

# A SHORT HISTORY OF SURFING MEDICINE AND THE SURFERS MEDICAL ASSOCIATION

## HAZARDOUS SEA CREATURES AND THE AGEING SURFER

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The Surfer's Medical Association (SMA) is an international organization of health-care professionals who frequently treat surfers as patients and who are surfers themselves. The SMA promotes research, training and education regarding trauma and disease factors which affect surfers, and is dedicated to helping all surfers be healthier.

The term "Surfing Medicine" was first used in the mid 1980s by a group of international surfing medical personnel at their initial conference on Tavarua Island in Fiji. The Association is committed to community service, especially in testing and implementing models of healthcare delivery for underdeveloped regions where surfing has an impact.

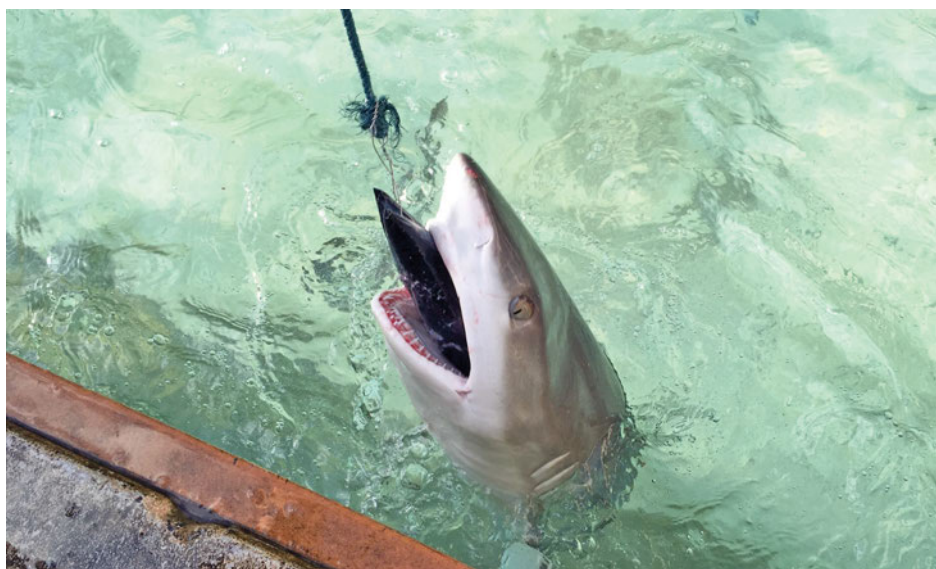
The communities of Nabila and Momi in Fiji, along with many coastal villages in

Mexico, Central America, Indonesia, Caribe and several Pacific Islands, have benefitted from help by the SMA. Nabila is a model community and is called the "healthiest village in Fiji" after the SMA started a smoking cessation programme as well as training village health workers, who are residents of the village, to oversee the health of the people in the village.

In addition to surfing physicians, scientists and other licensed healthcare professionals, the organization includes "barefoot doctors" (ordinary surfers who have sufficient training and skills to be effective first responders in remote locations where medical facilities are not readily accessible).

The goals of the SMA are best described by the following:

1. The **First Wave goal** is to educate surfers about health issues so that they can spend maximal time surfing and minimal time seeing healthcare providers.
2. The **Second Wave goal** is to conduct and support research regarding the connection between surfing and health.
3. The **Third Wave goal** is to represent the activity of surfing in the fields of medicine, healthcare and science.
4. The **Fourth Wave goal** is to teach healthcare providers about the unique trauma and disease problems of surfers and how to care for them.
5. The **Fifth Wave goal** is to create, around the world, a network of surfing healthcare professionals and "barefoot doctors".



6. The **Sixth Wave** goal is to protect and preserve the surfers' natural environment including the waves, the ocean, and our beaches.

*"As surfers and doctors, we're a pretty insignificant minority group on this planet. Yet we do have a degree of expertise in terms of the ocean/land interface (especially where there are waves)."*

*Dr Geoff Booth, Tracks Magazine, 1987*

Surfing doctors (doctors who surf) are a growing population and over the past half century there has been much exploration and discovery by such doctors. In their travels, they treated their own injuries, as well as other travelers and the local indigenous people they encountered.

In 1987, Doctors Geoff Booth, Mark Renneker and Kevin Starr wrote "Sick Surfers". This was a guide for surfers and others on how to be aware of surfing related injuries and how to treat these ocean maladies. In 2012, Dr Renneker along

with Dr Clayton Everline and Dr Andrew Nathanson, wrote "Surf Survival, The Surfer's Health Handbook". Dr Nathanson and Dr Everline represent a younger and newer generation to head up the surfing medicine quest.

