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ENSURING THE SAFETY OF PEOPLE STAYING IN AND AROUND BODIES OF WATER

Abstract

The safety of people staying in and around bodies of water constitutes an important component of public safety. The aim of this article is to present the issues of ensuring safety in aquatic environments in Poland, with particular emphasis on legal, statistical, organizational, and preventive aspects. The article uses theoretical research methods, with particular emphasis on the analysis of the relevant literature and statistical data published by public institutions. The article presents the scale of drowning incidents in Poland, including demographic characteristics of victims, the most common locations of accidents, and their primary causes. Special attention is given to human-related risk factors, particularly alcohol consumption and risky behaviors in and near aquatic environments. Operation of the water rescue system in Poland is discussed, with emphasis on the role of the Voluntary Water Rescue Service (WOPR), inter-institutional cooperation, and local safety management. The analysis is complemented by a comparison with selected European Union countries. Research indicates that ensuring safety in and around bodies of water requires a systems approach, combining rescue operations with extensive education and social prevention. The conclusions emphasize the need for strengthening public awareness, improving safety infrastructure, and enhancing coordination among institutions responsible for water safety.

Keywords

water safety, water rescue, drowning, public safety, prevention,
aquatic environments, WOPR

Introduction

The safety of people staying in and around bodies of water is an issue of growing importance both in Poland and in the world. The growing popularity of water tourism, water sports and recreation by rivers, lakes or the sea increases the risk of accidents, including tragic drownings. According to the World Health Organization, drowning is one of the leading causes of sudden death in people between the ages of 5 and 24, and most of these events could be avoided with proper prevention and effective organization of water rescue¹.

Water safety is defined as a set of activities, procedures and technical measures aimed at protecting the life and health of people staying in and around bodies of water, both in open water and in controlled reservoirs². Effective water rescue requires both preventive actions and efficient intervention in critical situations³. The article presents a comprehensive analysis of the issue of water safety in Poland, taking into account legal aspects, risk factors, accident statistics, as well as educational and rescue activities.

Legal conditions for ensuring safety in and around bodies of water

In Poland, the safety of people staying in and around bodies of water is regulated by the Act of 18 August 2011 on the safety of people staying in water areas⁴. The act imposes obligations on both people using bathing sites and water reservoir managers.

The main responsibilities include⁵:

- compliance with safety rules by people in and near bodies of water,
- ensuring appropriate supervision and rescue by owners and managers of water reservoirs,
- equipping bathing areas with rescue equipment, appropriate marking of dangerous places and conducting regular safety checks.

These regulations have a significant impact on water rescue organizations and supervision at bathing sites, including the obligation to cooperate with WOPR, PSP and the Police. Effective implementation of these regulations in practice enables quick response in crisis situations and education of the public in the field of safe use of water bodies.

Statistical analysis of drownings in Poland

According to Police data from 2020-2024, drowning in Poland remains a significant social and health problem. In 2020, 483 drowning accidents were recorded in Polish,

1 World Health Organization, *Global report on drowning: preventing a leading killer*, WHO, Geneva 2014.

2 A. Roman, *Water Rescue*, Wydawnictwo Akademickie, Warsaw 2021, p. 15.

3 Ibid., pp. 45-48.

4 The Act of 18 August 2011 on the Safety of Persons Staying in Water Areas, i.e. Journal of Laws of 2023, item 714, as amended.

5 <https://statystyka.policja.pl/st/wybrane-statystyki/utonięcia> [accessed: 17.02.2026]

422 in 2021, 444 in 2022, 490 in 2023, and 488 in 2024. As a result of these accidents, 460 people drowned in 2020, 408 in 2021, 419 in 2022, 450 in 2023, and 444 in 2024. The age of drowning victims between the years 2020-2024 is presented in Table 1.

Table 1. The age of drowning victims

The age of drowning victims	Years				
	2020	2021	2022	2023	2024
up to 7 years	5	5	0	0	1
8 – 14 years	5	5	6	9	3
15 – 18 years	13	10	14	7	23
19 – 30 years	63	54	52	66	44
31 – 50 years	143	118	140	140	150
over 50 years of age	223	208	203	223	215

Source: Own study based on <https://statystyka.policja.pl/st/wybrane-statystyki/utonięcia> [accessed: 17.02.2026]

The presented statistical data show that the most common victims of drowning are people over 50 years of age and people in the age range of 31-50 years. Another age group consists of people aged 19 to 30. In the studied period, 11 children under the age of 7 drowned. It should be noted that not every case of drowning registration has the age range of the person indicated.

Taking into account gender, it is worth mentioning that 48 women drowned in 2020, 40 in 2021, 47 in 2022, 50 in 2023, and 59 in 2024. Therefore, it can be said that in the vast majority of cases, it is men that are the victims of drowning.

