

INJURIES IN SAILBOARD ENTHUSIASTS

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ABSTRACT

This study was carried out to determine the rate and types of injuries experienced by boardsailors. Results derive from: (a) a review of hospital medical records for water sports injuries, and (b) a questionnaire-interview of 73 athletes windsurfing on waters in the Galveston area during a hurricane and in moderate and light wind conditions.

Windsurfers reported 0.22 injuries per 1,000 participant hours. Seventy-six per cent of athletes reported injuries while boardsailing, but only 15 per cent reported significant injuries.

The most common reported injuries included lacerations, jellyfish stings, abrasions, muscle strain, sunburn, contusions, and blisters. A small number of athletes reported ligament sprain, ear infection, knee injury, eye injury, and splinters.

The large majority of injuries reported are preventable by wearing protective gear, applying sunscreen, avoiding overpowering winds, and selecting safe sailing areas. Four per cent of water-sport injuries requiring hospitalisation resulted when epileptic water-sports participants had a seizure in or near the water.

Boardsailing or windsurfing has increased in popularity over the past ten years so that now there are more than 2 million sailors worldwide, and the numbers are growing rapidly.

Despite the large number of participants in the sport, there are as yet only a few articles which describe the rate and types of injuries experienced by boardsailors (Dewailly et al, 1986; Re et al, 1984; Rudelic et al, 1984; Sadat-Ali et al, 1985; Senn et al, 1982; Ullis et al, 1984). Little has been written about how injuries might be prevented.

This report presents the results of a survey of injuries in sailboard enthusiasts who were interviewed in or near Galveston. A hospital medical record search of all such injuries admitted to the John Sealy Hospital, the University of Texas Medical Branch at Galveston, was also completed. Results of the study allow specific recommendations to be made as regards injury prevention in this sport.

(sailors on the open ocean), Galveston at Offatt's Bayou, Mud Lake at Clear Lake City, and at Texas City dike in Texas City (all calm inland bays). Ten of these sailors, henceforth known as "hurricane sailors" were sailboarding in a 40 knot wind of a hurricane approaching Galveston.

Data are summarised in Tables I and II. Fourteen of the sailors reported that they had never taken a swim test (two of these were hurricane sailing).

METHODS

A questionnaire was developed to assess the following items of information: age, sex, date, and location of boardsailing activity, swim test, swimming proficiency, sailboard lessons, sailboard contests, and participant hours. Each sailor classified himself/herself as novice, intermediate, or expert, and whether he/she preferred light, moderate, or heavy winds. They then listed injuries sustained while windsurfing, factors which might have contributed to an injury, injury-related loss of time from sport, and injury severity. The study was approved by the Institutional Review Board of the University of Texas Medical Branch at Galveston.

John Sealy Hospital Medical records of individuals injured in water sports were reviewed for the period 1976-1986.

RESULTS

Fifty-one men and 22 women were interviewed by questionnaire at four locations: Galveston at the seawall

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TABLE I

Age, swimming distance (metres), years of experience windsurfing, and mean lifetime participant hours for study athletes

	mean age	age range	mean distance* (m)	experience	hours
All men (51)	26.3	18-44	974	2.5	707
All women (22)	28.1	18-44	1,230	1.5	617
Hurricane men (10)	27.5	19-44	1,224	4.0	627

*Mean distance the boardsailors stated they could swim. No swimming distance test was given.

TABLE II

Swimming test, lessons, contests and skill level of study athletes

	all men (%)	all women (%)	hurricane men (%)
Swim test	40 (78)	19 (86)	8 (80)
No test	11 (22)	3 (14)	2 (20)
Lessons	26 (51)	12 (55)	3 (30)
No lessons	25 (49)	10 (45)	7 (70)
Contests	10 (20)	3 (14)	5 (50)
No contest	41 (80)	19 (86)	5 (50)
Wind preference			
Light	4 (7)	7 (28)	0
Moderate*	20 (36)	12 (48)	1 (10)
Heavy	32 (57)	6 (24)	9 (90)
Skill level			
Novice	16 (31)	10 (45)	0
Intermediate	29 (57)	11 (50)	6 (60)
Expert	6 (12)	1 (5)	4 (40)

* Six men preferred moderate and heavy winds, one did not respond. Two women preferred light and moderate winds, one preferred heavy and moderate winds.