One of the areas of great interest are the ocean creatures that can cause injury to a surfer or ocean enthusiast. Dr Nathanson is an active and avid traveler as well as an expert in ocean creature injuries and their treatment.

Surfers share the surf break with a huge variety of marine animals. While the vast majority of these species are harmless, a few have the ability to cause harm by biting, stinging, or poking the unwary surfer. In the section that follows, we will discuss injuries, treatment and prevention of bites and stings from hazardous sea life.

## SHARKS

Shark attacks are a recurrent theme when discussing risks associated with the sport of surfing. There is probably no primordial fear

more ingrained in the human psyche than that of being consumed by a prehistoric creature with razor-like teeth and powerful jaws. Indeed such visions keep many from attempting the sport at all.

Fortunately the hype does not match the reality. Over the last decade there have been an average of only 75 shark attacks a year world-wide, and less than 10% of those are fatal<sup>1</sup>. Unfortunately, surfers are victims of about half of those attacks<sup>1</sup>. By contrast, the most dangerous animal of all, the mosquito, is responsible for 750,000 deaths per year.

Of the 350 species of sharks, 30 have been implicated in unprovoked human attacks, the most dangerous species being Great White, Tiger and Bull sharks. Attacks are most common in areas where surfers and sharks are in close proximity such as near seal-breeding colonies, steep drop-offs, or river mouths. Surfers are also at risk in waters inhabited by sharks when water visibility is low due to turbidity and at dawn or dusk. Interestingly, most shark attacks appear to be accidental, as the shark often takes one bite, and then swims away.

## Prevention

- Do not wear shiny watches, jewellery or bright colours as these are thought to attract the attention of sharks.
- Avoid excessive splashing as sharks are can sense vibrations in the water which they may mistake for an injured fish or seal.
- Avoid surfing at dawn, dusk or in cloudy waters. Limited visibility may result in a shark mistakenly biting a hand or foot, thinking it is a fish.
- Avoid surfing near seal colonies, deep drop-offs or river mouths where sharks are likely to congregate.
- Stay near groups of other surfers as sharks are opportunistic predators and more likely to attack solitary individuals.
- If a shark larger than two metre is spotted, it is safest to slowly exit the water without splashing.
- Sharks respect size and power: if attacked aggressively, strike the shark in the snout, eyes or gills with fists or a surfboard.

## Treatment

The victim of a shark attack may require assistance in reaching the shore

via surfboard, boat or jetski. Rescuers are almost never attacked. Upon reaching shore the bitten surfer should be placed in a supine position with the injured extremity elevated. Hemorrhage should be controlled in the field by the application of firm direct pressure on the bleeding site. A clean towel or shirt wrapped around a rescuers hand and pressed firmly on the wound is usually effective. If hemorrhage can't be controlled with direct pressure, a tourniquet should be applied close to the groin for lower extremity bleeding or axilla for upper extremity bleeding<sup>2</sup>.

Victims of shark bites should be transferred to a trauma centre. Wounds should be examined, irrigated and repaired with loose closure in the operating suite. Bites often result in deep, linear lacerations which commonly cause neurovascular and tendon injuries and occasionally amputations. Infections are common and prophylactic antibiotics covering gram negative organisms should be administered.

#### JELLYFISH

It has been estimated that there are more than 500,000 jellyfish stings annually worldwide. Most stings cause temporary burning pain and whip-like skin wheals, which fade over hours to days. The severity

of stings varies widely depending on the species, surface area of the sting and size of the patient. Systemic symptoms such as nausea, vomiting, diaphoresis, dizziness and allergic reactions are rare. Deaths from cardiac arrest, intracranial haemorrhage and anaphylaxis are extremely rare and usually caused by "box" jellyfish (cubozoans), found predominantly in Indo-Pacific waters.

#### Prevention

Rash guards and wetsuits provide excellent protection from jellyfish stings. "Safe Sea" is a lotion that can be applied to bare skin that has been clinically proven to decrease risk of stings in jellyfish-infested waters.

#### Treatment

If a sting involves more than local skin irritation, the surfer should exit the water. Adherent tentacles should be removed from the skin surface using a towel or a plastic bag for protection. Tentacles can also be scraped off using the edge of a knife blade or a credit card. The skin should not be rubbed or rinsed with fresh water as this will cause un-deployed stinging cells (nematocysts) to fire. A variety of topical treatments are used to deactivate any remaining nematocysts. For example vinegar has historically been used to deactivate the stings of the highly

poisonous Australian Box jellyfish (*Chironex fleckerii*), whereas non-scalding hot water is effective in reducing the pain and redness associated with stings of the less poisonous Hawaiian Box jellyfish, and the very common Portuguese Man-o-war. For other species of jellyfish Papain appears to be the most effective treatment<sup>3</sup>. Physicians and surfers should become familiar with treatment of jellyfish stings residing in local waters.

