

Injury and Illness Surveillance of Sailors at :

43rd ISAF Youth Sailing World
Championship 2013

&

ISAF World Championship,
Santander 2014

MARITIME HEALTH IN OCEANIC & OFF-SHORE RACING
MEETING

October 17th, 2014, BARCELONA, SPAIN



Funding & Authors

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JUNTA DE ANDALUCIA
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Centro Andaluz de Medicina del Deporte



ISAF
WORLD SAILING

Outline



- Background
- Objectives
- Study Design
- Results
- Discussion
- Recommendations
- Questions



Background - Pilot Study

- Poster at 2011 ACSM Annual Meeting
 - Tan B, Leong D, Ong A. *Injury Patterns of Competitive Sailors in Olympic Classes. Med Sci Sports Exerc 2011, 43(5): S243.*
- Pilot study – March 2010
- **143 sailors** from 8 MNAs – Olympic Class Sailors
- **1 month** retrospective questionnaire
- Administered by MNA Doctor



Background - Pilot Study



Summary of findings:

- Injury rate **0.53 injuries per 1000 sailing hours**
- Elite adult sailors reported mainly **overuse injuries of the lower back and knee**



Current Study Objectives



- To identify the common sailing injuries and illnesses among **competitive sailors** participating in the Youth Sailing World Championship and Santander World Championship.
- To **identify risk factors for injury in sailing**
- **To compare** our findings in **youth sailors** into **adult** Olympic sailors.

Study Design



- **Retrospective** cross-sectional study
- **12 month** Injury & Illness Recall Questionnaire
- Study population:
 - Sailors participating in the **ISAF Youth Sailing World Championships 2013** (Cyprus)
 - Sailors participating in the **ISAF World Sailing Championships 2014** (Santander)



43rd ISAF Youth Sailing World Championship 2013



- Limassol, Cyprus
- 13 to 20 July 2013
- 358 youth sailors; 61 MNAs/Countries
- Springboard for Olympic classes

2013 Classes:

Laser Radial – Boys and Girls (same as Laser Olympic class)

420 – Boys and Girls (similar to 470 Olympic class)

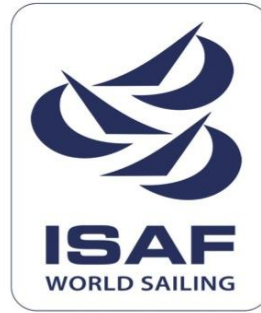
RS:X – Boys and Girls (same as RSX Olympic class)

29er – mixed (similar to 49er Olympic class)

SL16 – mixed (similar to Nacra olympic class)



Sailing Classes



Laser Radial (same boat as Olympic Class) Dinghy



420 (similar to Olympic class 470) Dinghy, 2-person



ISAF Youth Worlds 2013 / © ICARUS SAILING MEDIA



Sailing Classes



RS:X (same as Olympic RSX)

Windsurf

29er (similar to Olympic 49er)

Skiff, 2-person



Sailing Classes

SL16 (similar to Nacra Olympic class)

