

SURF SCIENCE

# BLUE MIND

FROM SURFERS, TO SURFERS



Where surf & science meet

MEET THE SCIENTIST – STUDENT'S PEAK – SURF SCIENCE EXPLAINED – MEET THE SURFER  
TIPS & TRICKS – COMMUNITY PROJECTS – SURFING MEDICINE INTERNATIONAL

ISSUE 0 | JANUARY 2026



pic: @mauromotty

Cover: 3 friends - surfing together for more than 30 years - before jumping into a 7AM 3°C surf session at Ribeira D'Ilhas - Ericieria. pic: @mauromotty

# EDITOR'S NOTE

Surfing has always been more than a sport.

It is a relationship — with the ocean, with our bodies, and with our minds. Every session is an experiment: balance, timing, fear, adaptation, joy. Yet, for decades, much of what happens between a surfer and a wave has remained unexplored, unexplained, or locked away in academic language.

**BLUE MIND** was created to change that.

This magazine exists at the intersection where **surf culture meets science**. Not to complicate surfing — but to understand it better. To translate research into real-world knowledge that helps surfers stay healthier, perform better, and connect more deeply with the ocean.

Afterall, science is already shaping the future of surfing: from injury prevention and performance training, to wave engineering, surf pools, big wave, water safety and environmental protection.

Our goal is **to make that knowledge accessible, practical, and relevant** — for everyday surfers, coaches, lifeguards, shapers, and ocean professionals.

This “issue zero” is a starting point.

Inside, you’ll meet scientists who surf, surfers who study science, and professionals working quietly behind the scenes to push our sport forward. You’ll find research explained without jargon, real stories from the water, and ideas that might change the way you look at your next session.

**BLUE MIND is from surfers, to surfers.**

Curious. Open-minded. Grounded in evidence, but driven by passion.

Welcome to the lineup. See you in the water.



*Editor-in-Chief  
**Pedro Seixas, PT, PhD***



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pic: @ftmarques



# W A R M - U P

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## MEET THE SCIENTIST

### DR. BRENDON FERRIER

An Aussie - Scotland based surfing scientist incharge with the coolest lab in Europe

## STUDENT'S PEAK

*Effect of a Training Protocol on Shoulder Pain and Function in Surf Athletes: A Case Study*

## MEET THE SURFER

### ANTÓNIO DANTAS

The National & European Portuguese Longboarder who also surfs WSL circuit

## Meet the Scientist - Surfing Scientist Profile

# DR. BRENDON FERRIER

Born in Western Australia and shaped by the powerful waves of the Margaret River region, Dr. Brendon Ferrier has spent more than four decades immersed in surfing — and more than two decades translating that lived experience into science.

Now at 53, based in Scotland, Ferrier embodies a rare profile: a lifelong surfer who understands both the feel of a rail biting into water and the biomechanics, physiology and engineering behind it.

Besides his **Master's in Sport and Exercise Medicine**, he got his **PhD in 2020 from Edith Cowan University (Perth)**, collaborating with his Scottish university and **Surfing Australia's High Performance Center**, focused on biomechanics of aerial surfing.



## From the shaping bay to the lab

Before entering academia, Brendon worked as a **professional fiberglasser**, gaining first-hand knowledge of surfboard construction, materials and performance trade-offs. That background still defines his approach today.

At the **Surf Lab**, research and development go far beyond theory. The lab actively connects surf companies with university departments of engineering, materials science and electrical engineering, creating a bridge between innovation and performance.

*"If you want meaningful research in surfing, it has to speak the language of both the surfer and the industry."*



# The Surf Lab — a global first

The Surf Lab represents the **world's first formal partnership between a university** - Edinburgh Napier University - and a commercial wave pool - Lost Shore Surf Resort. This creates a controlled yet surf-authentic environment for high-quality research.

One of the lab's most impactful projects **tested wetsuit thermal performance under extreme conditions**.

Surfers remained immobile in 0°C ice baths for 30 minutes, wearing different suits instrumented with thermistors at nine body locations.

The result?

**Sustainable Yulex® wetsuits matched the insulation of premium models**, leading to the deployment of 700 units for winter conditions in Scotland, where water temperatures sit between 2–3°C.



