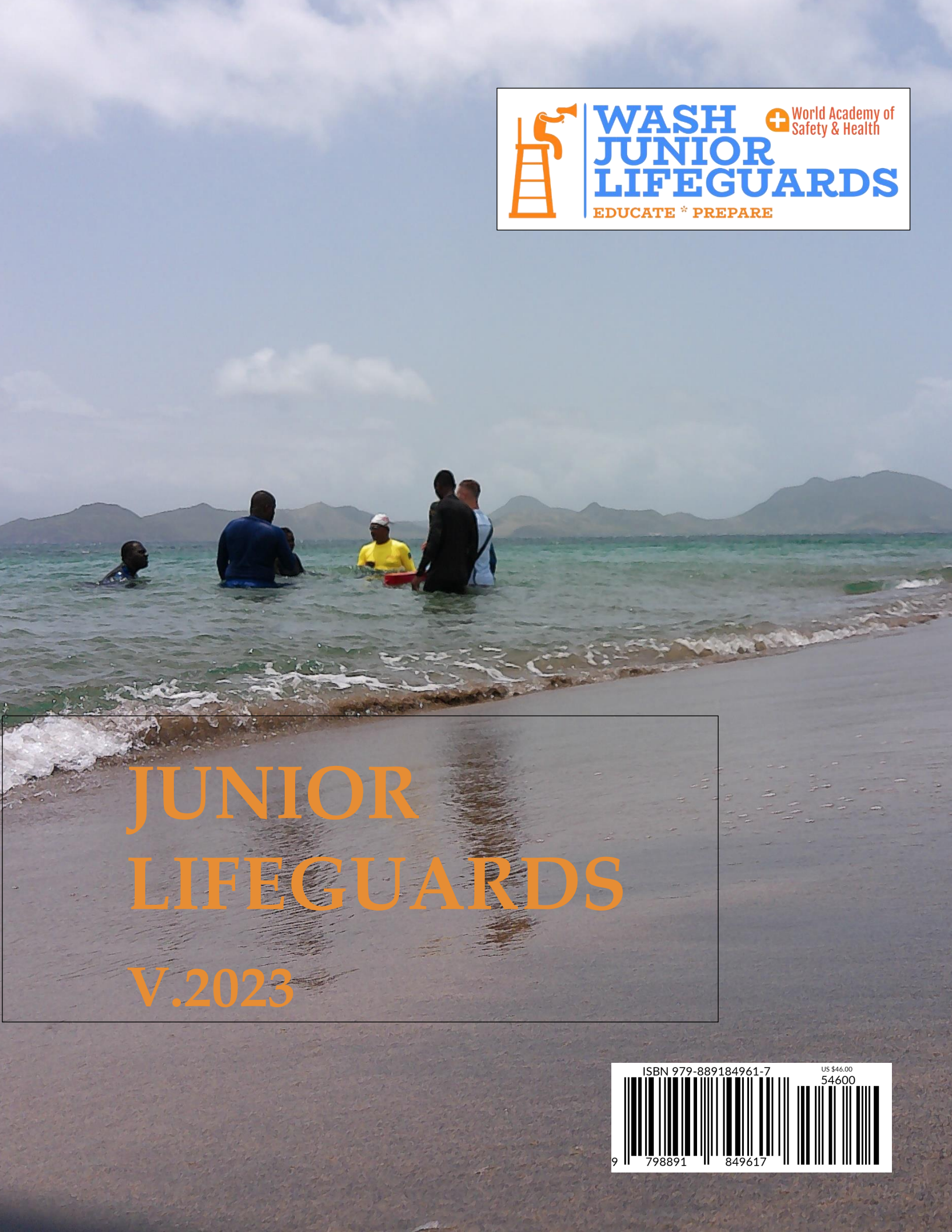

WASH JUNIOR LIFEGUARDS

World Academy of Safety & Health

EDUCATE * PREPARE

JUNIOR LIFEGUARDS

V.2023

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Junior Lifeguard Manual, v.2023

Purpose:

This *World Academy of Safety & Health (WASH) Junior Lifeguards Manual, v.2023* is exclusively intended to provide guidance and information to instructors of the World Academy of Safety & Health (WASH) Junior Lifeguards program(s). All information contained within this manual is subject to change at any time for any reason and without notice. All updates, changes, alterations, and new editions will be published on *www.juniors.lifeguardcertifications.com*.

Notification of Rights:

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Disclaimer

World Academy of Safety & Health (WASH) Educational Services has made all reasonable efforts to ensure the content of this *Junior Lifeguard Manual, v.2023* is accurate, up-to-date, and aligned with the most recent industry standards and recommendations at the time of its publication. Scientific and medical information and data can frequently change. Medical recommendations may, in turn, be updated to reflect this latest science and data. In addition to the regular 5-year program and curriculum review and update cycle, the *World Academy of Safety & Health (WASH) Junior Lifeguard Manual, v.2023* will be updated as frequently as is needed based upon any changes in medical recommendations. Any and all updates will be published on: *www.juniors.lifeguardcertifications.com*.

Each emergency situation is unique and, hence, warrants its own set of guidelines, principles, recommendations, information and/or emergency response protocols. Therefore, it is not possible for *World Academy of Safety & Health (WASH) Junior Lifeguards* and/or *World Academy of Safety & Health (WASH) Educational Services* to provide blanket emergency response recommendations.

This *Junior Lifeguard Manual, v.2023* must not replace or substitute for advanced medical care or emergency services response and treatment. Further, no information contained within this *Junor Lifeguard Manual, v.2023* should replace the need to seek care and/or advice from a physician, hospital staff member, or other licensed healthcare provider. Cooperation with local medical direction is necessary when developing a facility Emergency Action Plan (EAP) and best practices. Emergency services should always be contacted when there is an emergency situation.

World Academy of Safety & Health (WASH) Educational Services utilizes an Advisory and Review Committee in the development of all programs, courses, manuals, resources, and other instructional materials.

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About Us

Junior Lifeguard programs are essential for cultivating water safety skills and nurturing future lifeguards. These programs often serve as a foundational step for individuals who aspire to become certified lifeguards, which aligns with the mission and expertise of World Academy of Safety & Health (WASH) Junior Lifeguards.

Junior Lifeguard programs can contribute to building a strong foundation in water awareness and safety among young individuals. Here are some key components of the World Academy of Safety & Health (WASH) Junior Lifeguard program include:

1. **Curriculum Development:** Create a comprehensive curriculum that covers essential water safety topics suitable for juniors. This could include swimming skills, basic rescue techniques, CPR and first aid for children, and knowledge of beach and pool safety.
2. **Instructor Training:** Train dedicated instructors who are experienced in working with children. They should be well-versed in the curriculum and capable of delivering engaging and age-appropriate lessons.
3. **Age Groups:** Organize the program into age-appropriate groups to ensure that the content and activities are tailored to the developmental stage of the participants. This could range from early childhood to teenage years.
4. **Safety Emphasis:** Instill a strong emphasis on safety throughout the program. Teach juniors how to identify potential hazards, respond to emergencies, and stay safe in and around the water.
5. **Practical Training:** Provide hands-on experience in controlled aquatic environments, such as pools or calm beach areas. Practical exercises can reinforce theoretical knowledge and build confidence.
6. **Certification:** Consider offering a Junior Lifeguard certification upon successful completion of the program. While this certification may not be as advanced as the full lifeguard certification, it can serve as a valuable credential for young participants.
7. **Community Engagement:** Promote the program within local communities to encourage participation. Partner with schools, community centers, and other organizations to reach a wide audience of potential junior lifeguards.
8. **Continuous Improvement:** Continuously assess and refine the program based on feedback and emerging trends in water safety education. Stay updated with the latest guidelines and best practices.

A commitment to water awareness and safety education to a younger demographic helps prepare future lifeguards. It also fosters a culture of safety and responsibility in, on, and around bodies of water.

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PART I

Purpose of Junior Lifeguard Program(s)

The purpose of the World Academy of Safety & Health (WASH) Junior Lifeguards program is to teach participant(s) the content knowledge, physical skills, as well as technical and interpersonal skills required to become a lifeguard. Persons who complete the full WASH Junior Lifeguard program will be equipped with the confidence, basic physical skills, and basic industry content knowledge to be a viable WASH lifeguard certification candidate.

This program offers the flexibility to be able to adapt the physical skills and curriculum for each of the three (3) age groups within the WASH Junior Lifeguard program.

This program is not designed to train lifeguards; to train lifeguard supervisors; or to train persons to serve as a lifeguard in any capacity. To earn a WASH lifeguard certificate, successful completion of a WASH lifeguard certification course is necessary and requires a minimum age to be eligible as well as successful completion of physical pre-requisites.

All course participants have electronic access (using the student login on juniors.lifeguardcertifications.com) to program manuals, course slide presentations, and course skills video clips beginning with class registration and until sixty (60) days after the conclusion of the program for which the individual is/was registered.

Membership Junior Lifeguard Program(s)

Organizations wishing to participate and/or utilize the WASH Junior Lifeguard program at their facility, are charged an annual Affiliation Fee of $50.00 USD which is payable no later than February 1st of each calendar year. Additionally, each registered participant in an organization's program or camp must be, subsequently, registered in the WASH Junior Lifeguard database. The fee is $5.00 USD per participant to register in the WASH system.

Junior Lifeguard members receive:

- WASH Junior Lifeguard T-Shirt
- WASH Junior Lifeguard Sticker
- Eligibility to participate in the WASH Junior Lifeguard Regional, National, and International Competitions (additional fees apply)
- Access to the WASH Junior Lifeguard website and accompanying news, articles, videos, resources, and more
- Discounts with various online vendors

Facilities/Organizations Using the WASH Junior Lifeguard receive:

- WASH Junior Lifeguard Program Banner or Flag
- Access to all WASH Junior Lifeguard program resources and administrative documents.
- Eligibility to host the annual WASH Junior Lifeguard Regional, National, and International Competitions
- Access to the WASH Junior Lifeguard website and accompanying news, articles, videos, resources, and more
- Discounts with various online vendors

Program Design

Program Overview:

The WASH Junior Lifeguard program is intended for individuals between nine (9) and fifteen (15) years of age who wish to learn: more about general personal protection and water safety; marine life and oceanography; exercise and conditioning; and lifeguard techniques, practices, and protocols.

The goal of this course is to develop and equip students with the knowledge, skills, and confidence to respond during an in-water or dryland emergency while working as an open tidal water lifeguard. WASH encourages instructional design and skill application that provides flexibility in terms of the best approach and response to an emergency based upon each individual facility's circumstances and constraints. WASH believes this approach allows for more real-world scenarios to be addressed and the most appropriate emergency response taught and practiced.

Program & Curriculum Structure:

The World Academy of Safety & Health (WASH) Junior LifeguardsJunior Lifeguard program is designed to be delivered over the course of seven (7) weeks for five (5) days each week.

Pre-Requisite(s):

- Any person wishing to participate in the WASH Junior Lifeguard program(s) must be between the ages of nine (9) and fifteen (15) and successfully complete the pre-requisites: swim underwater for ten (10) feet; continuously swim, using only the front crawl, for 100 yards in 2 minutes, 45 seconds or less; tread water for three (3) minutes.

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Delivery Methods:

In-Person, instructor-led training sessions will be offered. Content will be provided via instructor lecture, instructor-facilitated discussion, small group skills instruction & practice, video segments and slide presentations. The recommended student to instructor ratio is 8:1.

Program Outline

Daily Activities

On the first day participants are assigned to the A, B, or C group according to their age (based on their age the first day of camp).

- A Group: 13 to 15 years old
- B Group: 11 to 12 years old
- C Group: 9 to 10 years old

Daily activities include:

Health, Safety and Physical Fitness:

- Stretching and aerobic exercises
- Skin cancer prevention/Sun protection

First Aid/CPR:

- Training in CPR and First Aid
- Treatment and protection of Spinal Trauma

Rescue Techniques:

- Preventive lifeguarding skills
- Identification of ocean conditions
- Rescue paddleboard training
- Distressed swimmers
- Mock ocean rescues

Educational Activities:

- Oceanography and marine biology
- Environmental impacts and issues

Recreational Activities:

- Basic paddling instruction
- Free-swim periods
- Beach games and competitions

Items participants should bring

- Snacks, lunch and drinks (please put participant's name on all items including coolers)
- Wear sunscreen and suit
- Junior Lifeguard bag
- Towel

Evaluation of Participants

Formal Evaluation of Required Physical Skills:

Each participant will be evaluated on a pass-fail basis for all required physical skills. Each participant must successfully demonstrate each required physical skill.

Formal Evaluation of Content Knowledge:

The written final exam is a required element to earn certification. This exam must be proctored by an Authorized World Academy of Safety & Health (WASH) Junior Lifeguardsinstructor and is untimed – instructor(s) must provide each participant adequate time to complete the exam.

A participant must score an eighty (80) percent or better on the final written exam to graduate from the WASH Junior Lifeguard program.

Graduation :

When a World Academy of Safety & Health (WASH) Junior Lifeguardscertificate is issued it signifies that the participant, on the date of completion as listed on the certificate, met all course objectives by successfully demonstrating for the WASH Instructor listed on the certificate:

- an understanding of content knowledge as based upon his or her score on the final written exam
- each required physical skill as listed on the Skills Assessment Form (SAF)

A valid WASH certification card does not guarantee the cardholder's current or future performance. It is the employer's responsibility to verify the cardholder's ability to successfully perform all job duties and responsibilities.

Program Pre-Requisites

During the first session of any World Academy of Safety & Health (WASH) Junior LifeguardsJunior Lifeguard program, each participant must successfully complete the course prerequisite physical skills.

If a participant fails to successfully complete and one of the pre-requisite physical skills, he/she will not be permitted to continue in the program.

- Verify all participants will be between nine (9) and fifteen (15) years of age.
- Swim underwater for ten (10) feet.
- Continuously swim, using only the front crawl, for 100 yards in 2 minutes, 45 seconds or less.
- Tread water for three (3) minutes.

Program Safety Requirements

During all sessions and all levels of any World Academy of Safety & Health (WASH) Junior LifeguardsJunior Lifeguard program, the following safety standards must be met and protocols followed.

The organization (this includes the program director or equivalent, all administrators/administrative officers/supervisors, program instructors, program counselors, and all other staff members /volunteers/parents associated with the program) delivering the World Academy of Safety & Health (WASH) Junior LifeguardsJunior Lifeguard Program must ensure the following minimum standards and protocols are met:

- Verify all participants have a signed (by parent and/or legal guardian) the World Academy of Safety & Health (WASH) Junior Lifeguards
- Verify all participants have successfully completed all Program Pre-Requisites.
- Maintain a maximum ratio of four (4) participants to one (1) instructor at the C level; six (6) participants to one (1) instructor at the B level; ten (10) participants to one (1) instructor at the A level.
- Ensure that any program participant entering the water does so with a designated/assigned partner program participant.
- Ensure there are an adequate number of lifeguards who are not responsible for or otherwise participating in the delivery of the Junior Lifeguard program in any way. WASH does not pre-determine the number of lifeguards required for any Junior Lifeguard sessions as there are too many variables that have an impact on determining the number of lifeguards required for the safest operation and delivery of the WASH Junior Lifeguard program. WASH relies solely on the local facility and/or organizational director and/or other local individuals responsible for and charged with safe delivery of the Junior Lifeguard program to properly determine the number of lifeguards needed.

Teaching & Learning

PART II

Addressing Different Learning Styles

Students who enroll in World Academy of Safety & Health (WASH) Junior Lifeguardscourses are diverse in many ways as they come from a variety of backgrounds and form a variety of geographic locations across the world. Just as important is the fact that they are also diverse in how they learn, compartmentalize information and process that information.
Instructors should have a working understanding of the different styles and preferences of learning. How one learns differs from one person to the next and, as an instructor, it is necessary to know what the various learning styles are and, more importantly, how to ensure the course is delivered in a manner that is consistent with the World Academy of Safety & Health (WASH) Junior Lifeguardsphilosophy that all learning styles need to be utilized to keep all participants engaged with the learning opportunities.

Generally speaking, there are four different learning styles:

1. Visual Learners
   These people tend to learn by seeing. Students who learn in this manner thrive when content is presented, for example, using graphs, diagrams, and the written word.
2. Auditory Learners
   These people tend to learn by hearing. Students who learn in this manner thrive when content is presented, for example, using lecture, listening to classmates explain a concept, or repeating aloud what was told to them.
3. Kinesthetic Learners
   These people tend to learn by physical engagement. Students who learn in this manner thrive when they are able to use their hands to engage with the content.
4. Reading/Writing Learners
   These people tend to learn by the use of the written word. Students who learn in this manner thrive when content is presented in writing or when asked to read the content.
   (Malvik 2020).

It is also important to keep in mind that it is rare for a person to learn by just one of these styles. Instead, in most cases, the learner engages with content and learning while using several of the styles. The healthiest and most productive learning takes place in an environment that welcomes participants form every learning style and plans activities in each lesson to target each one of the learning styles.

Keep in mind that most teachers and instructors present material and content in the manner in which they learn best. World Academy of Safety & Health (WASH) Junior Lifeguardsinstructors should be cognizant of this fact and remain self-aware when teaching – it is crucial that your students are given the best learning environment possible and that can start with learning opportunities and activities that include each of the learning styles.

Hands-On Learning

World Academy of Safety & Health (WASH) Junior Lifeguardsbelieves and promotes a learning environment in which the students and instructor(s) all cooperate with one another to accomplish the goal of learning the content and skills by all students. The philosophy of incorporating hands-on learning is not mutually exclusive to including activities throughout the course to address all learning styles. As a matter of fact, these concepts, by their very nature, are intertwined. For example, when a student is practicing a skill, the other students are watching the skill being performed and listening to the coaching provided by the instructor – hence, this single activity is addressing students in the class who might be visual learners, auditory learners and kinesthetic learners. If the instructor has the students read the technical steps

needed to successfully perform the skill prior to the practice session then the students who learn best by reading have also had their needs met.

Hands-on learning provides students with opportunities to apply content and skills to scenarios presented in the courses as well as to future situations. Students will be asked to take responsibility for their own learning, self-evaluate their progress and learn from the learning process (UC Davis, 2011 and Wurdinger & Carlson, 2010). This process allows the students to develop:

- self-confidence when interacting with the content and skills
- strong horizontal and vertical communication skills
- solid decision-making skills
- problem-solving skills

Integration of hands-on learning into teaching requires deciding what the students should gain from such a learning experience. Once the objective is chosen with the lesson plan and necessary materials complete, the instructor must only facilitate and evaluate the hands-on learning activity.

Motor Skills

A motor skill can be defined as one's body managing its movement. It involves any particular and specific movement(s) of one's body required to execute a certain intended act. Often times, motor skills are divided into two distinct categories – gross motor skills and fine motor skills. Gross motor skills are one's ability to perform daily functions such as walking, running, and swimming. While fine motor skills are one's ability to effectively utilize smaller muscles of the body, in particular the hands, to perform tasks such as eating, writing, and using small hand-held tools like scissors.

Motor skill development in young people is one manner. It is important to recognize and point out that the process of motor skill development in children can be impacted by a variety of factors. Some of these influential factors include genetics, muscle tone and development, overall growth rate, and gender.

Typically, development of motor skills occurs in progressive stages and include specific characteristics at each stage. In most cases, children reach each developmental stage around the same age.

Stages of Motor Skill Development

During an individual's life, motor skill development progresses through seven stages. These are reflexive, rudimentary, fundamental, sports skill, growth and refinement, peak performance, and regression. These stages are closely related to one's age but, not necessarily dependent upon one's age.

The corresponding characteristics of each developmental stage are: improvement, consistency, stability, and persistence and adaptability.

Stages of Motor Learning

Motor learning involves improvement, through practice, of the accuracy of one's muscle movements. As a person's development allows the capability to respond appropriately to their environment, motor learning can become a relatively permanent change – over time and through regular practice, the specific skill or set of skills is acquired and retained.

Cognitive – This phase occurs when the learner is new to a particular task and/or activity. Hence, the learner must dedicate significant cognitive activity to determine the best route or course of action to achieve the desired outcome or goal. The learner will stop using strategies that do not help to achieve the desired outcome. During this phase, considerable progress can be made in a relatively short period of time.

Associative – This phase begins once the learner has determined the best practices and/or most effective strategies to use to achieve the goal. During this phase, the learner will begin to recognize and make progressive changes and improvements in his or her movements – movements will become more consistent and predictable. Learners tend to spend the most time in this phase and, over time, one becomes competent with his or her muscle movements becoming efficient.

Autonomous – This phase may not occur for a learner for several years after he or she begins to learn a skill and/or work toward a specific goal (i.e. starts the cognitive phase). During this phase, the learner rarely needs to think about his or her actions or movements. Instead, he or she is able to perform the activity or action automatically.

During the childhood years, gender can have an impact on motor skill development. Generally speaking, boys perform better when it comes to object control and manipulation. However, there appears to be no developmental differences when it comes to locomotor skills from one gender to the other.

Influences on Development

Growth: Quantitative changes in one's body structure

Maturity: Qualitative changes that help support one's efforts to progress to more advanced levels of functioning. For the most part, this is intrinsic.

Experience: Factors that impact developmental characteristics during the learning process.

Adaptation: Interaction between natural forces within the learner and the learner's environment – nature versus nurture.

Stress: The imbalance between the learner's capability to accomplish the goal or execute the skill and the demands of achieving the goal or skill places on the learner.

Fatigue: Fatigue sets in when physical activity while working to achieve a goal or skill continues for a long period of time. This can have a significant impact on one's ability to continue working toward achieving the goal or skill. For example, the learner can experience a decrease in awareness; slowing down of both reaction times and speed of movement; disruption of timing; and a general disorganization of thought and physical performance. This can be mental and/or physical fatigue.

Vigilance: Refers to one's ability to maintain attention, awareness, and response to outside stimuli over a period of time. Vigilance ensures one's response to the outside stimuli occurs, is appropriate, and is timely.

Gender: Gender has an impact on the motor skill development timeline. For example, girls develop fine motor skills earlier than boys. While boys ae practicing object manipulation much sooner when compared to girls of the same age.

Pedagogical Principles & Facilitator Prep

Pedagogical Principles

Pedagogical principles are fundamental truths about the practice of teaching. These principles do not outline or provide any method of content or skill delivery nor do they provide a method of teaching. Instead, these principles are designed to underpin the implementation of a curriculum. In other words, these principles leverage what is known about how people learn and what the brain science research indicates with regard to how people retain information in long-term memory.

World Academy of Safety & Health (WASH) Junior Lifeguardshas developed the following pedagogical principles as an indicator of good teaching and learning. These items should not be treated as a checklist when delivering lessons – these items, instead, are the fundamental truths and what underpins the practice of teaching.

- Focus on the purposes of the curriculum
- Challenge the learner(s) to sustain efforts to achieve a goal
- Employ various teaching techniques that address multiple learning styles
- Promote problem solving where appropriate
- Draw on and build upon the learner's previous experience and knowledge base
- Create authentic and/or real-world contexts
- Utilize informal and formal assessment tools
- Make connections between skills, areas of learning, and the learner's experience and knowledge
- Encourage learner (if age appropriate) to take responsibility for his or her own learning
- Support social and emotional development as well as positive and healthy relationship building
- Use positive reinforcement

World Academy of Safety & Health (WASH) Junior Lifeguardsbelieves a good instructor, for example, understands that challenging the learner(s) underpins good teaching. But, this knowledge does not tell an instructor whether a learner needs a moment in silent thought, reflection, or time to process information or that challenging the learner in that moment or on that day is not in the best interest of the learner. This comes from a deeper understanding the instructor has for the most effective methods of learning for the specific learner(s) the instructor has in front of them. This, in turn, is informed by the instructor having a clear understanding of how information is retained in one's long-term memory.

Feedback

Feedback is the response provided to a learner as he or she performs a set of activities to achieve a goal or task – it can be either positive or negative. It is information that the learner usually internalizes and processes as an indicator of his or her level of performance or ability level in achieving the specific goal or task at hand.

There are two general types of feedback a learner receives:

1.) **Inherent** – This feedback occurs after completing the activity or skill. It is sensory information that the learner receives and is an indicator of his or her progress toward a specific goal. For example, a person in a swim lesson may know he or she made a mistake if he or she is unable to remain afloat while engaging with a swim stroke. Another example might be a diver who knows he or she made a mistake because, when entering the water, he or she felt pain or the splash was undesirable.

2.) **Augmented** – This feedback supplements the inherent feedback. In other words, the instructor may provide verbal feedback in the form of positive reinforcement when the learner properly and efficiently executes a skill in the water. Another example may be when the instructor provides the learner with verbal or written constructive criticism aimed at helping to improving a skill so that the time to mastery of said skill is decreased. Indirectly, this feedback should also increase the learner's overall performance.

Facilitation

A skilled facilitator is able to effectively engage the learners with the content while maintaining a student-centered approach. When facilitating learning, ensure the environment is a safe space for the sharing of information. When comfortable, people are more open to the process of learning.

Behaviors of a good facilitator:

- Acts as a servant-leader teacher – focuses on the success of the students
- Understands the difference between student-centered and teacher or instructor-centered approaches to teaching and learning
- Leads the students to the information .
- Asks guiding questions – keeps discussions effective and productive
- Assesses students on application of the skills and information as opposed to memorization of facts
- Creates an inclusive environment
- Effectively and clearly communicates directions
- Joins conversations as a neutral party and elicits student participation
- Makes the process of learning easier
- Link the course objectives to the course activities
- Provides coaching in order to reach a desired outcome for the students

Progressive Skill Building

The process of skill building and development begins with identification of both skill gaps or areas for improvement as well as key competencies (i.e. skills and abilities) of the learner. The instructor then develops a plan to address the gaps and develop the skills within the area(s) in need of improvement.

According to psychiatrist, Milton Erickson, "the process of learning and skill development in any area has four stages: unconscious incompetence, conscious incompetence, conscious competence, and unconscious competence"[7].

Unconscious Incompetence: As the saying goes, this is when one does not know what he or she does not know. In other words, the individual is clueless about his or her inability and/or lack of skill. Thus, the learner expresses no interest in doing anything differently or engaging in any learning process to correct the skill.

Conscious Incompetence: Eventually, learners move to a point of recognizing his or her own incompetence as it relates to ability or a skill. The learner tends to recognize the value of learning how to execute the skill differently. Thus, the learner is more apt to engage in the necessary practice as outlined by an instructor.

Conscious Competence: The learner has the desire to improve his or her skill level and is willing to practice building and developing the skill(s). At this level of development, the learner must still focus and be intentional about every aspect of learning and practicing.

Unconscious Competence: The learner is now able to perform the skill at such a high level that he or she rarely needs to think about what to do, how to do t, or when to do it. Instead, the learner's ability to execute the skill is natural.

Progressive skill building is when one learns individual and/or smaller subsets of skills that are part of a larger systemic program of skill development. This type of skill building is most effective when the practice of skills s continually measured and the level of difficulty of the practice or of the skill drills is adjusting according to the learner's present ability specific to each skill or smaller subset of skills.

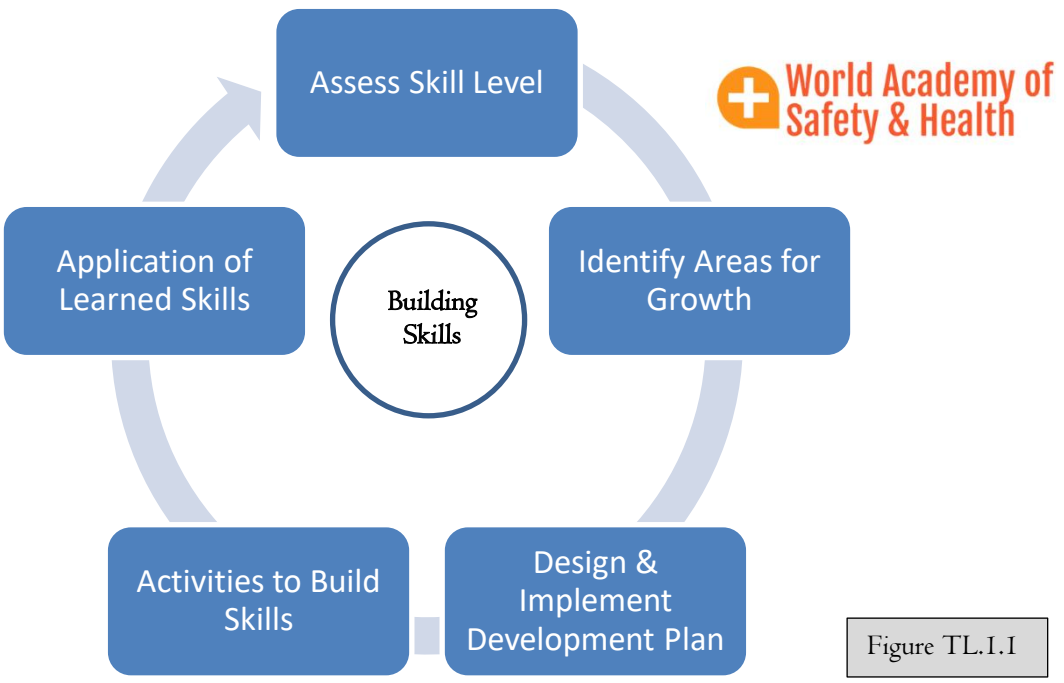


Figure TL.1.1

SMART Goals

The acronym SMART when referring to goals stands for: Specific, Measurable, Achievable, Relevant, and Time-Bound. These parameters are assumed to help one attain better results and provides the learner with a sense of direction. Generally speaking, setting SMART goals allows one to plan out the steps necessary to work toward and achieve a goal or, in our case, develop a skill.

Specific: What needs to be accomplished? What steps must be taken to achieve the goal?
Measurable: One's goal(s) must be quantified so that progress toward the goal(s) can be tracked. Setting up benchmarks along the way s a convenient way to measure progress during the process.
Achievable: One's goal(s) should be realistic and something the person can reasonably expect to achieve.
Relevant: Why is one setting the goal he or she is setting? Is it related to a bigger picture? Is the goal helping one work toward a larger goal or skill?
Time-Bound: In order for progress to be measured, the goal(s) must be achievable within a certain set amount of time.

Effective Communication Strategies

Successful instructing requires a 50:50 ratio of content knowledge to good communication skills. Effective communication has both verbal and non-verbal components. Body language and general demeanor has as much impact on instructor's effectiveness as all of the other verbal skills.

Verbal skills that impact one's ability to effectively communicate and positively impact student learning:

- Speaking clearly, loudly and concisely
- Actively listening
- Speaking in full sentences with well-developed and well-organized thoughts
- Speaking at a pace that allows students time to process the information being shared
- Providing students with positive feedback.
- Establishing a rapport with students through use of your sense of humor

Lesson Plan Design

Warm-Up/Drill: The Swim Lesson Instructor (SLI) can chose to engage participant(s) in an activity that asks him/her/them to call upon prior knowledge to answer questions and/or perform a physical skill(s). The activity should be age and swim lesson program and level appropriate This is a great way for the SLI to informally assess each participant's knowledge and skill level.

Prior Knowledge/Skill Review: The SLI should briefly review the knowledge gained and skills acquired during the previous lesson. The SLI may choose to present this in any one of multiple ways: informal discussion; informal guided question and answer; demonstration of skills; peer to peer practice.

Introduce New Knowledge/Skill: The introduction of new skills can be approached in one of several ways and the SLI should gauge the overall "personality" of the group along with the experience level of participant(s) as a guide in making a decision as how best to present new skills(s). The SLI can:

- Verbally explain the skill(s)
- Demonstrate the skill(s)
- Allow participant(s) to try the skill as you are verbally explaining it
- Show a brief video clip of the skill being executed
- Explain, demonstrate, re-explain

Practice New Skill: Once the introduction s completed, participant(s) should be provided time to practice the new skill(s). This should be accomplished by first using guided practice followed by peer-to-peer practice (if and when age and lesson/level appropriate). The complexity of the skill and participant(s) experience and skill level are, typically, the determining factors for the amount of practice time required. However, this is not an exact science and the SLI should rely on his/her own assessment of participant progress. The SLI should remember that the "chunking" of material is a

Knowledge/Skill Assessment & Exit Ticket:

Participant practice with SLI feedback are critical components of each lesson and the SLI should make all reasonable efforts to provide feedback during each part of each lesson.

The WASH Swim Lesson Program is progressive in nature. Therefore, the SLI must always remember:

- Skills presented in previous lessons into all future lessons (whether explicitly listed in lesson plan or not)
- The sequence of the presentation of skills is designed to build upon what was previously taught
- No participant should be moved along in the program unless and until the skills at the current category and level are performed to standard
- SLI should freely split lessons in this manual into multiple lesson sessions as needed and should also freely repeat lessons as many times as s needed for the participants t become proficient with the skills presented in the lesson
- To provide positive reinforcement and continual verbal praise to participants

Group C - Juniors

PART III

Intended Audience

School-aged children between approximately ages nine through eleven (9-11) (lesson plans and activities can be modified and adapted for both younger and older participants as needed).

Sample Lessons/Sessions

LESSON/SESSION ONE TOPIC(S): Identify local swimming areas/facilities; safety/danger signage; dangerous conditions; and rip currents.
Equipment
• Pictures of Rip Currents • Videos of Rip Currents • Pictures of Signage • Videos and Pictures of various swim kicks
Skills, Knowledge & Activity(s)
Identify local swim areas and facilities
Identify guarded and/or safe swim locations
Identify dangerous water and/or swimming conditions
Identify rip current
Explain how to escape a rip current
Identify & explain safety signage
Explain basic swim kicks to include: flutter, egg-beater. scissors
Explain basic swim arm movements to include: breaststroke arms, doggy paddle arms, etc
Rip Current Educational Video Clips: What is a rip current? (noaa.gov) Break the Grip of the Rip | Ocean Today (noaa.gov) Rip Current Survival Guide | Ocean Today (noaa.gov)

LESSON/SESSION TWO TOPIC(S): Identify rescue equipment; Explain and demonstrate tossing assists; Communication with victim(s)
Equipment
Rescue equipment – ring buoy, rescue tube, rescue line, life jacket
Skills, Knowledge & Activity(s)
Identify and explain how each piece of rescue equipment is utilized
Demonstrate, Explain, Practice, Demonstrate various tossing assists
Demonstrate, Explain, Practice, Demonstrate effective communication with potential victim(s)
Explain how to assess an emergency; preserve personal safety; and initiate an assist

LESSON/SESSION THREE TOPIC(S): Identify key components of water awareness and safety; Explain/Communicate to others water safety tips and best practices; Identify non-water safety guidelines when planning to swim outdoors
Equipment
Paper; writing utensils (markers, crayons, colored pencils); laptops/tablets/smartphones (optional);
Skills, Knowledge & Activity(s)
Identify whose safety is paramount during any water assist and/or rescue

Working in small groups:
• Identify a minimum of two water awareness and safety messages to communicate to a targeting audience (i.e. teenagers, adults, vacationers, etc)
• Design a posterboard, video clip, or similar media that:
  • Communicates your safety message
  • Includes at minimum five (5) scenes
  • Includes written descriptions and/or voice recordings
• Your presentation should "catch the attention" of viewers so that your message is effectively communicated
 	
You may choose to include music, voiceovers, pictures, etc…...

All projects should be presented to the group

LESSON/SESSION FOUR TOPIC(S): Design a piece a water rescue equipment; Develop a set of safety rules for a swimming pool facility and another set for a beach or similar open water environment
Equipment
Paper; writing utensils (markers, crayons, colored pencils); laptops/tablets/smartphones (optional)
Skills, Knowledge & Activity(s)

Working in small groups:
• Design a piece of rescue equipment that includes:
  • Purpose or use for the equipment
  • Equipment specs (i.e. length, width, weight, colors, etc) and material composition
  • Name of the new equipment
  • Functionality & Features (i.e. speed, power source, optional attachments, manner of control, maintenance requirements, etc)
  • How the equipment assists in the execution of the rescue

Examples of equipment to help in brainstorming & design: E.M.I.L.Y. | EMILY Rescue Robot | United States (emilyrobot.com) About MARSARS® Water Rescue Systems

LESSON/SESSION FIVE **TOPIC(S): Develop a set of safety rules for a swimming pool facility and another set for a beach or similar open water environment; Design a water awareness and safety presentation to be given to a classroom of students; Role Play:**
Equipment
Paper; writing utensils (markers, crayons, colored pencils); laptops/tablets/smartphones (optional)
Skills, Knowledge & Activity(s)

Working in small groups:
• Develop a set of pool rules (at minimum 10 rules) to be posted n a swimming facility.
• Design a water awareness and safety message that includes:
  • Identifying the type of swimming area
  • Identify the hazards and/or dangers specific to the area
  • Identify any safety equipment at or near the swimming area
  • Identify precautions swimmers should take in the area
  • Explain what to do in the case of an emergency

Sample Activities

UNDERSTANDING WATER FLOW **TOPIC(S): Understand the flow of water and relate it to ocean or other open water currents (i.e. rip currents)**
Equipment
PVC pipe with top half removed OR pool noodles with top half removed OR other long hollow objects; glue/waterproof tape/duct tape; jars/buckets/pitchers; water source; sloped or inclined area (use wood bord if needed to create a slope)
Skills, Knowledge & Activity(s)
• Use materials to create a "river", "current", or other steady fast-moving flow of water • Use a bucket or other container to catch the water at the end of the flow • Place small objects in the water flow to simulate people or other objects in a current (i.e. rip current) • Align multiple "water flow" designs adjacent to one another to compare the rate of the water flow of each design • Adjust the slope(s) of the water flows to illustrate the change in flow rate(s)

TOSSING ACTIVITY **TOPIC(S): Familiarize oneself with and practice the tossing motion that would be used in the case of a water-related emergency to deploy a ring buoy, life vest, or other flotation device**
Equipment
Ring buoy with attached line OR water balloons OR athletic balls (basketballs, soccer balls, volleyballs, etc) OR empty gallon milk jugs (or similar empty plastic containers); open area (preferably outdoors); a swimming pool or other rea with access to shallow water; 3 meters (~9 feet) of rope per empty milk jug
Skills, Knowledge & Activity(s)
• Practice tossing underhanded a ball back and forth between classmates starting at a distance of 1 meter (~3 feet) and moving further apart with each successive toss until approximately 3 meters (~9-10 feet) apart • Practice tossing underhanded a water balloon and forth between classmates starting at a distance of 1 meter (~3 feet) and moving further apart with each successive toss until approximately 3 meters (~9-10 feet) apart • Tie 3 meters (~9 feet) of rope to an empty milk jug • Fill the empty milk jug ¼ to ½ full of sand • Practice tossing underhanded the milk jug into the water and pulling it back to the pool or water's edge • Practice tossing underhanded a ring buoy into the water and pulling it back to the pool or water's edge

BUOYANCY TOPIC(S): Understanding the principles of buoyancy; Understanding what can assist someone in trouble in the water;
Equipment
Classroom, school, or household items; container to hold water (i.e. cooler, tub, pool); water source
Skills, Knowledge & Activity(s)
• Collect 3 items from around your classroom, school, or house (that CAN get wet) that you think can float • Collect 3 items from around your classroom, school, or house (that CAN get wet) that you think cannot float • Collect 2 items from around your classroom, school, or house (that CAN get wet) that you think can be used to assist a struggling swimmer

REVIEW/REFLECTION QUESTIONS	ONGOING

Safety on Water

What are three "survival swim strokes"?

