

Medical Recommendations for High-Risk Sailing Classes (Foiling)

Proposal to the World Sailing Medical Commission

1. Initial Statement

The evolution of sailing equipment toward flying or high-speed craft is fundamentally transforming the risk profile in sailing. These platforms (foilboards, kites, high-speed skiffs, foiling catamarans) expose athletes to potentially severe — even fatal — injuries. Speed, postural instability, a dynamic marine environment, absence of passive protections (seatbelts, closed cockpit, airbags), and the difficulty of rapid extraction at sea all justify a specific medical approach.

Studies in sports medicine and road trauma (Doecke et al., 2020; Jokschi, 1993; Richards & Cuerden, 2009) show that the risk of serious injury increases significantly above 50 km/h (~25 knots), with a second critical threshold above 80 km/h (~40 knots). These speeds are regularly reached (and often exceeded) in foiling disciplines.

Additional contributing factors include:

- Documented cases of drowning due to entrapment under the boat (notably in 49er and 49erFX),
- Extraction delays incompatible with effective resuscitation,
- A high incidence of combined trauma (head + spine + limbs),
- Difficulty locating a victim in the water, especially in dense fleets.

2. Objectives

- Propose a framework of minimum medical safety standards for high-risk sailing
- Clarify expectations for organizers, medical teams, and commissions
- Improve the quality and speed of on-water medical response

3. Risk-Based Classification

Group 1 – Directly exposed, unstable platforms

Examples: Kitefoil, IQFoil, Wingfoil, Moth

- Standing position, no structural protection
- Speeds > 20 knots, frequent airborne maneuvers
- Risks: high-velocity trauma, loss of consciousness, drowning

Reference: SailGP medical safety review (Allen et al., 2024, BJSM, accepted) highlights the need for <1 min response in these configurations.

Recommendations:

- 1 on-water medical team per 30 athletes
- ALS ambulance at extraction point
- Embedded rescue swimmer (Rescue Diver + FREC3 level recommended)
- Clearly marked extraction points

Group 2 – High-speed boats with cockpit

Examples: AC75, F50, ETF26, GC32

- Speeds > 35 knots
- Protective cockpit but high entrapment risk
- Very violent internal/hull impacts

Reference: FIA and Jokschi (1993) data show that impacts >70–80 km/h carry a fatality risk without passive protection.

Recommendations:

- 1 on-water medical team per boat followed
- Equipment for extrication / rapid cockpit access
- Safety briefing with the crew
- Direct coordination with local EMS

Group 3 – Open but entrapping platforms

Examples: 49er, 49erFX, Nacra 17

- Speeds > 20 knots
- High risk of entrapment under sail or trampoline

Reference: Field reports (Olympics, SOF, Worlds) document multiple such incidents over the past decade.

Recommendations:

- 1 medical team per 40–50 athletes
- 1 rescue diver per active race zone
- Mandatory quick-release systems on harnesses
- Coach training in self-extraction techniques

4. Cross-cutting Provisions

- Fleet size must be factored in when planning medical support. Larger participant numbers increase the risk of collision, entanglement, and saturation of rescue capacity.

Reference: Davis (2001) shows that multi-victim scenarios reduce first aid effectiveness without dedicated response teams.

- Continuous radio link between the medical lead, race officer, and safety officer
- Required equipment on safety boats:
 - AED, oxygen, BVM, spine board, vacuum mattress
 - IV-level analgesics, tourniquets, hemostatics
- Predefined extraction zones with ALS ambulance on site
- Pre-event drills: CPR + extraction (ongoing education)

5. Training & Coordination

- All responders should be trained in interventions in dynamic marine environments
- Direct link with a nearby trauma-capable hospital
- Emergency plans must be translated into English (lingua franca)
- Number of safety boats should allow for <1 minute intervention

6. Embedded References

- Allen A. et al. (2024). Medical preparedness for high-speed foiling events: experience from SailGP, BJSM (accepted)
- Doecke, S.D. et al. (2020). Impact speed and the risk of serious injury in vehicle crashes, *Accid. Anal. Prev.*, 144
- Joksche, H.C. (1993). Velocity change and fatality risk in a crash – a rule of thumb, *Accid. Anal. Prev.*, 25(1)
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- Davis, G. (2001). Relating injury severity to impact speed in pedestrian crashes, *Transp. Res. Rec.*, 1773