

01. A Meta-analysis of Sun Protective Measures, Cutaneous Injuries, and Cutaneous Illnesses in SailorsRyan Scheinkman¹, Samantha Verling¹, Sarah Antonevich¹, Matt Kim¹, Eran Gwillim²¹Miller School of Medicine, Miami, Florida USA²Scripps Institute, USA

Background: There are two million sail boats registered globally and 841 injuries were reported by the US Coast Guard between 2000-2011 indicating sailings popularity and inherent medical risk. Studies have looked at sun protective measures, sunburns, sailing injuries, or sailing illnesses. However, as of yet, a meta-analysis analyzing all these factors in relation to dermatological conditions has not been performed. To ascertain incidence of hat use, sunscreen use, clothing covering arms/legs, sunburns, lacerations, abrasions, blisters, folliculitis, cellulitis, or tinea among sailors to determine the epidemiology of these factors and guide clinical management, a meta-analysis of these factors was performed.

Methods: A PubMed literature review was performed using the following search terms: "medicine," "photoprotective," "blisters," "lacerations," "cellulitis," "sunscreen," "cancer," "UV," "injuries," "illness," "tinea," and "folliculitis" with "sailing and relevant articles (excluding case reports and articles with an in determinant time frame of injury/illnesses) were tabulated to find total incidence rates. **Results:** In our analysis of studies that covered sun protective measures, we found a total 2273 sailors across various skill levels had the following reported metrics: a sunburn incidence of 630/2273 (27.7%) within a year or after race, sunscreen usage ratio of 1393/1703 (81.8%), hat usage ratio of 85/487 (17.5%), and protective shirt/pants (cover arms and legs) usage ratio of 49/487 (10.1%). After combining the meta-analyses from Nathanson et al. with more studies specific to cutaneous illnesses (1231 total) and injuries (3414 total) in Sailors, we found the incidence of blisters of 22/1699 (1.3%), laceration and abrasions of (655/3414) 19.2%, cellulitis of 14/1231 (1.1%), tinea of 41/1231 (3.3%), and folliculitis of 50/1231 (4.1%). **Conclusion:** We found that although over 80% of participating sailors wore sunscreen, less than a fifth wore adequate protective clothing (hats, clothing covering arms/legs) considering the outdoor nature of the sport indicating the role clinician advising could provide to educate sailors about sun protection. Additionally, sailors reported 655 injuries that were lacerations/abrasions indicating measures should be investigated to minimize these injuries. Limitations in this meta-analysis include the time frame of included studies, case reports, and the focus on PubMed articles. However, we determined that these criteria would best enable us to quantify incidence rates.

Table:**Table 1: Meta-analysis of Sailor Sun Protective Measures, Sun Burns, & Cutaneous Injuries/Conditions*****Part I:**

Study	Sunscreen Usage (#)**	Head Covering (#)	Arms/Legs Covering (#)***	Sunburns (#)****	Total (#)
De Castro et al.	-	-	-	89	113

Gutiérrez et al.	47	42	27	43	56
Zalaudek et al.	369	43	22	296	431
Nathanson et al.	950	-	-	190	1188
Loddé et al.	27	-	-	3	28
Hayes et al.	-	-	-	9	457
Total	1393/1703	85/487	49/487	630/2273	2273

Part II:

Study	Blisters	Laceration and Abrasions	Total Injuries	Cellulitis	Tinea	Folliculitis	Total Illnesses
Nathanson et al.	-	442	1715	0	0	0	559
Neville et al.	0	11	220	0	0	0	119
Price et al.	0	36	299	14	35	50	386
Schaefer et al.	11	79	238	-	-	-	-
Soligard et al.	0	6	21	-	-	-	-
Tan et al.	0	17	341	0	0	0	29
Hayes et al.	0	30	90	0	6	0	84
Crunkhorn et al.	0	6	349	0	0	0	54
Forycka et al.	10	28	141	-	-	-	-
Total	22/1699	655/3414	3414	14/1231	41/1231	50/1231	1231

* Dashes (-) were used to represent relevant datapoints missing in study

** Sunscreen usage during competition or over year period.

*** Use of long sleeve shirt or long pants that cover arms or legs

**** Sunburns during competition or over past year

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