Police statistics also distinguish the number of people who drowned by type of water reservoir. Such data are provided in Table 2.

Table 2. Number of people who drowned – depending on the type of water reservoir

Type of water reservoir	Years				
	2020	2021	2022	2023	2024
Lake	118	98	105	121	121
River	111	95	102	111	112
Pond	84	88	69	67	73
Lagoon	37	41	36	36	36
Sea	25	26	16	18	18

Source: Own study based on <https://statystyka.policja.pl/st/wybrane-statystyki/utonięcia> [accessed: 17.02.2026]

The collected data show that during the entire analyzed period, drownings most often occurred in lakes and rivers. The fewest people drowned in the sea.

The circumstances of drowning accidents, along with the distinction of persons who drowned under the influence of alcohol, are indicated by the data contained in Table 3.

Table 3. Circumstances of drowning accidents

Circumstances of drowning accidents	Years				
	2020	2021	2022	2023	2024
Bathing in an unguarded but not prohibited place	64	61	67	54	79
Carelessness when being by the water	38	34	37	33	37
Carelessness when fishing	34	20	37	28	34
Bathing in a prohibited place	25	28	29	21	22
Drinking alcohol before drowning	117	78	107	82	89

Source: Own study based on <https://statystyka.policja.pl/st/wybrane-statystyki/utonienia> [accessed: 17.02.2026]

The presented data show that in the analyzed period, alcohol consumption before swimming was the most frequent circumstance of drowning.

These data are the basis for planning preventive and educational activities and the organization of the water rescue system in Poland.

Causes and mechanisms of accidents in water bodies

Analysis of the causes of accidents in water bodies is a key element in assessing the effectiveness of the water safety system. Statistical data, observations of water rescuers and scientific studies clearly indicate that the vast majority of events are not random, but result from repetitive mechanisms and risky behaviors. These factors can be divided into three main groups: human, environmental and organizational, and technical factors.

Human factors are considered to be the most important source of water hazards. In the literature on the subject, it is determined that over 70% of water accidents are directly or indirectly related to inappropriate human behavior⁶. The most frequently indicated reasons include: overestimating one's own swimming skills, disregarding the applicable safety rules, lack of knowledge of the specifics of a given body of water and taking risks under the influence of alcohol.

A particularly dangerous phenomenon is the belief that one is in full control over the situation in the water, which leads to ignoring warning signals, such as a change in the weather, reduced water temperature, or the presence of water currents.

6 M. Dąbrowski, *Universal Safety and Water Rescue*, Difin, Warsaw 2019, p. 121.

Research indicates that adults, especially men of working age, tend to underestimate threats and engage in impulsive behavior⁷.

One of the most serious factors contributing to accidents by the water remains alcohol consumption. Alcohol has a negative effect on perceptual abilities, motor coordination and risk assessment, which near aquatic environments can lead to tragic consequences. The literature emphasizes that even small doses of alcohol significantly reduce the body's ability to adapt to physical exertion and changing environmental conditions⁸.

In addition, alcohol contributes to the rapid cooling of the body, which increases the risk of hypothermia, especially in water of low temperature. Combined with the lack of rescue supervision and staying in unguarded places, alcohol consumption is one of the most dangerous elements of recreation by the water.

The second important group of causes are environmental factors related to the natural properties of water bodies. Rivers, lakes and dam reservoirs are characterized by variable hydrological conditions, which are often not noticed by bathers. Water currents, whirlpools, sudden bottom faults or varying depths pose a serious threat even to people with good swimming skills.

The so-called "wild bathing areas", deprived of safety infrastructure and signage, are particularly dangerous. As P. Michniewicz points out, the lack of information about the state of the bottom of bodies of water and current hydrological conditions significantly increases the risk of accidents, especially in the case of bathers jumping into the water⁹.

Weather conditions such as sudden storms, strong winds or a drop in temperature are also important. These phenomena can lead to a rapid deterioration in safety conditions, especially in open water bodies and at sea.

A separate category of causes of accidents are organizational and technical factors related to the improper functioning of water protection systems. These include an insufficient number of lifeguards, lack of appropriate rescue equipment, incorrect marking of bathing areas and insufficient supervision of compliance with bathing site regulations.

The literature points out that staff shortages in water rescue organizations can lead to delays in rescue operations, which in the case of drownings is crucial for the survival of the injured person¹⁰. Every minute of delay significantly reduces the chances of effective resuscitation.

