Safety/technique.
        2. Neutral – 10 metre/33 Feet.
        3. Negative – Safety/technique.
    iii. Things that effect buoyancy:
        1. Lung volume.
        2. Wetsuits.
        3. Weights.
        4. Body type.
        5. Salt vs fresh.
    iv. Buoyancy Checks:
        1. Surface 'collar bone' rule of thumb.
        2. Slight positive at 5 metre/16 Feet.
        3. Neutral at 10 metre/33 Feet.

e. Types & causes of blackouts:
    i. Insufficient oxygen to the brain to support higher function.
    ii. Recovery Blackout:
        1. 90% - Critical hypoxia or Pulmonary Dump.
        2. Insufficient recovery breathing.
        3. Blood pressure disruption.
    iii. Ascent Blackout:
        1. 10% (9% & 0.9%) – Critical hypoxia or 'Vacuum Effect'.
        2. Rapid lung volume expansion and rapid drop in partial pressures.

7. Aquatic adaptations:

a. Bradycardia.
b. Splenic contractions.
c. Blood shunt (peripheral constriction).

8. In-Water Training Exercises:
    a. Confined Water Skills & Techniques.
    b. Open Water Skills & Techniques.
    c. Communications.

5.12 Confined Water

To be certified as a PFI Freediver students must demonstrate the following skills to the satisfaction of the PFI Instructor:

1. Watermanship and Stamina (May be completed in open water. If done in open water, must be completed prior to any other open water skills).
    a. Distance swim of 200 Metre nonstop using any stroke without the use of swimming aids (mask or swim goggles may be used), or 300 Metre nonstop using mask, snorkel, and fins.
    b. Tread water for 10 minutes without flotation.

Note: If an exposure suit is worn for any of the above skills, the wearer must be neutrally buoyant at the surface.

2. Snorkel breathing:
    a. Swim continuously at the surface without a mask for a minimum of 25 minutes without removing the face from the water while breathing continuously through the snorkel.
3. Open Water Freedive Simulation:
    a. Breathe up.
    b. Descent with proper head position.
    c. Equalizing at the surface and on the way down to the bottom of the pool.
    d. Relaxed bottom kicking for 10 seconds.
    e. Ascent with proper head position.
    f. Drop arms at 10 metre/33 Feet (simulated depth) and shallower.
4. Assist with a simulated surface LMC as a safety:
    a. Physically support the Freediver.

b. Keep one hand on the chest above the waterline but below the chin.
c. Speak calmly to encourage the Freediver to breathe.

5. Respond to a simulated blackout at the surface:
    a. Protect airway with "head sandwich".
    b. Place Freediver on their back into the "dosey-doe" position.
    c. Remove their mask.
    d. Blow, Tap, Talk 3 times.
6. Assist with a simulated underwater blackout:
    a. Recognize Freediver underwater signaling for assistance.
    b. Freedive, take control of the Freediver asking for assistance.
    c. Recognize blackout before surfacing.
    d. Protect the airway with a "head sandwich".
    e. Place Freediver on their back into the "dosey-doe" position.
    f. Remove their mask.
    g. Blow, Tap, Talk 3 times.
    h. 2 simulated rescue breaths.
7. Static and Dynamic Apnea:
    a. Static apnea:
        i. As a breath-holder student must complete a minimum of 4 consecutive static breath-holds.
            1. 1st session:
                a. Vent – hold ratio:
                    i. 1 minute – 1 minute.
                    ii. 3 minutes – 2 minutes.
                    iii. 3 minutes - 2:30 minutes.
                    iv. 4 minutes – 3 minutes.
            2. 2nd session (optional):
                a. Vent – hold ratio:
                    i. 3 minutes – 2 minutes.
                    ii. 4 minutes – 3 minutes.

iii. 5 minutes – 4 minutes.

ii. Complete a minimum 1:30 minute static apnea, not exceeding 4:00 minutes, without any hypoxic symptoms.

iii. As a safety student must complete:

1. Buddy supervision.
2. Timing and safety signals.
3. Recovery breathing and support assistance.

b. Dynamic apnea (optional):

i. As a breath-holder student must complete a minimum of 3 dynamic performances.

1. Vent – distance ratio:
   a. 1 minute – 25 metre/82 Feet.
   b. 2 minutes – 25 metre/82 Feet + turn.
   c. 2 minutes – 50 metre/82 Feet.
2. Streamlining and kicks appropriate for dynamic.
3. Complete a minimum 25 metre/82 Feet dynamic apnea, not exceeding 75 metre/246 Feet, without any hypoxic symptoms.
4. As a safety student must complete:
   a. Surface safety with floatation.
   b. Recovery breathing and surface support assistance.

5.13 Open Water

To be certified as a PFI Freediver a student must demonstrate the following skills to the satisfaction of the PFI Freediver Instructor as follows:

1. Open Water Training Sessions:
   a. A minimum of one (1) open water session must be completed with two (2) recommended.
2. Weighting and Buoyancy:
   a. Establish positive buoyancy at approximately 5 metre/16 Feet after 1st level exhalation without sculling, finning, treading, or pushing off plate.
   b. Establish neutral buoyancy at approximately 10 metre/33 Feet with peak inhalation without sculling, finning, treading, or pushing off plate.

3. Fin Use:
    a. Introduce proper kick cycles determinations to landmark depths:
        i. Landmark 10 metre/33 Feet kick cycles.
        ii. Landmark 15 metre/50 Feet and 20 metre/66 Feet kick cycles (optional).
    b. Dolphin kick (optional).
4. Free Immersion Warm-up Dives:
    a. Complete a minimum of four (4) free immersion style freedives as a warm-up.
    b. Reach a minimum of 10 metre/33 Feet without barotrauma or hypoxic symptoms:
        i. Breathe up properly.
        ii. Remove snorkel.
        iii. Descend using double or single leg descents.
        iv. Ensure proper head position.
5. Complete six constant ballast dives:
    a. Reach a minimum of 10 metre/33 Feet without barotrauma or hypoxic symptoms.
        i. Surface breathing and preparation.
        ii. Remove snorkel.
        iii. Double leg, or single leg raised entry.
6. Demonstrate proper descent procedures:
    a. Stay within arm's reach of the descent line.
    b. Face line during descent.
    c. Maintain proper head neutral position.
    d. Equalize frequently with arm tucked.
    e. Descend at approximately 1 metre/3 Feet a second.
    f. Practice kick-cycle speed and depth determination.
    g. Utilize line for an effective bottom turn.
7. Demonstrate proper ascent procedures:
    a. Double raised hands if flexibility and comfort allow.
    b. Drop arms at 10 metre – 5 metre/33 Feet – 16 Feet.

c. Recapture expanding air from mask if possible.

d. 2 metre/6 Feet exhalation prior to surfacing

e. Proper recovery breathing.

5.14 Graduation Requirements

In order to successfully complete the course students must:

1. Successfully complete all the knowledge development, confined water, and open water training sessions. Open water training is not necessary for Pool Only certification.
2. Demonstrate mature and sound judgment concerning planning and execution.
3. Achieve a passing score of 80% on the final exam and show 100% knowledge comprehension.
4. Complete the following skills:
    a. Equipment:
        i. Prepare equipment with minimal assistance.
        ii. Buddy check all equipment.
    b. Entry and exit:
        i. Enter water with techniques appropriate for the environment.
        ii. Signal buddy/shore/boat.
        iii. Exit water with techniques appropriate for the environment.
    c. Proper weighting and buoyancy:
        i. Test for approximate neutral buoyancy at surface by floating upright at collar bone without sculling, finning, or treading.
        ii. After buoyancy has been established – either collarbone for pool only, or 10 metre/33 Feet during open water for Freediver, perform a first level exhalation at the surface - If the student sinks – they are over weighted.
    d. Snorkel Use:
        i. Successfully clear and blast the snorkel without removing the head from the water.
    e. Proper fin use:
        i. Flutter kick at the surface.
        ii. Maintain a stationary position with sculling.

f. Descent and Ascent Procedures:
    i. Surface breathing and preparation.
    ii. Remove snorkel prior to entry.
    iii. Demonstrate a double leg raised entry or a single leg raised entry in the order of:
        1. Bend.
        2. Leg(s).
        3. Pull.
        4. Kick.
    iv. Demonstrate proper ascent procedures:
        1. Head in neutral position.
        2. Recapturing expanding air in the mask if possible.
        3. Exhale at approximately 2 metre/7 Feet.
        4. Proper recovery breathing.
    v. During descents and ascents – the students' head position must remain neutral.
g. Self-emergency Ascent Procedures:
    i. Flooded mask ascent:
        1. Fully flood at depth.
            a. Pool only – deep end of pool.
            b. Freediver – at 5 metre /16 Feet
        2. Remain at depth for approximately 10 seconds before ascending.
        3. Ascent and recovery breathe in a controlled manner.
    ii. Remove weight belt and ascend:
        1. Remove weight belt at depth:
            a. Pool only – deep end of pool.
            b. Freediver – minimum 5 metre/16 Feet.
        2. Ascend holding belt low at their side with buckle end down.
        3. Perform proper recovery breathing.
        4. Replace weight belt at the surface with right hand release.

h. Recovery Breathing:
    i. Proper exhalation from 2 metre/6 Feet.
    ii. Position both hands on float/side of pool.
    iii. Show proper 3 hook and 3 cleansing breaths on upper half of lung volume.
    iv. Hook breaths are held for a full 3 seconds.
i. Safety & Problem Management:
    i. Assist with recovery breathing as a safety:
        1. Be 2 metre/7 Feet to 3 metre/10 Feet to the side of the Freediver.
        2. Use audio coaching when necessary.
        3. Remain attentive and vigilant for a minimum of 30 seconds after the Freediver has surfaced.
    ii. Respond to a simulated surface LMC as a Safety:
        1. Physically support the Freediver.
        2. Keep one hand parallel to the water, above the water, but below the chin.
        3. Speak calmly to encourage the Freediver to breathe.
        4. Maintain control until the Freediver regains control.
    iii. Respond to a simulated blackout at the surface:
        1. Place the Freediver on their back with the airway protected using a "head sandwich".
        2. Securely support the Freediver's head with a "dosey-doe".
        3. Blow, tap, talk 3 times.
        4. Maintain control until the Freediver regains control.
    iv. Assist with a simulated underwater blackout no deeper than 5 metre/16 Feet:
        1. Recognize signal for assistance.
        2. Physically support the Freediver.
        3. Ensure proper hand placement.
        4. Recognize blackout before the surface.
        5. Protect the airway with a "head sandwich".

6. Perform surface blackout procedures through 2 rescue breaths once the student has ascended with the blacked out Freediver.

Instructors Must:

1. Submit certifications to PFI Headquarters within 7 days of course completion date for processing.

6. Intermediate Freediver

6.1 Introduction

This follow-up program to the PFI Freediver course continues to develop the comfort and safety skills of basic level freediving. The PFI Intermediate Freediver is the foundation program for the PFI Advanced Freediver as well as professional programs. It brings a whole knowledge approach introducing skills and techniques as well as a high-level of knowledge in physics, physiology, and safety & problem management. During this program participants work in depths as deep as 40 metre/132 Feet while learning valuable warm-up skills to enhance this capacity. This program encompasses static apnea and may also introduce dynamic apnea. A PFI Intermediate Pool Only certification may be issued to those not wishing to participate in open water training.

6.2 Course Objectives

This program will also focus on a high level of safety & problem management by learning how to take care of black-outs underwater and initiating BLS recovery procedures while also developing appropriate kick cycles while also developing the sink phase part of negative buoyancy.

6.3 Program Prerequisites

1. Minimum age of 12 for Junior Intermediate Freediver or 16 years for Intermediate Freediver.
2. Competent swimming skills.
3. PFI Freediver or equivalent skill level.

6.4 Required Student Equipment

1. Freediving quality mask, fins and snorkel.
2. Freediving quality exposure protection (appropriate for local environment).
3. Freediving quality weight belt and weights (appropriate for local environment).
4. A timing device (preferred freediving computer or gauge).

6.5 Support Materials

Student Materials:

1. *PFI Medical Statement*.
2. *PFI Liability and Assumption of Risk* Form.
3. *PFI Intermediate* Manual or eLearning.

Instructor Materials:

1. *PFI Intermediate Freediver* Instructor Manual.
2. *PFI Intermediate Freediver* Instructor Guide.
3. *PFI Intermediate Freediver* final exam and answer sheet.

6.6 Qualification of Graduates

1. Upon successful completion of this course, graduates may engage in buddy supported freediving activities appropriate for the environment without direct supervision of an instructor to depths no greater than 40 metre/132 Feet.
2. Upon successful completion of this course, graduates are qualified to enroll in the Intermediate Freediver Coaching, Advanced Freediver, Open line Diving, Freediver Safety, and Specialty Freediver programs.
3. Divers may be certified with an Intermediate Freediver-Pool Only certification after successfully completing all knowledge Development and Confined Water training sessions.

There is no open water training necessary for this level of certification and divers at this level are not certified for any open water activities.