1.) _____

2.) _____

3.) _____

Swimming Pools

Provide three general water awareness and safety rules/guidelines and/or best practices when around swimming pools:

1.) _____

2.) _____

3.) _____

What are two "need to knows" when visiting a swimming pool facility for the very first time?

1.) _____

2.) _____

Open Water Environments

List and describe three ways in which one can provide assistance to another who is struggling in the water:

1.) _____

2.) _____

3.) _____

Provide three general water awareness and safety rules/guidelines and/or best practices when around the ocean or other open water:

1.) _____

2.) _____

3.) _____

If you find yourself in trouble in the open water, what should you do to try to get help?

_____

_____

_____

What should you do if you ever find yourself in a rip current?

_____

_____

_____

What should you do if ever caught in a river current?

_____

_____

_____

Water Around the Home

What are two areas in or around your house that could present water-related dangers or hazards?

1.) _____

2.) _____

What are two rules and/or guidelines related to backyard, at-home swimming pools?

1.) _____

2.) _____

REFLECTION & TASKS	ONGOING
Part I	
Today, I learned: _____ _____	
Part II	
Today, I learned: _____ _____	
Part III	
Today, I learned: _____ _____	
Part IV	
Today, I learned: _____ _____	
Part V	
Today, I learned: _____ _____	

Tidal Water

Tidal Cycles

The Earth is not a perfect circle or sphere. For this reason, not every geographic area on our planet experiences the same tidal cycles. If the Earth was a perfect circle then all regions of the world would experience two equally proportioned high and low tides in each 24-hour period of time.

As the Earth rotates, large landmasses (i.e. continents) prevent the tidal bulges from moving west. Therefore, this water is unable to freely and, hence, establish unique tidal patterns in each ocean and/or in different regions of the same ocean[21].

Semi-Diurnal Tides – The most common tidal pattern. High tide and low tide occur twice during a 24-hour period of time and the variation in height of each successive high and low tide is minimal. This is typically found on the east coast if the United States.

Diurnal Tides – High and low tide each occur once during a 24-hour period of time. This is typically found in the Gulf of Mexico.

Mixed Tides –. This is typically found on the west coast of the United States as well as many Pacific islands.

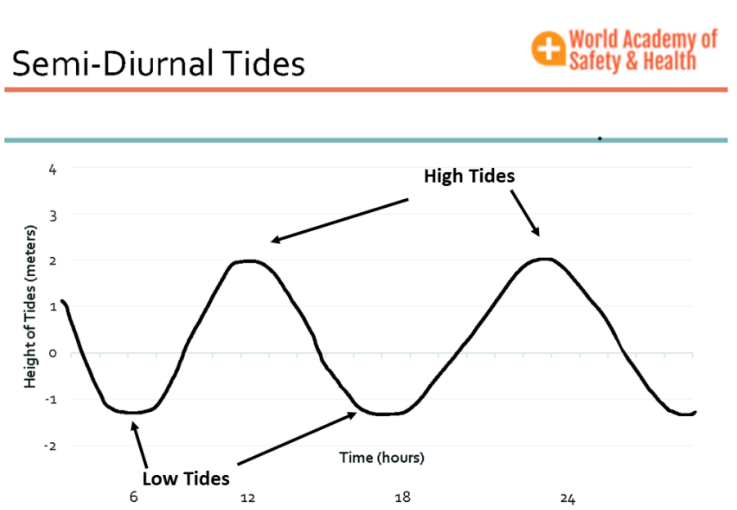
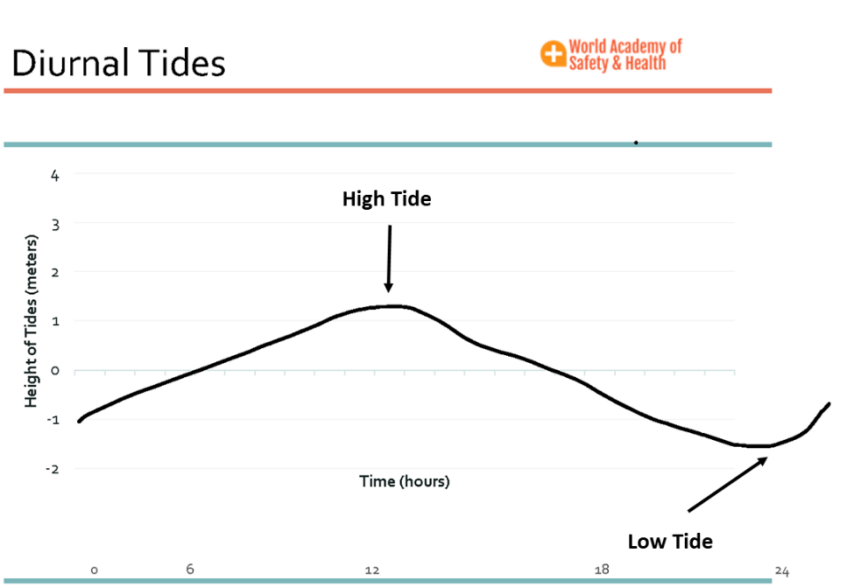


Figure C2.1



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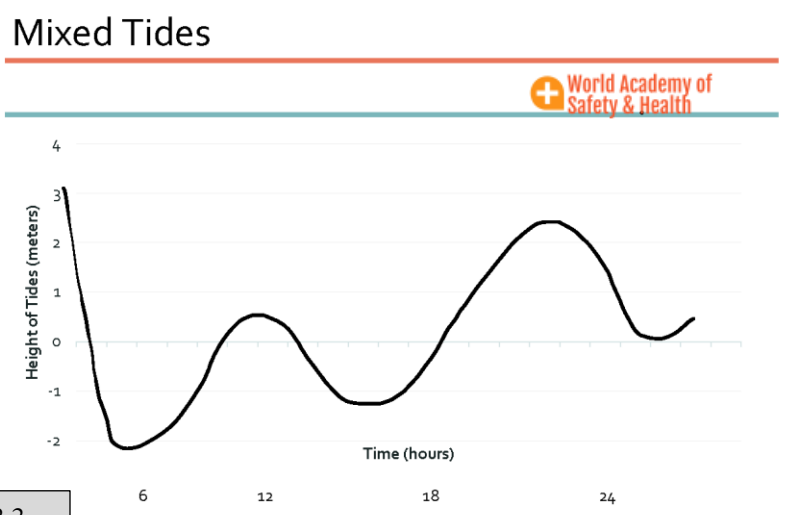


Figure C2.2

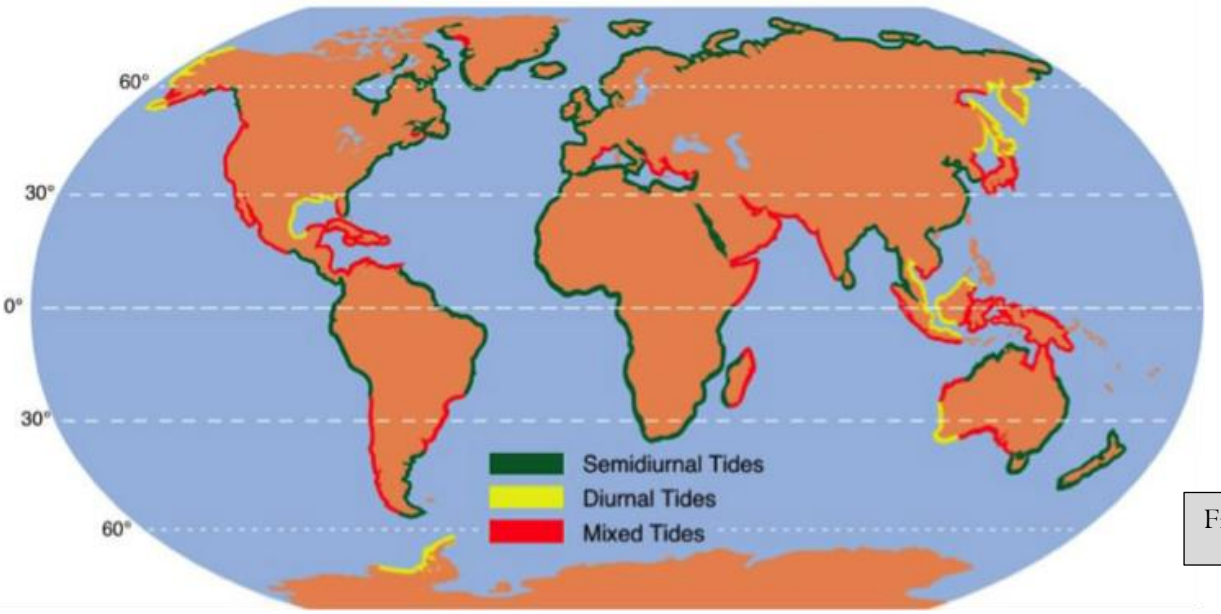


Figure C2.4

Waves

Ocean waves all share the same characteristic component parts. These include:

- **Crest** – the highest point of a wave
- **Trough** – the lowest point of a wave
- **Height** – the distance between the crest and the trough
- **Amplitude** – the distance between the crest or the trough and the resting position of the water's surface
- **Period** – the time between two consecutive wave crests
- **Frequency** – the number of waves that pass by a fixed position in a given amount of time

Wind waves are caused by a friction between the local winds and the surface of the water.

Swell waves or ground swell are generated by the wind associated with distant weather systems. Local winds have little to no impact on swell waves.

Ocean Currents

According to the National Oceanic Atmospheric Administration (NOAA), an "ocean current describes the movement of water from one location to another. Currents are generally measured in meters per second or in knots (1 knot = 1.85 kilometers per hour or 1.15 miles per hour)[18].

Rip Currents

A rip current is when a volume of water flows away from the beach or shoreline in a narrow channel. These currents, typically, occur at surf beaches where there is a gap or split in a sandbar and/or near other structures such as a jetty, dock, pier or similar object. They are surface currents and can only pull a swimmer away from the shoreline – they do not pull a swimmer under the water.

> *Rip currents can form in a gap between sandbars, piers, or parts of a reef. Such underwater obstacles block waves from washing directly back to sea. The water from these waves, called feeder waves, runs along the shore until it finds an opening around the obstacle.*
>
> *The stream of water, now a rip current, rushes to the opening, just like water down a drain. A rip current flows more quickly than the water on either side of it, and may stir up sediment from the beach. This sometimes makes rip currents easy to spot as dark or muddy lines running from the beach out toward the ocean. Rip currents are also usually more calm-looking than the surrounding water. Once past the obstacle (between the sandbars or piers), a rip current loses pressure and stops flowing*[15].

Often times, rip currents and undertows are confused with one another. Unlike rip currents, an undertow is an ocean current that flows along the bottom of the water column. An undertow can also pull a swimmer beneath the water's surface[15].

Rip currents can be as narrow as 10 feet in width but can also be as wide as 100-200 feet in width. The water is usually moving 1-2 feet per second (approximately 1.09-2.19 kilometers per hour or .59-1.18 knots) but, can be as fast as 8 feet per second (approximately 8.8 kilometers per hour or 4.74 knots)[18].

Why are Rip Currents Dangerous

- Rescues performed at surf beaches, over 80% of the time, are the result of rip currents[18].
- Pull people away from shore no matter the person's swimming ability.
- Can appear, disappear and reappear at a moment's notice and can also increase in strength at any moment.

How to Recognize a Rip Current

- Cloudy, murky, and/or discolored channel of water
- Flattened area of water within the breaking waves
- Outward flow of water while the flow of water on either side of the narrow channel in question is flowing inward. This is most often identified by a line of debris, seaweed, foam or other objects moving away from the shoreline in the channel.
- The outward flow of water is choppier than the surrounding water.

Escaping the Pull of a Rip Current

- Relax and float until the current ends – the longer rip currents extend only a few hundred feet from the surf zone and weaken as they move farther from the shoreline.
- Never attempt to swim against the outgoing current – you will likely tire quickly.
- Once 'released' from the pull of a rip current, swim parallel to the shore until well clear of the current. Only then should you begin swimming toward the shoreline.
- Sometimes the current weakens enough and/or circles back to the shoreline while you are floating to allow you to swim back to the beach.

Figure C2.5

Figure C2.6

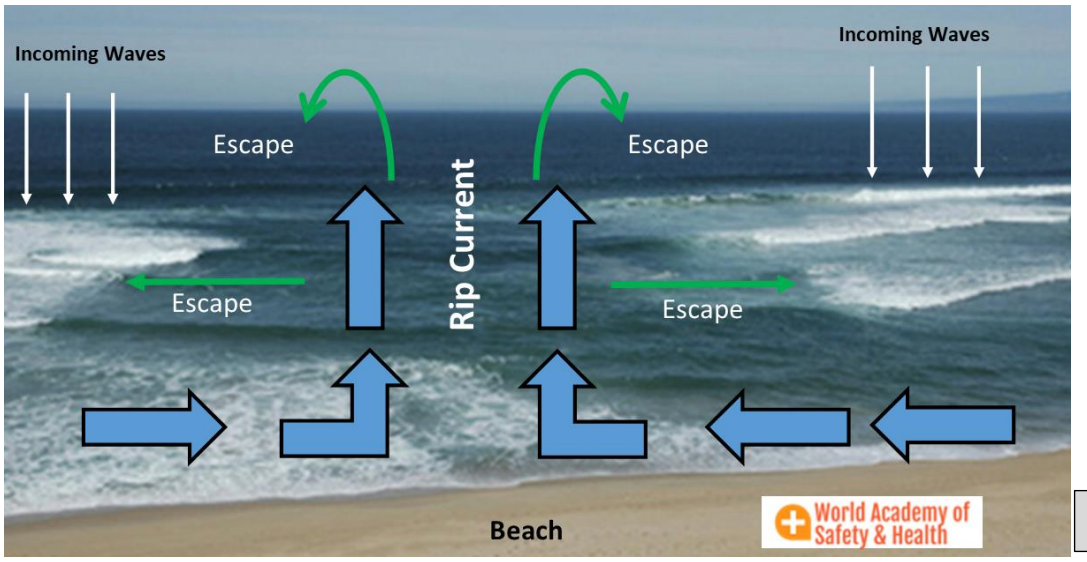


Figure C2.7

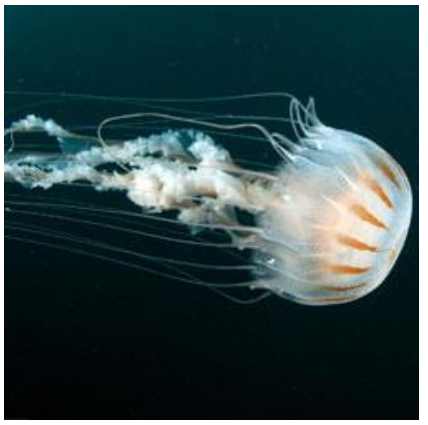
Longshore Current

When a wave reaches the beach, there is a release of a tremendous amount of energy that, in turn, creates a current that flows alongside or parallel to the coast within the area of breaking waves. This current moving along the shoreline is called a longshore current.

The velocity of a longshore current is influenced by several factors all having to do with the original wave reaching the coast (i.e. the velocity of incoming wave, angle of the incoming wave, slope of the ocean floor leading up to the beach). For example, the steeper the angle of the breaking wave or the steeper the ocean floor then the resulting longshore current will travel with greater velocity.

A wave breaks and runs up the beach and then begins to recede down the beach and back into the water. Longshore currents move onto the beach and then away from the beach as a "sheet" of water taking with it sand and other debris from the beach and can lead to beach erosion. This movement of sand, debris, and other sediment is referred to as longshore drift.

Marine & Aquatic Life & Creatures



Jellyfish

These squishy critters injure beach-goers far more often than any other type of sea life. Since a sting from jellyfish tentacles can prove painful even when the creature is dead, smart beach-goers everywhere give them a wide berth both in the water and along the shore. The U.S. National Library of Medicine, National Institutes of Health, offers advice on how to treat jellyfish stings.

Sea Urchins

Step on one of these spiny round invertebrates and you'll be sorry! Most common in shallow waters near sandy or rocky shorelines and on subtropical coral reefs, urchins inflict a painful wound when a spine penetrates human skin. The U.S. National Library of Medicine, National Institutes of Health, offers general advice on how to treat a wide variety of animal stings or bites.

Lionfish

Widely established along the East Coast, Caribbean, and the Gulf of Mexico, these showy swimmers are lovely to look at but tricky to touch. The lionfish's spines deliver a venomous sting that can cause extreme pain, sweating, respiratory distress, and even paralysis. So unless you're an expert, don't touch them. If you are unlucky enough to get stung by a lionfish, seek immediate medical attention. The U.S. National Library of Medicine, National Institutes of Health, offers advice on how to treat lionfish stings.

Stingray

Common throughout the Mid-Atlantic, Southeast U.S., Caribbean, and Gulf of Mexico, stingrays often swim within a few yards of shore, where they prey on tiny fish and shellfish. They are known to lie on the bottom and cover themselves with sand, which is how most people get stung. Stingrays are not aggressive, but if you follow one too closely, you run the risk of catching the business end of the stingray's sharp, painful stinger. Anyone stung by a stingray should visit the nearest medical facility as soon as possible. The U.S. National Library of Medicine, National Institutes of Health, offers advice on how to treat stings from a stingray.

Sharks

Shark attacks are rare. Make yourself less vulnerable to one by staying out of the water at dawn and dusk, when sharks are most active. You should also stay out of the water if you have any open wounds. It goes without saying that if you see a shark swimming nearby, leave the water as quickly and quietly as you can. Then, inform your fellow beach-goers and the closest lifeguard.

It is important to always observe posted signage and stay away from hazardous marine life. Do not touch any living or dead marine life that is considered hazardous – this includes parts of the marine life that may have detached, broken apart, or that has been severed.

Animals are not the only living organism or sea creatures that can pose a hazard while at the beach, in the water, and/or walking along or otherwise enjoying the shoreline. Certain coastal or marine plant life can also cause one harm. One example is fire coral which can be found in the Atlantic, Indian, and Pacific Oceans as well as in the Caribbean Sea. Though this develops and forms coral features, it is more closely related to jellyfish in that it has tentacles that, when contacted by a person, create a burning sensation similar to a jellyfish sting. In many cases, the tentacles or brushes of fire coral are so small they are not able to be seen.

Sun Protection & Skin Health

"Skin cancer accounts for almost half of all cancers diagnosed in the United States, and there is both direct and indirect evidence that sun exposure can cause skin cancer" [1, 2].

Preventions

- Sunscreen (30+ SPF) & reapply
- Hydration
- Shade/Use of Umbrellas
- Sunglasses
- Hats & Visors
- Sun protecting clothing (i.e. UPF shirts)
- Use of UPF gaiters

Remain Healthy

Protecting oneself s important and cannot be overstated. This protection includes preventative measures to eliminate or at least mitigate skin diseases such as all forms of skin cancer. Generally speaking, medically-related concerns are best treated when there is early detection – longer inaction can lead to far less available effective treatments.

What each individual lifeguard can do to help him/herself:

- Schedule regular skin cancer screenings
- Create preventative health plan
- Have a physician (dermatologist)
- Visually inspect your skin each month

Many lifeguard organizations are now very progressive in terms of approach to skin care. For example, many uniforms issued by lifeguard employers now include UPF long sleeve shirts with built-in gaiters and/or hoods; hats with large brims to protect one's neck, face, and ears; and unlimited supplies of sunscreen.

Oceanography & Marine Science

Ocean Facts

- Ocean covers over 70% of earth's and approximately 140 million square miles.
- Only about 5% of this area has been explored by scientists to this point.
- First known ocean life was approximately 3.1 billion years ago.
- There are approximately 250,000 different ocean species.
- It is estimated there are between 650, 000 and 800,000 additional ocean species yet to be discovered.
- Commercial fishing industry accounts for, by many estimates, the largest amount of protein consumed by humans worldwide.

Intertidal Zone

This is the area where the ocean meets the land (i.e. the beach) between successive high and low tides. Intertidal zones exist any coastal environment in which the ocean meets the land whether a sandy beach, rocky cliffside, and/or mudflats. The size of an intertidal zone varies from one location to another and can change within the same environment s a result of the crashing waves, moving water, and/or tidal action.

Characteristics of an intertidal can include:

- Submerged during high tide
- Exposed during low tide
- Intertidal zone composition, layout, and ecosystem can change frequently as a result of crashing waves

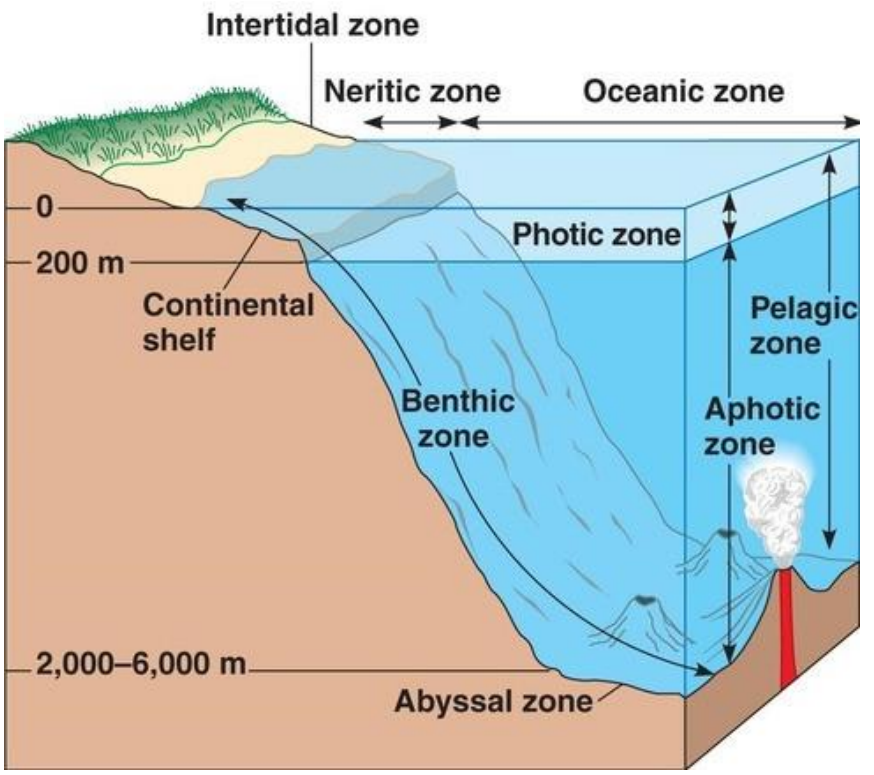
There are generally three zones within an intertidal zone. These are the low, middle, and high areas or zones and are based upon the overall average exposure of the area. The low area is only exposed during the period of time in which the tide is at its lowest point; the middle area is regularly exposed and, subsequently, submerged during the tidal cycles; and the high zone is regularly and only covered when the tide is at its highest point.

Organisms existing in an intertidal zone must be able to withstand harsh conditions – they have adapted to be able to handle the extremes that any intertidal zone presents. Many of these organisms, depending upon the area of the intertidal in which they exist, must be able to live and thrive in a watery environment (at high tide) and in a gaseous environment (at low tide).

Ocean Zones

In addition to the intertidal (discussed above), there are five (5) other zones in the ocean. The neritic and oceanic zones describe areas that extend horizontally away from the shoreline. The photic, aphotic, and benthic zones describe areas that extend from the water's surface vertically downward into the depths of the ocean.

1.) **Neritic Zone:** this is the area over top of the continental shelf. Comparatively speaking, the water within this zone is not very deep. This zone is shallow enough to be plentiful in sunlight and, thus, plentiful in nutrients which leads to an abundance of organisms.
2.) **Oceanic Zone:** this is the area beyond the continental shelf. Comparatively speaking, the water within this zone can be very deep. The depth of the water can, therefore, limit the amount of sunlight that is able to penetrate the water and, thus, both nutrients and organisms may be in short supply within this zone.
3.) **Photic Zone:** this is the zone from 0-200 meters of water depth. For the most part, sunlight is able to penetrate the water within this zone, thus leading to photosynthetic reactions and more organisms when compared to the aphotic and benthic zones.
4.) **Aphotic Zone:** this zone is below the 200 meter mark and, thus, has limited sunlight and photosynthesis cannot take place. Given the limited number of organisms, food can be scarce and most organisms eat one another and/or whatever may drift (or sink) down from the photic zone.
5.) **Benthic Zone:** this zone is considered the ocean floor (the bottom). This is, of course, the deepest part of the ocean and has no sunlight, no photosynthesis, and very few organisms,



Sandy Shorelines

A sandy beach is created over very long periods of time and is the result of erosion and weathering that can include wind, rain, and other forms of friction on the landmass. The by-product, called sediment, of the erosion is deposited into the ocean and can then be transported very long and/or short distances by the wind and currents. Eventually, this sediment is deposited back on the land helping to form a beach and/or sandy shoreline. The composition, color, and size of each individual piece of sediment can be different and is largely determined by the amount and duration of the erosion and weathering as well as the origin of the sand/sediment.

There can be other components of a sandy beach. For example, the sand on beaches may also be composed, in part, by sediment created from erosion of offshore coral formations. Or, black sand beaches were created by hardened lava that then eroded many years ago.

Sandy beaches never remain the same – the natural elements (i.e. tides, wind, rain) are causing constant changes to the contour, shape, and size of sandy beaches. This constant movement can result in the formation of and/or disappearance of: sandbars; sand dunes; and tide pools.

Not all sandy beaches exist in the same, or even similar, climates. Temperatures can range form frigid and arctic to hot and tropical. The manner in which these sandy beaches were formed remains the same. However, the organisms found in, on, or around these beaches changes based the climatic conditions.

Coastal Lands

All coastal land formations result of various geologic processes (i.e. waves & currents, wind, rainfall, climate) and the types of sediments present.

Waves: A wave is a vibration moving through the water causing the water to move up and down. Eventually and when the wave (the vibration) enters shallow water and interacts with the ocean floor, the top of the wave folds over itself (wave break) and crashes creating white water and swift movement toward the shoreline. This action causes sediment from the ocean floor to become suspended within the water column and, thus, available to be moved from one place to another by ocean currents. Smaller waves tend to move sediment onto the land and contribute to making or increasing the size of sandy beaches. While larger waves like those seen during coastal storms (nor'easters, hurricanes, etc.) tend to move sediment from the beach and out to sea (coastal erosion).

Rip Currents: Rip currents are formed as a result of an upward slope of water on the beach. As a wave moves shoreward, it pushes water toward and onto the beach causing the upward slope. While the water is in this stage, the overall water level is slightly higher on the shoreline when compared to the water level beyond the breaking waves. The higher water then moves toward the open water and through the breaking waves in an effort to equalize the water levels. This seaward movement usually occurs in very narrow paths and can be moving at high rates of speed of up to tens of centimeters per second. These currents are able to carry a tremendous amount of suspended sediment and, many times, are seen as cloudy or murky "bubbles" or "lines" of water moving way from the shoreline.

Long Shore Currents: These currents are the result of breaking waves approaching the shoreline at an angle. This angled approach of the water creates a subsequent current that runs along and parallel to the shoreline and out through the incoming breaking waves. Longshore currents can move in either direction along the shoreline and this direction is largely dependent on the direction of the original wave approach. During times of heavy surf, longshore currents can "pick-up' the suspended sediment (discussed in the "waves" section above) and transport it from one place to another along the coastline. In many cases this process is influenced by the prevailing wind direction and strength.

Tides: Tides and regular tidal changes contribute significantly to the shoreline in two ways: 1.) they can transport large amounts of sediment at one time; and 2.) the action and power of the breaking waves on the shoreline can change the contour of the beach; influence land and beach formations such as sand dunes and tide pools; cause varying amounts of beach erosion; and have many other impacts to the land and property along a shoreline.

Climate: Climate includes such actions as temperature, rainfall, wind, and humidity. Hence, in many ways, climate encompasses many of the processes already discussed and

Temperature: the prevailing temperature of a coastal region is significant, especially in very cold environments. When the water in, for example, drainage basins, freezes it does not create and/or move sediment until it thaws in warmer spring/summer temperatures. If the water freezes in crevices of rocks in more temperate regions, the rocks could split, shatter, break off causing sediment that eventually is transported to the coastline.

Rainfall: rainfall is a form of weathering and works to erode the coastline. It also provides runoff via streams and rivers thus transporting additional sediment to the coastlines.

Wind: winds influence waves and, thus, are a key component in land formations along the coastlines.
Gravity: gravity causes a natural falling or downslope transport of rocks and sediment. Of course, gravity's influence on coastal land formations is more pronounced in areas with a rocky shoreline or cliffs that border the water.

Sea Grasses

Sea grasses are the only flowering plants in the marine environment and evolved from land plants approximately 90 million years ago. To date, scientists are aware of between 60-75 species of sea grasses. Most all of the known species are found in the shallow water of the back bays and/or other brackish (mix of fresh and saltwater that is more saline than freshwater but less saline than marine water) water.

Sea grasses can be found worldwide from the topics to the arctic areas (there are different species in different climates). Often times, sea grasses are found as dense meadows under the water and sometimes can be seen from space. They are considered one of the most productive ecosystems in the world providing food and shelter to microscopic invertebrates, large fish, marine mammals, sea birds, crustaceans, turtles, and more. Sea grasses help support the commercial fishing industry; have positive environmental impacts by taking carbon dioxide from the atmosphere; have a cleansing effect on surrounding waters; and support by biodiversity serving as a habitat and creating food sources for so many marine organisms both large and small.

Human uses of sea grasses include: fertilizer; household insulation; fill materials for industrial products such as car, plane, train, and boat seats; roofing products; components of furniture; and medical bandages.

Salt Marshes

A salt marsh is another coastal ecosystem that exists as a wetland that flood during high tides and drains during low tides. This process creates an environment in which there are large amounts of decomposing material that creates peat. This peat along with a thick deep mud compose the base soil within a salt marsh. Since salt marshes are underwater during high tides and then contain this peat (decomposing organic material), there are decreased levels of oxygen in salt marshes. In turn the oxygen is replaced with another gas, sulfur and gives rise to the rotten egg smell particularly during low tides.

Salt marshes are the breeding grounds and safety areas of the ocean environment. As such, they are responsible for providing shelter, food, and nurseries for approximately 70%-80% of all coastal species. Additionally, salt marshes are the protectors of human life, property, water quality, and coastal land. They serve to limit erosion by: creating a buffer zone against waves and tidal action; absorbing excess water from rain and flooding; and filtering runoff.

Barrier Islands

A barrier island is coastal land that formed as a result of long-term and repetitive wave and tidal action. They are composed primarily of sand and run parallel with the mainland. Barrier islands tend to have increased exposure to storms and other weather but serve to protect areas on the mainland.

Just as islands are surrounded by water, a barrier island, typically, has an inlet on either end; a back bay, salt marsh, lagoon, or other wetland on the mainland side; and an ocean or sea on the on-mainland side. Generally speaking and compared to islands, barrier islands are close to the mainland and, in most cases, are connected by way of a bridge or similar structure. Barrer islands can occur singularly but most commonly are found as a chain with between a few to dozens of islands occurring together in a single chain. A single barrier island can extend less than a mile up to approximately 114 miles.

Barrier islands can and usually do evolve as a result of various coastal processes. For example, severe storms could "cut" a new inlet while, essentially, splitting the barrier island. Storms and erosion could also have the opposite effect and permanently close an existing inlet in effect turning the barrier land into a peninsula.

Coral Reefs

Coral reefs are found in the world's oceans in tropical and sub-tropical regions. They are made up of calcium carbonate. Coral that is more rocky in structure provide the 'foundation' upon which the remaining portions of a reef formation lays or sets itself. Coral polyps form a living 'wrapping paper' over the calcium carbonate skeleton particularly on the upper levels of a coral formation.

A coral polyp is a living organism – an animal, in fact. A coral polyp is classified as an invertebrate meaning it does not have a backbone and can be as small as a pinhead and as large as 1-2 feet in diameter. Unlike many plants, animals cannot make their own food. As such, they must feed on other living organisms – many coral polyps eat zooplankton which are tiny, sometimes microscopic animals that are typically found drifting freely in the ocean. Other coral polyps can feed on tiny fish, random organic debris, and/or zooxanthellae (an umbrella term that describes all single-cell organisms).

The portion(s) of coral reefs that looks like a plant is the portion that is, actually, composed of the polyps. These polyps are soft and have the ability to be flexible but do secrete limestone that allows the polyp to develop a support structure. As a coral reef grows the individual polyps work together and build upon each other forming a polyp colony.

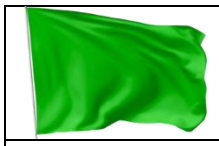
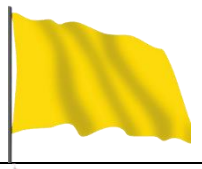
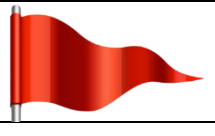
Coral bleaching is a problem facing reefs across the world. It is largely considered the result of pollution. The zooxanthellae mentioned earlier in this section has a symbiotic relationship (both the zooxanthellae and the polyps benefit from the relationship) with the coral polyps – the polyp gets food from the zooxanthellae while the polyp provides a 'house' for the algae. However, stressors can cause the coral polyps to react and push the zooxanthellae out. This causes a lack of color since the color comes from the algae. Hence, the term bleaching. But there is more to this process because pushing out the algae also results in the polyps having no food source. If this coral bleaching process goes on too long, it can result in irreversible damage and the colony will eventually die.

Beach Warning Flag System

Beach warning flag systems are designed to help the public in assessing risk prior to entering the water. With or without warning systems in place, swimmers and beachgoers should always be encouraged to check with the lifeguard prior to entering the water. Even the most experienced swimmers and/or those who feel they are familiar with the ocean should check-in with the lifeguard about current conditions. Further, every piece of beach is different and, therefore, presents unique hazards that may be specific to that beach and/or region. The local lifeguard service will have the most reliable, most up-to-date, and most detailed information about the ocean water and conditions.

Like other communication systems, it is important that the beach warning flag system is uniform and standardized. Standardization of the flag system with the various colored flags having the same meaning from one location to another serves to help limit public confusion. Thus, increasing overall public beach safety.

Use of beach warning flag systems begain in the state of Florida in 2005. At that time, it was used as a simple method of warning the public about the danger or liklihood of rip currents. Rip current risk is determined by a combination of the speed and direction of the wind; the tidal ranges; and the localized surf conditions. For lifeguards, the most important tool at their disposal are their eyes. Looking the water will quickly allow an assessment of it's current behavior.

	Safe to Swim
	Caution; Moderate Risks; Medium Hazard of Strong Currents and/or Heavy Surf
	Extreme Caution; High Risks; High Hazard of Strong Currents and/or Heavy Surf
	Dangerous Marine Life Present
	Extreme Danger and Swimming Area CLOSED
	Marks the Swimming Area with Lifeguards
	Watercraft Area
	Dirty Water

The standard flag colors and meanings for beachgoers. This system should be used on all beaches to increase overall public safety.
FIGURE C.4.2

A "Swimming Area" flag flying on a local beach. They should be attached to a 5-8 pole (PVC or wood) so that they are more easily seen from a distance on the beach. They should be placed deep enough each morning that they do not blow over and should be high enough up the beach so that the incoming tide does not wash away the sand in which they are posted.
FIGURE C.4.3

Recreational Activities

Free Swim

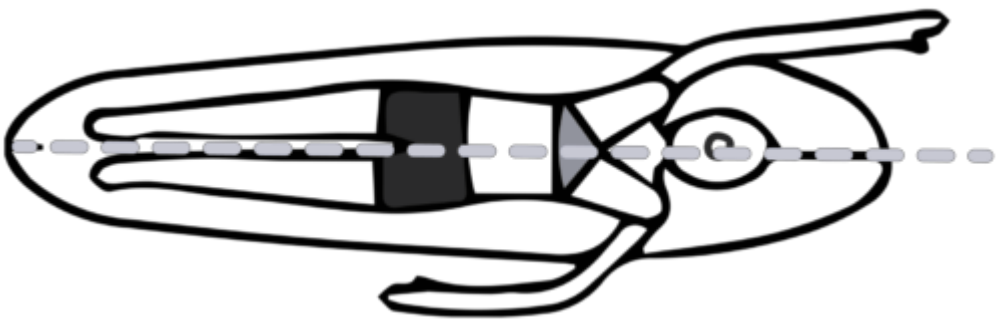
This is an opportunity for program participants to become more comfortable and at ese n the water. Under the guidance and supervision of program instructors and lifeguards (in the water for safety), participants should work to increase both his/her skill level entering the water and maneuvering within the surf zone. Instructors may also use this time to work in small groups and/or one-on-one with on the various swim strokes and other participant skills.

