Journal: Infection

Supplementary material to

Definition of the Post-COVID syndrome using a symptom-based Post-COVID score in a prospective, multi-center, cross-sectoral cohort of the German National Pandemic Cohort Network (NAPKON)

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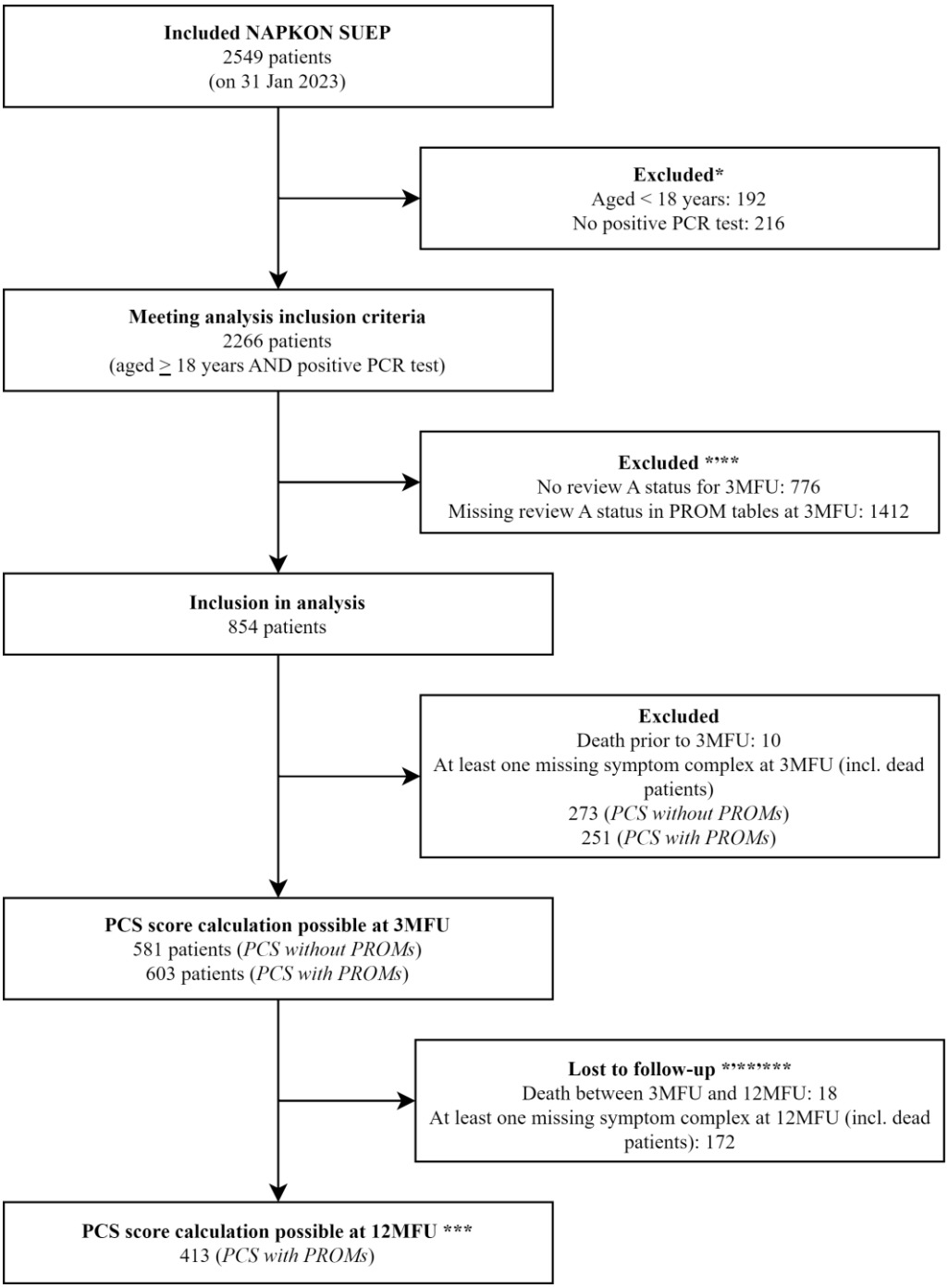

Figure S1: Study Flow Chart.

* at lest one criteria was not present; ** review A status means that a monitoring has been performed at the study sites, which recruited the patient and entered study data; this is a standard data export criterion for NAPKON data; *** PCS at 12MFU was only calculated for patients with PCS including PROMs at 3MFU

File S1: STROBE Statement—Checklist of items that should be included in reports of cohort studies.