Another project Ferrier supported was an MSc project by Damaris Vasquez that **quantified energy expenditure in surfing** using VO<sub>2</sub>max testing via ski ergometer, combined with heart rate monitoring and GPS tracking during surf sessions. The data now underpins a forthcoming publication and a PhD funding proposal comparing ocean surfing and wave pools as tools for global health.

## Vision

Over the next decade, Dr. Brendon Ferrier aims to grow a **collaborative ecosystem of surf research**, supporting students, launching PhDs and translating science into real-world benefits — from high-performance surfing to mental and physical health.



*"Surfing is still a very young sport in academic terms. That's exactly why collaboration matters more than competition."*



**ferox**



**Algarve - PORTUGAL**

# Students' Peak - Students Projects

## Effect of a Training Protocol on Shoulder Pain and Function in Surf Athletes: A Case Study

Sofia Santos, PT - ESSATLA, Oeiras, Portugal  ESSATLA ESCOLA SUPERIOR DE SAÚDE ATLÂNTICA



**Scope:** The paddling motion is one of the most common injury mechanisms in surfing, accounting for approximately 42% to 54% of the total duration of a surfing session. This movement closely resembles the front crawl stroke used by competitive swimmers, both in terms of kinematics and intensity, generating high articular and muscular stress on the shoulder complex (SC). Therapeutic exercise programs focused on strength, flexibility, and sensorimotor training have proven to be effective and safe strategies in clinical practice with swimmers. Due to the similarities in movement patterns, this approach can be applied to surfers, aiming to reduce the risk of musculoskeletal injuries and the pain associated with joint overuse.

**Objective:** To assess the effect of a Physiotherapy intervention protocol based on exercise, targeting improvements in flexibility, strength, and proprioception of the SC, on pain and shoulder functionality in surfers who report shoulder pain during or after training.

**Methodology:** This study followed a quantitative longitudinal case study design, with three assessment moments and one intervention phase. The protocol involved a structured exercise program focused on strength, flexibility, and sensorimotor training, implemented over six weeks, with two sessions per week lasting between 60 and 90 minutes each. Inclusion criteria: athletes who participated in surfing competitions in 2024 and plan to continue in 2025; reported unilateral or bilateral shoulder pain during or after surfing sessions within the last six months; aged between 18 and 25. Exclusion criteria: history of shoulder surgery; current or past physiotherapy treatment; use of anti-inflammatory or analgesic medication. Assessed variables: pain (Numeric pain scale and severity irritability and nature (NPS, SIN)), strength (dynamometry), flexibility (goniometry), sensorimotor control (Upper Quarter Y-Balance Test - YBT-UQ), and functionality (Disabilities of the Arm Shoulder and Hand (DASH) scale). The independent variable was the exercise-based training protocol.

**Conclusion:** This study reinforces the importance of exercise-based physiotherapy interventions in sports rehabilitation, especially when tailored to the specific demands of the sport. The results demonstrated improvements in shoulder pain and functional performance in surfers, confirming this to be an effective and low-cost approach with a positive impact on recreational surfing, training, and competitive performance.

**Keywords:** Training; Surfers; Physiotherapy; Shoulder; Competition.

# ANTÓNIO DANTAS

from Capital do Império to the World

**At just 22 years-old, António Dantas stands at the forefront of Portuguese longboarding, bringing classic style to the world stage. From the beaches of São Pedro do Estoril - The Capital of the Empire", as the locals call it - to the World Tour lineup, his journey blends talent, persistence, and a deep sense of belonging to the ocean.**

Among a generation raised on summer camps, PlayStation and football, António Dantas discovered a deeper connection — the ocean. He first touched a surfboard at age five or six during holiday programs organized by his mother, but it wasn't until twelve that surfing became more than a pastime. That's when he began training year-round and realized he'd found his calling.

The competitive spark came while watching his brother João won a national championship at São Pedro do Estoril. What started as admiration quickly became ambition. Encouraged by his family, and with his first "real" board — a long epoxy longboard gifted by his uncle Manuel Dantas — António began taking the sport seriously.