Preventive actions in the field of safety near bodies of water

Averting accidents near bodies of water requires undertaking comprehensive preventive measures, including both social education and the development of safety infrastructure. Prevention is considered to be the most effective element of the system

7 A. Lisowski, *Drowning as a public health problem*, PZWL, Warsaw 2020, pp. 108–110.

8 J. Czapski, *Accident Prevention and Public Safety*, Wolters Kluwer, Warsaw 2017, pp. 151–154.

9 P. Michniewicz, *Water rescue system in Poland*, University of Physical Education, Poznań 2018, pp. 83–87.

10 A. Roman, *Rescue ...*, op. cit., pp. 92–95.

of life protection near bodies of water, as it allows for a reduction in the number of events before they ever occur.

Water safety education should cover all age groups, with a particular focus on children and young people. Educational programs implemented in schools, social campaigns and information activities carried out by public services and rescue organizations play a key role in shaping the right attitudes.

Research indicates that people with basic knowledge of the rules of safe use of water bodies are less likely to engage in risky behavior and more often use guarded bathing areas¹¹. Education should include not only the rules of safe bathing, but also the basics of first aid and how to respond in emergency situations.

An important element of prevention is the proper organization of bathing sites and their unambiguous marking. Designating zones for people who can and cannot swim, the use of buoys and information boards, as well as ensuring the visible presence of lifeguards significantly increases the level of safety in bathing areas.

As A. Roman emphasizes, guarded bathing areas have a several times lower rate of fatal accidents compared to unguarded places¹². These data unequivocally confirm the legitimacy of investing in the development of water safety infrastructure.

An important element of the presentation strategy are social campaigns, such as information campaigns on the dangers associated with alcohol or dangerous jumps into the water. a special role is played by activities carried out at the local level, adapted to the specificity of a given region and type of water.

The literature emphasizes that the effectiveness of campaigns increases when they are conducted cyclically and supported by local governments and the media¹³. One-off actions have a limited impact on lasting change in social behavior.

Water rescue system in Poland as an element of ensuring safety near water bodies

Ensuring the safety of people staying in or around bodies of water requires an efficiently functioning water rescue system, based on the cooperation of specialized entities and clearly defined competencies. This system is an integral part of the national public safety system and plays a key role in responding to events that threaten human life and health.

The central place in the Polish water rescue system is occupied by entities authorized to perform water rescue, in particular the Water Volunteer Rescue Service (WOPR) and other organizations with appropriate permits from the minister responsible for internal affairs. Their activities are complemented by the State Fire Service, the Police and other rescue services, which take action in situations requiring specialist equipment or inter-ministerial coordination.

11 B. Góra, *Education for Safety*, PWN, Warsaw 2018, pp. 201-204.

12 A. Roman, *Rescue...*, op. cit., pp. 134-135.

13 M. Kulesza, *Local Security Management*, Difin, Warsaw 2016, pp. 176-180.

The literature emphasizes that the model of Polish water rescue is based on the principle of cooperation of services, which allows for a flexible response to various threats, both in inland waters and in marine areas¹⁴. Efficient communication and clearly defined procedures for cooperation between entities are crucial.

The leading role in securing bathing areas and conducting rescue operations in water areas is played by WOPR. This organization carries out tasks in the area of direct rescue, prevention and social education. The basic duties of WOPR lifeguards include supervising the safety of bathers, intervening in emergency situations and providing qualified first aid.

As A. Roman points out, the effectiveness of rescue operations largely depends on the level of training of rescuers, their experience and access to modern equipment¹⁵. In this context, systematic training, practical exercises and improvement of operational procedures are important.

Lifeguards are a key element of the water safety system. Their competencies include both swimming and rescue skills, as well as knowledge in the field of emergency medicine, psychology and the principles of interpersonal communication. Legislators have defined minimum qualification requirements for lifeguards, but in practice the level of their preparation often exceeds the formal requirements.

The literature emphasizes that the professionalism of lifeguards has a direct impact on the level of safety of water users¹⁶. The speed of reaction, accurate assessment of the situation and the ability to cooperate with other services can determine the success of the rescue operation and save the life of an injured person.

The effectiveness of the water rescue system also depends on the availability of appropriate infrastructure and equipment. Observation towers, rescue boats, jet skis, diving equipment and means of communication are the basic elements of equipment that allow rescuers to quickly reach the injured person.

Studies indicate that well-equipped guarded bathing sites are characterized not only by a lower number of accidents, but also by a higher effectiveness of interventions¹⁷. Investments in rescue infrastructure should therefore be seen as investments in public safety.

Safety systems around bodies of water in Poland and in selected countries of the European Union – comparative analysis

Comparative analysis of safety systems used near bodies of water allows for the identification of good practices and areas for improvement. There are different organizational models of water rescue used in European Union countries, but the common goal is to reduce the number of drownings and water accidents.

