

Supplementary Material

Table S1. Correlations between domain-specific cognitive functioning, individual cognitive test measures, and FEV₁ in patients with COPD

FEV ₁	Correlation coefficient	P-value
Domain-specific cognition		
Psychomotor speed (compound z-score)	-0.136 ^a	0.066
SCWT card I	0.046 ^a	0.532
CST-A	0.034 ^a	0.649
LDST 60 sec written	-0.053 ^b	0.475
LDST 60 sec oral	-0.112 ^b	0.132
Planning (compound z-score)	0.056 ^b	0.455
BADS key search	-0.093 ^b	0.210
BADS zoo map	0.022 ^a	0.766
Working memory (compound z-score)	-0.111 ^b	0.136
VVLT trial 1	-0.002 ^b	0.982
DS backward	-0.176 ^b	0.017
Verbal memory (compound z-score)	-0.032 ^b	0.663
VVLT total recall 1–5	-0.003 ^b	0.663
VVLT delayed recall	-0.054 ^b	0.469
VVLT retention max	-0.053 ^a	0.475
Cognitive flexibility (compound z-score)	-0.170 ^b	0.021
SCWT card III	0.059 ^a	0.430
CST-C	0.101 ^a	0.175

Abbreviations: BADS, Behavioural Assessment of the Dysexecutive Syndrome; CST, Concept Shifting Test; DS, Digit Span; LDST, Letter Digit Substitution Test; SCWT, Stroop Color-Word Test; SD, standard deviation; VVLT, Visual Verbal Learning Test. ^a, Spearman's rank correlation coefficient; ^b, Pearson's correlation coefficient

Table S2. Clinical characteristics in COPD patients with and without impairments in psychomotor speed

	Patients with impairments in psychomotor speed (n=18)	Patients without impairments in psychomotor speed (n=165)	P-value
FUNCTIONAL STATUS			
Functional exercise capacity			
6MWT (meters)	440.0 (122.1)	431.1 (111.0)	0.750
6MWT (% predicted)	66.7 (16.6)	68.4 (16.6)	0.668
Daily activities			
COPM mobility domain, n (%)	0.9 (0.3)	0.8 (0.4)	0.339
Performance score (points)	3.8 (1.9)	3.8 (1.5)	0.921
Satisfaction score (points)	3.3 (2.0)	2.8 (1.7)	0.347
COPM productivity domain, n (%)	0.8 (0.4)	0.6 (0.5)	0.200
Performance score (points)	4.2 (1.5)	3.8 (1.5)	0.393
Satisfaction score (points)	4.2 (1.8)	3.1 (1.8)	0.050
COPM leisure domain, n (%)	0.4 (0.5)	0.5 (0.5)	0.539
Performance score (points)	3.1 (1.7)	3.5 (1.6)	0.572
Satisfaction score (points)	1.8 (1.0)	2.9 (1.6)	0.126
COPM self-care domain, n (%)	0.4 (0.5)	0.5 (0.5)	0.442
Performance score (points)	4.7 (1.4)	4.1 (1.6)	0.421
Satisfaction score (points)	3.6 (1.1)	3.1 (1.9)	0.563
DISEASE-SPECIFIC HEALTH STATUS			
CAT score (points)	22.5 (5.8)	22.0 (6.6)	0.739
SGRQ-C symptom score (points)	59.3 (16.2)	61.7 (20.0)	0.632
SGRQ-C activity score (points)	75.7 (13.8)	77.2 (14.2)	0.677
SGRQ-C impact score (points)	50.6 (12.6)	45.8 (17.1)	0.258
SGRQ-C total score (points)	59.9 (10.9)	58.2 (14.2)	0.635
PSYCHOLOGICAL WELLBEING			
HADS Depression score (points)	8.6 (3.4)	7.2 (4.0)	0.180
HADS Anxiety score (points)	9.6 (4.9)	7.8 (4.4)	0.117
BDI score score (points)	17.7 (5.6)	16.0 (6.3)	0.272
SCL-90 Anxiety score (points)	11.6 (4.5)	9.9 (4.2)	0.102
SCL-90 Agoraphobia score (points)	30.8 (9.2)	27.6 (10.8)	0.229
SCL-90 Depression score (points)	26.4 (10.6)	23.1 (7.1)	0.078
SCL-90 Somatization score (points)	22.0 (7.0)	17.5 (5.6)	0.002
SCL-90 Insufficiency score (points)	27.6 (8.0)	26.0 (8.3)	0.456
SCL-90 Sensitivity score (points)	8.1 (1.7)	7.7 (2.3)	0.432
SCL-90 Hostility score (points)	6.9 (2.3)	6.5 (3.0)	0.621
SCL-90 Insomnia score (points)	14.2 (5.0)	12.4 (4.1)	0.082
SCL-90 Psychoneuroticism score (points)	165.3 (34.0)	146.8 (42.8)	0.077

Data shown as mean (SD) or as n (%). Abbreviations: 6MWT. 6-min walk distance; BDI Beck Depression Inventory; COPM. Canadian Occupational Performance Measure; HADS. Hospital Anxiety and Depression Scale; SCL-90 Symptom Checklist 90; SGRQ-C. COPD-specific version of the St. George respiratory questionnaire.