At just 14, he won his first National overall title. All the setbacks and learning moments only fueled his growth and national victories soon led to international recognition, including a breakthrough win in Spain that made António the first (and still the only) Portuguese surfer to win a Longboard QS event, securing his spot on the World Tour.



*"My identity isn't just about longboarding.  
I want to be a good father, husband, son, and friend"*



***"The level on the world tour is incredible,"*** António reflects. ***"Each heat feels like a final."*** Still, he sees momentum building back home. ***"Longboarding in Portugal isn't as big as it was decades ago, but more people are getting involved — more schools, more workshops, more stoke."***

Now officially recognized as a high-performance athlete, António balances structured training with a grounded, ocean-first approach. Gym work, jiu-jitsu, nutrition, and countless hours in the water form the backbone of his routine. Yet his perspective continues to evolve.

More than trophies, António values the life surfing has given him — travel, discovery, and a lifestyle centered around the sea.

For António Dantas, the world title remains a dream — but the greatest victory might be living a life forever shaped by the rhythm of the waves.



*"As a kid, I thought winning national or European titles would be the peak of my life. Now I see them as steps, not destinations."*

*pic: @mauromottt*



# MAIN HEAT

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Surfing is no longer just about time in the water.

Understanding how your body moves — and where it fails — is the difference between progression and frustration.

Regular physical assessment is not just for pros. It's a tool to surf longer, recover faster and keep you in the water.

## FIRST SET

Physical assessment in surfers: Guidelines for health professionals - Part 1 Upper quarter

## SECOND SET

Physical assessment in surfers: Guidelines for health professionals - Part 2 Lower quarter

# FIRST SET

## Physical assessment in surfers: Guidelines for health professionals – Part 1 Upper quarter

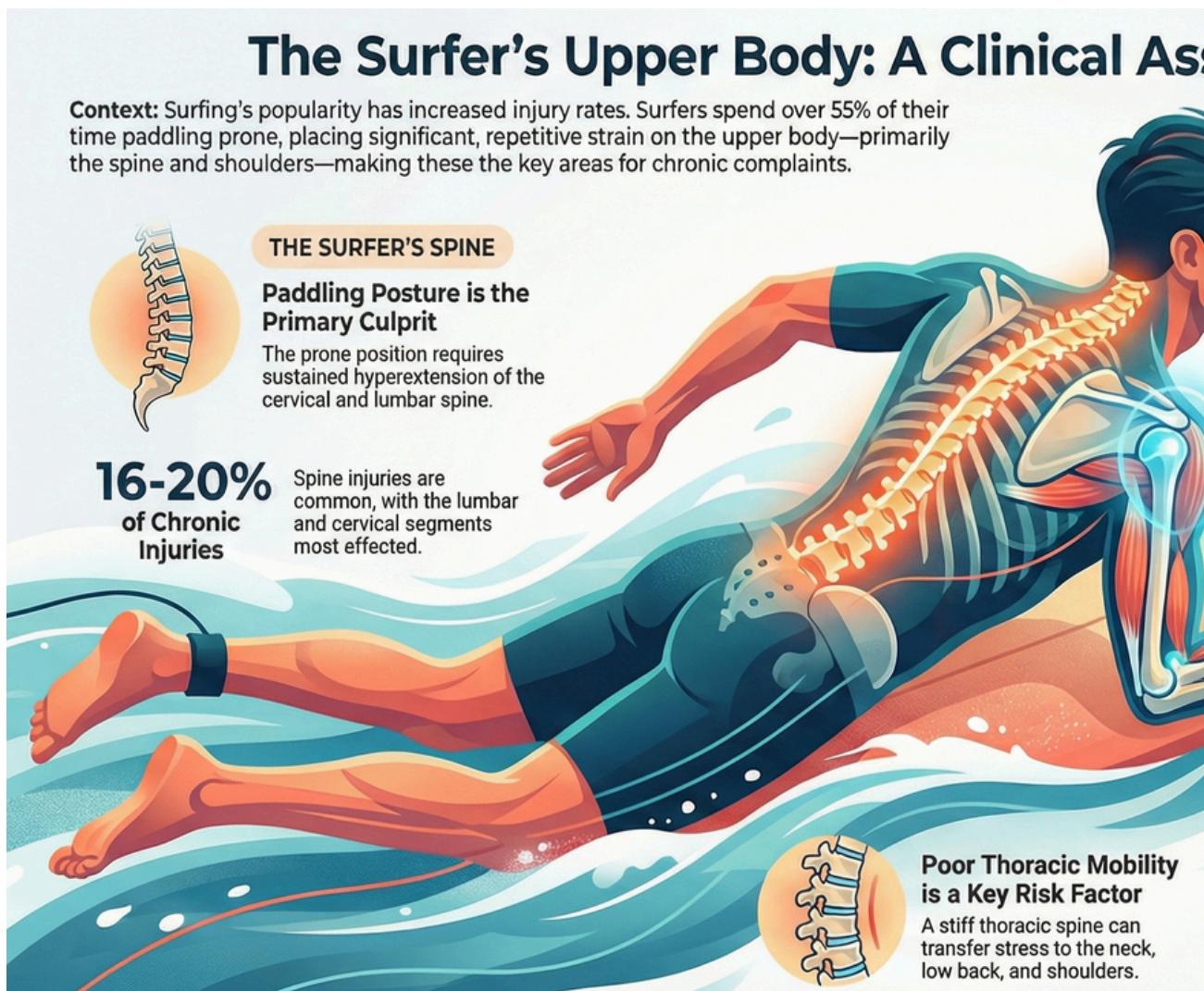
Lima GV, Takeuchi E, Seixas PMC, Rehder A, Prada MPV, Baboghlouian M, Brech GC. Physical assessment in surfers: Guidelines for health professionals - Part 1 upper quarter. Acta Ortop Bras. [online]. 2025;33(4):Page 1 of 7.