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3
Objectives	3	State specific objectives, including any prespecified hypotheses	3
Methods			
Study design	4	Present key elements of study design early in the paper	4
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	4
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	4
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	/
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	4-5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4-5
Bias	9	Describe any efforts to address potential sources of bias	9
Study size	10	Explain how the study size was arrived at	4-5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	5
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	5
		(*b*) Describe any methods used to examine subgroups and interactions	5
		(*c*) Explain how missing data were addressed	5
		(*d*) If applicable, explain how loss to follow-up was addressed	4
		(*e*) Describe any sensitivity analyses	6

File S1: continued

Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5
		(b) Give reasons for non-participation at each stage	5
		(c) Consider use of a flow diagram	/
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5
		(b) Indicate number of participants with missing data for each variable of interest	14-16
		(c) Summarise follow-up time (eg, average and total amount)	/
Outcome data	15*	Report numbers of outcome events or summary measures over time	5-6
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	14-15
		(*b*) Report category boundaries when continuous variables were categorized	4-5
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6
Discussion			
Key results	18	Summarise key results with reference to study objectives	7
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	9
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	7-9
Generalisability	21	Discuss the generalisability (external validity) of the study results	9
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	11

*Give information separately for exposed and unexposed groups.

Table S1: Variable selection for PCS score mapping.

No.	Complex PCS	Description PCS	Symptom	Query	Form	Variables
1	**Chemosensory deficits**	Smelling disturbance, impaired sense of taste	Taste disorders	Symptoms	fv3_3	gec_sy_ne_taste
			Odor disorders	Symptoms	fv3_3	gec_sy_ne_smell
2	**Fatigue**	Fatigue	Fatigue ("Fatigue")	Symptoms	esyoth	sy_oth_icd11name
			Chronic Fatigue Syndrome *(Persistent or frequent fatigue)*	PROM	prom	cfs
			Chalder Fatigue Scale	PROM	promext	cfs_seid_1 to cfs_seid_13
			PROMIS 29 – Fatigue	PROM	promext	pro_29_hi7, pro_29_an3, pro_29_fatexp41, pro_29_fatexp40
3	**Exercise intolerance**	Shortness of breath, reduced exercise capacity	Dyspnea	Symptoms	fv3_3	gec_sy_pd_dysp
			Dyspnea (screening question)	PROM	prom	dysp
			PROMIS Dyspnea	PROM	promext	pro_dysfl001 to pro_dysfl10
			Fatigue – diagnostic criteria *(Feeling sick after physical exertion)*	PROM	promext	cfs_seid_crit2
4	**Joint or muscle pain**	Muscle pain, joint pain	Joint pain	Symptoms	fv3_1	sy_arthr
			Muscle pain	Symptoms	fv3_1	sy_myalg
5	**Ear-nose-throat ailments**	Hoarseness, sore throat, running nose	Runny nose	Symptoms	fv3_2	sy_pd_rhin
			Nasal congestion	Symptoms	fv3_2	sy_pd_stuf
			Sneezing	Symptoms	fv3_2	sy_pd_sneez
			Sore throat	Symptoms	fv3_2	sy_pd_sore
6	**Coughing, wheezing**	Coughing, wheezing	Coughing	Symptoms	fv3_2	gec_sy_pd_cough
			Wheezing	Symptoms	fv3_2	sy_pd_wheez
7	**Chest pain**	Chest pain	Chest pain	Symptoms	fv3_1	sy_breastp
			Pain, location: chest	PROM	prom	pain_loc_chest
8	**Gastrointestinal ailments**	Stomach pain, diarrhea, vomiting, nausea	Stomach ache	Symptoms	fv3_2	gec_sy_gi_abdp
			Pain, location: abdomen	PROM	prom	pain_loc_abd
			Diarrhea	Symptoms	fv3_2	gec_sy_gi_diar
			Vomiting	Symptoms	fv3_2	gec_sy_gi_vom
			Nausea	Symptoms	fv3_2	gec_sy_gi_naus

Table S1: continued

No.	Complex PCS	Description PCS	Symptom	Query	Form	Variables
9	**Neurological ailments**	Confusion, vertigo, headache, motor deficits, sensory deficits, numbness, tremor, deficits of concentration, cognition or speech	Orientation disorder or confusion	Symptoms	fv3_3	gec_sy_ne_conf
			Cognitive impairments	Symptoms	Fv3_3	sy_ne_cogn
			Fatigue - diagnostic criteria (*Orthostatic intolerance - dizziness when standing up/walking*)	PROM	promext	cfs_seid_crit5
			Vertigo	Symptoms	fv3_1	sy_dizzi
			Headache	Symptoms	fv3_1	gec_sy_heada
			Pain, location: head	PROM	prom	pain_loc_head
			In the same area of the body: numbness (in case of pain)	PROM	promext	pain_dn2_6
			Fatigue - diagnostic criteria (*cognitive (concentration or word-finding) disorders*)	PROM	promext	cfs_seid_crit4
			PROMIS cognitive function	PROM	prom	pro_pc2r pro_pc35r pro_pc36r pro_pc42r
10	**Dermatological ailments**	Hair loss, rash, itchiness	Change in the skin or mucous membranes	Symptoms	fv3_1	sy_skin
11	**Infection signs**	Chills, fever, general sickness/flulike symptoms	Feeling cold (“Chills”)	Symptoms	esyoth	sy_oth_icd11name
			Fever	Symptoms	fv3_1	gec_sy_fever
			Anorexia	Symptoms	fv3_1	sy_appet
			Lymph node swelling	Symptoms	fv3_1	sy_lymph
			General sickness/flulike symptoms („Feeling ill“)	Symptoms	esyoth	sy_oth_icd11name
12	**Sleep disturbance**	Insomnia, unrestful sleep	Sleep disturbance („*Sleep disturbance, not elsewhere classified*“)	Symptoms	esyoth	sy_oth_icd11name
			PROMIS-29: Sleep disturbance	PROM	promext	pro_29_sleep109, pro_29_sleep116, pro_29_sleep20, pro_29_sleep44,

The complete data dictionary is available in German **here**.

