HYPOXIC BLACKOUT
A Partnership to Raise Awareness

2017 World Congress on Drowning Prevention
Presentation by:
Mike Espino, YMCA of the USA
Connie Harvey, American Red Cross
Hypoxic Blackout—

• Is a condition in which the body is deprived of adequate oxygen supply.

• Is the result of a person who engages in activities such as hyperventilation preceding underwater swimming and extended breath-holding in the water.

• Happens very quickly and usually without warning when a swimmer engages in these dangerous activities. Educate them about the dangers of these actions.
Despite educational efforts, deaths related to hypoxic blackout in the water are still occurring.

At YMCA Pools since 2008—
- At least 5 hypoxic blackout-related deaths have occurred
- At least 18 more swimmers have been successfully rescued after losing consciousness following extended breath holding.

Over the past few years, there have been highly-publicized deaths related to hypoxic blackout.
HYPOXIC BLACKOUT—CAMPAIGN TO RAISE AWARENESS

Raising awareness at all levels within the Y

• All Y-USA communication vehicles
• E-mail to 27,000 Y certified lifeguards
• Annual Y-USA COO Aquatic Safety letter to local CEOs
• Heat sheets at short & long course YMCA National Swimming Championships
• Incorporated into the NEW Y Swim Lesson program outlines

HAVE YOU HEARD OF HYPOXIC BLACKOUT?

DID YOU KNOW...
• Hypoxic Blackout is a condition in which the body is deprived of adequate oxygen supply.
• Hypoxic Blackout is the result of a person who engages in activities such as hyperventilation preceding underwater swimming and extended breath-holding in the water.
• Hypoxic Blackout happens very quickly and usually without warning when a swimmer engages in these dangerous activities.

ENJOY THE WATER SAFELY THIS SUMMER

Having a good time swimming or playing in the pool is something we all enjoy. However, enjoying the water means being safe in the water too. Some activities may seem like a game or training but can be dangerous. Breath-holding contests, underwater swimming challenges and hyperventilating before swimming are potentially deadly activities, even when performed for competitive or military training.

Be smart and do not engage in, or let your family members participate in such activities. Being confident and comfortable underwater is an essential aquatic skill. Being educated and participating only in safe breathing practices is an essential life skill.

IS YOUR SWIMMER LIFEGUARDING THIS SUMMER?

Help your child have a safe and fun summer while he or she works as a lifeguard. Educate your child about the dangers of Hypoxic Blackout. Remind him or her to be alert while on duty and prevent swimmers from attempting to hyperventilate and engage in extended breath-holding activities. Encourage them to educate patrons about the dangers of these actions. If your child sees such activities, remind them to enforce their facility’s rules and intervene if they see anyone engaged in these risky behaviors.

Working as a lifeguard is a great responsibility – help make your child’s summer job experience as a lifeguard a positive one they will remember for a lifetime!

TRAIN (SAFELY) LIKE A CHAMPION!

Strong, fast underwaters and a steady breathing pattern are both essential for competitive swimming success. There are plenty of safe ways for swimmers to improve both. But there are also some training activities that are dangerous, even deadly. Without adequate oxygen, swimmers can suffer Hypoxic Blackout.
• Never hyperventilate then practice underwater kicking.
• Do not participate in underwater swimming or kicking contests.
• Do not participate in swims or underwater kicking exercises in which breathing is not allowed.

Work with your coach to incorporate safe training practices that will improve your speed and power without putting you at risk for Hypoxic Blackout.
HYPOXIC BLACKOUT—CAMPAIGN TO RAISE AWARENESS

American Red Cross, USA Swimming, and YMCA of the USA joint statement on Hypoxic Blackout

• Goal to educate the public about the risks of hypoxia in the water
• Defined Hypoxic Blackout
• Our educational programs reinforce the proper methods to breathe before entering and while in the water

Joint Statement from the American Red Cross, USA Swimming and YMCA of the USA on Hypoxic Blackout and Inaccurate Use of the Terminology Shallow Water Blackout

FOR IMMEDIATE RELEASE

CHICAGO, September 30, 2015 – The practices of hyperventilation preceding underwater swimming and extended breath-holding in the water are dangerous and potentially deadly activities. These actions can put the body in a state of hypoxia—a condition in which the body is deprived of adequate oxygen supply.

It is our goal to educate the public about the risks of hypoxia in the water and help ensure that those we teach do not engage in behavior that could result in loss of consciousness and death. Our educational programs reinforce the proper methods to breathe before entering and while in the water.

Some refer to the aftereffects of improper breathing as “shallow water blackout.” The use of this language in these cases is misleading since water depth is not a factor in the body’s response to hyperventilation and extended breath-holding.

In an effort to be more clear and accurate, the American Red Cross, YMCA of the USA (Y-USA) and USA Swimming do not use nor endorse the term shallow water blackout. In our training programs and public education, our organizations use terminology that describes the dangerous behaviors that should be prevented—voluntary hyperventilation preceding underwater swimming and extended breath-holding. For simplicity, we refer to this condition as hypoxic blackout.