Multi-hull, 2-person





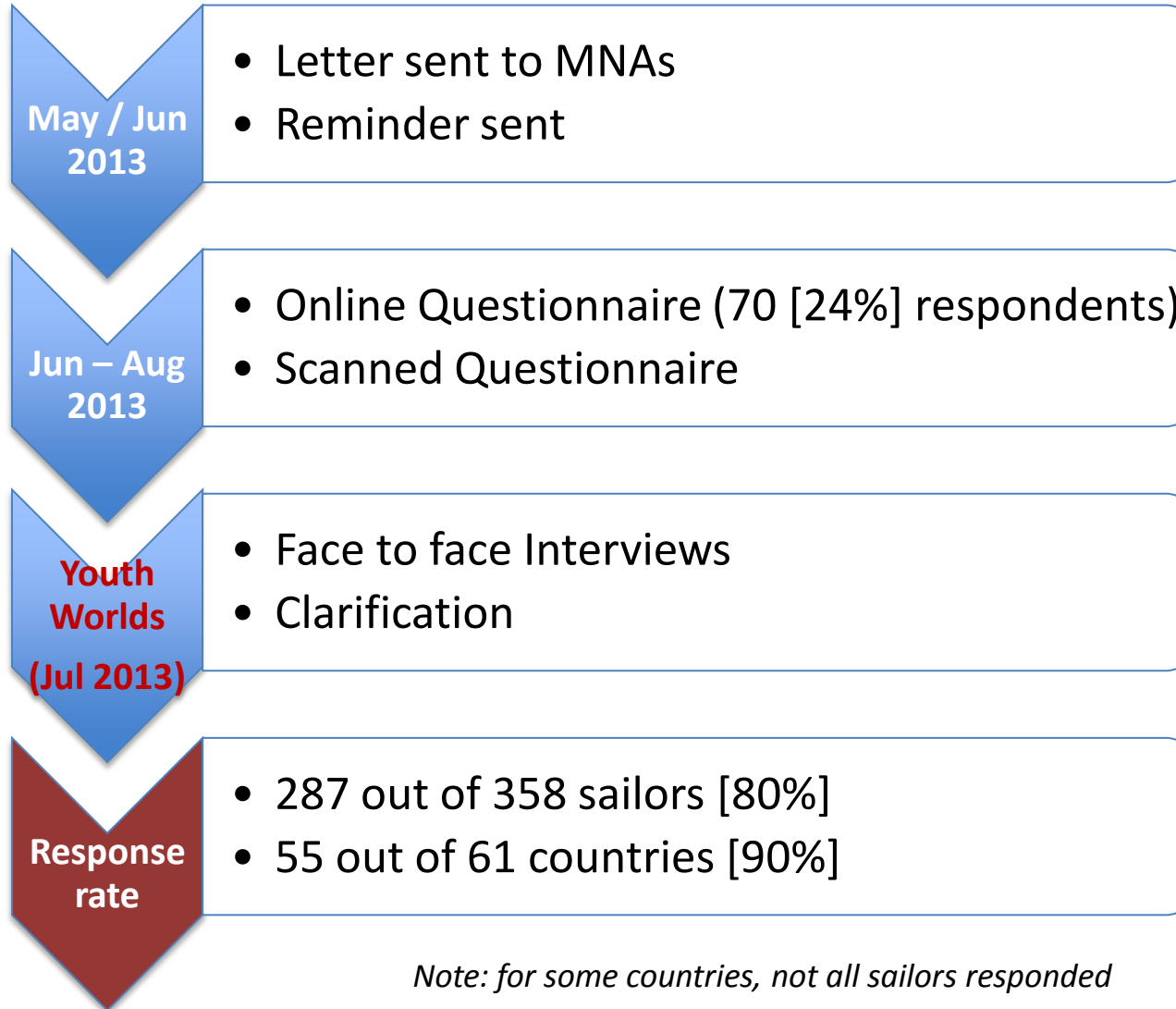
Injury and Illness Definitions

- Sailors were asked to recall any injuries or illnesses in the **past 12 months** which arose from sailing.
- Injury details:
 - **No. of injuries**
 - **Site; Type; Cause of Injury**
 - **Treatment**
 - **Days lost**
- Sailing-specific questions:
 - **Mechanism; Contributing factors; Part of boat**





Results – Response Rate



Note: for some countries, not all sailors responded



Online Version

- Go to [live form](#) (click to view)



Injury and Illness Surveillance of Athletes at the 43rd ISAF Youth Sailing World Championship 2013 (12-month Recall Questionnaire)

This is a retrospective recall questionnaire on the occurrence of injury and illness in the past 12 months before the ISAF Youth Sailing World Championships, and the results will help the ISAF Medical Committee understand the injury patterns among our elite youth sailors.

Target sailors:

Participants in the 43rd ISAF Youth Sailing World Championship 2013, Limassol, Cyprus

Who should fill up this form:

The MNA Medical Officers or Medical Team Personnel, should fill up this questionnaire, in consultation with the sailor(s)

Confidentiality

The information you key in here will be kept confidential and the sailors' names and ISAF ID will not be entered into the injury and illness database. The information will be used for the purpose of compiling the incidence of sailing injuries only, and will not be used for any other purposes.

Sailor's Name

ISAF Sailor Number

Country

Home Port

Age (years)

Date of birth (dd/mm/yy)

Gender

Class (for the ISAF Youth Sailing World Championship 2013)

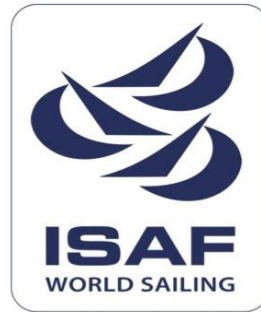
- Laser Radial
- 420
- RS:X
- 29er
- SL16

Position

- Helm
- Crew



Online Version



- Go to [live form](#) (click to view)

Number of years in non-competitive sailing

Number of years in competitive sailing

In the last 12 months, what is your duration on on-water sailing season (months)?

In the last 12 months, what is your estimated on-water training hours per week during the sailing season?

Duration of dry-land training period (months)

Estimated dry-land training hours per week during dry-land training periods

Do you compete in any other sports besides sailing?

- Yes
 No

If the answer to previous question is yes, which sport(s)?

How much of the time do you use sunscreen when sailing?

- 0 - 25 %
 25 - 50 %
 50 - 75 %
 75 - 100 %

How much of the time do you use a life jacket when sailing?

- 0 - 25 %
 25 - 50 %
 50 - 75 %
 75 - 100 %

In the last 12 months, have you taken cannabis, hashish or marijuana

- Yes
 No

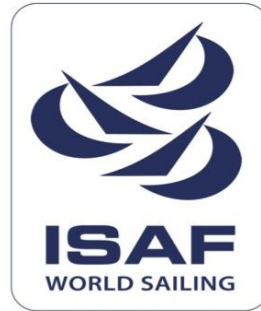
In the past 12 months, were you suffering from any injuries not arising from sailing?

