

AMERICAN ACADEMY OF PEDIATRICS

Committee on Injury and Poison Prevention

Personal Watercraft Use by Children and Adolescents

ABSTRACT. The use of personal watercraft (PWC) has increased dramatically during the past decade as have the speed and mobility of the watercraft. A similar dramatic increase in PWC-related injury and death has occurred simultaneously. No one younger than 16 years should operate a PWC. The operator and all passengers must wear US Coast Guard-approved personal flotation devices. Other safety recommendations are suggested for parents and pediatricians.

ABBREVIATION. PWC, personal watercraft.

Personal watercraft (PWC) became commercially available during the 1970s when Kawasaki Motors Corporation introduced the Jet Ski. This craft allowed 1 person to maneuver a small (<4 m) boat while standing up. Newer sit-down models made by several manufacturers allow as many as 3 people on board, can pull a water skier, and may be able to reach speeds of 60 mph with engines ranging from 60 to 135 hp. The lure of speed and mobility at a relatively inexpensive price has proven irresistible to many recreational boaters.

The use of PWC has increased dramatically during the past decade. Between 1990 and 1995, the number of PWC in operation more than tripled from 240 000 to 760 000.¹ Annual sales of PWC rose from 29 000 in 1987 to 200 000 in 1995.² Current estimates suggest that more than 1 million PWC are now in use. Despite the increased popularity of PWC, many communities are limiting or banning their use because of environmental concerns and the risk of injury.³

Until recently only scattered case reports of injury associated with PWC use have been published.⁴⁻⁶ However, several regional reports⁷⁻¹⁰ and 2 national reports^{1,2} suggest a fairly uniform and substantial increase in the number of injuries associated with the use of PWC. Data from the National Electronic Injury Surveillance System used in 1 study estimate that nearly 12 000 people were treated in hospital emergency departments during 1995. This represents a fourfold increase from 1990, when 2860 injuries were treated.¹ The Coast Guard reports an even greater increase in fatalities, from 5 during 1987 to 57 during 1996. Preliminary data from the National Association of State Boating Law Administrators show at least 83 fatalities for 1997.²

According to the National Electronic Injury Sur-

veillance System data, 7% of injuries occurred to children 14 years and younger; 38% of those injured were 15 to 24 years old.¹ In the National Transportation Safety Board study, 9% of operators involved in PWC incidents were younger than 16 years, and 46% were 16 through 24 years old.² Finally, in the report by Hamman et al,⁷ 27% of the injured were younger than 17 years, and 61% were 25 years of age or younger. In an even more telling set of statistics, in California, children younger than 18 years accounted for 14% of all boating incidents, 18% of all boating injuries, and 5% of boating fatalities, but 93% of these incidents involved PWC.⁸ Conversely, PWC in California represented 16% of all registered vessels but accounted for 55% of all boating injuries.^{2,8}

PWC are the only recreational boats for which the leading cause of death is not drowning; most fatalities result from blunt trauma. When the cause of death is drowning, most victims are not wearing personal flotation devices. The types of nonfatal injury are quite varied. Lacerations represent 30% to 57% of the injuries. There are 3 case reports of significant vaginal laceration while riding a PWC.⁴⁻⁶ Fractures are the next most commonly recorded injury (12% to 26%). The lower extremity is injured more commonly than is the upper extremity. Branche et al¹ and Hamman et al⁷ report a significant incidence of head injury (17% to 29%).

Most injuries seem to occur when PWC collide—either with other vessels including other PWC or with fixed objects such as docks or tree stumps. Behavioral factors cited in 3 studies include operator inexperience (most operators had <20 hours of experience in boat operation), operator inattention, and excess speed or reckless operation.^{2,9,10} Operators who rent the watercraft seem to be at especially high risk. Operating characteristics of the PWC contribute to these problems. They are maneuverable only when the throttle is open. Contrary to experience in every other motor vehicle, an obstruction is not avoided by slowing and turning but by maintaining or increasing speed and turning to avoid the hazard. In addition, as with any other watercraft, there is no ability to brake. Stopping is achieved only by cutting the throttle and by coasting; while coasting, no steering is possible.²

No published studies exist dealing with the effectiveness of protective equipment to prevent injury sustained while riding PWC. Just as wearing a personal flotation device should be mandatory for any boat operator or passenger, personal flotation devices must be worn by anyone riding PWC. The Personal Watercraft Industry Association recom-

The recommendations in this statement do not indicate an exclusive course of treatment or serve as a standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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mends wearing eye protection, a wet suit, footwear, and gloves. Helmets are worn by some professional PWC riders. Although it makes intuitive sense that a helmet would be protective, it is unclear which type of helmet would provide the best protection. No studies have been performed to assess the effectiveness of these equipment interventions, and industry standards are not available for this gear.

RECOMMENDATIONS

1. No one younger than 16 years should operate PWC.
2. The operator and every passenger must wear a US Coast Guard-approved personal flotation device.
3. Alcohol or other drug use should be avoided before and while operating PWC.
4. Participation in a safe boater course with specific information about PWC should be required before operating PWC.
5. Safe operating practices, such as no operation between sunset and sunrise, no wake jumping, and observing posted speed limits or no-wake zones, should be followed. (No-wake zone means the craft speed is slow enough that no wake is formed behind the craft as it crosses a specific area.)
6. PWC should not be operated where swimmers are in the water.
7. If a PWC is being used to tow another person on skis, knee boards, tubes, or other devices, a second person must face the rear to monitor the person being towed.
8. All persons who rent PWC should be required to comply with these recommendations.
9. Protective equipment such as wet suits, gloves, boots, eyewear, and helmets may be appropriate to wear.
10. Pediatricians should work within their communities to pass legislation that supports the previously mentioned recommendations.¹¹ Included in such legislation should be funding to support adequate enforcement of regulations such as alcohol consumption, speed limits, and the use of personal flotation devices.
11. Additional research into appropriate protective equipment and modification of PWC to improve safety should be supported by pediatricians.

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