



## Causes of Drowning in Water and Tactical Methods of Quick Rescue in Drowning

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### ABSTRACT.

Causes that lead to frustrating incidents involving drowning are mainly due to citizens diving in unapproved bodies of water or falling into the water as a result of their carelessness. Drowning occurs during bathing in bodies of water or when it falls suddenly. In this article we will talk about tactical methods of quick rescue and first aid in case of drowning.

**Key words:** water, drowning, involuntary accident, carelessness, bathing, ponds, mud, search and Rescue, Emergency, Ambulance, fainting.

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### Introduction.

Drowning is an accident in which the respiratory tract becomes filled with fluid, usually water or liquid masses (mud, clay), causing severe respiratory and cardiac dysfunction. Drowning usually occurs when swimming in large bodies of water or for some other unpleasant reasons. Even a good swimmer can drown if they do not follow the rules of swimming and do not take precautions.

Fatigue from swimming for a long distance, as well as injuries from diving with the head, can lead to drowning as a result of the head hitting a rock or other hard object. A person diving headfirst (if he does not know the technique of diving headfirst) will suffer injuries to the neck, eyes, and back due to the risk of hitting the surface of the water, which can cause unconsciousness. Hitting the head on the bottom of the pool poses a risk of fracture of the cervical vertebrae. Drunkenness can also cause drowning, as a drunk person cannot control himself and violates the rules of swimming. In addition, he can get cold and faint because he does not feel the cold well. When the temperature suddenly changes after being hot in the sun and suddenly diving into the water, when the stomach is full of food and digestion is accelerated, or when a person is scared of falling into the water suddenly, fainting can also occur.

Death from drowning occurs under the influence of severe pathological changes - hypoxia (lack of oxygen). Drowning occurs during swimming in water bodies or when suddenly falling into the water, a drowning person can be saved by 90% after one minute, and only 1-3% after 6-7 minutes. Drowning in water is not difficult, even skilled swimmers can drown quickly and silently. This happens even on beaches where there are many people and everyone can be observed. It is a misconception that the main cause of drowning is not knowing how to swim. A person who does not know how to swim will not go into deep water and will generally try to stay away from the water. It is difficult to imagine that a person who cannot swim will swim to the middle of a lake and drown there. Drowning is a mechanical form of suffocation, resulting from the lungs filling with water. The time and nature of the risk of death depends on the condition of the organism and external factors. Every year, about 70,000 people die from drowning worldwide. The majority of them are young men and children.

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### Methodology.

The most common causes of drowning are:

*Alcohol.* Intoxication can lead a person to the most irrational actions, and a person may have difficulty assessing his own strength. In a drunken state, a person may bet with friends to swim to the other side of the river or simply jump into the water to "relax". In any case, alcohol is responsible for 80% of drownings.

*Natural hazards.* Even a master swimmer can fall into a whirlpool, and it is very difficult to swim out of it and overcome a strong current.

*Hit.* While diving or trying to get out of the water, a person may hit a floating branch, an object, or someone else. Sometimes the impact is so strong that the person is unable to swim back to the surface.

*Vein traction.* In cold water, there is a high chance of a vein cramping due to intense muscle tension, and swimming with a cramping leg is almost impossible.

Types of drowning:

1. **True (true) drowning**, also called wet drowning, occurs as a result of water entering the lungs. As a result of water filling the alveoli instead of air, blood vessels burst and water enters the bloodstream. It occurs in three stages:

Initial - in this case, a person is conscious, able to move, hold his breath under water and try not to swallow it. After first aid is provided and the water from the lungs is expelled by coughing and from the stomach by vomiting, there are no complications;

Agonal - in this stage, the drowning person loses consciousness. Although his movements are preserved, they are not voluntary, water enters the lungs uncontrollably, there is a heartbeat and breathing, but it is weak. If first aid cannot be provided and water is not removed from the lungs, the victim's condition very quickly passes into the third stage;

Clinical death - breathing and pulse stop, the pupils do not react to light. The victim can only be helped in the first minutes.

2. **False (asphyxiating) drowning**. In this type of drowning, death also occurs due to water entering the lungs, but this time it is caused by a spasm. The throat narrows and prevents water from entering the lungs, the person quickly loses consciousness, then begins to sink to the bottom of the water, and as a result, water enters him uncontrollably. This condition is observed with a sharp impact on the water, in situations of fear, shock.

3. **Syncope or blue drowning**. Death occurs due to cardiac arrest, and cardiac arrest is due to hypothermia and excessive exertion. In syncope drowning, the skin turns pale due to capillary spasm. This type of drowning is safer and can be resuscitated even after being under water for 10 minutes or more. Such drowning is observed both in inexperienced swimmers who spend a lot of energy on various chaotic movements and panic, and in experienced swimmers with heart failure.

Drowning in seawater is considered safer than drowning in ordinary freshwater bodies. First aid for drowning consists of performing resuscitation measures. It is very dangerous to pull a drowning person out of the water. When a person is drowning, he can drown the person saving him due to the "state of death". Therefore, if the rescuer is not physically strong enough, it is necessary to rescue him with two or three people.

