RESEARCH ON THE PREVALENCE OF THE USE OF LIFE JACKETS AND SAFETY JACKETS AMONG AMATEUR KAYAKERS IN POLAND

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ABSTRACT

Safety is one of the main aspects related to physical activities conducted on or in the immediate vicinity of water. Many people drown every year in Poland. The use of a kayak has numerous legal aspects. In the light of Polish regulations, a kayak is a ship. Vessels used on inland waterways must comply with the technical requirements and requirements for life-saving equipment set out in specific regulations. One of them is the obligation to equip the ship with life jackets in the number corresponding to the number of passengers on the ship. With the proviso that to meet the requirement it is enough to equip the ship with life jackets, and not to use them, understood as putting a life jacket on a person staying on the ship. The study was aimed at determining the attitudes and behaviors of Polish kayakers in the field of kayak use, especially regarding safety and comfort, with particular emphasis on the life jacket as a popular means of increasing safety on the water. The study was conducted in the form of an original questionnaire placed in groups of kayakers on a popular social networking site. In total, all kayaking groups in which the survey was placed count nearly 15,000 participants. The survey was anonymous and voluntary, it did not collect data about respondents.

The study involved 257 people, including 172 men (67%) and 85 women (33%). The participants of the study assess their kayaking skills as: intermediate 43.6%, advanced 38.9%, beginner 9.7%, expert 7.4%, one person declared the level of "instructor". 42% of respondents declare that they kayak several dozen days a year, 37.4% - several days a year, 15.6% - one to several days a year, 4.3% - several times a week, some people gave different answers .

Most respondents (72.8%) have their own life jackets. 27.2% of respondents do not have such vests, which suggests that they rent them together with kayaks.

Conclusions:

1. There is lack of coherent and clear laws regulating the safety obligations of persons using kayaks as amateurs in Poland.
2. Among the surveyed intermediate and advanced kayakers there is high level of awareness regarding the safety of using a kayak and measures to increase safety.
3. Among interviewed kayakers there is significant popularity of life jackets in the absence of a legal regulation considering them as basic and sufficient safety measure when kayaking.

Keywords: life jackets; safety jackets; kayakers.

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INTRODUCTION

Safety is one of the main aspects related to physical activities conducted on or in the immediate vicinity of water. The Polish Police publishes annual data on drownings, which show that several hundred people die every year in Poland as a result of drowning. Thus, in particular years, the following were recorded: 2012 - 449 deaths, 2013 - 709 deaths, 2014 - 648 deaths, 2015 - 573 deaths, 2016 - 504 deaths, 2017 - 457 deaths, 2018 - 545 deaths, 2019 - 456 deaths, 2020 - 460 deaths, 2021 - 408 deaths. As the most common circumstances leading to drowning, the Police indicate: bathing in an unguarded but not forbidden place, carelessness while staying near water, carelessness while fishing, bathing in a forbidden place and alcohol consumption. The statistical data published on the Police website do not include accidents suffered by kayakers [1]. Due to the fact that the published data do not exhaust the issues of this study, a request was made to the General Headquarters of the Police (KGP), the Main Headquarters of the State Fire Service (KGPSP) and the Water Volunteer Rescue Service (WOPR) for access to data on drownings of canoeists, and on the number of search and rescue operations carried out in relation to kayakers. We received no response.

Regardless of the data collected and made available by the Police and rescue services, kayaking accidents are frequent topics of information services, especially in the summer season. Press releases usually do not contain a full description of the event and expose sensational threads. However, entering the words: "kayaker", "kayak", "accident", "drowning" into the search engine allows you to obtain up to several dozen results from recent years. Selected search results:

"Tragedy in Mazovia. A 21-year-old canoeist drowned in the morning in Lake Górskie" – Warsaw Our City 2022 [2].

"The tragedy near Koniecpol, on the Pilica River. A man who was kayaking drowned. - Czestochowa Our City 2022 [3].