Table S3. Clinical characteristics in COPD patients with and without impairments in planning

	Patients with impairments in planning (n=20)	Patients without impairments in planning (n=163)	P-value
FUNCTIONAL STATUS			
Functional exercise capacity			
6MWT (meters)	392.3 (93.2)	436.9 (113.2)	0.092
6MWT (% predicted)	64.2 (15.1)	68.8 (16.7)	0.241
Daily activities			
COPM mobility domain, n (%)	0.8 (0.4)	0.8 (0.4)	0.969
Performance score (points)	3.9 (1.6)	3.7 (1.6)	0.678
Satisfaction score (points)	3.3 (1.9)	2.8 (1.7)	0.253
COPM productivity domain, n (%)	0.8 (0.4)	0.6 (0.5)	0.277
Performance score (points)	4.5 (1.2)	3.8 (1.6)	0.101
Satisfaction score (points)	4.0 (1.8)	3.1 (1.8)	0.088
COPM leisure domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.898
Performance score (points)	3.4 (1.6)	3.4 (1.6)	0.902
Satisfaction score (points)	3.7 (1.6)	2.7 (1.6)	0.111
COPM self-care domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.817
Performance score (points)	4.4 (1.8)	4.1 (1.6)	0.693
Satisfaction score (points)	4.4 (0.6)	3.0 (1.8)	0.045
DISEASE-SPECIFIC HEALTH STATUS			
CAT score (points)	21.8 (6.6)	22.1 (6.5)	0.867
SGRQ-C symptom score (points)	57.0 (18.7)	62.0 (19.8)	0.293
SGRQ-C activity score (points)	81.6 (14.3)	76.5 (14.0)	0.137
SGRQ-C impact score (points)	52.5 (14.8)	45.5 (16.9)	0.088
SGRQ-C total score (points)	62.4 (11.9)	57.9 (14.1)	0.185
PSYCHOLOGICAL WELLBEING			
HADS Depression score (points)	9.1 (3.3)	7.2 (4.0)	0.049
HADS Anxiety score (points)	8.1 (3.7)	8.0 (4.6)	0.926
BDI score score (points)	16.5 (5.6)	16.2 (6.3)	0.844
SCL-90 Anxiety score (points)	10.1 (3.5)	10.0 (4.3)	0.960
SCL-90 Agoraphobia score (points)	29.1 (11.7)	27.8 (10.6)	0.613
SCL-90 Depression score (points)	23.9 (8.4)	23.3 (7.5)	0.781
SCL-90 Somatization score (points)	20.7 (8.0)	17.6 (5.5)	0.025
SCL-90 Insufficiency score (points)	8.0 (2.8)	26.0 (8.0)	0.367
SCL-90 Sensitivity score (points)	7.0 (3.1)	7.7 (2.2)	0.547
SCL-90 Hostility score (points)	8.0 (2.8)	6.5 (2.9)	0.482
SCL-90 Insomnia score (points)	12.7 (3.8)	12.6 (4.3)	0.897
SCL-90 Psychoneuroticism score (points)	155.7 (45.2)	147.7 (42.0)	0.430

Data shown as mean (SD) or as n (%). Abbreviations: 6MWT. 6-min walk distance; BDI Beck Depression Inventory; COPM. Canadian Occupational Performance Measure; HADS. Hospital Anxiety and Depression Scale; SCL-90 Symptom Checklist 90; SGRQ-C. COPD-specific version of the St. George respiratory questionnaire.

Table S4. Clinical characteristics in COPD patients with and without impairments in working memory