There is no noise when **a person is drowning** - most people do not scream when they have to fight for every breath, and there is no waving of hands or splashing of water.

**A drowning person usually exhibits the following symptoms:**

- The head is kept below the water surface, the mouth is under water and only occasionally rises to breathe.
- The drowning person does not straighten his hair, which interferes, does not float from one place to another, he looks at one point, his gaze at that moment remains "glassy".
- He tries to lean back or throw his head back, breathing with difficulty.
- He turns pale, in true drowning - there is foam around the mouth and nose.

There are other signs of drowning, such as shuddering and panting, but they cannot be detected from a distance (Figure 1).

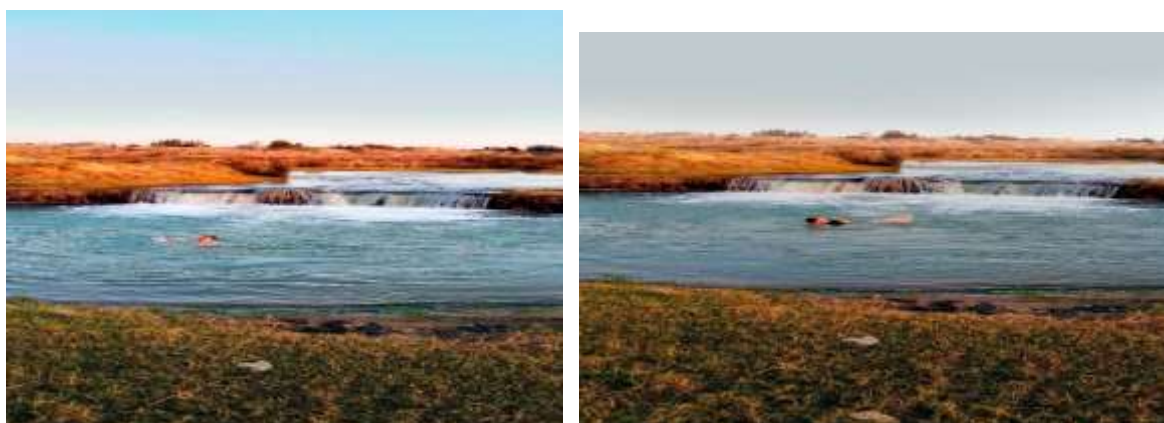


Figure 1. Disorganized movement in drowning situations

### Techniques for rescuing a drowning person.

First of all, it is necessary to thoroughly assess whether it is possible to save the drowning person without going into the water. It is necessary to use a long stick, a rescue balloon or other inflatable objects nearby and ask for help from those around you. The difficulty in helping a drowning person is that

the drowning person reflexively grabs the rescuer, and if the rescuer does not have sufficient experience, the drowning person can pull both of them to the bottom of the water. Such actions occur involuntarily, so a person should follow a few simple rules: first, to help a drowning person, you need to swim from behind him, that is, he should not see the rescuer. Then, you need to use various ways to get the drowning person out of the water:

- put the drowning person on his back, hold him by the head near the armpit or ear, and, while swimming, pull him with your legs.
- put one hand under the drowning person's armpit, hold him by the chin, fix him above the water level, and pull him by moving his free arms and legs.
- put the victim on his back, put one hand under his armpit, hold his other hand, and pull him behind you.

If a drowning person tries to grab you, hold your breath and dive under the water. Do not try to free yourself from the drowning person by forcibly opening his arms - panic will give the victim additional strength, and the fight will take even longer. If the diver has reached the bottom of the water, you should dive, taking into account the strength and direction of the current. After diving, hold the drowning person tightly and push hard from the bottom of the water to raise him to the surface in one motion. When you get to the shore, you need to give the victim artificial respiration, but first you need to lay him down, remove vomit, sand, etc. from his mouth, listen to his breathing and pulse.

If the victim is conscious, you need to lay him down with his head lower than his feet, remove his wet clothes, wrap him in a warm blanket, and give him a hot drink. Then it is mandatory to call an ambulance - even if the victim looks well and says that he feels well, it is necessary to conduct an urgent medical examination. If the victim is breathing but unconscious, he is brought to consciousness with ammonia, wrapped in a warmer blanket, given a hot drink and a doctor is called.

If breathing and pulse are not detected, emergency rescue measures are taken. This includes artificial respiration and heart massage (cardiopulmonary resuscitation) (Figure 2).

First, the water in the lungs is removed, for this the drowning person should be thrown over the knees, brought into a hanging position and at the same time holding the head and pressing it between the shoulder blades. If this does not help, it is necessary to insert two fingers into the victim's mouth and press on the root of the tongue (Figure 2 (A)).



**Figure 2. Emergency assistance to a drowning person.**

**Give artificial respiration.** The simplest method of artificial respiration for an unprepared person is the “mouth-to-mouth” method. To do this, the victim is laid on his back, his head is thrown back, and breaths are given into his mouth, while his nose is closed with his fingers. If water that has not come out before begins to come out, the victim’s head should be turned to the side, and the shoulder on the opposite side should be raised. Two artificial respirations are given and up to 30 heart massages are performed. Until the reflex begins and the victim begins to breathe independently, cardiopulmonary resuscitation is performed 4-5 times in a ratio of 2/30.