Table S2: Post hoc test results for sex (male vs. female), smoker (yes or former vs. no), hospitalization (yes vs. no), administration to ICU (never vs. at least once), Vaccination against SARS-CoV-2 prior to study inclusion (yes vs. no).

	p value					
	PCC severity					
	None vs. mild	None vs. moderate	None vs. severe	Mild vs. moderate	Mild vs. severe	Moderate vs. severe
Age	.625	.718	.293	.373	.175	.430
Sex	.192	.078	**<.001***	.972	**.039***	**.032***
Smoker	.655	.570	.760	>.999	>.999	>.999
Hospitalization	.738	**.004***	.164	.051	.314	>.999
Admission to ICU	.456	.753	.514	.697	.208	.353
At least one vaccination against SARS-CoV-2 prior to study inclusion	.132	.366	.156	.496	.816	.403
All vaccinations against SARS-CoV-2 prior to study inclusion	**.019***	**.013***	.929	.825	.110	.131
PROMIS-29 Ability to participate in social roles and activities	**.004***	**<.001***	**<.001***	**<.001***	**<.001***	.054
PROMIS-29 Physical Function	**<.001***	**<.001***	**<.001***	**.001***	**.001***	.356

Table S3: Post hoc test results for comparison between PCC severity groups of age, BMI, number of comorbidities, PROMIS-29 Ability to participate in social roles and activities, PROMIS-29 physical function, number of vaccinations against SARS-CoV-2, EQ-5D-5L index and VAS at 3 and 12MFU, adjusted for multiple testing using Bonferroni correction.

	p value	power
Difference in mean age between PCC groups		
None vs. mild	.731	
None vs. moderate	.281	
None vs. severe	>.999	
Mild vs. moderate	>.999	
Mild vs. severe	>.999	
Moderate vs. severe	>.999	
Difference in mean BMI between PCC groups		
None vs. mild	>.999	
None vs. moderate	.442	
None vs. severe	.448	
Mild vs. moderate	.397	
Mild vs. severe	.361	
Moderate vs. severe	>.999	
Difference in mean number of comorbidities between PCC groups		
None vs. mild	.095	
None vs. moderate	**.045***	.128
None vs. severe	.263	
Mild vs. moderate	>.999	
Mild vs. severe	>.999	
Moderate vs. severe	>.999	
Difference in mean of PROMIS-29 Ability to participate in social roles and activities sum score		
None vs. mild	**<.001***	-.312
None vs. moderate	**<.001***	-.673
None vs. severe	**<.001***	-.737
Mild vs. moderate	**<.001***	-.350
Mild vs. severe	**<.001***	-.494
Moderate vs. severe	.431	
Difference in mean of PROMIS-29 Physical function sum score		
None vs. mild	**<.001***	-.332
None vs. moderate	**<.001***	-.616
None vs. severe	**<.001***	-.696
Mild vs. moderate	**<.001***	-.275
Mild vs. severe	**<.001***	-.437
Moderate vs. severe	.235	
Difference in mean of number of vaccinations against SARS-CoV-2		
None vs. mild	>.999	
None vs. moderate	>.999	
None vs. severe	>.999	
Mild vs. moderate	>.999	
Mild vs. severe	>.999	
Moderate vs. severe	>.999	
Difference in mean of EQ-5D-5L Index at 3MFU		
None vs. mild	**.006***	-.202
None vs. moderate	**<.001***	-.542
None vs. severe	**<.001***	-.597
Mild vs. moderate	**<.001***	-.323
Mild vs. severe	**<.001***	-.478
Moderate vs. severe	**.014***	-.146

Table S3: continued

	p value	power
Difference in mean of EQ-5D-5L VAS at 3MFU		
None vs. mild	**<.001***	-.280
None vs. moderate	**<.001***	-.557
None vs. severe	**<.001***	-.578
Mild vs. moderate	**<.001***	-.260
Mild vs. severe	**<.001***	-.385
Moderate vs. severe	.435	
Difference in mean of EQ-5D-5L Index at 12MFU		
None vs. mild	**<.001***	-.343
None vs. moderate	**<.001***	-.721
None vs. severe	**<.001***	-.719
Mild vs. moderate	**<.001***	-.358
Mild vs. severe	**<.001***	-.503
Moderate vs. severe	.327	
Difference in mean of EQ-5D-5L VAS at 12MFU		
None vs. mild	**.006***	-.233
None vs. moderate	**<.001***	-.619
None vs. severe	**<.001***	-.612
Mild vs. moderate	**<.001***	-.367
Mild vs. severe	**<.001***	-.484
Moderate vs. severe	.668	

Table S4: Post hoc test results for clinical severity (mild, moderate, severe) during acute infection.