Shallow water blackout is the medical condition that can result in unconsciousness in water that is typically less than 15 feet (5 meters) deep either from diving equipment failure or as a breath-hold diver returns to the surface. There are specific precautions and prevention strategies for this condition.
SAFETY MEASURES—SWIM LESSONS

• Breath control is important part of learning to swim—but limits are set
  - Never “see how far” or “how long”
• Limited to one breath before submerging
• Underwater activities should never be competitive or repetitive
• Instructors should never ask you to do more
• Lifeguards will make you stop
SAFETY MEASURES—SWIM INSTRUCTORS

- Trained to teach:
  - Safety principles of breath control and warn of dangers
  - Progressions for improving breath control and breath management

- Expectations for safety protocols during instruction:
  - Limit participants to a single inhalation
  - Set safety limits for practice
    - Number of body lengths
    - Amount of time
SAFETY MEASURES—LIFEGUARDS

Taught to prohibit these activities:

• Hyperventilation

• Contests, games, or repetitive activities that challenges ability to:
  • Swim extended distances underwater
  • Hold their breath underwater for extended periods

Trained to:

• Watch out for and prevent these activities including in competitive swimming

• Intervene and stop the activity

• Explain that they should only take a single inhalation before submerging when swimming and playing underwater
SAFETY MEASURES—COACHES

- Additional experience and training advocated
- Monitor carefully and instructor swimmers to breathe when necessary
- Have swimmers take only one or at the most two deep breaths
- Only use in a training program of experienced swimmers in good physical condition with proper supervision and instruction
- Generally conduct this activity on the surface of the water (except dolphin kick training)
- Limit the number of repeats of hypoxic swimming
- Allow adequate time for recovery, which will vary from swimmer to swimmer
HYPOXIC BLACKOUT

Hypoxic blackout and its dangers
Mike Espino
YMCA of the USA

Safety measures for prevention
Connie Harvey
American Red Cross

Realities of hypoxic blackout
Safer strategies for training athletes in breathing management
Q&A
Coach Bob Bowman
Arizona State University
SAFER STRATEGIES FOR TRAINING ATHLETES

USA Swimming, Inc.
Operational Risk Committee
Hypoxic Training Recommendations
Wednesday, September 21, 2016

If hypoxic training is utilized by coaches in the development of advanced competitive swimmers, it must be conducted only when following appropriate principles and under the direct supervision of an experienced coach. These principles are:

1. Coaches should stress to athletes that they should never ignore the urge to breathe.
2. Hypoxic training should involve progressive overload, in line with the athlete's physical and skill development — for example, beginning with efforts over 5 m, 10 m, then 15 m etc. as the swimmer develops the appropriate skills and physiological capacity.
3. Coaches should ensure adequate rest between hypoxic efforts to ensure full recovery.
4. Athletes should not hyperventilate (take multiple, deep breaths) prior to any hypoxic effort or before any underwater swims.
5. Hypoxic training should not involve competitive efforts of maximum duration, or distance covered.

Hypoxic Training – On the Surface and/or Underwater

Drills may be conducted as part of on top of the water training or under water training. Extreme care must be undertaken by the coach when under water training is being conducted. The risk of a swimmer losing consciousness when on the surface is lower than during underwater swimming drills. While on the surface, swimmers are more likely to take a breath when needed whereas underwater they may resist the urge to breathe. In addition, any loss of consciousness while swimming on the surface is more likely to be noticed by coaches or aquatic supervisors, allowing for a faster rescue response. If a swimmer loses consciousness underwater, that swimmer may go unnoticed for a period of time thereby increasing the likelihood of injury.

Common risk reduction strategies include:
- Hypoxic training should involve progressive overload, in line with the swimmer's physical and skill development — for example, beginning with efforts over 5 m, 10 m, then 15 m etc. - as the swimmer develops the appropriate skills and physiological capacity.
- Adequate aquatic supervision is provided. Swimmers should never swim alone.
- Never hyperventilate (take multiple, deep breaths) prior to any hypoxic training or efforts or before any underwater swims.
- Structuring sessions to minimize involuntary hyperventilation immediately prior to a hypoxic set.
- Encouraging swimmers to breathe as needed and to stay within their comfort zone.
- Ensuring adequate rest for full recovery between hypoxic efforts. Recovery time will vary from swimmer to swimmer.
- Hypoxic training should not involve competitive efforts of maximum duration, or distance covered. Coaches and swimmers must not engage in breath holding games or challenges.

Underwater Drills

Common underwater activities that can lead to hypoxic blackouts include repeated underwater swims or underwater kicking drills as well as stationary breath holding competitions for time. In all instances, the nature of the risk can be high. Even with successful resuscitation, complications including hypoxic brain damage and respiratory infection can occur.

The following considerations must be factored into hypoxic underwater training:

1. Coaches should be aware of the dangers and understand the risks of hypoxic training.
2. Swimmers should be instructed to surface and breathe when they feel they need to.
3. Stationary breath holding should never be used as a training method.
4. Only one deep breath should be allowed prior to submersion. Hypoxic blackout is closely linked to hyperventilation.
5. Underwater drills should be at the start of a workout when swimmers are not close to their maximum aerobic capacity (VO2 max).
6. In general, the drill distance should not exceed 25 yards for a one time attempt. No immediate repeat attempts or challenges should be undertaken. More experienced, elite, athletes may attempt longer distances but should only do so under direct supervision of an experienced coach.
7. Allow adequate time for recovery, which will vary from swimmer to swimmer. Some guidelines suggest at least a two minute recovery time should be allowed before attempting another underwater swim, depending on age and experience.
8. No competitions or challenges; i.e. see who can swim the greatest distance underwater or hold their breath for the longest time will be conducted by coaches or swimmers.
9. There will be no pressure or penalties for swimmers who are unable to hold their breath as long as other swimmers.
ON-GOING EFFORTS

• This level of collaboration of these leaders in water safety education in the United States to address a specific issue is unique.

• Having this common goal—and using common language—while leveraging the resources and relationships of each respective organization is sure to achieve greater impact to reduce drowning due to hypoxic blackout.

• All three organizations will continue the awareness campaign to stakeholders, by—
  ▪ Expanding content in existing educational materials
  ▪ Development of new educational materials and messaging.
  ▪ Engaging in joint presentations.
QUESTIONS?