

Supplementary table 1. Relationship between submarine service year and multi-morbidity and its burden
: A subgroup analysis in submariners

	Years of submarine service			P _{trend} [¶]
	1-4 years (N=158)	5-9 years (N=107)	≥10 years (N=145)	
OR (95% CI)* for the association with multi-morbidity [†]				
Model 1	1	0.78(0.38,1.61)	1.23(0.52,2.91)	0.286
Model 2	1	0.60(0.28,1.27)	0.69(0.26,1.82)	0.865
OR (95% CI)* for the association with the high disease burden [‡] estimated by Cumulative Illness Rating Scale				
Model 1	1	1.12(0.56,2.21)	1.21(0.52,2.80)	0.833
Model 2	1	0.89(0.44,1.83)	0.70(0.28,1.78)	0.272

OR (95% CI): odds ratio (95% confidence interval)

* estimated by multiple logistic regression analysis. In model 1, age was adjusted. In model 2, age, alcohol intake, smoking status (not included in the analysis for the disease burden), and job-ranking were adjusted.

† defined as two or more chronic health problems in a person

‡ defined as Cumulative Illness Rating Scale score ≥ 3 ¶ assessed by linear regression analysis, for which year of service was put in the model as a continuous variable.

Supplementary Table 2. Distribution of symptoms in each organ domain of Cumulative Illness Rating Scale

Organ domains	All Subjects			After excluding smokers and obese subjects		
	Non-submariner	Submariner	P-value*	Non-submariner	Submariner	P-value*
	N(%)	N(%)		N(%)	N(%)	
Overall	84(46.7)	284(69.3)	<0.001	13(17.6)	38(35.8)	0.007
Cardiac	2(1.1)	4(1.0)	0.880	0(0)	1(0.9)	1.000
Vascular	21(11.7)	125(30.5)	<0.001	6(8.1)	23(21.1)	0.023
Respiratory	74(41.1)	239(58.3)	<0.001	6(8.1)	16(14.7)	0.180
Eyes ear, nose, and throat	53(29.4)	85(20.7)	0.021	23(32.4)	21(19.3)	0.042
Upper gastrointestinal tract	5(2.8)	8(2.0)	0.529	3(4.1)	1(0.9)	0.182
Lower gastrointestinal tract	9(5.0)	12(2.9)	0.211	6(8.1)	5(4.6)	0.356
Musculoskeletal or tegumental	34(18.9)	96(23.4)	0.222	15(20.3)	22(20.2)	0.989
Neurological	5(2.8)	11(2.7)	0.948	1(1.4)	3(2.8)	0.648
Endocrine, metabolic, breast	63(35.0)	211(51.5)	<0.001	2(2.7)	11(10.1)	0.078
Other organ	4(2.2)	19(4.6)	0.163	3(4.1)	2(1.8)	0.395

N: number, SD: standard deviation

* P-value was obtained by chi-square test or Fisher's exact test