	p value		
	Clinical severity during acute infection		
PCC severity	Mild vs. moderate	Mild vs. severe	Moderate vs severe
None vs. mild	.995	.245	.198
None vs. moderate	**.007***	**.014***	.613
None vs. severe	.147	.505	.806
Mild vs. moderate	**.036***	.402	.439
Mild vs. severe	.214	>.999	.255
Moderate vs. severe	>.999	.763	.530

Table S5: Post hoc test results for number of vaccinations against SARS-CoV-2 (0, 1, 2, 3 or more)

	p value [a]					
	Number of vaccinations against SARS-CoV-2 [b]					
PCC severity	0 vs. 1	0 vs. 2	0 vs. 3+	1 vs. 2	1 vs. 3+	2 vs. 3+
None vs. mild	.438	.991	.762	.552	.739	.906
None vs. moderate	.353	.064	.154	.635	.894	.806
None vs. severe	.606	.181	.325	.749	.984	.941
Mild vs. moderate	>.999	.192	.489	.245	.548	.654
Mild vs. severe	.267	.187	.231	>.999	>.999	>.999
Moderate vs. severe	.228	**.011***	.050	.503	.852	.782

Table S6: Group comparisons between PCC severity groups none, mild, moderate and severe stratified by sex and age groups.

	Female																	
	< 65 years									**>= 65 years**								
	PCC Severity									**PCC Severity**								
	None		**Mild**		**Moderate**		**Severe**		**p value [a]**	**None**		**Mild**		**Moderate**		**Severe**		**p value [a]**
n (%)	52	(28.7)	35	(19.3)	71	(39.2)	23	(12.7)		18	(32.1)	13	(23.2)	20	(35.7)	5	(9.0)	
BMI [kg/m²], *mean (SD)* [b,c]	26.7	(6.9)	26.2	(6.4)	29.3	(8.0)	29.9	(6.6)	.052	25.5	(6.3)	25.7	(7.1)	26.6	(4.4)	22.3	(3.1)	.377
Smoker, *n (%)* [b]																		
Never	39	(78.0)	21	(60.0)	46	(65.7)	15	(65.2)	.311	8	(47.1)	10	(76.9)	13	(65.0)	2	(40.0)	.309
Yes or former	11	(22.0)	14	(40.0)	24	(34.3)	8	(34.8)		9	(52.9)	3	(23.1)	7	(35.0)	3	(60.0)	
Clinical Severity (following WHO criteria) [b, f]																		
Mild disease, *n (%)*	20	(38.5)	12	(35.3)	12	(16.9)	2	(8.7)	.514	1	(5.6)	0		0		0		.162
Moderate disease, *n (%)*	28	(53.8)	19	(55.9)	54	(76.1)	19	(82.6)		17	(94.4)	10	(76.9)	16	(80.0)	5	(100.0)	
Severe disease, *n (%)*	4	(7.7)	3	(8.8)	5	(7.0)	2	(8.7)		0		3	(23.1)	4	(20.0)	0		
Hospitalized, *n (%)* [b]																		
No	20	(38.5)	12	(35.3)	12	(16.9)	2	(8.7)	**.035***	1	(5.6)	0		0		0		.643
Yes	32	(61.5)	22	(64.7)	59	(83.1)	21	(91.3)		17	(94.4)	13	(100.0)	20	(100.0)	5	(100.0)	
Admission to intensive care unit (ICU) [b]																		
Never, *n (%)*	28	(87.5)	16	(84.2)	47	(81.0)	18	(90.0)	.795	17	(100.0)	11	(84.6)	17	(85.0)	5	(100.0)	.323
At least once, *n (%)*	4	(12.5)	3	(15.8)	11	(19.0)	2	(10.0)		0		2	(15.4)	3	(15.0)	0		
	Male																	
	< 65 years									**>= 65 years**								
	PCC Severity									**PCC Severity**								
	None		**Mild**		**Moderate**		**Severe**		**p value [a]**	**None**		**Mild**		**Moderate**		**Severe**		**p value [a]**
n (%)	103	(40.1)	47	(18.3)	92	(35.8)	15	(5.8)		42	(39.3)	24	(22.4)	37	(34.6)	4	(3.7)	

BMI [kg/m²], *mean (SD)* [b,c]	28.4	(5.4)	28.1	(5.9)	28.1	(4.3)	29.5	(4.5)	.573	26.8	(6.1)	27.9	(4.6)	28.2	(6.5)	27.3	(4.1)	.452