### What happens in the water?

While paddling, surfers maintain cervical and lumbar extension for long periods, often with limited thoracic mobility. This creates **excessive stress on the spine and shoulders**.

Repeated **paddling cycles** also overload the shoulder rotators, elbows and wrists, especially when mobility restrictions or strength imbalances are present.

**Take-offs and landings** add further stress, particularly to the elbows and hands.



## Why this matters?

Modern surfing involves spending more than 60% of a surfing session paddling.

That means **prolonged prone position, sustained spinal extension and thousands of repetitive upper-limb movements.**

Over time, this load explains why **neck, shoulder and elbow pain** are so common among surfers — from weekend warriors to World Tour athletes.

## Assessment Guide



### THE SURFER'S SHOULDER

#### Overuse From Paddling Drives Injury

Repetitive motion leads to muscle imbalance, scapular dyskinesia, and subacromial impact.

**22.4%**  
of Injuries  
Involve the Shoulder

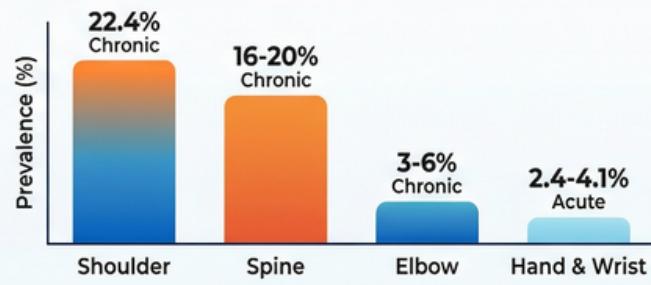
Shoulders are one of the most common sites for chronic injuries in surfers.



#### Check for Rotator Muscle Imbalance

Surfers often present with weakness in lateral rotators and shortening of internal rotators.

### Injury Prevalence Comparison (Upper Quarter)



### Assessment priorities

- Shoulder rotation strength and range of motion
- Modified Upper Quarter Y-Balance Test
- Closed Kinetic Chain Upper Extremity Stability Test
- Thoracolumbar mobility assessments

**These tools help identify limitations before pain becomes injury.**

### Take home message:

- If your shoulders, neck or elbows are constantly sore, **it's not "just surfing".**
- It's usually a mix of mobility restrictions, strength imbalances and accumulated load — all of which can be assessed, trained and improved.