- Yes
 No

In the past 12 months, were you suffering from any injuries arising from sailing?

- Yes

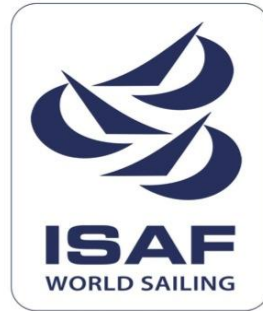




Demographics

	All (287)	Injured (50)
Mean Age (yr)	16.7	16.7
Gender (Male %)	62%	54%
Participation in other sport	27%	20%
Sunscreen use		
<i>75 – 100% of the time</i>	29%	38%
Life jacket use		
<i>75 – 100% of the time</i>	91%	90%





Demographics

	All (287)	Injured (50)
Years in competitive sailing	6	7
Non-competitive (yr)	3	4
Sailing hours (per year)	500	521
Recreational drug use	1%	2%



Results – Injury Prevalence



- **50 sailors (17%) reported 60 injuries**
 - Multiple injuries – 8 sailors had 2 injuries, 1 had 3 injuries
- **0.42 injuries per 1000 sailing hours**
- 0.21 injuries per sailor

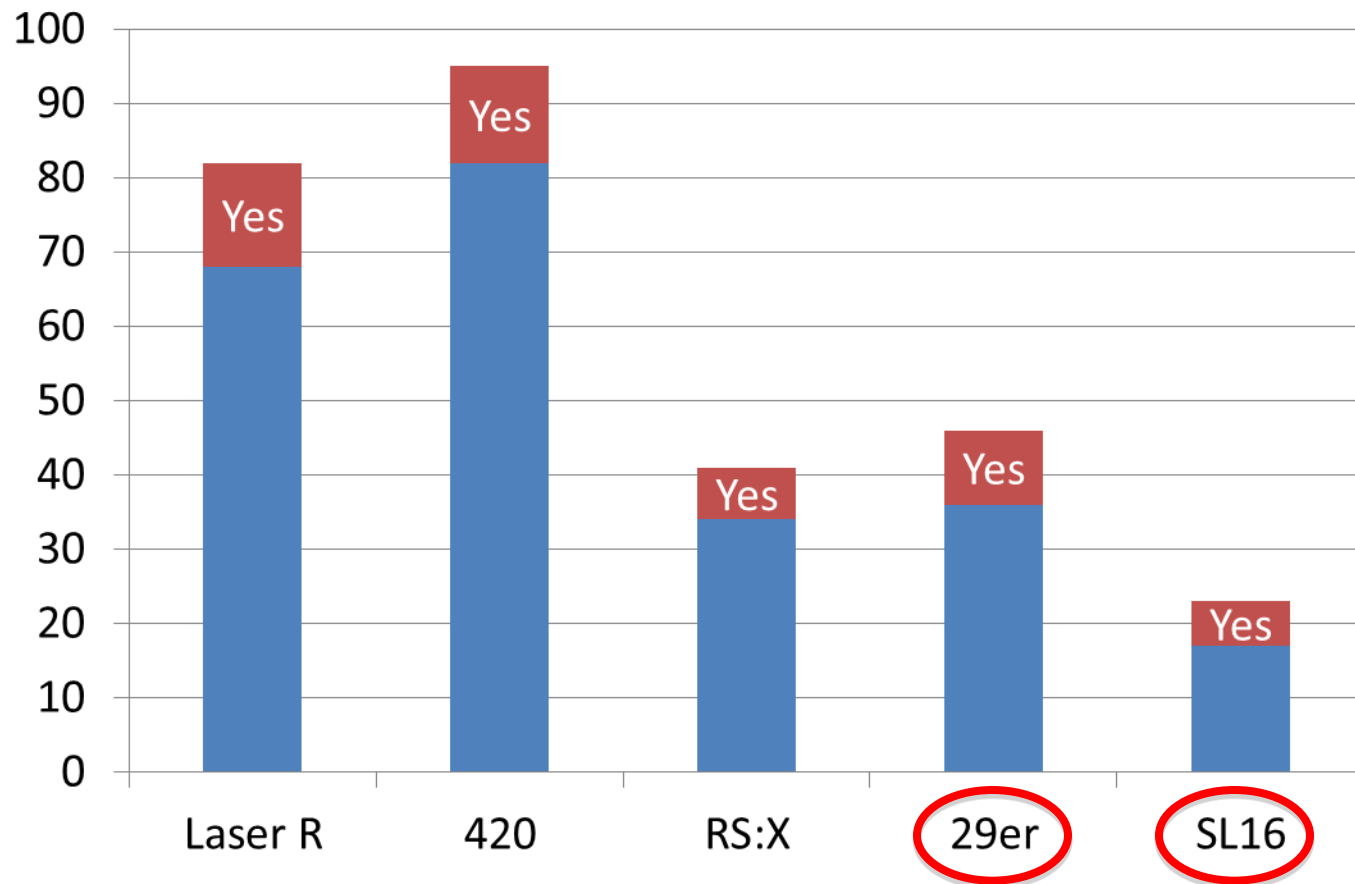


Injury & Illness Reporting

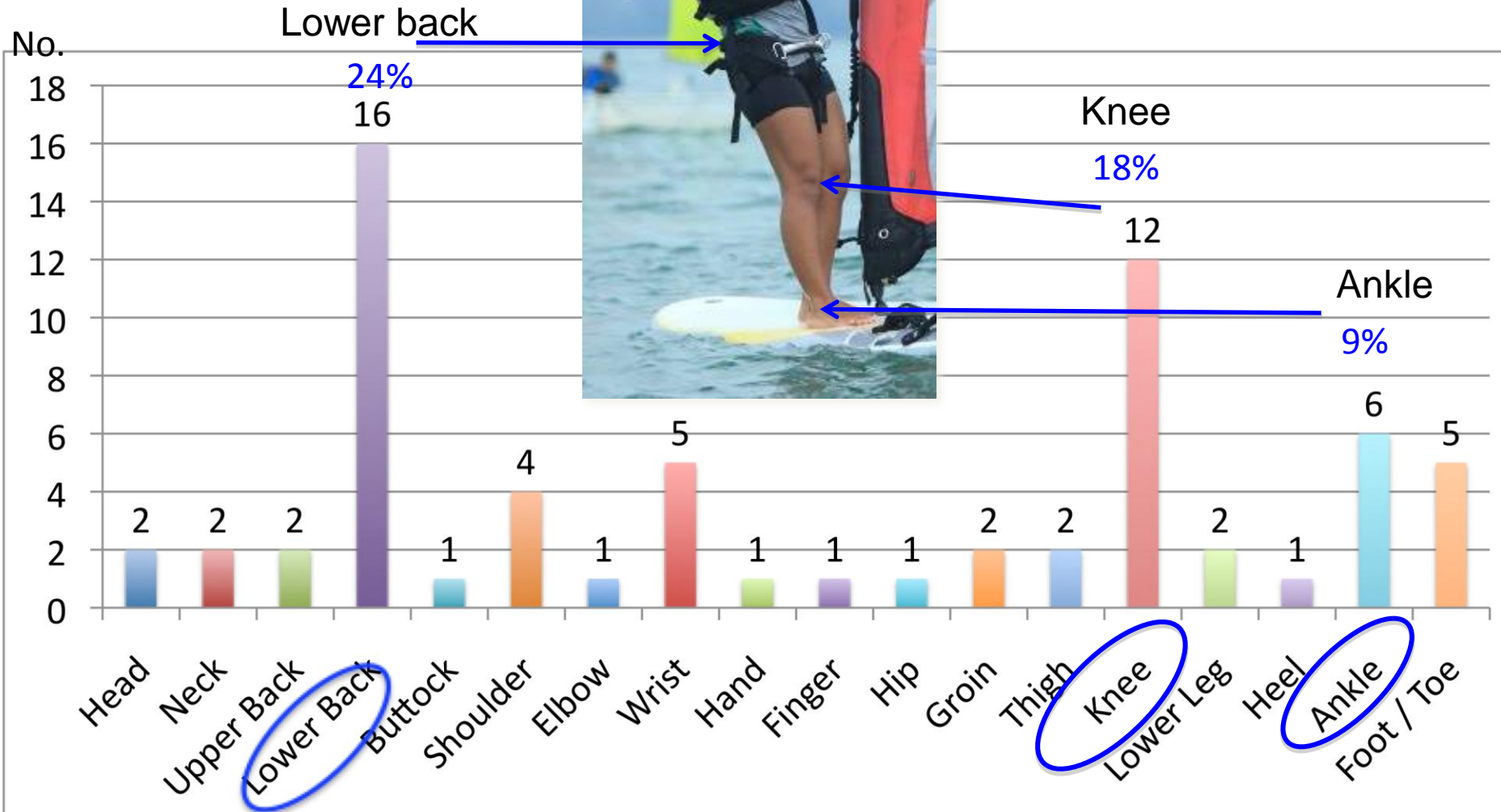
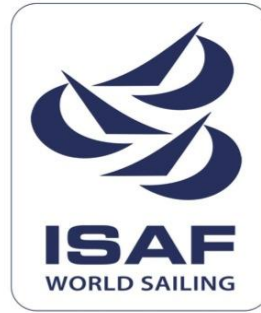
Total number = 287 sailors

Percentages are of each sailing class

Class (No.)	All (287)	Laser R (82)	420 (95)	RS:X (41)	29er (46)	SL16 (23)
Injury related to sailing	50 17%	14 17%	13 14%	7 17%	10 22%	6 26%
Injury not related to sailing						
Illness related to sailing						
Illness not related to sailing						