Table S6: continued

	Male																
	< 65 years									**>= 65 years**							
	PCC Severity									**PCC Severity**							
	None		**Mild**		**Moderate**		**Severe**		**p value** [a]	**None**		**Mild**		**Moderate**		**Severe**		**p value** [a]
Smoker, *n (%)* [b]																	
Never	60	(59.4)	23	(48.9)	51	(56.0)	7	(46.7)	.587	19	(50.0)	14	(60.9)	16	(43.2)	3	(75.0)	.439
Yes or former	41	(40.6)	24	(51.1)	40	(44.0)	8	(53.3)		19	(50.0)	9	(39.1)	21	(56.8)	1	(25.0)	
Clinical Severity (following WHO criteria) [b, f]																	
Mild disease, *n (%)*	27	(26.2)	11	(23.4)	13	(14.4)	4	(26.7)	.327	2	(4.8)	2	(8.3)	2	(5.4)	0		.973
Moderate disease, *n (%)*	63	(61.2)	26	(55.3)	59	(65.6)	8	(53.3)		32	(76.2)	17	(70.9)	28	(75.7)	4	(100.0)	
Severe disease, *n (%)*	13	(12.6)	10	(21.3)	18	(20.0)	3	(20.0)		8	(19.0)	5	(20.8)	7	(18.9)	0		
Hospitalized, *n (%)* [b]																	
No	27	(26.2)	11	(23.4)	13	(14.4)	4	(26.7)	.196	2	(4.8)	2	(8.3)	2	(5.4)	0		.810
Yes	76	(73.8)	36	(76.6)	77	(85.6)	11	(73.3)		40	(95.2)	22	(91.7)	35	(94.6)	4	(100.0)	
Admission to intensive care unit (ICU) [b]																	
Never, *n (%)*	60	(83.3)	26	(74.3)	61	(80.3)	9	(81.8)	.733	30	(76.9)	17	(81.0)	30	(88.2)	4	(100.0)	.549
At least once, *n (%)*	12	(16.7)	9	(25.7)	15	(19.7)	2	(18.2)		9	(23.1)	4	(19.0)	4	(11.9)	0		

[a] group differences assessed by Chi2, Fishers- or Kruskal-Wallis test, as appropriate; normally significant values were Bonferroni-adjusted by multiplication with the size of the respective group characteristics (i.e. 6 or 18), if the unadjusted p value already exceeded 0.050, no adjustment was done

[b] all analyses were conducted for patients with available data (female missing data <65 years/>=65 years: BMI 16/6, smoker 3/1, admission to ICU 44/2, clinical severity 1/0, vaccination against Sars-COV-2 21/5; male missing data <65 years/>=65 years: BMI 21/8, smoker 3/5, hospitalization 1/0, admission to ICU 54/4, clinical severity 2/0, vaccination against SaSARS-CoV-2 32/15, PROMIS-29 Ability to participate in social roles and activities 74/35, PROMIS-29 Physical Function 71/34)

Table S7: Post hoc test results for smoker (yes or former vs. no), hospitalization (yes vs. no), administration to ICU (never vs. at least once) stratified by sex and age groups.

	Female											
	p value											
	< 65 years						**>= 65 years**					
	PCC severity						PCC severity					
	None vs. mild	None vs. moderate	None vs. severe	Mild vs. moderate	Mild vs. severe	Moderate vs. severe	None vs. mild	None vs. moderate	None vs. severe	Mild vs. moderate	Mild vs. severe	Moderate vs. severe
Smoker	.121	.209	.385	.720	.901	>.999	.201	.444	>.999	.701	.268	.358
Hospitalization	.945	**.013***	**.020***	.064	**.048***	.505	>.999	.474	>.999	-	-	-
Administration to ICU	>.999	.622	>.999	>.999	.661	.496	.179	.234	-	>.999	>.999	>.999
	Male											
	p value											
	< 65 years						**>= 65 years**					
	PCC severity						PCC severity					
	None vs. mild	None vs. moderate	None vs. severe	Mild vs. moderate	Mild vs. severe	Moderate vs. severe	None vs. mild	None vs. moderate	None vs. severe	Mild vs. moderate	Mild vs. severe	Moderate vs. severe
Smoker	.309	.745	.514	.540	>.999	.692	.575	.723	.608	.288	>.999	.321
Hospitalization	.869	.067	>.999	.283	>.999	.259	.618	>.999	>.999	.643	>.999	>.999
Administration to ICU	.398	.787	>.999	.644	>.999	>.999	>.999	.340	.564	.464	>.999	>.999

Table S8: Correlations with Post-COVID-Sum-Score.

	Total		Female				Male			
			< 65 years		>= 65 years		< 65 years		>= 65 years	
	rho	p value	rho	p value	rho	p value	rho	p value	rho	p value
Age	0.072	.077	-	-	-	-	-	-	-	-
BMI	0.121	**.004***	0.249	**.001***	0.023	.875	0.036	.584	0.196	.054
Clinical Severity	0.104	**.011***	0.226	**.002***	0.244	.070	0.106	.090	-0.017	.861
Number of pre-existing comorbidities	0.116	**.004***	0.092	.216	0.093	.494	0.170	**.006***	0.229	**.018***
Number of vaccinations against SARS-CoV-2	**0.036**	**.393**	**-0.042**	**.588**	**0.252**	**.069**	**0.009**	**.890**	**0.117**	**.254**
Quality of Life (EQ-5D-5L) at 3MFU										
Index	-0.558	**<.001***	-0.686	**<.001***	-0.277	.068	-0.551	**<.001***	-0.428	**<.001***
VAS	-0.531	**<.001***	-0.598	**<.001***	-0.278	.065	-0.554	**<.001***	-0.555	**<.001***
Quality of Life (EQ-5D-5L) at 12MFU										
Index	-0.691	**<.001***	-0.756	**<.001***	-0.244	.179	-0.698	**<.001***	-0.714	**<.001***
VAS	-0.594	**<.001***	-0.592	**<.001***	-0.416	**.018***	-0.602	**<.001***	-0.743	**<.001***
PROMIS-29 Ability to participate in social roles and activities[1]	-0.635	**<.001***	-0.668	**<.001***	-0.414	**.018***	-0.688	**<.001***	-0.520	**<.001***
PROMIS-29 Physical function[1]	-0,593	**<.001***	-0.646	**<.001***	-0.466	**.006***	-0.607	**<.001***	-0.520	**<.001***

