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Determinants of Physical Function in Persons with COPD and Sleep Disturbance.

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Background

Emerging evidence suggests good sleep promotes improved physical function by reducing fatigue in persons with COPD. However, the determinants of physical function in persons with both COPD and disturbed sleep remain unclear.

Purpose/Significance

The purpose of this study was to examine determinants of physical function (PF) in persons with COPD who have disturbed sleep. We hypothesized that potentially modifiable COPD and sleep-related clinical variables such as dyspnea and depression are associated with physical function.

Theoretical/Conceptual Framework

The Theory of Unpleasant Symptoms (TOUS) is comprised of three major components: symptoms experienced, factors that influence the symptoms and consequences of the symptoms. The TOUS guided our thoughts in this study.

Method

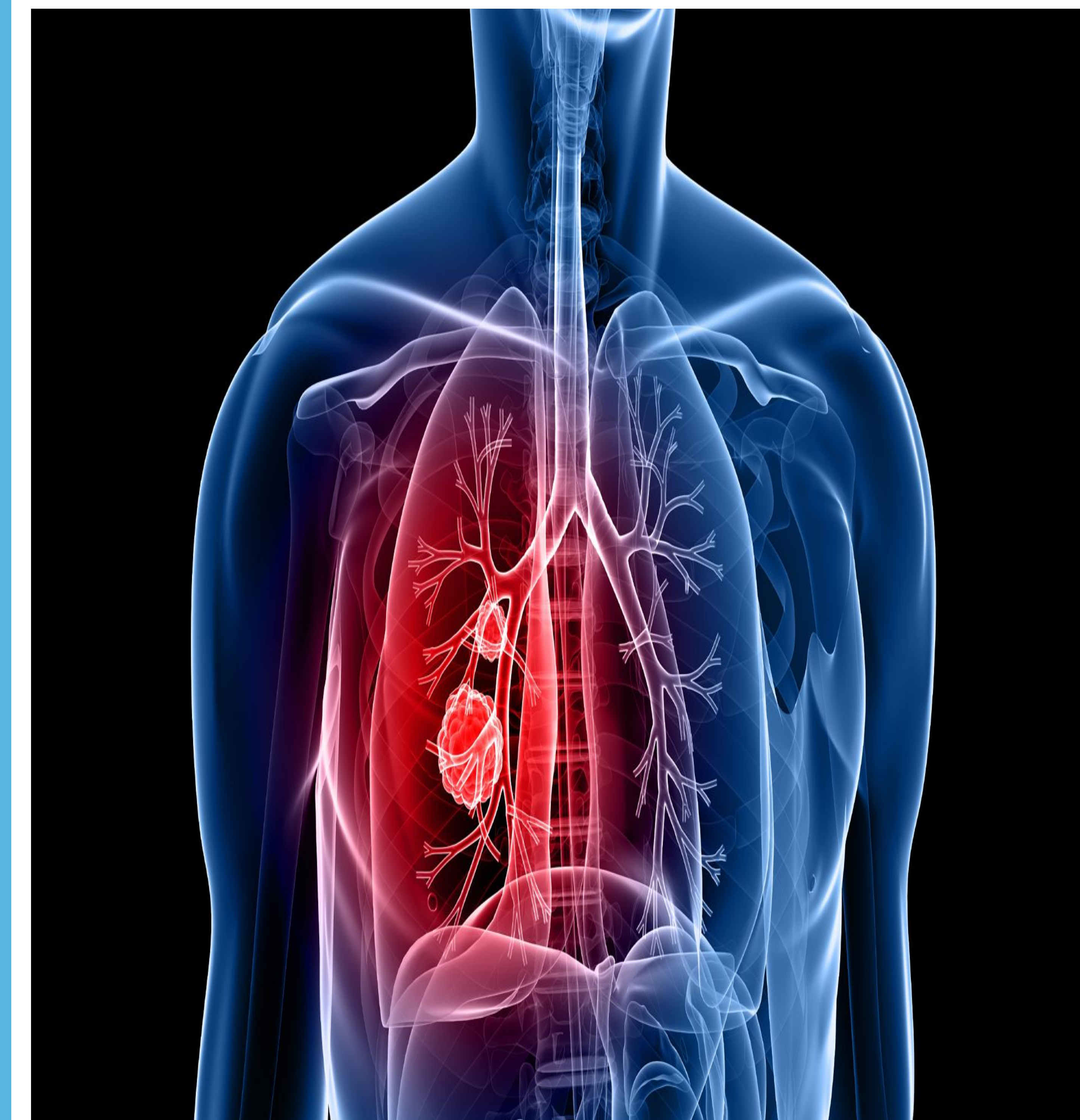
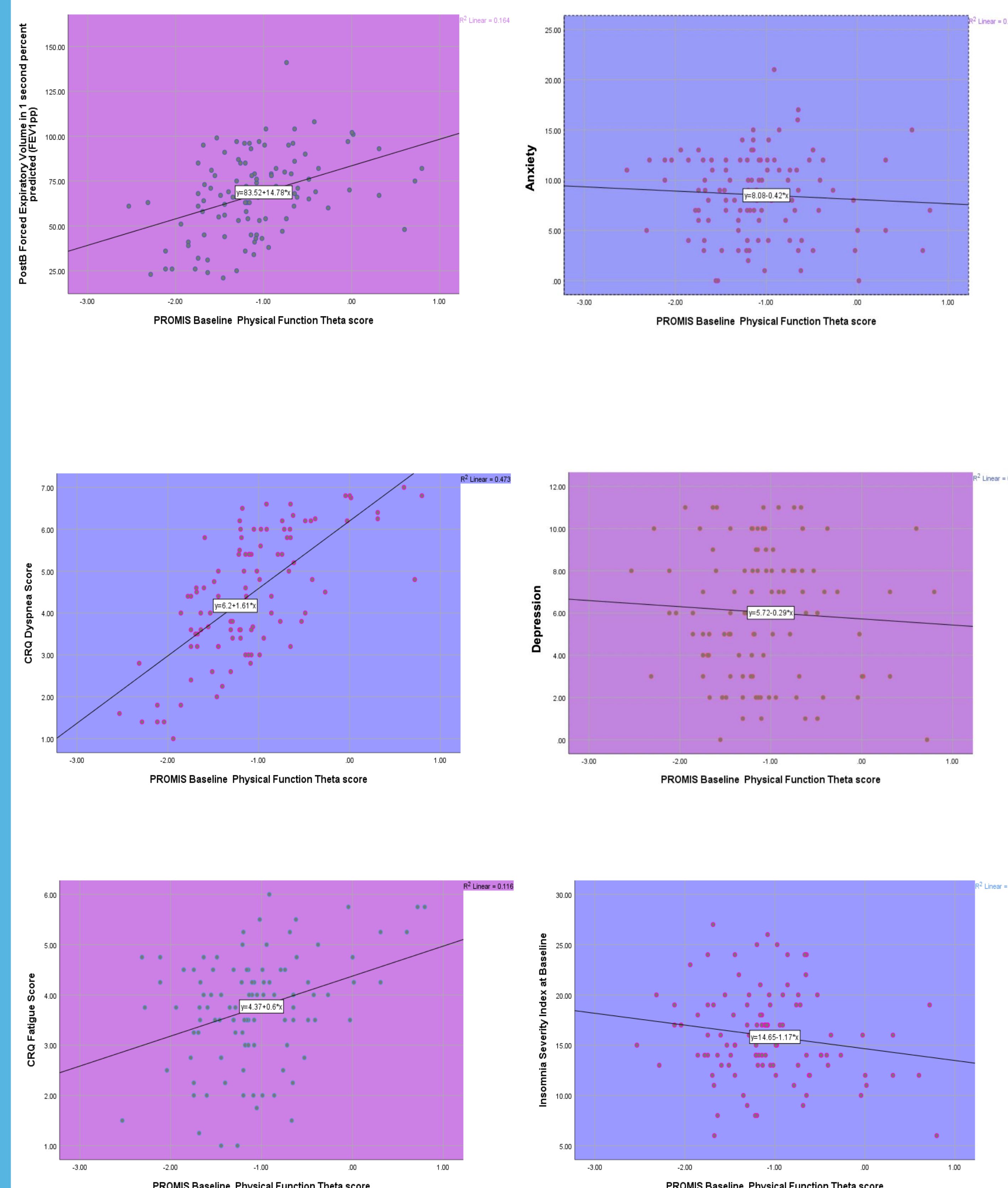
We conducted a cross-sectional, secondary analysis of data in persons with COPD who reported insomnia. The study included 104 participants (60% men) who underwent spirometry, a sleep study, and completed the Insomnia Severity Index, the Chronic Respiratory Disease Questionnaire dyspnea scale, and the PROMIS anxiety, depression, CRQ fatigue and physical function measures.

