

Drowning: The First Time Problem

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The First Time Problem (FTP) proposes that “swimming pool only” swimmers are at greater risk of drowning than frequent open water swimmers because they may be overwhelmed by the number of new experiences and challenges they face following an unexpected fall into cold open water when clothed. The problem can be overcome by providing swimmers with information and safe opportunities to practice survival swimming skills they might need in open water conditions.

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Between one half to two thirds of those aged over 4 years who drown accidentally are reported by police, family, or friends to be able to swim and over half drown within 3 m (10 feet) of safety (Home Office UK, 1977; Lifesaving Society, 2004). The majority of teen and adult drownings occur when individuals unexpectedly fall into open water (Royal Life Saving Australia, 2004; RLSS UK, 2011; CDC, 2012). The Royal Life Saving Society UK estimated that 86% of accidental drownings occur in open water locations and that only 14% of casualties were bathing or swimming when they got into difficulty (RLSS UK, 2011). In light of these reports and claims, the question arises as to why some swimmers are unable to save their own lives when they unexpectedly find themselves immersed in open water.

In this paper, I suggest that inexperienced open water swimmers in general and swimming pool swimmers in particular are at greater risk of drowning than frequent open water swimmers because they can become overwhelmed by the number of new experiences they have to cope with following an unexpected clothed fall into cold open water. I have called this tragic situation the First Time Problem (FTP). The problem can be summarized as the first time a swimmer enters cold water, swimming in clothing, swimming in footwear, swimming without goggles, or swimming in the dark, should not be when he/she is drowning. Being overwhelmed by new experiences can result in a sense of helplessness and swimmers may surrender to panic and lose their ability to help themselves.

Drowning Realities

The FTP recognizes that in the 21st century many swimmers in developed countries choose to swim only in warm pools where they wear a swimsuit, a swimming hat, and protect their eyes with swim goggles. If they choose to swim in the sea, many

wear a wet suit or only do so while on vacation in countries where the sea water is warm. Table 1 lists the proposed differences between a planned entry into a swimming pool for recreational purposes and an unexpected fall into cold open water which I have called “Drowning Realities.”

Table 1 Comparison of Drowning Realities and Swimming Pool Realities

Drowning Realities	Swimming Pool Realities
Unexpected entry	Prepared entry
Cold water	Lukewarm water
Soft/stony bottom	Hard, regular bottom
Open, irregular shape	Closed, known shape
Low or high sides	Deck level or low sides
Moving water	Still water
Unknown depths	Known depths
Wearing street clothes	Wearing swimwear
Unprotected eyes	Wearing goggles
Wearing footwear	No footwear
Possibly nighttime	Bright lights
Unknown/changing distances	Known distances to safety
Possibly no shallow water	Known shallow end

Dealing with one or two of the “Drowning Realities” might not pose a life threatening danger to a competent pool swimmer. It is the urgent immediate need to deal with many of them together that creates the life threatening problem since there is a real possibility that the sum of the “Drowning Realities” can overwhelm a swimmer and lead to panic. Research indicates that most individuals can adequately deal with two unexpected variables at the same time but not more than two safely (Halford, Baker, McCredden & Bain, 2005; Finch, 2008). The FTP can be overcome by providing swimmers with training opportunities in safe, controlled environments that simulate real drowning experiences. These opportunities would allow them to experiment with different possibilities and to successfully deal with the associated problems thereby reducing the likelihood of them panicking in a real drowning situation because they would have previous knowledge and experience to fall back on. Military research and practice has established that **with specific training and experiences a tendency to panic can be greatly reduced** (Molloy & Grossman, 2007).

Panic

Golden and Tipton (2002) and Leach (1994) describe panic as self-destructive behavior without judgment or reasoning during which an individual will be unable to understand or follow any instructions. The panicked individual will most likely

fixate to one particular means of escaping from their predicament and ignore all others. Leach (1994) estimated that in an emergency between 10–20% of people will react calmly in an effective manner; approximately 75% will be confused and act mechanically with poor reasoning, and between 10–15% will act totally inappropriately without reason. Research indicates that those who remain calm will most likely have received training in emergency management or had prior experience in similar stressful situations with positive outcomes. The confused majority can be taught to act appropriately, thereby greatly increasing their survival chances. Golden and Tipton (2002) state that panic most likely occurs when individuals perceive themselves as trapped with no viable survival options (p. 238).

Cold Water

The immediate physical effects of a sudden immersion in cold water are well known and called the Cold Shock Response. Golden and Tipton (2002) summarized these as both respiratory (e.g., gasp, hyperventilation, and an inability to voluntarily breath hold) and cardiovascular (e.g., vasoconstriction of superficial blood vessels, rapid heart rate, irregular heartbeats, increased blood pressure, and a danger of heart attack). They suggested that the “response probably accounts for the majority of near-drowning incidents and drowning deaths following accidental immersion in open water below 15 °C (59 °F).” In their opinion, panic is a likely consequence of cold shock in those lacking experience of cold water immersion and knowledge of its temporary duration of between 2–3 min (Golden & Tipton 2002, p. 59).

