

## ONLINE DATA SUPPLEMENT

### Determinants and Outcomes of Change in Physical Activity in COPD

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## METHODS

Generalized linear regression models (PROC GLM, SAS 9.4, SAS Institute; Cary, NC) explored baseline characteristics, chosen *a priori* to possibly impact PA, as predictors of overall change in daily step count, adjusting for baseline daily step count and PA promotion group. Spearman correlation coefficients examined relationships between changes in daily step count and changes in COPD measures. Statistical significance was defined as  $p < 0.05$ .

## RESULTS

### *Baseline predictors of change in daily step count*

In univariate linear regression models, baseline daily step count predicted change in daily step count ( $p=0.0003$ , 95% CI [-554,-168]), with a higher baseline step count predicting significantly less improvement in PA (table S1). Other significant predictors of change in daily step count included self-reported diagnosis of depression, social support (domains of emotional support, affectionate support and positive interaction), use of supplemental oxygen, and enrollment in Summer and Fall, independent of baseline daily step count and PA promotion group (table S1). Neither lung function, CRP and IL-6, comorbidities of cardiovascular disease or back pain, history of AE prior to study entry, occurrence of AE, pulmonary ER visit, or hospitalization during the study, nor level of adherence to the Omron pedometer predicted change in daily step counts.

### *Effects of changes in daily step count on changes in COPD measures*

Among participants in both PA promotion groups combined, increases in daily step count were significantly correlated with increases in FEV<sub>1</sub> % predicted ( $r=0.286$ ,  $p=0.0057$ ) and

6MWT distance ( $r=0.400$ ,  $p<0.0001$ ), (table S2). Increases in daily step count were significantly correlated with decreases in CRP ( $r=-0.247$ ,  $p=0.017$ ) and IL-6 ( $r=-0.360$ ,  $p=0.0004$ ), (table S2). There was no significant correlation between change in daily step count and change in mMRC dyspnoea score, SGRQ-TS, BDI-II score, and social support (table S2).

**TABLE S1** Predictors of change in daily step count

Predictor	Effect on change in daily step count <sup>*</sup>	95% confidence interval	p-value
Baseline daily step count <sup>†</sup> (per 1,000 steps increase)	-361	-554; -168	0.0003
Diagnosis of depression (Ref.=no diagnosis)	-801	-1530; -71.9	0.032
MOS Social support	398	89.0; 707	0.012
Emotional support	287	5.89; 568	0.046
Tangible support	162	-94.4; 418	0.213
Affectionate support	474	232; 716	0.0002
Positive interaction	375	66.9; 683	0.018
Oxygen use (Ref.=no oxygen)	-849	-1677; -21.9	0.044
Season of enrollment (Ref.=Spring)			
Spring (March-May)			
Summer (June-August)	-1414	-2308; -519	0.002
Fall (September-November)	-1371	-2199; -542	0.002
Winter (December-February)	-531	-1664; 601	0.354

<sup>\*</sup>Effects on change in daily step count are the model coefficients as determined by 9 separate generalized linear regression models, adjusted for baseline daily step count and PA promotion group, except where noted.

<sup>†</sup>Model adjusts for PA promotion group only.

MOS: Medical Outcomes Study; Ref.: reference group.

**TABLE S2** Relationship between change in daily step count and change in COPD measures

Change in COPD measure	Spearman correlation coefficient	p-value
FEV <sub>1</sub> % predicted	0.286	0.0057
6MWT distance (m)	0.400	<0.0001
CRP (mg/L)	-0.247	0.017
IL-6 (ng/mL)	-0.360	0.0004
mMRC dyspnoea score	-0.111	0.287
SGRQ-TS	-0.177	0.092
BDI-II depression score	-0.113	0.282
MOS social support	-0.034	0.751
Emotional support	-0.023	0.830
Tangible support	-0.001	0.992
Affectionate support	-0.128	0.228
Positive interaction	-0.080	0.449

BDI-II: Beck Depression Inventory; CRP: C-reactive protein; IL-6: interleukin-6; MOS: Medical Outcomes Study; mMRC: modified Medical Research Council; 6MWT: 6-minute walk test; SGRQ-TS: St. George's Respiratory Questionnaire-Total Score.