

Supplementary material

Enhancing our understanding of the time course of acute exacerbations of COPD managed on an outpatient basis.

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Supplementary material 1

Table S1 - Changes in peripheral oxygen saturation (SpO₂, percentage), forced expiratory volume in one second, percentage predicted (FEV₁, % predicted), maximum inspiratory pressure (P_Imax, cmH₂O), quadriceps muscle strength, percentage predicted (QMS, % predicted), COPD assessment test (CAT) and 5 times sit-to-stand test (5STS, seconds) during the course of an AECOPD.

	AECOPD (T0) n=44	8 days (T1) n=44	15 days (T2) n=42	45 days (T3) n=37
FEV₁ (% predicted)	43.62±17.67	46.82±19.20	49.76±23.87*	51.11±20.27*
P_Imax (cmH₂O)	50.00±19.34	49.82±21.49	54.03±21.17†	56.52±18.82*†
QMS (% predicted)	49.69±24.01	50.09±21.31	51.30±25.63	62.59±27.41*†‡
5STS (seconds)	11.11±4.92	10.22±4.74	9.08±3.56*†	8.12±3.36*†
SpO₂ (percentage)	92.52±2.72	93.82±2.68*	94.19±2.42*	94.03±2.57*
CAT	22.53±6.71	17.98±7.22*	16.36±7.73*	14.73±7.35*†

Legend: Values are shown as mean ± standard deviation; significant difference at p<0.05; * diff from T0; † diff from T1; ‡ diff from T2.

5STS, 5 times sit-to-stand; CAT, COPD assessment test; FEV₁, forced expiratory volume in one second; P_Imax, maximum inspiratory pressure; QMS, quadriceps muscle strength; SpO₂, peripheral oxygen saturation.

T0 - Within 48 hours of exacerbation onset, T1- Day 8, T2 - Day 15 and T3 - Day 45 after the onset of the acute exacerbation of chronic obstructive pulmonary disease (AECOPD).

Supplementary material 2

Table S2 - Generalised Estimating Equation Models for time.

Independent variable	Dependent variables					
	SpO ₂ Exp(B) 95% CI	FEV ₁ (% predicted) Exp(B) 95% CI	Plmax Exp(B) 95% CI	QMS (% predicted) Exp(B) 95% CI	CAT Exp(B) 95% CI	5STS Exp(B) 95% CI
Time						
T0 ^a						
T1	1.014 (1.005 to 1.023)	1.073 (0.931 to 1.237)	0.996 (0.913 to 1.088)	1.008 (0.917 to 1.109)	0.798 (0.699 to 0.911)	0.920 (0.826 to 1.026)
T2	1.018 (1.010 to 1.026)	1.141 (1.008 to 1.291)	1.081 (0.991 to 1.178)	1.032 (0.944 to 1.129)	0.726 (0.645 to 0.816)	0.817 (0.737 to 0.905)
T3	1.016 (1.007 to 1.026)	1.172 (1.061 to 1.294)	1.130 (1.016 to 1.257)	1.260 (1.143 to 1.388)	0.672 (0.571 to 0.790)	0.731 (0.635 to 0.841)

Legend: ^areference category for each independent variable.

5STS, 5 times sit-to-stand; CAT, COPD assessment test; CI: Confident interval; FEV₁, forced expiratory volume in one second; Plmax, maximum inspiratory capacity; QMS, quadriceps muscle strength; SpO₂, peripheral oxygen saturation. T0 - Within 48 hours of exacerbation onset, T1– Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the acute exacerbation of chronic obstructive pulmonary disease (AECOPD).

Supplementary material 3

Table S3 - Generalised Estimating Equation Models for each dependent variable (interactions not presented).