"Empty kayak, but where is the canoeist? Now he will pay for his behavior." – Eastern Journal 2022 [4].

"Tykocin. The canoe capsized while rafting down the Narew River. A 33-year-old is dead" – Polsat News 2022 [5].

"The man fell out of the canoe into the Bug. Rescue services are looking for him" TVP Warszawa 2022 [6].

The use of a kayak has numerous legal aspects. In the light of Polish regulations, a kayak is a ship. According to the Inland Navigation Act, a ship is any floating device with or without mechanical drive used on inland waterways [7]. At the same time, not all Polish waters belong to the category of "inland waterways". The list of inland waterways has been published in separate regulations and includes 30 entries of waters included in this category, including rivers and river sections, canals and lakes [8]. Vessels used on inland waterways must comply with the technical requirements and requirements for life-saving equipment set out in specific regulations. One of them is the obligation to equip the ship with life jackets in the number corresponding to the number of passengers on the ship. With the proviso that to meet the requirement it is enough to equip a ship with life jackets, and not to use them understood as putting a life jacket on a person staying on the ship [9]. Failure to equip an inland waterway vessel is punishable by a fine [10]. It is worth noting that these provisions seem to apply only to the waters enumerated in the Regulation of the Council of Ministers of June 26, 2019 on inland waterways. The quoted regulations are so vague and incompatible with the specificity of canoeing that their application or non-application, including the possible imposition of penalties on kayakers, may depend not so much on the knowledge of the law, but on the common sense of the kayak user and the specific policeman carrying out the inspection. In view of the above, the National Police Headquarters was requested to provide data on the intervention of the Police in cases of unlawful equipment for kayakers. We received responses stating that they do not collect such data.

It should be noted that in Poland, owning and using a kayak does not require any formalities. In particular, there is no state system for training, examining and licensing kayakers, as is the case with yacht sailors or motorboat helmsmen. Kayak equipment is not subject to registration. Until recently, kayaks intended for fishing were subject to registration, but this obligation was abolished in 2020 [11].

The Polish Canoe Qualification System (PSKK) was created out of the need to standardize kayaking skills. It is described as a bottom-up initiative of a group of experienced kayakers and instructors and has been promoted quite intensively for several years [12].

In addition, the Polish Kayak Association (PZKaj) conducts training for animators, guides and instructors of the so-called canoeing PZKaj [13].

However, the lack of voluntary training or even basic skills does not prevent you from owning and using a kayak even in the most difficult conditions.

A life jacket is an obligatory life-saving device on ships. The parameters of life jackets are defined by the relevant Polish standards. In short: a life jacket is a life-saving device with a buoyancy of at least 100N, the parameters of which are to ensure buoyancy for a person who cannot swim, even in the event of loss of consciousness, by placing such a person face up and ensuring that he/she can breathe. The parameters of the life jacket are specified in detail in the Polish Standard (PN) [14]. It should be noted, however, that the life jacket is a rescue aid whose usefulness in canoeing is moderate, due to its construction that significantly restricts the kayaker's freedom of movement and difficulties in choosing the right position in the kayak cockpit, especially in narrow and cramped vessels.

The legal obligation to equip a vessel with life jackets means only the obligation to have them in a kayak, not to wear a life jacket at all times. Such provisions are in some contradiction with kayaking practice. One of the basic kayaking hazards is the capsizing of the kayak ("cabin") and the kayaker falling into the water. The Polish Kayak Qualification System identifies this threat as so significant and common that it recommends practicing the behavior during a kayak capsize at the very beginning of basic kayaking training [15]. Taking into account the usually very dynamic course of the cabin caused by sailing on an invisible obstacle, a high wave or a fast water current, simply "equipping" a kayak with a life jacket in no way improves the safety of a person in the water.