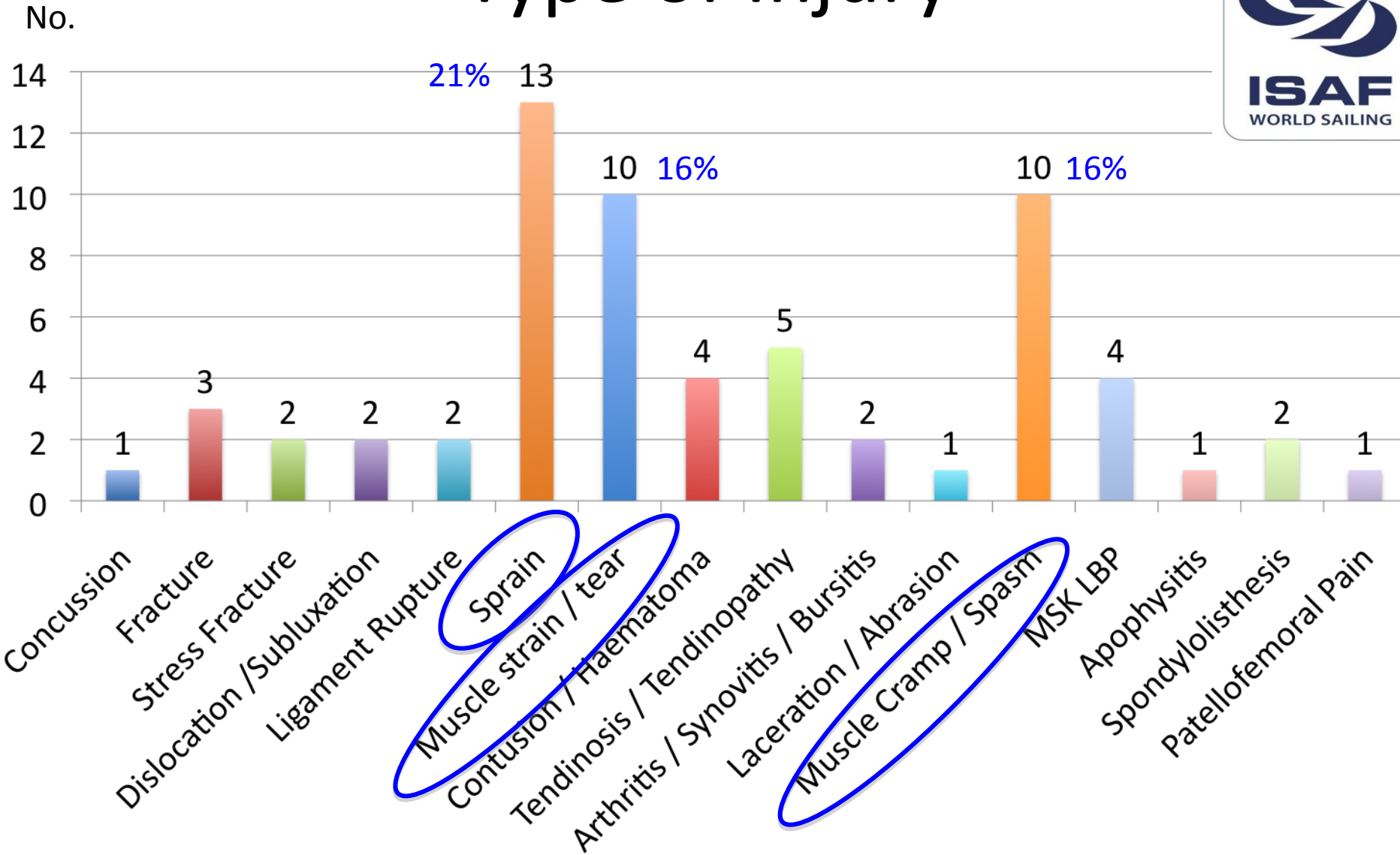


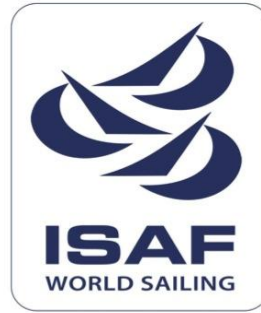
Site of Injury





Type of Injury





Injury by Site & Type

Lower back

Muscle cramp/spasm – 19%

MSK pain – 9.7%

Strain – 9.7%

Sprain – 6.5%



Knee

Strain – 9.7%

Sprain – 9.7%

Muscle cramp/spasm – 6.5%

Ankle

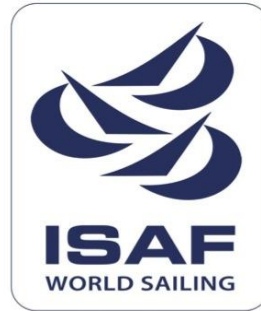
Sprain – 9.7%

Strain – 3.2%

Foot/toe

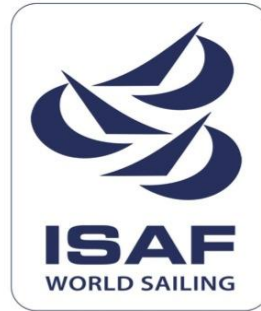
Sprain – 6.5%

Strain – 3.2%



Injury – Top 3 Causes

Cause	Number	Percentage
Overuse (Gradual)	26	43%
Contact with stagnant object	16	26%
Overuse (Sudden)	6	10%