Basic Paddling

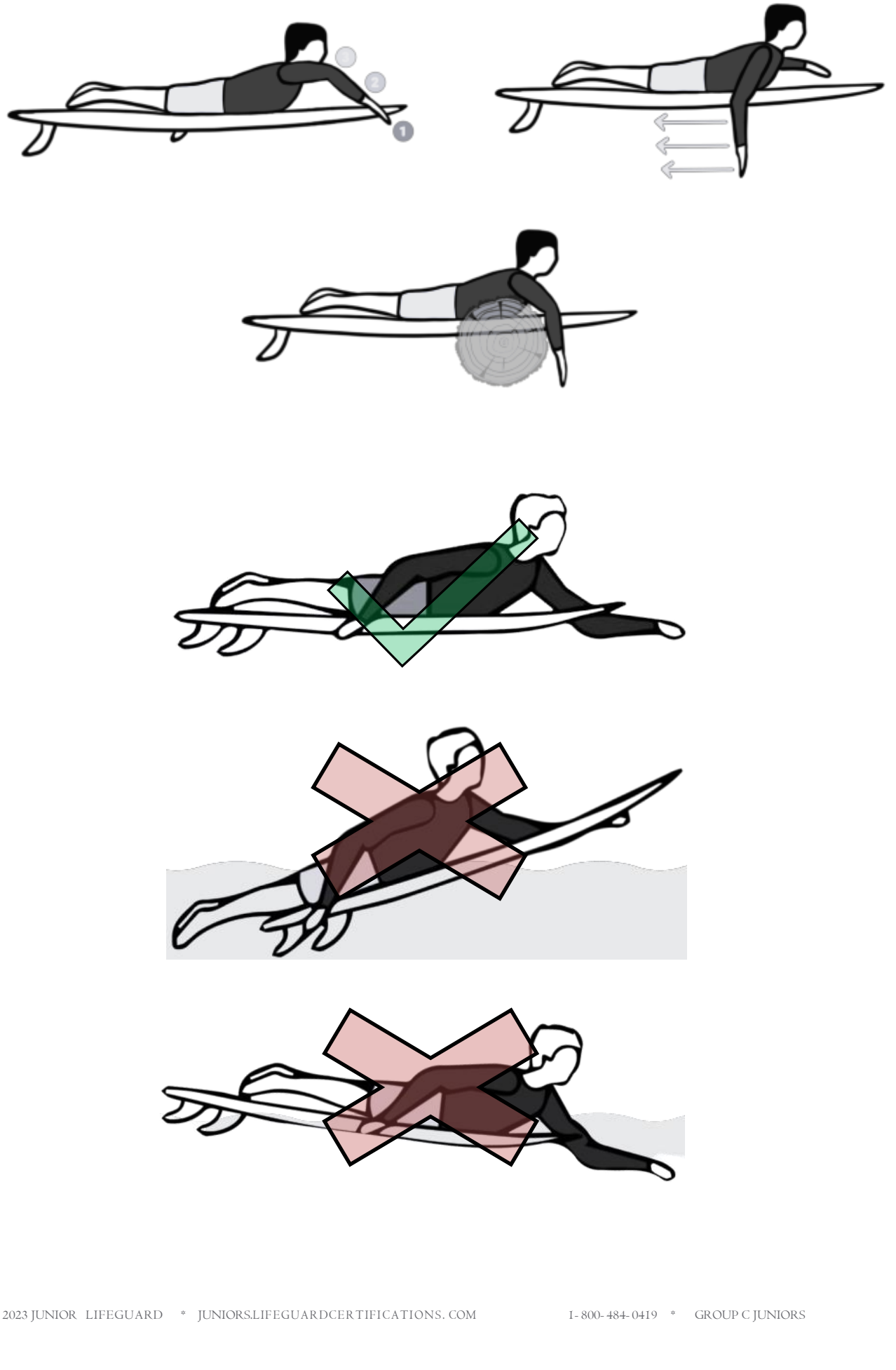
The goal for all paddlers on a rescue board is two-fold: to minimize drag and maximize propulsion.

I.) **Minimize Drag**:

- **Body Placement on Board** – The paddler's body must be in the correct spot on the rescue board (both from side to side and tail to tip or nose). If too far forward the nose of the rescue board may submerge and not only not be resistance free but also have a chance of submerging causing the paddler to fall from the board over the nose. Likewise, if the paddler is too far back on the board it is likely that the tail of the rescue board will partly submerge and the nose will elevate above the surface of the water – this will result in the pushing the water with the full surface area of the bottom of the board and dramatically increasing resistance. The best position is one of balance and centered on the rescue board. This allows for the rescue board to glide across the water's surface with the least amount of resistance therefore increasing the speed and ease for the paddler.
- **Horizontal Body Positioning** – The paddler's body should be in the prone position (stomach on the rescue board) with an arched lower back so that his/her head and face are upright and able to see in front of him/herself. Additionally, it is important for the paddler to be centered on the board from side to side with his/her legs together to create a balanced station on the board.



- **Arm Positioning and Arm Action** – The paddler's arms should be able to reach over the rails of the rescue board and enter the water with relative ease while allowing the paddler to maintain balance on the rescue board.



2.) **Maximize Propulsion**:

- **Arm Catch** – Once the arm is under the water it must be extended forward. The goal is to place the arm and hand at an angle that allows for a maximum amount of water to be moved during the 'Arm Pull' phase. The paddler should extend his/her arm as far forward as possible with his/her hand straight.
- **Arm Pull** – The paddler's arm pull should be done using the maximum amount of force to push as much water as possible in a single 'Arm Pull'. The paddler should keep his/her elbow high while maintaining his/her forearm and hand in a perpendicular position relative to the ocean bottom and fingers pressed tightly together to limit the amount of water able to flow between fingers.
- **Arm Recovery** – The paddler should remove his/her arm from the water while leading with his/her elbow during this motion. Once his/her arm is out of the water, the recovery is now led by the hand followed by the forearm and the elbow. The paddler should begin to position his/her hand to re-enter the water to start the next 'Arm Catch' phase.
- **Hand & Arm Entry** – The paddler's hand should enter the water well in front of his/her head with fingertips entering the water first. This will help to reduce drag. It is ideal to have one's pointer finger enter first.

The paddler should always keep his/her arms as close to the rescue board rails as possible as this will limit injury and be more effective in moving the maximum amount of water to increase propulsion. The paddler, especially beginners, should be reminded that balance on the rescue board is achieved by the body's centered position (side to side and nose to tail) on the board and not with one's legs. Use of one's legs for this purpose will only create additional and unwanted drag.

The composition of the rescue board itself has a significant impact on the amount of drag as well as the ease of paddling and subsequent speed of the bord movement across the water's surface. Some rescue board components to consider include: volume, contour of the bottom of the board, the bord's fins, and internal composition of the board.

Games, Drills & Competitions

Exercise, Conditioning & Stretching:

- Forward Lunge
- Side Lunge
- Seat Stretch
- Knees to Chest
- Fingers to Toes
- Overhead Arm Stretch
- Arms Wide
- Triceps Stretch
- Quad Stretch
- Calf Stretch
- Soft Sand Sprints
- Surf Dashing
- 5-10-5 Shuffles
- Push Ups
- Sit Ups
- Plank to Low Squat
- Inchworm

Capture the Flag:

- Break into two teams
- Set arbitrary boundary lines (with safety in my first) for the game
- Establish a dividing line between team #1 and team #2 (two separate team zones)
- Establish the "prison" or "jail" such as a lifeguard stand, dune fence, or other stationary object within the game boundaries
- Each team should hide their respective "flag" (which can be a towel, shirt or other object of which both teams are made aware)
- Goal is to locate and take the opponent's flag back to your team zone

Beach Flags:

- Participants lay prone (face down) on sand at start line; toes on start line; heels together; one hand on top of the other hand; fingertips to his/her wrist; head up in the air; elbows extended forward so chest is flat on sand
- Participants may not dig, scoop, or move sand as to create anything other than the original flat surface
- Participants may not dig feet into the sand
- On the marshal's whistle, participants rise; turn around; race toward the "flags" at the finish line
- The "flags" or batons (cut pieces of garden hose) are stuck in the sand in an upright position
- Distance from start to finish line (from participants in prone position to the flags/batons) is 20 meters; distance between one participant to the next is 1.5 meters; always less flag/baton than participant
- Elimination occurs when participant does not secure flag/baton
- Randomly draw sticks for lane assignments (maximum of 10 lanes in each heat)
- While racing from start line to flags/batons, participants may not intentionally impede the path of another participant – cause for immediate elimination at discretion of marshal, referee, starter
- Each participant may only secure a single flag(s)/baton(s) in a heat
- False Starts:
  - Disregarding commands of marshal, referee, starter
  - Lifting any body part prior to start whistle/horn
  - False start beyond the first violation will result in participant being eliminated
- Each run in a single heat may have 1, 2, or 3 participants eliminated at the sole discretion of the marshal, referee, starter (how many participants to be eliminated in a heat determines how many flags/batons to be placed at finish line)
- During semi-final and final run, only 1 participant is able to be eliminated
- If more than participant has a grasp on the same flag/baton, the participant with a grasp lower on the flag/baton (closest to the sand & away from colored stripe) shall be awarded the flag/baton
- F at any point during the competition, the marshal, referee, starter are unable to reach a consensus and/or are uncertain of a ruling the participants involved will engage in 'run-off'.
- Course and course set-up details found in '*PART V Competition*'.

Relays (Running, Swimming & Paddling):

- No Hands Get Up – run 25 yards; lay down on back; cross arms; get up without moving hands/arms; run to start/finish line
- Under Broom – divide into 2 teams; set-up 2 courses; lay broom across two objects (chairs, cones, etc); run 25 yards; crawl under broom without disrupting the placement; run 25 yards to start/finish line
- Push Up Relay – divide into teams of 4; designate 2 participants from each team to be obstacles (go under the first and over the second); first person from each team runs 25 yards; crawls under first obstacle (teammate holding push up position); runs 10 yards and goes over second teammate (laying on ground); runs 10 yards to tag teammate who runs in opposite direction navigating 'teammate obstacles'.

Rescue Techniques

Water Entries

Surf Dash

This entry should be used when the lifeguard is entering the water from the beach. The lifeguard must always enter the water "up current'. In other words, lifeguard(s) should use the current to his/her advantage when making an entry and approach to a victim so that the current pushes the rescuing lifeguard(s) laterally (parallel to shoreline) toward the victim during the swim from the beach.

The lifeguard should be wearing the rescue can, keeping it in one hand along with the towline and begin to run into the water. Effort should be made to bend one's knees and lift one's feet and legs out of the water to clear each incoming wave – this is often referred to as "high knees". This technique allows the lifeguard to move through the surf zone as quickly as possible and mitigate the effect of the breaking waves and whitewater.

Once the lifeguard reaches a depth in which it becomes difficult or impossible to lift his/her feet and legs out of the water to clear the waves, then he/she should begin to dive head-first over the incoming waves. This usually occurs when the lifeguard is about knee to thigh deep.

To effectively dive over the waves, the lifeguard should:

- Keep arms and hands extended over his/her head to protect one's head, neck and face from striking the bottom (***FIGURE C.5.1***).
- Once over the wave and under the water, grab the sandy bottom with both hands, grabbing a fistful of sand in each hand.
- Move both arms backwards through the water column, tossing the handfuls of sand behind you while, simultaneously, re-establishing both feet on the bottom to be able to push off the bottom for the next head-first dive over the next incoming wave.
- Continue this movement until reaching a depth in which it becomes more effective and efficient to swim to your victim (***FIGURE C.5.2***).
- Once swimming, the lifeguard should dive head-first (***FIGURE C.5.3***) under each incoming wave and come up on the other side to immediately resume his/her swim stroke (***FIGURE C.5.4***).

FIGURE C.5.1

FIGURE C.5.2

FIGURE C.5.3

FIGURE C.5.4

Approaching the Victim

The lifeguard should always allow the rescue tube or rescue can to trail behind him/her as he/she approaches to the victim(s). This will allow the lifeguard to choose between the front crawl arm stroke and reach the victim with maximum swim speed.

The lifeguard should maintain visual contact with the victim during the entirety of his/her swim approach. Hence, the lifeguard must be swimming with his/her head up and out of the water (***FIGURE C.5.6***). When lifeguard is within arm's length of the victim, he/she should stop approaching, reach behind him/herself and grab hold of the rescue can towline; pull the rescue can to him/herself; and hand the rescue can to the victim – always keeping between him/herself and the victim.

Lifeguard uses font crawl stoke to approach a victim and keeps her head out of the water in order to maintain constant visual contact with the victim.
FIGURE C.5.6

Water Rescues

Water rescues can come in many forms and can occur at any time. Lifeguards must always be prepared and expecting an emergency to occur.

Rescue Tube and Rescue Can

The lifeguard rescue tube should be on the lifeguard's person at all times when on duty and responsible for emergency response. To properly wear a rescue tube or a rescue can, the lifeguard should place one arm and his or her head through the strap so that the strap lays in a diagonal direction across the lifeguard's chest. Rescue tubes are available:

- in a variety of high visibility colors (i.e. red, orange, yellow, bright blue, etc…)
- in a variety of sizes with the most common being 40" and 50"
- in various buoyant materials with the most common being closed cell dense foam

Rescue tubes and rescue cans will:

- provide enough buoyancy for both lifeguard and victim
- help calm a panicked victim once he or she is able to grasp the rescue tube
- provide a barrier between the lifeguard and victim to prevent the lifeguard from being grabbed by a panicked victim

A lifeguard should never enter the water to execute a rescue without properly wearing the rescue tube or rescue can.

Always remember, it is vital for the lifeguard to activate the EAP prior to entering the water to execute a rescue and/or make contact with any victim.

Contact and Control

Generally speaking, when a lifeguard contacts a victim, the rescue tube or rescue can provides a certain level of comfort to a victim and can help to mitigate the behaviors of a panicked victim. It is important for the lifeguard to protect him or herself from a panicked victim – the rescue tube or rescue can should always be kept between the lifeguard and the victim and used as a barrier to help prevent a panicked victim from being able to grab hold of an approaching lifeguard. If a victim is able to reach and grab a lifeguard, the tube should be immediately removed from the lifeguard's head and arm, pushed toward the victim, and the lifeguard should swim away from the panicked victim. Leaving the rescue tube with the panicked victim will keep him or her afloat until the lifeguard can re-approach and contact the victim safely.

Rescue Procedure and Coverage

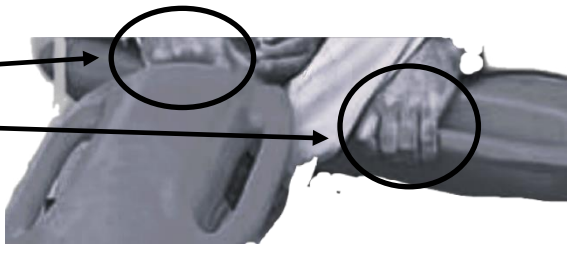
1. Lifeguard recognizes victim(s) and removes excess clothing and puts the rescue tube or rescue can strap over his/her head and one arm.
2. Activate the EAP by using 6 or more short whistle blasts often referred to as "blowing shorts" and the whistle blasts should not stop until the lifeguard enters the water. This should be the universal sound of an active water rescue.
3. Lifeguard enters the water using the "Surf Dash" as previously described and approached the victim while maintaining visual contact with victim.
4. The water entry point is determined by quickly assessing the direction and strength of the prevailing water current/movement.
5. Lifeguards on either adjacent side of the rescue will cover or stand up on the stations/chairs.
6. A covering lifeguard may have to scan the water of the rescuing lifeguard(s).
7. Lifeguard arrives to victim.

Once the lifeguard reaches the victim and passes the rescue tube or rescue can, the lifeguard will have two choices:

1. If victim is conscious and able to maintain a grip on the rescue tube or rescue can, the lifeguard will:
    a. Pass the rescue can or tube to the victim and tell them to hold it tightly with both hands and to help kick if he/she is able to do so.
    b. Roll onto his/her back so that he/she is facing the victim and begin to backstroke to the shoreline.

2. If victim is unconscious; the lifeguard is not able to effectively swim the victim to shore; or the victim is unable to maintain grip on rescue tube or rescue can, the lifeguard will:
    a. If lifeguard is using a rescue can:
        1. Place the rescue can diagonally in front of the victim; lifeguard places his/her arms under victim's arms; lifeguard will place victim between him/herself and the rescue can; the victim's arms will freely rest draped over the rescue can.
        2. Signal for back-up lifeguard(s).
        3. Primary lifeguard will maintain a grip on his/her rescue can with one hand and grab the secondary lifeguard's rescue can handle with the other hand (***FIGURE C.5.7***).
        4. Secondary lifeguard will begin to swim primary lifeguard and victim to the shoreline.
        5. As additional back-up lifeguards arrive to assist, each will hand his/her rescue can to previous responding lifeguard in the "chain" and turn to begin swimming to the shoreline.
        6. All back-up lifeguards should be holding the handle of the can of the lifeguard in front of him/her with one hand and using the other hand to help sidestroke to the shoreline.

Please note that if a lifeguard either does not have long enough arms or does not have the strength to maintain a grip on the secondary lifeguards' rescue can handle, the lifeguarding service leadership should consider tying loops in all rescue can towlines. This will allow lifeguards to slip his/her hand through the loop; drape the loop around his/her wrist; and hold the towline in the palm of his/her hand (***FIGURE C.5.9***).



Primary lifeguard holds rescue with one hand across the front of the victim and grasps the handle of the back-up lifeguard's rescue can during a 'chain' rescue.
FIGURE C.5.7

Victim grasping rescue tube as the Lifeguard uses the backstroke to return the victim to the shoreline.

FIGURE C.5.8

Loop tied in the rescue can towline for a lifeguard during a 'chain' rescue to slip his/her hand and wrist to maintain a connection with his/her back-up lifeguard.
FIGURE C.5.9

b. If lifeguard is using rescue tube:

1. Place the rescue tube straight across the front of the victim; clip the rescue tube closed (*FIGURE C.5.11*) so that it forms a circle around the victim's torso; lifeguard places both arms under the armpits of the victim so that his/her elbows rest in the victim's armpits; lifeguard places both hands on the victim's shoulders.
2. Signal for back-up lifeguard(s).
3. Primary lifeguard will maintain a grasp of the victim in the recue tube and the back-up lifeguard will hand the primary lifeguard the towline loop of his/her rescue tube.
4. Primary lifeguard will slip his/her arm and wrist through the loop and hold the towline in the palm of his/her hand.
5. Secondary lifeguard will begin to swim primary lifeguard and victim to the shoreline.
6. As additional back-up lifeguards arrive to assist, each will hand his/her rescue tube towline loop to the previous responding lifeguard in the "chain" (*FIGURE C.5.12*) and turn to begin swimming to the shoreline.
7. All back-up lifeguards should be holding the towline loop of the rescue tube of the lifeguard in front of him/her with one hand and using the other hand to help sidestroke to the shoreline.

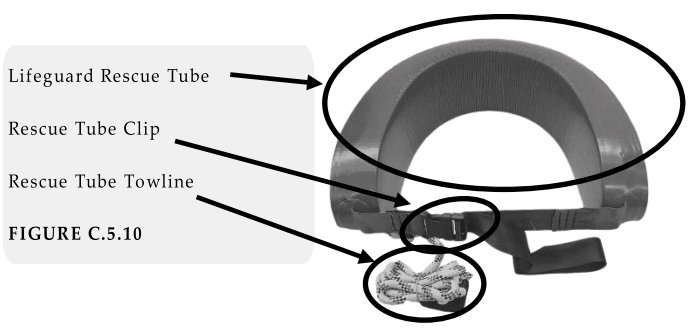


FIGURE C.5.10


Rescue tube clipped around victim.

FIGURE C.5.11

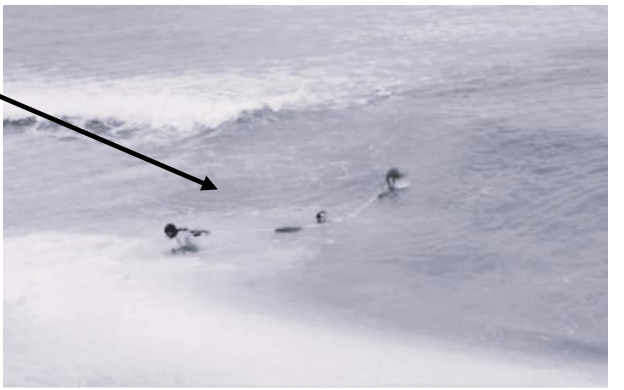

Lifeguard Chain Rescue

FIGURE C.5.12

Multiple Victim

This type of rescue involves 2 or more drowning victims at the same time. The victims could be any combination of passive, active or, simply, a distressed or tired swimmer.

The best response to multiple victims is to have at least one lifeguard for each victim enter the water. However, this is not always possible. When there are more victims than lifeguards to perform a rescue, the responding lifeguard(s), using the most appropriate entry and rescue technique for the circumstance, shall:

- Activate EAP.
- assist the victim who is in the most danger. In other words, the lifeguard will quickly assess and decide which of the victims needs attention first.
- perform rescue on the victim in greatest need.

If all victims are active, the lifeguard should:

- Secure the first victim and then swim, with the first victim, to the second victim.
- Assist the second victim in grabbing hold of the rescue tube or the rescue can handles. If using a rescue tube, the second victim should be instructed to wrap his/her arms and legs around victim #1.
- Signal for back-up lifeguards to assist in bringing victims to the shoreline (if available, a lifeguard with a line buoy should be deployed)

If one victim is passive, the lifeguard should:

- Lifeguard secures the passive victim on the rescue tube or rescue can first.
- If victim is unresponsive, lifeguard checks for breathing and if not breathing, provides immediate rescue breathing.
- Signal for back-up lifeguards to assist in bringing passive victim to the shoreline (if available, a rescue board or kayak should be deployed if the victim is pulseless).
- If victim is responsive and/or is unresponsive but breathing, the lifeguard should secure the victim on the rescue tube or rescue can; signal for back-up lifeguards; and swim to the next victim.

Rescue Board Rescues

Rescue boards are common pieces of equipment routinely used by lifeguards at waterfront facilities. They look similar to a surfboard and are made from a variety of materials. Some rescue boards are composed exclusively form high-density foam while others have a core of plastic or fiberglass which then has an outer covering of high-density foam or rubber.

There are other features that can be added or removed from a board during production. For example:

- fins of varying sizes on the underside
- two handles on the topside while some have handles the entire length of the topside
- foam knee pads on the topside

And, the boards can vary in both size and shape which can have a dramatic impact on the manner in which the board functions in the water.

Rescue boards allow a lifeguard to:

- Reach victim(s), who are a distance from the shore, much quicker as compared to swimming to the victim(s).
- Perform patron surveillance from a different vantage point – i.e. in the water behind the swimmers. This also allows the lifeguard to be in much closer proximity to the swimmers in the case of an emergency.
- Rescue larger victims who otherwise might require multiple lifeguards to bring him or her to shore.
- Efficiently rescue a passive victim who are a distance from shore.
- Rescue multiple victims at one time.
- Perform in-water assessments of a victim.

Lifeguard rescue board with side handles, foam topper, bottom skeg.
FIGURE C.5.13

Lifeguard makes a water entry on the rescue board to begin his approach to a possible in-water victim.
FIGURE C.5.14

FIGURE C.5.15

Spinal Trauma

Recognizing Signs & Symptoms

Spinal Trauma should be suspected in any of the following circumstances:

- Pain in Head, Neck and/or Back
- Fluids Exiting Nose, Mouth, Ears or Eyes
- Numbness and/or Weakness
- Altered State of Consciousness
- Imbalance on Their Feet

Stabilization of Spinal Trauma

Effectively managing a victim of a spinal injury can be scary. It is important that the lifeguard remember that so long as the victim has a pulse, is breathing, and is not suffering any additional immediately life-threatening injuries, lifeguards and other rescuers should take their time to ensure there are no sudden or erratic movements of the victim and that inline stabilization is constantly maintained.

When it comes to splinting an injury, lifeguards are taught not to splint unless the victim must be moved. This is exactly how we should approach the idea of backboarding here. And, that a victim should only be moved if leaving them in their current position would cause further harm as they await EMS arrival.

Victims of spinal trauma should be treated in a similar way – backboarding of a victim with suspected spinal trauma should only be done if and when local EMS protocol dictates it. Aquatic facilities must coordinate with their local EMS for guidance.

Arm Splints

To effectively perform this skill, the lifeguard should:

- Activate the EAP.
- Approach the victim by either using the breaststroke or the walking being careful to limit any disturbance in the water.
- Align hip closest to the victim near the victim's hip.
- Use arm closest to the victim to grasp the victim's outer arm farthest from the lifeguard near the bicep while simultaneously using arm farthest from the victim to grasp the victim's outer arm closest to the lifeguard near the bicep.
- Simultaneously move the victim's arms up alongside the victim's head so that the victim's biceps are against the victim's ears (***FIGURE C.6.2***).
- Apply pressure to both of the victim's arms so that the head and neck are immobilized. This pressure should be firm and evenly distributed on both sides of the victim's head.

Slowly and smoothly walk around the pool in the direction the victim's head is pointing as you perform this entire skill and after the victim is rolled to the face- up position (***FIGURE C.6.3***). This will help the victim's lower body to remain buoyant and float near the water's surface which will keep the victim's entire body more streamlined.

Figure C6.3

Figure C6.4

Figure C6.5

Figure C6.6

Figure C6.7

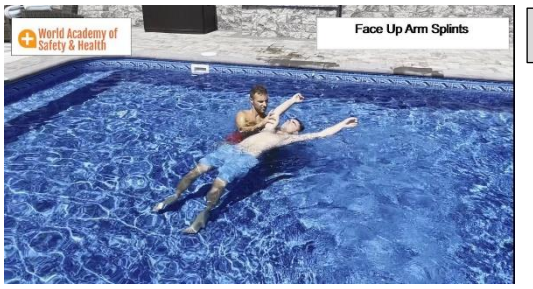


Figure C6.8

Figure C6.9

Seated Stable Carry

This technique is most easily used in water no deeper than the lifeguard's waist.

To effectively perform this skill, the lifeguard should:

- activate the EAP.
- approach the victim by either using the breaststroke or the walking being careful to limit any disturbance in the water.
- approach the victim from behind.
- place arm closest to the victim under the victim's armpit farthest from the lifeguard.
- place arm farthest from the victim under the victim's armpit closest to the lifeguard.
- arms should be far enough under the victim's armpits to allow the palms of the lifeguard's hands to reach the victim's ears to provide manual inline stabilization.
- once the lifeguard's arms are fully under the victim's armpits and the lifeguard's hands are providing manual inline stabilization, lifeguard should lift the victim up so that his or her back is flush against the lifeguard's chest.
- while facing the victim, a second rescuer picks up both legs of the victim from behind the knees and pushes the victim against the first rescuer's back as the first rescuer walks the victim out of the water.

This technique is also easily used with a spinal trauma victim on land who is seated, standing, or laying in a prone position.

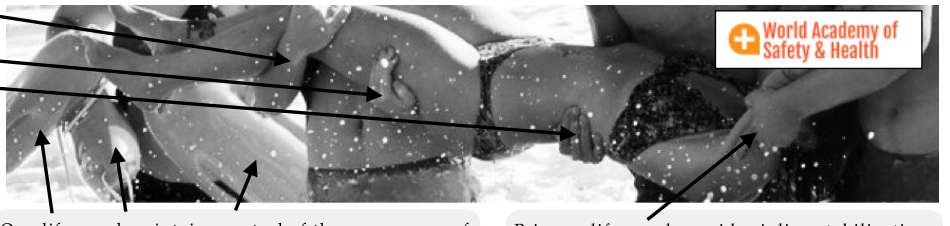
Other responding back-up lifeguards should place themselves in the water between the victim and the oncoming wave action with his/her backs facing the incoming swells and whitewater. The bodies of these back-up lifeguards along with their rescue cans will help to mitigate the impact the breaking wave action has on the victim.

Figure C6.10

Figure C6.11

When additional lifeguards are available, each of the back-up lifeguards should place his/her hands under the back, legs, and waist of the suspected spinal trauma victim. This will help to provide support and stabilization to the spinal column.

FIGURE C.6.12



One lifeguard maintains control of the rescue cans of all other rescuing lifeguards. These were also used on the way to the beach to block the crashing surf.

Primary lifeguard provides inline stabilization.

Other Resources

Kids' Corner | Pool Safely

DVD: Swimming , Lifesaving & Water Rescue in Naturals Environments (ENGLISH) – Aguaseguras

Drowning Prevention | CDC

Drowning Facts | Drowning Prevention | CDC

Water Safety Educational Resources - NDPA

Healthy Swimming/Recreational Water | Healthy Swimming | Healthy Water | CDC


World Academy of
Safety & Health


HELP!!!!
World Academy of
Safety & Health


NO DIVING


911
EMERGENCY
EMERGENCY
CALL
World Academy of
Safety & Health


EMERGENCY
PHONE


911
Police · Fire · Medical
EMERGENCY


DANGER
NO SWIMMING
ALLOWED

Group B - Juniors

PART IV

Intended Audience

School-aged children between approximately ages twelve through thirteen (12-13) (lesson plans and activities can be modified and adapted for both younger and older participants as needed).

Introduction to Lifeguarding

Pool Lifeguarding:

The primary responsibility of all lifeguards is the safety and well-being of patrons. Often times, other facility related duties interfere with the job of a lifeguard.

If lifeguards are the staff members who are responsible for maintenance, cleanliness, membership status checks, and other duties then those duties must be assigned to lifeguards who are not in the stand and are not responsible, at that time, for patron surveillance.

Drowning can occur quickly in even the shallowest of water. It is crucial that the lifeguard remain vigilant and alert during his or her entire shift while in the stand and responsible for patron surveillance.

In order to remain alert, the lifeguard must take care of him or herself. The heat, humidity, and sun can take a toll on one's body. Lifeguards should remain hydrated; reapply sunscreen every few hours; use the umbrella if possible; and be rotated out of the sun every 30-40 minutes to perform other facility-related duties or to, simply, take a break.

Figure C1.1

Lifeguards are the last line of defense in drowning prevention. This responsibility must be taken seriously by all who are employed in the aquatics industry.

Finally, it is easy to become complacent while sitting in the lifeguard tower. This is particularly true if and when a significant number of days has passed since one's facility has experienced any type of emergency.

It is vital that all lifeguards continue to 'stand up in the canoe'. In other words, it is easy to sit down in a canoe and enjoy the ride. It takes tremendous focus and hard work to stand up in a moving canoe. The lifeguard must exercise this same type of focus and work hard to pay close attention to what is going on around him or her and be prepared to respond to any emergency – as all emergencies are unexpected.

Surf Lifeguarding:

Lifeguards at beaches, oceans, and other tidal waters are vital to drowning prevention. According to the United States Lifesaving Association (USLA), the chances of a fatal drowning at a beach guarded by a USLA agency lifeguard is 1 in 18 million[26].

Figure C1.2

When making decisions about using lifeguards and other means of increasing public safety in aquatic settings, policy makers should use available local evidence. This evidence includes:

- *the effects that lifeguards have had on patrons' safety and attitudes;*
- *the number of people using the facility or beach area during the past years;*
- *the incidence of water-related injuries and drownings at the facility or beach area during those time periods;*
- *data on the number of water-related injuries and drownings at pools and beaches in the local area or state with and without lifeguards, for comparison; and*
- *the level of lifeguards provided (e.g., number of lifeguards per number of persons using the facility).*

In addition to these factors, policy makers should consider public attitudes about lifeguards and legal issues related to using lifeguards[4].

Data provided by the Centers for Disease Control (CDC) indicates that, "nonfatal drowning can result in long-term health problems and costly hospital stays"[5] as evidenced by:

- *For every child who dies from drowning, another eight receive emergency department care for non-fatal drowning.*[7]
- *More than* ***40%*** *of drownings treated in emergency departments require hospitalization or transfer for further care (compared with 8% for all*

Tidal Water

Tidal Cycles

The Earth is not a perfect circle or sphere. For this reason, not every geographic area on our planet experiences the same tidal cycles. If the Earth was a perfect circle then all regions of the world would experience two equally proportioned high and low tides in each 24-hour period of time.

As the Earth rotates, large landmasses (i.e. continents) prevent the tidal bulges from moving west. Therefore, this water is unable to freely and, hence, establish unique tidal patterns in each ocean and/or in different regions of the same ocean[21].

Semi-Diurnal Tides – The most common tidal pattern. High tide and low tide occur twice during a 24-hour period of time and the variation in height of each successive high and low tide is minimal. This is typically found on the east coast if the United States.

Diurnal Tides – High and low tide each occur once during a 24-hour period of time. This is typically found in the Gulf of Mexico.

Mixed Tides –. This is typically found on the west coast of the United States as well as many Pacific Islands.

Semi-Diurnal Tides

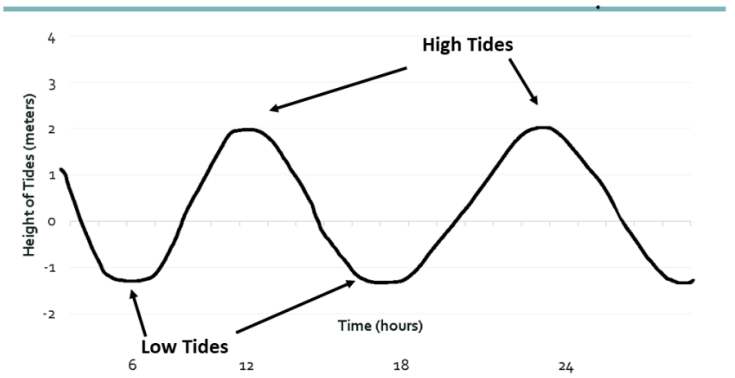


Figure C2.1

Diurnal Tides

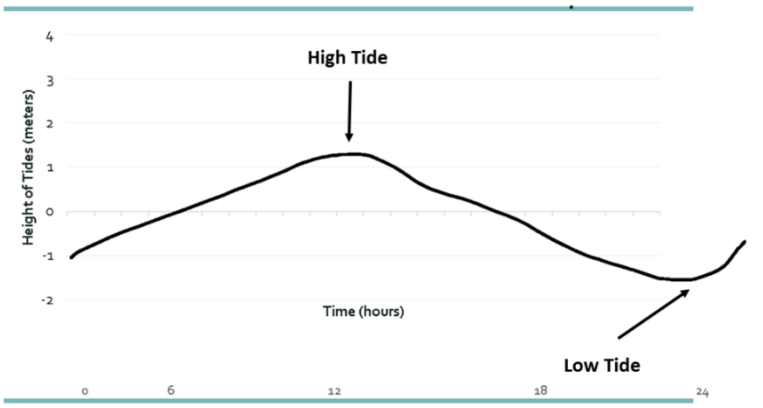


Figure C2.2

Mixed Tides

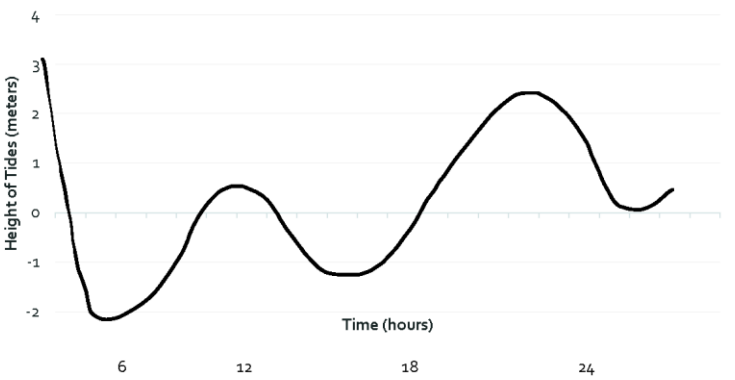


Figure C2.3

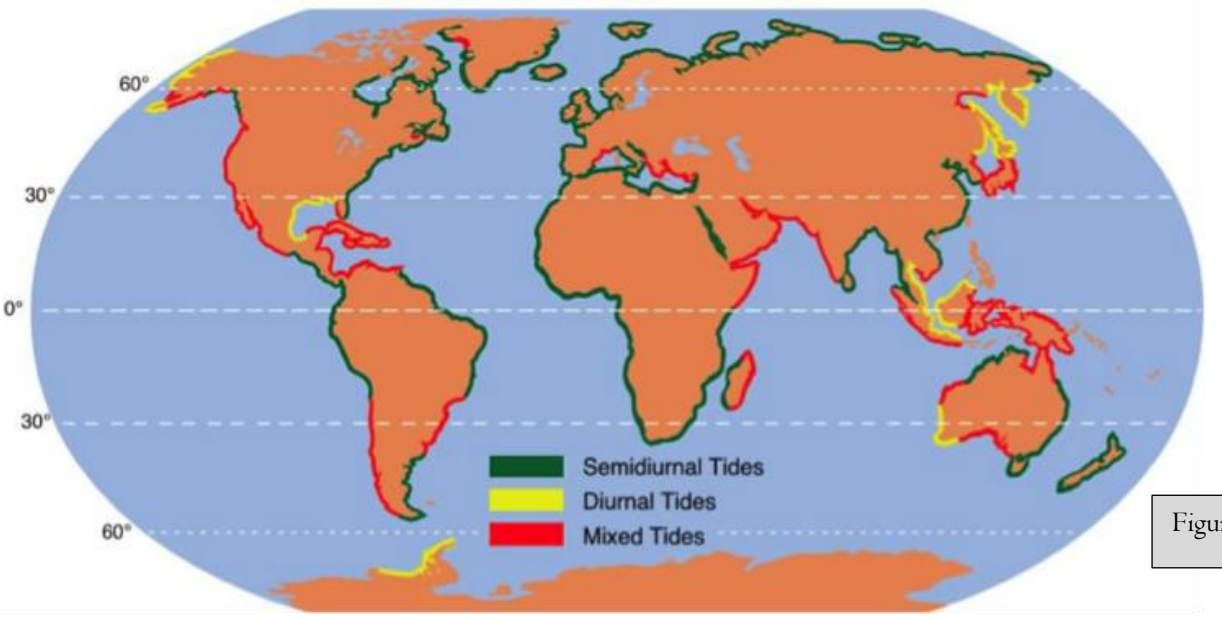


Figure C2.4

Waves

Ocean waves all share the same characteristic component parts. These include:

- **Crest** – the highest point of a wave
- **Trough** – the lowest point of a wave
- **Height** – the distance between the crest and the trough
- **Amplitude** – the distance between the crest or the trough and the resting position of the water's surface
- **Period** – the time between two consecutive wave crests
- **Frequency** – the number of waves that pass by a fixed position in a given amount of time

Wind waves are caused by a friction between the local winds and the surface of the water.

Swell waves or ground swell are generated by the wind associated with distant weather systems. Local winds have little to no impact on swell waves.

Ocean Currents

According to the National Oceanic Atmospheric Administration (NOAA), an "ocean current describes the movement of water from one location to another. Currents are generally measured in meters per second or in knots (1 knot = 1.85 kilometers per hour or 1.15 miles per hour)[18].

Rip Currents

A rip current is when a volume of water flows away from the beach or shoreline in a narrow channel. These currents, typically, occur at surf beaches where there is a gap or split in a sandbar and/or near other structures such as a jetty, dock, pier or similar object. They are surface currents and can only pull a swimmer away from the shoreline – they do not pull a swimmer under the water.

> *Rip currents can form in a gap between sandbars, piers, or parts of a reef. Such underwater obstacles block waves from washing directly back to sea. The water from these waves, called feeder waves, runs along the shore until it finds an opening around the obstacle.*

> *The stream of water, now a rip current, rushes to the opening, just like water down a drain. A rip current flows more quickly than the water on either side of it, and may stir up sediment from the beach. This sometimes makes rip currents easy to spot as dark or muddy lines running from the beach out toward the ocean. Rip currents are also usually more calm-looking than the surrounding water. Once past the obstacle (between the sandbars or piers), a rip current loses pressure and stops flowing*[15].

Often times, rip currents and undertows are confused with one another. Unlike rip currents, an undertow is an ocean current that flows along the bottom of the water column. An undertow can also pull a swimmer beneath the water's surface[15].

Rip currents can be as narrow as 10 feet in width but can also be as wide as 100-200 feet in width. The water is usually moving 1-2 feet per second (approximately 1.09-2.19 kilometers per hour or .59-1.18 knots) but, can be as fast as 8 feet per second (approximately 8.8 kilometers per hour or 4.74 knots)[18].

Why are Rip Currents Dangerous

- Rescues performed at surf beaches, over 80% of the time, are the result of rip currents[18].
- Pull people away from shore no matter the person's swimming ability.
- Can appear, disappear and reappear at a moment's notice and can also increase in strength at any moment.