Alternatively and commonly used in canoeing, there is a level 50 belay device, colloquially known as a "buffer vest". A lifejacket provides a much lower level of protection than a lifejacket, both in terms of the required

buoyancy - 50N and the construction that helps people who can swim stay afloat, but does not ensure the proper position of unconscious people in the water [16]. However, the life jacket ensures adequate freedom of movement and comfort of use, which has made it the basic means of protection commonly used in amateur kayaking.

Both types of measures, in the common understanding, are sometimes confused and are collectively referred to as "kapok".

OBJECTIVE

The study was aimed at determining the attitudes and behaviors of Polish kayakers in the field of kayak use, especially regarding safety and comfort, with particular emphasis on the life jacket as a popular means of increasing safety on the water.

METHOD

The study was conducted in the form of an original questionnaire placed in groups of kayakers on a popular social networking site [Tab. 1.].

The following groups were chosen as the place of publication: Kayaking and Zwałkowe, Kayaks, Kayaking Tourist Poland, Pływam Dmuchancem, Kayaking, Kajaki Northern Poland. In total, all kayak groups had about 15,000 participants. Prior to the publication of the survey, the consent of social group administrators for their publication was obtained. The survey was anonymous and voluntary, it did not collect data about respondents. The survey was publicly available on November 4-7, 2022, and then closed after 257 completed surveys were received. Respondents were asked to complete the questionnaire once. The method of publishing the survey additionally allowed the respondents to freely express themselves or comment on the survey in the part not covered by the questions.

Tab.1

Questionnaire.

No	Question	Options
1.	Sex	female male
2.	My self-assessment of kayaking skill/single choice	beginner intermediate advanced expert
3.	How often do you canoe?/single choice	one to several days a year several days a year several dozen days a year regularly several times a week
4.	My main kayaking activity is..... /single choice	one-day trips multi-day trips trips lasting several days regular workouts kayak fishing
5.	I have my own kayak	yes no
6.	I prefer kayaks/single choice	rigid (plastic, fiber) pumped foldable
7.	I usually kayak around /max. 2 replies	lowland rivers mountain rivers lakes, lagoons sea bays open sea
8.	I usually kayak/single choice	in the group alone
9.	I use/single choice of life jacket when kayaking	always usually sometimes never
10.	I use a life vest/single choice	own borrowed
11.	I prefer buoyancy vests/single choice	with solid filling (foam) pneumatic
12.	When buying a life jacket, I follow / max. 3 answers	price aesthetics quality manufacturer's brand comfort of use practicality security level
13.	The best place to buy a life jacket is / single choice	stationary shop online shop advertising portal-vests used
14.	When renting a life jacket, I follow/max. 3 replies	aesthetics

		quality degree of wear comfort of use practicality security level in the rentals it is not possible to choose the right vest
15.	I use other safety equipment when kayaking/any number of answers	signal whistle signal lamp dart buoyancy chambers smoke buoy helmet spare oar
16.	I use additional comfort equipment when kayaking/any number of answers	gloves dry suit wetsuit-foam kayak shoes apron kayak jacket kayak pants

RESULTS

The study involved 257 people, including 172 men (67%) and 85 women (33%). 25 people provided the questionnaire with free statements regarding the researched issue.

The participants of the study assess their kayaking skills as: intermediate 43.6%, advanced 38.9%, beginner 9.7%, expert 7.4%, one person declared the level of "instructor". 42% of respondents declare that they kayak several dozen days a year, 37.4% - several days a year, 15.6% - one to several days a year, 4.3% - several times a week, some people gave different answers.

As the main kayaking activity, the respondents indicate one-day trips - 45.9%, trips lasting several days - 41.2%, trips lasting several days - 5.8%, regular training - 3.9%, individual people declare other types of activity.

In the group of respondents, 70.8% of people have their own kayak, while 74.3% prefer "rigid" kayaks, made of plastics (polyethylene, fibres), 21.4% prefer inflatable kayaks, and 2.3% kayaks foldable, single people exchange packrafts and canoes.