6.7 Who May Teach

This course may be taught by any active PFI Intermediate Freediver Instructor. The PFI Intermediate Freediver Instructor may use active status PFI Assistant Intermediate Instructors to increase student ratios.

To qualify as a PFI Assistant Intermediate Freediver Instructor:

1. Active PFI Freediver Instructor.
2. 21 years of age.
3. Have certified at least 20 students, 10 of which must be at the Freediver level.

4. Fully assist with all components of at least one Intermediate Freediver course with an Intermediate Freediver Instructor.
5. Complete demonstration quality 40 metre/132 Feet CWT and FIM dives.
6. Be issued the Assistant Intermediate Freediver Instructor Rating from a qualified Intermediate Freediver Instructor.

6.8 Student to Instructor Ratio

Classroom:

1. Unlimited so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined Water:

1. A maximum of eight students to one PFI Intermediate Freediver Instructor (8:1).
2. A maximum of twelve students to one PFI Intermediate Freediver Instructor (12:1 max) with the use of active status PFI Assistant Intermediate Freediver Instructors.

Open Water:

1. A maximum of six students to one PFI Intermediate Freediver Instructor (6:1).
2. A maximum of ten students to one PFI Intermediate Freediver Instructor (10:1 max) with the use of active status PFI Assistant Intermediate Freediver Instructors.

6.9 Course Structure and Duration

General Execution:

1. No more than 2 in-water sessions per day.
2. Training sessions must be completed during daylight hours, or under conditions that simulate daylight conditions.
3. All skills are to be briefed, practiced, evaluated, and debriefed by the PFI Intermediate Freediver Instructor or PFI Assistant Intermediate Freediver Instructor.
4. During all skills, students will act in a buddy team (buddy A – diver, buddy B – safety) during all skills to promote team freediving.

Confined Water Execution:

1. Students must complete a minimum of 2 confined water sessions.

2. Maximum confined water training session of 10 metre/33 Feet for confined water skills, 40 metre/132 Feet for open water skills for Intermediate Freediver Deep Pool Only certification.
3. Students should, where applicable, treat the confined water as an 'open water environment' and employ all protocols consistent with open water freediving.

Open Water Execution:

1. Students must complete a minimum of 2 open water sessions with 3 recommended.
2. Training depth must be between 25 to 40 Metre/82 to 132 Feet; the maximum depth may not exceed 40 Metre/132 Feet.

Course Structure:

1. PFI Allows Instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The suggested number of total course training hours is 24.5.

6.10 Administrative Requirements

1. Collect the course fees from all the students.
2. Ensure the students have the required equipment.
3. Communicate the schedule to the students.
4. Have the students complete:
    a. *PFI General Liability and Express Assumption of Risk* Form
    b. *PFI Medical History* Form

6.11 Knowledge Development Overview

The following topics must be covered during this course by the PFI Intermediate Freediver Instructor and/or active status PFI Assistant Intermediate Freediver Instructor as outlined in the PFI General Standards and Procedures section. Instructors may use additional texts or materials they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Participant and staff introductions.
    b. Course overview.

c. Paperwork and prerequisites.
d. Equipment requirements check.
e. Classroom, Confined and Open Water protocols and conduct.
f. Safety/supervision practices.

2. History of Freediving:
    a. Origin of freediving
        i. Roman and Greek armies.
        ii. Ama Freedivers.
        iii. Modern day freediving.
3. Safety & Problem Management:
    a. Freediving supervision:
        i. Supervision.
        ii. Proximity.
        iii. Technique.
    b. Safety for depth freediving:
        i. Styles of depth freediving.
        ii. Constant ballast.
        iii. Constant ballast no-fins.
        iv. Free immersion.
        v. Rule of 9's.
        vi. Positioning and proximity:
            1. Safety depth - meet at 1/3 Freediver's max depth:
                a. Safety time - intercepts Freediver 10 seconds after reaching safety depth (dive time +10 seconds)
        vii. 2, 3 and 4 person teams.
    c. Safety and signals for static apnea:
        i. What is static apnea.
        ii. Why train in static apnea.
        iii. Signals.
        iv. Two strikes rule.

v. Target times.
vi. Exiting a static apnea.
vii. Responding to emergencies.

d. Safety for dynamic:
    i. What is dynamic apnea.
    ii. Why train in dynamic apnea.
    iii. Safety positioning.
    iv. Responding to emergencies.

e. Performance evaluations:
    i. Determine the next target time, depth, and distance.
    ii. The 10 evaluation criteria:
        1. Tired/exhaustion.
        2. Technique.
        3. Equalizations.
        4. Near-blackout/blackout.
        5. Urge to breath/contractions.
        6. Pressure contractions.
        7. Tired legs/failure.
        8. Equipment performance.
        9. Chest compression/squeeze.
        10. Narcosis.

f. Self-bailout underwater:
    i. Steps of self-bailout:
        1. Terminate the Freedive.
        2. Use line for assistance.
        3. Signal buddy for help.
        4. Release weight belt and hold it in hand for future release.
        5. Drop weight belt.
        6. Keep your eyes open.
        7. Discontinue freediving day with any signs of hypoxia.

8. Moderate freediving time, depth, distance, exertion.

g. Assisted bailout underwater:
    i. Bailout signal:
        1. Hand signal and/or head signal.
        2. Started before reaching safety at depth.
    ii. Line signals:
        1. Safety lightly holds line and feels for pulls.
    iii. Provide support and propulsion.
    iv. Under arm, waist, or hands.
    v. Utilize ascent line for propulsion assistance if possible.
    vi. Monitor airway for LMC/BO.
    vii. Ditch weight belt if required.
h. Protective breathing reflexes:
    i. Cessation of breathing.
    ii. Restart breathing response with blow tap talk.
    iii. Laryngospasms.
i. Freediver rescue breathing (FRB):
    i. Create airway by 'dosey doe' position and head tilt.
    ii. Remove mask.
    iii. Three blow-tap-talks (BTT).
    iv. Call for assistance.
    v. Rescue breaths.
j. Near-blackouts (LMC):
    i. Near Blackout/LMC/Samba.
    ii. Signs and Symptoms of near blackout/LMC.
    iii. Assisting an LMC underwater.
    iv. Assisting an LMC at the surface.
k. Blackouts (BO):
    i. Depth vs. Apnea Hypoxia.
    ii. Signs and symptoms of Blackouts/BO.

iii. Assisting Blackouts at the surface.
iv. Assisting blackouts underwater.

l. Buddy separation:
i. Surface.
ii. Underwater.
1. Search patterns:
a. U patterns.
b. Expanding square.

4. Equipment for Intermediate Freediving
a. Masks:
i. Types.
ii. Features and materials.
iii. Proper maintenance.
b. Fins:
i. Mono-fins vs long fins.
ii. Benefits of long blade fins.
iii. Blade materials.
iv. Full foot vs. open heel foot pockets.
v. How to properly fit a fin.
vi. Proper maintenance.
c. Snorkels:
i. Features of a good freediving snorkel.
ii. Placement of snorkel on mask strap.
iii. Use.
iv. Proper maintenance.
d. Exposure protection:
i. Wetsuits:
1. Types.
2. Features and materials.
ii. Hoods:

1. Types.
2. Features and materials.

iii. Gloves:

1. Types.
2. Features and materials.

iv. Socks:

1. Types.
2. Features and materials.

e. Freediving computers:

i. Freediving computer vs timers:

1. Types.
2. Features.
3. Care and maintenance.

f. Weight systems:

i. Types of weight systems.
ii. Rubber vs. nylon belts.
iii. Weights.
iv. Proper placement of belt.
v. Buckles.
vi. Accessories and maintenance.

g. Lines, flags and floats:

i. "Diver Below Flag".
ii. Alpha Flag.
iii. Floats.

h. Accessory freediving equipment:

i. Nose clips & fluid goggles.
ii. Gear bags.
iii. Freediving knives.
iv. Lights and markers.
v. Goodie bags and stringers.

5. In-Water Environment:
    a. Local aquatic animal and plant life.
    b. Hazardous animals and plants.
    c. Animals/plants of interest.
    d. Local environmental conditions:
        i. Fresh vs salt.
        ii. Temperature and thermoclines.
        iii. Visibility.
        iv. Wind, waves and currents.
        v. How to assess and plan accordingly.
        vi. Sea sickness medications.
    e. Local freediving procedures.
    f. Entry/exit procedures.
6. Freediving Breathing Techniques:
    a. Respiratory muscles/breathing segments:
        i. Diaphragm.
        ii. Intercostal.
        iii. Scalene/subclavian.
        iv. Neck.
    b. Breathing techniques:
        i. Normal ventilations.
        ii. Ventilations.
        iii. Purging.
        iv. Peak Inhalation.
    c. Specialty breathing techniques:
        i. Packing.
        ii. Reverse packing.
    d. Recovery breathing:
        i. Hook breaths.
        ii. Cleanse breaths.

iii. Pool - static/dynamic recovery breaths.
iv. Ocean – depth/constant ballast/free immersion recovery breaths.
v. Safety Procedures.

e. Breathing exercises:
i. Segmented breathing.
ii. Negative diaphragm.
iii. Packing stretches.
iv. Reverse packing.

7. Equalization Techniques – body:
a. Equalizing ears, sinuses and mask.
b. Methods of equalizing:
i. Frequency.
c. Equalizing Issues.
d. Masks.

8. Physics of Freediving:
a. Depth and pressure:
i. Biggest change in our physiology.
ii. Weight 100 km/62 miles of atmosphere = 14.7 psi/1 bar/ 1 ATA at sea level.
iii. Every 10 metre/33 Feet of sea water is the equivalent of 1 ATA.
b. Pressure and volume:
i. Boyles Law.
ii. 5 airspaces affected by Boyle's law.
1. Lungs, ears, sinuses, mask, wetsuit.
2. Lung compression vs importance of small mask volumes.
3. Not losing air during descents due to equalizing.
4. Re-inhale mask air volume during ascent.
c. Partial pressures:
i. Daltons law of pressures.
ii. Effects of varying partial pressures of O2 during a Freedive.

d. Buoyancy principles:
    i. Archimedes' principle.
    ii. Three states of buoyancy.
    iii. Effects of buoyancy.
    iv. Descents and ascent techniques.
e. Streamlining and hydrodynamics:
    i. Density of water versus air.
    ii. Drag and hydrodynamics.

9. Physiology of Freediving:
    a. Nervous system:
        i. Central nervous system:
            1. Peripheral nervous system.
            2. Sympathetic/Parasympathetic nervous system.
    b. Circulatory system:
        i. Purpose.
        ii. Functions.
        iii. Differences between sexes.
        iv. Relation to freediving.
    c. Respiratory system:
        i. Purpose.
        ii. Functions.
        iii. Differences between sexes.
        iv. Relation to freediving.
    d. Lung volumes and freediving:
        i. Pulmonary function test.
        ii. Main lung volume measurements:
            1. Inspiratory volume (IV).
            2. Expiratory volume (EV).
            3. Vital capacity (VC).
            4. Functional residual capacity (FRC = EV + RV).

5. Packing volume (PV).

e. What makes us breathe:
    i. Reflex respiratory center (RRC).
    ii. Chemoreceptors.
    iii. Stretch receptors.
f. Types of blackouts:
    i. 3 freediving blackouts:
        1. Static blackout.
        2. Ascent blackout.
    ii. Whiteout.
    iii. Excessive hyperventilation.
    iv. Excessive lung expansion.
    v. CO2/N2 blackouts.
    vi. Barotrauma blackouts.
g. Aquatic adaptations:
    i. Mammalian diving reflex.
    ii. Four main adaptations.
    iii. Blood shunting or blood prioritization:
        1. Effects of immersion.
h. Pressure and body airspaces:
    i. Airspaces in the body:
        1. Elastic.
        2. Rigid.
        3. Semi-rigid.
    ii. Intestinal squeeze.
i. Barotraumas – pressure related injuries:
    i. Middle ear.
    ii. Barotitis media:
        1. Alternobaric vertigo.
    iii. Transient vertigo.

iv. Mask squeeze.

j. Physiological stresses and dangers:

i. Hypoxia.

ii. Hypercapnia.

iii. Hypocapnia.

iv. Decompression sickness.

10. Psychology of Freediving:

a. Anxiety Stimulus:

i. Physiology of stress.

ii. Causes:

1. Physical Stress.

2. Physiological Stress.

3. Psychological Stress.

iii. Stress Reduction:

1. Stop – Think – Act.

2. Employ Psychological techniques.

iv. Self-talk.

v. Step by step.

vi. Compensatory changes.

vii. Visualization.

11. Training Programs for Freediving:

a. In-Water Training Exercises:

i. Confined Water Skills & Techniques.

ii. Open Water Skills & Techniques.

iii. Communications.

6.12 Confined Water

To be certified as a PFI Intermediate Freediver a student must demonstrate the following skills to the satisfaction of the PFI Instructor as follows:

1. Watermanship and Stamina (May be completed in open water. If done in open water, must be completed prior to any other open water skills):
    a. Distance swim of 200 Metre nonstop using any stroke without the use of swimming aids (mask or swim goggles may be used), or 300 Metre nonstop using mask, snorkel, and fins.
    b. Tread water for 10 minutes without flotation.