How to Recognize a Rip Current

- Cloudy, murky, and/or discolored channel of water
- Flattened area of water within the breaking waves
- Outward flow of water while the flow of water on either side of the narrow channel in question is flowing inward. This is most often identified by a line of debris, seaweed, foam or other objects moving away from the shoreline in the channel.
- The outward flow of water is choppier than the surrounding water.

Escaping the Pull of a Rip Current

- Relax and float until the current ends – the longer rip currents extend only a few hundred feet from the surf zone and weaken as they move farther from the shoreline.
- Never attempt to swim against the outgoing current – you will likely tire quickly.
- Once 'released' from the pull of a rip current, swim parallel to the shore until well clear of the current. Only then should you begin swimming toward the shoreline.
- Sometimes the current weakens enough and/or circles back to the shoreline while you are floating to allow you to swim back to the beach.

Figure C2.5

Figure C2.6

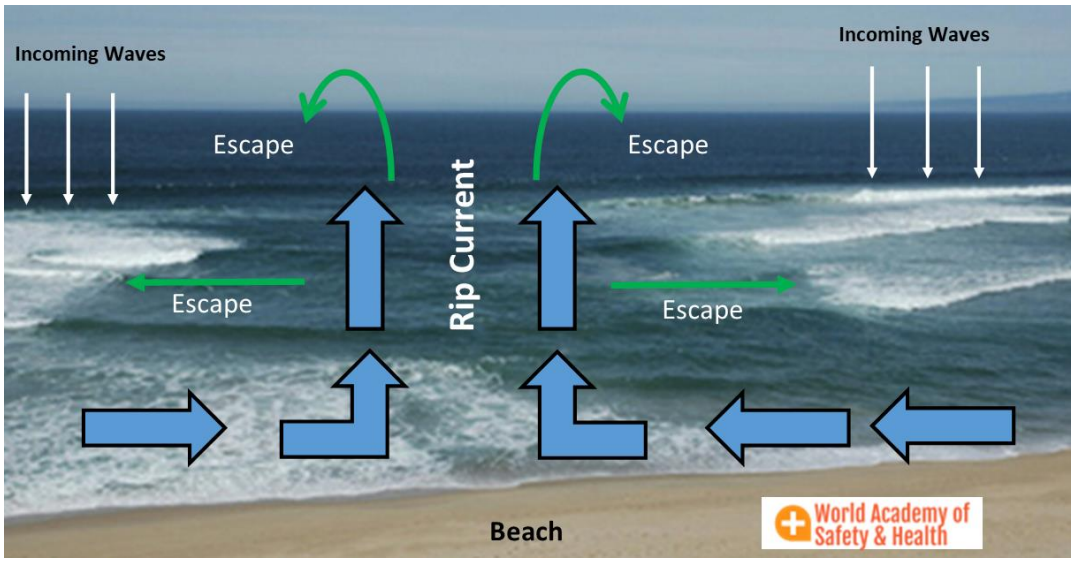


Figure C2.7

Longshore Current

When a wave reaches the beach, there is a release of a tremendous amount of energy that, in turn, creates a current that flows alongside or parallel to the coast within the area of breaking waves. This current moving along the shoreline is called a longshore current.

The velocity of a longshore current is influenced by several factors all having to do with the original wave reaching the coast (i.e. the velocity of incoming wave, angle of the incoming wave, slope of the ocean floor leading up to the beach). For example, the steeper the angle of the breaking wave or the steeper the ocean floor then the resulting longshore current will travel with greater velocity.

A wave breaks and runs up the beach and then begins to recede down the beach and back into the water. Longshore currents move onto the beach and then away from the beach as a "sheet" of water taking with it sand and other debris from the beach and can lead to beach erosion. This movement of sand, debris, and other sediment is referred to as longshore drift.

Preventative Lifeguarding

Each lifeguard organization must decide between preventative lifeguarding and reactive lifeguarding.

Preventative lifeguarding is a series of techniques used to stop accidents, rescues, and other emergency incidents from occurring. It requires the lifeguard(s) to engage in continual swimmer surveillance during the entirety of his/her shift and stop behaviors that could lead to an emergency incident.

Reactive lifeguarding is more similar to most other first responders and emergency services departments in that the lifeguards do not keep a constant, watchful eye on the beach or the swimmers. Instead, the lifeguard(s) are not assigned to a specific swimming area or beach but, rather, are on roving patrols across the entire shoreline. In this case, the lifeguards respond to an emergency call for help as opposed to working to prevent it.

Surveillance

Lifeguards in open water environments can utilize a variety of methods to engage in patron surveillance. It also occurs from many vantage points depending on the environmental conditions, layout of the swimming area, training level of the lifeguards, and available equipment.

The most traditional method of watching swimmers is from an elevated lifeguard station or chair. In some locations, there is one lifeguard assigned to each chair while in other locations, there are two lifeguards assigned to each chair.

Other widely used methods of patron surveillance include: use of an elevated platform in the water located either amongst the swimmers or behind the swimmers; drone coverage; rescue board deployment; patrol vessels.

Scanning & Victim Recognition

Not all drowning victims exhibit the same behaviors. Generally speaking, a victim:

- is unable to make any forward progress in the water – all movements are being used in an attempt to get air.
- has both arms extended to the side and is simultaneously slapping the water with both hands or is pushing down on the water trying to support him or herself and stay able the water.
- is vertical in the water with an ineffective or no kick or,
- is horizontal in the water with the face down in the water.

Drowning victims may be vertical in the water with the head tilted back with the face looking toward the sky or the horizontal victim may have his or her head face down in the water. In either case, the victim is, typically, unable to shout or wave for help. Without assistance, the victim will eventually submerge and might continue to struggle in an effort to resurface. The struggle will cease as the victim becomes passive and unconscious below the water's surface. It is possible that some victims never exhibit a struggle and, instead, slip under the water and begin the drowning process – this is, usually, more difficult to identify than the victim on the water's surface.

The lifeguard is watching for:

- **Head low in the water** – The victim's face and mouth can submerge and resurface repeatedly as he or she struggles to get air and each time he or she gasps for air, water can be inhaled. A strong or healthy swimmer is easily able to keep his or her head high in the water and above the water's surface. A person unable to do this may require assistance.
- **Low Stroke** – A strong or healthy swimmer is easily able to bring his or her elbows out of the water with each swim stroke. A swimmer dragging his or her elbows in the water is a sign that he or she may require assistance.
- **Little to no kick** – A strong or healthy swimmer maintains a strong kick of his or her legs. No kick and/or no breaking of the water's surface with a kick is a sign that he or she may require assistance. Often times, the victim is more vertical than horizontal in the water when there is an ineffective kick.

Typically, a swimmer displays a low head in the water, a low stroke, and little to no kick simultaneously.

Additional signs of distress in the water include:

- **Hair in Eyes** – for most swimmers, brushing his or her wet hair off or away from the face and eyes is instinctive behavior. When a swimmer makes no attempt to do this, it should be seen as a sign of distress.
- **Grasping the Water with Both Arms** – when a swimmer struggles to keep his or her head above water and begins to panic, he or she begins to rapidly slap the surface of the water of slash both arms through the water with both hands at the same time. When a lifeguard observes this type of behavior, the lifeguard must immediately respond.
- **'Climbing the Ladder'** – when a swimmer struggles to keep his or her head above water and begins to panic, he or she begins to engage in what appears to be an upward crawl in the water. This is an ineffective method to keep one's head above water and, when observed, requires the immediate response from lifeguard(s).
- **'Bicycle Spokes'** – a distressed swimmer, as recognized by fellow bathers, with the distressed swimmer in the middle and fellow bathers moving toward him or her from all sides to provide assistance looks like a bicycle wheel with the good Samaritans being the spokes of the wheel and the distressed swimmer being at the center of the wheel.
- **Waving of the Hands** – a swimmer who may be tired yet is not yet in a panic or in dire need of assistance may wave his or her hands for assistance from lifeguard(s).
- **Unusual and/or Erratic Behavior or Activity** – any behaviors and/or activities exhibited by swimmer(s) that seem unusual or erratic should be given additional scrutiny to determine if a lifeguard response is required.

It is not always a linear progression from distressed swimmer to drowning.

There are situations in which a victim never displays the signs or symptoms of distress. Instead, they could already be submerged in the water and, therefore, the lifeguard never sees the signs of distress.

Hazards

Each location presents unique features that are and/or could easily become hazards to swimmers and other beachgoers. These hazards can be naturally occuring and a result of the environment or they can be man-made hazards. Some examples include:

Rocks and Jetties
Piers
Storm Drains
Reefs
Sandbars
Poor Swimmer

Docks
Marine Life
Drop Offs & Gullies
Rip Currents
Temperature lunctuations
Surf/Wave Action

Severe Water Conditions
Backwash
Excessive Splashing
Wave Knocks Person Over
Unattended Children
Edges of Swim Crowd

No matter the hazard(s) present, it is important for the lifeguard to recognize the features; understand how the feature(s) is or can be a danger; maintain vigilance in patron surveillance and preventative actions to keep swimmers and beachgoers away from the hazard(s); and understand how to most effectively execute a rescue on and/or near the hazard(s) in question.

The swimming area at a waterfront facility should be marked with a distinct border provided around this swimming area. This will:

- Keep possible dangers to swimmers out of the area – i.e. boats, kayaks, PWC's, etc.
- Keep the swimmers in the area so that lifeguards can more easily scan and keep watch over the patrons as well as more easily communicate with the swimmers.
- Allow for strategic positioning of lifeguards to ensure effective patron surveillance can be maintained.
- Allow for management to monitor the swimming area for underwater hazards.

Using a marked buoy line to set a distinct swimming area. This helps lifeguards with swimmer surveillance and also keeps the are free of vessel traffic—motorized and non motorized.

Underwater Hazards

The swimming area should be inspected on, at least, a daily basis and prior to opening to swimmers for underwater hazards. These hazards should immediately be removed. If it is not possible to immediately remove the hazard, the lifeguard should communicate with management so that the area can be closed or the object marked above the water line so that lifeguards can keep patrons away from that area until the hazard is removed. Whether to close the area or mark the hazard is a decision based on the unique circumstance at the facility and must be made with patron safety as the number one priority. If patrons cannot safely use any portion of the swimming area without the hazard being removed then the area must close until the object is taken out of the water.

Docks and Piers

Floating and stationary piers and docks are common structures found at beachfront facilities. Often times, these structures are used for other recreational activities other than swimming. These include fishing, canoe or paddleboat rentals, or even boat traffic approaching the area. It is crucial that there is a clearly marked safety area surrounding these structures to keep swimmers away.

If the pier or dock includes any features such as a slide or diving board then boat traffic must be kept away and the rental area for PWC's, kayaks, wind or kitesurfers must be on the other side of the structure. In cases like these, there should be a clearly marked swimming area surrounding the landing zone of the slide or diving board.

Whether swimming is permitted in the area or it is strictly reserved for boats, kayaks, and other activities the lifeguard(s) should be assigned to the area using the same general principles of assignment used when positioning lifeguard(s) in the general swimming area.

Environmental Conditions

Changing environmental conditions throughout the day can have a dramatic impact on the water conditions at any waterfront or open water facility. These environmental conditions and their subsequent impact on water conditions should be monitored closely throughout that day. If there are any changes in the water conditions that make it unsafe for swimming, the area must be closed until conditions improve enough to take swimming safe.

Wind can lead to currents where they did not previously exist or changes to existing currents. Rain can also have a significant impact on water conditions. For example, heavy rain can:

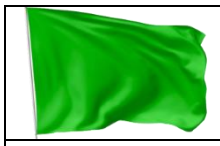
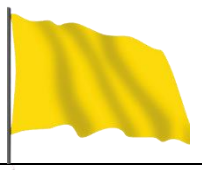
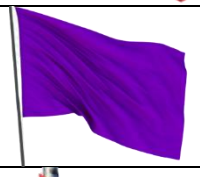
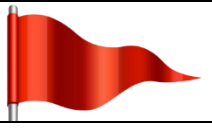
- Negatively impact water clarity
- Decrease the water temperature
- Increase water levels which, in turn, can impact water currents
- Change the contour of the bottom which may lead to changes in water depth and/or changes to water currents

Beach Warning Flag System

Beach warning flag systems are designed to help the public in assessing risk prior to entering the water. With or without warning systems in place, swimmers and beachgoers should always be encouraged to check with the lifeguard prior to entering the water. Even the most experienced swimmers and/or those who feel they are familiar with the ocean should check-in with the lifeguard about current conditions. Further, every piece of beach is different and, therefore, presents unique hazards that may be specific to that beach and/or region. The local lifeguard service will have the most reliable, most up-to-date, and most detailed information about the ocean water and conditions.

Like other communication systems, it is important that the beach warning flag system is uniform and standardized. Standardization of the flag system with the various colored flags having the same meaning from one location to another serves to help limit public confusion. Thus, increasing overall public beach safety.

Use of beach warning flag systems begain in the state of Florida in 2005. At that time, it was used as a simple method of warning the public about the danger or liklihood of rip currents. Rip current risk is determined by a combination of the speed and direction of the wind; the tidal ranges; and the localized surf conditions. For lifeguards, the most important tool at their disposal are their eyes. Looking the water will quickly allow an assessment of it's current behavior.

	Safe to Swim
	Caution; Moderate Risks; Medium Hazard of Strong Currents and/or Heavy Surf
	Extreme Caution; High Risks; High Hazard of Strong Currents and/or Heavy Surf
	Dangerous Marine Life Present
	Extreme Danger and Swimming Area CLOSED
	Marks the Swimming Area with Lifeguards
	Watercraft Area
	Dirty Water

The standard flag colors and meanings for beachgoers. This system should be used on all beaches to increase overall public safety.
FIGURE C.4.2

A "Swimming Area" flag flying on a local beach. They should be attached to a 5-8 pole (PVC or wood) so that they are more easily seen from a distance on the beach. They should be placed deep enough each morning that they do not blow over and should be high enough up the beach so that the incoming tide does not wash away the sand in which they are posted.
FIGURE C.4.3

Assists

Pool or Surf Environment

Immediately after recognizing a water emergency, the lifeguard must activate the facility's Emergency Action Plan (EAP) by whatever means is outlined in the plan – this is typically by using a specific whistle signal reserved for this purpose.

The lifeguard(s) then immediately moves into the respond phase and quickly assesses and decides whether to execute an assist or to signal a full rescue and enter the water to perform the water rescue. In either case, the lifeguard makes contact with the victim, executes the assist or rescue and safely begins to move the victim back to the beach for extraction from the water. The lifeguard should then assess the victim and provide any additional emergency care necessary.

A rescue or incident report should be completed prior to releasing the victim.

Assists are used to help a tired swimmer without entering the water and/or signaling a full water rescue. There are two types of assists:

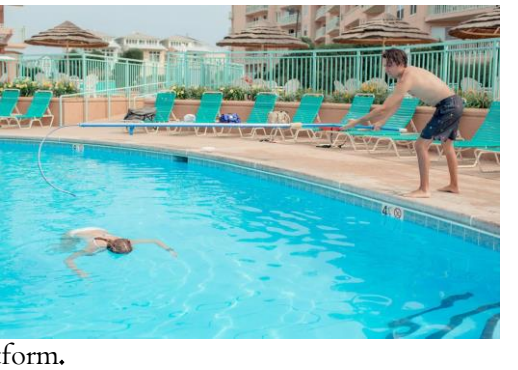
Tossing Assist

Lifeguard tosses a ring buoy to the tired swimmer. This is usually utilized from an elevated position such as a dock, pier, platform, vessel. Steps to follow when using a tossing assist:

- Place the rope attached to the ring buoy on a flat surface and place foot on this rope. This ensures that the lifeguard has the ability to pull the victim to the platform once they grab the flotation device that is tossed.
- The lifeguard should toss the flotation device over the head of the victim and beyond or behind the victim. This ensures that the flotation device is not thrown short of the victim's reach. Instead, it lands behind the victim allowing the lifeguard to slowly begin pulling the throw line or rope in a controlled manner bringing the flotation device to the victim.
- Once the victim has a firm grip on the flotation device, the lifeguard should slowly pull the throw line without any sudden jerks of the rope to the edge of the platform.

Reaching Assist

Lifeguard extends a reaching pole, rescue tube or can, or his or her hand/arm to the tired swimmer. This is usually utilized from an elevated position such as a pier, dock, platform, or vessel. Steps to follow when using a reaching assist:



- Lifeguard should stand at the edge of the platform ensuring he or she has a strong base with feet shoulder width apart. The lifeguard should shift his or her weight back away from the edge of the platform to avoid the victim pulling on the reaching pole causing the lifeguard to be pulled into the water.
- Once the victim has a firm grip on the reaching pole, the lifeguard should begin to slowly and in a controlled manner use the pole to pull the victim to the side of the platform.

Water Entries

Surf Dash

This entry should be used when the lifeguard is entering the water from the beach. The lifeguard must always enter the water "up current'. In other words, lifeguard(s) should use the current to his/her advantage when making an entry and approach to a victim so that the current pushes the rescuing lifeguard(s) laterally (parallel to shoreline) toward the victim during the swim from the beach.

The lifeguard should be wearing the rescue can, keeping it in one hand along with the towline and begin to run into the water. Effort should be made to bend one's knees and lift one's feet and legs out of the water to clear each incoming wave – this is often referred to as "high knees". This technique allows the lifeguard to move through the surf zone as quickly as possible and mitigate the effect of the breaking waves and whitewater.

Once the lifeguard reaches a depth in which it becomes difficult or impossible to lift his/her feet and legs out of the water to clear the waves, then he/she should begin to dive head-first over the incoming waves. This usually occurs when the lifeguard is about knee to thigh deep.

To effectively dive over the waves, the lifeguard should:

- Keep arms and hands extended over his/her head to protect one's head, neck and face from striking the bottom (***FIGURE C.5.1***).
- Once over the wave and under the water, grab the sandy bottom with both hands, grabbing a fistful of sand in each hand.
- Move both arms backwards through the water column, tossing the handfuls of sand behind you while, simultaneously, re-establishing both feet on the bottom to be able to push off the bottom for the next head-first dive over the next incoming wave.
- Continue this movement until reaching a depth in which it becomes more effective and efficient to swim to your victim (***FIGURE C.5.2***).
- Once swimming, the lifeguard should dive head-first (***FIGURE C.5.3***) under each incoming wave and come up on the other side to immediately resume his/her swim stroke (***FIGURE C.5.4***).

FIGURE C.5.1

FIGURE C.5.2

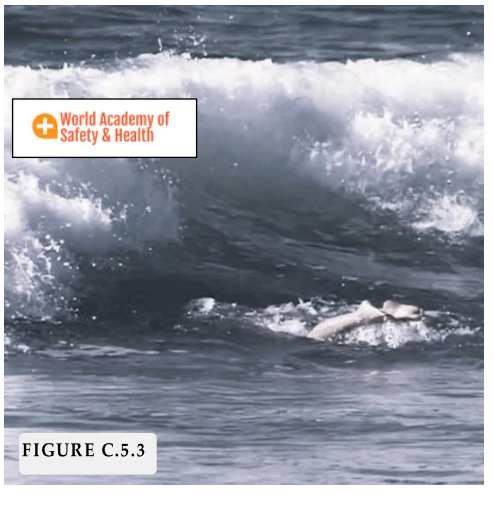


FIGURE C.5.3

FIGURE C.5.4

Lifeguard is seen jumping from an elevated position keeping his/her feet down and the rescue is being worn and held in one hand..
FIGURE C.5.5

Elevated Feet-First Dive

The entry should be used when the lifeguard must enter the water from an elevated position (***FIGURE C.5.5***). This entry must only be used when the lifeguard is certain that he/she will be entering deep water and there are no underwater hazards that he/she might strike upon entry.

Elevated Head-First Surface Dive

This entry should be used when entering the water from a platform and is most commonly used when entering from a vessel.

The lifeguard should be wearing the rescue tube and holding with one hand as he/she stands on the edge of the platform. The lifeguard should use one hand to push him/herself away from the platform while entering the water head-first.

This entry should only be used in deeper water and when the responding lifeguard is certain of the water's depth and absence of any underwater hazards.

Approaching the Victim

The lifeguard should always allow the rescue tube or rescue can to trail behind him/her as he/she approaches to the victim(s). This will allow the lifeguard to choose between the front crawl arm stroke and reach the victim with maximum swim speed.

The lifeguard should maintain visual contact with the victim during the entirety of his/her swim approach. Hence, the lifeguard must be swimming with his/her head up and out of the water (***FIGURE C.5.6***). When lifeguard is within arm's length of the victim, he/she should stop approaching, reach behind him/herself and grab hold of the rescue can towline; pull the rescue can to him/herself; and hand the rescue can to the victim – always keeping between him/herself and the victim.

Lifeguard uses font crawl stoke to approach a victim and keeps her head out of the water in order to maintain constant visual contact with the victim.
FIGURE C.5.6

Water Rescues

Water rescues can come in many forms and can occur at any time. Lifeguards must always be prepared and expecting an emergency to occur.

Rescue Tube and Rescue Can

The lifeguard rescue tube should be on the lifeguard's person at all times when on duty and responsible for emergency response. To properly wear a rescue tube or a rescue can, the lifeguard should place one arm and his or her head through the strap so that the strap lays in a diagonal direction across the lifeguard's chest. Rescue tubes are available:

- in a variety of high visibility colors (i.e. red, orange, yellow, bright blue, etc…)
- in a variety of sizes with the most common being 40" and 50"
- in various buoyant materials with the most common being closed cell dense foam

Rescue tubes and rescue cans will:

- provide enough buoyancy for both lifeguard and victim
- help calm a panicked victim once he or she is able to grasp the rescue tube
- provide a barrier between the lifeguard and victim to prevent the lifeguard from being grabbed by a panicked victim

A lifeguard should never enter the water to execute a rescue without properly wearing the rescue tube or rescue can.

Always remember, it is vital for the lifeguard to activate the EAP prior to entering the water to execute a rescue and/or make contact with any victim.

Contact and Control

Generally speaking, when a lifeguard contacts a victim, the rescue tube or rescue can provides a certain level of comfort to a victim and can help to mitigate the behaviors of a panicked victim. It is important for the lifeguard to protect him or herself from a panicked victim – the rescue tube or rescue can should always be kept between the lifeguard and the victim and used as a barrier to help prevent a panicked victim from being able to grab hold of an approaching lifeguard. If a victim is able to reach and grab a lifeguard, the tube should be immediately removed from the lifeguard's head and arm, pushed toward the victim, and the lifeguard should swim away from the panicked victim. Leaving the rescue tube with the panicked victim will keep him or her afloat until the lifeguard can re-approach and contact the victim safely.

Rescue Procedure and Coverage

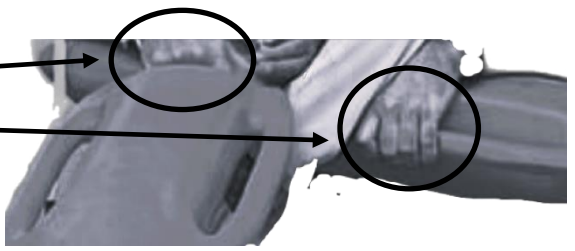
1. Lifeguard recognizes victim(s) and removes excess clothing and puts the rescue tube or rescue can strap over his/her head and one arm.
2. Activate the EAP by using 6 or more short whistle blasts often referred to as "blowing shorts" and the whistle blasts should not stop until the lifeguard enters the water. This should be the universal sound of an active water rescue.
3. Lifeguard enters the water using the "Surf Dash" as previously described and approached the victim while maintaining visual contact with victim.
4. The water entry point is determined by quickly assessing the direction and strength of the prevailing water current/movement.
5. Lifeguards on either adjacent side of the rescue will cover or stand up on the stations/chairs.
6. A covering lifeguard may have to scan the water of the rescuing lifeguard(s).
7. Lifeguard arrives to victim.

Once the lifeguard reaches the victim and passes the rescue tube or rescue can, the lifeguard will have two choices:

1. If victim is conscious and able to maintain a grip on the rescue tube or rescue can, the lifeguard will:
   - Pass the rescue can or tube to the victim and tell them to hold it tightly with both hands and to help kick if he/she is able to do so.
   - Roll onto his/her back so that he/she is facing the victim and begin to backstroke to the shoreline.

2. If victim is unconscious; the lifeguard is not able to effectively swim the victim to shore; or the victim is unable to maintain grip on rescue tube or rescue can, the lifeguard will:
   - If lifeguard is using a rescue can:
     a. Place the rescue can diagonally in front of the victim; lifeguard places his/her arms under victim's arms; lifeguard will place victim between him/herself and the rescue can; the victim's arms will freely rest draped over the rescue can.
     b. Signal for back-up lifeguard(s).
     c. Primary lifeguard will maintain a grip on his/her rescue can with one hand and grab the secondary lifeguard's rescue can handle with the other hand (***FIGURE C.5.7***).
     d. Secondary lifeguard will begin to swim primary lifeguard and victim to the shoreline.
     e. As additional back-up lifeguards arrive to assist, each will hand his/her rescue can to previous responding lifeguard in the "chain" and turn to begin swimming to the shoreline.
     f. All back-up lifeguards should be holding the handle of the can of the lifeguard in front of him/her with one hand and using the other hand to help sidestroke to the shoreline.

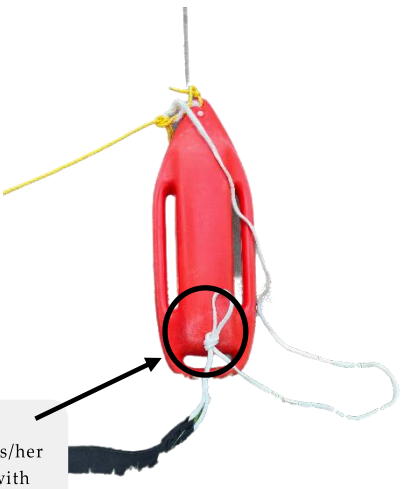
Please note that if a lifeguard either does not have long enough arms or does not have the strength to maintain a grip on the secondary lifeguards' rescue can handle, the lifeguarding service leadership should consider tying loops in all rescue can towlines. This will allow lifeguards to slip his/her hand through the loop; drape the loop around his/her wrist; and hold the towline in the palm of his/her hand (***FIGURE C.5.9***).



Primary lifeguard holds rescue with one hand across the front of the victim and grasps the handle of the back-up lifeguard's rescue can during a 'chain' rescue.
FIGURE C.5.7

Victim grasping rescue tube as the Lifeguard uses the backstroke to return the victim to the shoreline.

FIGURE C.5.8



Loop tied in the rescue can towline for a lifeguard during a 'chain' rescue to slip his/her hand and wrist to maintain a connection with his/her back-up lifeguard.
FIGURE C.5.9

c. If lifeguard is using rescue tube:

1. Place the rescue tube straight across the front of the victim; clip the rescue tube closed (*FIGURE C.5.11*) so that it forms a circle around the victim's torso; lifeguard places both arms under the armpits of the victim so that his/her elbows rest in the victim's armpits; lifeguard places both hands on the victim's shoulders.
2. Signal for back-up lifeguard(s).
3. Primary lifeguard will maintain a grasp of the victim in the recue tube and the back-up lifeguard will hand the primary lifeguard the towline loop of his/her rescue tube.
4. Primary lifeguard will slip his/her arm and wrist through the loop and hold the towline in the palm of his/her hand.
5. Secondary lifeguard will begin to swim primary lifeguard and victim to the shoreline.
6. As additional back-up lifeguards arrive to assist, each will hand his/her rescue tube towline loop to the previous responding lifeguard in the "chain" (*FIGURE C.5.12*) and turn to begin swimming to the shoreline.
7. All back-up lifeguards should be holding the towline loop of the rescue tube of the lifeguard in front of him/her with one hand and using the other hand to help sidestroke to the shoreline.

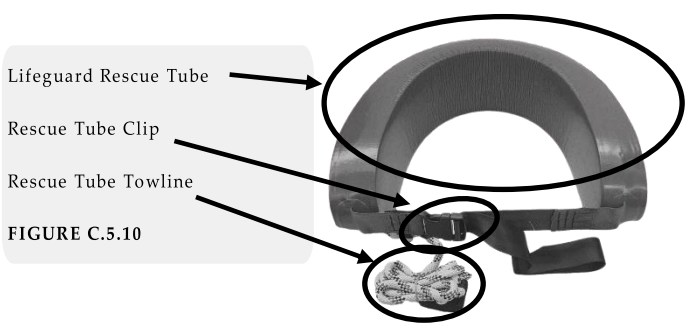


FIGURE C.5.10


Rescue tube clipped around victim.

FIGURE C.5.11

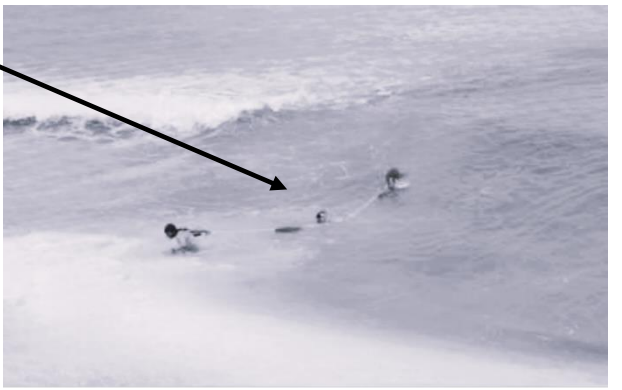

Lifeguard Chain Rescue

FIGURE C.5.12

Multiple Victim

This type of rescue involves 2 or more drowning victims at the same time. The victims could be any combination of passive, active or, simply, a distressed or tired swimmer.

The best response to multiple victims is to have at least one lifeguard for each victim enter the water. However, this is not always possible. When there are more victims than lifeguards to perform a rescue, the responding lifeguard(s), using the most appropriate entry and rescue technique for the circumstance, shall:

- Activate EAP.
- assist the victim who is in the most danger. In other words, the lifeguard will quickly assess and decide which of the victims needs attention first.
- perform rescue on the victim in greatest need.

If all victims are active, the lifeguard should:

- Secure the first victim and then swim, with the first victim, to the second victim.
- Assist the second victim in grabbing hold of the rescue tube or the rescue can handles. If using a rescue tube, the second victim should be instructed to wrap his/her arms and legs around victim #1.
- Signal for back-up lifeguards to assist in bringing victims to the shoreline (if available, a lifeguard with a line buoy should be deployed)

If one victim is passive, the lifeguard should:

- Lifeguard secures the passive victim on the rescue tube or rescue can first.
- If victim is unresponsive, lifeguard checks for breathing and if not breathing, provides immediate rescue breathing.
- Signal for back-up lifeguards to assist in bringing passive victim to the shoreline (if available, a rescue board or kayak should be deployed if the victim is pulseless).
- If victim is responsive and/or is unresponsive but breathing, the lifeguard should secure the victim on the rescue tube or rescue can; signal for back-up lifeguards; and swim to the next victim.

Submerged Victim

The following procedure should be utilized when a submerged victim is easily seen from the water's surface by the responding lifeguard(s) and/or the lifeguards' assigned post from the shoreline:

- Activate EAP.
- Lifeguard approaches victim using either the front crawl or the breaststroke keeping the rescue tube high and tight across chest and under rescuer's armpits.
- Lifeguard should allow the rescue tube to float on the water's surface while continuing to wear the rescue tube strap as he or she approaches the victim's underwater position.
- Lifeguard shall perform either a feet-first or head-first dive to reach the victim in the water column or on the bottom of the pool.
- Lifeguard shall reach one arm under one of the victim's armpits from the rear so that the victim's back is flush against the lifeguard's chest and the lifeguard's arm is able to reach across the front of the victim's chest.
- Lifeguard may choose to push off the bottom with his or her feet and/or begin to kick to propel both victim and rescuer to the water's surface. This is likely unnecessary as the buoyancy of the rescue tube is enough to propel both victim and rescuer to the water's surface.
- Lifeguard shall simultaneously begin to reach for the rescue tube tow line with the hand of his or her free arm. Once the tow line is in hand, the rescuer should begin to feed the tow line to his or her hand that is across the victim's chest.
- Lifeguard shall slide the rescue tube between the victim's back just below his or her shoulder line and the lifeguard's chest.
- Lifeguard shall lean the victim back on the tube (just as was done for a passive victim at the water's surface).
- Lifeguard shall open and maintain an airway and provide in-water ventilations (discussed in detail later in the chapter) if necessary.

Chapter 8 – Search and Rescue discusses and outlines the procedures for submerged victims not immediately and easily seen from the water's surface by the responding lifeguard(s).

Rescue Board Rescues

Rescue boards are common pieces of equipment routinely used by lifeguards at waterfront facilities. They look similar to a surfboard and are made from a variety of materials. Some rescue boards are composed exclusively form high-density foam while others have a core of plastic or fiberglass which then has an outer covering of high-density foam or rubber.

There are other features that can be added or removed from a board during production. For example:

- fins of varying sizes on the underside
- two handles on the topside while some have handles the entire length of the topside
- foam knee pads on the topside

And, the boards can vary in both size and shape which can have a dramatic impact on the manner in which the board functions in the water.

Rescue boards allow a lifeguard to:

- Reach victim(s), who are a distance from the shore, much quicker as compared to swimming to the victim(s).
- Perform patron surveillance from a different vantage point – i.e. in the water behind the swimmers. This also allows the lifeguard to be in much closer proximity to the swimmers in the case of an emergency.
- Rescue larger victims who otherwise might require multiple lifeguards to bring him or her to shore.
- Efficiently rescue a passive victim who are a distance from shore.
- Rescue multiple victims at one time.
- Perform in-water assessments of a victim.

Lifeguard rescue board with side handles, foam topper, bottom skeg.
FIGURE C.5.13

Executing Victim Rescue with Rescue Board

- Rescuer can either use the rescue board by paddling prone – laying flat on his or her stomach while stroking the water with both arms simultaneously or one arm followed by the other arm similar to a front crawl swim stroke. Or, the rescuer may kneel on the board with his or her weight centered and while leaning forward and downward extend both arms into the water to stroke simultaneously.
- As the rescuer approaches the victim, he or she should exit the rescue board keeping hold of the board.
- Rescuer should position him or herself on the long side of the board; turn the board upside down in the water; and approach the victim by pushing the board toward the victim and while keeping the board between him or herself and the victim.

ACTIVE VICTIM:

- Rescuer should ask victim to extend one arm; rescuer grab the wrist of the victim's extended arm to help drape it over the rescue board.
- Rescuer will hold the victim on the board by continuing to grasp the victim's wrist against the side edge of the board.
- Rescuer will gain leverage with his or her kick under the water so that he or she can flip the rescue board right side up in the water while continuing to hold victim's wrist against the board so that the victim ends up on his or her stomach on the board.
- Rescuer should grasp the victim by the swimsuit and/or waistband (or the hip if necessary) to pull the victim's lower body onto the board.
- Rescuer can: side stroke to the shoreline while holding the rescue board with the other hand; use a breaststroke kick while pushing the rescue board with both hands from behind to the shoreline; place him or herself on the rescue board by positioning his or her chest between the legs of the victim and paddle with both hands toward the shoreline. An active victim can be asked to help paddle in any of these scenarios.

PASSIVE VICTIM:

- Rescuer grabs one of the victim's wrists and drapes it over the rescue board while pulling the victim's chest onto the rescue board as far as possible.
- Rescuer will hold the victim on the board by continuing to grasp the victim's wrist against the side edge of the board.
- Rescuer will gain leverage with his or her kick under the water so that he or she can flip the rescue board right side up in the water while continuing to hold victim's wrist against the board so that the victim ends up on his or her stomach on the board.
- Victim's head and face must be positioned on the rescue board so as to not take in any water.
- Rescuer should grasp the victim by the swimsuit and/or waistband (or the hip if necessary) to pull the victim's lower body onto the board.
- Rescuer places him or herself on the rescue board by positioning his or her chest between the legs of the victim and paddle with both hands toward the shoreline.

Lifeguard makes a water entry on the rescue board to begin his approach to a possible in-water victim.
FIGURE C.5.14

FIGURE C.5.15

Landline Rescues

This type of rescue involves what is often referred to as a "line buoy". It is a rescue can attached to marine line (600-800 feet or 182.88-243.84 meters in length and .25-.50 inches or .64-1.27 cm in diameter) and this line is attached to a stationary point on the beach.

Typically, lifeguards utilize one of three types of landline setups. The first option is more traditional in nature and entails a spool of marine line that is able to freely dispense as the lifeguard enters the water. One end of the line is attached to the spool and the other end is attached to the line buoy as shown in ***FIGURE C.5.16***. The second option is a rescue throw bag (***FIGURE C.5.17***). The line is self-contained in the bag and the lifeguard(s) on the beach maintain control of the bag while the other end is connected to the line buoy. The third option is having the line spooled on the winch of a Motorized vehicle. In this case, the line is mechanically dispensed as the lifeguard enters the water and can be mechanically reeled in to return the lifeguard and victim to the beach.

Landline system used for rescues which may require rescuer to swim long distances and/or to swim in very rough and unfavorably dangerous conditions.
FIGURE C.5.16

Rescue throw bag which can be used instead of a landline for areas in which rescues will require shorter swims. This throw bag also tends to be more portable than the landline system.
FIGURE C.5.17

Once the lifeguard reaches the victim with the line buoy he/she has two choices:

1.) Pass the rescue can to the victim so that he/she places the rescue can diagonally in front of the victim; lifeguard places his/her arms under victim's arms; lifeguard will place victim between him/herself and the rescue can; the victim's arms will freely rest draped over the rescue can
2.) Pass the rescue can or tube to the victim and tell them to hold it tightly with both hands and to help kick if he/she is able to do so.

In either of the above cases, once the victim has a grasp on the rescue can, the lifeguard will signal the lifeguard(s) on the beach to begin pulling the line back to the shoreline (***FIGURE C.5.18***). If possible, the lifeguard and the victim should assist the "pullers" by
kicking

Lifeguard pulls the landline back to the beach with both the swimming lifeguard and victim(s) attached to the other end of the line.
FIGURE C.5.18

Rescue Kayak

Kayaks to be used for lifeguards and/or rescues should be 10-12 feet (3.05-3.66 meters) in length, be open topped, and weigh between 40-50 pounds (18.14-22.68 kg). Kayaks can be used for water patrol, a more advantageous position for patron surveillance and scanning, or for water rescues.

Positioning in the Rescue Kayak

To maneuver the kayak safely, the lifeguard should:

- Sit straight up in the kayak with shoulders square.
- Grip the paddle at shoulder-width and neck to chin height.
- Lean backwards through incoming waves while holding the paddle at or above the level of your head.
- Lean forward with feet secured in the foot wells and paddle once a wave passes and you are within the lull.