Sailing-specific - Mechanism

Mechanism	Number	Percentage
Hit part of boat	14	47%
Hit by object	4	7%
Trip/fall	2	3%

Other answers: fall overboard, hiking, trapezing, pumping, hyperextension, gym exercise

Sailing-specific – Contributing Factor



Contributing Factor	Number	Percentage
Heavy weather	23	38%
Fatigue	16	27%
Planned jibe	3	5%
Tack	3	5%



Other answers: capsized, sail change, equipment failure, docking, ground, light winds, long session, overtraining, weak back, trimming



Part of boat associated with Injury

(30 Dinghies)



Other boat – 1 (3%)
Traveling bar – 1 (3%)
Daggerboard case – 1 (3%)
Not applicable – 16 (53%)

Boom – 1 (3%)

**Sheets/lines
- 3 (10%)**

Hiking straps – 2 (7%)

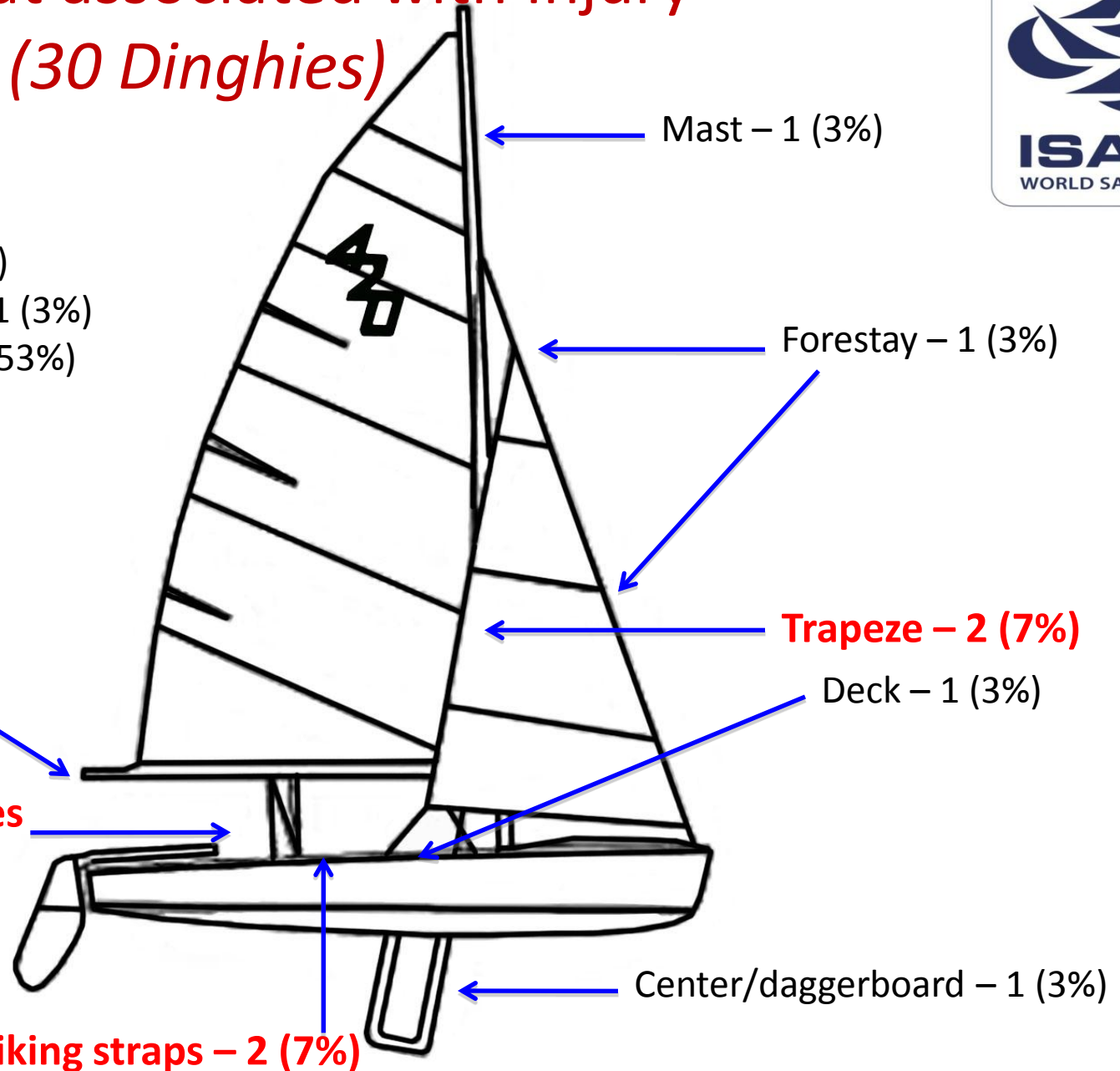
Mast – 1 (3%)