Skin reactions that develop after a sting are often red, raised, and painful, and can occasionally develop into blisters. Topical 1% hydrocortisone will help alleviate symptoms. Patients with mild allergic reactions involving generalized hives and itching should be treated with oral antihistamines and steroids and closely observed. If signs of anaphylaxis such as hypotension, wheezing, and throat swelling develop, subcutaneous epinephrine should be administered immediately.

#### OTHER STINGING SEA CREATURES

A variety of hazardous marine animals inhabit the sea floor and can cause envenomation and puncture wounds when stepped upon.

*Stingrays* live in sandy protected bays in tropical and sub-tropical waters and feed on sea worms and molluscs buried beneath

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the sand. When stepped on, they reflexively whip their tails upward, striking the surfer in the foot or ankle with a sharp serrated barb coated with venom. This usually results in a small (1 cm), but often deep puncture wound and a throbbing electrical or burning sensation which radiates up the leg (Figure 1). The wound may be dusky in appearance and often bleeds profusely. Systemic symptoms, which are uncommon, include nausea, vomiting, and palpitations. Occasionally fragments of the barb may remain embedded in the wound.

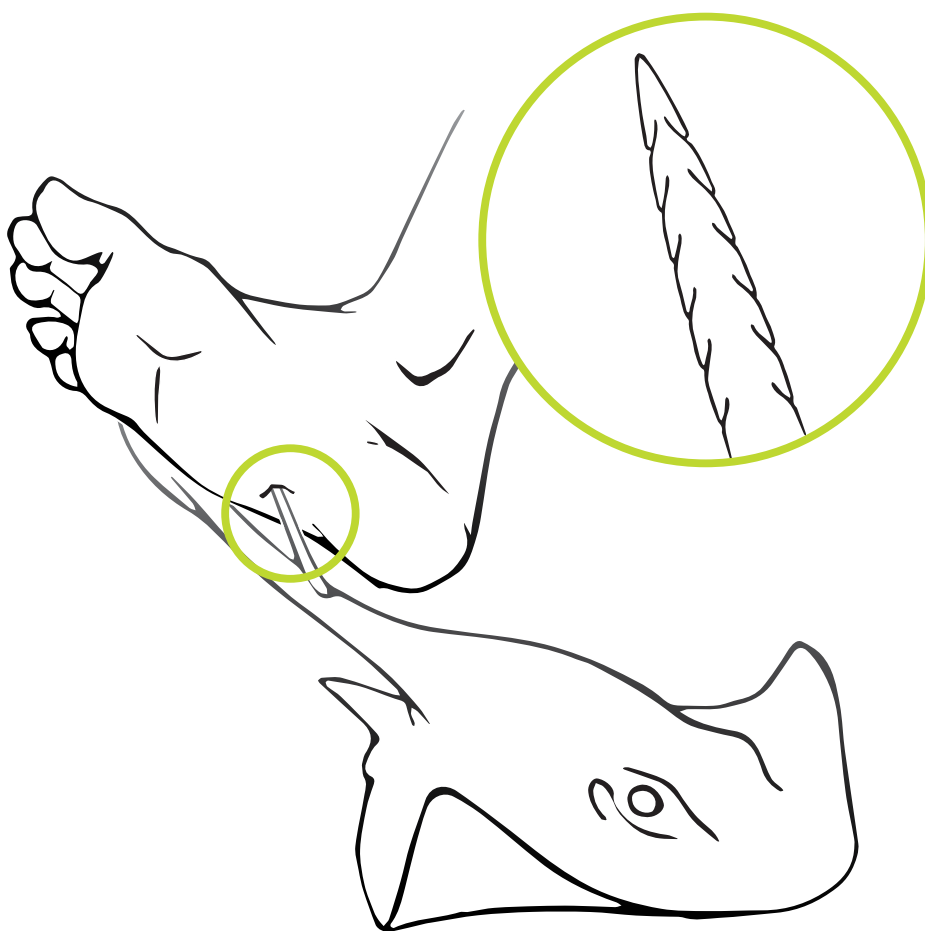
#### Prevention

When surfing in waters populated by stingrays it is safest to shuffle one's feet through the sand in order to scare these timid animals away and to avoid stepping on top of a stingray. Surfers should paddle as opposed to wade through shallow waters not only to avoid stingray stings but also foot injuries from sea urchins, stinging fish, and coral reef.