**Indirect heart massage.** In this case, it is necessary to place the hands on top of each other on the lower part of the chest, two fingers above the pit of the stomach, and press it rhythmically at a rate of 30 times per minute. If the help is provided by one person, two artificial breaths should be given for every 30 compressions. When the victim starts breathing, it is necessary to call an ambulance immediately.

Since the human body is lighter than water, a person only begins to sink when he panics. To avoid drowning in water, one enters a shallow pool, puts his feet together, and waits for a while. The water feels like it is pushing a person upward, and one must be able to feel this sensation. One must lie on one's back and relax. The head may be completely submerged, but the important thing is that the mouth and nose remain above the water surface. Calmness is a quality that helps even a person who does not know how to swim stay close to the surface of the water for a long time.

**If a person is in a panic, it is recommended to do the following:**

- The arms are not raised and the water is not hit with them. The arms should be moved underwater: in this case it will be easier to keep the head above the water level;
- Move with the legs as if you were walking down the street;
- Take a deep breath as soon as possible, the body will immediately feel lighter. Of course, at that moment, try to remain calm.

**It is recommended to keep the following in mind when entering the water:**

- Never go into the water drunk; especially while lying on inflatable mattresses and oxygen cylinders.
- During the hottest hours of the day (12:00-16:00), you may faint due to sunstroke in the water, so it is better not to take risks.
- Do not swim alone, especially in unfamiliar water bodies. There should always be someone nearby who can monitor you and help you if necessary;
- If the swimmer has swum for a long time and is tired, he should rest, lie on his back, relax, and rest in the form of a “star”. After catching his breath, slowly start swimming towards the shore.
- If a person is being carried away by the current, do not resist: wait for the current to weaken and slowly move towards the shore. Rip currents are considered very dangerous. They form along the coast and carry you directly into the open river or ocean. Such currents can carry you several hundred meters from the coast. In such cases, the best approach is to swim parallel to the coast, not against the current. Rip currents are usually not very wide (a few meters), so it is not difficult to get out of them.

If a vein is torn, a decision must be made quickly: -If you bend your leg at the knee and bring your heel to your buttock during hip thrusts, it will pass quickly;

- The abdominal muscles will relax quickly if you pull your legs to your stomach;
- For the calf muscles, moving forward helps, take your foot out of the water and pull your heel towards you with your hand;
- For the forearm thrusts, sharply opening and closing your palm several times helps. Saving a drowning person is the duty of every person. To fulfill this duty, you must know how to swim well. Everyone who can swim is obliged to help a drowning person. Not to lose yourself in the idea of helping a drowning person, and a person who knows how to swim, without wasting time running around, immediately taking off his outer clothing and saving a drowning person is one of the greatest human duties.

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## Results.

The study identified several primary causes of drowning incidents, including unauthorized swimming in unregulated bodies of water, lack of swimming skills, sudden falls into water, and negligence. Statistical data indicate that a significant proportion of drowning cases occur due to a lack of awareness regarding water safety measures and the absence of proper supervision, especially among children and inexperienced swimmers.

Tactical methods of quick rescue were analyzed, highlighting the effectiveness of different approaches in various drowning scenarios. These methods include:

The use of life rings, ropes, or buoyant objects to assist a drowning individual from a safe distance.

Techniques used by trained professionals to physically retrieve victims while minimizing risk to the rescuer.

Utilizing watercraft for swift retrieval, particularly in deep or turbulent waters.

The immediate application of CPR and other life-saving techniques significantly improves survival rates.

The results emphasize the importance of proactive measures, including public awareness campaigns, safety regulations, and the availability of emergency rescue personnel near water bodies. Additionally, training civilians in basic water rescue and CPR techniques can substantially enhance survival outcomes in drowning emergencies.

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## Conclusion

Drowning remains a major public safety concern, often caused by inadequate supervision, lack of swimming proficiency, and reckless behavior around water bodies. The implementation of swift and effective rescue techniques plays a crucial role in reducing fatalities. The findings suggest that increasing public awareness, enforcing stricter safety regulations, and promoting emergency response training can significantly mitigate drowning risks. Future research should focus on developing advanced rescue technologies and enhancing community engagement in water safety education to further prevent drowning incidents and improve emergency response efficiency.

## References:

1. Law of the Republic of Uzbekistan “On the Rescue Service and the Status of a Rescuer”.

2. Order of the Minister of Emergency Situations “On Approval and Implementation of Occupational Safety Rules in Diving Work”.
3. Order of the Minister of Emergency Situations “On Approval of the Regulations of the Commission for Certification of Divers of the Ministry of Emergency Situations”.
4. Atakulov N.J. Educational and Methodological Manual for Diving Training. Samarkand-2022, 116 p (p 66-82).
5. Алешина С.И. “Спасатель”. Москва, 2007, стр 224-229. 6. Долин П.А. “Ликвидация ЧС”. Москва, 2008, стр 104.
6. Долин П.А. “Ликвидация ЧС”. Москва, 2008, стр. 104.
7. [www.fvv.uz](http://www.fvv.uz).