Note: If an exposure suit is worn for any of the above skills, the wearer must be neutrally buoyant at the surface.

2. Snorkel Breathing:
    a. Swim continuously at the surface without a mask for a minimum of 25 metre/82 Feet without removing your face from the water while breathing continuously through the snorkel.
3. Open Water Freedive Simulation:
    a. Breathe up.
    b. Remove snorkel.
    c. Descent with proper head position.
    d. Appropriate kick cycles to simulate freediving to 20 metre/66 Feet plus 10 seconds relaxed kicking against the bottom.
    e. Ascent with proper head position.
    f. Drop arms at 10 metre/33 Feet (simulated depth) and shallower.
4. Static and Dynamic Apnea:
    a. Static apnea:
        i. As a breath-holder student must complete a minimum of 4 consecutive static breath-holds:
            1. 1st session vent – hold – purge ratios:
                a. 2 minutes – 1 minute – no purging.
                b. 3 minutes – 2 minutes – purges start at approximately 0:30 minute.
                c. 4 minutes – 3 minutes – purges start at approximately 0:45 minute.
                d. 5 minutes – 4 minutes – purges start at approximately 1:00 minute.
            2. 2nd optional static session vent – hold – purge ratios:

a. 3 minutes – 2 minutes – no purging.

b. 4 minutes – 3 minutes – purges start at approximately 0:30 minute.

c. 5 minutes – 4 minutes or unlimited – purges start approximately 1:15 Minute.

ii. Complete a minimum 3:00 minutes static apnea without any hypoxic signs or symptoms.

iii. As a safety, student must complete:

1. Buddy supervision.

2. Monitor timing.

3. Perform safety signals.

4. Recovery breathing and support assistance.

5. Dynamic apnea (optional).

a. As a breath-holder student must complete a minimum of 3 dynamic performances:

i. Vent – distance ratio:

1. 1 minute – 25 minutes.

2. 2 minutes – 25 minutes + turn.

3. 2 minutes– 50 minutes.

b. Streamlining and kicks appropriate for dynamic.

c. Complete a minimum 50 metre/164 Feet dynamic apnea without any hypoxic symptoms.

d. As a safety student must complete:

i. Surface safety with floatation.

ii. Recovery breathing and surface support assistance.

6. Negative Pressure Dives:

a. Students work as Buddy A and Buddy B, switching back and forth after each dive.

b. Students must complete a maximum of 6 negative pressure dives:

i. 1 – 2: first level exhalation; mouth fill and Frenzel mouth fill out of mask through nose

ii. 3 – 4: second level exhalation, focus on head position, practice mouth fills on bottom.

iii. 5 – 6: third level exhalation with mouth fill, focus on head position, relaxation and air management.

c. Complete at minimum, first level exhalation with proper equalization at minimum depth of 3 metre/10 Feet, or second level exhalation with proper equalization for pools shallower than 3 metre /10 Feet.

d. Complete all dives as follows:

i. Employ surface pre-equalizations; ½ way down and once on bottom.

ii. Hand over head for protection holding mask in place.

iii. Head down vertical position during sink and while on bottom (exception dive #6 where students may take heart rate relaxed on bottom).

iv. Preform recovery breathing.

e. As Safety, provide supervision and assistance with recovery breathing.

6.13 Open Water

To be certified as a PFI Intermediate Freediver a student must demonstrate the following skills to the satisfaction of the PFI Instructor as follows:

1. Open Water Training Sessions:

    a. A minimum of two (2) separate ocean sessions must be completed with three (3) recommended.

2. Weighting and Buoyancy:

    a. Establish positive buoyancy at approximately 5 metre/16 Feet after a 1st level exhalation without sculling, finning, treading, or pushing off plate.

    b. Establish neutral buoyancy at approximately 10 metre/33 Feet without sculling, finning, treading, or pushing off plate.

3. Fin Use:

    a. Demonstrate proper kick cycles determinations to landmark depths:

        i. Landmark 10 metre/33 Feet kick cycles count.

        ii. Landmark 15 metre/50 Feet kick cycles count.

        iii. Landmark 20 metre/66 Feet kick cycles count.

        iv. Landmark 25 metre/82 Feet kick cycles count.

4. Free Immersion Warm-up Dives:

    a. Eight free immersion warm-up dives.

b. Complete a minimum of eight (8) free immersion style freedives as a warm-up.
c. Must reach a minimum of 25 metre/82 Feet without any hypoxic symptoms or barotraumas.
d. Employing the following proper techniques described below:
    i. Breathe up properly.
    ii. Remove snorkel.
    iii. Descend using double or single leg descents.
    iv. Ensure proper head position.
e. Facial immersion for 5 minutes may be introduced on open water session 2.
f. A negative pressure dive with 1st level exhalation to a max 10 metre /33 Feet with 'touch 'n go' may be introduced as last warm-up procedure on open water session 2.

5. Constant Ballast Target Dives:
    a. Complete a minimum of eight (8) constant ballast style freedives.
    b. Reach a minimum depth of 25 metre/82 Feet without hypoxic symptoms or barotraumas.
    c. Employ the following proper techniques described below:
        i. Surface breathing and preparation.
        ii. Remove snorkel.
        iii. Single leg raised descent.
        iv. Proper head position.
        v. Proper kick cycles to 20 Metre/66 Feet.
    d. Pause kicking and sink to target depth with intermittent maintenance kicks to keep descent rate.
6. Emergency Rescue & Problem Management:
    a. Assist with a simulated surface LMC as a safety for a simulated 25 metre/82 Feet dive:
        i. Meet Freediver at proper safety depth of 10 metre/33 Feet.
        ii. Signal and respond to Freediver's signs and issues.
        iii. Physically support the Freediver.
        iv. Keep one hand on the chest above the waterline but below the chin.

v. Speak calmly to encourage the Freediver to breathe.

b. Respond to a simulated blackout at the surface for a simulated 30 metre/98 Feet dive:
    i. Meet Freediver at proper safety depth of 10 metre/33 Feet.
    ii. Signal and respond to Freediver's signs and issues.
    iii. Protect the Freediver's airway with a "head sandwich".
    iv. Place the Freediver on their back into a "dosey-doe".
    v. Remove mask.
    vi. Blow, Tap, Talk 3 times.

c. Assist with a simulated underwater blackout for a simulated 40 metre/132 Feet dive:
    i. Meet Freediver at proper safety depth of 15 Metre/50 Feet.
    ii. Signal and respond to Freediver's signs and issues.
    iii. When Freediver blacks out, protect the airway with a "head sandwich".
    iv. Swim Freediver to the surface and place on back and into "dosey-doe" position.
    v. Remove mask and perform Blow, Tap, Talk 3 times.
    vi. Perform 2 simulated rescue breaths and call for assistance.
    vii. Begin to evacuate while performing simulated rescue breaths once every 5 seconds.

6.14 Graduation Requirements

In order to successfully complete the course students must:

1. Successfully complete all the knowledge development, confined water, and open water training sessions. Open water training is not necessary for Pool Only certification.
2. Demonstrate mature and sound judgment concerning planning and execution.
3. Achieve a passing score of 80% on the final exam and show 100% knowledge comprehension.
4. Complete the following skills:
    a. Equipment:
        i. Prepare equipment with minimal assistance.

ii. Buddy check all equipment.

b. Entry and exit:
    i. Enter water with techniques appropriate for the environment.
    ii. Signal buddy/shore/boat.
    iii. Exit water with techniques appropriate for the environment.

c. Proper weighting and buoyancy:
    i. Test for approximate neutral buoyancy at surface by floating upright at collar bone without sculling, finning, or treading.
    ii. After buoyancy has been established – either collarbone for pool only, or 10 metre/33 Feet during open water for Intermediate Freediver, perform a first level exhalation at the surface - If the student sinks – they are over weighted.

d. Snorkel Use:
    i. Successfully clear and blast the snorkel without removing the head from the water.

e. Proper fin use:
    i. Flutter kick at the surface.
    ii. Maintain a stationary position with sculling.

f. Descent and Ascent Procedures:
    i. Surface breathing and preparation.
    ii. Remove snorkel prior to entry.
    iii. Demonstrate a double leg raised entry or a single leg raised entry in the order of:
        1. Bend.
        2. Leg(s).
        3. Pull.
        4. Kick.
    iv. Demonstrate proper ascent procedures:
        1. Head in neutral position.
        2. Recapturing expanding air in the mask if possible.
        3. Exhale at approximately 2 metre /7 Feet.

4. Proper recovery breathing.

v. During descents and ascents – the student's head position must remain neutral.

g. Self-emergency Ascent Procedures:

i. Flooded mask ascent:

1. Fully flood at depth:

a. Pool only – deep end of pool.

b. Intermediate Freediver – at 10 metre/33 Feet.

2. Remain at depth for approximately 10 seconds before ascending.

3. Ascent and recovery breathe in a controlled manner.

ii. Remove weight belt and ascend:

1. Remove weight belt at depth:

a. Pool only – deep end of pool.

b. Intermediate Freediver – minimum 10 metre/33 Feet.

2. Ascend holding belt low at their side with buckle end down.

3. Perform proper recovery breathing.

4. Replace weight belt at the surface with right hand release.

h. Recovery Breathing:

i. Proper exhalation from 2 metre/6 Feet.

ii. Position both hands on float/side of pool.

iii. Show proper 3 hook and 3 cleansing breaths on upper half of lung volume.

iv. Hook breaths are held for a full 3 seconds.

i. Safety & Problem Management:

i. Assist with recovery breathing as a safety:

1. Be 2 metre/7 Feet to 3 metre/10 Feet to the side of the Freediver.

2. Use audio coaching when necessary.

3. Remain attentive and vigilant for a minimum of 30 seconds after the Freediver has surfaced.

ii. Respond to a simulated surface LMC as a Safety:

1. Physically support the Freediver.

2. Keep one hand parallel to the water, above the water, but below the chin.
3. Speak calmly to encourage the Freediver to breathe.
4. Maintain control until the Freediver regains control.

iii. Respond to a simulated blackout at the surface:

1. Place the Freediver on their back with the airway protected using a "head sandwich".
2. Securely support the Freediver's head with a "dosey-doe".
3. Blow, tap, talk 3 times.
4. Maintain control until the Freediver regains control.

iv. Assist with a simulated underwater blackout:

1. Recognize signal for assistance.
2. Physically support the Freediver.
3. Ensure proper hand placement.
4. Recognize blackout before the surface.
5. Protect the airway with a "head sandwich".
6. Perform surface blackout procedures through 2 rescue breaths once the student has ascended with the blacked out Freediver.

v. Lost Freediver – completed no deeper than 10 metre/33 Feet:

1. Surface swim minimum 25 metre/82 Feet looking for "lost" Freediver.
2. Locate Freediver, catch breath, breathe up.
3. Make proper entry and simulate 25 metre/82 Feet dive.
4. "Victim" descends after rescuer has been under water for approximately 20 seconds and will lay on the bottom next to the "rescuer".
5. After completion of 25 metre/82 Feet descent simulation, rescuer secures victim's airway with a "head sandwich".
6. Ascend to the surface and place victim into "dosey-doe" and perform surface blackout rescue procedures.
7. Call for assistance and evacuate the victim 50 metre /165 Feet while simulating rescue breaths every 5 seconds.

Instructors must:

1. Submit certifications to PFI Headquarters within 7 days of course completion date for processing.

7. Open Line Diving

7.1 Introduction

This program is designed to provide open line diving for PFI or equivalent certified Freedivers at the Snorkeler, Freediver, Intermediate, Advanced, or Specialty Freedive areas with the opportunity for supervised buddy diving sessions in pool or depth disciplines. These sessions will provide a diving support system which may include counterbalances or similar FRS under the supervision of a trained PFI Professional.

7.2 Course Objectives

The objective of these open line diving sessions is to provide individuals with a training environment that allows them to practice diving and skills with a buddy. Freedivers are limited to the maximum depths for which they are certified with the proper safety protocols in place. Specialty Freediver areas governed by limits of that particular specialty, or their primary certification.

7.3 Program Prerequisites

1. Minimum age of 18 years (10 with written consent of legal guardian).
2. Certified as a PFI Snorkeler, PFI Freediver, PFI Intermediate Freediver, PFI Advanced Freediver or equivalent skill level if defined.
3. For 'Open Line Diving' certified Freediver must have finished a recognized course, refresher, or coaching session in the last 12 months and provide proof of such experience to the satisfaction of the PFI Professional.
4. Qualified Freedivers may participate in Open Line Diving outside of the 12-month limitation if they have continually participated in open water sessions and can provide proof of such sessions to the satisfaction of the PFI Professional.
5. A PFI Professional may at any time require that a qualified Freediver take a coaching session or refresher course, if necessary, before participating in Open Line Diving.