[1] the lower the sum score, the higher the social or functional impairments

Table S9: Patient characteristics of patients with changed PCS from 3 to 12MFU.

	Worse PCS		**No shift in PCS**		**Better PCS**	
	73	**(12.1)**	**232**	**(38.5)**	**85**	**(14.1)**
Sex, *n (%)*						
Women	29	(39.7)	**96**	**(41.6)**	**31**	**(36.5)**
Men	44	(60.3)	**135**	(58.4)	54	(63.5)
Age [years], *mean (SD)*	57.2	(16.8)	**53.6**	(15.5)	49.9	(14.6)
Age groups, *n (%)*						
< 65 years	45	(61.6)	**174**	(75.7)	69	(81.2)
>= 65 years	28	(38.4)	**56**	(24.3)	16	(18.8)
Pre-existing comorbidities, *n (%)*						
Cardiovascular diseases	38	(52.1)	**109**	(47.0)	29	(34.1)
Diabetes	15	(20.5)	**40**	(17.3)	9	(10.6)
Cancer	15	(20.5)	**29**	(12.6)	8	(9.4)
Nephrological diseases	12	(16.4)	**14**	(6.0)	10	(11.8)
Allergies	11	(15.3)	**39**	(16.9)	16	(18.8)
Respiratory diseases	7	(9.6)	**27**	(11.6)	15	(17.6)
Gastrointestinal or hepatic diseases	6	(8.2)	**18**	(7.8)	3	(3.5)
Psychiatric diseases	4	(5.5)	**11**	(4.7)	3	(3.5)
Organ transplant	3	(4.1)	**9**	(3.4)	5	(5.9)
Neurological diseases	2	(2.7)	**7**	(3.0)	3	(3.5)
Rheumatologic or immunologic diseases	1	(1.4)	**7**	(3.0)	2	(2.4)
No. of pre-existing comorbidities, *Mean (SD)*	2.0	(2.0)	**1.7**	(1.8)	1.5	(1.7)
0, *n (%)*	19	(26.0)	**68**	(29.3)	31	(36.5)
1-2, *n (%)*	30	(41.1)	**105**	(45.3)	36	(42.4)
3-5, *n (%)*	18	(24.7)	**47**	(20.3)	14	(16.5)
6 or more, *n (%)*	6	(8.2)	**12**	(5.2)	4	(4.7)
No. of vaccinations per patient, *Mean (SD)*	**1.4**	**(1.1)**	**1.5**	**(1.1)**	**1.5**	**(1.1)**
0, *n (%)* [b]	19	(26.8)	56	(25.3)	21	(27.3)
1, *n (%)* [b]	18	(25.4)	40	(18.1)	13	(16.9)
2, *n (%)* [b]	22	(31.0)	77	(34.8)	28	(36.4)
3 or more, *n (%)* [b]	12	(16.9)	48	(21.7)	15	(19.5)

Table S10: Symptom complexes with symptoms present for at least two months at 12MFU visit following the recommendations by Bahmer et al. (2022)

No.	Symptom complex	Self-reported sub-symptoms	Without PROMs		With PROMs	
			n	(%)	n	(%)
1	**Chemosensory deficits** [a, b]	Smelling disturbance, impaired sense of taste	45	(8.4)	45	(8.4)
2	**Fatigue** [b]	Fatigue	52	(9.2)	244	(42.6)
3	**Exercise intolerance**	Shortness of breath	96	(19.0)	205	(39.0)
4	**Joint or muscle pain** [a,b]	Muscle pain, joint pain	39	(7.4)	39	(7.4)
5	**Ear-Nose-Throat (ENT) ailments** [a,b]	Sneezing, sore throat, running nose, stuffy nose	16	(3.0)	16	(3.0)
6	**Coughing, wheezing** [a,b]	Coughing, wheezing	35	(6.5)	35	(6.5)
7	**Chest pain** [b]	Chest pain	11	(2.1)	63	(11.9)
8	**Gastrointestinal ailments** [b]	Stomach pain, diarrhea, vomiting, nausea	11	(2.0)	51	(9.0)
9	**Neurological ailments** [b]	Confusion, vertigo, headache, deficits of cognition	77	(14.0)	244	(43.3)
10	**Dermatological ailments** [a,b]	Skin or mucous membrane change	7	(1.3)	7	(1.3)
11	**Infection signs** [a,b]	Chills, fever, feeling ill, lymph node swelling, loss of appetite	14	(2.5)	14	(2.5)
12	**Sleep disturbance** [b]	Sleep disturbance, not elsewhere classified	0	-	78	(13.4)

