

**Supplementary**

**Table S1** Source and sample size of GWAS summary statistics

Phenotype	Data source	Sample size	Reference genome
ED	<a href="https://storage.googleapis.com/finngen-public-data-r5/summary_stats/finngen_R5_ERECTILE_DYSFUNCTION.gz">https://storage.googleapis.com/finngen-public-data-r5/summary_stats/finngen_R5_ERECTILE_DYSFUNCTION.gz</a>	1, 154 cases and 94, 024 controls	GRCh38
FEV1 FVC PEF FEV/FEC ratio	New genetic signals for lung function highlight pathways and chronic obstructive pulmonary disease associations across multiple ancestries. Nature Genetics, 2019	321, 047	GRCh37

GWAS, Genome-Wide Association Study; ED, erectile dysfunction; FEV1, forced expiratory volume in one second; FVC, forced vital capacity; PEF, peak expiratory flow.

**Table S2** MR-PRESSO testing causal effect between ED and lung function

Exposure	Outcome	MR analysis	Causal estimate	Sd	T-stat	P value	GlobalTest.RSSobs	GlobalTest.Pvalue	Distortion.Test. Distortion. Coefficient.BETA.x	Distortion.Test. Pvalue
ED	FEV1	Raw	-0.009033138	0.002695	-3.35128	0.005766	11.95754142	0.653846154		
		Outlier-corrected	NA	NA	NA	NA	11.95754142	0.653846154		
ED	FVC	Raw	-0.006135376	0.002712	-2.26207	0.04305	11.00868415	0.661538462		
		Outlier-corrected	NA	NA	NA	NA	11.00868415	0.661538462		
ED	PEF	Raw	-0.005430866	0.003154	-1.72176	0.110765	15.48272702	0.423076923		
		Outlier-corrected	NA	NA	NA	NA	15.48272702	0.423076923		
ED	RATIO	Raw	-0.010250211	0.003035	-3.37712	0.005497	13.82341475	0.5		
		Outlier-corrected	NA	NA	NA	NA	13.82341475	0.5		
FEV1	ED	Raw	-0.057446766	0.162572	-0.35336	0.724437	104.1618657	0.866942149		
		Outlier-corrected	NA	NA	NA	NA	104.1618657	0.866942149		
FVC	ED	Raw	0.037394273	0.17841	0.209597	0.834413	76.12180863	0.969		
		Outlier-corrected	NA	NA	NA	NA	76.12180863	0.969		
PEF	ED	Raw	0.115293651	0.14708	0.783884	0.434627	113.0469236	0.759349593		
		Outlier-corrected	NA	NA	NA	NA	113.0469236	0.759349593		
RATIO	ED	Raw	-0.002106226	0.119969	-0.01756	0.986009	263.4708549	0.015348837	-117.9000196	0.048372093
		Outlier-corrected	0.011766612	0.114941	0.102371	0.918559	263.4708549	0.015348837	-117.9000196	0.048372093

FEV1, forced expiratory volume in one second; FVC, forced vital capacity; PEF, peak expiratory flow; ED, erectile dysfunction; MR, mendelian randomization; Sd, standard deviation; NA, not applicable.

**Table S3** Causal relationships of ED on lung function estimated by multivariable MR

Model	Exposure	Outcome	OR	OR_CIL	OR_CIU	ORCI95	P.value
Fixed-effect	ED	FVC	1.002	0.998	1.006	0.998, 1.006	0.326286482
Fixed-effect	education		1.141	1.101	1.182	1.101, 1.182	3.08E-13
Fixed-effect	residence		1.006	0.962	1.052	0.962, 1.052	0.796630528
Fixed-effect	Sinusitis		0.126	0.025	0.629	0.025, 0.629	0.011522382
Fixed-effect	Asthma		1.026	1.017	1.034	1.017, 1.034	7.55E-10
Fixed-effect	COPD		4.229	1.843	9.706	1.843, 9.706	0.000668213
Fixed-effect	ED	FEV1	0.999	0.995	1.003	0.995, 1.003	0.693851397
Fixed-effect	education		1.136	1.097	1.176	1.097, 1.176	1.26E-12
Fixed-effect	residence		1.022	0.978	1.068	0.978, 1.068	0.332207217
Fixed-effect	Sinusitis		1.872	0.38	9.221	0.38, 9.221	0.440854773
Fixed-effect	Asthma		1.078	1.069	1.087	1.069, 1.087	4.01E-75
Fixed-effect	COPD		5.695	2.495	13.003	2.495, 13.003	3.62E-05
Fixed-effect	ED	RATIO	0.992	0.988	0.996	0.988, 0.996	0.000214567
Fixed-effect	education		1.011	0.975	1.048	0.975, 1.048	0.562192807
Fixed-effect	residence		1.038	0.992	1.086	0.992, 1.086	0.110704618
Fixed-effect	Sinusitis		248.036	48.332	1, 272.92	48.332, 1, 272.916	3.91E-11
Fixed-effect	Asthma		1.118	1.108	1.127	1.108, 1.127	1.67E-154
Fixed-effect	COPD		2.374	1.018	5.538	1.018, 5.538	0.045339745
Fixed-effect	ED	PEF	0.998	0.994	1.002	0.994, 1.002	0.368911454
Fixed-effect	education		1.059	1.022	1.098	1.022, 1.098	0.001461801
Fixed-effect	residence		1.047	1.001	1.095	1.001, 1.095	0.043596798
Fixed-effect	Sinusitis		7.987	1.594	40.008	1.594, 40.008	0.011488096
Fixed-effect	Asthma		1.055	1.046	1.064	1.046, 1.064	2.71E-38
Fixed-effect	COPD		3.728	1.619	8.585	1.619, 8.585	0.001990095

FVC, forced vital capacity; FEV1, forced expiratory volume in one second; PEF, peak expiratory flow; ED, erectile dysfunction; COPD, chronic obstructive pulmonary disease; MR, Mendelian randomization; OR, odds ratio; OR\_CIL, odds ratio\_confidence interval lower bound; OR\_CIU, odds ratio\_confidence interval upper bound; CI, confidence interval.