Analysis of accidental drownings in the United Kingdom show that only 3% of drownings occur in swimming pools, with 63% occurring in inland waterways, and 23% in coastal waterways (RLSS UK, 2011) where the temperature seldom rises above 16 °C (61 °F) at best (Kayarchy, 2012). The proposed solution to the Cold Shock Response problem is to float face up during the initial minutes until respiration and blood pressure/blood flow return to safe levels (Irish Lifesaving Foundation, 2006; Barwood et al., 2011). Trying to swim while hypoxic from the initial effects of the Cold Shock Response can result in sudden total swim failure. Swimmers should learn to float on the back *in clothing*, taking full slow breaths to counter hyperventilation. When breathing has steadied, the swimmer can consider what to do next while realizing that they can breathe and are not sinking.

Submersion in cold water reduces blood flow to limbs, especially the legs, and a rapid loss of grip power from chilled fingers can make exiting water difficult if there is a high freeboard and no help (Golden & Tipton, 2002). While there is a need to reduce activity and float in the beginning of an immersion to deal with the Cold Shock Response, once a swimmer regains control of their breathing it is imperative that they leave the water quickly before their limbs become severely chilled and immobile. If an inexperienced swimmer is distressed due to the effects of Cold Shock and is unable to exit the water immediately, he may think swimming to safety as fast as he can as his only survival option. In a severe hypoxic state, the swimmer may quickly become anoxic and experience sudden total swim failure and drown very close to safety. This is one possible explanation as to why such a high percentage of drownings occur within 3 m (10 feet) of safety.

Swimming in Clothing

Swimming in clothing is often discouraged or forbidden in swimming pools for hygiene and safety reasons. Swimmers may never have swum in clothing before a fall into water. Wet clothing does not have much weight in water but it does hamper arm and leg movements. Clothing will normally have some air trapped inside of its layers and this aids buoyancy and slows body heat loss during the first (cold shock) minutes (Barwood et al., 2011). Swimmers should experiment with different strokes while wearing street clothing to discover what works best for them. Once swimmers are proficient at swimming in clothing they should practice removing clothing. The primary purposes of this are not only to learn how to remove clothing in water but to give swimmers experience of how difficult it can be to remove them and how easy it can be to swim in them. They may learn that, while in clothing, the breaststroke can be a better option than front crawl, and that in certain circumstances (e.g., wind spray) it is advisable to remain supine and swim backward to safety (Irish Lifesaving Foundation, 2006). Experience should be provided first in light summer clothing and then subsequently in heavy or layered winter clothing (Figure 1).



Figure 1 – Swimmers in clothing (without goggles) experiencing difficulty swimming prone.

Swimming in Footwear

Swimming in street footwear is usually prohibited in swimming pools because of hygiene concerns but is a frequent reality in drowning situations. As with clothing, swimming while wearing footwear requires modifications to general swimming strokes. Plimsolls or sneakers are usually made of buoyant materials and will float, whereas boots will need to be removed as soon as possible. Swimmers should experiment by swimming in different types of street footwear and learning how to safely remove them in water.

Swimming Without Goggles

Swimming without goggles can be difficult, especially when done for the first time. In open water, wind spray can be a problem. Inexperienced open water swimmers

tend to frequently stop, tread water, and wipe their eyes. They also tend to lift their heads high out of the water to aid their vision resulting in a lowering of the legs and increased resistance to forward movement. If a wind is blowing water spray into a swimmer's eyes or they have vision problems due to corrective lens, they would be better swimming backward to avoid inhaling the spray and eye splash. This would also restore the horizontal body position lost in diagonal prone stroking, thereby reducing energy requirements experienced in a hypoxic state (Figures 2 and 3).



Figure 2 – Swimmer with vision problem treading water in an attempt to orientate herself.



Figure 3 – Swimmers in clothing (without goggles) discovering the ease of swimming on their backs.

Night Time

Between one fifth and one quarter of drownings occur at night or in low light situations (Eaton, 1990). Disorientation can be a problem for drowning casualties. There are a number of possible physiological causes such as an imbalance of fluid in the inner ear due to a sudden drop in temperature following entry into cold water or the prior consumption of alcohol (Royal Life Saving Australia, 2004). Inexperience at being in water at night may be a contributing factor for safety reasons. Swimming in the dark is prohibited in swimming pools and is discouraged at open water locations. Blindfolded swimming exercises may help swimmers deal with the night disorientation problem.

Summary

The Drowning Prevention Model identifies four causal factors that lead to a drowning: lack of supervision (unsuitable or absent supervision), being uninformed, unprotected or unrestricted access (access to water without safety advice), an inability to cope (insufficient survival knowledge), and lack of knowledge (disregard or misjudgment of hazards) (Royal Life Saving Society, 2011). The First Time Problem can be considered part of an inability to cope. The provision of information on specific topics like the Cold Shock Response and the added buoyancy obtained from air trapped within clothing can help reduce panic resulting from a lack of survival knowledge. Education combined with deliberately planned pool exercises such as floating and swimming in street clothing and street footwear can make a lifesaving difference in unexpected open water drowning situations.

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