[Read the full paper here](#)





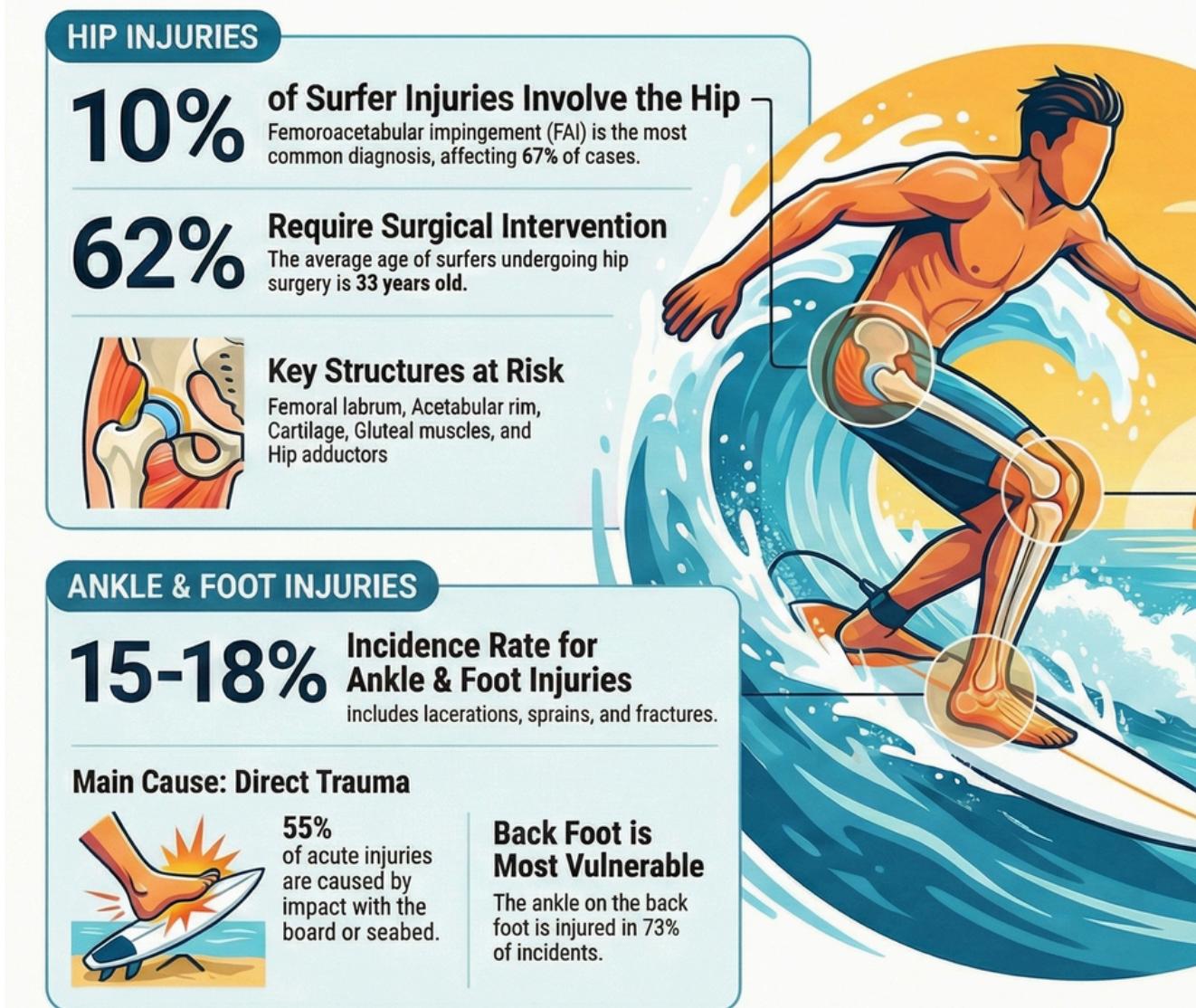
pic: @mauromatty

# SECOND SET

## Physical assessment in surfers: Guidelines for health professionals - Part 2 Lower quarter

Brech GC, Takeuchi E, Seixas PMC, Rehder A, Prada MPV, Babogluian M, Lima GV. Physical assessment in surfers: Guidelines for health professionals - Part 2 lower quarter. Acta Ortop Bras. [online]. 2025;33(4):Page 1 of 7.