[a] no adjustment with patient reported outcome measures (PROMs)

[b] percentages relate to number of patients with available data (missing data: chemosensory deficits 50, Fatigue without/with PROMs 17/12, exercise and intolerance without/with PROMs 81/59, joint or muscle pain 57, ENT ailments 48, coughing/ wheezing 43, chest pain without/with PROMs 63/57, gastrointestinal ailments without/with PROMs 21/20, neurological ailments without/with PROMs 36/22, dermatological ailments 53, infection signs 21, sleep disturbance without/with PROMs 2/2)

Table S11: Connection between social or functional impairments and pre-existing comorbidities for patients with no Post-COVID.

		PCC severity = "None"			
		PROMIS-29 Ability to participate in social roles and activities [a]		PROMIS-29 Physical Function [a]	
	Total	No impairments	Impairments	No impairments	Impairments
Pre-existing comorbidities, *n (%)* [b]	**854**	113 (13.2)	2 (0.23)	111 (13.0)	8 (0.94)
Respiratory diseases	10 (4.7)	2 (1.8)	0	2 (1.8)	0
Cardiovascular diseases	94 (43.7)	42 (37.2)	2 (100.0)	40 (36.0)	6 (75.0)
Neurological diseases	7 (3.3)	2 (1.8)	0	2 (1.8)	0
Psychiatric diseases	7 (3.3)	2 (1.8)	0	2 (1.8)	0
Gastrointestinal or hepatic diseases	11 (5.1)	5 (4.4)	0	7 (6.3)	0
Diabetes	29 (13.5)	14 (12.4)	0	14 (12.6)	2 (25.0)
Rheumatologic or immunologic diseases	1 (0.5)	1 (0.9)	0	1 (0.9)	0
Nephrological diseases	19 (8.8)	8 (7.1)	1 (50.0)	8 (7.2)	2 (25.0)
Allergies [j]	29 (13.5)	20 (17.7)	0	19 (17.1)	1 (12.5)
Cancer [j]	35 (16.3)	13 (11.5)	1 (50.0)	13 (11.7)	2 (25.0)
Organ transplant [j]	14 (6.5)	7 (6.2)	0	7 (6.3)	1 (12.5)

[a] all analyses were conducted for patients with available data (missing data: PROMIS-29 ability to participate in social roles and activities 172, PROMIS-29 Physical Function 166)
[b] all analyses were conducted for patients with available data (missing data: psychiatric diseases 1, diabetes 3, allergies 6, cancer 4)

Table S12: Sensitivity analysis treating a missing in a symptom complex as 0 points: Group comparisons between PCC severity groups none, mild, moderate and severe.

	PCC-Score [a]				p value [c]	
	0 (none)	**>0 to ≤10.75 (mild)**	**>10.75 to ≤26.25 (moderate)**	**>26.25 (severe)**	**unadjusted**	**adjusted**
n (%)	318 (37.2)	173 (20.3)	301 (35.2)	62 (7.3)		
Age [years], *Mean (SD)* [b,d]	52.6 (17.1)	55.3 (16.7)	54.7 (14.9)	53.4 (13.8)	.218	n.a
Age groups, *n (%)* [b,d]						
< 65 years	226 (71.1)	122 (70.9)	224 (74.7)	51 (82.3)	.251	n.a
>= 65 years	92 (28.9)	51 (29.1)	76 (25.3)	11 (17.7)		
Sex *n (%)* [b,d]						
Women,	119 (37.4)	65 (37.8)	127 (42.2)	35 (56.5)	**.034***	.204
Men	199 (62.6)	107 (62.2)	174 (57.8)	27 (43.5)		
BMI [kg/m²], *mean (SD)* [b,d]	27.6 (5.9)	28.2 (7.7)	28.4 (6.0)	29.1 (6.0)	.078	n.a
Smoker, *n (%)* [b,d]						
Never	179 (60.9)	100 (58.5)	166 (55.9)	35 (56.5)	.659	n.a
Yes or former	115 (39.1)	71 (41.5)	131 (44.1)	27 (43.5)		
Clinical Severity (following WHO criteria) [b,d]						
Mild disease (no hospitalization), *n (%)*	64 (20.3)	31 (18.0)	35 (11.7)	7 (11.3)	**.026***	.466
Moderate disease (hospitalized, no oxygen or oxygen by mask or nasal prongs (< 15 l/min)), *n (%)*	204 (64.6)	105 (61.0)	208 (69.8)	48 (77.4)		
Severe disease (hospitalized, oxygen by NIV or high flow (> 15 l/min)), *n (%)*	48 (15.2)	36 (20.9)	55 (18.5)	7 (11.3)		
Hospitalized, *n (%)* [b,d]						
No	64 (20.3)	31 (18.0)	35 (11.7)	7 (11.3)	**.021***	.126
Yes	252 (79.7)	141 (82.0)	263 (88.3)	55 (88.7)		
Admission to intensive care unit (ICU) [b,d]						
Never, *n (%)*	202 (82.1)	104 (76.5)	209 (80.7)	46 (86.8)	.369	n.a
At least once, *n (%)*	44 (17.9)	32 (23.5)	50 (19.3)	7 (13.2)		
Vaccination against SARS-CoV-2 prior to study inclusion [b,e]						
No, *n (%)*	159 (57.8)	106 (67.5)	170 (60.7)	35 (60.3)	.262	n.a
Yes, *n (%)*	116 (42.2)	51 (32.5)	110 (39.3)	23 (39.7)		
No. of pre-existing comorbidities, *Mean (SD)* [b,d]	1.6 (1.8)	2.0 (2.1)	2.0 (2.0)	2.3 (2.3)	.053	n.a
0, *n (%)*	106 (33.3)	56 (32.4)	83 (27.6)	15 (24.2)	.276	n.a
1 or more, *n (%)*	212 (66.7)	117 (67.6)	218 (72.4)	47 (75.8)		