Most sailors reported that they had never entered a boardsailing contest (Table II). Seven of the ten hurricane sailors had never taken a formal lesson. Hurricane sailors preferred heavy winds, classified themselves in the intermediate to expert categories, and tended to be year-round sailors.

All injuries were counted by category of injury (Table III). Minor injuries were very common such that exact counts of minor injuries could not be made. Thus, injuries were listed by category for each participant. i.e. If a sailor had experienced many small lacerations, these were classified as a single injury.

TABLE III
Total injuries reported by boardsailors

	Numbers of categories of injury plus significant injuries						
	0	1*	2	3	4	5	total
All men (51)	17	16	12	4	1	1	61
All women (22)	3	6	5	5	3	0	54
Hurricane men (10)	2	1	4	1	1	1	21

* Athletes who reported just one significant injury or just one category of injury.

Injuries resulting in one or more days lost from sports participation or requiring a visit to a physician for treatment were classified as significant injuries, and each of these injuries was listed as a single injury.

Injuries were reported by 72.6 per cent but only 15 per cent of the participants reported significant injuries as defined above (Table IV). Seven of the individuals required a physician's attention because of an injury.

TABLE IV

All injuries, significant injuries, total lifetime hours and injuries per 1,000 participant hours

	Injuries per 1,000 participant hours				
	All	Sign*	Hours	All	Sign*
Women (22)	43	5	13,575	3.17	0.37
Men (51)	61	6	36,107	1.69	0.17
All (73)	104	11	49,682	2.09	0.22

* Sign: significant injuries are those needing a doctor's evaluation and treatment and/or resulting in a loss of at least one day from sports participation.

Injury rates were calculated per 1,000 participant hours based on exposure estimates, all injury categories, and significant injuries reported by the sailors. These data are listed in Table IV. Women reported more categories of injury and more significant injuries per 1,000 participant hours than did men. Table V summarises the types of injury reported by the sailors. The more serious injuries included lacerations on rocks which required many sutures to close them, a knee injury resulting in synovitis, and multiple eye problems requiring the care of an ophthalmologist.

No record was found of any patients admitted to the John Sealy Hospital as a result of a sailboard injury. Of 176 case records studies, 34 of the water-related injuries were

TABLE V

Total number of athletes reporting at least one injury in each category. Preventive Measures

Injury category	No. of athletes (per cent)	Preventive measure
Laceration	21 (29%)	Wear booties or shoes, sail in deep water, avoid obstacles
Jellyfish stings	19 (26%)	Wear stretchsuit or wetsuit, avoid infested areas
Abrasions	17 (23%)	Wear booties or shoes, use safe launch facilities, avoid obstacles
Muscle strain	14 (19%)	Avoid heavy winds, use harness in heavy winds, reduce sail area
Sunburn	8 (10%)	Wear sunscreen
Contusion	6 (8%)	Use mastpad, take lessons
Blisters	6 (8%)	Wear protective gloves
Sprain	4 (5%)	Avoid heavy wind and waves
Ear infection	3 (4%)	Use drops, earplugs
Knee (unspecified)	3 (4%)	Avoid heavy wind and waves
Eye irritation	2 (3%)	Protective sunglasses
Splinters	1 (1%)	Wear booties or shoes
Total	104 (72.6%)*	

* 72.6% of 73 athletes reported 93 minor injuries plus 11 significant injuries.

ethanol-related. Seven of the admissions were near drownings in epileptiform seizure patients. Cardiac risk factors were noted in three patients, two of whom had myocardial infarctions (one while fishing and one while wading in the water), and one patient had syncope caused by an arrhythmia relating to prolonged QT syndrome.

DISCUSSION

Among this group of sailors the rate of significant injuries was 0.22 per 1,000 participant hours. Weightman and Browne (1981) compared injury rates in 13 sports. Rates ranged from 0.03 injuries per 1,000 participant hours (swimming) to 3.65 injuries per 1,000 participant hours (football). By comparison our sailboard enthusiasts appear to fall within the middle range as regards injury rate per 1,000 participant hours.

Studies have shown that significant injuries may be more of a problem for competitive elite board sailors who sail in high winds, wave jump, and use faster equipment than recreational sailors. Ullis and Anno (1984) reported injuries such as herniation of intervertebral disc, fractures (feet, vertebrae, fingers, tibia, ankle), concussion, fractured teeth, torn menisci, pneumothorax and nasal skin cancer. Recently Habal (1986) has also reported significant injuries. These include fractured neck, fractured mandible, loss of a hand due to a shark attack, disruption of the cruciate ligament, and a drowning death.