This guideline complements the previous upper-quarter article, pointing out **musculoskeletal injuries in surfers as primarily acute and linked to the standing phase on the board during wave riding**, in a closed kinetic chain, especially during complex maneuvers such as aerials.



While surfing, the hip, knee, ankle and foot are exposed to high impact and eccentric loads, with frequent patterns of knee flexion, dynamic valgus and femoral rotation, which increases the risk of acute ligament, meniscal and bony lesions as well as chronic overload.

## Why this matters?

Most serious surfing injuries happen **while standing on the board**, not paddling.

Modern surfing — especially aerials and high-speed maneuvers — exposes the lower limbs to high impact, eccentric loading and extreme ranges of motion.

## What happens in the water?

During wave riding, surfers operate in a closed kinetic chain with **repeated knee flexion, hip rotation and dynamic loading**.

Landings often involve valgus stress, internal rotation and asymmetric loading between front and back legs — a perfect storm for knee and hip injuries.

### KNEE INJURIES

#### Knee Injuries Account for 10-28% of Cases

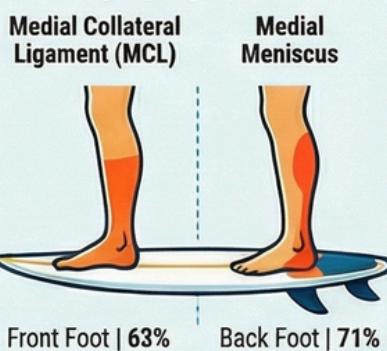
Incidence has increased over the last 15 years due to more complex maneuvers.

##### Primary Cause: Aerial Maneuver Landings



Landing on an unstable surface creates significant valgus (inward) stress on the knee.

##### Injury by Stance



### ESSENTIAL FUNCTIONAL ASSESSMENT TESTS

#### Step Down Test



Qualitatively evaluates dynamic knee valgus and stability of hip stabilizers.

#### Lower Quarter Y-Balance Test (YBT)



A dynamic test that assesses lower limb strength, flexibility, and proprioception.

#### Weight-Bearing Lunge Test (WBLT)



Measures ankle dorsiflexion range of motion, a key factor in landing mechanics.

### Assessment priorities

- Hip mobility and strength
- Knee alignment and dynamic control
- Ligament and meniscus integrity
- Movement quality during functional tasks (step-down, landing mechanics)

Video analysis can be valuable in identifying risky movement patterns.

[Read the full paper here](#)

## Take home message:

- Strong legs are not enough.
- Surfers need mobile hips, stable knees and good landing mechanics to handle the demands of modern surfing — especially in high-performance conditions.



*pic: @ftmarques*

# C O O L - D O W N

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**Tips & Tricks**  
**Pre-surf warm up**

**Community**  
**SURFaddict**

**Surfing Medicine  
International**

**Keeping the surfers  
healthy & safe**



*surfisio.pt*



# Tips & Tricks - Pre-surf Warm-up



[Learn more here](#)

# STUDY 5 MINUTES FROM THE SEA?

THE CHOICE  
IS YOURS.

## BACHELOR'S DEGREES

- Pharmacy |
- Osteopathy |
- Physiotherapy |
- Nursing

## POSTGRADUATE COURSES

- Osteopathy |
- Physiotherapy
- | Health Management

## MASTER'S DEGREES

- Rehabilitation Nursing |
- Medical-Surgical Nursing in the area of Nursing for People in Critical Conditions
- | Medical-Surgical Nursing in the area of Nursing for People in Chronic Conditions
- | Community Nursing in the area of Community Health and Public Health Nursing

# Community - Projects & Initiatives



Long before surfing became a trend, a spectacle, or an industry, it was already something much deeper for **Teresa Abraços**. She **began surfing over four decades ago**, at a time when surfing in Portugal was poorly understood, socially stigmatized, and almost entirely male-dominated. **Being one of the few women in the water** shaped her not only as an athlete, but as someone who quickly understood that surfing could be a powerful tool for cultural change.

