Surfing Injuries

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Wombat, Jaws, Maui
Outline

• How Dangerous is Surfing?
• How do Injuries Occur?
• What are the Most Common Injuries?
• Catastrophic Injuries / Fatalities
How Dangerous is Surfing?
### Survey Studies

<table>
<thead>
<tr>
<th>Activity</th>
<th>Injury Rate per 1,000 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parachuting</td>
<td>65</td>
</tr>
<tr>
<td>Aust. Football</td>
<td>55</td>
</tr>
<tr>
<td>Skiing</td>
<td>6</td>
</tr>
<tr>
<td>Pro Surfing</td>
<td>4</td>
</tr>
<tr>
<td>Rec. Surfing</td>
<td>3.5</td>
</tr>
<tr>
<td>Gymnastics</td>
<td>2</td>
</tr>
</tbody>
</table>


### 32 Surfing Contests

<table>
<thead>
<tr>
<th>Activity</th>
<th>Injury Rate per 1,000 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rugby</td>
<td>69</td>
</tr>
<tr>
<td>Football</td>
<td>33</td>
</tr>
<tr>
<td>Soccer</td>
<td>18</td>
</tr>
<tr>
<td>Surfing</td>
<td>6.6</td>
</tr>
<tr>
<td>Baseball</td>
<td>5.8</td>
</tr>
<tr>
<td>Tennis</td>
<td>0.2</td>
</tr>
</tbody>
</table>


*Or 1,000 Athlete Exposures*
But not all surf is created equal.....

Pipeline = 32 Injuries/1,000 hrs.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waves &gt; Overhead vs. Smaller waves¹</td>
<td>2.4</td>
</tr>
<tr>
<td>Hard bottom vs. Sand bottom¹</td>
<td>2.6</td>
</tr>
<tr>
<td>Over 40 years old vs. Younger²</td>
<td>1.9</td>
</tr>
<tr>
<td>Expert vs. Intermediate/Beginner²</td>
<td>1.9</td>
</tr>
<tr>
<td>Male vs. Female</td>
<td>1</td>
</tr>
</tbody>
</table>

¹ Nathanson, Tam-Sing, Dao, Bird: *Am J of Sports Medicine* 2007
How do Surfing Injuries Occur?
How do Surfing Injuries Occur?
Mechanism of Surfing Injury
N = 1,237

- Wave: 7%
- Ocean Floor: 18%
- Other's Board: 11%
- Marine Animal: 3%
- Other: 6%
- Rider's Board: 55%
Part of Surfboard Resulting in Injury

N = 828

"The most dangerous teeth in the water are the fins on the bottom of your surfboard"

- Surf Survival-

Nose 14%
Rail 21%
Leash 2%
Fins 41%
Tail 7%
Unknown 9%
Other 6%
Most Common Acute Surfing Injuries
N = 1,237

- **Lacerations 42%**
- Contusions 13%
- Sprain/Strain 12%
- Fracture/Disloc 8%
- Concussion 6%
- Sting/Bite 3%
- Ear Drum 1%
- Hypothermia
- Drowning
Location of Lacerations and Fractures
N = 519 and 99

Lacerations (42%)
- Head 17%
- Face 24%
- Chest 1%
- Arm 6%
- Genitals 1%
- Hand 5%
- Leg 16%
- Foot 20%
- Ankle 6%

Fractures (8%)
- Head 1%
- Face 30%
- Neck 7%
- Shoulder 2%
- Chest 23%
- Arm 9%
- Hand 5%
- Leg 8%
- Foot 8%
- Ankle 5%
Board – Related Injuries

Fin Cut

Nose of board (recoil)
Hitting Bottom

Keala Kennelly, Teahupoo, 2011

“Reef Rash”
Leash Injury
Shoulder Dislocation
Catastrophic Surfing Injuries

- C-Spine Injury
- Head
- Eye Injury
- Arterial laceration
- Spleen/Liver lacerations

Jesse Bilauer, Life rolls on Foundation
August 23, 2009

Paid Notice: Deaths
NATHanson, ANDREW J

nATHANSON—Andrew J. He died August 21 from a surfing accident at the age of 51. He is survived by his loving mother Sally, his adored wife Elyse and beloved children Brian, Alison, and Kevin; his brother Larry and sister-in-law Lorraine. He was a graduate of Cornell University and received a MBA from The Wharton School. He went on to become an accomplished, highly successful managing director at Drexel Burnham Lambert and Donaldson, Lufkin & Jenrette, where he was on the Investment Banking Executive Committee and held other senior positions. He was a Managing Partner of Oak Hill Capital Partners and a director of several Companies including Duane Reade, Inc. His greatest pleasure was spending time with his family. He loved watching and participating in his children's activities. He loved all outdoor and athletic activities including football, skiing, scuba diving and golf. He was adventurous and loved to travel and explore new places. He was a philanthropist and donated to a number of causes and foundations, including The Robert Cullen Fund at Cornell University. Memorial services will be held August 24 at 11am at Congregation Emanu-El of Westchester 2125 Westchester Avenue East Rye, NY.
Causes of Surfing Deaths
(N = 94)

- Shark Attack: 15%
- Head Injury: 13%
- Heart Attack: 7%
- Lightning: 10%
- Laceration: 2%
- Drowning: 53%

(4 Tethered by Leash, 4 Seizures)
Tow-In Surfing, “Jaws”, Maui

- Began Mid-90’s
- Team Approach
- Culture of Safety
- Flotation
- Wave-force Trauma

- **Zero Fatalities**
Carlos Burle, Nazare, Portugal ‘13
Summary

• Surfing is safer than soccer
• Most injuries are caused by impact with board
• Lacerations are common
• Catastrophic / Fatal: Cervical Spine, Eye, Drowning
Questions / Comments

Nainoa Nathanson, Age 10
Injury Prevention
Building a safer surfboard

“Surfboards are made with pointy noses for purely aesthetic reasons. Rounding off the last half inch has no effect on performance”  - Shaun Thompson, TSJ 2012
Leashes

• Keeps board (a flotation aid) close at hand
• Decrease injuries to others
• Make sure you know how to get out fast
• Always put your leash on the same way
Protective Gear

- Wetsuit
- Leash
- Booties
- Helmet
- Flotation?
Chronic Surfing Injuries
N = 295

<table>
<thead>
<tr>
<th>Overuse Injuries</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder</td>
<td>29%</td>
</tr>
<tr>
<td>Back strain</td>
<td>26%</td>
</tr>
<tr>
<td>Neck strain</td>
<td>15%</td>
</tr>
<tr>
<td>Knee</td>
<td>15%</td>
</tr>
<tr>
<td>Elbow</td>
<td>8%</td>
</tr>
</tbody>
</table>