		Dependent variables						
		SpO ₂ Exp(B) 95% CI	FEV ₁ (% predicted) Exp(B) 95% CI	PI _{max} Exp(B) 95% CI	QMS (% predicted) Exp(B) 95% CI	CAT Exp(B) 95% CI	5STS Exp(B) 95% CI	
Independent variables	Time							
		T0 ^a						
		T1	1.014 (0.969 to 1.061)	1.386 (0.699 to 2.749)	0.956 (0.543 to 1.684)	0.542 (0.232 to 1.266)	0.678 (0.333 to 1.382)	1.154 (0.718 to 1.855)
		T2	1.019 (0.978 to 1.062)	1.215 (0.803 to 1.837)	1.459 (0.786 to 2.709)	0.604 (0.366 to 0.999)	0.792 (0.393 to 1.595)	0.806 (0.536 to 1.212)
		T3	1.061 (1.009 to 1.116)	1.269 (0.805 to 2.001)	1.256 (0.654 to 2.410)	0.983 (0.509 to 1.898)	0.548 (0.190 to 1.581)	1.809 (0.771 to 4.243)
		BMI						
		Underweight ^a						
		Normal weight	0.999 (0.971 to 1.029)	1.349 (1.015 to 1.791)	1.102 (0.769 to 1.577)	1.301 (0.765 to 2.212)	0.776 (0.584 to 1.032)	1.342 (0.995 to 1.810)
		Overweight	0.994 (0.972 to 1.017)	1.564 (1.188 to 2.060)	0.958 (0.716 to 1.280)	1.048 (0.801 to 1.270)	0.829 (0.637 to 1.079)	1.380 (1.025 to 1.857)
		N^o Exacerbations						
		0-1 ^a						
		≥2	0.986 (0.970 to 1.001)	0.963 (0.763 to 1.217)	0.942 (0.685 to 1.248)	0.820 (0.633 to 1.063)	0.946 (0.791 to 1.133)	0.900 to 1.408
		CCI						
		Mild ^a						
		Moderate	1.024 (0.998 to 1.051)	1.116 (0.785 to 1.587)	1.041 (0.593 to 1.829)	1.234 (0.620 to 2.456)	0.942 (0.709 to 1.253)	1.042 (0.762 to 1.423)
		Severe	1.025 (0.998 to 1.053)	1.219 (0.889 to 1.672)	0.972 (0.570 to 1.658)	1.019 (0.461 to 2.256)	0.847 (0.613 to 1.171)	1.477 (1.038 to 2.102)
	mMRC							
	0-1 ^a							
	≥2	0.991 (0.973 to 1.009)	0.890 (0.654 to 1.211)	0.973 (0.661 to 1.329)	0.603 (0.404 to 0.899)	1.293 (1.038 to 1.610)	1.439 (1.077 to 1.922)	

Legend: ^areference category for each independent variable.

5STS, 5 times sit-to-stand; BMI, body mass index; CAT, COPD assessment test; CCI, Charlson comorbidity index; CI: Confident interval; FEV₁, forced expiratory volume in one second; PI_{max}, maximum inspiratory capacity; mMRC, modified British Medical Research Council questionnaire; QMS, quadriceps muscle strength; SpO₂, peripheral oxygen saturation.

T0 - Within 48 hours of exacerbation onset, T1– Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the acute exacerbation of chronic obstructive pulmonary disease (AECOPD).

Supplementary material 4

Figure S1 - Effects of the interaction between time and (A) body mass index, (B) modified British Medical Research Council questionnaire (mMRC), (C) acute exacerbations of COPD (AECOPD) during the previous year and (D) Charlson Comorbidity Index (CCI) in changes occurring in peripheral oxygen saturation (SpO₂) during an AECOPD. T0 - Within 48 hours of exacerbation onset, T1 – Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the AECOPD.

No significant interactions were found.

