## Supplementary data

In our study, the comprehensive search strategy is detailed in Table S1. Regarding the quality assessment of the articles, Figure S1 presents the risk of bias evaluation for each included study.

For the assessment of nutrient supplements (NS) on physical performance, the effects of NS treatment were evaluated using various tests. These included the 6-minute walk test (6-MWT), physical activity level (PAL), incremental shuttle walk test (ISWT), endurance shuttle walk test (ESWT), short physical performance battery (SPPB), five-repetition sit-to-stand test (STS5), and cycle endurance time (CET), as illustrated in Figure S2.

In the conducted subgroup analyses, stratification by intervention periods, as displayed in Figures S3 to S9, revealed that NS with a longer intervention duration ( $\geq$  12 weeks) resulted in more significant improvements in both body weight (P=0.04; Figure S3) and quadriceps muscle strength (P=0.01; Figure S8) compared to NS with shorter intervention periods (< 12 weeks). Interestingly, the impact of NS on sarcopenia did not show significant changes irrespective of the combination with pulmonary rehabilitation, as illustrated in Figures S10 to S16. In contrast, the 6-minute walk test (6-MWT) demonstrated potential benefits when not combined with pulmonary rehabilitation, though this finding was not statistically significant (P=0.18; Figure S16). Furthermore, subgroup analyses comparing different types of NS did not reveal any significant differences, as shown in Figures S17 to S21.

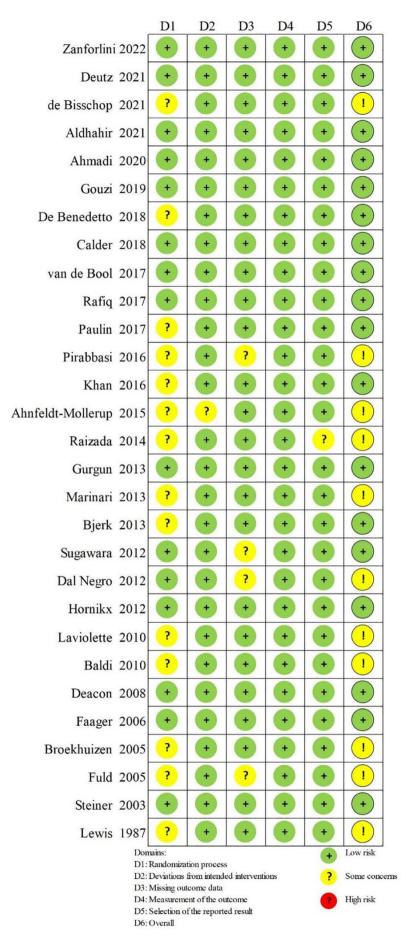


Figure S1. Risk of bias graph. Assessment of the risk-of-bias for each study is based on the Cochrane risk-of-bias 2 tools.