	Patients with impairments in working memory (n=47)	Patients without impairments in working memory (n=136)	P-value
FUNCTIONAL STATUS			
Functional exercise capacity			
6MWT (meters)	426.3 (426.3)	434.0 (109.0)	0.686
6MWT (% predicted)	67.6 (17.0)	68.5 (16.5)	0.741
Daily activities			
COPM mobility domain, n (%)	0.8 (0.4)	0.8 (1.6)	0.750
Performance score (points)	3.6 (1.5)	3.8 (1.6)	0.575
Satisfaction score (points)	2.6 (1.7)	2.9 (1.8)	0.368
COPM productivity domain, n (%)	0.7 (0.5)	0.6 (0.5)	0.301
Performance score (points)	4.0 (1.5)	3.8 (1.6)	0.510
Satisfaction score (points)	3.4 (1.7)	3.2 (1.9)	0.696
COPM leisure domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.701
Performance score (points)	3.1 (1.4)	3.6 (1.6)	0.208
Satisfaction score (points)	2.8 (1.4)	2.8 (1.7)	0.991
COPM self-care domain, n (%)	0.4 (0.5)	0.5 (0.5)	0.430
Performance score (points)	4.6 (1.4)	4.0 (1.6)	0.152
Satisfaction score (points)	3.7 (1.1)	3.0 (2.0)	0.168
DISEASE-SPECIFIC HEALTH STATUS			
CAT score (points)	22.0 (6.4)	22.0 (6.6)	0.984
SGRQ-C symptom score (points)	60.8 (21.1)	61.7 (19.2)	0.803
SGRQ-C activity score (points)	78.0 (14.9)	76.7 (13.9)	0.608
SGRQ-C impact score (points)	48.5 (1.9)	45.6 (16.0)	0.316
SGRQ-C total score (points)	59.7 (15.2)	57.9 (13.4)	0.455
PSYCHOLOGICAL WELLBEING			
HADS Depression score (points)	7.8 (4.0)	7.2 (4.0)	0.387
HADS Anxiety score (points)	8.9 (4.5)	7.7 (4.4)	0.110
BDI score score (points)	16.8 (5.7)	16.0 (6.4)	0.447
SCL-90 Anxiety score (points)	11.1 (4.4)	9.7 (4.1)	0.053
SCL-90 Agoraphobia score (points)	29.9 (10.5)	27.3 (10.7)	0.158
SCL-90 Depression score (points)	23.9 (7.7)	23.2 (7.5)	0.593
SCL-90 Somatization score (points)	19.5 (6.6)	17.4 (5.5)	0.038
SCL-90 Insufficiency score (points)	28.4 (9.3)	25.4 (7.7)	0.034
SCL-90 Sensitivity score (points)	7.9 (2.3)	7.6 (2.3)	0.475
SCL-90 Hostility score (points)	7.2 (3.4)	6.3 (2.8)	0.079
SCL-90 Insomnia score (points)	13.1 (4.4)	12.4 (4.1)	0.345
SCL-90 Psychoneuroticism score (points)	157.7 (42.7)	145.4 (41.9)	0.087

Data shown as mean (SD) or as n (%). Abbreviations: 6MWT. 6-min walk distance; BDI Beck Depression Inventory; COPM. Canadian Occupational Performance Measure; HADS. Hospital Anxiety and Depression Scale; SCL-90 Symptom Checklist 90; SGRQ-C. COPD-specific version of the St. George respiratory questionnaire.

Table S5. Clinical characteristics in COPD patients with and without impairments in verbal memory

	Patients with impairments in verbal memory (n=50)	Patients without impairments in verbal memory (n=133)	P-value
FUNCTIONAL STATUS			
Functional exercise capacity			
6MWT (meters)	400.2 (111.1)	443.9 (110.1)	0.018
6MWT (% predicted)	64.1 (17.1)	69.8 (16.2)	0.035
Daily activities			0.629
COPM mobility domain, n (%)	0.8 (0.4)	0.8 (0.4)	
Performance score (points)	3.8 (1.7)	3.8 (1.5)	0.850
Satisfaction score (points)	2.8 (1.9)	2.8 (1.7)	0.998
COPM productivity domain, n (%)	0.6 (0.5)	0.6 (0.5)	0.740
Performance score (points)	3.9 (1.5)	3.9 (1.6)	0.926
Satisfaction score (points)	3.5 (1.9)	3.2 (1.8)	0.453
COPM leisure domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.579
Performance score (points)	3.5 (1.5)	3.4 (1.7)	0.841
Satisfaction score (points)	2.9 (1.6)	2.8 (1.6)	0.775
COPM self-care domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.799
Performance score (points)	4.2 (1.8)	4.2 (1.5)	0.991
Satisfaction score (points)	3.4 (2.2)	3.1 (1.6)	0.444
DISEASE-SPECIFIC HEALTH STATUS			0.322
CAT score (points)	21.2 (6.9)	22.3 (6.4)	
SGRQ-C symptom score (points)	59.0 (22.3)	62.3 (18.7)	0.320
SGRQ-C activity score (points)	79.4 (13.0)	76.2 (14.4)	0.193
SGRQ-C impact score (points)	48.4 (18.2)	45.5 (16.2)	0.310
SGRQ-C total score (points)	59.8 (15.1)	57.8 (13.4)	0.399
PSYCHOLOGICAL WELLBEING			0.932
HADS Depression score (points)	7.4 (3.8)	7.3 (4.0)	
HADS Anxiety score (points)	7.8 (4.8)	8.0 (4.4)	0.790
BDI score score (points)	15.8 (10.1)	15.4 (0.5)	0.139
SCL-90 Anxiety score (points)	15.1 (5.2)	16.6 (6.5)	0.605
SCL-90 Agoraphobia score (points)	10.3 (4.1)	10.0 (4.3)	0.404
SCL-90 Depression score (points)	26.9 (9.4)	28.4 (11.1)	0.008
SCL-90 Somatization score (points)	21.0 (6.1)	24.3 (7.9)	0.447
SCL-90 Insufficiency score (points)	17.4 (5.6)	18.1 (6.0)	0.344
SCL-90 Sensitivity score (points)	25.2 (7.5)	26.5 (8.5)	0.535
SCL-90 Hostility score (points)	7.5 (2.0)	7.8 (2.4)	0.949
SCL-90 Insomnia score (points)	6.5 (3.3)	6.6 (2.8)	0.806
SCL-90 Psychoneuroticism score (points)	142.4 (38.7)	150.9 (43.5)	0.229