Results

Descriptive Statistics							
	N	Range	Minimum	Maximum	Mean	Std. Error	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
PROMIS Baseline Physical Function Theta score	104	3.33	-2.53	.80	-1.0938	.06163	.62853
Insomnia Severity Index at Baseline	104	21.00	6.00	27.00	15.9327	.43581	4.44440
CRQ Fatigue Score	104	5.00	1.00	6.00	3.7212	.10804	1.10180
CRQ Dyspnea Score	104	6.00	1.00	7.00	4.4362	.14422	1.47078
Anxiety	104	21.00	.00	21.00	8.5385	.40509	4.13116
Depression	104	11.00	.00	11.00	6.0385	.30306	3.09062
PostB Forced Expiratory Volume in 1 second percent predicted (FEV1pp)	104	120.00	21.00	141.00	67.3558	2.25225	22.96850
Valid N (listwise)	104						

Participants reported moderate COPD and insomnia. Multiple regression revealed that better physical function (PF) was related to less dyspnea ($r = -.688, p < 0.001$), less severe COPD ($r = -.405, p < 0.001$), and less fatigue ($r = -.340, p < 0.001$). Fatigue was positively related to insomnia severity ($r = .446, p < 0.001$). Depression and insomnia severity were negatively related to PF in men but not in women.

Scatter Plot



Conclusions

- COPD and sleep-related variables are associated with physical function in persons with COPD and disturbed sleep.
- These results suggest that improving breathing, minimizing fatigue and enhancing sleep could be important targets for optimizing physical function in patients with COPD.
- Further studies should examine associations among these variables in longitudinal studies and in people with more severe COPD.

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