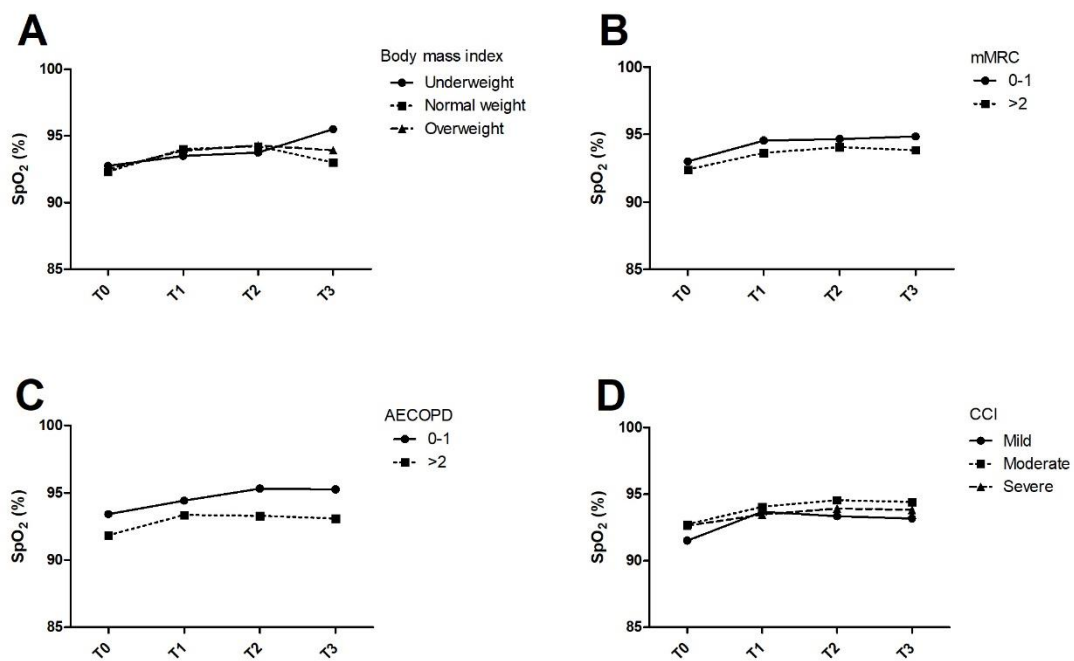


Figure S2 - Effects of the interaction between time and (A) body mass index, (B) modified British Medical Research Council questionnaire (mMRC), (C) acute exacerbations of COPD (AECOPD) during the previous year and (D) Charlson Comorbidity Index (CCI) in changes occurring in forced expiratory volume in one second (FEV₁) – percentage predicted during an AECOPD. T0 - Within 48 hours of exacerbation onset, T1 – Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the AECOPD.

No significant interactions were found.

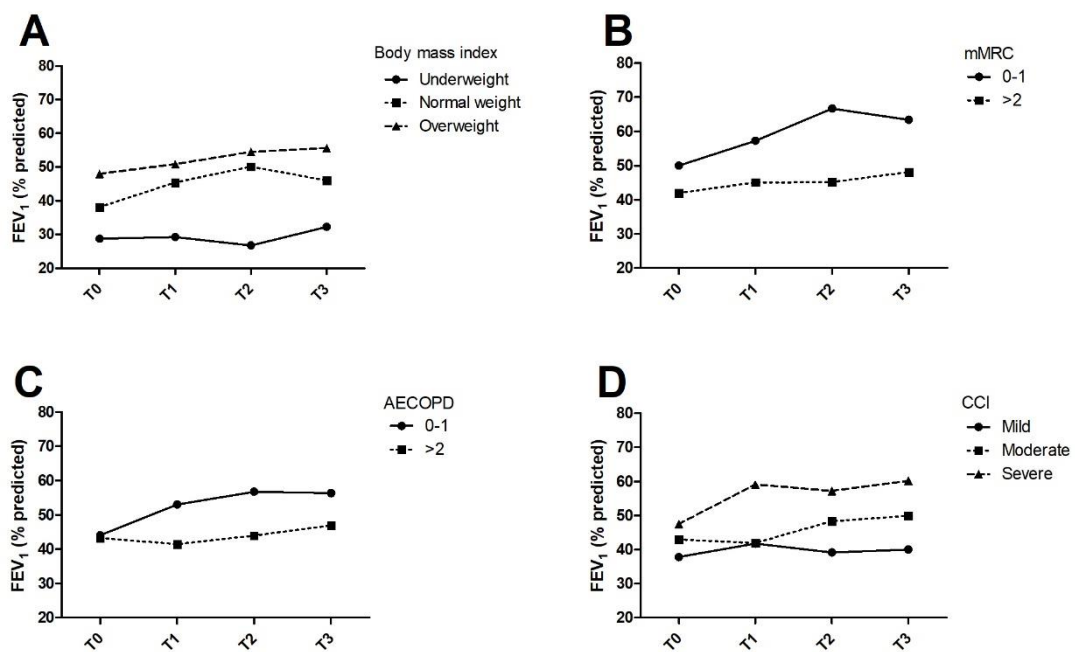


Figure S3 - Effects of the interaction between time and (A) body mass index, (B) modified British Medical Research Council questionnaire (mMRC), (C) acute exacerbations of COPD (AECOPD) during the previous year and (D) Charlson Comorbidity Index (CCI) in changes occurring in maximum inspiratory pressure during an AECOPD. T0 - Within 48 hours of exacerbation onset, T1 – Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the AECOPD.

* significant interaction between time*number of exacerbations in the previous year ($p=0.007$), time*comorbidities ($p=0.025$) and time*dyspnea ($p=0.012$) were found to affect changes in PImax during an AECOPD.