Navigation of the Rescue Kayak

- **Launching** – drag the kayak into ankle to knee-deep water; place hands on ether side of the kayak; sit in the kayak; immediately grab the paddle and begin paddling.
- **Paddling** – push the water with one side of the paddle while pulling the water with the other side of the paddle. Ideally, it should approximately be 60% push and 40% pull.
- **Turning** – use a backstroke of the paddle on the side/direction you want to turn the kayak. Follow the backstroke with a forward stroke of the paddle on the opposite side/direction you want to turn the kayak.
- **Stopping** – use a backstroke on alternating sides of the paddle; jump out of the kayak feet-first.
- **Approaching Victim** – always maintain visual contact with the victim; rescuer and victim should be facing one another; ensure the victim is on one side of the kayak.

The kayak should always be kept at a 45-degree angle to the waves when moving through the surf/impact zone. The lifeguard must also ensure that maximum speed is reached prior to attempting to move through incoming waves/swell.

Executing Victim Rescue with Kayak

ACTIVE VICTIM:

- Rescuer approaches facing the victim and keeping the victim to one side of the kayak.
- Rescuer straddles the kayak with his/her legs while remaining seated on top of the kayak.
- Rescuer assist the victim in placing both arms/hands on top of and across the kayak.
- Rescuer instructs victim to kick his/her legs while pulling the victim at he arms/shoulders and waist onto the kayak.
- Rescuer pulls the victim's legs onto the kayak so that the victim is face-down and his/her head is near the bow and his/her feet are near the rescuer.
- If the rescuer is unable to maneuver the victim onto the kayak using the method described above:
  - rescuer should maneuver the kayak so that the victim is able to grab hold of the bow.
  - rescuer instructs the victim to grasp the bow firmly with both hands.
  - rescuer attempts to return the victim to the beach or other safe area.

PASSIVE VICTIM:

- Rescuer approaches facing the victim and keeping the victim to one side of the kayak.
- Rescuer should exit the kayak on the side nearest to the victim.
- Rescuer, while exiting the kayak, should maintain grasp on the kayak with one hand and roll the kayak upside-down while exiting.
- Rescuer grasps the wrist of the victim and pulls him/her toward the kayak.
- Rescuer places/drapes the victim's arms over the top of the kayak.
- Rescuer climbs on top of the upside-down kayak while maintaining a grasp on both of the victim's arms ensuring they remain draped over the top of the kayak.
- Rescuer exits the kayak on the opposite side of the victim while, simultaneously, rolling the kayak to the upright position. Rescuer will gain leverage with his or her kick under the water so that he/she is more easily able to flip the kayak upright.
- Rescuer climbs aboard the kayak.
- Rescuer straddles the kayak and moves the victim's legs onto the kayak.
- Rescuer should position the victim on his/her back if rescue breathing is required.
- Rescuer returns the victim to the beach or other safe area.

MULTIPLE VICTIMS:

- Rescuer should approach the victim in the greatest distress first.
- Rescuer should follow the procedures outlined above in both the 'ACTIVE' and 'PASSIVE' sections.
- Rescuer will then, with the first victim aboard, will approach the second victim.
- Rescuer should either follow the procedures outlined above in the 'ACTIVE' and 'PASSIVE' sections. Sometime, the rescuer will need to use his/her judgement and enter the water with the rescue tube to secure and move the second victim onto the kayak instead of following the 'ACTIVE' or 'PASSIVE' procedures.
- Rescuer should have the second victim firmly grasp the stern of the kayak with both hands.
- Rescuer should instruct victims to grasp the side of the kayak if/when there are more than two (2) victims.
- Rescuer should position victim(s) on his/her back if rescue breathing is required. Other conscious victims can be given the rescue tube in these cases so they may float and await back-up lifeguard(s).
- Rescuer(s) should return the victims to the beach or other safe area.

Escapes

Active victims only objective is survival. The victim will do anything to keep his or her head above water and breath. This includes grabbing for and latching onto any stationary object and/or person in the water. This includes the rescuing lifeguard.

A lifeguard cannot allow the victim to grab him or her and possibly becoming a victim him or herself. Hence, it is standard practice for rescuing lifeguards to approach an active victim from the rear as to limit the victim's ability to grab hold of the lifeguard.

There will be times, no matter the precautions a lifeguard takes, that he or she will be grabbed and possibly held underwater by a panicked active drowning victim. In these cases, it is vital that the lifeguard be very well versed in performing both rear and front victim hold escape maneuvers.

Anytime a lifeguard is grabbed by a victim, his or her initial reaction and first action must be immediate. If not wearing a rescue tube, the lifeguard should:

1.) Tuck his or her chin against his or her chest
2.) Submerge him or herself in the water by pushing up with both hands and arms as many times as is needed to submerge. The victim will likely release his or her hold in an effort to return to the water's surface.
3.) Return to the surface and re-approach the victim from the rear and execute a rear rescue by placing one arm over the top of the victim's shoulder, across the victim's chest and under the opposite armpit. Use a side stroke to move the victim to safety.

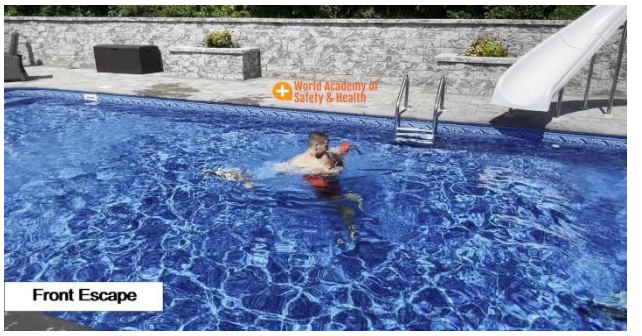
If wearing a rescue can or tube, the lifeguard should:

1.) Tuck his or her chin against his or her chest
2.) Forcefully push up on the victim's elbows or apply pressure to the brachial pressure points to break the victim's hold.
3.) Submerge him or herself.
4.) Return to the surface and re-approach the victim from the rear and execute a rear rescue by placing one arm over the top of the victim's shoulder, across the victim's chest and under the opposite armpit. Use a side stroke to move the victim to safety.

1


World Academy of Safety & Health
Front Escape

2


World Academy of Safety & Health
Front Escape

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Front Escape

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Front Escape

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Front Escape

6


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Front Escape

Extraction From the Water

- **Assisted Walk** – one or more lifeguards place one arm around the waist of the conscious victim while being removed from the water and drapes one of the victim's arms around the lifeguard's neck and over his/her shoulder. The lifeguard(s) carries the rescue can or tube in his/her other hand and escort victim to the sand.
- **Chair Carry** – two lifeguards facing one another, interlock arms by holding one another's wrists – right arms to left arms, respectively. The two forward most arms scoop the victim under his/her knees and the two rear most arms support the victim's back. The victim's left arm is draped around one lifeguard's neck while the victim's right arm is draped around the other lifeguard's neck.
- **Victim Beach Drag** – lifeguard stands behind the victim and places his/her arms under the victim's armpits far enough so that the lifeguard's elbows rest under the victim's armpits. The lifeguard interlocks his/her hands and fingers in front of the chest of the victim. The lifeguard begins to walk backwards out of the water dragging the victim 's heels across the ground.

Medical Emergencies

If a call for emergency medical care is received by a lifeguard and:

One lifeguard is assigned to the area:

- Lifeguard notifies, via agency's communication system, the lifeguard supervisor of the medical emergency and the location of the victim(s).
- Lifeguard uses whistle to immediately notify the swimmers they will be unsupervised and should clear the water immediately.
- Lifeguard responds to the medical emergency being sure to take a communication device and medical response bag.
- Lifeguard provides an update, via the agency's communication system, to lifeguard supervisor and/or advanced medical team.

Two or more lifeguards are assigned to the area:

- One of the lifeguards (lifeguard #1) responds to the medical emergency being sure to take a communication device and medical response bag.
- Lifeguard #1 assesses the victim(s) and determines if a supervisor is required and/or if immediate advanced medical care is required.
- Lifeguard #1 provides an update, via the agency's communication system, to lifeguard #2 and lifeguard supervisor of the condition of the victim(s).
- Lifeguard #2 remaining within the assigned area begin to clear the water in anticipation of providing back-up coverage at the scene of the medical emergency.
- Only once all lifeguards return to the assigned are will swimmers be permitted back in the water.

There is a Lifeguard supervisor nearby:

- The lifeguards notify, via the agency's communication system, the assigned supervisor of the emergency while providing as much detail as possible starting with the location so that the supervisor may begin his/her route while receiving additional information.
- The lifeguard supervisor responds to the medical emergency.
- The lifeguard supervisor assesses the victim(s) and determines if more advanced medical care is necessary.

All medical aids other than minor basic first aid require the lifeguard and/or lifeguard supervisor to accurately complete an agency incident report. Though the details of the report can be completed post-incident, it is vital that the victim's information be gathered while on-scene. This would include: victim's signs and symptoms, allergies, medications, past pertinent medical history, last oral intake, events leading to incident which is often referred to as SAMPLE; first and last name; phone number; local address and permanent home address; and any other contact information for victim and family members and/or friends accompanying the victim.

Spinal Trauma

Figure C6.1

Recognizing Signs & Symptoms

Spinal Trauma should be suspected in any of the following circumstances:

- Pain in Head, Neck and/or Back
- Fluids Exiting Nose, Mouth, Ears or Eyes
- Numbness and/or Weakness
- Altered State of Consciousness
- Imbalance on Their Feet

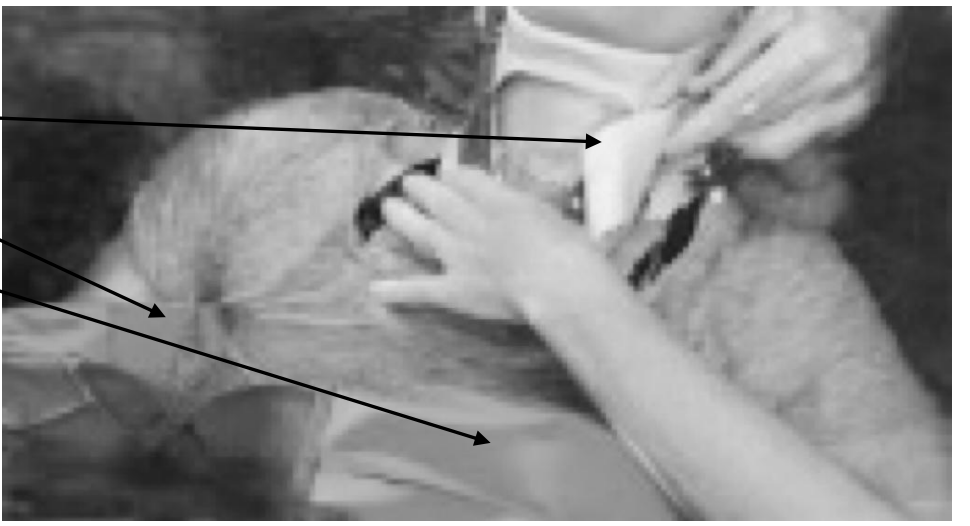
Stabilization of Spinal Trauma

Effectively managing a victim of a spinal injury can be scary. It is important that the lifeguard remember that so long as the victim has a pulse, is breathing, and is not suffering any additional immediately life-threatening injuries, lifeguards and other rescuers should take their time to ensure there are no sudden or erratic movements of the victim and that inline stabilization is constantly maintained.

When it comes to splinting an injury, lifeguards are taught not to splint unless the victim must be moved. This is exactly how we should approach the idea of backboarding here. And, that a victim should only be moved if leaving them in their current position would cause further harm as they await EMS arrival.

Victims of spinal trauma should be treated in a similar way – backboarding of a victim with suspected spinal trauma should only be done if and when local EMS protocol dictates it. Aquatic facilities must coordinate with their local EMS for guidance.

- Always use manual inline stabilization both in-water and on land for any suspected spinal.
- Only backboard a victim of suspected spinal trauma when required by local medical direction.
- Participate in additional in-service training using the equipment, facility, local protocols and facility protocols for spinal trauma victims.



Application of C-Collar to an in-water victim suffering an apparent spinal trauma injury.

Rescue tube can also be seen clipped around the victim under his/her armpits.

FIGURE C.6.2

Arm Splints

To effectively perform this skill, the lifeguard should:

- Activate the EAP.
- Approach the victim by either using the breaststroke or the walking being careful to limit any disturbance in the water.
- Align hip closest to the victim's hip.
- Use arm closest to the victim to grasp the victim's outer arm farthest from the lifeguard near the bicep while simultaneously using arm farthest from the victim to grasp the victim's outer arm closest to the lifeguard near the bicep.
- Simultaneously move the victim's arms up alongside the victim's head so that the victim's biceps are against the victim's ears (***FIGURE C.6.2***).
- Apply pressure to both of the victim's arms so that the head and neck are immobilized. This pressure should be firm and evenly distributed on both sides of the victim's head.
- Slowly and smoothly walk around the pool in the direction the victim's head is pointing as you perform this entire skill and after the victim is rolled to the face- up position (***FIGURE C.6.3***).

  This will help the victim's lower body to remain buoyant and float near the water's surface which will keep the victim's entire body more streamlined.

Figure C6.3

Figure C6.4

Figure C6.5

Figure C6.6

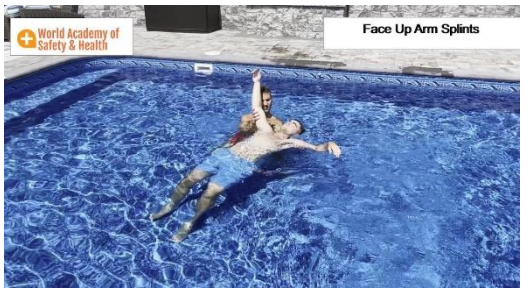


Figure C6.7

Figure C6.8

Figure C6.9

Backboarding Spinal Trauma Victims

The following are generalized set of procedures for backboarding. They are designed to provide a broad understanding of the goals of backboarding in various situations and environments. Each facility's design, protocols, and techniques are different and local medical direction and EMS protocols may differ from one jurisdiction to another. For these reasons, it is vital for a lifeguard to receive additional in-service training from his or her employer based upon the employer's specific procedure and technique(s) as well as the local medical direction and local EMS protocols.

The overall goal of backboarding an in-water victim of spinal trauma is the ability to extract this person from the pool without causing additional injury. There are many techniques used to effectively backboard a victim. All techniques are based upon the same set of principles and the specific detailed steps are dependent upon the circumstance:

- Maintaining inline stabilization of the head, neck and back of the victim.
- Backboard is placed underneath the victim and raised up to the victim.
- One or more backboard straps, headgear pillows and head strap(s) are utilized.
- Extraction from the pool in a safe and effective manner.

The most desirable circumstance is having at least four trained rescuers available when handling a situation in which a spinal trauma victim must be backboarded.

Seated Stable Carry

This technique is most easily used in water no deeper than the lifeguard's waist.

To effectively perform this skill, the lifeguard should:

- activate the EAP.
- approach the victim by either using the breaststroke or the walking being careful to limit any disturbance in the water.
- approach the victim from behind.
- place arm closest to the victim under the victim's armpit farthest from the lifeguard.
- place arm farthest from the victim under the victim's armpit closest to the lifeguard.
- arms should be far enough under the victim's armpits to allow the palms of the lifeguard's hands to reach the victim's ears to provide manual inline stabilization.
- once the lifeguard's arms are fully under the victim's armpits and the lifeguard's hands are providing manual inline stabilization, lifeguard should lift the victim up so that his or her back is flush against the lifeguard's chest.
- while facing the victim, a second rescuer picks up both legs of the victim from behind the knees and pushes the victim against the first rescuer's back as the first rescuer walks the victim out of the water.

This technique is also easily used with a spinal trauma victim on land who is seated, standing, or laying in a prone position.

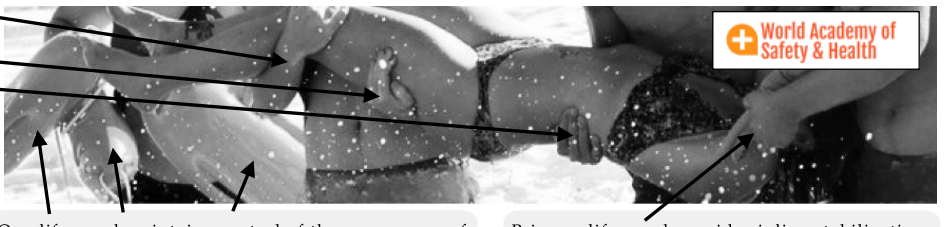
Other responding back-up lifeguards should place themselves in the water between the victim and the oncoming wave action with his/her backs facing the incoming swells and whitewater. The bodies of these back-up lifeguards along with their rescue cans will help to mitigate the impact the breaking wave action has on the victim.

Figure C6.10

Figure C6.11

When additional lifeguards are available, each of the back-up lifeguards should place his/her hands under the back, legs, and waist of the suspected spinal trauma victim. This will help to provide support and stabilization to the spinal column.

FIGURE C.6.12



One lifeguard maintains control of the rescue cans of all other rescuing lifeguards. These were also used on the way to the beach to block the crashing surf.

Primary lifeguard provides inline stabilization.

Standing Backboarding

Standing backboarding or what is often referred to as a "standing takedown" is used when a person exhibits the signs of spinal trauma while on land. Or, it is used when a person complains of the symptoms of spinal trauma while on land and standing.

The steps for backboarding a victim who is in the standing position are:

- lifeguard provides manual inline stabilization by placing the palms of his/her hands on the victim's ears while facing the victim.
- back-up lifeguard will apply the proper size c-collar while standing behind the victim.
- a back-up lifeguard will place the spineboard behind the victim.
- Two lifeguards will maintain manual inline stabilization while in front of the victim by each placing the palm of his/her hand closest to the victim on the victim's ear. These lifeguards will place his/her other hand under the victim's armpit and grasp a handle of the backboard.
- a third back-up lifeguard will grasp the top of the backboard with two hands from behind the victim to assist in guiding the board with the victim to the ground while the other two lifeguards maintain manual inline stabilization and contact with the backboard handles.

Vertical backboarding on land of a victim of suspected spinal trauma – often referred to as a 'standing takedown'.

FIGURE C.6.13

Zero Depth Backboarding

The zero depth backboarding procedures are used in two different circumstances. If a person exhibits the signs of or complains of the symptoms of spinal trauma while on land and is on the ground. Or, if a person exhibits the signs of spinal trauma while in shallow water – a few inches to only wet ground. If the victim's airway, while on his/her back, is out and remains out of the water then the water is shallow enough to utilize the zero depth backboarding procedures.

The procedure for zero depth backboarding are:

1.) primary lifeguard (lifeguard #1) provides manual inline stabilization using the Arm Splints technique from the top of a face-up victim and while standing on one side of a face-down victim. If the victim is face-down, the lifeguard must roll the victim the face-up position once secure in the Arm Splints.
2.) if victim is unresponsive, lifeguard checks for breathing and if not breathing, provides immediate rescue breathing.
3.) if victim is responsive or unresponsive but breathing, lifeguard #1 maintains inline stabilization.
4.) first back-up lifeguard (lifeguard #2) takes over manual inline stabilization from the one side of the victim's head by placing his/her palms over the ears of the victim.
5.) Lifeguard #1 moves victim's arms to the sides of the body and secures a c-collar on the victim.
6.) lifeguard #1 places the arm of the victim on the side he/she will be rolled.
7.) lifeguard #1 grasps the victim at the hip area and ribcage area.
8.) second back-up lifeguard (lifeguard #3) retrieves a backboard.
9.) lifeguard #2 signals lifeguard #1 to roll the victim toward him/herself and lifeguard #3 to slide the backboard under the victim from the opposite side of lifeguard #1.
10.) lifeguard #2 signals lifeguard #1 and lifeguard #3 to roll the victim onto the backboard.
11.) lifeguard #3 retrieves backboard headgear while lifeguard #1 secures the straps from the chest to the feet of the victim (ensuring that the chest strap is secured under the victim's armpits and the waist strap is over top of the victim's hands/arms).
12.) lifeguard #3 assists lifeguard #2 in securing the headgear and head straps. The top head strap goes across the victim's forehead and if the backboard headgear has a second strap it goes on top of the c-collar near the victim's chin.

Protocols & Communication

Lifeguard Techniques, Stations & Positioning

Generally speaking, when considering the positioning of lifeguards, the management staff must ensure:

- Lifeguard should be provided a stand/chair/tower/station that is elevated above the beach and the level of the swimming area.
- Lifeguard stands/chairs/towers/stations are placed close enough to the water to allow the lifeguard to effectively scan and perform swimmer surveillance, but, far enough up the beach so that the high tide does not disrupt the stability of the stand/chair/tower/station.
- Lifeguard services should consider alternate methods of swimmer surveillance (i.e. stationary elevated platform in the water if there is limited wave action; in water patrol by lifeguard(s) using a rescue board, kayak or other non-motorized vessel).
- All lifeguards have a reliable and effective method of communication with one another and, at minimum, one lifeguard must have a direct line of communication to local authorities; management; and/or other emergency services.

Lifeguard chair for two lifeguards as some areas assign partners to each lifeguard station/location.
FIGURE C.7.1

Lifeguard tower for one or multiple lifeguards. Used in select geographic areas and can be equipped with telephones, climate control, polarized windows & more.
FIGURE C.7.2

Lifeguard chair for a single lifeguard. It is elevated above the level of the swimmers and far enough behind the high tide line that it is not washed away or damaged by the incoming tidal flow and/or wave action.
FIGURE C.7.3

Missing Person/Child

Any time the lifeguard(s) is notified a person missing, he/she should:

- Obtain the name and complete description – including age, gender, hair color, eye color, clothing description.
- Find out the person's last know location.
- Find out if the missing person was engaged in an activity on the beach; was last seen in the water; if the missing person was walking in a particular direction. It is IMPORTANT to note: statistically speaking, missing children and elderly will walk with the wind along the shoreline.
- Find out if the missing person has any medical conditions.
- Obtain any other information that may be helpful in locating the missing person.
- Contact dispatcher with the above information so the dispatcher can alert other lifeguard(s). If there is no dispatcher, alert nearby businesses and utilize any type of communication and/or public address system to alert the public on or around the beach.
- Instruct the family of the missing person to remain in one location so that the lifeguard(s) can easily and quickly make contact as and when needed.
- If the missing person was last seen in the water, lifeguard(s) must immediately assess and investigate to determine if a water search should be conducted.
- Notify the dispatcher when the missing person is located.

Any time a missing child is brought to a lifeguard, the lifeguard(s) should:

- Notify the dispatcher of the missing child being sure to share a complete description – the dispatcher will alert other lifeguard(s).
- If lifeguard does not immediately locate the parents, the missing child should be kept with the lifeguard. It may be useful to use one long whistle blast to gain attention of swimmers and beachgoers and point out the missing child.
- If, after the above public notification, the parents are not located, the child should be taken to the next lifeguard station and the procedure repeated.
- Ensure that the child is comforted and his/her emotional well-being is preserved during the process.
- If this procedure is unsuccessful in locating the parents, the child should be transferred to the local authorities for their assistance in locating the parents.
- At no time during the process, should any lifeguard leave his/her area unguarded.

Whistle Signals

A whistle can be an effective mechanism to communicate with fellow lifeguards, with members of the public, and with supervisors. As with any form of communication within an organization and within particular geographic areas where there are the same and/or similar services offered to citizens, whistle signal communication within lifeguard services must remain standardized. This standardization ensures seamless interaction between lifeguards and/or lifeguard agencies during emergencies and normal operations, thus, allowing the agencies to provide the best victim care possible.

Acme Thunderer whistle recommended for beachfronts, ocean rescue, & other open water environments.
FIGURE C.7.4 World Academy of Safety & Health

Standard Whistle Signals

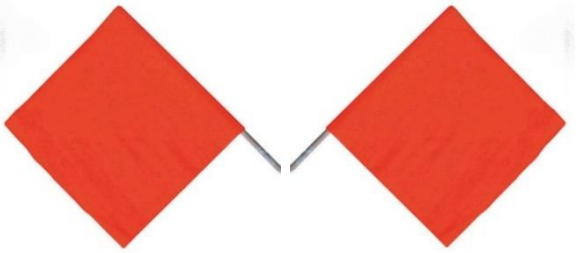
One Long Blast	Attention of Swimmer(s)
Two Short Blasts	Attention of Lifeguard(s)
Two Long Blasts	Land Emergency; Medical Emergency
Series of Short Blasts	Water Rescue; Water Emergency

Flag Signals

Semaphore is a system or method of signaling to others using a pre-established "signal alphabet". It is often referred to as the language of the ocean.

Originating in France, the semaphore system was developed by Claude Chappe in 1790 and was used during emergency situations on or around ships and/or the ocean and for the government to communicate during the French Revolution. During the 1700's and early 1800's, semaphore was performed using light signals. Semaphore using flags was not developed until 1866[16].

Two 18"x18" semaphore flags, each mounted on a 24" wood pole for handheld flag signaling and communication between lifeguards.
FIGURE C.7.5 World Academy of Safety & Health



Present day use is typically found along beaches so that lifeguards and/or lifeguard stations may effectively communicate with one another. It is also frequently used to signal to airplanes and pilots. In today's system, one flag (typically orange or another high visibility color) is held in each hand and the person's arms are placed in distinct and specific positions with each position representing a letter or number in the semaphore "alphabet".

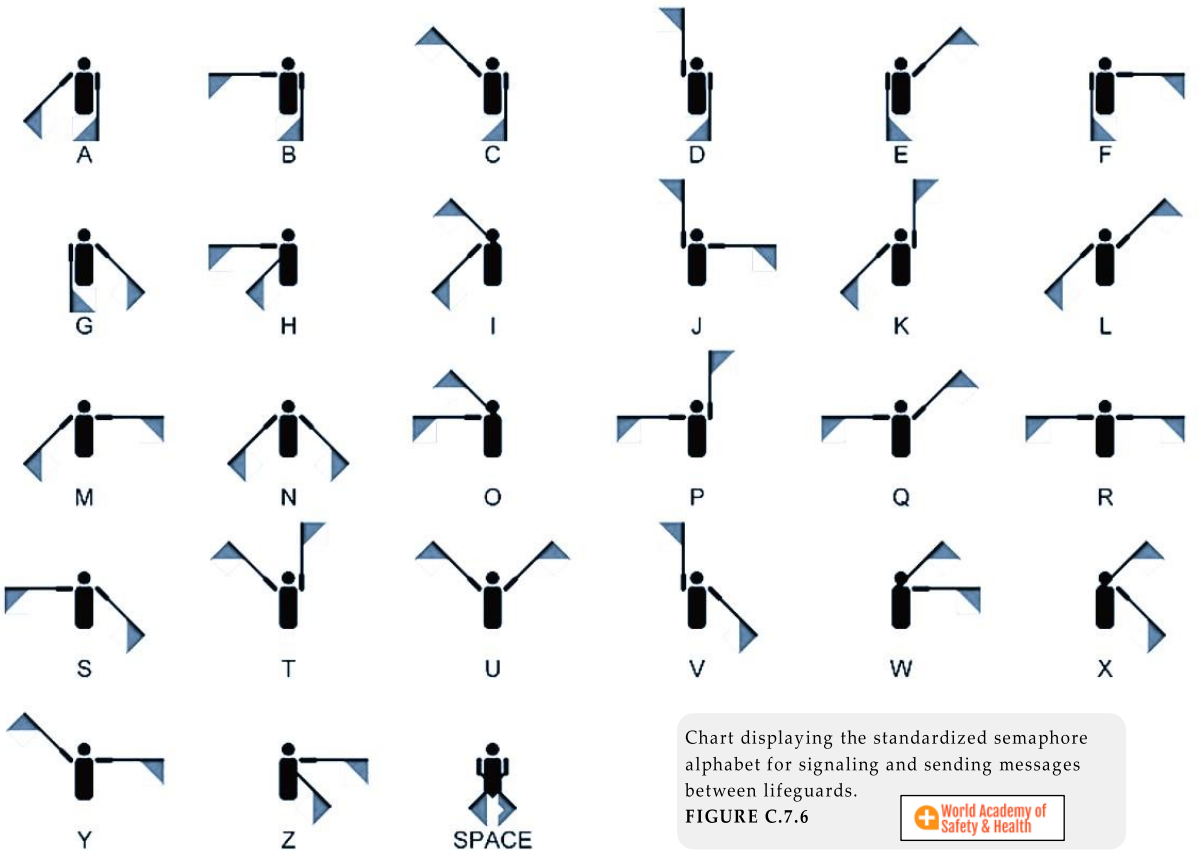


Chart displaying the standardized semaphore alphabet for signaling and sending messages between lifeguards.
FIGURE C.7.6

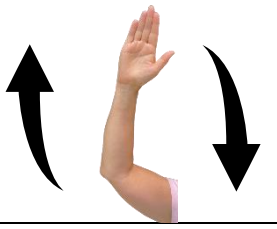
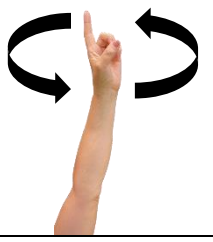
Handheld Portable Radios

If an organization is using a system of communication that includes handheld radios, there are a few mandatory components of such a system that require

A universal or standard set of "ten codes" does not exist. Instead, the use of, meaning of and protocol surrounding "ten codes" varies form one jurisdiction to another and/or from one organization to another.

A full list of "ten codes" can be found in *Appendix A*.

Hand Signals

	**Pointing** - to a Person or Situation to Alert a Fellow Lifeguard of a Situation
	**Tapping the Tap of your Head** – Request a Fellow Lifeguard Watch your Area
	**Creating a 'Circle" Above your Head with Two Arms** – All Okay
	**Making Fist with One Hand while Simultaneously Grabbing the Wrist of that Hand** – Submerged Victim
	**One Hand Straight Over Head Moving the Arm Back & Forth Left to Right** – Signal other Lifeguard(s) that CPR and AED is/are Needed
	**One Hand Straight Over Head Moving the Arm Up and Down While in Water** - Signal Lifeguard(s) on Beach to Begin to Pull the Landline
	**One Hand Straight Over Head on Land or in Water** – Need Immediate Assistance
	**One Hand Straight Over Head While Making a Fist While in Water** – Signal to Lifeguard(s) on Beach to Stop Pulling Landline
	**Arm Extended Over Head with Finger Pointing Upward and Motioning a "Circle" motion with Finger** - Incoming Watercraft, Vessel, or Other Watersport Object; Call a Lifeguard to the Beach from the Water

Weather Related Procedures

The beach should be cleared whenever there lightning is seen or it is known to be in the area. Agencies should consider at least one portable lightning detector to equip the lifeguards with the most up-t-date, real-time storm and lightning information. Clearing of the beach must include the non-swimmers who are only on the beach. All persons must be directed to take cover in the closest indoor space until the storm has passed and it is deemed safe, by the lifeguards, to return to the beach.

Clearing of the beach can take place using a communication system such as a public address system and/or a megaphone. If the appropriate communication equipment is not available, the lifeguard(s) must use his/her whistle and loudly announce the clearing of the beach due to the incoming weather and/or, once the water has been cleared, walk person to person on the beach making the appropriate notification.

Lifeguard(s) must remain near his/her assigned beach but in the nearest indoor and/or closed safe area.

Group A - Juniors

PART V

Intended Audience

School-aged children between approximately ages fourteen through fifteen (14-15) (lesson plans and activities can be modified and adapted for both younger and older participants as needed). The focus of A Group Juniors should be skills practice that can be accomplished by way of competition and competition preparation activities (see ***Part VII*** and/or ***WASH Competition Rules Manual***).

Introduction to Lifeguarding

Pool Lifeguarding:

The primary responsibility of all lifeguards is the safety and well-being of patrons. Often times, other facility related duties interfere with the job of a lifeguard.

If lifeguards are the staff members who are responsible for maintenance, cleanliness, membership status checks, and other duties then those duties must be assigned to lifeguards who are not in the stand and are not responsible, at that time, for patron surveillance.

Drowning can occur quickly in even the shallowest of water. It is crucial that the lifeguard remain vigilant and alert during his or her entire shift while in the stand and responsible for patron surveillance.

In order to remain alert, the lifeguard must take care of him or herself. The heat, humidity, and sun can take a toll on one's body. Lifeguards should remain hydrated; reapply sunscreen every few hours; use the umbrella if possible; and be rotated out of the sun every 30-40 minutes to perform other facility-related duties or to, simply, take a break.

Lifeguards are the last line of defense in drowning prevention. This responsibility must be taken seriously by all who are employed in the aquatics industry.

Finally, it is easy to become complacent while sitting in the lifeguard tower. This is particularly true if and when a significant number of days has passed since one's facility has experienced any type of emergency.

It is vital that all lifeguards continue to 'stand up in the canoe'. In other words, it is easy to sit down in a canoe and enjoy the ride. It takes tremendous focus and hard work to stand up in a moving canoe. The lifeguard must exercise this same type of focus and work hard to pay close attention to what is going on around him or her and be prepared to respond to any emergency – as all emergencies are unexpected.

Surf Lifeguarding:

Lifeguards at beaches, oceans, and other tidal waters are vital to drowning prevention. According to the United States Lifesaving Association (USLA), the chances of a fatal drowning at a beach guarded by a USLA agency lifeguard is 1 in 18 million[26].

When making decisions about using lifeguards and other means of increasing public safety in aquatic settings, policy makers should use available local evidence. This evidence includes:

- *the effects that lifeguards have had on patrons' safety and attitudes;*
- *the number of people using the facility or beach area during the past years;*
- *the incidence of water-related injuries and drownings at the facility or beach area during those time periods;*
- *data on the number of water-related injuries and drownings at pools and beaches in the local area or state with and without lifeguards, for comparison; and*
- *the level of lifeguards provided (e.g., number of lifeguards per number of persons using the facility).*

In addition to these factors, policy makers should consider public attitudes about lifeguards and legal issues related to using lifeguards[4].

Data provided by the Centers for Disease Control (CDC) indicates that, "nonfatal drowning can result in long-term health problems and costly hospital stays"[5] as evidenced by:

- *For every child who dies from drowning, another eight receive emergency department care for non-fatal drowning.*[7]
- *More than* ***40%*** *of drownings treated in emergency departments require hospitalization or transfer for further care (compared with 8% for all*

Tidal Water

Tidal Cycles

The Earth is not a perfect circle or sphere. For this reason, not every geographic area on our planet experiences the same tidal cycles. If the Earth was a perfect circle then all regions of the world would experience two equally proportioned high and low tides in each 24-hour period of time.

As the Earth rotates, large landmasses (i.e. continents) prevent the tidal bulges from moving west. Therefore, this water is unable to freely and, hence, establish unique tidal patterns in each ocean and/or in different regions of the same ocean[21].

Semi-Diurnal Tides – The most common tidal pattern. High tide and low tide occur twice during a 24-hour period of time and the variation in height of each successive high and low tide is minimal. This is typically found on the east coast if the United States.

Diurnal Tides – High and low tide each occur once during a 24-hour period of time. This is typically found in the Gulf of Mexico.

Mixed Tides –. This is typically found on the west coast of the United States as well as many Pacific Islands.

Semi-Diurnal Tides

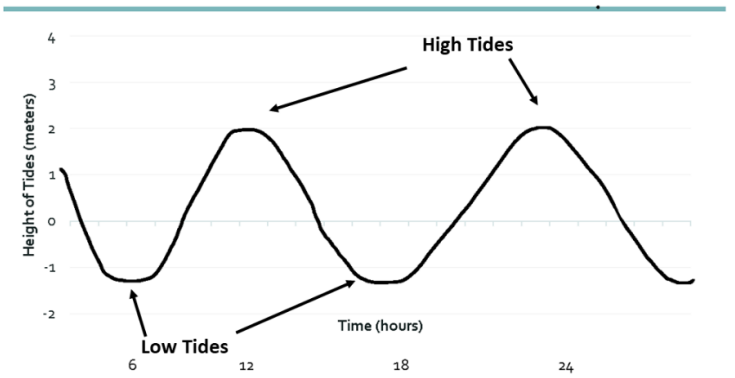


Figure C2.1

Diurnal Tides

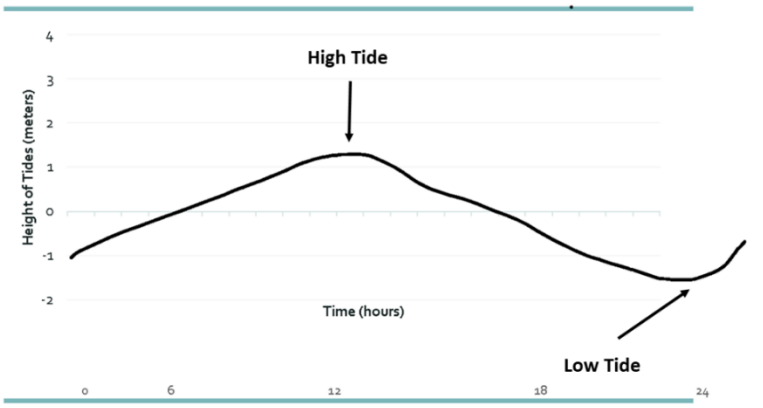


Figure C2.2

Mixed Tides

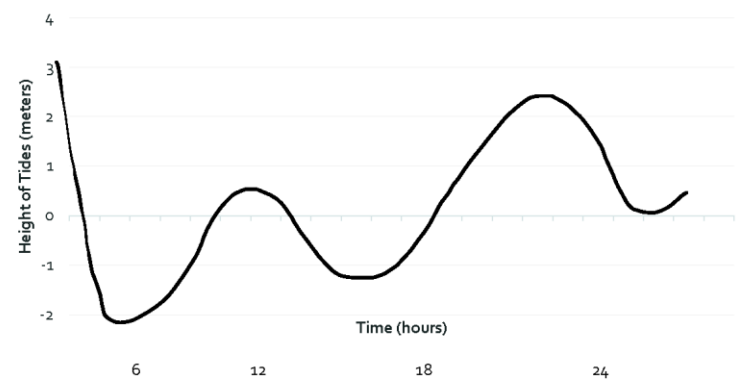


Figure C2.3

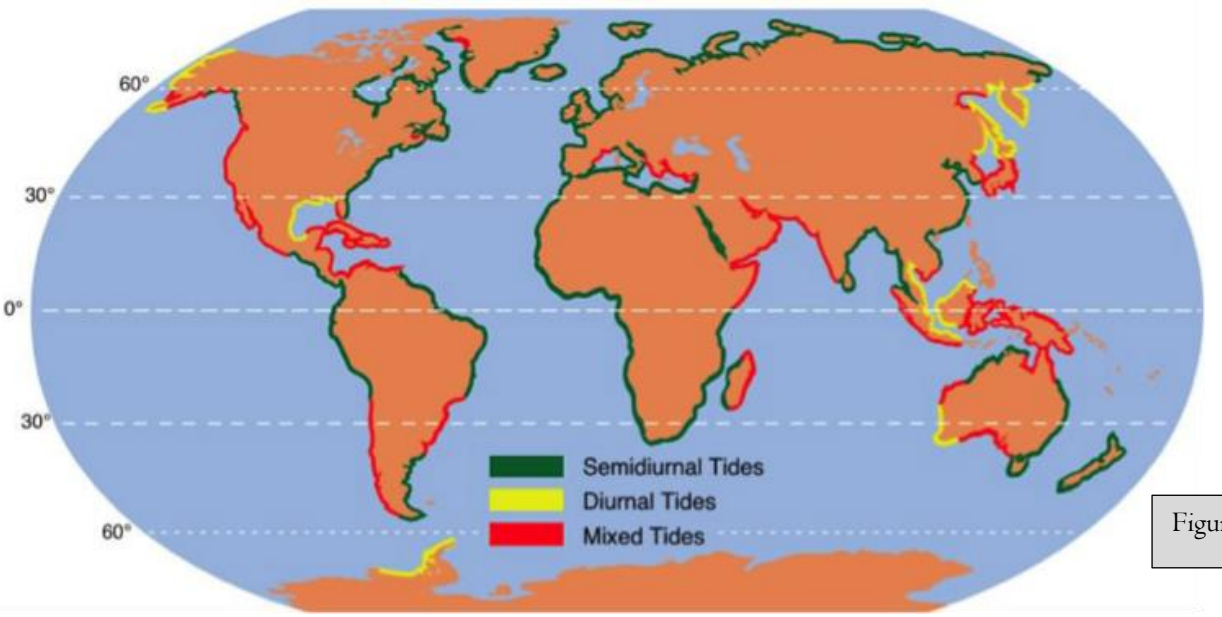


Figure C2.4

Waves

Ocean waves all share the same characteristic component parts. These include:

- **Crest** – the highest point of a wave
- **Trough** – the lowest point of a wave
- **Height** – the distance between the crest and the trough
- **Amplitude** – the distance between the crest or the trough and the resting position of the water's surface
- **Period** – the time between two consecutive wave crests
- **Frequency** – the number of waves that pass by a fixed position in a given amount of time

Wind waves are caused by a friction between the local winds and the surface of the water.