The preferred waters for kayaking (two answers possible) are: lowland rivers - 90.3%, lakes and lagoons - 47.1%, mountain rivers - 26.8%, sea bays - 5.4%, open sea 1 .9%, and single answers: "bank rivers", "canals", "all difficult reservoirs".

At the same time, 66.5% of the respondents declare that they canoe in a group, while 33.5% of people canoe alone.

The summary of the answers in this section allows us to conclude that most of the respondents have an intermediate to expert kayaking experience and a significant regularity of kayaking activity. The vast majority of respondents have their own equipment and declare clear preferences as to the type of kayak they use due to its construction - "rigid" and inflatable kayaks predominate. Significantly, 1/3 of the respondents kayak alone, which would indicate a high self-esteem of their own skills and preparation for overcoming possible difficulties (carrying, overcoming piles, capsizing).

Respondents declare that their main kayaking activities take place on lowland rivers as well as lakes and lagoons, with mountain rivers as the third option. The types of water used for kayaking indicated in the answers correspond to the general characteristics of Polish waters, characterized by the predominance of lowland rivers, lakes and lagoons, with as much as 88% of the territory of Poland located in the Vistula and Oder river basins [17].

In the part of the survey devoted to safety on water, the information was obtained that the majority of respondents (72.8%) have their own life jackets, which corresponds to the declarations of having floating equipment (70.8%). 27.2% of respondents do not have such vests, which suggests that they rent them together with kayaks.

Respondents also clearly have preferences as to the type of vests. The vast majority prefer life jackets with solid padding (94.2%), while few (5.8%) use inflatable vests.

Respondents declare the features of life jackets that are most important to them when buying equipment (multiple choice of answers possible). The following are dominant here: comfort of use (easy to put on, freedom of movement, adjustment range) - 75.1% of responses, safety (buoyancy, certificates) - 55.6% of responses, quality of workmanship - 38.5% of responses, practicality (pockets, handles, additional equipment) - 35.4% of responses, price - 31.5% of responses, aesthetics -12.5% and manufacturer's brand - 3.1%. Other single answers were also recorded, including: "destiny - different for the mountains, different for the lowlands", "the amount of space occupied by the vest".

As the best place to buy a vest, a stationary store is indicated - 49.4% or an online store - 46.3%. Few - 4.3% indicated the advertising portal - it concerns used vests.

A similar distribution of answers was recorded in the question which features of a life jacket are most important when renting a life jacket (possibility of multiple choice of answers). Comfort of use - 43.6% of people, safety - 27.6% of people, degree of wear - 26.8% of people, quality - 14.8%, practicality - 9.7% of people, aesthetics - 8.9% of people. There were also answers that were difficult to classify, eg "I take what they give" or "whatever is available". In the case of rentals, it is significant that 41.6% of the respondents believe that the rentals do not have vests suitable for them.

In the part of the study devoted to safety, the respondents were also allowed to indicate other measures to increase safety on water by multiple selection from the list or entering their own answer. And so: 42.8% - people declare that they use a signaling

whistle, 40.1% - a rescue dart, 36.6% - buoyancy chambers, 27.2% - a helmet, 20.2% - a spare oar, 10.1 % - signal lamp, 2.7% - smoke buoy. Among the single answers (less than 1%), the following were noted: first aid kit, knife, telephone, two-way radio, flare gun, "Pamelka" buoy, life jacket, pump, towing license and answers that cannot be classified into a specific category. 13.6% of the respondents answered that they do not use any other safety equipment.

The answers given in the part of the study concerning safety on water allow us to conclude that the respondents have a high knowledge of safety rules and available equipment to increase safety. They indicate the use of various equipment, including contact, signaling and calling for help (whistles, smoke beacons, telephones, radiotelephones, signal gun), allowing to help other canoeists (dart, towing license, "Pamelka" buoy), protecting the kayak from sinking (buoyancy chambers), protecting against injuries (helmet), supporting the loss of the oar (spare oar). The vast majority of respondents declare using other equipment in addition to their life jacket.