Δ									
Л		NS			ntrol			Std. Mean Differen	
Study or Subgroup	Mean	SD	Total	Mean			Weight	IV, Random, 95%	
Aldhahir 2021			22		1,386.27	22	30.1%	0.71 [0.10, 1.	
Dal Negro 2012	501.65	397.29		-46.93	362.16	44	34.9%	1.43 [0.96, 1.	
/an de Bool 2017	76.3	1,781.85	38	-822.8	1,519.32	35	35.0%	0.54 [0.07, 1.	0]
fotal (95% CI)			104			101	100.0%	0.90 [0.32, 1.4	8]
Heterogeneity: Tau <sup>2</sup> = 0	0.19; Chi <sup>2</sup> =	7.59, df = 3	2 (P = 0	.02); P= 1	74%				
est for overall effect: Z	= 3.06 (P =	= 0.002)							2 1 0 1 2
									Favours [control] Favours [NS]
D									
В		NS		Con	ntrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean		Total	Weight	IV, Fixed, 95%	
Ndhahir 2021	73	51.62	22	40	50.44	22	25.5%	33.00 [2.84, 63.	
)eacon 2008	84	78.9	38	83.8	60.3	42	24.1%	0.20 [-30.81, 31.	
uld 2005	55	85.7	14	76	81.9	11	5.3%		
Gurgun 2013	43.3	59.2	15	69.3	69.7	15	10.8%	-26.00 [-72.28, 20.	
teiner 2003	60	50.6	25	42.6	51.1	35	34.2%	17.40 [-8.68, 43.	8]
									-
otal (95% CI)			114			125	100.0%	10.48 [-4.76, 25.]	2] 🔶
Heterogeneity: Chi <sup>2</sup> = 6	.10, df = 4 (	(P = 0.19);	l <sup>≈</sup> = 349	6					
est for overall effect: Z									-50 -25 0 25 50
	··· V	,							Favours [control] Favours [NS]
C									
C		NS		Co	ntrol			Std. Mean Differen	e Std. Mean Difference
Study or Subgroup	Mean		Total			Total	Weight	IV, Fixed, 95%	
Annfeldt-Mollerup 2015		60.65	28	48	22.65	25	19.8%	0.21 [-0.33, 0.	
Deacon 2008	377.4	392	38	487.4	385.7	42	29.8%	-0.28 [-0.72, 0.	
aager 2006	194.7	169.12	13	180.1	160.41	10	8.5%	0.09 [-0.74, 0.	
Fuld 2005	365	319.5	14	275	275.4	11	9.2%	0.29 [-0.51, 1.	
Gurgun 2013	0.53	2.4	15	0.77	1.4	15	11.3%	-0.12 [-0.84, 0.	
Steiner 2003	328	400.1	25	191	251.8	35	21.5%	0.42 [-0.10, 0.	4]
Total (95% CI)			133			138	100.0%	0.07 [-0.17, 0.3	1] 🔶
Heterogeneity: Chi <sup>2</sup> = 4	.99, df = 5 (	(P = 0.42);	I <sup>2</sup> = 0%						-1 -0.5 0 0.5 1
Test for overall effect: Z	(= 0.56 (P =	= 0.57)							
									Favours (control) Favours (NS)
D									
D		NS			ntrol			Mean Differen	e Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95%	CI IV, Fixed, 95% CI
Bjerk 2013	0.9	1.11	18	0.6	1.63	18	100.0%	0.30 [-0.61, 1.	1]
Fotal (95% CI)			18			18	100.0%	0.30 [-0.61, 1.3	11
Heterogeneity: Not app	licable							, .	
Test for overall effect: Z		- 0.52)							-2 -1 0 1 2
overan enect. Z		5.52)							Favours (control) Favours (NS)
Е									
L		NS		Co	ntrol			Mean Differen	e Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight		
Aldhahir 2021	2	2.35	22	-2	2.69	22	100.0%		
somerill 2021	2	2.50	22	-2	2.08	22	100.0%	4.00 [2.01, 0.	ଏ 📕
fotal (95% CI)			22			22	100.0%	4.00 [2.51, 5.4	a1
	licoblo		22			22	100.0%	4.00 [2.31, 5.4	
Heterogeneity: Not app									-4 -2 0 2 4
Fest for overall effect: Z	2 = 5.25 (P <	ະ ບ.ບປປປ1)							Favours (control) Favours (NS)
г									
F									
					NS		0	ontrol	Mean Difference Mean Difference
tudy or Subgroup				Mean		Total	Mean	SD Total Weig	
aviolette 2010	- <b>6</b>	and the latest sector		256.5			134.4		% 122.10 [-107.22, 351.42]
Paulin 2017 (absence						8	-83	92.14 8 32.9	
Paulin 2017 (presence	of pulmon:	ary rehabil	itation)		297.89	8	376		
/an de Bool 2017				144	204.61	38	244.5	314.61 35 32.0	% -100.50 [-223.36, 22.36]
Fotal (95% CI)						64		61 100.0	% 24.01 [-124.11, 172.14]
Heterogeneity: Tau <sup>2</sup> = 1	3944.27; C	chi² = 8.87,	df = 3	(P = 0.03)	; I <b>≈</b> = 66%				-200 -100 0 100 2
Test for overall effect: Z	= 0.32 (P =	= 0.75)							Favours [control] Favours [NS
	•								Favours (control) Favours (NS

Figure S2. Forest plot of meta-analysis results from the effect of nutrient supplements on changes in physical activity level (A), incremental shuttle walk test (B), endurance shuttle walk test (C), short physical performance battery (D), five-repetition sit-to-stand test (E), cycle endurance time (F) in people with chronic obstructive pulmonary disease.