Swell waves or ground swell are generated by the wind associated with distant weather systems. Local winds have little to no impact on swell waves.

Ocean Currents

According to the National Oceanic Atmospheric Administration (NOAA), an "ocean current describes the movement of water from one location to another. Currents are generally measured in meters per second or in knots (1 knot = 1.85 kilometers per hour or 1.15 miles per hour)[18].

Rip Currents

A rip current is when a volume of water flows away from the beach or shoreline in a narrow channel. These currents, typically, occur at surf beaches where there is a gap or split in a sandbar and/or near other structures such as a jetty, dock, pier or similar object. They are surface currents and can only pull a swimmer away from the shoreline – they do not pull a swimmer under the water.

> *Rip currents can form in a gap between sandbars, piers, or parts of a reef. Such underwater obstacles block waves from washing directly back to sea. The water from these waves, called feeder waves, runs along the shore until it finds an opening around the obstacle.*

The stream of water, now a rip current, rushes to the opening, just like water down a drain. A rip current flows more quickly than the water on either side of it, and may stir up sediment from the beach. This sometimes makes rip currents easy to spot as dark or muddy lines running from the beach out toward the ocean. Rip currents are also usually more calm-looking than the surrounding water. Once past the obstacle (between the sandbars or piers), a rip current loses pressure and stops flowing[15].

Often times, rip currents and undertows are confused with one another. Unlike rip currents, an undertow is an ocean current that flows along the bottom of the water column. An undertow can also pull a swimmer beneath the water's surface[15].

Rip currents can be as narrow as 10 feet in width but can also be as wide as 100-200 feet in width. The water is usually moving 1-2 feet per second (approximately 1.09-2.19 kilometers per hour or .59-1.18 knots) but, can be as fast as 8 feet per second (approximately 8.8 kilometers per hour or 4.74 knots)[18].

Why are Rip Currents Dangerous

- Rescues performed at surf beaches, over 80% of the time, are the result of rip currents[18].
- Pull people away from shore no matter the person's swimming ability.
- Can appear, disappear and reappear at a moment's notice and can also increase in strength at any moment.

How to Recognize a Rip Current

- Cloudy, murky, and/or discolored channel of water
- Flattened area of water within the breaking waves
- Outward flow of water while the flow of water on either side of the narrow channel in question is flowing inward. This is most often identified by a line of debris, seaweed, foam or other objects moving away from the shoreline in the channel.
- The outward flow of water is choppier than the surrounding water.

Escaping the Pull of a Rip Current

- Relax and float until the current ends – the longer rip currents extend only a few hundred feet from the surf zone and weaken as they move farther from the shoreline.
- Never attempt to swim against the outgoing current – you will likely tire quickly.
- Once 'released' from the pull of a rip current, swim parallel to the shore until well clear of the current. Only then should you begin swimming toward the shoreline.
- Sometimes the current weakens enough and/or circles back to the shoreline while you are floating to allow you to swim back to the beach.

Figure C2.5

Figure C2.6

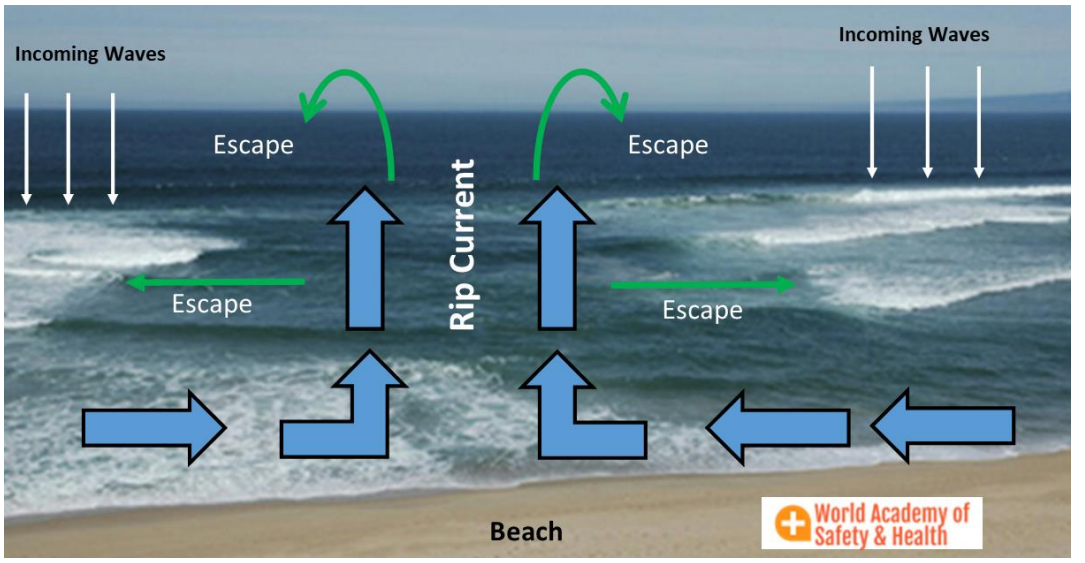


Figure C2.7

Longshore Current

When a wave reaches the beach, there is a release of a tremendous amount of energy that, in turn, creates a current that flows alongside or parallel to the coast within the area of breaking waves. This current moving along the shoreline is called a longshore current.

The velocity of a longshore current is influenced by several factors all having to do with the original wave reaching the coast (i.e. the velocity of incoming wave, angle of the incoming wave, slope of the ocean floor leading up to the beach). For example, the steeper the angle of the breaking wave or the steeper the ocean floor then the resulting longshore current will travel with greater velocity.

A wave breaks and runs up the beach and then begins to recede down the beach and back into the water. Longshore currents move onto the beach and then away from the beach as a "sheet" of water taking with it sand and other debris from the beach and can lead to beach erosion. This movement of sand, debris, and other sediment is referred to as longshore drift.

Preventative Lifeguarding

Each lifeguard organization must decide between preventative lifeguarding and reactive lifeguarding.

Preventative lifeguarding is a series of techniques used to stop accidents, rescues, and other emergency incidents from occurring. It requires the lifeguard(s) to engage in continual swimmer surveillance during the entirety of his/her shift and stop behaviors that could lead to an emergency incident.

Reactive lifeguarding is more similar to most other first responders and emergency services departments in that the lifeguards do not keep a constant, watchful eye on the beach or the swimmers. Instead, the lifeguard(s) are not assigned to a specific swimming area or beach but, rather, are on roving patrols across the entire shoreline. In this case, the lifeguards respond to an emergency call for help as opposed to working to prevent it.

Surveillance

Lifeguards in open water environments can utilize a variety of methods to engage in patron surveillance. It also occurs from many vantage points depending on the environmental conditions, layout of the swimming area, training level of the lifeguards, and available equipment.

The most traditional method of watching swimmers is from an elevated lifeguard station or chair. In some locations, there is one lifeguard assigned to each chair while in other locations, there are two lifeguards assigned to each chair.

Other widely used methods of patron surveillance include: use of an elevated platform in the water located either amongst the swimmers or behind the swimmers; drone coverage; rescue board deployment; patrol vessels.

Scanning & Victim Recognition

Not all drowning victims exhibit the same behaviors. Generally speaking, a victim:

- is unable to make any forward progress in the water – all movements are being used in an attempt to get air.
- has both arms extended to the side and is simultaneously slapping the water with both hands or is pushing down on the water trying to support him or herself and stay able the water.
- is vertical in the water with an ineffective or no kick or,
- is horizontal in the water with the face down in the water.

Drowning victims may be vertical in the water with the head tilted back with the face looking toward the sky or the horizontal victim may have his or her head face down in the water. In either case, the victim is, typically, unable to shout or wave for help. Without assistance, the victim will eventually submerge and might continue to struggle in an effort to resurface. The struggle will cease as the victim becomes passive and unconscious below the water's surface. It is possible that some victims never exhibit a struggle and, instead, slip under the water and begin the drowning process – this is, usually, more difficult to identify than the victim on the water's surface.

The lifeguard is watching for:

- **Head low in the water** – The victim's face and mouth can submerge and resurface repeatedly as he or she struggles to get air and each time he or she gasps for air, water can be inhaled. A strong or healthy swimmer is easily able to keep his or her head high in the water and above the water's surface. A person unable to do this may require assistance.
- **Low Stroke** – A strong or healthy swimmer is easily able to bring his or her elbows out of the water with each swim stroke. A swimmer dragging his or her elbows in the water is a sign that he or she may require assistance.
- **Little to no kick** – A strong or healthy swimmer maintains a strong kick of his or her legs. No kick and/or no breaking of the water's surface with a kick is a sign that he or she may require assistance. Often times, the victim is more vertical than horizontal in the water when there is an ineffective kick.

Typically, a swimmer displays a low head in the water, a low stroke, and little to no kick simultaneously.

Additional signs of distress in the water include:

- **Hair in Eyes** – for most swimmers, brushing his or her wet hair off or away from the face and eyes is instinctive behavior. When a swimmer makes no attempt to do this, it should be seen as a sign of distress.
- **Grasping the Water with Both Arms** – when a swimmer struggles to keep his or her head above water and begins to panic, he or she begins to rapidly slap the surface of the water of slash both arms through the water with both hands at the same time. When a lifeguard observes this type of behavior, the lifeguard must immediately respond.
- **'Climbing the Ladder'** – when a swimmer struggles to keep his or her head above water and begins to panic, he or she begins to engage in what appears to be an upward crawl in the water. This is an ineffective method to keep one's head above water and, when observed, requires the immediate response from lifeguard(s).
- **'Bicycle Spokes'** – a distressed swimmer, as recognized by fellow bathers, with the distressed swimmer in the middle and fellow bathers moving toward him or her from all sides to provide assistance looks like a bicycle wheel with the good Samaritans being the spokes of the wheel and the distressed swimmer being at the center of the wheel.
- **Waving of the Hands** – a swimmer who may be tired yet is not yet in a panic or in dire need of assistance may wave his or her hands for assistance from lifeguard(s).
- **Unusual and/or Erratic Behavior or Activity** – any behaviors and/or activities exhibited by swimmer(s) that seem unusual or erratic should be given additional scrutiny to determine if a lifeguard response is required.

It is not always a linear progression from distressed swimmer to drowning.

There are situations in which a victim never displays the signs or symptoms of distress. Instead, they could already be submerged in the water and, therefore, the lifeguard never sees the signs of distress.

Hazards

Each location presents unique features that are and/or could easily become hazards to swimmers and other beachgoers. These hazards can be naturally occuring and a result of the environment or they can be man-made hazards. Some examples include:

Rocks and Jetties
Piers
Storm Drains
Reefs
Sandbars
Poor Swimmer

Docks
Marine Life
Drop Offs & Gullies
Rip Currents
Temperature lunctuations
Surf/Wave Action

Severe Water Conditions
Backwash
Excessive Splashing
Wave Knocks Person Over
Unattended Children
Edges of Swim Crowd

No matter the hazard(s) present, it is important for the lifeguard to recognize the features; understand how the feature(s) is or can be a danger; maintain vigilance in patron surveillance and preventative actions to keep swimmers and beachgoers away from the hazard(s); and understand how to most effectively execute a rescue on and/or near the hazard(s) in question.

The swimming area at a waterfront facility should be marked with a distinct border provided around this swimming area. This will:

- Keep possible dangers to swimmers out of the area – i.e. boats, kayaks, PWC's, etc.
- Keep the swimmers in the area so that lifeguards can more easily scan and keep watch over the patrons as well as more easily communicate with the swimmers.
- Allow for strategic positioning of lifeguards to ensure effective patron surveillance can be maintained.
- Allow for management to monitor the swimming area for underwater hazards.

Using a marked buoy line to set a distinct swimming area. This helps lifeguards with swimmer surveillance and also keeps the are free of vessel traffic—motorized and non motorized.

Underwater Hazards

The swimming area should be inspected on, at least, a daily basis and prior to opening to swimmers for underwater hazards. These hazards should immediately be removed. If it is not possible to immediately remove the hazard, the lifeguard should communicate with management so that the area can be closed or the object marked above the water line so that lifeguards can keep patrons away from that area until the hazard is removed. Whether to close the area or mark the hazard is a decision based on the unique circumstance at the facility and must be made with patron safety as the number one priority. If patrons cannot safely use any portion of the swimming area without the hazard being removed then the area must close until the object is taken out of the water.

Docks and Piers

Floating and stationary piers and docks are common structures found at beachfront facilities. Often times, these structures are used for other recreational activities other than swimming. These include fishing, canoe or paddleboat rentals, or even boat traffic approaching the area. It is crucial that there is a clearly marked safety area surrounding these structures to keep swimmers away.

If the pier or dock includes any features such as a slide or diving board then boat traffic must be kept away and the rental area for PWC's, kayaks, wind or kitesurfers must be on the other side of the structure. In cases like these, there should be a clearly marked swimming area surrounding the landing zone of the slide or diving board.

Whether swimming is permitted in the area or it is strictly reserved for boats, kayaks, and other activities the lifeguard(s) should be assigned to the area using the same general principles of assignment used when positioning lifeguard(s) in the general swimming area.

Environmental Conditions

Changing environmental conditions throughout the day can have a dramatic impact on the water conditions at any waterfront or open water facility. These environmental conditions and their subsequent impact on water conditions should be monitored closely throughout that day. If there are any changes in the water conditions that make it unsafe for swimming, the area must be closed until conditions improve enough to take swimming safe.

Wind can lead to currents where they did not previously exist or changes to existing currents. Rain can also have a significant impact on water conditions. For example, heavy rain can:

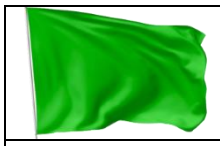
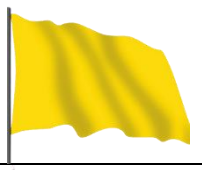
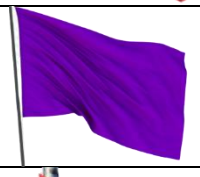
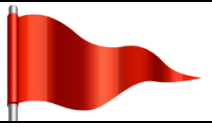
- Negatively impact water clarity
- Decrease the water temperature
- Increase water levels which, in turn, can impact water currents
- Change the contour of the bottom which may lead to changes in water depth and/or changes to water currents

Beach Warning Flag System

Beach warning flag systems are designed to help the public in assessing risk prior to entering the water. With or without warning systems in place, swimmers and beachgoers should always be encouraged to check with the lifeguard prior to entering the water. Even the most experienced swimmers and/or those who feel they are familiar with the ocean should check-in with the lifeguard about current conditions. Further, every piece of beach is different and, therefore, presents unique hazards that may be specific to that beach and/or region. The local lifeguard service will have the most reliable, most up-to-date, and most detailed information about the ocean water and conditions.

Like other communication systems, it is important that the beach warning flag system is uniform and standardized. Standardization of the flag system with the various colored flags having the same meaning from one location to another serves to help limit public confusion. Thus, increasing overall public beach safety.

Use of beach warning flag systems begain in the state of Florida in 2005. At that time, it was used as a simple method of warning the public about the danger or liklihood of rip currents. Rip current risk is determined by a combination of the speed and direction of the wind; the tidal ranges; and the localized surf conditions. For lifeguards, the most important tool at their disposal are their eyes. Looking the water will quickly allow an assessment of it's current behavior.

	Safe to Swim
	Caution; Moderate Risks; Medium Hazard of Strong Currents and/or Heavy Surf
	Extreme Caution; High Risks; High Hazard of Strong Currents and/or Heavy Surf
	Dangerous Marine Life Present
	Extreme Danger and Swimming Area CLOSED
	Marks the Swimming Area with Lifeguards
	Watercraft Area
	Dirty Water

The standard flag colors and meanings for beachgoers. This system should be used on all beaches to increase overall public safety.
FIGURE C.4.2

A "Swimming Area" flag flying on a local beach. They should be attached to a 5-8 pole (PVC or wood) so that they are more easily seen from a distance on the beach. They should be placed deep enough each morning that they do not blow over and should be high enough up the beach so that the incoming tide does not wash away the sand in which they are posted.
FIGURE C.4.3

Assists

Pool or Surf Environment

Immediately after recognizing a water emergency, the lifeguard must activate the facility's Emergency Action Plan (EAP) by whatever means is outlined in the plan – this is typically by using a specific whistle signal reserved for this purpose.

The lifeguard(s) then immediately moves into the respond phase and quickly assesses and decides whether to execute an assist or to signal a full rescue and enter the water to perform the water rescue. In either case, the lifeguard makes contact with the victim, executes the assist or rescue and safely begins to move the victim back to the beach for extraction from the water. The lifeguard should then assess the victim and provide any additional emergency care necessary.

A rescue or incident report should be completed prior to releasing the victim.

Assists are used to help a tired swimmer without entering the water and/or signaling a full water rescue. There are two types of assists:

Tossing Assist

Lifeguard tosses a ring buoy to the tired swimmer. This is usually utilized from an elevated position such as a dock, pier, platform, vessel. Steps to follow when using a tossing assist:

- Place the rope attached to the ring buoy on a flat surface and place foot on this rope. This ensures that the lifeguard has the ability to pull the victim to the platform once they grab the flotation device that is tossed.
- The lifeguard should toss the flotation device over the head of the victim and beyond or behind the victim. This ensures that the flotation device is not thrown short of the victim's reach. Instead, it lands behind the victim allowing the lifeguard to slowly begin pulling the throw line or rope in a controlled manner bringing the flotation device to the victim.
- Once the victim has a firm grip on the flotation device, the lifeguard should slowly pull the throw line without any sudden jerks of the rope to the edge of the platform.

Reaching Assist

Lifeguard extends a reaching pole, rescue tube or can, or his or her hand/arm to the tired swimmer. This is usually utilized from an elevated position such as a pier, dock, platform, or vessel. Steps to follow when using a reaching assist:

- Lifeguard should stand at the edge of the platform ensuring he or she has a strong base with feet shoulder width apart. The lifeguard should shift his or her weight back away from the edge of the platform to avoid the victim pulling on the reaching pole causing the lifeguard to be pulled into the water.
- Once the victim has a firm grip on the reaching pole, the lifeguard should begin to slowly and in a controlled manner use the pole to pull the victim to the side of the platform.

Water Entries

Surf Dash

This entry should be used when the lifeguard is entering the water from the beach. The lifeguard must always enter the water "up current'. In other words, lifeguard(s) should use the current to his/her advantage when making an entry and approach to a victim so that the current pushes the rescuing lifeguard(s) laterally (parallel to shoreline) toward the victim during the swim from the beach.

The lifeguard should be wearing the rescue can, keeping it in one hand along with the towline and begin to run into the water. Effort should be made to bend one's knees and lift one's feet and legs out of the water to clear each incoming wave – this is often referred to as "high knees". This technique allows the lifeguard to move through the surf zone as quickly as possible and mitigate the effect of the breaking waves and whitewater.

Once the lifeguard reaches a depth in which it becomes difficult or impossible to lift his/her feet and legs out of the water to clear the waves, then he/she should begin to dive head-first over the incoming waves. This usually occurs when the lifeguard is about knee to thigh deep.

To effectively dive over the waves, the lifeguard should:

- Keep arms and hands extended over his/her head to protect one's head, neck and face from striking the bottom (***FIGURE C.5.1***).
- Once over the wave and under the water, grab the sandy bottom with both hands, grabbing a fistful of sand in each hand.
- Move both arms backwards through the water column, tossing the handfuls of sand behind you while, simultaneously, re-establishing both feet on the bottom to be able to push off the bottom for the next head-first dive over the next incoming wave.
- Continue this movement until reaching a depth in which it becomes more effective and efficient to swim to your victim (***FIGURE C.5.2***).
- Once swimming, the lifeguard should dive head-first (***FIGURE C.5.3***) under each incoming wave and come up on the other side to immediately resume his/her swim stroke (***FIGURE C.5.4***).

FIGURE C.5.1

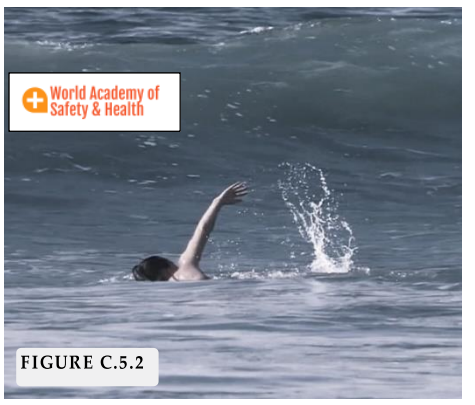


FIGURE C.5.2

FIGURE C.5.3

FIGURE C.5.4

Lifeguard is seen jumping from an elevated position keeping his/her feet down and the rescue is being worn and held in one hand..
FIGURE C.5.5

Elevated Feet-First Dive

The entry should be used when the lifeguard must enter the water from an elevated position (***FIGURE C.5.5***). This entry must only be used when the lifeguard is certain that he/she will be entering deep water and there are no underwater hazards that he/she might strike upon entry.

Elevated Head-First Surface Dive

This entry should be used when entering the water from a platform and is most commonly used when entering from a vessel.

The lifeguard should be wearing the rescue tube and holding with one hand as he/she stands on the edge of the platform. The lifeguard should use one hand to push him/herself away from the platform while entering the water head-first.

This entry should only be used in deeper water and when the responding lifeguard is certain of the water's depth and absence of any underwater hazards.

Approaching the Victim

The lifeguard should always allow the rescue tube or rescue can to trail behind him/her as he/she approaches to the victim(s). This will allow the lifeguard to choose between the front crawl arm stroke and reach the victim with maximum swim speed.

The lifeguard should maintain visual contact with the victim during the entirety of his/her swim approach. Hence, the lifeguard must be swimming with his/her head up and out of the water (***FIGURE C.5.6***). When lifeguard is within arm's length of the victim, he/she should stop approaching, reach behind him/herself and grab hold of the rescue can towline; pull the rescue can to him/herself; and hand the rescue can to the victim – always keeping between him/herself and the victim.

Lifeguard uses font crawl stoke to approach a victim and keeps her head out of the water in order to maintain constant visual contact with the victim.
FIGURE C.5.6

Water Rescues

Water rescues can come in many forms and can occur at any time. Lifeguards must always be prepared and expecting an emergency to occur.

Rescue Tube and Rescue Can

The lifeguard rescue tube should be on the lifeguard's person at all times when on duty and responsible for emergency response. To properly wear a rescue tube or a rescue can, the lifeguard should place one arm and his or her head through the strap so that the strap lays in a diagonal direction across the lifeguard's chest. Rescue tubes are available:

- in a variety of high visibility colors (i.e. red, orange, yellow, bright blue, etc…)
- in a variety of sizes with the most common being 40" and 50"
- in various buoyant materials with the most common being closed cell dense foam

Rescue tubes and rescue cans will:

- provide enough buoyancy for both lifeguard and victim
- help calm a panicked victim once he or she is able to grasp the rescue tube
- provide a barrier between the lifeguard and victim to prevent the lifeguard from being grabbed by a panicked victim

A lifeguard should never enter the water to execute a rescue without properly wearing the rescue tube or rescue can.

Always remember, it is vital for the lifeguard to activate the EAP prior to entering the water to execute a rescue and/or make contact with any victim.

Contact and Control

Generally speaking, when a lifeguard contacts a victim, the rescue tube or rescue can provides a certain level of comfort to a victim and can help to mitigate the behaviors of a panicked victim. It is important for the lifeguard to protect him or herself from a panicked victim – the rescue tube or rescue can should always be kept between the lifeguard and the victim and used as a barrier to help prevent a panicked victim from being able to grab hold of an approaching lifeguard. If a victim is able to reach and grab a lifeguard, the tube should be immediately removed from the lifeguard's head and arm, pushed toward the victim, and the lifeguard should swim away from the panicked victim. Leaving the rescue tube with the panicked victim will keep him or her afloat until the lifeguard can re-approach and contact the victim safely.

Rescue Procedure and Coverage

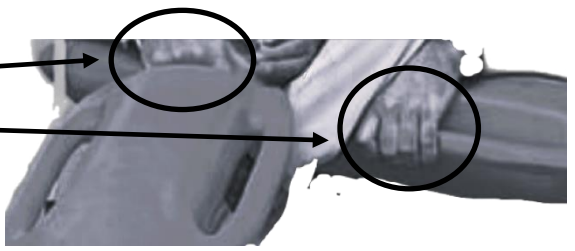
1. Lifeguard recognizes victim(s) and removes excess clothing and puts the rescue tube or rescue can strap over his/her head and one arm.
2. Activate the EAP by using 6 or more short whistle blasts often referred to as "blowing shorts" and the whistle blasts should not stop until the lifeguard enters the water. This should be the universal sound of an active water rescue.
3. Lifeguard enters the water using the "Surf Dash" as previously described and approached the victim while maintaining visual contact with victim.
4. The water entry point is determined by quickly assessing the direction and strength of the prevailing water current/movement.
5. Lifeguards on either adjacent side of the rescue will cover or stand up on the stations/chairs.
6. A covering lifeguard may have to scan the water of the rescuing lifeguard(s).
7. Lifeguard arrives to victim.

Once the lifeguard reaches the victim and passes the rescue tube or rescue can, the lifeguard will have two choices:

1. If victim is conscious and able to maintain a grip on the rescue tube or rescue can, the lifeguard will:
   - Pass the rescue can or tube to the victim and tell them to hold it tightly with both hands and to help kick if he/she is able to do so.
   - Roll onto his/her back so that he/she is facing the victim and begin to backstroke to the shoreline.

2. If victim is unconscious; the lifeguard is not able to effectively swim the victim to shore; or the victim is unable to maintain grip on rescue tube or rescue can, the lifeguard will:
   - If lifeguard is using a rescue can:
     a. Place the rescue can diagonally in front of the victim; lifeguard places his/her arms under victim's arms; lifeguard will place victim between him/herself and the rescue can; the victim's arms will freely rest draped over the rescue can.
     b. Signal for back-up lifeguard(s).
     c. Primary lifeguard will maintain a grip on his/her rescue can with one hand and grab the secondary lifeguard's rescue can handle with the other hand (***FIGURE C.5.7***).
     d. Secondary lifeguard will begin to swim primary lifeguard and victim to the shoreline.
     e. As additional back-up lifeguards arrive to assist, each will hand his/her rescue can to previous responding lifeguard in the "chain" and turn to begin swimming to the shoreline.
     f. All back-up lifeguards should be holding the handle of the can of the lifeguard in front of him/her with one hand and using the other hand to help sidestroke to the shoreline.

Please note that if a lifeguard either does not have long enough arms or does not have the strength to maintain a grip on the secondary lifeguards' rescue can handle, the lifeguarding service leadership should consider tying loops in all rescue can towlines. This will allow lifeguards to slip his/her hand through the loop; drape the loop around his/her wrist; and hold the towline in the palm of his/her hand (***FIGURE C.5.9***).



Primary lifeguard holds rescue with one hand across the front of the victim and grasps the handle of the back-up lifeguard's rescue can during a 'chain' rescue.
FIGURE C.5.7

Victim grasping rescue tube as the Lifeguard uses the backstroke to return the victim to the shoreline.

FIGURE C.5.8

Loop tied in the rescue can towline for a lifeguard during a 'chain' rescue to slip his/her hand and wrist to maintain a connection with his/her back-up lifeguard.
FIGURE C.5.9

d. If lifeguard is using rescue tube:

1. Place the rescue tube straight across the front of the victim; clip the rescue tube closed (***FIGURE C.5.11***) so that it forms a circle around the victim's torso; lifeguard places both arms under the armpits of the victim so that his/her elbows rest in the victim's armpits; lifeguard places both hands on the victim's shoulders.
2. Signal for back-up lifeguard(s).
3. Primary lifeguard will maintain a grasp of the victim in the recue tube and the back-up lifeguard will hand the primary lifeguard the towline loop of his/her rescue tube.
4. Primary lifeguard will slip his/her arm and wrist through the loop and hold the towline in the palm of his/her hand.
5. Secondary lifeguard will begin to swim primary lifeguard and victim to the shoreline.
6. As additional back-up lifeguards arrive to assist, each will hand his/her rescue tube towline loop to the previous responding lifeguard in the "chain" (***FIGURE C.5.12***) and turn to begin swimming to the shoreline.
7. All back-up lifeguards should be holding the towline loop of the rescue tube of the lifeguard in front of him/her with one hand and using the other hand to help sidestroke to the shoreline.

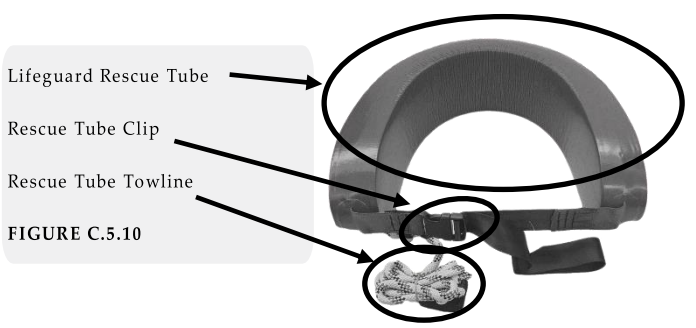
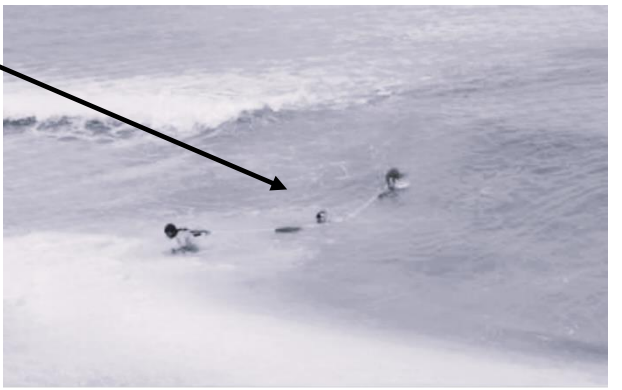


FIGURE C.5.10


Rescue tube clipped around victim.
FIGURE C.5.11


Lifeguard Chain Rescue
FIGURE C.5.12

Multiple Victim

This type of rescue involves 2 or more drowning victims at the same time. The victims could be any combination of passive, active or, simply, a distressed or tired swimmer.

The best response to multiple victims is to have at least one lifeguard for each victim enter the water. However, this is not always possible. When there are more victims than lifeguards to perform a rescue, the responding lifeguard(s), using the most appropriate entry and rescue technique for the circumstance, shall:

- Activate EAP.
- assist the victim who is in the most danger. In other words, the lifeguard will quickly assess and decide which of the victims needs attention first.
- perform rescue on the victim in greatest need.

If all victims are active, the lifeguard should:

- Secure the first victim and then swim, with the first victim, to the second victim.
- Assist the second victim in grabbing hold of the rescue tube or the rescue can handles. If using a rescue tube, the second victim should be instructed to wrap his/her arms and legs around victim #1.
- Signal for back-up lifeguards to assist in bringing victims to the shoreline (if available, a lifeguard with a line buoy should be deployed)

If one victim is passive, the lifeguard should:

- Lifeguard secures the passive victim on the rescue tube or rescue can first.
- If victim is unresponsive, lifeguard checks for breathing and if not breathing, provides immediate rescue breathing.
- Signal for back-up lifeguards to assist in bringing passive victim to the shoreline (if available, a rescue board or kayak should be deployed if the victim is pulseless).
- If victim is responsive and/or is unresponsive but breathing, the lifeguard should secure the victim on the rescue tube or rescue can; signal for back-up lifeguards; and swim to the next victim.

Submerged Victim

The following procedure should be utilized when a submerged victim is easily seen from the water's surface by the responding lifeguard(s) and/or the lifeguards' assigned post from the shoreline:

- Activate EAP.
- Lifeguard approaches victim using either the front crawl or the breaststroke keeping the rescue tube high and tight across chest and under rescuer's armpits.
- Lifeguard should allow the rescue tube to float on the water's surface while continuing to wear the rescue tube strap as he or she approaches the victim's underwater position.
- Lifeguard shall perform either a feet-first or head-first dive to reach the victim in the water column or on the bottom of the pool.
- Lifeguard shall reach one arm under one of the victim's armpits from the rear so that the victim's back is flush against the lifeguard's chest and the lifeguard's arm is able to reach across the front of the victim's chest.
- Lifeguard may choose to push off the bottom with his or her feet and/or begin to kick to propel both victim and rescuer to the water's surface. This is likely unnecessary as the buoyancy of the rescue tube is enough to propel both victim and rescuer to the water's surface.
- Lifeguard shall simultaneously begin to reach for the rescue tube tow line with the hand of his or her free arm. Once the tow line is in hand, the rescuer should begin to feed the tow line to his or her hand that is across the victim's chest.
- Lifeguard shall slide the rescue tube between the victim's back just below his or her shoulder line and the lifeguard's chest.
- Lifeguard shall lean the victim back on the tube (just as was done for a passive victim at the water's surface).
- Lifeguard shall open and maintain an airway and provide in-water ventilations (discussed in detail later in the chapter) if necessary.

Chapter 8 – Search and Rescue discusses and outlines the procedures for submerged victims not immediately and easily seen from the water's surface by the responding lifeguard(s).

Rescue Board Rescues

Rescue boards are common pieces of equipment routinely used by lifeguards at waterfront facilities. They look similar to a surfboard and are made from a variety of materials. Some rescue boards are composed exclusively form high-density foam while others have a core of plastic or fiberglass which then has an outer covering of high-density foam or rubber.

There are other features that can be added or removed from a board during production. For example:

- fins of varying sizes on the underside
- two handles on the topside while some have handles the entire length of the topside
- foam knee pads on the topside

And, the boards can vary in both size and shape which can have a dramatic impact on the manner in which the board functions in the water.

Rescue boards allow a lifeguard to:

- Reach victim(s), who are a distance from the shore, much quicker as compared to swimming to the victim(s).
- Perform patron surveillance from a different vantage point – i.e. in the water behind the swimmers. This also allows the lifeguard to be in much closer proximity to the swimmers in the case of an emergency.
- Rescue larger victims who otherwise might require multiple lifeguards to bring him or her to shore.
- Efficiently rescue a passive victim who are a distance from shore.
- Rescue multiple victims at one time.
- Perform in-water assessments of a victim.

Lifeguard rescue board with side handles, foam topper, bottom skeg.
FIGURE C.5.13

Executing Victim Rescue with Rescue Board

- Rescuer can either use the rescue board by paddling prone – laying flat on his or her stomach while stroking the water with both arms simultaneously or one arm followed by the other arm similar to a front crawl swim stroke. Or, the rescuer may kneel on the board with his or her weight centered and while leaning forward and downward extend both arms into the water to stroke simultaneously.
- As the rescuer approaches the victim, he or she should exit the rescue board keeping hold of the board.
- Rescuer should position him or herself on the long side of the board; turn the board upside down in the water; and approach the victim by pushing the board toward the victim and while keeping the board between him or herself and the victim.

ACTIVE VICTIM:

- Rescuer should ask victim to extend one arm; rescuer grab the wrist of the victim's extended arm to help drape it over the rescue board.
- Rescuer will hold the victim on the board by continuing to grasp the victim's wrist against the side edge of the board.
- Rescuer will gain leverage with his or her kick under the water so that he or she can flip the rescue board right side up in the water while continuing to hold victim's wrist against the board so that the victim ends up on his or her stomach on the board.
- Rescuer should grasp the victim by the swimsuit and/or waistband (or the hip if necessary) to pull the victim's lower body onto the board.
- Rescuer can: side stroke to the shoreline while holding the rescue board with the other hand; use a breaststroke kick while pushing the rescue board with both hands from behind to the shoreline; place him or herself on the rescue board by positioning his or her chest between the legs of the victim and paddle with both hands toward the shoreline. An active victim can be asked to help paddle in any of these scenarios.

PASSIVE VICTIM:

- Rescuer grabs one of the victim's wrists and drapes it over the rescue board while pulling the victim's chest onto the rescue board as far as possible.
- Rescuer will hold the victim on the board by continuing to grasp the victim's wrist against the side edge of the board.
- Rescuer will gain leverage with his or her kick under the water so that he or she can flip the rescue board right side up in the water while continuing to hold victim's wrist against the board so that the victim ends up on his or her stomach on the board.
- Victim's head and face must be positioned on the rescue board so as to not take in any water.
- Rescuer should grasp the victim by the swimsuit and/or waistband (or the hip if necessary) to pull the victim's lower body onto the board.
- Rescuer places him or herself on the rescue board by positioning his or her chest between the legs of the victim and paddle with both hands toward the shoreline.

Lifeguard makes a water entry on the rescue board to begin his approach to a possible in-water victim.
FIGURE C.5.14

FIGURE C.5.15

Landline Rescues

This type of rescue involves what is often referred to as a "line buoy". It is a rescue can attached to marine line (600-800 feet or 182.88-243.84 meters in length and .25-.50 inches or .64-1.27 cm in diameter) and this line is attached to a stationary point on the beach.