7.4 Required Student Equipment

1. Freediving quality mask/fins/snorkel.
2. Wetsuit.
3. Weights and belt.

4. Freediving computer or timing device.
5. Line cutter/knife (as required by the local environment)
6. Or any specialty equipment deemed necessary by the local environment of specifics of the training session such as lanyards.

7.5 Support Materials

Student Materials:

1. *PFI Liability and Assumption of Risk* Form.
2. *PFI Medical* Statement.

Supervisor Materials and Systems:

1. PFI approved Freediver Support/Retrieval Systems (FRS).
2. BLS/First Aid support equipment.

7.6 Qualification of Graduates

1. Upon successful completion of this open line diving session the Freediver receives no certification.
2. Upon successful completion of this open line diving, graduates receive no pre-qualification to enroll in any PFI courses, except those that may require proof of Freediving experience with a PFI Freediver Supervisor within the last 12 months.
3. Upon successful completion of this open line diving session the Freediver may request a signature on their Freediving Record card as proof of recent diving experience.

7.7 Who May Teach

This open line diving session may be conducted by any active status PFI Freediver Supervisor.

7.8 Student to Instructor Ratio

Classroom/Briefing:

1. Unlimited, so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined Water:

1. Maximum of twelve students to one PFI Freediver Supervisor (12:1).

Open Water:

1. Maximum of 6 students to one PFI Freediver Supervisor (6:1).

7.9 Open Line Diving Structure and Duration

General Execution:

1. Confined and Open water maximum depth restrictions are limited to experience and the qualifications of the participant.
2. All dives must use appropriate buddy safety rotation or teams (buddy A diver – buddy B safety).

Structure:

1. PFI Allows Instructors to structure sessions according to the number of students participating and their skill level.

7.10 Knowledge/Briefing Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Open Line Diving Overview.
    b. Paperwork and Prerequisites.
    c. Equipment Requirements Check.
    d. Boat/Pool Protocols and Conduct.
    e. In-water Protocols and Conduct.
    f. Safety/Supervision Practices.
2. Open Line Diving Session Overview:
    a. Welcome.
    b. What an open line diving session is and isn't:
        i. Opportunity to practice your skills and abilities.
        ii. Support rig provided.
        iii. Training not coaching - There will be no instructor supervising directly.

iv. Not a means of getting greater depths beyond certification level.

c. Responsibilities:

i. Conduct yourself in a safe and responsible manner as outlined by your training level.

ii. Provide back-up safety according to your level if a situation or accident would require.

3. Paperwork and Prerequisites:

a. Participant Information Form.

b. Liability Form.

c. Medical Forms.

d. Standard Safe Freediving Practice Statement of Understanding.

e. Verify certification as PFI Snorkeler through Advanced Freediver or specialty Freediver programs or equivalent.

4. Equipment Requirements Check:

a. Appropriate Freediving mask, fins, snorkel.

b. Appropriate exposure protection for local environment.

c. Appropriate weights and weight belt.

d. Appropriate Freediving computer or timing device.

e. Appropriate knife or line cutting device for local environment if required.

f. Lanyards if required by depth and level of certification.

5. Boat/Pool Protocols and Conduct:

a. Boat/Pool important areas.

b. Suiting up/down and gear storage.

c. Entries and exits.

d. In-water communication with boat/pool staff.

e. Drifting procedures.

6. In-water Protocols and Conduct:

a. Swimming to and from the support station.

b. Rig set-up and breakdown.

c. Rig rules.

d. Freediving rotations.

7. Safety/Supervision Practices:
    a. Direct Supervision Protocols.
    b. Proper Buoyancy:
        i. Neutral Buoyancy at no less than 10 metre/33 Feet.
        ii. At a minimum, positive on the surface with exhalation.
    c. Counterbalance and plate depth adjustments.
    d. Line rotations for supervision:
        i. 2-person alternating, break between performing and safety.
        ii. 3-person alternating, safety after performing.
        iii. 4-person, buddy team rotation.
        iv. 5-person, alternating with break before safety.
        v. 6-person, buddy team rotation.
    e. LMC/BO Procedures Review:
        i. Surface LMC protocols.
        ii. Surface BO protocols.
        iii. Depth bail-out.
        iv. Underwater blackout protocols.
        v. No Freediving after LMC/BO.
        vi. BLS protocols & calling for help.

7.11 Graduation Requirements

In order to successfully complete an open line diving session Freedivers must:

1. Attend all knowledge/briefing sessions and confined water or open water training sessions.
2. Demonstrate proficiency in in-water buddy diving technique.
3. Demonstrate mature and sound judgment concerning planning and execution.

PFI Freediver Supervisors or higher professional members must:

1. Keep all paperwork on file for no less than 7 years.

8. Safety Freediver

8.1 Introduction

The PFI Safety Freediver course is a recreational level program where successful participants will learn the knowledge, skills and techniques for advanced level safety that may be used in demanding freediving environments, Advanced level depths of freediving, and competition style freediving for depths beyond 40 metre /132 Feet.

8.2 Course Objectives

The objective of this course is to train individuals in the benefits, skills, techniques and safety & problem management for advanced level and competition style safety. Safety Freediver focuses on safety and problem management as well as risk mitigation with an emphasis on counter-balance set-up and use. It also incorporates primary and secondary safety Freedivers for accident management.

8.3 Program Prerequisites

1. 16 years of age.
2. Above average swimming skills.
3. PFI Intermediate Freediver, or equivalent from another recognized agency that have also completed the PFI Intermediate Freediver.

Crossover Exam:

1. Provide proof of current First Response Adult and Child Emergency Care Provider and Oxygen Administration Provider certification or equivalent. *

* **Note**: First Response courses may be combined with the Safety Freediver course by qualified instructors

8.4 Required Student Equipment

1. Freediving quality mask, fins, snorkel.
2. Freediving quality exposure protection (appropriate for local environment).
3. Freediving quality waist and neck weight belt and weights (appropriate for local environment).
4. Freediving computer and additional timing device.

8.5 Support Materials

Student Materials:

1. *PFI Medical Statement*.
2. *PFI Liability and Assumption of Risk* Form.
3. *PFI Safety Freediver* Slides.

Instructor Materials:

1. *PFI Safety Freediver* Presentation.
2. *PFI Safety Freediver* final exam and answer sheet.
3. AIDA sanctioned freediving lanyard.

8.6 Qualification of Graduates

1. Upon successful completion of this course, graduates may engage in safety freediving activities as a safety during advanced level training for depths up to and exceeding 60 metre/197 Feet.
2. Students will be able to perform every position on a freedive safety team.
3. Upon successful completion of this course, graduates are qualified to enroll in Advanced Freediver, Freediver Supervisor, Open-line Diving, and Specialty Freediver programs.
4. Divers may be certified with a Safety Freediver-Pool Only certification after successfully completing all knowledge Development and Confined Water training sessions. There is no open water training necessary for this level of certification and divers at this level are not certified for any open water activities.

8.7 Who May Teach

This course may be taught by any active PFI Intermediate Freediver Instructor.

The PFI Intermediate Freediver Instructor may use active PFI Assistant Intermediate Freediver Instructors to increase student ratios.

8.8 Student to Instructor Ratio

Classroom:

1. Unlimited so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined Water:

1. A maximum of eight students to one PFI Intermediate Freediver Instructor (8:1). Or a maximum of twelve students to one PFI Intermediate Freediver Instructor (12:1 max) with the use of active status PFI Assistant Intermediate Freediver Instructors.

Open Water:

1. A maximum of six students to one PFI Intermediate Freediver Instructor (6:1).
2. A maximum of ten students to one PFI Intermediate Freediver Instructor (10:1 max) with the use of active status PFI Assistant Intermediate Freediver Instructors.

8.9 Course Structure and Duration

General Execution:

1. No more than 2 in-water sessions per day.
2. Training sessions must be completed during daylight hours, or under conditions that simulate daylight conditions.
3. All skills are to be briefed, practiced, evaluated, and debriefed by the PFI Intermediate Freediver Instructor or PFI Assistant Intermediate Freediver Instructor.
4. During all skills, students will act as a part of a safety team, diver, primary safety, secondary safety, on-deck, clutch, etc.

Confined Water Execution:

1. Students must complete a minimum of 1 confined water session.
2. Maximum confined water training session of 10 metre/33 Feet.
3. Students should, where applicable, treat the confined water as an 'open water environment' and employ all protocols consistent with open water freediving.

Open Water Execution:

1. Students must complete a minimum of 1 open water session.
2. Training depth must be between 20 to 40 metre/66 to 132 Feet; the maximum depth may not exceed 40 metre/132 Feet.

Course Structure:

1. PFI Allows Instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The suggested number of total course training hours is 15.

8.10 Administrative Requirements

1. Collect the course fees from all the students.
2. Ensure the students have the required equipment.
3. Communicate the schedule to the students.
4. Have the students complete:
    a. *PFI General Liability and Express Assumption of Risk* Form
    b. *PFI Medical History* Form

8.11 Knowledge Development Overview

Instructors may use any additional text or materials that they feel help present these topics.

The following topics must be covered during this course:

1. Introduction:
    a. Participant and staff Introductions:
    b. Course overview.
    c. Paperwork and prerequisites.
    d. Equipment requirements check.
    e. Classroom, confined and open water protocols and conduct.
    f. Safety/supervision practices.
2. Roles as Safety Freediver:
    a. Safety Freediver Responsibilities:
        i. Role model.
        ii. Directly responsible for the safety of the performing Freediver.
        iii. Areas of responsibility: comp line, warm-up lines, transition zones, spectator area.
        iv. Safety team: primary, secondary, on deck, clutch, timer, first aid.
        v. First aid and Freediver retrieval systems setup.
    b. Safety Freediver in Training:
        i. Training is any individual or group meeting to work on techniques and achieve greater depths within their certification levels outside of formal training under the supervision of a PFI Professional Member.

ii. Assist the group in setting up the training area whether confined or open water.

iii. Set up safety equipment including first aid, emergency oxygen, in-water freediving recovery oxygen, and the open water Freediver retrieval system.

iv. Note that a Safety Freediver is an advanced safety that is trained to handle many situations – however not eligible for liability insurance and cannot be part of any organized event, or educational program.

3. Advanced Safety & Problem Management:

    a. Advanced Depth Safety Protocols, Systems and Teams:

        i. These recommendations are for training dives outside of class or competitions.

        ii. All competition dives require a lanyard and FRS regardless of depth.

        iii. 0-20 metre/0 – 66 Feet: 2-person freedive team. At depth safety may be required.

        iv. 21-40 metre/69 – 132 Feet: 3-person freedive team recommended and at depth safety.

        v. 41 metre – 60 metre/135 – 197 Feet: 4-person freedive team, two at depth safety, 'Freediver Retrieval System' (FRS) and lanyards mandatory.

        vi. 61 metre – 80 metre/200 – 262 Feet: 5-person freedive team, three at depth safety, counterbalance and lanyards mandatory.

        vii. 81 metre+/265 Feet+: 6 person+ freedive team, multiple at depth which may include scuba support, counterbalance, and lanyards mandatory.

    b. Individual Team Member Roles:

        i. Individual team roles provide the following:

            1. Appropriate level of safety for the performance.

            2. Back-up/redundancy.

            3. Emergency signals for depth to surface.

            4. Efficient activation and use of counterbalances.

            5. Adequate rest periods for team members.

            6. Each role may have dual purposes:

                a. Primary Safety Freediver.

                    i. 1/3 Depth and dive time + 10 seconds.

ii. Responds to and signals emergency/bailout.
iii. Protects airway.
iv. Provides BLS until requests change.
v. May request position change at depth.

b. Secondary Safety Freediver:
i. 5 metre/16 Feet shallower and 10 seconds later than Primary.
ii. May provide downtime count.
iii. Provides support and propulsion.
iv. Removes lanyard at surface.
v. Provides surface propulsion, support, and BLS if requested.
vi. May take primary position at depth if signaled.
vii. Responds to and signals emergency/bailout.

c. Scooter Safety Freediver:
i. 2/3 depth + 10 seconds.
ii. Responds to and signals emergency/bailout.
iii. Provides support and propulsion.
iv. Responds to performer.
v. Slows or hands off to primary and secondary at shallower depths.
vi. Safety Freedivers using scooters should be PFI DPV Freediver certified.

d. On-Deck/Primary stand-by:
i. Rotates into primary position next.
ii. May provide countdown & downtime.
iii. May work clutches and counterbalance.
iv. May take secondary position if primary surfaces.
v. Responds to and signals emergency/bailout.

e. On-Deck/Secondary stand-by:
i. Rotates into secondary position next.

ii. May provide countdown & downtime.

iii. May work clutches and counterbalance.

iv. Responds to and signals emergency/bailout.

f. Scuba Safety:

i. Used to provide 'eyes on' and immediate emergency signal to surface at depths below 80 metre/262 Feet.

ii. Responds to and signals emergency/bailout.

iii. May also have an FRS (lift bag and bottle with carabiner or line ascender).

iv. Scuba Safety Divers need to be trained and qualified to the depth they are performing as safety and additionally need to be trained and certified as TDI Scuba Freedive Safety.

g. Clutch (person responsible at surface for the counter-balance operations):

i. Responds to and signals emergency/bailout.

ii. Works the clutch/cleat and/or drop-weight.

iii. Provides additional 'pulling power'.

iv. May also support performer during surface breath-up.

v. May also provide count-down and count-up.

c. Line Freediving Operating Procedures:

i. Pre-Dive:

1. Agree on objectives for the day; team, locations, depths, equipment.
2. Develop 'Emergency Assistance Plan'.
3. Assemble and assign team and performer rotations along with personal equipment check.
4. Prep and check rig and safety/first aid equipment.
5. Review safety procedures and provide 'dry runs'.
6. Set-up equipment at training site and do rig/safety equipment check.

ii. Dive:

1. Confirm performer, style, depth, anticipated time and countdown time.
2. Establish rotations and jobs.
3. Dive check between primary/secondary:
4. Initiate count-down and count-up:
    a. Count-down; 2 minutes standard count-down till performer dives.
    b. Count-up; after performer starts in +10 sec.
5. Safety freedive team performs according to training and protocol:
    a. Good performance; conduct performer post-dive evaluation.
    b. Performer requests bailout; conduct performer post-dive performance evaluation.
    c. Performer requires emergency bail-out (LMC, BO):
        i. Initiate emergency response u/w.
        ii. Initiate any surface emergency response.
6. Surface safety check to check all team members are OK and move to 2nd performer starting back at the top 'Confirm performer, style, depth, anticipated time and countdown time'.

iii. Post-Dive:

1. Breakdown, rinse and store rig and safety equipment checking for damage.
2. Debrief the team training session; objectives for the day, team, locations, depths, equipment, performances, and any rescues.