**Table S4** Results of the MR analyses testing the causal association of lung function on ED

Exposure	Outcome	Instrumental SNPs	Method	Estimate	CIL	CIU	OR	OR_CIL	OR_CIU	ORCI95	Pvalue
FEV1	ED	414	Weighted median	0.014011945	-0.33783	0.36586	1.014110573	0.71332	1.44175	0.713, 1.442	0.93778
			IVW	0.088413648	-0.15194	0.32877	1.092439914	0.85904	1.38925	0.859, 1.389	0.47093
			MR-Egger	-0.10472809	-0.9287	0.71924	0.900569361	0.39507	2.05288	0.395, 2.053	0.80327
			(intercept)	0.004280993	-0.01319	0.02175	0.004280993	-0.01319	0.02175	-0.013, 0.022	0.63098
			MBE	-0.007481	-0.94489	0.92993	0.992546914	0.38872	2.53434	0.389, 2.534	0.98752
			Contamination mixture	-0.12481928	-0.55482	0.21518	0.882656404	0.57418	1.24009	0.574, 1.24	0.42861
			RAPS	0.090435236	-0.14493	0.3258	1.094650612	0.86508	1.38514	0.865, 1.385	0.451
FVC		343	Weighted median	-0.05615427	-0.44174	0.32943	0.945393276	0.64292	1.39018	0.643, 1.39	0.77531
			IVW	-0.07404828	-0.33582	0.18772	0.928626857	0.71475	1.2065	0.715, 1.206	0.57929
			MR-Egger	0.51449551	-0.51255	1.54154	1.672794381	0.59897	4.67178	0.599, 4.672	0.32618
			(intercept)	-1.23E-02	-0.03315	0.00848	-1.23E-02	-0.03315	0.00848	-0.033, 0.008	0.24543
			MBE	-0.21048227	-1.39788	0.97691	0.810193417	0.24712	2.65624	0.247, 2.656	0.72827
			Contamination mixture	-0.24856459	-0.72856	0.20144	0.779919482	0.4826	1.22316	0.483, 1.223	0.2462
			RAPS	-0.07556981	-0.34355	0.19241	0.927215002	0.70925	1.21217	0.709, 1.212	0.58
PEF		396	Weighted median	-0.02077642	-0.35466	0.31311	0.979437927	0.70141	1.36767	0.701, 1.368	0.90293
			IVW	0.056116837	-0.15523	0.26746	1.057721257	0.85622	1.30664	0.856, 1.307	0.60277
			MR-Egger	0.339157401	-0.25092	0.92924	1.403764282	0.77808	2.53258	0.778, 2.533	0.25995
			(intercept)	-0.00737917	-0.02174	0.00698	-0.00737917	-0.02174	0.00698	-0.022, 0.007	0.31397
			MBE	-0.27971754	-1.05032	0.49088	0.755997253	0.34983	1.63376	0.35, 1.634	0.47681
			Contamination mixture	0.067383863	-0.31262	0.40738	1.06970602	0.73153	1.50288	0.732, 1.503	0.61215
			RAPS	0.057086829	-0.15787	0.27204	1.058747737	0.85396	1.31264	0.854, 1.313	0.603
RATIO		684	Weighted median	0.037101111	-0.21573	0.28993	1.037797948	0.80595	1.33633	0.806, 1.336	0.77364
			IVW	0.094722292	-0.06583	0.25527	1.099353513	0.93629	1.29081	0.936, 1.291	0.24754
			MR-Egger	-0.1163032	-0.49297	0.26037	0.890205274	0.61081	1.29741	0.611, 1.297	0.54507
			(intercept)	0.006122849	-0.00376	0.01601	0.006122849	-0.00376	0.01601	-0.004, 0.016	0.22485
			MBE	0.006769916	-0.44182	0.45536	1.006792884	0.64287	1.57673	0.643, 1.577	0.9764
			Contamination mixture	0.21705036	-0.05295	0.43705	1.242406668	0.94843	1.54813	0.948, 1.548	0.11632
			RAPS	0.096439249	-0.05632	0.24919	1.101242677	0.94524	1.28299	0.945, 1.283	0.216

IVW, inverse-variance weighted method; MBE, mode-based estimate; MR, Mendelian randomization; RAPS, Robust Adjusted Profile Score; FEV1, forced expiratory volume in one second; FVC, forced vital capacity; PEF, peak expiratory flow; ED, erectile dysfunction; OR, odds ratio; OR\_CIL, odds ratio\_confidence interval lower bound; OR\_CIU, odds ratio\_confidence interval upper bound; CI, confidence interval.