Landline system used for rescues which may require rescuer to swim long distances and/or to swim in very rough and unfavorably dangerous conditions.
FIGURE C.5.16

Typically, lifeguards utilize one of three types of landline setups. The first option is more traditional in nature and entails a spool of marine line that is able to freely dispense as the lifeguard enters the water. One end of the line is attached to the spool and the other end is attached to the line buoy as shown in ***FIGURE C.5.16***. The second option is a rescue throw bag (***FIGURE C.5.17***). The line is self-contained in the bag and the lifeguard(s) on the beach maintain control of the bag while the other end is connected to the line buoy. The third option is having the line spooled on the winch of a Motorized vehicle. In this case, the line is mechanically dispensed as the lifeguard enters the water and can be mechanically reeled in to return the lifeguard and victim to the beach.

Rescue throw bag which can be used instead of a landline for areas in which rescues will require shorter swims. This throw bag also tends to be more portable than the landline system.
FIGURE C.5.17

Once the lifeguard reaches the victim with the line buoy he/she has two choices:

3.) Pass the rescue can to the victim so that he/she places the rescue can diagonally in front of the victim; lifeguard places his/her arms under victim's arms; lifeguard will place victim between him/herself and the rescue can; the victim's arms will freely rest draped over the rescue can
4.) Pass the rescue can or tube to the victim and tell them to hold it tightly with both hands and to help kick if he/she is able to do so.

In either of the above cases, once the victim has a grasp on the rescue can, the lifeguard will signal the lifeguard(s) on the beach to begin pulling the line back to the shoreline (***FIGURE C.5.18***). If possible, the lifeguard and the victim should assist the "pullers" by
kicking

Lifeguard pulls the landline back to the beach with both the swimming lifeguard and victim(s) attached to the other end of the line.
FIGURE C.5.18

Rescue Kayak

Kayaks to be used for lifeguards and/or rescues should be 10-12 feet (3.05-3.66 meters) in length, be open topped, and weigh between 40-50 pounds (18.14-22.68 kg). Kayaks can be used for water patrol, a more advantageous position for patron surveillance and scanning, or for water rescues.

Positioning in the Rescue Kayak

To maneuver the kayak safely, the lifeguard should:

- Sit straight up in the kayak with shoulders square.
- Grip the paddle at shoulder-width and neck to chin height.
- Lean backwards through incoming waves while holding the paddle at or above the level of your head.
- Lean forward with feet secured in the foot wells and paddle once a wave passes and you are within the lull.

Navigation of the Rescue Kayak

- **Launching** – drag the kayak into ankle to knee-deep water; place hands on ether side of the kayak; sit in the kayak; immediately grab the paddle and begin paddling.
- **Paddling** – push the water with one side of the paddle while pulling the water with the other side of the paddle. Ideally, it should approximately be 60% push and 40% pull.
- **Turning** – use a backstroke of the paddle on the side/direction you want to turn the kayak. Follow the backstroke with a forward stroke of the paddle on the opposite side/direction you want to turn the kayak.
- **Stopping** – use a backstroke on alternating sides of the paddle; jump out of the kayak feet-first.
- **Approaching Victim** – always maintain visual contact with the victim; rescuer and victim should be facing one another; ensure the victim is on one side of the kayak.

The kayak should always be kept at a 45-degree angle to the waves when moving through the surf/impact zone. The lifeguard must also ensure that maximum speed is reached prior to attempting to move through incoming waves/swell.

Executing Victim Rescue with Kayak

ACTIVE VICTIM:

- Rescuer approaches facing the victim and keeping the victim to one side of the kayak.
- Rescuer straddles the kayak with his/her legs while remaining seated on top of the kayak.
- Rescuer assist the victim in placing both arms/hands on top of and across the kayak.
- Rescuer instructs victim to kick his/her legs while pulling the victim at he arms/shoulders and waist onto the kayak.
- Rescuer pulls the victim's legs onto the kayak so that the victim is face-down and his/her head is near the bow and his/her feet are near the rescuer.
- If the rescuer is unable to maneuver the victim onto the kayak using the method described above:
  - rescuer should maneuver the kayak so that the victim is able to grab hold of the bow.
  - rescuer instructs the victim to grasp the bow firmly with both hands.
  - rescuer attempts to return the victim to the beach or other safe area.

PASSIVE VICTIM:

- Rescuer approaches facing the victim and keeping the victim to one side of the kayak.
- Rescuer should exit the kayak on the side nearest to the victim.
- Rescuer, while exiting the kayak, should maintain grasp on the kayak with one hand and roll the kayak upside-down while exiting.
- Rescuer grasps the wrist of the victim and pulls him/her toward the kayak.
- Rescuer places/drapes the victim's arms over the top of the kayak.
- Rescuer climbs on top of the upside-down kayak while maintaining a grasp on both of the victim's arms ensuring they remain draped over the top of the kayak.
- Rescuer exits the kayak on the opposite side of the victim while, simultaneously, rolling the kayak to the upright position. Rescuer will gain leverage with his or her kick under the water so that he/she is more easily able to flip the kayak upright.
- Rescuer climbs aboard the kayak.
- Rescuer straddles the kayak and moves the victim's legs onto the kayak.
- Rescuer should position the victim on his/her back if rescue breathing is required.
- Rescuer returns the victim to the beach or other safe area.

MULTIPLE VICTIMS:

- Rescuer should approach the victim in the greatest distress first.
- Rescuer should follow the procedures outlined above in both the 'ACTIVE' and 'PASSIVE' sections.
- Rescuer will then, with the first victim aboard, will approach the second victim.
- Rescuer should either follow the procedures outlined above in the 'ACTIVE' and 'PASSIVE' sections. Sometime, the rescuer will need to use his/her judgement and enter the water with the rescue tube to secure and move the second victim onto the kayak instead of following the 'ACTIVE' or 'PASSIVE' procedures.
- Rescuer should have the second victim firmly grasp the stern of the kayak with both hands.
- Rescuer should instruct victims to grasp the side of the kayak if/when there are more than two (2) victims.
- Rescuer should position victim(s) on his/her back if rescue breathing is required. Other conscious victims can be given the rescue tube in these cases so they may float and await back-up lifeguard(s).
- Rescuer(s) should return the victims to the beach or other safe area.

Escapes

Active victims only objective is survival. The victim will do anything to keep his or her head above water and breath. This includes grabbing for and latching onto any stationary object and/or person in the water. This includes the rescuing lifeguard.

A lifeguard cannot allow the victim to grab him or her and possibly becoming a victim him or herself. Hence, it is standard practice for rescuing lifeguards to approach an active victim from the rear as to limit the victim's ability to grab hold of the lifeguard.

There will be times, no matter the precautions a lifeguard takes, that he or she will be grabbed and possibly held underwater by a panicked active drowning victim. In these cases, it is vital that the lifeguard be very well versed in performing both rear and front victim hold escape maneuvers.

Anytime a lifeguard is grabbed by a victim, his or her initial reaction and first action must be immediate. If not wearing a rescue tube, the lifeguard should:

1.) Tuck his or her chin against his or her chest
2.) Submerge him or herself in the water by pushing up with both hands and arms as many times as is needed to submerge. The victim will likely release his or her hold in an effort to return to the water's surface.
3.) Return to the surface and re-approach the victim from the rear and execute a rear rescue by placing one arm over the top of the victim's shoulder, across the victim's chest and under the opposite armpit. Use a side stroke to move the victim to safety.

If wearing a rescue can or tube, the lifeguard should:

1.) Tuck his or her chin against his or her chest
2.) Forcefully push up on the victim's elbows or apply pressure to the brachial pressure points to break the victim's hold.
3.) Submerge him or herself.
4.) Return to the surface and re-approach the victim from the rear and execute a rear rescue by placing one arm over the top of the victim's shoulder, across the victim's chest and under the opposite armpit. Use a side stroke to move the victim to safety.

1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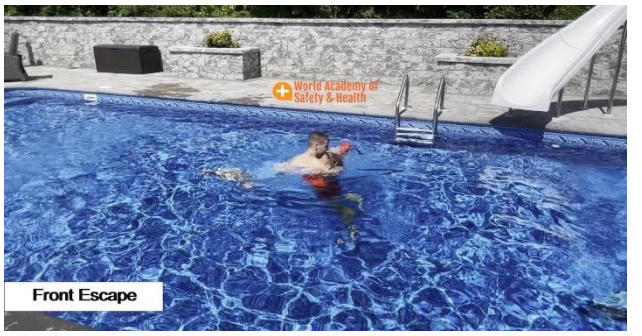
Front Escape

2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Front Escape

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Front Escape

Extraction From the Water

- **Assisted Walk** – one or more lifeguards place one arm around the waist of the conscious victim while being removed from the water and drapes one of the victim's arms around the lifeguard's neck and over his/her shoulder. The lifeguard(s) carries the rescue can or tube in his/her other hand and escort victim to the sand.
- **Chair Carry** – two lifeguards facing one another, interlock arms by holding one another's wrists – right arms to left arms, respectively. The two forward most arms scoop the victim under his/her knees and the two rear most arms support the victim's back. The victim's left arm is draped around one lifeguard's neck while the victim's right arm is draped around the other lifeguard's neck.
- **Victim Beach Drag** – lifeguard stands behind the victim and places his/her arms under the victim's armpits far enough so that the lifeguard's elbows rest under the victim's armpits. The lifeguard interlocks his/her hands and fingers in front of the chest of the victim. The lifeguard begins to walk backwards out of the water dragging the victim 's heels across the ground.

Medical Emergencies

If a call for emergency medical care is received by a lifeguard and:

One lifeguard is assigned to the area:

- Lifeguard notifies, via agency's communication system, the lifeguard supervisor of the medical emergency and the location of the victim(s).
- Lifeguard uses whistle to immediately notify the swimmers they will be unsupervised and should clear the water immediately.
- Lifeguard responds to the medical emergency being sure to take a communication device and medical response bag.
- Lifeguard provides an update, via the agency's communication system, to lifeguard supervisor and/or advanced medical team.

Two or more lifeguards are assigned to the area:

- One of the lifeguards (lifeguard #1) responds to the medical emergency being sure to take a communication device and medical response bag.
- Lifeguard #1 assesses the victim(s) and determines if a supervisor is required and/or if immediate advanced medical care is required.
- Lifeguard #1 provides an update, via the agency's communication system, to lifeguard #2 and lifeguard supervisor of the condition of the victim(s).
- Lifeguard #2 remaining within the assigned area begin to clear the water in anticipation of providing back-up coverage at the scene of the medical emergency.
- Only once all lifeguards return to the assigned are will swimmers be permitted back in the water.

There is a Lifeguard supervisor nearby:

- The lifeguards notify, via the agency's communication system, the assigned supervisor of the emergency while providing as much detail as possible starting with the location so that the supervisor may begin his/her route while receiving additional information.
- The lifeguard supervisor responds to the medical emergency.
- The lifeguard supervisor assesses the victim(s) and determines if more advanced medical care is necessary.

All medical aids other than minor basic first aid require the lifeguard and/or lifeguard supervisor to accurately complete an agency incident report. Though the details of the report can be completed post-incident, it is vital that the victim's information be gathered while on-scene. This would include: victim's signs and symptoms, allergies, medications, past pertinent medical history, last oral intake, events leading to incident which is often referred to as SAMPLE; first and last name; phone number; local address and permanent home address; and any other contact information for victim and family members and/or friends accompanying the victim.

Spinal Trauma

Figure C6.1

Recognizing Signs & Symptoms

Spinal Trauma should be suspected in any of the following circumstances:

- Pain in Head, Neck and/or Back
- Fluids Exiting Nose, Mouth, Ears or Eyes
- Numbness and/or Weakness
- Altered State of Consciousness
- Imbalance on Their Feet

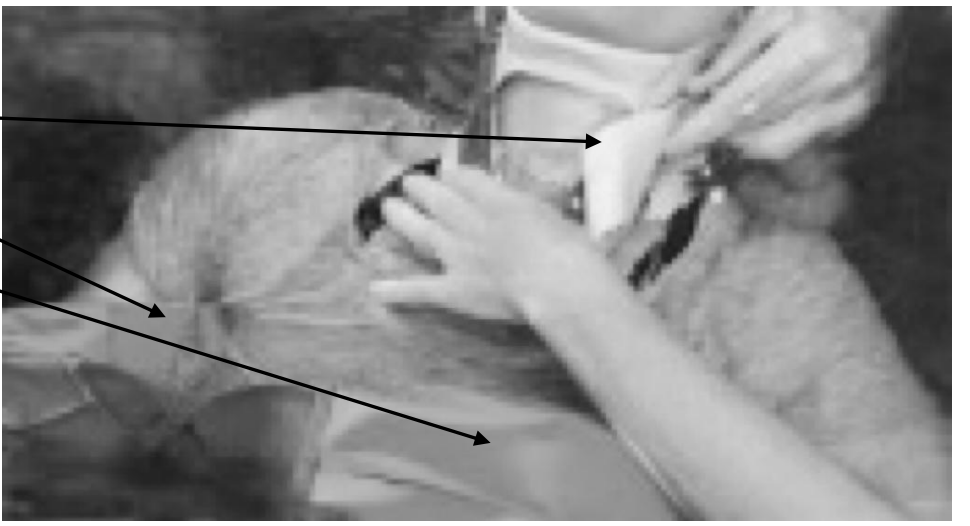
Stabilization of Spinal Trauma

Effectively managing a victim of a spinal injury can be scary. It is important that the lifeguard remember that so long as the victim has a pulse, is breathing, and is not suffering any additional immediately life-threatening injuries, lifeguards and other rescuers should take their time to ensure there are no sudden or erratic movements of the victim and that inline stabilization is constantly maintained.

When it comes to splinting an injury, lifeguards are taught not to splint unless the victim must be moved. This is exactly how we should approach the idea of backboarding here. And, that a victim should only be moved if leaving them in their current position would cause further harm as they await EMS arrival.

Victims of spinal trauma should be treated in a similar way – backboarding of a victim with suspected spinal trauma should only be done if and when local EMS protocol dictates it. Aquatic facilities must coordinate with their local EMS for guidance.

- Always use manual inline stabilization both in-water and on land for any suspected spinal.
- Only backboard a victim of suspected spinal trauma when required by local medical direction.
- Participate in additional in-service training using the equipment, facility, local protocols and facility protocols for spinal trauma victims.



Application of C-Collar to an in-water victim suffering an apparent spinal trauma injury.

Rescue tube can also be seen clipped around the victim under his/her armpits.

FIGURE C.6.2

Arm Splints

To effectively perform this skill, the lifeguard should:

- Activate the EAP.
- Approach the victim by either using the breaststroke or the walking being careful to limit any disturbance in the water.
- Align hip closest to the victim's hip.
- Use arm closest to the victim to grasp the victim's outer arm farthest from the lifeguard near the bicep while simultaneously using arm farthest from the victim to grasp the victim's outer arm closest to the lifeguard near the bicep.
- Simultaneously move the victim's arms up alongside the victim's head so that the victim's biceps are against the victim's ears (***FIGURE C.6.2***).
- Apply pressure to both of the victim's arms so that the head and neck are immobilized. This pressure should be firm and evenly distributed on both sides of the victim's head.
- Slowly and smoothly walk around the pool in the direction the victim's head is pointing as you perform this entire skill and after the victim is rolled to the face- up position (***FIGURE C.6.3***).

  This will help the victim's lower body to remain buoyant and float near the water's surface which will keep the victim's entire body more streamlined.

Figure C6.3

Figure C6.4

Figure C6.5

Figure C6.6

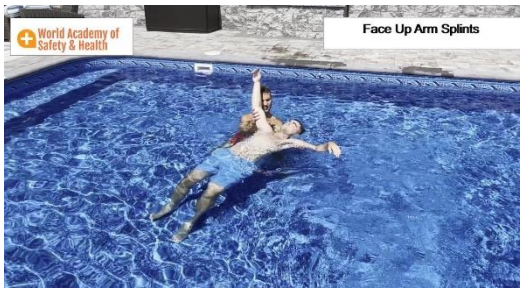


Figure C6.7

Figure C6.8

Figure C6.9

Backboarding Spinal Trauma Victims

The following are generalized set of procedures for backboarding. They are designed to provide a broad understanding of the goals of backboarding in various situations and environments. Each facility's design, protocols, and techniques are different and local medical direction and EMS protocols may differ from one jurisdiction to another. For these reasons, it is vital for a lifeguard to receive additional in-service training from his or her employer based upon the employer's specific procedure and technique(s) as well as the local medical direction and local EMS protocols.

The overall goal of backboarding an in-water victim of spinal trauma is the ability to extract this person from the pool without causing additional injury. There are many techniques used to effectively backboard a victim. All techniques are based upon the same set of principles and the specific detailed steps are dependent upon the circumstance:

- Maintaining inline stabilization of the head, neck and back of the victim.
- Backboard is placed underneath the victim and raised up to the victim.
- One or more backboard straps, headgear pillows and head strap(s) are utilized.
- Extraction from the pool in a safe and effective manner.

The most desirable circumstance is having at least four trained rescuers available when handling a situation in which a spinal trauma victim must be backboarded.

Seated Stable Carry

This technique is most easily used in water no deeper than the lifeguard's waist.

To effectively perform this skill, the lifeguard should:

- activate the EAP.
- approach the victim by either using the breaststroke or the walking being careful to limit any disturbance in the water.
- approach the victim from behind.
- place arm closest to the victim under the victim's armpit farthest from the lifeguard.
- place arm farthest from the victim under the victim's armpit closest to the lifeguard.
- arms should be far enough under the victim's armpits to allow the palms of the lifeguard's hands to reach the victim's ears to provide manual inline stabilization.
- once the lifeguard's arms are fully under the victim's armpits and the lifeguard's hands are providing manual inline stabilization, lifeguard should lift the victim up so that his or her back is flush against the lifeguard's chest.
- while facing the victim, a second rescuer picks up both legs of the victim from behind the knees and pushes the victim against the first rescuer's back as the first rescuer walks the victim out of the water.

This technique is also easily used with a spinal trauma victim on land who is seated, standing, or laying in a prone position.

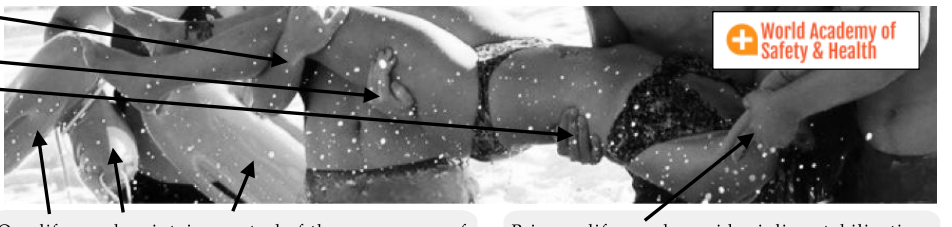
Other responding back-up lifeguards should place themselves in the water between the victim and the oncoming wave action with his/her backs facing the incoming swells and whitewater. The bodies of these back-up lifeguards along with their rescue cans will help to mitigate the impact the breaking wave action has on the victim.

Figure C6.10

Figure C6.11

When additional lifeguards are available, each of the back-up lifeguards should place his/her hands under the back, legs, and waist of the suspected spinal trauma victim. This will help to provide support and stabilization to the spinal column.

FIGURE C.6.12



One lifeguard maintains control of the rescue cans of all other rescuing lifeguards. These were also used on the way to the beach to block the crashing surf.

Primary lifeguard provides inline stabilization.

Standing Backboarding

Standing backboarding or what is often referred to as a "standing takedown" is used when a person exhibits the signs of spinal trauma while on land. Or, it is used when a person complains of the symptoms of spinal trauma while on land and standing.

The steps for backboarding a victim who is in the standing position are:

- lifeguard provides manual inline stabilization by placing the palms of his/her hands on the victim's ears while facing the victim.
- back-up lifeguard will apply the proper size c-collar while standing behind the victim.
- a back-up lifeguard will place the spineboard behind the victim.
- Two lifeguards will maintain manual inline stabilization while in front of the victim by each placing the palm of his/her hand closest to the victim on the victim's ear. These lifeguards will place his/her other hand under the victim's armpit and grasp a handle of the backboard.
- a third back-up lifeguard will grasp the top of the backboard with two hands from behind the victim to assist in guiding the board with the victim to the ground while the other two lifeguards maintain manual inline stabilization and contact with the backboard handles.

Vertical backboarding on land of a victim of suspected spinal trauma – often referred to as a 'standing takedown'.

FIGURE C.6.13

Zero Depth Backboarding

The zero depth backboarding procedures are used in two different circumstances. If a person exhibits the signs of or complains of the symptoms of spinal trauma while on land and is on the ground. Or, if a person exhibits the signs of spinal trauma while in shallow water – a few inches to only wet ground. If the victim's airway, while on his/her back, is out and remains out of the water then the water is shallow enough to utilize the zero depth backboarding procedures.

The procedure for zero depth backboarding are:

1. primary lifeguard (lifeguard #1) provides manual inline stabilization using the Arm Splints technique from the top of a face-up victim and while standing on one side of a face-down victim. If the victim is face-down, the lifeguard must roll the victim the face-up position once secure in the Arm Splints.
2. if victim is unresponsive, lifeguard checks for breathing and if not breathing, provides immediate rescue breathing.
3. if victim is responsive or unresponsive but breathing, lifeguard #1 maintains inline stabilization.
4. first back-up lifeguard (lifeguard #2) takes over manual inline stabilization from the one side of the victim's head by placing his/her palms over the ears of the victim.
5. Lifeguard #1 moves victim's arms to the sides of the body and secures a c-collar on the victim.
6. lifeguard #1 places the arm of the victim on the side he/she will be rolled.
7. lifeguard #1 grasps the victim at the hip area and ribcage area.
8. second back-up lifeguard (lifeguard #3) retrieves a backboard.
9. lifeguard #2 signals lifeguard #1 to roll the victim toward him/herself and lifeguard #3 to slide the backboard under the victim from the opposite side of lifeguard #1.
10. lifeguard #2 signals lifeguard #1 and lifeguard #3 to roll the victim onto the backboard.
11. lifeguard #3 retrieves backboard headgear while lifeguard #1 secures the straps from the chest to the feet of the victim (ensuring that the chest strap is secured under the victim's armpits and the waist strap is over top of the victim's hands/arms).
12. lifeguard #3 assists lifeguard #2 in securing the headgear and head straps. The top head strap goes across the victim's forehead and if the backboard headgear has a second strap it goes on top of the c-collar near the victim's chin.

Protocols & Communication

Lifeguard Techniques, Stations & Positioning

Generally speaking, when considering the positioning of lifeguards, the management staff must ensure:

- Lifeguard should be provided a stand/chair/tower/station that is elevated above the beach and the level of the swimming area.
- Lifeguard stands/chairs/towers/stations are placed close enough to the water to allow the lifeguard to effectively scan and perform swimmer surveillance, but, far enough up the beach so that the high tide does not disrupt the stability of the stand/chair/tower/station.
- Lifeguard services should consider alternate methods of swimmer surveillance (i.e. stationary elevated platform in the water if there is limited wave action; in water patrol by lifeguard(s) using a rescue board, kayak or other non-motorized vessel).
- All lifeguards have a reliable and effective method of communication with one another and, at minimum, one lifeguard must have a direct line of communication to local authorities; management; and/or other emergency services.

Lifeguard chair for two lifeguards as some areas assign partners to each lifeguard station/location.
FIGURE C.7.1

Lifeguard tower for one or multiple lifeguards. Used in select geographic areas and can be equipped with telephones, climate control, polarized windows & more.
FIGURE C.7.2

Lifeguard chair for a single lifeguard. It is elevated above the level of the swimmers and far enough behind the high tide line that it is not washed away or damaged by the incoming tidal flow and/or wave action.
FIGURE C.7.3

Missing Person/Child

Any time the lifeguard(s) is notified a person missing, he/she should:

- Obtain the name and complete description – including age, gender, hair color, eye color, clothing description.
- Find out the person's last know location.
- Find out if the missing person was engaged in an activity on the beach; was last seen in the water; if the missing person was walking in a particular direction. It is IMPORTANT to note: statistically speaking, missing children and elderly will walk with the wind along the shoreline.
- Find out if the missing person has any medical conditions.
- Obtain any other information that may be helpful in locating the missing person.
- Contact dispatcher with the above information so the dispatcher can alert other lifeguard(s). If there is no dispatcher, alert nearby businesses and utilize any type of communication and/or public address system to alert the public on or around the beach.
- Instruct the family of the missing person to remain in one location so that the lifeguard(s) can easily and quickly make contact as and when needed.
- If the missing person was last seen in the water, lifeguard(s) must immediately assess and investigate to determine if a water search should be conducted.
- Notify the dispatcher when the missing person is located.

Any time a missing child is brought to a lifeguard, the lifeguard(s) should:

- Notify the dispatcher of the missing child being sure to share a complete description – the dispatcher will alert other lifeguard(s).
- If lifeguard does not immediately locate the parents, the missing child should be kept with the lifeguard. It may be useful to use one long whistle blast to gain attention of swimmers and beachgoers and point out the missing child.
- If, after the above public notification, the parents are not located, the child should be taken to the next lifeguard station and the procedure repeated.
- Ensure that the child is comforted and his/her emotional well-being is preserved during the process.
- If this procedure is unsuccessful in locating the parents, the child should be transferred to the local authorities for their assistance in locating the parents.
- At no time during the process, should any lifeguard leave his/her area unguarded.

Whistle Signals

A whistle can be an effective mechanism to communicate with fellow lifeguards, with members of the public, and with supervisors. As with any form of communication within an organization and within particular geographic areas where there are the same and/or similar services offered to citizens, whistle signal communication within lifeguard services must remain standardized. This standardization ensures seamless interaction between lifeguards and/or lifeguard agencies during emergencies and normal operations, thus, allowing the agencies to provide the best victim care possible.

Acme Thunderer whistle recommended for beachfronts, ocean rescue, & other open water environments.
FIGURE C.7.4 World Academy of Safety & Health

Standard Whistle Signals

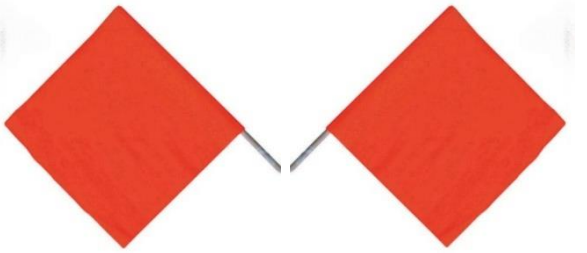
One Long Blast	Attention of Swimmer(s)
Two Short Blasts	Attention of Lifeguard(s)
Two Long Blasts	Land Emergency; Medical Emergency
Series of Short Blasts	Water Rescue; Water Emergency

Flag Signals

Semaphore is a system or method of signaling to others using a pre-established "signal alphabet". It is often referred to as the language of the ocean.

Originating in France, the semaphore system was developed by Claude Chappe in 1790 and was used during emergency situations on or around ships and/or the ocean and for the government to communicate during the French Revolution. During the 1700's and early 1800's, semaphore was performed using light signals. Semaphore using flags was not developed until 1866[16].

Two 18"x18" semaphore flags, each mounted on a 24" wood pole for handheld flag signaling and communication between lifeguards.
FIGURE C.7.5 World Academy of Safety & Health



Present day use is typically found along beaches so that lifeguards and/or lifeguard stations may effectively communicate with one another. It is also frequently used to signal to airplanes and pilots. In today's system, one flag (typically orange or another high visibility color) is held in each hand and the person's arms are placed in distinct and specific positions with each position representing a letter or number in the semaphore "alphabet".

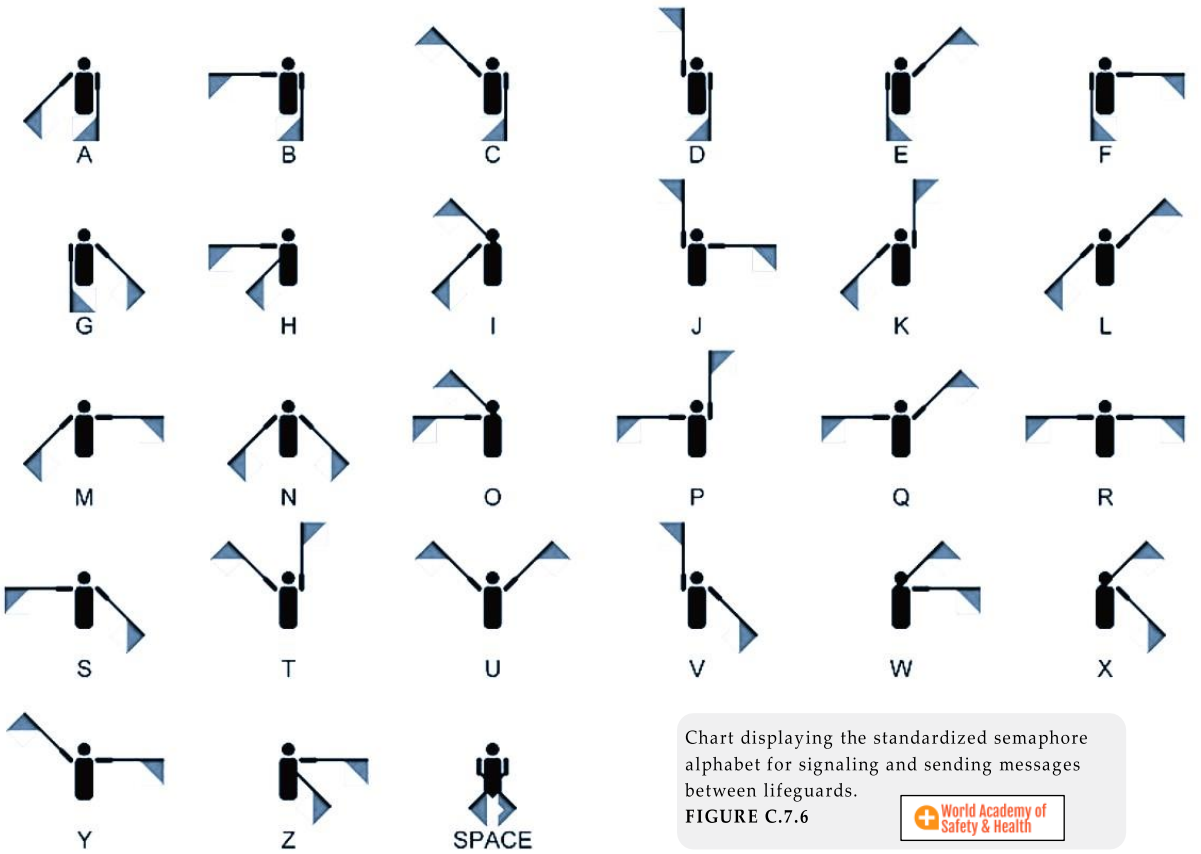


Chart displaying the standardized semaphore alphabet for signaling and sending messages between lifeguards.
FIGURE C.7.6

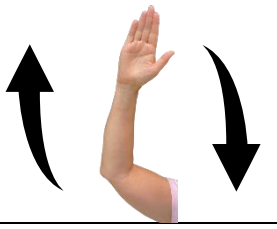
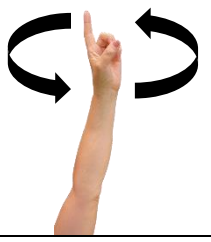
Handheld Portable Radios

If an organization is using a system of communication that includes handheld radios, there are a few mandatory components of such a system that require

A universal or standard set of "ten codes" does not exist. Instead, the use of, meaning of and protocol surrounding "ten codes" varies form one jurisdiction to another and/or from one organization to another.

A full list of "ten codes" can be found in *Appendix A*.

Hand Signals

	**Pointing** - to a Person or Situation to Alert a Fellow Lifeguard of a Situation
	**Tapping the Tap of your Head** – Request a Fellow Lifeguard Watch your Area
	**Creating a 'Circle" Above your Head with Two Arms** – All Okay
	**Making Fist with One Hand while Simultaneously Grabbing the Wrist of that Hand** – Submerged Victim
	**One Hand Straight Over Head Moving the Arm Back & Forth Left to Right** – Signal other Lifeguard(s) that CPR and AED is/are Needed
	**One Hand Straight Over Head Moving the Arm Up and Down While in Water** - Signal Lifeguard(s) on Beach to Begin to Pull the Landline
	**One Hand Straight Over Head on Land or in Water** – Need Immediate Assistance
	**One Hand Straight Over Head While Making a Fist While in Water** – Signal to Lifeguard(s) on Beach to Stop Pulling Landline
	**Arm Extended Over Head with Finger Pointing Upward and Motioning a "Circle" motion with Finger** - Incoming Watercraft, Vessel, or Other Watersport Object; Call a Lifeguard to the Beach from the Water

Weather Related Procedures

The beach should be cleared whenever there lightning is seen or it is known to be in the area. Agencies should consider at least one portable lightning detector to equip the lifeguards with the most up-t-date, real-time storm and lightning information. Clearing of the beach must include the non-swimmers who are only on the beach. All persons must be directed to take cover in the closest indoor space until the storm has passed and it is deemed safe, by the lifeguards, to return to the beach.

Clearing of the beach can take place using a communication system such as a public address system and/or a megaphone. If the appropriate communication equipment is not available, the lifeguard(s) must use his/her whistle and loudly announce the clearing of the beach due to the incoming weather and/or, once the water has been cleared, walk person to person on the beach making the appropriate notification.

Lifeguard(s) must remain near his/her assigned beach but in the nearest indoor and/or closed safe area.

Search and Rescue

Shallow Water Line Search

The lifeguard(s) must activate the EAP and initiate a line search when a submerged victim: cannot immediately and easily be seen by the lifeguard(s) from the shoreline (or his/her assigned post); submerges while the lifeguard(s) is/are responding and approaching the victim and the lifeguard(s) cannot immediately and easily be seen by the lifeguard(s); slips under the water with only bystander(s) witnessing the submersion; slips under the water without the lifeguard or any other bystander witnessing the submersion.

A shallow water line search is utilized when a victim slips below the surface of the water at a depth in which lifeguard(s) can easily walk and the bottom is not visible.

Either the lifeguard who saw this occur or the primary lifeguard who is communicating with the bystander who saw the victim slip under the water, should immediately attempt to triangulate the victim's last known position. To accomplish this, the lifeguard should:

- Make a visual note of the victim's last known position prior to submerging.
- Quickly identify:
  - a stationary object beyond this position;
  - a stationary object that is perpendicular to this position and;
  - a stationary object that is behind you, the rescuer, on the shoreline.
- These three objects relative to the victim's last known position will allow you to maintain a marking of the depth and/or distance from the shoreline of the victim's last known position as well as the being able to maintain the victim's last known position relative to the position of the lifeguard line search in the water.
- As additional lifeguards arrive on scene, they will each enter the water, forming a line in which they are arm's length apart from the lifeguard on either side – to ensure this distance is maintained throughout the search, the lifeguards can interlock arms.
- The most senior lifeguard in the water will be the primary rescuer responsible for directing the search line and will communicate directly with the lifeguard onshore.
- The line should begin either up current or up wind from the victim's last know position; the shortest person must be in the shallowest of the water and the tallest person in the deepest part of the water with no person ever being deeper than chest deep; the line should begin to walk in the direction of the victim's last known position with each person in the line sweeping his or her feet left to right and right to left across the bottom in an effort to feel and locate the victim; the line moves at the pace of the slowest walking person.
- The line search must continue in a back-and-forth fashion across the water until the victim is located.

Deep Water Line Search

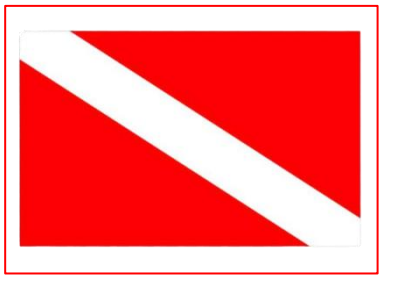
Either the lifeguard who saw this occur or the primary lifeguard who is communicating with the bystander who saw the victim slip under the water, should immediately attempt to triangulate the victim's last known position. To accomplish this, the lifeguard should:

- Make a visual note of the victim's last known position prior to submerging.
- Quickly identify:
  - a stationary object beyond this position;
  - a stationary object that is perpendicular to this position and;
  - a stationary object that is behind you, the rescuer, on the shoreline.
- These three objects relative to the victim's last known position will allow you to maintain a marking of the depth and/or distance from the shoreline of the victim's last known position as well as the being able to maintain the victim's last known position relative to the position of the lifeguard line search in the water.
- As additional lifeguards arrive on scene, they will each enter the water with mask and fins (*FIGURE C.8.1*), forming a line in which they are arm's length apart from the lifeguard on either side.
- The most senior lifeguard in the water will be the primary rescuer responsible for directing the search line and will communicate directly with the lifeguard onshore.
- The line should begin either up current or up wind from the victim's last know position; the shortest person must be in the shallowest of the water and the tallest person in the deepest part of the water; the line should begin by performing a head-first surface dive to the bottom and taking the number of underwater swim strokes as preassigned by the primary rescuer in the direction of the victim's last known position with each lifeguard in the line sweeping his or her hands, arms and feet left to right and right to left across the bottom and through the water column and visually looking through the water all in an effort to locate the victim; lifeguards should resurface in an upright position once he or she has completed the preassigned number of underwater swim strokes; once all lifeguards have resurfaced, the primary rescuer moves the line to the lifeguard who is farthest back.
- The line search must continue in in this same pattern across the water until the victim is located; the search is taken over by local EMS services; or the search is terminated by local EMS services.

It is vital that any time lifeguards are submerged in the water, for any reason, that at least one Marker Buoy s used to notify nearby boat traffic of persons under the water's surface.

Mask and fins to be used during a deep water submerged victim search.
FIGURE C.8.1

Any time lifeguards are performing and activity, including submerged victim deep water line searches, the "Diver Down" flag must be deployed.
FIGURE C.8.2



Locating Submerged Victim

- If the victim is located by lifeguards during a line search – deep or shallow water – he or she must immediately be brought to the surface of the water. Lifeguard(s) should accomplish this by any means necessary with the most desired technique being one in which the victim is grasped under each armpit by one or more lifeguards.
- Once at the surface, the victim should be kept on his or her back while ensuring his or her face is clear of the water. The lifeguards should work as a team to move the victim to the shoreline as quickly and efficiently as possible. Once on the beach, the victim should be assessed and the appropriate emergency care provided based on the victim's condition.

CPR/AED/First Aid

PART VI

HEART ATTACK

SIGNS AND SYMPTOMS MAY INCLUDE:

- Chest Pain-pressure, tightness, radiates to jaw and arm(s)
- Nausea & Sweating
- Shortness of Breath
- Weakness
- Denial

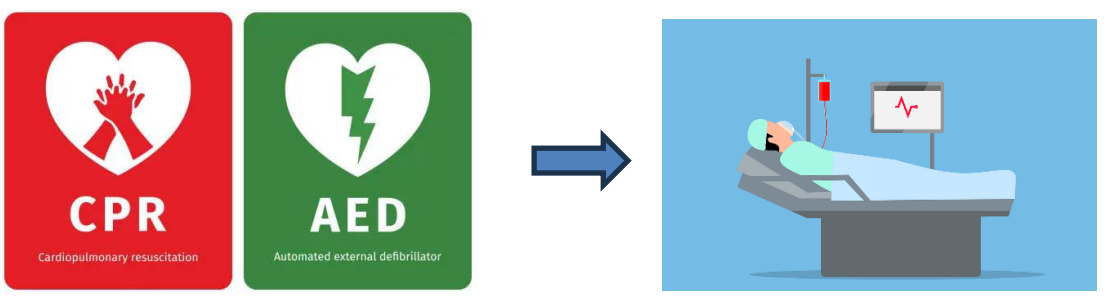
Gender can impact the signs and symptoms of heart attack. Females may not experience any chest pain or pressure. Instead, a heart attack can present as a shortness of breath, tiredness, and/or feeling ill with flu-like symptoms.