During recreational kayaking, it is important to maintain the kayaker's personal comfort, which affects not only the pleasure of communing with nature, but also individual safety. And so: 71.6% of respondents use kayaking shoes, 59.5 - gloves, 48.2% - apron, 40.1% - kayaking jacket, 25.3% - kayaking pants, 19.5% - wet suit - wetsuit , and 12.1% - dry suit. Single answers: waders, hat, glasses, neoprene seat pads, waterproof bag, thermal underwear, mittens (type of gloves), "I don't use". It should be pointed out that some of the comfort-enhancing equipment significantly affects the safety of the canoeist. Dry and wet suits protect against cooling, boots and gloves protect against foot and hand injuries, apron protects the cockpit against flooding.

Despite the high awareness of safety requirements, when buying or renting a vest, comfort is always the first choice criterion, and safety the second. He also points out that only individual respondents under the "other answer" option or a free statement attached to the questionnaire indicate the use of a life jacket, which may also be related to the practical conditions of its use. Life jackets provide a level of safety that is much higher than that of life jackets, but they are considered uncomfortable to use and significantly hinder paddling, which was expressed by the participants of the study in free statements or comments attached to the survey. It is also interesting that despite the declared use of a variety of equipment improving safety, only 56.4% of canoeists answered that they use a life jacket "always", and 16.7% that "usually", 22.6% use it "sometimes", and 4.3% "never".

DISCUSSION

Life jackets and 50 N belay devices (buoyancy aids) are not identical in terms of their properties and intended use. However, they are recommended and used in water sports, including canoeing, to reduce the risk of drowning. Leaving aside legal ambiguities regarding the obligation to equip floating devices, both lifejackets and lifejackets increase user safety [18].

Canoeing incidents are frequent and violent. This is confirmed by the study of rescue operations conducted by the Bieszczady Volunteer Water Rescue Service on the Solina reservoir. Human errors, changes in weather conditions, and drunkenness are cited as important causes of incidents [19].

It is also worth noting that the risk of incidents and the severity of their consequences for participants are not the same. The level of risk depends on many factors: the distance from the marina or land, weather conditions, water depth, river current or wave of the water reservoir. This risk can be graded from negligible to extreme [20].

The risks associated with practicing amateur water activities or performing professions related to work on or under water are extremely diverse and require the use of adequate safety measures. The risks associated with diving can be recalled as diametrically opposed to amateur canoeing in terms of the nature and possible effects. Diving lifesaving equipment, similarly to kayaking, has evolved from typical life jackets towards specialized multi-functional life-saving devices. Diving lifesaving equipment, as in the case of life jackets, should keep the unconscious diver on the surface of the water in a position that allows breathing. At the same time, similarly to canoeing, periodical trends are observed in diving protection regarding the use of specific safety measures, and at the same time there are significant differences in the functionalities of the equipment [21].

This provokes reflection that the legal requirement to equip a kayak with a life jacket and strictly comply with it in certain conditions may be redundant, and in many cases not only will not increase the level of canoeist safety, but may reduce the level of safety. The question should be asked whether, from the point of view of the canoeist's safety, it would not be better to impose a general obligation to wear a life jacket when using a kayak (non-swimmers and children) and, alternatively, an obligation to wear a life jacket (everyone else).

CONCLUSIONS

- There is lack of coherent and clear laws regulating the safety obligations of persons using kayaks as amateurs in Poland.
- Among the surveyed intermediate and advanced kayakers there is high level of awareness regarding the safety of using a kayak and measures to increase safety.
- Among interviewed kayakers there is significant popularity of life jackets in the absence of a legal regulation considering them as basic and sufficient safety measure when kayaking.

Conflicts of interest
Not applicable

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