14 P. Michniewicz, *System...*, op. cit., p. 33.

15 A. Roman, *Rescue...*, op. cit., p. 161.

16 M. Dąbrowski, *Safety...*, op. cit., pp. 141-143.

17 J. Czapski, *Prevention...*, op. cit., pp. 189-192.

Compared to Western European countries, Poland is characterized by a relatively higher drowning rate per 100 thousand inhabitants. Countries such as Germany, France and the Netherlands record lower values of this indicator, which is related to long-term education policies, a high level of urbanization of bathing sites and universal access to swimming lessons.

On the other hand, the countries of Central and Eastern Europe show similar problems as Poland, including a significant share of alcohol in accidents and a large number of incidents in unguarded places¹⁸. These comparisons indicate that the key differentiating factor is the level of social awareness and the degree of institutionalization of preventive activities.

In many EU countries, special emphasis is placed on water education from an early age. Compulsory swimming lessons in primary schools, extensive information campaigns and strict water safety regulations all contribute to a systematic reduction in the number of drownings.

The literature indicates that the adaptation of selected foreign solutions in Poland could bring measurable benefits in terms of improving safety near water bodies¹⁹. This applies in particular to the standardization of bathing water signage and the development of water education.

Analytical conclusions concerning the safety of people staying in and around bodies of water and recommendations for improving safety

Analysis of the safety of people staying in and around bodies of water allows us to formulate a number of conclusions of a systemic, organizational and social nature. The collected statistical material and a review of the literature on the subject clearly indicate that despite the existence of extensive legal regulations and rescue structures, the level of danger near bodies of water in Poland remains relatively high.

First, it should be emphasized that drownings are not an accidental phenomenon, but are predominantly the result of repetitive patterns of risky behavior. The dominant share of human factors, including alcohol consumption, overestimation of one's own skills and the use of unguarded places to swim, indicates an insufficient level of social awareness in the field of water hazards. This means that even the best-organized rescue system is not able to fully compensate for the irresponsible behavior of water users.

Secondly, the analysis of statistical data confirms a significant variation in the level of safety depending on the type of body of water. Rivers and lakes, and especially the so-called wild bathing areas, generate a much higher risk than guarded bathing areas. This indicates the need for further development of safety

18 A. Lisowski, *Drowning...*, op. cit. op. cit., pp. 131-133.

19 B. Góra, *Education...*, op. cit., pp. 221-223.

infrastructure and rational spatial planning in areas particularly vulnerable to water accidents.

Thirdly, the water rescue system operating in Poland, based on the cooperation of WOPR, the State Fire Service, the Police and local governments, can be assessed as essentially efficient, but unevenly developed. Differences in the level of security between regions of the country indicate a strong dependence of water safety on the financial and organizational capabilities of local government units²⁰.

Based on the analysis, it is possible to formulate recommendations, the implementation of which could contribute to reducing the number of accidents and drownings in or around bodies of water.

Further development of water education should be considered a key direction of action. In the literature on the subject, it is repeatedly emphasized that long-term educational programs bring more lasting effects than ad hoc information campaigns²¹. In particular, it seems reasonable to:

- introduce common and systematic swimming lessons for children and young people,
- expand safety education programs to include issues related to water hazards,
- intensify social campaigns aimed at adults, especially in the context of alcohol and recreation by the water.

Another important area is the development of water safety infrastructure. This applies both to increasing the number of guarded bathing sites and to the standardization of their equipment. It is advisable to develop uniform, nationwide standards concerning:

- the number of lifeguards, depending on the size of the body of water and the number of users,
- minimum rescue equipment,
- marking of dangerous areas and places prohibiting bathing.

The experience of Western European countries shows that a high level of standardization significantly improves the safety of water users²².

Local governments should also play a greater role in water safety management. Effective action requires not only the provision of financial resources, but also the coordination of the activities of various actors. The literature emphasizes that a management model based on local partnerships is conducive to better recognition of threats and a more effective response to the needs of society²³.

20 M. Kulesza, *Management...*, op. cit., pp. 214-216.

21 B. Góra, *Education...*, op. cit., p. 231.

22 A. Lisowski, *Drowning...*, op. cit., p. 142.

23 J. Czapski, *Prevention...*, op. cit., p. 201.

Conclusion

The safety of people staying in or around bodies of water is a complex interdisciplinary problem, requiring coordinated actions on many levels. The analysis showed that despite the existence of a legal framework and the functioning of specialized rescue services, the number of accidents and drownings in Poland remains at a level that requires further, consistent actions.

It is crucial to combine effective rescue with extensive prevention and social education. Only a systemic approach, including both preventive and intervention measures, can lead to a sustainable improvement in water safety. In this context, it is important to shape appropriate social attitudes and raise awareness of the risks associated with the use of different bodies of water.

This article is an attempt to comprehensively address the issue of safety in and around bodies of water and may be the basis for further research and practical actions aimed at reducing the number of tragic events in the aquatic environment.

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