4. Counterbalance & Freediver Retrieval Systems:

a. History and concepts of Freediver retrieval systems and counterbalances:

i. Freediver Retrieval System (FRS) is any system that allows the performing Freediver to be independently and immediately retrieved from depth while wearing a lanyard, from max depth to the surface with minimal effort and at a speed equal to or greater than the Freediver would typically swim (1 metre/second).

ii. FRS' should have two systems; primary FRS and back-up.

iii. FRS's included:

1. Counterbalances.

2. Float and line pulled from surface-by-surface tenders or mechanical engines.
3. Scuba divers with lift-bags.
4. Other systems may exist that follow the criteria set above.

iv. Counter-balance concept:

1. Retrieve a Freediver from depth when lanyard is used.
2. Safety activated from the surface.
3. Safeties at depth can signal the surface to activate system.
4. Balanced or over-balanced

v. Counter-balance parts and pieces:

1. PVC, aluminum, carbon fiber bars just below surface keep floats and lines apart.
2. Floats – at end of each bar.
3. Lines.
4. Bottom weights.
5. Bottom plate.
6. Configurations.
7. Use and operation of counterbalance.

b. Lanyards parts, pieces and use:

i. Wrist/waist/ankle strap, line or cable, quick release with D-ring and carabiner

ii. The waist belt is separate from the weight belt.

iii. Cable is typically 1 metre (shorter or longer).

iv. Carbineer - aluminum and composite will follow, stainless steel leads during sink phase.

v. AIDA rules govern lanyard specifications for competitions.

5. Emergency Signals:

a. Surface to Shore/Boat:

i. Hand Signals.

ii. Sound Signal.

b. U/W Diver to Diver or surface:

i. Hand Signals.

ii. Sound Signal.

6. Advance Weighting Precautions:
    a. Advanced Freedivers may be neutrally buoyant at 15 metre/50 Feet or deeper on a peak inhalation plus packing.
    b. Due to packing, the Freediver may be negatively buoyant at the surface on an exhalation.
    c. This is one reason we use Freediver recovery systems with lanyards.
    d. Since Freedivers will be warming up while weighted for their dive, extra supervision must always be maintained, including use of a lanyard.
7. Common Freediver Problems and Responses:
    a. Post-Freedive Performance Evaluation Criteria or Bailout:
        i. Oxygen, energy, equalizing, legs, urge to breathe, psychology, equipment, chest compression, technique, own it.
    b. Common Physiological Problems:
        i. Stress and anxiety, hypoxia, LMC, recovery breathing, 6 types of blackout, CO2 accumulation.
    c. Recovery Breathing Problems:
        i. Improper volume.
        ii. No hook breaths from depth.
        iii. Not holding hook breaths long enough.
        iv. Not enough breaths.
    d. Common Equipment Problems:
        i. Masks & Facial Equipment.
        ii. Snorkel.
        iii. Fins.
        iv. Wetsuits & Exposure Protection.
        v. Weight Systems.
        vi. Computers.
        vii. Lanyards:
            1. Wrist/waist/ankle (appropriate for discipline).

2. Hang-up on surface and/or depth (line is stored coiled or with kinks, lack of proper start or bottom turn).
3. Quick release doesn't function (lack of adequate freshwater rinse, secure pull-tap).
4. Strap holding (Velcro is worn).

viii. Counterbalances and Rig Systems.

ix. Lift Bag Retrieval Systems.

e. Depth Specific Problems:

i. Blackout at depth/surface.

ii. LMC at surface.

iii. Whiteout.

iv. Equalizing; ears/sinuses.

v. Chest or tracheal squeeze.

vi. Pressure contractions.

vii. Lanyard catching and slowing pace.

viii. Loss of line/reference.

ix. Too fast/too slow.

x. Bail out.

f. Static Apnea Problems:

i. Improper signals.

ii. Near Blackout (LMC).

iii. Blackout.

iv. Loss of airway control.

v. Strong contractions.

vi. Unresponsive.

vii. Recovery breathing.

viii. Edge of pool to close.

g. Dynamic Apnea Problems:

i. Near Blackout (LMC).

ii. Blackout.

iii. Loss of airway control (bubbles).
iv. Strong contractions.
v. Speeding up/slowing down.
vi. Cramps & lactic acid.
vii. Losing technique and kick style.
viii. Disorientation/lane reference.
ix. Recovery breathing.
x. Weighting.

8. Barotraumas – Pressure Related Injuries:
    a. Middle ear barotraumas – during a continuous fast descent without equalization.
    b. Barotitis media.
    c. Sinus squeeze.
    d. Alternobaric vertigo.
    e. Transient vertigo.
    f. Perforated tympanic membrane (TM).
    g. Tooth squeeze.
    h. Reverse block.
    i. Mask squeeze.
    j. Lung over-pressurization.
    k. Lung/tracheal squeeze.
9. Decompression Illness (DCI) and Technical Freediving
    a. Decompression Illness and Freediving:
        i. Decompression sickness – excessive accumulation and release of nitrogen from body tissues.
            1. Bubbles form causing.
            2. Surface intervals to avoid DCI:
    b. Technical Freediving:
        i. 100% Oxygen can be used as a recovery agent for Advanced Freediving.
        ii. Freedivers cannot breathe 100% O2 and dive immediately for risk of oxygen toxicity.

iii. Effects of varying partial pressures on a person breathing 100% oxygen:

1. CNS oxygen toxicity – NOAA CNS oxygen exposure limit.
2. Freedivers at increased risk because of CO2 retention work fatigue as well as potentially reduced Gamma Aminobutyric Acid (GABA) a brain wave modulator.

iv. Signs & Symptoms of Oxygen Toxicity (CONVENTID):

1. CONvulsions.
2. Visual disturbances.
3. Ear ringing.
4. Nausea.
5. Tingling.
6. Irritability.
7. Dizziness.

c. Basic O2 Rules and Protocols

i. 5-minute O2 flush (recommended after for depths deeper than 40 metre/132 Feet).

ii. Surface O2 only (compressed gas/lung expansion issues)

1. 5-minute off 02 (breath normal air before any further freediving)

d. Safety Note:

i. Unless trained and certified in the use of compressed oxygen and nitrox Safety Freedivers can only monitor the Basic O2 Rules and Protocols set above. They cannot assemble or breakdown technical scuba systems for use or use technical systems for any reason other 5-minute O2 flush

10. Safety Freediver Equipment Workshop:

a. First Aid & O2 Assembly Workshop:

i. First aid, emergency O2, and technical freediving O2 assembly set-up and check for use.

b. Counterbalances Assembly Workshop:

i. Hands on workshop to assemble and review all parts of an FRS.

c. Lanyard Assembly Workshop:

i. Check to ensure lanyard compliance for safe operation.

ii. Demonstrate proper lanyard location for each discipline.

iii. Activate emergency release.

8.12 Confined Water

To be certified as a PFI Safety Freediver students must demonstrate the following skills to the satisfaction of the PFI Instructor:

1. Watermanship and Stamina (May be completed in open water. If done in open water, must be completed prior to any other open water skills):
    a. Distance swim of 200 Metre nonstop using any stroke without the use of swimming aids (mask or swim goggles may be used), or 300 Metre nonstop using mask, snorkel, and fins.
    b. Tread water for 10 minutes without flotation.

Note: If an exposure suit is worn for any of the above skills, the wearer must be neutrally buoyant at the surface.

2. Static Apnea Mockup:
    a. Class is split into two groups – safety and performer.
    b. Safety group will react to issues provided to the performer group.
    c. Perform a series of at least 4 static mockups where the instructor gives those performing the statics realistic problems that are commonly seen.
    d. Safety will respond with appropriate levels of correction.
        i. "give me a signal" "give me a stronger signal" "don't hold your signal".
        ii. Telling the performer to relax appropriate areas that are showing tension.
        iii. Perform appropriate rescues as previously taught.
    e. Last static will always end in a full blackout with at least two rescue breaths.
3. Dynamic Apnea Mockup:
    a. The instructor will split the class into two groups – safety and performer.
    b. Perform a series of at least 4 dynamic mockups where the instructor gives those performing the dynamic realistic problems that are commonly seen in dynamic scenarios.
    c. Last dynamic will always end in a full blackout on the bottom, with rescuer pulling the Freediver off the bottom, rotating under the Freediver so that the Freediver surfaces face up, perform blackout procedures to at least two rescue breaths.
4. Lifeguard Skills:
    a. Talk and encourage the person in all situations.

i. Drop your belt.
ii. Lay on your back.
iii. Come to me.

5. Surface/Deck Response:
    a. Establish low and anchored body positioning.
    b. Use shepherd's hook, throw buoy, reach assist.
    c. Continuous talk and encouragement.
    d. Demonstrate for active and passive panic.
6. Tired Diver Tow:
    a. Arm hook/dosey-doe tow:
        i. Ready to give breaths if necessary.
    b. Arm pull.
    c. Leg push.
7. In-Water Response: Passive & Responsive:
    a. Swim approach with float.
    b. On guard body positioning.
    c. Maintain 3 metre/6 Feet distance.
8. In-Water Response: Passive & Unresponsive:
    a. Swim approach with float.
    b. On guard body positioning.
    c. Swim around and behind tired diver when approaching.
9. In-Water Response: Active & Responsive:
    a. Swim approach from behind with float.
    b. On guard body positioning.
    c. Approach and remove weight-belt underwater.
10. In-Water Response: Active & Unresponsive:
    a. Swim approach from behind with float.
    b. On guard body positioning.
    c. Approach and remove weight belt underwater.
11. Front Approach: Breaks & Release:

a. Face to face approach and panic attack.

b. Freediver Supervisor tuck chin, secure under armpits, push victim vertical and behind Freediver Supervisor.

i. Freediver Supervisor swims away underwater maintaining 3 metre/10 Feet distance and on guard stance.

12. Back Approach: Breaks & Release:

a. Back to face approach and panic attack.

b. Freediver Supervisor tuck chin, secure under armpits, push victim vertical and forward of Freediver Supervisor.

i. Freediver Supervisor swims away underwater maintaining 3 metre/10 Feet distance and on guard stance.

13. Unconscious Freediver Exits:

a. One-person ladder exit.

b. Two-person deck exit.

8.13 Open Water

To be certified as a PFI Safety Supervisor a student must demonstrate the following skills to the satisfaction of the PFI Instructor as follows:

1. Equipment:

a. Prepare without assistance of the instructor.

b. Buddy check all equipment.

c. Entry Procedure most appropriate for local environment.

2. Recovery Breathing and Coaching:

a. Buddy A – recovering Freediver:

i. Proper upper lung exhalation in last 2 metre/6 Feet.

ii. Position both hands on float.

iii. Show proper 3 hook and 3 cleans breaths on the upper half of lung volume.

iv. Holding a full 3 second count during Hook breaths.

v. Employ surface protocols.

vi. Signal OK when asked by surface safety after 30 seconds.

b. Buddy B – surface safety

i. Position 90 degrees to surfacing Freediver.

ii. Providing visual and audio counts during recovery breathing.

iii. Use 'float' hand for counts.

iv. Coaching a full 3 second count during Hook breaths and count off cleansing breaths.

v. Signaling OK after 30 seconds on surface.

