

Summary

Water sports appear to be save concerning foot and ankle injuries. However, analyzing injury patterns in Windsurf, Kitesurf and wave surf, foot and ankle injuries rate within the most frequent injuries. Collision with the board, obstacles in the water close to the beach and rotation trauma with the foot fixed in foot straps and bindings are the main causes. Reef cuts and open wounds may cause dangerous infections especially in tropical water. Midfoot injuries may cause painful chronic instability and arthritis. Lisfranc joint lesions and subtalar injuries must be excluded after a fall with the foot caught in the foot strap.

Keywords

Windsurf– Kitesurf– Surf– Lisfranc joint– Ankle injury– Foot injury

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Fuß- und Sprunggelenks Verletzungen beim Wellenreiten (Surfen), Windsurfen und Kitesurfen: Eine Verlaufsstudie und eine Literaturrecherche

Zusammenfassung

Im Bezug auf Fuß- und Sprunggelenks Verletzungen erscheinen Wassersportarten als sicher und wenig verletzungsträchtig. Allerdings zeigt sich bei der Analyse der Windsurf-, Kitesurf- und Surf-Verletzungen die Rate der Fuß- und Sprunggelenksverletzungen als eine der häufigsten Verletzungen. Kollision mit dem Board, mit festen Gegenständen im Wasser in Ufernähe und Rotationsverletzungen des Fußes, der in der Fußschlaufe fixiert ist, stellen die häufigsten Ursachen dar. Schnitt-Verletzungen am Riff und offene Verletzungen können gefährliche Infektionen verursachen, besonders in tropischen Gewässern. Verletzungen des Mittelfußes haben häufig chronische Instabilität und Arthrose zur Folge. Verletzungen des Lisfranc-Gelenkes und des unteren Sprunggelenkes müssen

REVIEW / SPECIAL ISSUE

Foot and ankle injuries in surfing, windsurfing, Kitesurfing: A follow up study and review of the literature

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Introduction

Wave Surfing, Windsurfing and Kitesurfing are water sports performed by all age groups. Board sports is the term used if the athlete is standing on one board. As the muscles of the upper body are highly used and need a lot of power, the focus concerning overuse or injury is primarily not on foot and ankle injuries. However – these injuries are very common and frequent. In a follow up study injuries in professional windsurf freestyle and Kitesurf freestyle are analyzed. A review of the literature shows the evidence.

Surfing areas are coastlines exposed to the open sea catching waves. Kitesurfing and windsurfing areas are the sea and lake shorelines all over the world with constant and strong winds. Competitions, professional world cup tours with sponsoring and prize money are pushing the level of surfing. The nomination of wave surfing as Summer Olympic games discipline will further push the professional level. Awards for the biggest surfed waves, high jump in kite-surfing, and storm surf in windsurfing are showing the extremes.

Away from competition most of these fun sports are performed by

millions of recreational women and men, girls and boys in light conditions.

Injuries

Although these sports are water-sports, foot and ankle injuries are the most frequent injuries in Windsurf and Kitesurf athletes. As the team doctor at the world pro tour event of Kitesurfing and Windsurfing in Austria since the year 2000 there is a many years experience with injuries in Kite- and Windsurfing. Every year since 2000 the world elite in windsurfing and kite surfing was questioned and examined. Ankle sprains are common. Skin lacerations especially on the feet are frequent and the feet of the athletes are usually full of scars. Limited range of motion in the ankle and subtalar joints is a frequent finding especially in freestyle windsurf athletes. In wave surfing, head injuries are the most frequent followed by ankle and foot injuries.

Etiology and pathomechanism

Why does a water sport cause such a high rate of foot and ankle injuries?

erkannt werden, wenn der Fuß in der Fußschlaufe fixiert verdreht wurde.

Schlüsselwörter

Windsurf– Kitesurf– Wellenreiten– Surf– Lisfranc-Gelenk – Sprunggelenk – Fuß-Verletzung

The sport of surfing is mostly performed barefoot because of the better tactile feedback to the board. Neoprene boots are used in cold water for cold protection. Sharp rocks, shells, sea urchin and poison fish but also beach pollution are frequent causes for cuts and skin lacerations – the most frequent foot injury in surfing sports. The own surfboard, especially the fiberglass or carbon fiber fins are the second frequent cause of injury. Open wounds need 1–2 weeks for proper healing. But the athletes wish to go back in the water to surf. Therefore wounds are always wet, exposed to UV radiation and to bacteria. Deep wound infections can become a danger to life especially in tropic regions and after reef contact.

Foot straps are used in windsurfing and Kitesurfing for board control. Injuries occur if the foot gets caught in the foot strap during a fall. Rotation and hyper-extension or - flexion can cause ligament injuries, fractures and luxation especially around the Lisfranc joint. These injuries are similar to the injury described by Jacques Lisfranc in the 1800s. He observed Lisfranc joint luxation in horse riders falling from the horse and getting caught

in the stirrup. If wide foot straps or – in wakestyle Kitesurfing – wake board bindings are used, the foot has a better stability in the strap. But sliding out of the strap becomes more critical and subtalar or ankle joint injuries are more likely. Ankle ligament injuries – medial as well as lateral – may cause chronic ankle instability. Care must be taken in ankle compression & rotation injury. Talar neck fractures and subtalar fractures especially the fracture of the lateral process of the talus called snowboarder's ankle are often overlooked injuries using simple ap and lateral view X ray.

Jumps and falls are normal in these sports and most injuries occur landing the board after high jumps in the water. Kitesurfing presents a special risk as starting and landing the kite is by far the short period with the highest risk. Getting lifted up in the air on land without detaching from the power kite is critical.

Recent reports show an increasing rate of Midfoot and Lisfranc injuries also in the surf sport. The aerials with hard landing on the board may cause these fractures and injuries even without the use of footstraps (Figs. 1–8).



Figure 1
Foot straps are necessary to control the board in freestyle rotation jumps.

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