Forestay – 1 (3%)

Trapeze – 2 (7%)

Deck – 1 (3%)

Center/daggerboard – 1 (3%)



Severity of Injuries

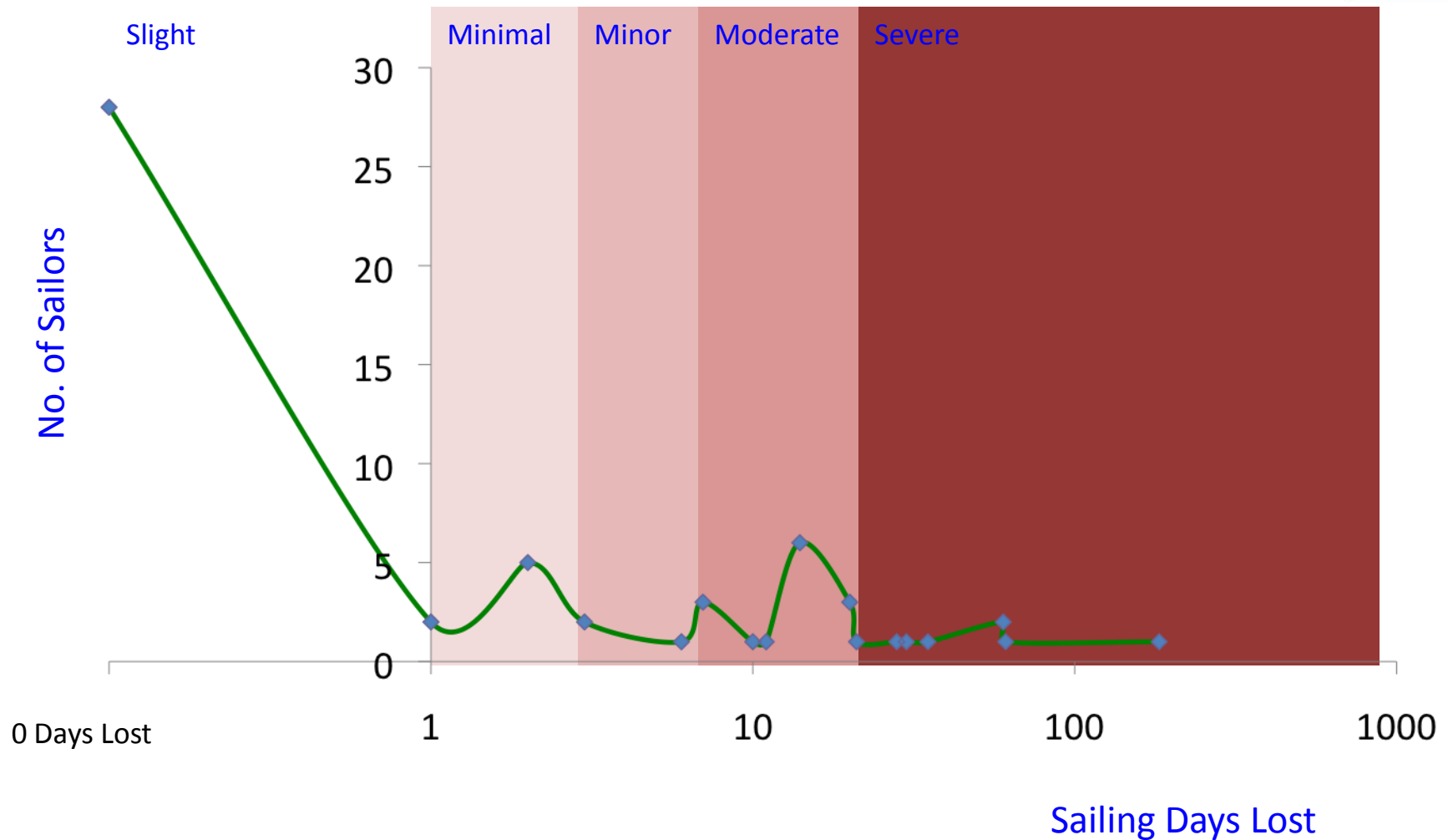


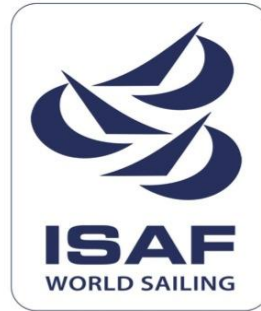
- Out of the 60 injuries reported, **32 injuries (53%) required rest from sailing**
- The rest period ranged from **1 to 183 days**
- **24** reported that they were still suffering from the injury