3. Safety Scenarios.

All students must successfully participate in all positions of a safety team, including participating in the rotating to depth relieving the primary, or secondary, as well as having pulled up a blacked-out Freediver utilizing the FRS.

a. 30 metre – 39 metre/98 – 129 Feet Recreational Scenario Assistance with LMC:

i. PFI Instructor simulates 40 metre/132 Feet freedive with 20-30 seconds of bottom time, Simulating a recreational dive:

1. Completes dive.

2. Has LMC after 3rd hook breath.

ii. Primary Safety Freediver – 15 metre/50 Feet:

1. Primary meets at 15 metre/50 Feet.

2. Proper position 45-degrees from diver.

3. Provides support for LMC – recreational.

iii. Secondary Safety Freediver – 10 metre/33 Feet:

1. Secondary meets at 10 metre/33 Feet.

2. Proper position opposite Primary Safety behind Freediver.

b. 40 metre – 49 metre/132 – 161 Feet Competition Scenario Assistance with LMC:

i. PFI Instructor simulates 50 metre/165 Feet freedive:

1. Reaches safety depth late (too slow on dive).

2. Asks for assistance (before reaching safety if desired).

3. Has LMC after 3rd hook breath.

ii. Primary Safety Freediver – 20 metre/66 Feet – Secondary Safety Freediver – 15 metre/50 Feet:

1. Recognize and respond to 'somethings wrong' signal by 15 metre/50 Feet.
2. Provide lift assistance during ascent.
3. Provides proper LMC support for disqualified diver (diver asked for assistance)

iii. Secondary Safety Freediver – 15 metre/50 Feet:

1. Recognize and respond to 'somethings wrong' signal at 15 metre/50 Feet.
2. Provide lift assistance during ascent.
3. Provides proper LMC support for disqualified diver (diver asked for assistance).

iv. Clutch:

1. Count down timer plus diver time.
2. If Primary or Secondary calls the dive.
    a. Call out "EMERGENCY, EMERGENCY, EMERGENCY".
    b. Activate FRS.
    c. Place foot against carabiner under float.
    d. Pull plate to surface as fast as possible.

c. 50 metre – 59 metre/180 – 194 Feet Competition Scenario with B/O:

i. PFI Instructor simulates 55 metre/180 Feet freedive:

1. Reach safety depth early.
2. Ask for assistance (before reaching safety if desired).
3. Bail Out (BO) by 10 metre/33 Feet.
4. Come around after 3 'BLOW, TAP, TALKS' and 2 full breaths.

ii. Primary Safety Freediver – 20 metre/66 Feet – Secondary Safety Freediver – 15 metre/50 Feet:

1. Recognize and respond to 'somethings wrong' signal at 15 metre/50 Feet.
2. Provide lift assistance during ascent.
3. Recognize blackout 10 metre/33 Feet below surface.
4. Airway control 'head sandwich' to horizontal.

5. Switch arms into the 'Dosey Doe' position.
6. Remove mask and provide 3 'BLOW, TAP, TALKS' and 2 full breaths, initiate help, and continue rescue breaths for at least 2 rounds of breaths.

iii. Secondary Safety Freediver – 15 metre/50 Feet:

1. Recognize and respond to 'somethings wrong' signal at 15 metre/50 Feet.
2. Provide lift assistance during ascent.
3. Removes lanyard from line.
4. Immediately assists with 'Dosey Doe'.

iv. Clutch:

1. Count down timer plus diver time.
2. If Primary or Secondary calls the dive.
3. Calls out "EMERGENCY, EMERGENCY, EMERGENCY".
    a. Activates FRS.
    b. Places foot against carabiner under float.
    c. Pulls plate to surface as fast as possible.

d. 60 metre/197 Feet Competition Scenario Blackout at Depth:

i. PFI Instructor simulates 60 metre/197 Feet freedive:

1. Blackout at depth.
2. Allows plate to catch lanyard and bring to safeties at 15 metre/50 Feet.

ii. Primary Safety Freediver – 20 metre/66 Feet:

1. Calls dive at the 1:50 mark on freedive.
2. Calls for switch.
3. Ascends to surface.
4. Breathes up to make additional dives.

iii. Secondary Safety Freediver – 15 metre/50 Feet:

1. Repeats primary's call of dive.
2. Waits for Primary On-Deck to relieve at 15 metre/50 Feet.
3. Ascends to surface.

4. Breathes up to make additional dives.

iv. On-Deck Primary – On-Deck Secondary:

1. Manages Freediver's position prior to the dive and secures pillow/float after Freediver's entry.
2. Recognizes called dive.
3. Descends to 15 metre/50 Feet to relieve Safety at depth.
4. Ascends when relieved by another diver.
5. Breathes up to make additional dives.

v. Clutch:

1. Count down timer.
2. Calls out "EMERGENCY, EMERGENCY, EMERGENCY" when primary and secondary call dive.
3. Activates FRS.
4. Places foot against carabiner under float.
5. Pulls plate to surface as fast as possible.

vi. Safety at depth when Freediver arrives at 15 metre/50 Feet:

1. Immediately protects airway 'head sandwich'.
2. Ascends to surface, then horizontal on to back.
3. 3 – blow-tap-talks, two rescue breaths.
4. Calls for help.
5. Continue rescue breathing while swimming around the rig.

vii. Safety swimming down to relieve diver at depth when Freediver/plate reaches 15 metre/50 Feet:

1. Assists with ascent.
2. Removes lanyard from line.
3. Gets into "Dosey Doe" position on opposite side of primary.
4. Assists with swimming around the rig.
5. Waits for primary to call to switch rescue breathing.

4. Maximum Safety Threshold Dive (optional):

a. Primary Safety Freediver – 25 metre/82 Feet to 40 metre/132 Feet:

i. Makes dive to next 5 metre/16 Feet safety depth.

ii. Wait 20 seconds.

iii. Calls dive.

iv. Protects airway with "head sandwich".

v. Swims blacked-out diver to the surface, performs surface blackout protocols until at least one additional rescue breath after calling for help.

b. Secondary Safety Freediver:

i. Follow Primary down per protocols, 10 seconds after, 5 metre/16 Feet shallower.

ii. Secondary will act as the Safety for the Primary as this is a working threshold dive for the Primary.

8.14 Graduation Requirements

In order to successfully complete the course Students must:

1. Successfully complete all the knowledge development, confined water and open water training sessions. Open water training is not necessary for Pool Only certification.
2. Demonstrate mature and sound judgment concerning planning and execution.
3. Achieve a passing score of 80% on the final exam and show 100% knowledge comprehension.

Instructors must:

1. Process the registration within 7 days of course completion.

9. Advanced Freediver

9.1 Introduction

This is the most advanced level certification course for individuals wishing to expand their knowledge of breath hold diving beyond the Intermediate Freediver level for the purpose of increasing underwater awareness and performance.

In this course individuals develop advanced level knowledge of the physics and physiology of freediving below residual lung volumes and the associated risks, as well as advanced equalization techniques beyond equalizing thresh-hold.

Participants will practice freediving specific skills and techniques to maximum depths no deeper than 60 metre/197 Feet while achieving a minimum depth of 40 metre/132 Feet utilizing advanced sink phases and negative pressure training with moderate packing, along with advanced techniques for static apnea to 4:00 minutes and dynamic apnea development for 75 metre/246 Feet.

A PFI Advanced Freediver Pool Only certification may be issued to those not wishing to participate in open water training.

9.2 Course Objectives

The objective of this course is to train individuals in the benefits, skills, techniques and safety & problem management for Advanced level freediving to a minimum depth of 40 metre/132 Feet using an unmodified commercially available freediving mask, with extended level static apnea development of 4:00 minutes at a minimum, and optional dynamic apnea development of 75 metre/246 Feet.

9.3 Program Prerequisites

1. 16 years old.
2. Competent swimming skills.
3. PFI Safety Freediver (can be combined with Advanced Freediver however minimum course requirements from both courses must be met.)

9.4 Required Student Equipment

1. Freediving quality mask, fins (note – bi-fins are required for safety, a mono- fin is allowed for target dives), snorkel.

2. Freediving quality exposure protection (appropriate for local environment).
3. Freediving quality waist and neck weight belt and weights (appropriate for local environment).
4. Freediving computer and timing device.
5. Freediving AIDA or CMAS sanctioned lanyard.
6. Neck pillow and float.

9.5 Support Materials

Student Materials:

1. PFI Medical Statement.

2. *PFI Liability & Assumption of Risk* Form

Instructor Materials:

1. *PFI Advanced Freediver* Presentation.

9.6 Qualification of Graduates

Upon successful completion of this course, graduates may engage in freediving activity without direct supervision of an instructor to depths no greater than 60m/197ft, with a minimum 4-person buddy team utilizing a Freediver retrieval system for freedives greater than 40 metre/132 Feet.

Upon successful completion of this course, graduates are qualified to enroll in the PFI Freediver Supervisor Program.

Freedivers may be certified with an Advanced Freediver-Pool Only certification after successfully completing all Knowledge Development and Confined Water training sessions. There is no open water training necessary for this level of certification and divers at this level are not certified for any open water activities.

9.7 Who May Teach

This course may be taught by any active PFI Advanced Freediver Instructor.

To qualify as a PFI Assistant Advanced Freediver Instructor:

1. Active PFI Intermediate Freediver Instructor.
2. Certified as PFI Advanced Freediver.
3. 21 years of age.

4. Have certified at least 25 Intermediate level students, with at least 5 of those at Safety Freediver level.
5. Fully assist with all components of at least one Advanced Freediver course with an Advanced Freediver Instructor.
6. Demonstration quality 60 metre/197 Feet CWT and FIM dives.
7. Be issued the Assistant Advanced Freediver Instructor Rating from a qualified Advanced Freediver Instructor.

9.8 Student to Instructor Ratios

Classroom:

1. Unlimited so long as adequate facilities, supplies and time are provided to ensure comprehensive and complete training.

Confined Water:

1. A maximum of eight students to one PFI Advanced Instructor (8:1). Or maximum of twelve students to one PFI Advanced Instructor (12:1) with the use of one active status PFI Assistant Advanced Freediver Instructor max.

Open Water:

1. A maximum of six students to one PFI Advanced Instructor (6:1). Or a maximum of ten students to one PFI Advanced Freediver Instructor (10:1) with the use of one active status PFI Assistant Advanced Freediver Instructor max.

9.9 Course Structure and Duration

General Execution:

1. No more than 2 in-water sessions per day.
2. Training sessions must be completed during daylight hours, or under conditions that simulate daylight conditions.
3. All skills are to be briefed, practiced, evaluated, and debriefed by the PFI Advanced Freediver Instructor or PFI Assistant Advanced Freediver Instructor.
4. During all skills, appropriate safety must be reinforced either through Freediver Supervisors, or students in each position appropriate for the freedive.

Confined Water Execution:

1. Students must complete a minimum of 4 confined water sessions.

2. Maximum confined water training session of 10 metre/33 Feet for confined water skills, 60 Metre/197 Feet for open water skills for Advanced Freediver Deep Pool Only certification.
3. Students should, where applicable, treat the confined water as an 'open water environment' and employ all protocols consistent with open water freediving.

Open Water Execution:

1. Students must complete a minimum of 4 open water sessions.
2. Training depth must be between 40 to 60 Metre/132 to 197 Feet; the maximum depth may not exceed 60 Metre/197 Feet.

Course Structure:

1. PFI Allows Instructors to structure courses according to the number of students participating and their skill level.

Duration:

1. The suggested number of total course training hours is 50.

9.10 Administrative Requirements

1. Collect the course fees from all the students.
2. Ensure the students have the required equipment.
3. Communicate the schedule to the students.
4. Have the students complete:
    a. *PFI General Liability and Express Assumption of Risk* Form
    b. *PFI Medical History* Form

9.11 Knowledge Development Overview

The following topics must be covered during this course by the PFI Advanced Freediver Instructor and/or active status PFI Advanced Freediver Assistant Instructor as outlined in the PFI General Standards and Procedures section. However, instructors may use additional texts or materials they feel help present these topics.

1. Introduction:
    a. Participant and staff Introductions.
    b. Course overview.
    c. Paperwork and prerequisites.

d. Equipment requirements check.
e. Classroom, Confined and Open Water protocols and conduct.
f. Safety/supervision practices.

