

Incidence of Swimming-Induced Pulmonary Edema

A Cohort Study Based on 47,600 Open-Water Swimming Distances

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e-Table 1. Participants in the swimming races of Vansbrosimningen 2016-2019

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2016	<i>2017</i>	2018	2019	Total
13380	12518	11413	10262	47573
				45913
315	339	330	361	1345
386	379	474	492	1731
361	353	436	435	1585
22	20	31	44	117
				Total
5670	5487	4847	4330	20334
402	423	395	310	1530
64	66	79	148	357
3138	3072	2940	2546	11696
1119	1008	951	863	3941
2987	2462	2201	2065	9715
6136	5976	5321	4788	22221
7244	6542	6092	5474	25352
				Mean (SD)
40.0	40.2	40.8	40.9	40.4 (0.4)
				Total
3487	3406	2933	2760	12586
3399	2963	2705	2371	11438
	13380 13006 315 386 361 22 5670 402 64 3138 1119 2987 6136 7244 40.0	13380 12518 13006 12087 315 339 386 379 361 353 22 20 5670 5487 402 423 64 66 3138 3072 1119 1008 2987 2462 6136 5976 7244 6542 40.0 40.2 3487 3406	13380 12518 11413 13006 12087 11010 315 339 330 386 379 474 361 353 436 22 20 31 5670 5487 4847 402 423 395 64 66 79 3138 3072 2940 1119 1008 951 2987 2462 2201 6136 5976 5321 7244 6542 6092 40.0 40.2 40.8 3487 3406 2933	13380 12518 11413 10262 13006 12087 11010 9810 315 339 330 361 386 379 474 492 361 353 436 435 22 20 31 44 5670 5487 4847 4330 402 423 395 310 64 66 79 148 3138 3072 2940 2546 1119 1008 951 863 2987 2462 2201 2065 6136 5976 5321 4788 7244 6542 6092 5474 40.0 40.2 40.8 40.9 3487 3406 2933 2760

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≥61 years (n)	473	475	540	535	2023
Speed					
< 20 min/km	2010	1972	2044	1675	7701
≥ 20 min/km	11312	10454	9332	8509	39607
did not finish the race	58	92	37	78	265
Temperature					Mean (SD)
Water temperature** (C°); mean (SD)	17.1 (0.2)	16.8 (0.3)	19.5 (0.5)	15.9 (0.3)	17.3 (1.5)

^{*27097} individuals participated in one year; 4764 individuals participated in two years, 1604 participated in three years, 1119 participated all four years.

^{***}Air temperature is presented as mean (SD) of hourly measurements 9 am - 6 pm in Vansbro over the three racing days. Total mean (SD) is given for the four years.

	2016	201 <i>7</i>	2018	2019	Total
Total swimming distances ≥18 yrs (n) Total individuals ≥18 yrs (n)	13380 13006	12518 12087	11413 11010	10262 9810	47573 45913
Individuals swimming >1 race in one year ≥18 yrs* (n)	315	339	330	361	1345
Total swimming distances <18 yrs (n)	386	379	474	492	1731
Total individuals <18 yrs (n)	361	353	436	435	1585
Individuals swimming >1 race in one year <18 yrs (n)	22	20	31	44	117
Distances swum for particpants ≥18 years					Total
Men 3000 m (n) 1500 m (n) 1000 m (n)	5670 402 64	5487 423 66	4847 395 79	4330 310 148	20327 1530 358

^{**}Water temperature is presented as mean (SD) of hourly measurements 9 am - 6 pm in the river of Vanån and Västerdalälven over the three racing days. Total mean (SD) is given for the four years.



Women 3000 m (n)	3138	3072	2940	2546	11696
1500 m (n)	1119	1008	951	863	3941
1000 m (n)	2987	2462	2201	2065	9715
Sex and age for patients ≥18 years					
Men	6136	5976	5321	4788	22221
Women	7244	6542	6092	5474	25352
					Mean (SD)
Age years; mean	40.0	40.2	40.8	40.9	40.4 (0.4)
Age groups					Total
18-30 years (n)	3487	3406	2933	2760	12586
31-40 years (n)	3399	2963	2705	2371	11438
41-50 years (n)	3868	3462	3098	2569	12997
51-60 years (n)	2153	2212	2137	2027	8529
≥61 år (n)	473	475	540	535	2023
Speed					
< 20 min/km	2010	1972	2044	1675	7701
≥ 20 min/km	11312	10454	9332	8509	39607
did not finish the race	58	92	37	78	265
Temperature					Mean (SD)
Water temperature** (C°); mean (SD)	17.1 (0.2)	16.8 (0.3)	19.5 (0.5)	15.9 (0.3)	17.3 (1.5)
Air temperature*** (C°); mean (SD) *27097 individuals participated in one year: 9528 individuals	19.2 (1.8)	16.9 (1.8)	21.8 (2.1)	15.5 (1.6)	18.3 (6.8)

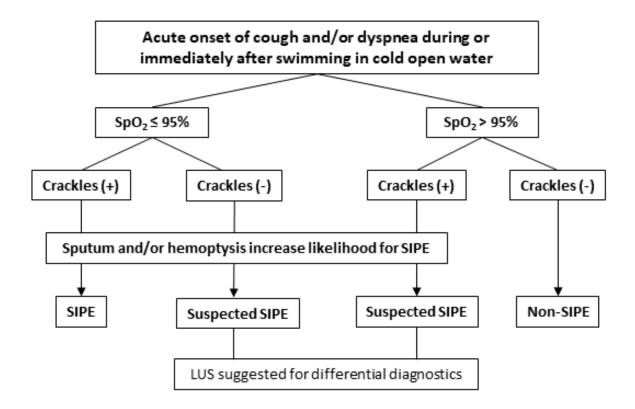
^{*27097} individuals participated in one year; 9528 individuals participated in two years, 4812 participated in three years,

Information on races swum and age/sex groups of all participants during the swimming races of Vansbrosimningen in 2016-2019. Individuals turning 18 years old the same year as participating in the swimming event were counted as adult participants (≥18 years).

⁴⁴⁷⁶ participated all four years.

**Water temperature is presented as mean (SD) of hourly measurements 9 am - 6 pm in the river of Vanån and Västerdalälven over the three racing days. Total mean (SD) is given for the four years.

^{***}Air temperature is presented as mean (SD) of hourly measurements 9 am - 6 pm in Vansbro over the three racing days. Total mean (SD) is given for the four years.



Differential diagnostics

- Chest pain: consider acute coronary syndrome (ACS)
- Consider other potential causes of respiratory symptoms based on clinical history e.g. asthma, respiratory infections, heart failure.
 These conditions can coexist with SIPE.
- Water aspiration is not an exclusion criterion for SIPE

e-Figure 1: Suggested algorithm for SIPE diagnosis in patients with acute onset of cough and/or dyspnea during swimming in open water. The algorithm is based on peripheral oxygen saturation (SpO2) and crackles on lung auscultation, with excessive sputum and/or hemoptysis supporting diagnosis. Patients with findings of crackles and SpO2 \leq 95% could be diagnosed with SIPE based on clinical evaluation. For patients with findings of crackles or SpO2 \leq 95%, lung ultrasound (LUS) is suggested for differential diagnosis if available. Previously published by Hårdstedt et al, CHEST 2020.