Severity of Injuries



Slight = 0 days; Minimal = 1-3; Minor = 4-7; Moderate = 8-21; Severe >21
(Neville & Folland 2009)





Illnesses

9 sailors (3%) reported 9 sailing-related illnesses

Variable	No.	Variable	No.
System		<i>Treatment</i>	
Dermatologic	4 (44%)	Sought med care	5 (56%)
Gastrointestinal	2 (22%)	Self-medicate	2 (22%)
Symptom (can be >1)		None	2 (22%)
Sunburn	3 (27%)	Stopped sailing	
Pain	2 (18%)	No	6
Other symptoms: Palpitations, dehydration, fever, rash, joint stiffness		Yes	3
		Duration	20 days
		Still suffering	
		Yes	2



Comparison with other sports

Sport	Sailing	Sailing	Football	Swimming	Tennis
Level	International	International	National France	National Finland	National Denmark
	Youth	Adult	Youth	Adult	Adult
Injury rate (per 1000 exposure hr)	0.42	0.53	4.8	1.1	2.3

Our study

Pilot study (2010)



Findings & Recommendations



- Compared to adult sailors, a higher proportion of youth sailors **required rest from sailing**, although they had less injury per 1000 sailing hours → impact on recovery strategies
- Further studies
 - Time-loss from sailing due to injury
 - The effect of **non-sailing related injuries** on sailing



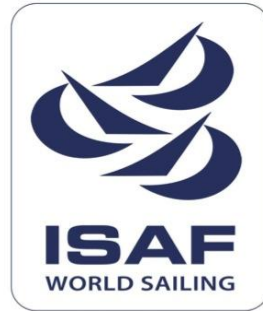


Limitations

- Mostly **answered by sailors** themselves
 - Not assisted by MNA medical officer
 - If assisted → coach or delegation I/C
 - Researchers on the ground had the chance to help answer queries, and to clarify with the sailors
- Some sailors actually train & compete in a **different class from the youth worlds' class**

At the ISAF World Championship most of the surveys were conducted **WITH** the researchers
(doctors)

Summary

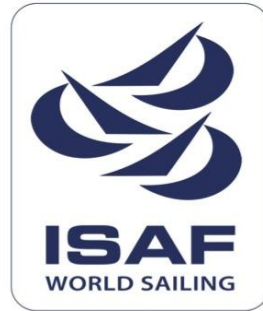


- Competitive **youth** sailors report mainly **overuse lower back and knee injuries**, similar to adult sailors.
- Compared to adult sailors, a **higher proportion of youth sailors required rest from sailing**, although they had less injury per 1000 sailing hours.
- A small number of illnesses were mainly skin conditions related to environmental causes.

We have conducted the same study with Olympic sailors during **Santander World Championships 2014**.
Results coming soon.



08 - 21
September 2014



References

- Allen JB, De Jong MR. [Sailing and sports medicine: a literature review.](#) Br J Sports Med 2006;40:587-593.
- Dyson R, Buchanan M, Hale T. [Incidence of sports injuries in elite competitive and recreational windsurfers.](#) Br J Sports Med 2006;40:346-350.
- Le Gall F, Carling C, Reilly T, Vanderwalle H, Church J, and Rochcongar P. [Incidence of Injuries in Elite French Youth Soccer Players: A 10-Season Study.](#) Am J Sports Med June 2006;34:928-938.
- Nathanson AT, Baird J, Mello M. [Sailing injury and illness: results of an on-line survey.](#) Wilderness Environ Med. 2010 Dec;21(4):291-7. Epub 2010 Jun 11.
- Neville V, Folland JP. [The epidemiology and aetiology of injuries in sailing.](#) Sports Med 2009;39:129-145.
- Ristolainen LH. [Sports injuries in Finnish elite cross-country skiers, swimmers, long-distance runners and soccer players.](#) Jyväskylä: University of Jyväskylä, 2012, 91 p. (Publications of the ORTON Research Institute, A:32)
- Tan B, Leong D, Ong A. [Injury Patterns of Competitive Sailors in Olympic Classes.](#) Med Sci Sports Exerc 2011, 43(5): S243.
- Winge S, Jorgensen U, Lassen Nielsen A. [Epidemiology of injuries in Danish championship tennis.](#) Int J Sports Med 1989. 10368–371.371.



SAILING



TOP: ANDRÉS FERNÁNDEZ Alabau, second on the right, sails behind the british Isobel Hamilton.

EL DIARIO MONTAÑÉS
Sábado, 20.09.14 - D.L. SA-564-20

SANTANDE 2014 SAILING WORLD CHAMPIONSHIPS

EDICIÓN BILINGÜE - BILINGUAL EDITION



**LA ALEGRÍA DE ESPAÑA
HAPPINESS FOR SPAIN**

Marina Alabau logra la primera medalla para el equipo español
Marina Alabau gets the first medal for the Spanish team

Muchas
gracias

Thank you