2. Advanced Safety & Problem Management:
    a. Advance Weighting Precautions:
        i. Advanced Freedivers will be neutrally buoyant at 15 metre/50 Feet on a peak inhalation plus packing.
        ii. The Freediver may be negatively buoyant at the surface on an exhalation due to packing.
        iii. Lanyards and a Freediver recovery system must be used.
        iv. Supervision and safety is increased at the advanced level due to surface buoyancy without packing.
    b. Exhalation Statics:
        i. 1st level exhalation warmup statics.
        ii. Required signals start at the 15 second mark.
        iii. Signals must be performed at a minimum of every 15 seconds.
        iv. No bubbles on LMC or Blackout.
3. Technical Freediving Protocols:
    a. O2 Use for Advanced Freediving:
        i. 100% Oxygen can be used as a recovery agent for Advanced Freediving.
        ii. Freedivers cannot breathe 100% O2 and dive immediately for risk of oxygen toxicity.
        iii. Effects of varying partial pressures on a person breathing 100% oxygen:
            1. CNS oxygen toxicity – NOAA CNS oxygen exposure limit:
                a. Oxygen can only be used at the surface.
                b. A minimum break of 5 minutes is required before any freedives.
        iv. To avoid O2 toxicity, it's recommended that Freedivers breathe O2 for 5:00 minutes after a target dive, then breathe air for no less than 5:00 minutes before descending to any depth.
        v. Signs & Symptoms of Oxygen Toxicity.
4. Equipment for Advanced Freediving Workshop and Equipment Check:

a. Masks & Fluid Goggles Workshop
    i. Mask features and types.
    ii. Fluid goggles.
        1. Benefits and drawbacks.
    iii. No goggles.
    iv. Nose clips.
b. Mono-fins vs. Bi-fins:
    i. Benefits and drawbacks of each style.
    ii. Blade materials.
    iii. Exposure Protection Repair Workshop.
    iv. Wetsuits:
        1. Two-piece or One-piece suits.
        2. Wetsuit features:
            a. Competition wetsuits vs. regular freediving wetsuits.
        3. Wetsuit Buoyancy.
    v. Hoods:
        1. Ear holes.
c. Freediving Computers Workshop:
    i. Freediving computer & timers:
        1. Features.
        2. Implementation for mouth fill.
        3. Proper maintenance.
d. Weighting Workshop:
    i. Types of weight systems:
        1. Waist belt:
            a. Right hand quick release
            b. Features.
            c. Styles.
            d. Benefits.
    ii. Neck weights:

1. Features.
2. Styles.
3. Benefits.

e. Lanyard Check:
   i. Check to ensure lanyard compliance for safe operation.
   ii. Demonstrate proper lanyard location for each discipline.
   iii. Activate emergency release.

f. Personal Floats & Mesh Bags:
   i. Neck/knee/ankle personal floats:
      1. Mesh bags.
      2. Attachment points.

5. Advanced Freediving Breathing Techniques:

a. Advanced Breathing Techniques:
   i. Packing – Glossopharyngeal Inhalation:
      1. Technique.
      2. Dangers and signs to terminate packing.
   ii. Reverse packing – Glossopharyngeal Exhalation:
      1. Technique.
      2. Dangers and signs to terminate reverse packing.
   iii. Workshop:
      1. While sitting or lying down trying to add or remove air from a water bottle.
      2. Start with one pack and gradually work up to more packs and reverse packs.
      3. Packing stretches.
      4. Peak inhalation with gradual packs.
      5. Series of 4 stretches: left, right, front, and back.
      6. Completed 3 times with gradually more packs.
   iv. Reverse packing:
      1. Exhalation to residual volume with reverse packs.

2. Used in coordination with negative diaphragm stretches.

b. Recovery Breathing and Surface Protocol (SP):

i. Upon surfacing, performer must do the following within 15 seconds:

1. Remove all facial equipment.
2. Give the 'okay' signal.
3. Say "I'm okay" or "I am okay" in English.

ii. Recommended to practice doing 3 hook breaths first, then begin SP.

iii. Performer's airway must not submerge for 1:00 minute or until judges show cards.

iv. Safety Freedivers cannot touch the performer until a judge advises or shows the card.

6. Advanced Freediving Physics, Physiology and Techniques: Depth & Pressure:

a. Advanced Depth and Pressure on Physiology:

i. Depth compression to 7 ATA:

1. Lung volume.
2. Equalizing.

ii. Residual volume.

iii. 6 Freedivers airspaces affected by Boyle's law:

1. Lungs.
2. Ears.
3. Sinuses.
4. GI.
5. Mask.
6. Wetsuit.

b. Effects of Immersion and Negative Pressure Breathing:

i. "On-back" horizontal position:

1. Benefits.
2. Potential issues.

c. Negative Pressure Dives:

i. Reasons to perform negative pressure.

ii. Performed in the pool or in open water.

iii. Utilizes progressively greater levels of exhalation.

iv. Physics:

1. A 1st level exhalation has an equal lung volume on the surface that a peak inhalation has at 20 metre/66 Feet/3 ATA.
2. In a 5 metre/16 Feet/1.5 ATA dive 1st level exhale, simulates 35 metre/116 Feet from an equalizing/chest compression standpoint = 3 ATA X 1.5 ATA = 4.5 ATA or 35 metre/115 Feet.
3. 2nd level = peak at 30/99/4 ATA so the same 5 metre/16 Feet /1.5 ATA dive equals 4 ATA X 1.5 ATA = 6 ATA or 50 metre/165 Feet.
4. 3rd level = peak at 40 metre/132 Feet/5 ATA so 5 ATA X 1.5 ATA = 7.5 ATA or 65 metre/212 Feet.
5. The depths simulated quickly increase with small jumps in actual depth achieved.
6. 1st level at 10 metre/33 Feet /2 ATA is 50 metre/165 Feet, at 15 metre/50 Feet /2.5 ATA is 65 metre/212 Feet.

v. Physiology and safety:

1. Due to the higher levels of chest compression, there are risks associated.
2. Thoracic squeezes.
3. Head position.
4. Bottom turns.
5. Safety precautions.
6. Thoracic filling.
7. Presence of bubbles.

vi. Benefits of negative pressure dives.

d. Pressure and Body Airspaces:

i. Thoracic filling - Causes.

e. Barotraumas – Pressure Related Injuries:

i. Middle ear barotraumas:

1. Signs and symptoms.
2. Effects of depth on middle ear.

ii. Barotitis media:
    1. Signs and symptoms.
    2. First aid.
iii. Sinus squeeze:
    1. Signs and symptoms.
    2. First aid.
iv. Alternobaric vertigo:
    1. Signs and Symptoms.
    2. First aid.
v. Transient vertigo:
    1. Signs and Symptoms.
    2. First aid.
vi. Perforated tympanic membrane (TM):
    1. Causes.
    2. Signs and Symptoms.
    3. First aid.
vii. Tooth squeeze:
    1. Causes.
    2. Signs and Symptoms.
    3. First aid.
viii. Reverse block:
    1. Causes.
    2. Signs and Symptoms.
    3. First aid.
ix. Lung/tracheal squeeze:
    1. Signs and Symptoms.
    2. Causes.
    3. First aid.
    4. Three types of squeezes:
        a. Type 1 – small traces or streaks of blood seen in spit.

i. First Aid.

b. Type 2 – Mostly bright red blood in spit.

i. First Aid.

c. Type 3 – Blood upon surfacing, coughing, blood for several days, or a re-squeeze of a type 1 or type 2.

i. First Aid.

5. Persistent cyanosis & shortness of breath from any squeeze should include 100% o2 and hospital care.

a. Signs and Symptoms

b. Causes

c. Prevention

d. First aid

e. Lung over-pressurization – air expansion within the lungs

f. Signs and Symptoms

g. Causes

h. First aid

f. Decompression and Freediving - Technical Freediving:

i. Signs and Symptoms.

ii. Causes.

iii. Prevention.

iv. First aid.

7. Advanced Equalization Techniques:

a. Equalization Techniques:

i. Throat block.

ii. Equalizing ears, sinuses, and mask.

iii. With mask vs. without mask.

iv. Changes with 30 metre/99 Feet – 40 metre/132 Feet:

1. Residual volume.

2. Mouth filling.

3. Head position.

v. Voluntary Tubular Opening (VTO):
    1. Frequency.
    2. Methods.
    3. Benefits.
vi. Frenzel:
    1. Frequency.
    2. Methods.
    3. Benefits.
vii. Equalizing thresh-hold:
    1. Grouper call or reverse pack.
    2. Alarms and kick counts.
    3. Tongue position.
viii. Negative pressure training:
    1. Simulate lungs at deeper depths.
    2. Mouth-fills and Frenzel practice.
    3. Head positioning.
    4. Psychology of Advanced Freediving

b. Anxiety Stimulus:
    i. Physiology of stress:
        1. Symptoms.
        2. Causes – real and imagined.
        3. Physical Stress.
        4. Physiological Stress.
        5. Psychological Stress.
    ii. Stress Reduction:
        1. Stop – Think – Act.
        2. Training.
        3. Preparation and prevention.
        4. Skills practice and in-water comfort.
        5. Confidence in buddy and support.

6. Maintain equipment.
7. Employ psychological techniques such as Self-talk.
8. Step by step.

iii. Compensatory changes.

iv. Visualization.

c. Designing Your Warm-up Routine:

i. Athletes are given 45:00 minutes to warm up before their target (Official Top, OT).

ii. For depth disciplines, you can use this time to do facial immersion, free immersion (FIM), negative pressure FIM, and final breathe-up.

iii. It is recommended but not required that your warm-ups are not deeper than 20 metre/66 Feet.

iv. For pool disciplines, a combination of facial immersion and shorter statics (inhalation or exhalation, wet or dry) are recommended.

v. Warm-up routines are to kick in mammalian dive reflexes and psychologically prepare the athlete for their target performance.

vi. If not regularly training, your warm-up routine may start with a greater number of dives or breath-holds.

vii. If training consecutively for days or weeks, you may not require many warm-up dives or breath-holds before the target performance.

viii. When designing your warm-up:

1. Leave yourself enough cushion time for accidents such as water intake on peak inhale, equipment adjustments, etc.
2. Calculate the time of your warm-up and subtract that from OT.
    a. If your OT is 00:45 minutes, and your warm-up only takes 00:30 minutes, wait to start your warm-up until 00:15 minutes.

ix. DESIGN YOUR OWN OCEAN & POOL WARM-UP ROUTINES.

8. Advanced Freediving Training – Dry, Gym, Pool and Ocean:

a. Proper Hydration for Freediving:

i. Loss of Fluids:

1. Sweating.
2. Breathing.

3. Urinating.

ii. Dehydration:

1. Fatigue.
2. Impaired Blood Shunt.
3. Increases risk of DCI.

iii. Fluid Intake Before and During Exercise:

1. What Is the Best Drink Composition.

iv. Fluid Intake After Exercise:

1. What Is the Best Drink Composition.

b. Working Heart Rate Zones:

i. Calculating training zones:

1. Maximum heart rate.
2. Resting heart rate.
3. Calculating the zone value.

ii. Energy Efficient or Recovery Zone – 60% - 70%.

iii. Aerobic Zone – 70% - 80%.

iv. Anaerobic Zone – 80% - 90%.

c. Recovery:

i. Speeding up recovery.

ii. Refueling.

iii. Muscle repair.

iv. Re-hydration.

v. Immune system.

d. Pool Training for Performance:

i. Pool program A – techniques & cardio/strength training.

ii. Pool program B – Technique & Co2/O2 tolerance training.

iii. Pool program C – Targets and Co2/O2 training.

e. Gym Training for Performance:

i. Weight training – legs.

ii. Cardio training.

f. Daily Food & Fitness Log:
    i. Keep track of food and water intake.
    ii. Note how you felt.
    iii. Note how the workout that day went – what worked, what didn't.
g. Freedive logs:
    i. Keep track of your dive day.
    ii. Includes:
        1. Equipment.
        2. Warm-up.
        3. Water conditions.
        4. Depths hit.
        5. Notes.
h. Long term training program development:
    i. Work with a coach.
    ii. Set goals:
        1. Short term.
        2. Moderate term.
        3. Long term.
i. Co2 & O2 tolerance training:
    i. O2 tolerance.
    ii. Co2 tolerance.
    iii. Inhalation vs Exhalation training.
j. Equalization training:
    i. Daily X200 equalizations.
    ii. Exhalation and reverse packs.
k. Stretching programs:
    i. Packing stretches.
    ii. Negative diaphragm.
l. Negative pressure training:
    i. Quickly repetitive equalization and chest compression practice.

ii. Establish streamlined sink phase at shallower depths.

iii. Practice depth bottom turns shallower.

9.12 Confined Water

To be certified as a PFI Advanced Freediver a student must demonstrate the following skills to the satisfaction of the PFI Instructor as follows:

1. Watermanship and Stamina (May be completed in open water. If done in open water, must be completed prior to any other open water skills):
    a. Distance swim of 200 Metre nonstop using any stroke without the use of swimming aids (mask or swim goggles may be used), or 300 Metre nonstop using mask, snorkel, and fins.
    b. Tread water for 10 minutes without flotation.

Note: If an exposure suit is worn for any of the above skills, the wearer must be neutrally buoyant at the surface.

2. Open Water Simulation – 40 metre/132 Feet depth:
    a. Breathe up on back with 5 purges (packs if utilizing).
    b. Descend with appropriate kick cycles lasting 30 seconds.
    c. 10 seconds relaxed no intermittent kicking (sink phase).
    d. Relaxed bottom kicking for 40 seconds or kick horizontal for 40 metre/132 Feet dynamic.
    e. Proper ascent in deep end with depth recovery breathing and buddy coaching.
3. Static/Dynamic Apnea:
    a. Static apnea:
        i. Students must perform as Buddy A and Buddy B; breath-holder and safety.
        ii. Minimum of 4 consecutive static breath-holds.
        iii. Complete a minimum of a 4:00 minutes static apnea without any hypoxic symptoms.
        iv. Safety procedures.
        v. Supervision with signals starting at:
            1. 1 minute on pool session one.