That awareness grew over time. For Teresa, surfing was never just about competition or leisure — it was about community, identity, and above all, opportunity.

[surfadaptado.pt](http://surfadaptado.pt) 

The desire to go beyond individual practice became increasingly clear, until in 2012 she found in **adaptive surfing** a natural extension of her journey. That same year, she became involved as a volunteer — and later as President — of **SURFaddict, the Portuguese Association for Adaptive Surfing**, a non-profit organization that provides free surfing experiences to people with disabilities.

On the beach, the impact is immediate and profound. More than riding waves, participants gain something often missing from their daily lives: a space

for social connection, stimulation outside clinical environments, and a genuine sense of belonging. The simple act of leaving home, feeling the sand, hearing the ocean, and sharing smiles in a playful setting becomes transformative. **The benefits multiply — from mobility and balance to physical endurance, from autonomy to sensory regulation, from self-esteem to emotional wellbeing.** The effect extends beyond the surfers themselves, reaching caregivers who find rare moments of rest, connection, and even joy

Beaches are becoming more accessible, and mindsets more open. **Just as women's surfing gradually found its place, disability is now becoming normalized in the lineup.**

For Teresa, this may be SURFaddict's greatest legacy: proving that it is natural — and essential — for people with disabilities to surf. Looking ahead, she envisions growth across the association's three pillars: leisure, regular therapeutic intervention, and technical progression, opening pathways all the way to competition. Because when surfing becomes more than a wave — when it becomes a bridge — its impact reaches far beyond the ocean.

# Surfing Medicine International

## Meet the SMI - Surfing Medicine International!

This extraordinary organisation, was founded by 3 friends: Ingvar, Dion (NL) and Ogi (Austria). All of them medical doctors and stoked surfers. In 2012, Arvid Schigt (NL) and David Hefer (Germany) joined them to put up the **first World Surfing Conference** held at Sagres, Portugal, which counted with more than **85 participants from 19 countries** worldwide. And then, it never stopped!

After 12 editions of **Advanced Surf Life Support Courses**, 8 World Conferences held in Europe and Australia, and other all-year around initiatives, SMI has set its mark as a respectful and key player organisation regarding surfing health and drowning prevention.



## DR. INGVAR BERG



Ingvar grew up in The Hague, in the Netherlands, far from tropical reefs, but close to wind and speed. At 12, he was already skateboarding and snowboarding.

Windsurfing followed and the ocean entered his life head-on in 2007, during a

trip to Australia, where he bought his first surfboard in Noosa and spent weeks surfing around Byron Bay and nearby breaks.

A medical doctor since 2009 and an **Emergency Medicine specialist** since 2017, Ingvar sees the ocean and emergency care as parallel worlds where calm under pressure saves lives.

## - Keeping the surfer healthy & safe



*SMI relies on surf enthusiastic health professionals, scientists and other volunteers, sharing knowledge and experiences to inform and educate coastal communities to "Keep the surfer healthy and safe"*

[surfingmed.com](http://surfingmed.com) 

The mission is clear: **make surfing safer and recognize surfers as key bystander rescuers in drowning situations.**

At SMI, science is not an add-on - it is the foundation. All programs are built on scientific evidence, guidelines, and best practices. Trusting science means embracing constant evolution, review, and learning.

The **vision for the next decade** is both ambitious and practical: **surf lifesaving and CPR courses for surfers as a global norm, injury prevention programs, surfers informed about health risks from day one** — and empowered as ambassadors for health, safety, and the ocean.

In and out of the water, Ingvar continues to do the same thing: breathe deeply, stay focused, and respect the power of the wave.

At 41, he is **CEO of Surfing Medicine International (SMI)**, a non-profit organization dedicated to the science of surfing medicine. He leads an international team of volunteers — doctors, researchers, and surf professionals — united by science, passion, and respect for the ocean.

SMI develops research, injury prevention programs, and educational platforms such as Online Surf Life Support, which teaches surfers board rescues and CPR.

*See you on the next swell...*





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