#### Treatment

The wound should be copiously irrigated with saline solution or clean water. It should be carefully explored and any retained foreign material such as sand or barb fragments should be removed. Immersion of the affected foot in non-scalding hot water denatures the venom and provides near immediate pain relief. Due to the high incidence of infection, wounds should not be sutured, and most experts recommend prophylaxis with antibiotics which include coverage for gram negative marine organisms such as *vibrio vulnificus*<sup>4</sup>.

**Scorpionfish** are a group of well-camouflaged small tropical bottom-dwelling fish that possess poisonous dorsal spines. The dorsal spines are erected when the fish feels threatened, and injuries occur when an unsuspecting surfer steps on a fish and the dorsal spines penetrate the sole of the victim's foot, injecting venom. A series of 2-5 lined-up puncture wounds are telltale signs of an envenomation. The pain is immediate and similar to that of a number of wasp stings. Stings from the most poisonous species, the Indo-Pacific stonefish (*s. horrida*) commonly cause systemic symptoms such as dizziness, nausea and shortness of breath. Deaths



**Figure 1:** Based on the illustration from *Surf Survival, The Surfer's Health Handbook*.

have been reported. Treatment is similar to that of stingrays with removal of any retained foreign spines, immersion in non-scalding hot water, and prophylactic antibiotics. If hot water is not immediately available, burying the foot in hot sand has also proven to be effective in reducing pain<sup>5</sup>.

**Sea Urchins** are spine-covered globular creatures that live in crevices on rocky or reef-laden shorelines. The sharp brittle spines can easily penetrate a surfer's hand or foot and are notoriously difficult to remove. Injuries usually involve a cluster of a dozen or more spines which may leave a residual black pigment (Figure 2). A few tropical species have hollow, venomous spines, but most are non-venomous.

#### Treatment

Spines which protrude from the skin should be removed. In general, deeply embedded spines should be left in place as attempts to remove them will cause significant tissue damage. Infection from sea urchin spines is relatively uncommon. Most spines will slowly dissolve over the course of weeks and the pain they cause will

subside. Spines that have entered a joint (usually interphalangeal) should be surgically removed as they commonly cause synovitis and chronic joint swelling. Occasionally spines in the palms and soles will cause tender, raised inclusion granulomas which may require surgical removal<sup>6</sup>.

#### SURFING AND AGEING

With a greater number of surfers and water aficionados, there is significant diversity in surfing skill sets, ages and water sense. Stand Up Paddle (SUP) is the fastest growing water-related sport and it includes surfing, ocean paddling, lake paddling, SUP fishing and an emerging trend to raft strong flowing rivers on a SUP.

Surfing was once thought of as young person's sport, but surfers are staying in the water longer as they age. Surfers in their 70's and 80's are still in the water. Surfing medicine is now looking at how to keep these older surfers in contact with their sport and the ocean for longer.

The following are suggestions to enhance the surfing and ocean experience for maturing surfers:





**Figure 2:** Sea Urchin injury. Photo credit: Andrew Nathanson, MD.

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- Focus on quality wave experiences rather than quantity.
- Consider including alternative water sports and activities, such as kayaking, SUP paddling and surf photography.
- Focus on your surfing friendships and interactions.
- Acknowledge your surf buddies' injuries and limitations and help them remember what they use to do. Keep the memories alive.
- Keep your surfing morale high and work on keeping the stoke. Help others in the surfing world by coaching, volunteer judging a contest, working with veterans or those with disabilities to understand the thrill of surfing.
- Connect with the waves daily, by going to the beach, walking your dogs there and watching the ocean with friends.
- Challenge yourself to learn a new aspect of the surfing culture. Try a SUP, ride a boogie, body surf or just swim.

- Get into or stay in good physical shape.
- Ride a bigger board.

Terry "Tubesteak" Tracy, a surfing legend in California, had these words for aging surfers:

*"You may not be as bad as you feel."*

*"The only person who can take away your surf stoke is you."*

*"You go till you no mo can go."*

*Saburo, Hawaiian mentor*

These ideas can apply to many sports, but surfers have a particularly strong bond with the ocean. From fetal development through life, surfers need to maintain this water contact to follow a meaningful existence.

*For more information on Surfing Medicine and rehabilitation visit [www.surfersmedicalassociation.org](http://www.surfersmedicalassociation.org)*

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