TREATMENT;

Recognize the Signs and Symptoms
Activate Emergency Action Plan (EAP)
Position Patient in Most Comfortable Position while Maintaining Calm
Provide a Dose of Aspirin

CARDIAC CHAIN OF SURVIVAL:

- Early Recognition
- Early Activation of EAP & EMS
- Early CPR
- Early Defibrillation (AED use)
- Early Advanced Life Support



STROKE

SIGNS AND SYMPTOMS MAY INCLUDE:

- Severe Headache
- Slurred Speech
- Numbness, Weakness, and/or Paralyzation of one side of the body to include any combination of face, leg, and arm.
- Difficulty seeing and/or changes in vision in one or both eyes.
- Difficulty walking and/or inability to walk.

A commonly accepted method to assess if a person is experiencing a stroke is to use the acronym F.A.S.T.:
F: Facial Droop
A: Arm Drift
S: Speech
T: Time

There are 2 types of strokes:

Ischemic - a clot in a blood vessel that restricts or obstructs blood flow to the brain.

Hemorrhagic - a blood vessel that ruptures and prevents blood flow to the brain. In either case, the brain is deprived of oxygen and tissue starts to die. The longer the stroke goes unrecognized and untreated, the more damage is done

TREATMENT:

Recognize the Signs and Symptoms
Activate Emergency Action Plan (EAP)
Position Patient in Most Comfortable Position while Maintaining Calm
Monitor Vital Signs and Provide Rescue Breathing/CPR as Needed

RESCUE BREATHING

Rescue breathing is to be used for a victim who has a pulse (has a heartbeat and blood flow) but who is not breathing on his/her own. Blood flow that has little to no oxygen is a life-threatening condition and can result in the victim having a seizure, falling into a coma, or not surviving the medical event. It only takes approximately ten (10) minutes without oxygen for a person's brain to die.

Rescue breathing is the act of a rescuer providing ventilations to a victim to ensure the blood flow is oxygenated to keep one's vital organs functioning.

Steps for Rescuer Providing Rescue Breathing:

- CHECK SCENE FOR SAFETY
- CHECK LEVEL OF CONSCIOUSNESS (LOC) OF THE VICTIM
- ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- CHECK PULSE FOR NO MORE THAN TEN (10) SECONDS
    - If no pulse, ***MOVE TO THE CPR SECTION***
    - If has a pulse BUT NO BREATHING:
        - ***BEGIN RESCUE BREATHING IMMEDIATELY***

ADULT	CHILD	INFANT
2 INITIAL BREATHS		
1 BREATH EVERY 5-6 SECONDS	1 BREATH EVERY 2-3 SECONDS	1 BREATH EVERY 2-3 SECONDS

REASSESS CIRCULATION EVERY TWO (2) MINUTES

CONTINUE RESCUE BREATHING IF PULSE & NO BREATHING

START CPR IF NO PULSE

CPR

Adult:

- CHECK SCENE FOR SAFETY
- CHECK LEVEL OF CONSCIOUSNESS (LOC) OF THE VICTIM
- ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- CHECK PULSE (at the Carotid Artery located on either side of victim's neck immediately adjacent to the adams apple) FOR NO MORE THAN TEN (10) SECONDS
    - IF HAS A PULSE, GO BACK TO RESCUE BREATHING
    - IF NO PULSE, IMMEDIATELY BEGIN CHEST COMPRESSIONS:

COMPRESSIONS & BREATHS

- LANDMARK: BULLSEYE IN CENTER OF CHEST
- INTERLOCK FINGERS, LOCK ELBOWS, PIVOT AT WAIST
- 30 COMPRESSIONS
- 1 ½ - 2 INCHES IN DEPTH
- RATE OF 100-120 COMPRESSIONS PER MINUTE
- FOLLOWNG THE INITIAL 30 COMPRESSIONS, OPEN AIRWAY (head tilt-chin lift)
- PROVIDE 2 BREATHS ENOUGH TO MAKE CHEST RISE
- CONTNUE 4 CYCLES OF 30 COMPRESSIONS TO 2 BREATHS
- RECHECK VITAL SIGNS & PROVIDE APPROPRIATE CARE

Child:

- CHECK SCENE FOR SAFETY
- CHECK LEVEL OF CONSCIOUSNESS (LOC) OF THE VICTIM
- ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- CHECK PULSE (at the Carotid Artery located on either side of victim's neck immediately adjacent to the adams apple) FOR NO MORE THAN TEN (10) SECONDS

    - IF HAS A PULSE, GO BACK TO RESCUE BREATHING

    - IF NO PULSE, IMMEDIATELY BEGIN CHEST COMPRESSIONS:

        COMPRESSIONS 7 BREATHS
        - LANDMARK: BULLSEYE IN CENTER OF CHEST
        - USE JUST ONE HAND , LOCK ELBOW, PIVOT AT WAIST
        - 30 COMPRESSIONS
        - 1 - 1 ½ INCHES IN DEPTH (or 1/3 depth of chest)
        - RATE OF 100-120 COMPRESSIONS PER MINUTE
        - FOLLOWNG THE INITIAL 30 COMPRESSIONS, OPEN AIRWAY (head tilt-chin lift)
        - PROVIDE 2 BREATHS ENOUGH TO MAKE CHEST RISE
        - CONTNUE 4 CYCLES OF 30 COMPRESSIONS TO 2 BREATHS
        - RECHECK VITAL SIGNS & PROVIDE APPROPRIATE CARE

Infant:

- CHECK SCENE FOR SAFETY
- CHECK LEVEL OF CONSCIOUSNESS (LOC) OF THE VICTIM
- ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- CHECK PULSE (at the Brachial Artery located on inside of either arm, midway between the elbow on shoulder) FOR NO MORE THAN TEN (10) SECONDS

    - IF HAS A PULSE, GO BACK TO RESCUE BREATHING

    - IF NO PULSE, IMMEDIATELY BEGIN CHEST COMPRESSIONS:

        COMPRESSIONS & BREATHS
        - LANDMARK: INDEX FINGER ON NIPPLE OPPOSITE RESCUER; DRAG TO CENTER OF CHEST; DROP MIDDLE & RING FINGERS
        - USE TWO FINGERS (your middle and ring fingers mentioned above)
        - 30 COMPRESSIONS
        - ½ - 1 INCH IN DEPTH (or 1/3 depth of chest)
        - RATE OF 100-120 COMPRESSIONS PER MINUTE
        - FOLLOWNG THE INITIAL 30 COMPRESSIONS, OPEN AIRWAY (slight head tilt only)
        - PROVIDE 2 BREATHS ENOUGH TO MAKE CHEST RISE
        - CONTNUE 4 CYCLES OF 30 COMPRESSIONS TO 2 BREATHS
        - RECHECK VITAL SIGNS & PROVIDE APPROPRIATE CARE

Two-Rescuer:

RESCUER ONE:

- CHECK SCENE FOR SAFETY
- CHECK LEVEL OF CONSCIOUSNESS (LOC) OF THE VICTIM

RESCUER TWO:

- ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS

RESCUER ONE:

- CHECK PULSE (Carotid artery for Adult & Child victims; Brachial Artery for Infant victims all as described above) FOR NO MORE THAN TEN (10) SECONDS

    - IF HAS A PULSE, GO BACK TO RESCUE BREATHING

    - IF NO PULSE, IMMEDIATELY BEGIN CHEST COMPRESSIONS:

        COMPRESSIONS & BREATHS

        RESCUER ONE:

        - LANDMARK:
            - **ADULT/CHILD** - BULLSEYE IN CENTER OF CHEST
            - **INFANT** - INDEX FINGER ON NIPPLE OPPOSITE RESCUER; DRAG TO CENTER OF CHEST; DROP MIDDLE & RING FINGERS
        - USE TWO FINGERS (your middle and ring fingers mentioned above)
        - 30 COMPRESSIONS (as described above for adults, children, & infants)1 ½ - 2 INCHES IN DEPTH
        - RATE OF 100-120 COMPRESSIONS PER MINUTE

        RESCUER TWO:

        - POSITION SELF ETHER AT SIDE OF VICTM'S HEAD OPPOSTE RESCUER ONE OR AT TOP OF VICTIM' HEAD
        - DURING THE INITIAL 30 COMPRESSIONS, OPEN AIRWAY (slight head tilt only)
        - PROVIDE 2 BREATHS ENOUGH TO MAKE CHEST RISE

        RESCUER ONE & TWO:

        - CONTNUE 4 CYCLES OF 30 COMPRESSIONS TO 2 BREATHS
        - RECHECK VITAL SIGNS & PROVIDE APPROPRIATE CARE

        RESCUER ONE & TWO:

        - RESCUER ONE BECOMES TRED FROM PROVIDING COMPRESSIONS & CALLS FOR A CHANGE CYCLE
        - CYCLE CONCLUDES WITH 2 BREATHS; RESCUER ONE & TWO CHANGE PLACES; RESCUER ONE RECHECKS CRCULATIOIN & BREATHNG; RESCUER TWO LNDMARKS ON VICTIM'S CHEST; APPROPRATE EMERGENCY CARE PROVIDED
        - CHANGING PLACES SHOULD TAKE RESCUER ONE & RESCUER TWO NO MORE THAN TEN SECONDS

AUTOMATED EXTERNAL DEFIBRILLATOR (AED)

Early defibrillation is a crucial component in the Cardiac Chain of Survival. The victim's chance of surviving the event is decreased by approximately 10% for each minute that AED usage is delayed. While AED usage as early as possible can increase the victim's chance of survival by as much as 50%.

If a rescuer is unable to access the AED unit him or herself, a bystander should be sent to retrieve the AED as soon as possible. Once the AED arrives on scene, CPR should continue without interruption while the AED is set-up and pads attached.

AED USAGE STEPS:

- Turn on the AED.
- Expose victim's bare chest – i.e. remove clothing; shave male's chest hair as needed; remove jewelry around neck.
- Place AED pads on the victim's bare chest – i.e. .
- Rescuer operating the AED should 'Stand Clear' and verbally announce to others to also 'Stand Clear'.
- AED will analyze the victim's heart rhythm and announce either:
  - NO SHOCK ADVISED, CONTINUE CPR
  - SHOCK ADVISED
- If shock is advised:
  - Yell 'SHOCK ADVISED, EVERYBODY STAND CLEAR'.
  - Make certain nobody is touching the victim or the stretcher or anything else that is in contact with the victim.
  - Hover finger over the 'SHOCK' button while keeping eyes looking head to toe of the victim to ensure nobody else is in contact prior to shocking.
  - Press the 'SHOCK' button with eyes on victim.
  - Begin CPR until the victim shows signs of life OR the AED unit begins to re-analyze the victim's heart rhythm.

ADDITIONAL AED INFORMATION:

- Victim can be wet but should be moved out of any puddles or standing water.
- Victim should be moved off any metal surface.
- Pads placed on the victim according to the image on the AED pad itself:
  - Do not place on top of pacemaker, scar, or other bump on the victim – adjust pad placement
  - Use pediatric pads on victims under 55pounds or 8 years of age or younger.
  - If you do not have pediatric pads, the adult pads should be placed with one in the center of the chest and the other pad in the center of the back.
- Once the pads are placed on the victim and/or the machine is turned on, NEVER remove the pads or turn off the AED unit.

SPECIAL SITUATIONS

Modified Jaw Thrust:

The jaw thrust maneuver is an alternate technique used to open a victim's airway when spinal trauma is suspected. It allows the rescuer to open the airway without compromising the head, neck, or back. If one attempts to open the airway using the modified jaw thrust but are unsuccessful after multiple attempts, one should use the head tilt-chin lift technique – it is more important to open the airway of an unresponsive, non-breathing victim than it is to maintain spinal integrity.

HOW TO PERFORM THE MODIFIED JAW THRUST:

- Position oneself at the top of the victim's head
- Place and seal CPR pocket mask on victim
- Place hands on each side of victim's face
- Place one thumb on the left-side and the other on the right-side of the victim's chin
- Place a few fingers under the victim's lower jaw near to the corner of the jawbone
- Lift up with one's fingers while pushing downward on the victim's chin with one's thumbs/keep one's thumbs in place on the chin/cheekbones

Bag Valve Mask (BVM):

Regular practice and multiple rescuers are needed to effectively and efficiently use a BVM. Use of a BVM is advantageous for the victim – namely, it allows a higher concentration of oxygen to enter the victim's lungs when compared to ventilations provided by a rescuer using a pocket mask.

CPR Masks & PPE:

There are adult and pediatric sizes of CPR pocket masks and bag valve masks. If providing rescue breathing and/or CPR to a pediatric victim, a pediatric pocket mask or BVM should be used. If no pediatric mask is available, the adult sized mask is to be used but turned upside down so that the 'nose' portion of the mask sits on the pediatric victim's chin. This technique will allow the mask to be tightly sealed on the victim's face.

Rescuers should always use protective nitrile gloves when caring for any victim. Gloves should be worn from the start and prior to administering any assessment or emergency care.

CHOKING

CONSCIOUS CHOKING:

Adult & Child:

- CHECK SCENE FOR SAFETY
- ASK VICTIM IF HE/SHE IS CHOKING
- OBTAIN CONSENT
- IF VICTIM UNABLE TO BREATHE, COUGH, OR SPEAK, ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- STAND BEHIND THE VICTIM; SPREAD LEGS SO THAT RESCUER HAS A WIDE BASE; REACH ARMS UNDERNEATH THE VICTIM'S ARMS
- USE ONE HAND TO LOCATE VICTIM'S NAVEL
- MAKE FIST AND PLACE THIS FIST JUST ABOVE THE VICTIM'S NAVEL
- PROVIDE ABDOMINAL THRUSTS – PULL UP AND IN LKE A FISH HOOK SHAPE OR THE LETTER 'J'
- CONTINUE PROVIDING ABDOMINAL THRUSTS UNTIL:
  - THE OBSTRUCTION COMES OUT OR;
  - THE VICTIM BECOMES UNRESPONSIVE
- IF VICTM BECOMES UNRESPONSIVE, GUIDE VICTIM TO GROUD CUSHIONING THE BACK OF THE HEAD
- TREAT AS AN UNCONSCIOUS CHOKING VICTIIM AS DESCRIBED IN THE NEXT SECTION

Infant:

- CHECK SCENE FOR SAFETY
- OBTAIN PARENT/LEGAL GUARDAN CONSENT
- IF INFANT UNABLE TO COUGH, CRY, BREATHE, ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- PLACE FOREARM DOWN CENTER OF INFANT'S CHEST; PLACE INDEX FNGER & THUMB ON EACH SIDE OF INFANT'S LOWER JAW RESPECTIVELY; PLACE FOREARM ON OWN LEG TO POSITION INFANT'S HEAD LOWER THAN BODY TO ALLOW GRAVITY TO ASSIST IN DISLODGING THE OBJECT FROM THE AIRWAY
- USE OTHER HAND TO PROVIDE 5 BACK BLOWS WTH HEEL OF HAND TO THE CENTER OF INFANT'S BACK DIRECTLY BETWEEN HIS/HER SHOULDER BLADES
- FLIP INFANT OVER SO THAT RESCUER'S FOREARM IS DOWN CENTER OF INFANT'S BACK
- PLACE HAND ON BACK OF INFANT'S HEAD FOR SUPPORT
- PLACE FOREARM ON OWN LEG TO POSITION INFANT'S HEAD LOWER THAN BODY TO ALLOW GRAVITY TO ASSIST IN DISLODGING THE OBJECT FROM THE AIRWAY
- USE OTHER HAND TO PROVIDE 5 CHEST THRUSTS USING TWO FINGERS
- CONTINUE THE COMBINATION OF BACK BLOWS & CHEST THRUSTS UNTIL:
  - THE OBSTRUCTION COMES OUT OR;
  - THE VICTIM BECOMES UNRESPONSIVE
- IF VICTM BECOMES UNRESPONSIVE, LAY INFANT ON A HARD FLAT SURFACE
- TREAT AS AN UNCONSCIOUS CHOKING VICTIIM AS DESCRIBED IN THE NEXT SECTION

UNCONSCIOUS CHOKING:

Adult, Child & Infant:

- CHECK SCENE FOR SAFETY
- CHECK LEVEL OF CONSCIOUSNESS (LOC) OF THE VICTIM
- ACTIVATE EMERGENCY ACTION PLAN (EAP) & EMS
- PROVIDE 30 CHEST COMPRESSIONS (in same manner as CPR compressions on adult, child, infant respectively)
- OPEN AIRWAY (head tilt-chin lift, head tilt only for infants, or modified jaw thrust); CHECK FOR OBJECT IN MOUTH; PROVIDE FINGER SWEEP TO REMOVE OBJECT
- ATTEMPT A VENTILATION
- IF CHEST RISES:
  - CHECK PULSE
  - NO PULSE – START CPR
  - HAS PULSE BUT NO BREATHING – START RESCUE BREATHNIG
  - HAS PULSE AND IS BREATHING – AWAIT EMS & MONITOR VITAL SIGNS
- IF CHEST DID NOT RISE:
  - PROVIDE 30 CHEST COMPRESSIONS (in same manner as CPR compressions on adult, child, infant respectively)
  - OPEN AIRWAY (head tilt-chin lift, head tilt only for infants, or modified jaw thrust); CHECK FOR OBJECT IN MOUTH; PROVIDE FINGER SWEEP TO REMOVE OBJECT
  - ATTEMPT A VENTILATION
  - REPEAT THIS CYCLE UNTIL CHEST RISES

RECOVERY POSITION

The recovery position can be used for a victim who is breathing but unresponsive. The benefits of this position are three-fold:

1.) Maintains open airway for the victim
2.) Allows fluids to drain from victim's mouth
3.) Prevents the victim from aspirating

HOW TO PLACE VCTM IN THE RECOVERY POSITION:

- EXTEND VICTIM'S ARM CLOSEST TO RESCUER ABOVE HIS/HER HEAD
- BEND VICTIM'S LEG FARTHEST FROM RESCUER OVER THE VICTIM'S OTHER LEG (leg closest to rescuer)
- WHILE PROVIDING SUPPORT TO VICTIM'S HEAD & NECK, PLACE VICTIM'S ARM FARTHEST FROM RESCUER ACROSS VICTIM'S CHEST
- ROLL VICTIM AS A SINGLE UNIT AWAY FROM YOU (to prevent bodily fluid from victim from contacting rescuer)
- USE THE VICTIM'S TOP BENT KNEE AS A SUPPORT AGAINST THE GROUND TO PREVENT VICTIM FROM ROLLING OVER ONTO HIS/HER CHEST/STOMACH

FIRST AID - BLEEDING

Controlling Bleeding:

Severe bleeding can be life-threatening. Controlling this bleeding and activating the EAP are crucial steps to prevent loss of life. There are three types of bleeding:

1.) **Capillary Bleeding** – typically, this type of bleed is not serious in nature. It is usually only oozing blood that can be controlled relatively easily.
2.) **Venous Bleeding** - There is large amount/volume of blood gushing from this type of wound. However, direct pressure can typically control this bleed.
3.) **Arterial Bleeding** - This is the most serious type of bleed. One loses a large amount/volume of blood in a relatively short amount of time.

HOW TO CONTROL BLEEDING:

- APPLY DIRECT PRESSURE TO THE WOUND WITH HEEL OF HAND
- ELEVATE BODY PART WITH WOUND ABOVE LEVEL OF HEART
- APPLY DIRECT PRESSURE WITH HEEL OF HAND TO PRESSURE POINT
- ACTIVATE EAP & EMS AS NEEDED

CONSIDERATIONS:

- ALWAYS USE GAUZE OR OTHER CLOTH (preferably white with no lint) ON THE WONUND WHLE APPLYNG PRESSURE
- NEVER REMOVE BLOOD SOAKED GAUZE – ADD MORE ON TOP
- BE MINDFUL OF & CARE FOR SHOCK
- ALWAYS USE PPE

FIRST AID - SHOCK

Shock can occur in many circumstances and is common when experiencing a traumatic event as well as during periods of severe blood loss. When a person is in shock his/her body does not have the ability to effectively circulate oxygen throughout the body to the vital organs.

HOW TO RECOGNIZE SHOCK:

- POOR CAPILLARY REFILL
- WEAKNESS & RESTLESSNESS
- CONFUSION & DIZZINESS (may seem intoxicated)
- SKIN IS COOL & MOIST TO THE TOUCH

HOW TO TREAT SHOCK:

- RECOGNITION OF EMERGENCY
- ENSURE SCENE IS SAFE
- ACTIVATE EAP & EMS
- KEEP VICTIM CALM & AS COMFORTABLE AS POSSIBLE
- DO NOT PROVIDE ANY FOOD OR DRIINK
- RAISE LEGS APPROXIMATELY 6 INCHES (only if no spinal trauma suspected

FIRST AID – HEAT & COLD RELATED EMERGENCIES

Hypothermia:

This is a cold-related emergency and can be life-threatening. The victim's core body temperature has dropped below "normal" levels - typically below 95 degrees Fahrenheit (35 degrees Celsius). Generally speaking, there are three broad stages of hypothermia:

1.) **Stage I**: poor circulation; actively shivering; skin cold to the touch
2.) **Stage II**: slow weak pulse & slow breathing; irritable; lack of co-ordination & confusion
3.) **Stage III**: no pulse; no breathing

One should keep in mind that a person can become hypothermic even in "summertime" weather.

HOW TO TREAT HYPOTHERMIA:

- RECOGNIZE EMERGENCY
- MOVE VICTIM TO WARM AREA (i.e. indoors) – IF NOT POSSIBLE, SHIELD VICTIM FROM WINDS
- REMOVE ANY COLD & WET CLOTHIING
- WRAP VICTIM IN DRY WARM BLANKETS, TOWELS, CLOTHING
- WHEN MOVING VICTIM, DO SO GENTLY
- IF VICTIM'S BREATHING BECOMES LABORED – ACTVATE EAP & EMS
- IF VICTIM NOT BREATHING OR NO PULSE – PROVIDE RESCUE BREATHING AND/OR CPR

Hyperthermia:

This is a heat-related emergency and can be life-threatening. The victim's core body temperature has risen above "normal" levels - typically below 104 degrees Fahrenheit (40 degrees Celsius).

One should keep in mind that a victim suffering from hyperthermia should be cooled down as quickly as possible.

HOW TO RECOGNIZE HYPERTHERMIA:

- CONFUSION, DIZZINESS, HEADACHE, & NAUSEA
- ALTERED LEVELS OF CONSCIOUSNESS
- INCREASED PULSE RATE
- SKIN IS RED, HOT TO TOUCH, & MOIST OR DRY
- INCREASED OVERALL BODY TEMPERATURE

HOW TO TREAT HYPERTHERMIA:

- RECOGNIZE EMERGENCY
- MOVE VICTIM TO COOLER AREA (i.e. inside air conditioned area) – IF NOT POSSIBLE, MOVE VICTIM TO THE SHADE
- PLACE ICE PACKS IN 5 LOCTIONS ON THE VICTIM:
  - LEFT SHOULDER
  - RIGHT SHOULDER
  - LEFT ARMPIT
  - RIGHT ARMPIT
  - BACK OF NECK
- WRAP VICTIM IN COOL WET BLANKETS, TOWELS, CLOTHING
- IF VICTIM'S BREATHING BECOMES LABORED – ACTVATE EAP & EMS

FIRST AID – MUSCULOSKELETAL INJURIES

The general rule of thumb is to stabilize a bone injury in the position found and not to splint an injury unless the victim is to be moved/transported.

HOW TO RECOGNIZE SOFT TISSUE INJURIES:

- PAINFUL WHEN BODY MOVES
- TENDERNESS
- SWELLING & BRUSING (minor)

HOW TO TREAT SOFT TISSUE INJURIES:

- R.I.C.E.
  - REST – rest the injured body part
  - ICE – ice the injured body part for 10-15 minutes each hour
  - COMPRESSION – wrap the injured body part/area with an ACE bandage
  - ELEVATION - elevate the body part/area above the level of the heart

HOW TO RECOGNIZE BONE INJURIES:

- UNABLE TO MOVE BODY PART
- DEFORMITY AT POINT OF INJURY
- TENDERNESS; SWELLING; BRUISING; GRATING SENSATION

HOW TO TREAT BONE INJURIES:

- STABILIZE THE INJURD BONE/JOINT/AREA
- ACTIVATE EAP & EMS AS NEEDED
- APPLY ICE TO LIMIT SWELLING

FIRST AID – BURNS

The general rule of thumb is to stabilize a bone injury in the position found and not to splint an injury unless the victim is to be moved/transported.

HOW TO IDENTIFY THE DEGREE OF A BURN:

- **First Degree**: pain with red swelled skin
- **Second Degree**: pain with white or red blistered skin; fluids oozing from burn site
- **Third Degree**: severe pain and/or numbness at and surrounding the burn site; skin is any combination of black, red, white, gray color; severe loss of bodily fluid from burn site

HOW TO TREAT BURNS:

- ATTEMPT TO STOP THE BURNING
- FLUSH & COOL THE BURNED AREA WITH WATER FOR NO LESS THAN 20 MINUTES
- COVER BURNED AREA WTH LOOSE STERILE DRESSING
- ACTIVATE EAP & EMS:
  - 1ST AND 2ND DEGREE BURNS
  - 3RD DEGREE CHEMICAL OR ELECTRICAL BURNS

FIRST AID – DIABETIC EMERGENCIES

Other terms used to describe this type of emergency are Hyperglycaemia (blood sugar levels are too high) and Hypoglycaemia (blood sugar levels are too low). Hypoglycaemia can be a life-threatening condition when the blood glucose level falls below 70mg/dL.

HOW TO IDENTIFY A DIABETC EMERGENCY:

- WEAKNESS & DIZZINESS
- ALTERED LEVELS OF CONSCIOUSNESS
- IRRITABILITY & CHANGES IN PERSONALITY
- CHANGES IN OR DIFFICULTY BREATHING
- SKIN FEELS "CLAMMY" TO THE TOUCH

HOW TO TREAT DIABETIC EMERGENCIES:

- PROVIDE CONSCIOUS VICTIM WITH SUGAR (i.e. orange juice, candy bar, etc…)
- ACTIVATE EAP & EMS FOR UNSCIOUSNESS VICTIM
  - MONITOR VITAL SIGNS
  - PROVIDE RESCUE BREATHING AND/OR CPR AS NEEDED

FIRST AID – SEIZURES

HOW TO IDENTIFY A SEIZURE:

- ALTERED LEVELS OF CONSCOUSNESS
- SHAKING UNCONTROLLABLY
- BODY IS RIGID OR STIFF
- FOAM OOZING FROM MOUTH/AIRWAY (only for certain types of seizures)

HOW TO TREAT A SEIZURE:

- ACTIVATE EAP & EMS IF SEIZURE LASTS LONGER THAN 5 MINUTES OR IF CAUSE IS UNKNOWN
- ALLOW SEIZURE TO OCCUR WITHOUT RESTRICTING VICTIM IN ANY WAY
- PLACE PILLOW OR BLANKET TO CUSHION THE VICTIM'S HEAD
- DO NOT PLACE ANYTHING IN THE VICTIM'S
- OPEN AIRWAY ONCE SEIZURE CONCLUDES; CHECK PULSE & BREATHING; PROVDE APPROPRIATE CARE
- IF BREATHING BUT UNCONSCIOUS, PLACE IN RECOVERY POSITION

FIRST AID – POISONING

Prevention of poisoning is the most important step. Medications should be stored in a locked cabinet and other dangerous solutions should be stored out of the reach of children.

HOW TO IDENTIFY A POISONING:

- NAUSEA & ACTIVE VOMITING
- LABORED BREATHING
- SEVERE ABDOMINAL CRAMPING
- ALTERED LEVELS OF CONSCIOUSNESS
- PROFUSE SWEATING
- SEVERE HEADACHE
- BURNS, STAINS OR OTHER MARKINGS AROUND MOUTH
- BURNING IN CHEST AND/OR THROAT
- OPEN MEDICINE BOTTLES, CLEANING PRODUCTS, OR INDUSTRIAL SOLUTIONS IN HOUSE AND/OR NEAR VICTIM

HOW TO TREAT A POISONING:

- ACTIVATE EAP & EMS
- CALL POISON CONTROL & ONLY FOLLOW THEIR DIRECTIONS

FIRST AID – ASTHMA ATTACK

Prevention of poisoning is the most important step. Medications should be stored in a locked cabinet and other dangerous solutions should be stored out of the reach of children.

HOW TO IDENTIFY AN ASTHMA ATTACK:

- SHORTNESS OF BREATH
- WHEEZING
- RAPID AND/OR SHALLOW BREATHING
- INABILITY TO SPEAK, COUGH, OR MAKE NOISE
- BENDING OR LEANING FORWARD TO BREATH
- BLUE LIPS & FINGERNALS AND/OR POOR CAPILLARY REFILL
- SKIN MOIST TO THE TOUCH

HOW TO TREAT AN ASTHMA ATTACK:

- ACTIVATE EAP & EMS
- KEEP VICTIM CALM & IN COMFORTABLE POSITION
- ASK IF VICTIIM (or family member) HAS AN INHALER

FIRST AID – ALLERGIC REACTION

Many allergic reactions are minor in nature and only impact certain body parts and/or systems. For example, skin, eye, and nose allergies ae common and have little to no impact on larger body systems and are, typically, non-life threatening. On the other hand, there are some allergic reactions that can be severe enough to threaten one's life. Often times, these severe allergic reactions are referred to as Anaphylaxis and it requires immediate emergency care. One key sign that a person is suffering from Anaphylaxis is that he/she presents with multiple signs and symptoms from the list below and these signs and symptoms involve multiple parts of the body.

HOW TO IDENTIFY AN ALLERGIC REACTION:

- ITCHY EYES & NOSE
- RUNNY NOSE, SNEEZING & WATERING EYES
- RASHES AND/OR HIVES
- STOMACH CRAMPS AND MAYBE VOMITING AND/OR DIARRHEA
- REDNESS, SWELLING, & PAIN
- SWELLED TONGUE, WHEEZING & THROAT CLOSING
- CHEST TIGHTNESS
- LABORED BREATHING AND/OR RESPIRATORY ARREST
-

HOW TO TREAT AN ALLERGIC REACTION:

- PROVIDE ANTIHISTAMINE BY MOUTH (i.e. Benadryl)
- MONITOR AIRWAY & BREATHING
- IF ANAPHYLAXIS IS SUSPECTED:
  - ACTIVATE EAP & EMS
  - MONITOR VITAL SIGNS (pulse and breathing)
  - ASK VICTIM (and/or family members and friends) IF HE/SHE HAS AN EPI-PEN
  - ASSST IN ADMINISTERING EPI-PEN:
    - REMOVE SAFETY CAP
    - PLACE EPI-PEN IN VICTIM'S HAND
    - INSTRUCT VICTIIM TO HOLD EPI-PEN WITH TIP POINTED DOWN TOWARD HIS/HER UPPER LEG/THIGH (all while holding the victim's hand to help guide the epi-pen)
    - EPI-PEN POINTED TIP SHOULD BE PUSHED FIRMLY INTO THE UPPER THIGH UNTIL IT CLICKS
    - HOLD EPI-PEN IN PLACE FOR 3 SECONDS
    - PULL EPI-PEN STRAIGHT UP & OUT OF THIGH
    - RUB AREA FOR 10 SECONDS TO HELP ABSORB NTO THE MUSCLES

PART VII

Competition – Junior Lifeguards

As part of the WASH Junior Lifeguard program, participants should be exposed to the competition side of lifeguarding which is, often times, referred to as Lifesaving Sport. This is a crucial component of the program for multiple reasons:

- Instills good work ethic
- Promotes healthy competition
- Encourages consistent practice of rescue skills
- Promotes and fosters networking, collegial support, and an exchange of ideas

Facilities and organizations taking part in the WASH Junior Lifeguard program are encouraged to create opportunities for participants to compete with one another throughout the program culminating in and "End of Session" competition.

Member organizations may also choose to register their program participants (all or a elect group) for the annual WASH Junior Lifeguard Regional, National, and International Competitions. These events are held on a rotating schedule in various locations throughout the United States and the world.

WASH Sanctioned Competition Events – Pool

- 4x25 Swim Relay – Freestyle (Group C)
- 4x50 Swim Relay – Freestyle (Group B)
- 4x100 Swim Relay – Freestyle (Group A)
- 4x25 Swim Relay – Backstroke (Group C)
- 4x50 Swim Relay – Backstroke (Group B)
- 4x100 Swim Relay – Backstroke (Group A)
- 4x25 Individual Swim Medley (Group C)
- 4x50 Individual Swim Medley (Group B)
- 4x100 Individual Swim Medley (Group A)
- 4x25 Swim Medley Relay (Group C)
- 4x50 Swim Medley Relay (Group B)
- 4x100 Swim Medley Relay (Group A)
- Swim Rescue Race
- Ring Buoy Toss

WASH Sanctioned Competition Events - Beach

- Beach Run
- Beach Flags
- 4x? Beach Relay (Group C)
- 4x? Beach Relay (Group B)
- 4x100 Beach Relay (Group A)
- Rescue Board Race
- Rescue Race
- Swim
- WASH 'JuniorGuard' (run, swim,)
- Landline (Group A only)
- Run-Swim-Run
- Rescue Board Relay

Appendix A – Ten Codes

10-1	Receiving you poorly	10-41	Moved to different channel
10-2	Receiving you well	10-42	Traffic accident located at……
10-3	This channel in use	10-43	Traffic congestion located at……
10-4	Okay, Roger, Yes, I understand	10-44	I have a message for……
10-5	Relay the message	10-45	Stations on this channel identify yourself
10-6	Busy, Not able to talk now	10-50	Break
10-7	Out of service	10-60	What is the next message number
10-8	In service	10-62	Unable to copy your transmission. Use telephone
10-9	Please repeat your last message/transmission	10-63	Net directed to…….
10-10	Was 10-6. Now on call	10-64	Net clear
10-11	Talking to fast	10-65	Awaiting your next message
10-12	Visitors are present	10-67	All units comply
10-13	Advise weather conditions	10-70	Fire at…..
10-16	Make a pick up at	10-71	Proceed with your transmission in code
10-17	Important business	10-73	Ending conversation on radio
10-18	Anything for me/us?	10-77	Not receiving you
10-19	Return to headquarters/base	10-81	Reserve hotel for……
10-20	What is your present location?	10-82	Reserve room for…….
10-21	Contact by telephone	10-84	Telephone number is……
10-22	Make in-person contact with	10-85	Address is…….
10-23	Stand-by	10-89	Radio repairman needed
10-24	Assignment is complete	10-91	Talk closer to the radio mic
10-25	Contact another station by radio	10-92	Adjust your transmitter
10-26	Disregard last message/transmission	10-93	Check my frequency on this channel
10-27	I am changing to channel…….	10-94	Give me a long count
10-28	Proper station identification	10-99	All units
10-29	Time is up for contact	10-100	Rest stop
10-30	Violates regulations	10-200	Police needed at…….
10-31	No longer violating regulations		
10-32	Will advise readability of signal		
10-33	Emergency traffic only on this station		
10-34	In trouble, require assistance		
10-35	Urgent matter cannot discuss via radio		
10-36	Time check		
10-37	Send tow truck		
10-38	Injuries, ambulance required		
10-39	Your message has been delivered		

Appendix B - Ocean and Beach Terminology & Definitions

Amplitude – distance form the water's rest position to the top of the wave's crest.
Backbeach – the soft sand portion of the beach prior to reaching the roadside or other off-beach location.
Backwash – outward (or seaward) flow of water that was left over on the beach from previous waves. It flows under the new incoming waves.
Brackish – a mix of salt and freshwater.
Contour – the elevation of the seafloor.
Crest – the highest point of a wave.
Cusp – the arc(s) creating in the sand from the incoming waves and subsequent outflow of the backwash.
Downdrift – the direction that currents move sand, sediment, and other debris.
Ebb Tide – period of time during which the tide is falling.
Feeder – flow of water parallel to the shoreline that all converge to form the neck (or beginning) of a rip current.
Fetch – the distance, over the water, the wind blows in one direction.
Foreshore – area of beach that s under water during a high tide and is exposed to air during a low tide. Synonym to intertidal zone.
Frequency – the number of waves that pass by a fixed point in a given amount of time.
Groin – shoreline perpendicular structures designed to mitigate the sediment transport or erosion of a beach and/or to maintain updrift beaches.
Gully – underwater canyon or hole. An inshore gully refers to a deeper area as a result of a hole in the bottom.
Height – the distance between consecutive crest and a trough of a wave.
Inlet – a recess or narrow passage through a barrier island that leads into a bay.
Longshore – synonym of littoral. A current that is created by a series of waves reaching the shoreline, breaking, and releasing sudden bursts of energy that then run parallel to the shoreline.
Lull – time between wave sets.
Neap Tide – describes the tide immediately after the first or third quarters of the moon phase. It leads to the least amount of difference between consecutive high and low tides.
Offshore – wind blowing from the land to the water.
Onshore – wind blowing from the water to the land.
Outside – a shallow area that causes waves to break farther form shore and well behind the "inside" break.
Period – time it takes for two consecutive wave crests (or consecutive troughs) to pass a specified stationary point
Plunging Breaker – waves that move along a steep sloping bottom and the wave can form a powerful barrel with enormous close-outs.
Salinity – amount or percent of salt dissolved in the water.
Sea Wall – coastal defense structure, usually man-made, to mitigate the impact of coastal processes including but not necessarily limited to wave action, erosion, wind, and storm swell.
Shorebreak – waves breaking directly on the shoreline usually with great impact.
Slack Tide – period of time during which the tide is not rising or falling.
Spilling Breaker – waves that move along a gradual sloping bottom and the crest collapses down (or "breaks") the face of the wave.
Surf Line – the point in which the waves are impacted by bottom contour and form "breakers".
Surf Zone – area where waves typically break.
Swell – series of waves that propagate along the water/air line and are influenced by gravity. Wind transfers energy from the air to the water and swell is not influenced by local winds but rather by distant weather systems.
Tide Line – highest point of a tide.
Tide Pool – seawater left behind in the intertidal zone during low tide
Trough - lowest point of a wave.
Water Column – the space filled with water between the water's surface and the bottom.
Wave – circular movement of water caused by energy moving through the water.
White Caps – during the breaking of a wave, the air and seawater mix causing white caps in which there is a turbulent flow of water beneath the white caps.

Resources

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