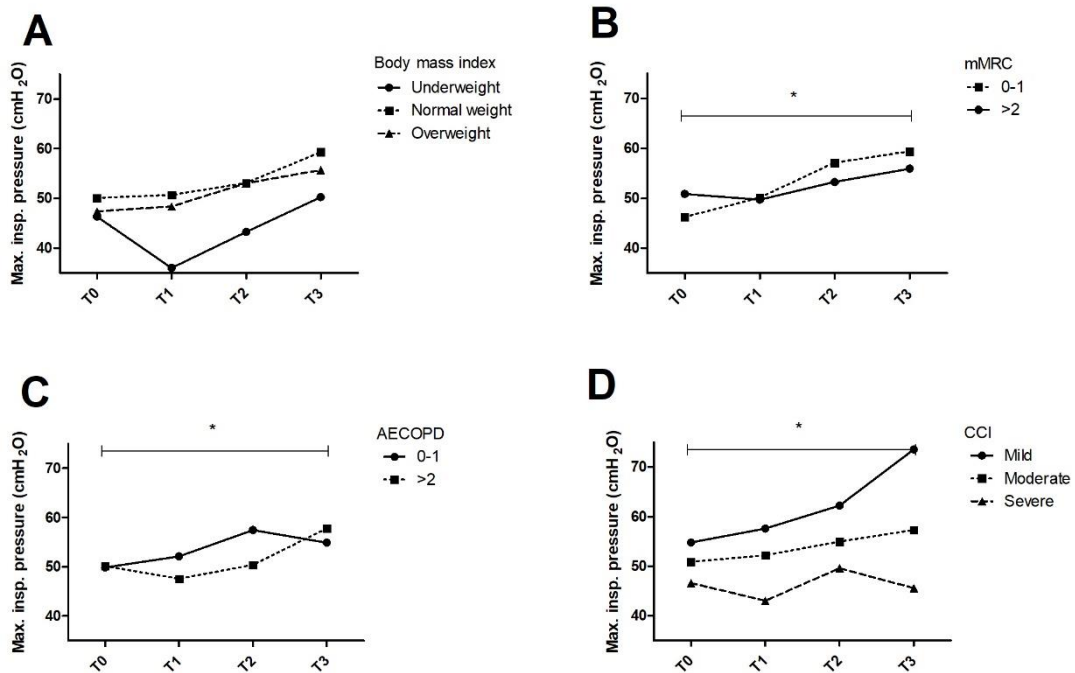


Figure S4 - Effects of the interaction between time and (A) body mass index, (B) modified British Medical Research Council questionnaire (mMRC), (C) acute exacerbations of COPD (AECOPD) during the previous year and (D) Charlson Comorbidity Index (CCI) in changes occurring in quadriceps muscle strength (QMS) – percentage predicted during an AECOPD. T0 - Within 48 hours of exacerbation onset, T1 – Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the AECOPD.

* significant interaction between time*number of exacerbations in the previous year ($p=0.035$) and time*comorbidities ($p=0.020$) were found to affect changes in QMS% predicted during an AECOPD.