2. 2 minutes on pool session two if participant hit 3:00 seconds static on pool session one.
3. For third and fourth pool sessions signals are given by the discretion of the student, in addition minimum static signal standards.
4. Additional signals may be required by the PFI Professional's request.

vi. Timing and safety signals.

vii. Recovery breathing and support assistance.

b. Exhalation Static apnea:

i. Students work as Buddy A and Buddy B; breath-holder and safety.

ii. Students will use exhalation statics as warm-ups for max statics.

iii. Exhalation statics are used for a stressed warm-up for a more relaxed target.

iv. Utilize a relaxed 1st Level Exhale.

v. Start signals at 0:15 and be given every 15 seconds.

c. Dynamic apnea (optional):

i. While optional, students are encouraged to participate in dynamic apnea.

1. Students work as Buddy A and Buddy B; dynamic and safety.
2. Minimum of 3 dynamic performances.
3. Dynamic apnea streamlining & kick technique.
4. Safety procedures:
    a. Surface safety with flotation.
    b. Recovery breathing and surface support assistance.
5. Negative Pressure Dives:
    a. Students work as Buddy A and Buddy B; switching back and forth after each dive.
    b. Maximum of 6 negative pressure dives in one session.
    c. Complete at a minimum, third level exhalation with proper equalization at a minimum depth between 3 metre/10 Feet or third level exhalation with 3 reverse packs for pools less than 3 metre/10 Feet with proper recovery breathing and

without any hypoxic symptoms, causing persistent ear barotraumas or thoracic squeezes.

9.13 Open Water

At the discretion of the instructor for students that have already achieved close to 40 metre/132 Feet, neutral buoyancy and dive depth progression can be adjusted deeper, keeping safety and safe progression in mind.

To be certified as a PFI Advanced Freediver a student must demonstrate the following skills to the satisfaction of the PFI Instructor as follows:

1. Open Water Training Sessions:
    a. A minimum of four (4) separate ocean sessions must be completed.
2. Proper Weighting and Buoyancy:
    a. Neutral Buoyancy at 15 metre/50 Feet – 20 metre/66 Feet on peak inhalation with packing – depth at instructor's discretion:
        i. Achieve neutral buoyancy to the .5kg/1.0 lbs.
        ii. No sculling, finning, treading, or pushing off plate.
3. Proper Fin Use:
    a. Kick cycles:
        i. Demonstrate Proper kick cycles determinations to landmark depths:
            1. To neutral buoyancy depth – kick cycles.
            2. From neutral buoyancy to double neutral buoyancy – kick cycles.
            3. From double neutral buoyancy to double neutral plus 10 metre/33 Feet – intermittent kick cycles.
4. Equalization Threshold:
    a. Establish the maximum mouth fill threshold.
        i. Must be able to complete a mouth fill while head down no shallower than 25 metre/82 Feet.
5. Free Immersion Warm-up Dives:
    a. Twelve free immersion warm-up dives:
        i. Complete a minimum of twelve (12) free immersion style freedives as a warm-up.

ii. Reach a minimum of 40 metre/132 Feet without any hypoxic symptoms or barotraumas.

iii. Employing the following proper techniques described below:

1. Surface breathing on back and preparation.
2. Proper roll and go technique with lanyard attached to ankle.
3. Single leg raised descent.

iv. Facial immersion for 5 minutes may be used.

v. A negative pressure dive with 1st level exhalation to a max 15 metre/50 Feet with 'touch and go' may be used for warm up.

vi. The student must show the ability to breath up on back, while securing the line.

vii. 90-degree bend at waist.

viii. One leg vertical out of water.

ix. Double arm pull.

x. Grab line and hand to nose.

xi. "BEND, LEG, PULL & GRAB".

b. Free immersion descent procedures:

i. Stay in contact with descent line.

ii. Face line during descent.

iii. Maintain proper head 'neutral' position.

iv. The student must determine how many pull cycles to neutral and pull cycles to double neutral.

v. Equalizing frequently.

vi. Descend slowly and relaxed.

vii. Utilize line for an effective bottom turn.

c. Free immersion ascent procedures:

i. Stay in contact with ascent line.

ii. Slow and relaxed with head in neutral position.

iii. Recapture expanding air from mask if possible.

iv. 2 metre/6 Feet exhalation prior to surfacing.

v. Proper recovery breathing.

d. Negative free immersion dives:
    i. Use negative pressure dives to practice sink phase and bottom turns.
    ii. Add additional neck weights to create appropriate 1 metre/second speed at shallower depths 4-8 lbs.
    iii. Lanyard must be used.
    iv. Employing the following proper techniques described below:
        1. Surface breathing on back and preparation.
        2. Inhalations plus packing then relaxed sigh to 1st level exhalation.
        3. Proper roll and go technique with lanyard attached to ankle.
        4. Single leg raised descent.
    v. Complete a series of negatives over the open water sessions:
        1. 5 metre – 7.5 metre – 10 metre – 12.5 metre – 15 metre/16 Feet – 24 Feet – 33 Feet – 41 Feet.
    vi. A negative pressure dive with 1st level exhalation to minimum 15 metre/50 Feet required maximum of 20 metre/66 Feet.

6. Self-Emergency Ascent Procedures:
    a. Lanyard Entanglement and last resort ditch and ascent:
        i. Descend to 15 metre/50 Feet.
        ii. Demonstrate undoing a simple entanglement and ascend.
        iii. Demonstrate the use of the lanyard quick release and ascend.

7. Constant Ballast Target Dives:
    a. Twelve target constant ballast dives:
        i. Complete a minimum of twelve (12) constant ballast style freedives.
        ii. Reach a minimum depth of 40 metre /132 Feet without hypoxic symptoms or barotraumas.
        iii. Employ the following proper techniques described below:
            1. Surface breathing and preparation on back.
            2. Peak inhalation, packing, roll and go, with lanyard attached to wrist.
            3. Single leg raised descent or double with mono-fin.
    b. Descent procedures:

i. Stay within arm's reach of the descent line.
ii. Face line during descent.
iii. Maintain proper head 'neutral' position.
iv. Equalizing frequently and with arm 'tucked'.
v. Descend at approximately 1 metre/3 Feet a second.
vi. Determine kick-cycle number, speed, and depth determination.
vii. Employ sink phase after 30 metre/99 Feet or 40 metre/132 Feet with periodic correcting kick/mouth-fill.
viii. Drop arms at a deeper depth to maintain 1 metre/second by creating flat surfaces.
ix. Utilize line for an effective bottom turn.

c. Ascent procedures:
i. Double raised hand.
ii. Drop arms at 10 metre – 5 metre/33 Feet – 16 Feet.
iii. Recapture expanding air from mask if possible.
iv. 2 metre/6 Feet exhalation prior to surfacing.
v. Proper recovery breathing with surface protocol.

8. Emergency Rescue & Problem Management (Rescue Scenarios):
a. LMC at surface review:
i. PFI Instructor simulates a 30 metre/99 Feet freedive:
1. Has LMC after no less than 2 recovery breaths.
ii. Buddy B – 10 metre/33 Feet safety Freediver:
1. Provides correct recovery breathing.
2. Provide correct arm support and airway protection.
3. Mask removal and blow across face if necessary.
4. Constant verbal encouragement.
5. Wait 30 seconds or until Freediver is recovered.

b. Blackout at surface review:
i. PFI Instructor simulates a 40 metre/132 Feet freedive:
1. Simulated LMC that progresses into BO after surface safety protects LMC.

2. Recovery after 3 'BLOW, TAP, TALKS'.

ii. Buddy B – 15 metre/50 Feet safety Freediver:

1. Provides correct recovery breathing and LMC response.
2. Airway control 'head sandwich' to horizontal.
3. Switch arms into the 'Dosey Doe' position.
4. Remove mask and provide 3 'BLOW, TAP, TALKS'.

9.14 Graduation Requirements

In order to complete this course, students must:

1. Successfully complete all the knowledge development, confined water, and open water training sessions. (Open water training is not required for a Pool Only certification).
2. Demonstrate mature and sound judgment concerning planning and execution.
3. Achieve a passing score of 80% on the final exam and show 100% knowledge comprehension.
4. Achieve the required constant weight and free immersion dive minimums with an unmodified commercially available mask. (Not required for Pool Only certification)
5. Complete the following skills:
    a. Equipment:
        i. Prepare equipment with minimal assistance.
        ii. Buddy check all equipment.
    b. Entry and exit:
        i. Enter water with techniques appropriate for the environment.
        ii. Signal buddy/shore/boat.
        iii. Exit water with techniques appropriate for the environment.
    c. Proper weighting and buoyancy:
        i. Test for approximate neutral buoyancy at surface by floating upright at collar bone without sculling, finning, or treading.
        ii. After buoyancy has been established – either collarbone for pool only, or neutral buoyancy depth check during open water for Advanced Freediver, perform a first level exhalation at the surface – remain at the surface. However, this may not be possible in advance weighting situations due to

packing, so lanyards should be used, and extra care always given to buddy supervision.

d. Snorkel Use:
    i. Successfully clear and blast the snorkel without removing the head from the water.

e. Proper fin use:
    i. Flutter kick at the surface.
    ii. Maintain a stationary position with sculling.

f. Descent and Ascent Procedures:
    i. Surface breathing and preparation while floating on back.
    ii. Roll over to a face down horizontal position.
    iii. Demonstrate a double leg raised entry or a single leg raised entry in the order of:
        1. Bend.
        2. Leg(s).
        3. Pull.
        4. Kick.
    iv. Demonstrate proper ascent procedures:
        1. Head in neutral position.
        2. Recapturing expanding air in the mask if possible.
        3. Exhale at approximately 2 metre/7 Feet.
        4. Proper recovery breathing.
    v. During descents and ascents – the student head position must remain neutral.

g. Self-emergency Ascent Procedures:
    i. Flooded mask ascent:
        1. Fully flood at depth:
            a. Pool only – deep end of pool.
            b. Advanced Freediver – at 20 metre/66 Feet.
        2. Remain at depth for approximately 10 seconds before ascending.
        3. Ascent and recovery breathe in a controlled manner.

ii. Remove weight belt and ascend:
    1. Remove weight on neck or waist belt (if no neck weight) at depth:
        a. Pool only – deep end of pool.
        b. Advanced Freediver – minimum 20 metre/66 Feet.
    2. Ascend holding belt low at their side with buckle end down.
    3. Perform proper recovery breathing.
    4. Replace neck weight or weight belt at the surface with right hand release if waist belt.

h. Recovery Breathing:
    i. Proper exhalation from 2 metre/6 Feet.
    ii. Position both hands on float/side of pool.
    iii. Show proper 3 hook and 3 cleansing breaths on upper half of lung volume.
    iv. Hook breaths are held for a full 3 seconds.

i. Safety & Problem Management.
    i. Assist with recovery breathing as a safety:
        1. Be 2 Metres/7 Feet to 3 Metres/10 Feet to the side of the Freediver.
        2. Use audio coaching when necessary.
        3. Remain attentive and vigilant for a minimum of 30 seconds after the Freediver has surfaced.
    ii. Respond to a simulated surface LMC as a Safety:
        1. Physically support the Freediver.
        2. Keep one hand parallel to the water, above the water, but below the chin.
        3. Speak calmly to encourage the Freediver to breathe.
        4. Maintain control until Freediver regains control.
    iii. Respond to a simulated blackout at the surface:
        1. Place the Freediver on their back with the airway protected using a "head sandwich".
        2. Securely support the Freediver's head with a "dosey-doe".

3. Blow, tap, talk 3 times.
4. Maintain control until Freediver regains control.

iv. Assist with a simulated underwater blackout:

1. Recognize signal for assistance.
2. Physically support the Freediver.
3. Ensure proper hand placement.
4. Recognize blackout before the surface.
5. Protect the airway with a "head sandwich".
6. Perform surface blackout procedures through 2 rescue breaths once the student has ascended with the blacked out Freediver.

v. Lost Freediver – completed no deeper than 10 metre/33 Feet:

1. Surface swim minimum 25 metre/82 Feet looking for "lost" Freediver.
2. Locate Freediver, catch breath, breathe up.
3. Make proper entry and simulate 25 metre/82 Feet dive – 6 strong kick cycles – 6 soft kick cycles – 5 seconds intermittent kicks.
4. "Victim" descends after rescuer completes 6th strong kick cycle and will lay on the bottom next to the Freediver.
5. After completion of 25 metre/82 Feet descent simulation, rescuer secures victim's airway with a "head sandwich".
6. Ascend to the surface and place victim into "dosey-doe" and perform surface blackout rescue procedures.
7. Call for assistance and evacuate the victim 50m/165ft while simulating rescue breaths every 5 seconds.