The data suggest that women appear to have an increased injury risk while boardsailing. This observation will need to be confirmed by a random sample methodology. In this study 45% of the women indicated that they were novices. It is possible that lack of experience or physical conditioning among this group could have predisposed them to injury. It should also be noted that most women athletes, even when well trained and conditioned, have a smaller body size and less muscle strength than their male counterparts. This physical difference could be a significant factor in moderate to heavy

winds during sailboarding or when sailing heavy boards. Wider hips and reduced quadriceps strength may also be a factor in some types of lower limb injury in women (DeHaven et al, 1986).

The current survey and related literature review suggest several recommendations to increase the safety and enjoyment of this sport. Lessons might profitably include instruction on the use of protective gear and review of safety techniques in addition to instruction in sailboarding technique. Preparticipation conditioning should be recommended for all athletes. Aerobic exercise and weight training could be beneficial.

Most of the minor and significant injuries reported might have been prevented. Some sailors now wear nylon spandex suits to prevent jellyfish stings. Shoes will prevent lacerations. Lacerations are so common that persons considering boardsailing should have the tetanus booster updated.

Many of the sailors with muscle strain reported that they were sailing in winds that overpowered them and they recommended caution in high winds. The harness currently being worn by expert sailors in high winds could be preventing many cases of tendonitis, muscle strain, and carpal tunnel syndrome. Bruises of the shins against the bottom of the mast can be prevented with a cushion mast protector. Leather or nylon gloves will protect from blisters. Two boardsailors reported eye problems. A pterygium was reported by an avid female windsurfer. Pterygia develop in eyes exposed to excessive wind, dust, and bright sunlight (Peyman et al, 1980). Other ophthalmologic risks, include splash keratosis, ultraviolet retinitis, corneal abrasions, and chemical or bacterial conjunctivitis. Preventive safety measures for the eyes should include: athletic sunglasses, limitation of continuous exposure, and washing with "artificial tears".

Sun damage to the skin has increased the incidence of a wide range of dermatologic problems, especially malignant or premalignant lesions. A sunscreen with a para-aminobenzoic acid (PABA) rating of 15 or greater should be applied 30 minutes or more prior to entering the water. This time factor allows for absorption and adherence of the sunscreen to the stratum corneum. Sunscreen should be reapplied approximately every hour, and should be a preparation labelled for use in water.

Jellyfish stings should be washed with salt water or alcohol. Fresh water causes rupture of nematocysts left in

the skin and can trigger further irritation. After cleansing, unseasoned meat tenderiser applied to the lesions can help denature the stinging protein and reduce irritation.

Ear infections can be prevented with drops. Solutions of two per cent acetic acid are sufficient to acidify the ear canal and prevent the growth of pseudomonas species on macerated skin. Ear solutions containing antibiotics may be sensitising to some individuals. Ears should be kept free from cerumen.

Patients liable to epileptiform seizures should be warned about the hazards of water sports (Cairns et al, 1984; Orłowski et al, 1982). While to our knowledge no board-sailors have yet experienced a submersion injury significant enough to require hospitalisation at John Sealy Hospital, participants with epilepsy should be discouraged from boardsailing because of the risk of drowning if a seizure were to occur while sailing.

This survey suggests that recreational sailboarding is a relatively safe sport with a low rate of significant injuries. It appears that with a few precautions windsurfing can be made even safer and more enjoyable.

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BOOK REVIEW

Title: THE WRIST
Editor: Gontran Sennwald (translated from French by D. le Vay)
Publishers: Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo 1987
Price: DM 268 269 pages Figures Tables Index Hard cover ISBN 3 540 17128 2

This 269 page book on the wrist joint is extremely well planned and illustrated with beautifully clear line drawings, photographs and X-rays. It details the complex anatomy, especially that of the ligamentous structures, and describes mechanisms of injury, how to diagnose the difficult carpal instabilities and the author's recommended techniques for dealing with them. There are some omissions. For example, no mention is made of the Herbert screw which has been a useful advance for carpal fracture fixation and for limited carpal arthrodeses; or carpal and wrist ganglia, tenosynovitis and RSI (repetitive strain injury) which has so plagued our Australian colleagues. This "state of the art" book is really beyond the scope of the general practitioner and even of the orthopaedic surgeon who does not have a special interest in the hand and wrist.

Basil Helal