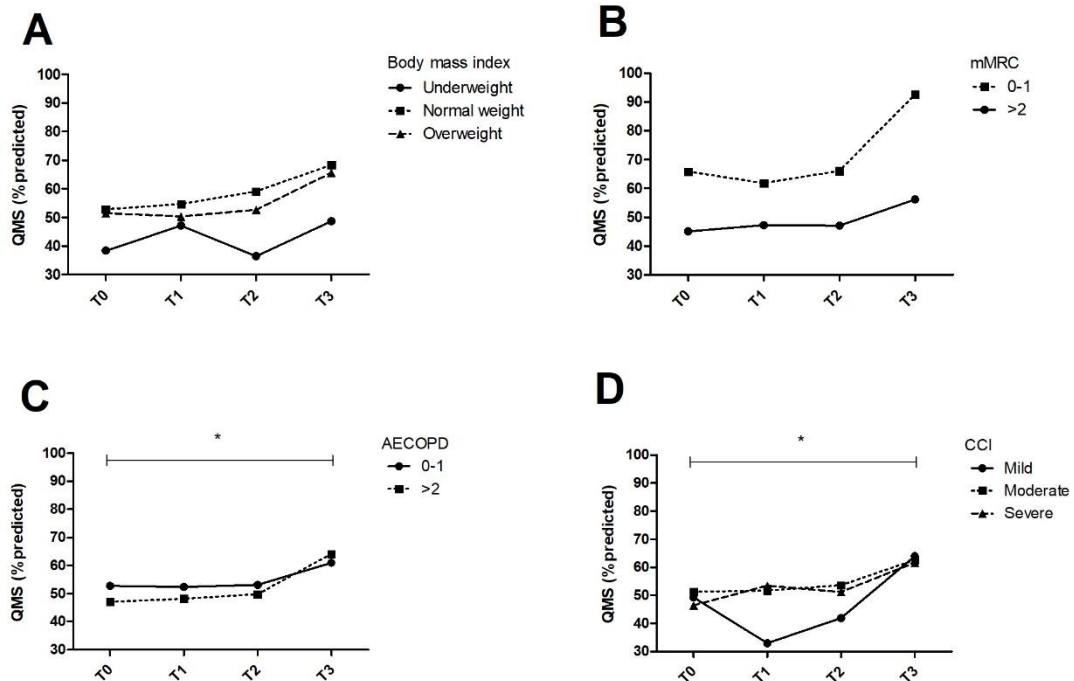


Figure S5 - Effects of the interaction between time and (A) body mass index, (B) modified British Medical Research Council questionnaire (mMRC), (C) acute exacerbations of COPD (AECOPD) during the previous year and (D) Charlson Comorbidity Index (CCI) in changes occurring in COPD assessment test (CAT) during an AECOPD. T0 - Within 48 hours of exacerbation onset, T1 – Day 8, T2 – Day 15 and T3– Day 45 after the onset of the AECOPD.

* significant interaction between time*BMI (p=0.039) were found to affect changes in CAT during an AECOPD.

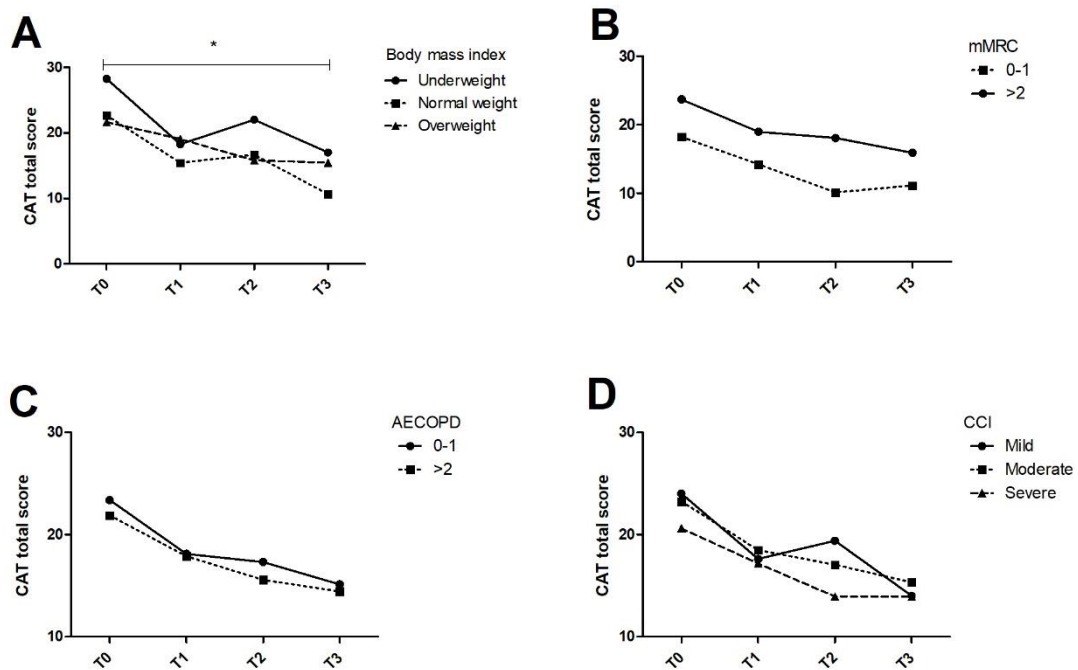


Figure S6 - Effects of the interaction between time and (A) body mass index, (B) modified British Medical Research Council questionnaire (mMRC), (C) acute exacerbations of COPD (AECOPD) during the previous year and (D) Charlson Comorbidity Index (CCI) in changes occurring in 5 times sit-to-stand (5STS) during an AECOPD. T0 - Within 48 hours of exacerbation onset, T1 – Day 8, T2 – Day 15 and T3 – Day 45 after the onset of the AECOPD.

* significant interaction between time*BMI (p=0.008), time*comorbidities (p=0.001) and time*dyspnea (p=0.003) were found to affect changes in 5STS during an AECOPD.