Data shown as mean (SD) or as n (%). Abbreviations: 6MWT. 6-min walk distance; BDI Beck Depression Inventory; COPM. Canadian Occupational Performance Measure; HADS. Hospital Anxiety and Depression Scale; SCL-90 Symptom Checklist 90; SGRQ-C. COPD-specific version of the St. George respiratory questionnaire.

Table S6. Clinical characteristics in COPD patients with and without impairments in cognitive flexibility

	Patients with impairments in cognitive flexibility (n=51)	Patients without impairments in cognitive flexibility (n=132)	P-value
FUNCTIONAL STATUS			
Functional exercise capacity			
6MWT (meters)	434.0 (107.9)	431.2 (113.7)	0.881
6MWT (% predicted)	68.1 (15.1)	68.3 (17.2)	0.916
Daily activities			
COPM mobility domain, n (%)	0.8 (0.4)	0.8 (0.4)	0.989
Performance score (points)	3.8 (1.8)	3.8 (1.5)	0.949
Satisfaction score (points)	2.9 (1.9)	2.8 (1.7)	0.937
COPM productivity domain, n (%)	0.6 (0.5)	0.6 (0.5)	0.893
Performance score (points)	4.0 (1.5)	3.9 (1.6)	0.750
Satisfaction score (points)	3.6 (1.7)	3.1 (1.9)	0.240
COPM leisure domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.294
Performance score (points)	3.3 (1.5)	3.5 (1.6)	0.611
Satisfaction score (points)	2.8 (1.5)	2.9 (1.7)	0.942
COPM self-care domain, n (%)	0.5 (0.5)	0.5 (0.5)	0.565
Performance score (points)	4.6 (1.3)	4.0 (1.7)	0.109
Satisfaction score (points)	3.8 (1.7)	2.8 (1.8)	0.022
DISEASE-SPECIFIC HEALTH STATUS			
CAT score (points)	22.5 (6.2)	21.8 (6.6)	0.544
SGRQ-C symptom score (points)	58.8 (18.8)	62.5 (20.0)	0.268
SGRQ-C activity score (points)	78.6 (14.0)	76.5 (14.2)	0.31
SGRQ-C impact score (points)	49.2 (16.2)	45.2 (17.0)	0.154
SGRQ-C total score (points)	59.9 (13.7)	57.8 (13.9)	0.348
PSYCHOLOGICAL WELLBEING			
HADS Depression score (points)	8.1 (3.7)	7.1 (4.1)	0.145
HADS Anxiety score (points)	8.6 (4.3)	7.7 (4.5)	0.283
BDI score score (points)	17.3 (6.1)	15.8 (6.2)	0.151
SCL-90 Anxiety score (points)	10.8 (4.3)	9.8 (4.2)	0.160
SCL-90 Agoraphobia score (points)	29.9 (10.8)	27.2 (10.6)	0.133
SCL-90 Depression score (points)	25.4 (9.1)	22.6 (6.8)	0.025
SCL-90 Somatization score (points)	20.7 (6.6)	16.9 (5.2)	<0.001
SCL-90 Insufficiency score (points)	28.3 (9.2)	25.4 (7.7)	0.030
SCL-90 Sensitivity score (points)	8.2 (2.4)	7.5 (2.2)	0.098
SCL-90 Hostility score (points)	6.8 (3.0)	6.5 (2.9)	0.424
SCL-90 Insomnia score (points)	13.4 (4.3)	12.3 (4.1)	0.098
SCL-90 Psychoneuroticism score (points)	160.6 (44.1)	143.9 (40.8)	0.016

Data shown as mean (SD) or as n (%). Abbreviations: 6MWT. 6-min walk distance; BDI Beck Depression Inventory; COPM. Canadian Occupational Performance Measure; HADS. Hospital Anxiety and Depression Scale; SCL-90 Symptom Checklist 90; SGRQ-C. COPD-specific version of the St. George respiratory questionnaire.