Table S12: continued

	PCC-Score [a]				p value [c]	
	0 (none)	**>0 to ≤10.75 (mild)**	**>10.75 to ≤26.25 (moderate)**	**>26.25 (severe)**	**unadjusted**	**adjusted**
Pre-existing comorbidities *n (%)* [b,f]						
Cardiovascular diseases	140 (44.0)	84 (48.6)	139 (46.2)	26 (41.9)	.729	n.a
Diabetes	44 (14.0)	40 (23.3)	42 (14.0)	11 (17.7)	**.035***	.210
Cancer	47 (15.0)	20 (11.6)	53 (17.7)	15 (24.6)	.083	n.a
Allergies	43 (13.8)	26 (15.0)	45 (15.1)	9 (14.5)	.969	n.a
Respiratory diseases	24 (7.6)	21 (12.1)	52 (17.3)	14 (22.6)	**<.001***	**.002***
Nephrological diseases	28 (8.8)	19 (11.0)	32 (10.6)	10 (16.1)	.356	n.a
Gastrointestinal or hepatic diseases	21 (6.6)	11 (6.4)	21 (7.0)	6 (9.7)	.794	n.a
Organ transplant	20 (6.3)	9 (5.2)	14 (4.7)	4 (6.5)	.773	n.a
Psychiatric diseases	11 (3.5)	5 (2.9)	26 (8.7)	5 (8.3)	**.009***	.055
Neurological diseases	12 (3.8)	8 (4.6)	11 (3.7)	7 (11.3)	.087	n.a
Rheumatologic or immunologic diseases	5 (1.6)	4 (2.3)	17 (5.7)	2 (3.2)	**.033***	.200
PROMIS-29 Ability to participate in social roles and activities [b,d]	18.9 (2.0)	16.9 (3.8)	13.1 (4.3)	11.3 (3.9)	**<.001***	**<.001***
No social impairments, *n (%)*	144 (98.6)	104 (89.7)	128 (53.6)	17 (32.7)	**<.001***	**<.001***
Social impairments, *n (%)*	2 (1.4)	12 (10.3)	111 (46.4)	35 (67.3)		
PROMIS-29 Physical function [b,d]	19.4 (1.6)	17.6 (3.5)	15.2 (4.2)	13.7 (4.2)	**<.001***	**<.001***
No physical impairments, *n (%)*	140 (44.0)	81 (46.8)	93 (30.9)	13 (21.0)	**<.001***	**<.001***
Physical impairments, *n (%)*	12 (3.8)	38 (22.0)	148 (49.2)	38 (61.3)		

[a] PCC-Groups including PROMs; missing values: 22; missings in symptom complexes were ignored (represented 0 points for the complex)

[b] all analyses were conducted for patients with available data (missing data by PCC-group:, age/age groups 2, sex: 1, BMI 82, smoker 30, clinical severity 6, hospitalization 6, admission to ICU 127, vaccination against SARS-CoV-2 prior to study inclusion 84, PROMIS-29 Ability to participate in social roles and activities 301, PROMIS-29 Physical function 291, diabetes 6, cancer 7, allergies 9, respiratory diseases 1, psychiatric diseases 5)

[c] group differences assessed by Chi2, Fishers- or Kruskal-Wallis test, as appropriate; normally significant values were Bonferroni-adjusted by multiplication with the size of the respective group characteristics (i.e. 6 or 18), n.a: not applicable because the unadjusted p value already exceeded 0.050

[d] for post-hoc test results see Figure 3 (age), Figure 4 (BMI), Table 4 (age groups (< or >= 65 years), sex, smoker, hospitalization, administration to ICU), Table 5 (clinical severity)

[e] "No" includes all patients without any SARS-CoV-2 vaccination

[f] pre-existing comorbidities were either diagnosed or not diagnosed

Supplementary text 1: Version numbers of PROMs

In the SUEP, PROMIS were assessed in the following versions: PROMIS-29 Fatigue 4a – Adult v1.0, PROMIS-29 Dyspnea Functional Limitations 10a – Adult v1.0, PROMIS Cognitive Function 4a – Adult v2.0, PROMIS-29 Sleep Disturbance 4a.