

Supplemental file 1

Mäki-Heikkilä et al. High training volume is associated with increased prevalence of nonallergic asthma in competitive cross-country skiers

Sensitivity analysis

Definition of allergic asthma

Asthma was defined as allergic if the subject reported a doctor-diagnosed allergy and asthma-related symptoms when exposed to furry animals or pollens. Otherwise, asthma was defined as nonallergic. As a sensitivity analysis, two additional different definitions of allergic asthma (doctor-diagnosed asthma and doctor-diagnosed allergy to pollens or animals or doctor-diagnosed asthma and asthmatic symptoms when exposed to furry animals or pollens) were used and are presented below.

Doctor-diagnosed asthma and doctor-diagnosed allergy to pollens or animals

Table 4A. Risk factors for allergic and non-allergic asthma in cross-country skiers, represented as odds ratios (OR) with 95 % confidence intervals

	Non-allergic asthma n = 43			Allergic asthma n = 48		
	OR	95% CI	p	OR	95% CI	p
Age	1.04	1.00–1.09	0.078	1.07	1.03–1.12	<0.001
100 hours more training per year	1.28	1.08–1.51	0.004	1.25	1.07–1.45	0.005
Parents or siblings with asthma	2.18	1.14–4.15	0.018	2.22	1.23–3.99	0.008
Female sex	0.64	0.32–1.25	0.189	1.04	0.58–1.86	0.908
Allergic rhinitis	0.42	0.21–0.84	0.014	***		
50 FIS-points less	1.02	0.86–1.22	0.801	1.18	0.98–1.42	0.087

*** All skiers with allergic asthma by this definition had allergic rhinitis.

Table 5A. Multivariable analysis for the risk on current asthma in cross-country skiers, represented as odds ratios (OR) with 95 % confidence intervals.

	Current asthma n = 91			Non-allergic asthma n = 43			Allergic asthma n = 48		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Age	1.06	1.01–1.11	0.011	1.03	0.97–1.09	0.359	1.10	1.03–1.17	0.003
100 hours more training per year	1.29	1.11–1.50	0.001	1.26	1.05–1.53	0.016	1.22	0.99–1.50	0.062
Parents or siblings with asthma	2.41	1.42–4.08	0.001	2.59	1.30–5.16	0.007	2.46	1.19–5.05	0.015
Allergic rhinitis	2.14	1.27–3.60	0.004	0.37	0.18–0.76	0.007	***		

*** All skiers with allergic asthma by this definition had allergic rhinitis.

Doctor-diagnosed asthma and asthmatic symptoms when exposed to furry animals or pollens**Table 4B. Risk factors for allergic and non-allergic asthma in cross-country skiers, represented as odds ratios (OR) with 95 % confidence intervals**

	Non-allergic asthma n = 26			Allergic asthma n = 65		
	OR	95% CI	p	OR	95% CI	p
Age	1.05	1.00–1.11	0.062	1.06	1.02–1.11	0.003
100 hours more training per year	1.37	1.13–1.68	0.002	1.24	1.07–1.44	0.003
Parents or siblings with asthma	0.68	0.29–1.60	0.372	3.11	1.79–5.44	<0.001
Female sex	1.43	0.64–3.17	0.385	0.72	0.41–1.25	0.241
Allergic rhinitis	0.86	0.38–1.93	0.717	2.81	1.60–4.94	<0.001
50 FIS-points less	1.54	1.11–2.12	0.009	1.05	0.90–1.22	0.556

Table 5B. Multivariable analysis for the risk on current asthma in cross-country skiers, represented as odds ratios (OR) with 95 % confidence intervals.

	Current asthma n = 91			Non-allergic asthma n = 26			Allergic asthma n = 65		
	OR	95% CI	p	OR	95% CI	p	OR	95% CI	p
Age	1.06	1.01–1.11	0.011	1.02	0.95–1.09	0.588	1.06	1.01–1.11	0.016
100 hours more training per year	1.29	1.11–1.50	0.001	1.34	1.07–1.67	0.009	1.18	1.00–1.39	0.054
Parents or siblings with asthma	2.41	1.42–4.08	0.001	0.63	0.25–1.59	0.329	3.59	1.98–6.51	<0.001
Allergic rhinitis	2.14	1.27–3.60	0.004	0.92	0.31–2.72	0.873	2.71	1.49–4.91	0.001