		NS		С	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
3.1 body weight (kg), sho	ort (<12w	vk)							
Ahmadi 2020	0.52	2.19	23	0.64	2.68	21	4.6%	-0.12 [-1.57, 1.33]	
Aldhahir 2021	1	3.03	22	1	2.94	22	4.1%	0.00 [-1.76, 1.76]	<del></del>
Broekhuizen 2005	2	2.3	38	1.6	2.7	42	5.0%	0.40 [-0.70, 1.50]	-+
Dal Negro 2012 (4 wk)	1.93	2.4	44	-1.1	1.57	44	5.4%	3.03 [2.18, 3.88]	
de Bisschop 2021	-0.6	1.6	25	-0.8	1.9	29	5.3%	0.20 [-0.73, 1.13]	-+
Deacon 2008	0.7	1.67	38	0.2	1.93	42	5.4%	0.50 [-0.29, 1.29]	+
Faager 2006	1.24	3.2	13	1.04	3.1	10	3.1%	0.20 [-2.39, 2.79]	
Gurgun 2013	1.1	0.9	15	0.6	0.7	15	5.6%	0.50 [-0.08, 1.08]	+
Laviolette 2010 (8 wk)	0.39	2.54	10	0.35	1.58	10	4.0%	0.04 [-1.81, 1.89]	
Lewis 1987	1.1	0.63	10	0.3	0.88	11	5.6%	0.80 [0.15, 1.45]	
Raizada 2014	1.15	2.02	15	-0.53	2.9	15	4.1%	1.68 [-0.11, 3.47]	
Steiner 2003	0.63	1.5	25	-0.58	1.5	35	5.4%	1.21 [0.44, 1.98]	
Subtotal (95% Cl)			278			296	57.5%	0.79 [0.26, 1.33]	◆
Heterogeneity: Tau <sup>2</sup> = 0.5	4; Chi <sup>2</sup> =	35.37,	df = 11	(P = 0)	0002)	l <sup>2</sup> = 69	%		
Test for overall effect: Z =	2.90 (P =	= 0.004	l)						
3.2 body weight (kg), long	a (>12u	(Jr)							
Baldi 2010	g(⇒12m 3.8	2.6	13	-0.1	1.1	13	4.7%	3.90 [2.37, 5.43]	
Calder 2018	1.81		20	1.38		19	4.7%	0.43 [-1.07, 1.93]	<b>_</b>
Dal Negro 2012 (12 wk)	5.53		44	-1.89		44	4.0%	7.42 [6.18, 8.66]	
Fuld 2005	0.4	2.9	14	-0.3	1.75	11	4.6%	0.70 [-0.93, 2.33]	
Khan 2016	1.48		30		2.6	30	4.0%	1.65 [0.48, 2.82]	
Laviolette 2010 (16 wk)	-0.09		10			10	3.8%	1.05 [-1.15, 3.25]	
Sugawara 2012		1.57	17		0.97	14	5.6%	1.50 [0.60, 2.40]	
van de Bool 2017		1.99	38		2.28	35	5.5%	1.60 [0.61, 2.40]	
Subtotal (95% CI)	1.9	1.99	186	0.5	2.20	176	39.3%	2.31 [0.70, 3.92]	
Heterogeneity: Tau <sup>2</sup> = 4.8	e: ohiz -	07 1 2		/0 ~ 0 0	00043			2.51[0.70, 5.52]	-
Test for overall effect: Z =				(1 0.0	0001)	1 - 32	20		
		2.200	.,						
Total (95% CI)			464			472	100.0%	1.37 [0.67, 2.06]	◆
Heterogeneity: Tau <sup>2</sup> = 2.0	5; Chi² =	153.73	3, df = 1	I9 (P < I	0.0000	11); I² =	88%	-	-4 -2 0 2 4
Test for overall effect: Z =	3.86 (P =	= 0.000	)1)						-4 -2 0 2 4 Favours (control) Favours (NS)
Test for subaroup differer	nces: Chi	i² = 3.0	16. df =	1 (P = 0	.08). l <sup>a</sup>	= 67.4	%		ravous (controlj ravous (NO)

Figure S3. Forest plot of subgroup analysis results from body weight changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

		NS		C	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD		Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
4.1 body mass index (kg	/m <sup>2</sup> ), sho	ort (<1	2wk)						
Ahmadi 2020	Ő.17	0.75	23	0.2	0.97	21	7.7%	-0.03 [-0.55, 0.49]	
Dal Negro 2012 (4 wk)	0.66	1.23	44	-0.21	0.54	44	8.1%	0.87 [0.47, 1.27]	
De Benedetto 2018	-0.4	3	45	-0.1	1.2	45	5.8%	-0.30 [-1.24, 0.64]	
de Bisschop 2021	-0.1	0.7	25	-0.3	1.5	29	7.2%	0.20 [-0.41, 0.81]	_ <del></del>
Faager 2006	0.4	1.89	13	0.3	0.83	10	4.9%	0.10 [-1.05, 1.25]	
Gouzi 2019	-0.3	1.72	31	-0.2	1.26	26	6.5%	-0.10 [-0.88, 0.68]	
Gurgun 2013	0.2	1.4	15	0.08	0.2	15	6.8%	0.12 [-0.60, 0.84]	
Marinari 2013	0.8	3.6	30	-0.4	2.12	25	3.7%	1.20 [-0.33, 2.73]	
Raizada 2014	0.51	1.32	15	-0.09	1.13	15	6.0%	0.60 [-0.28, 1.48]	
Steiner 2003	0.24	0.5	25	-0.22	0.6	35	8.5%	0.46 [0.18, 0.74]	
Subtotal (95% CI)			266			265	65.2%	0.33 [0.08, 0.58]	◆
Heterogeneity: Tau <sup>2</sup> = 0.0	6; Chi <sup>2</sup> =	14.45,	df = 9	(P = 0.1	1); l² =	38%			
Test for overall effect: Z =	2.55 (P =	0.01)							
	2								
4.2 body mass index (kg Calder 2018	/m~), lon	g(≥1 1.03	2wk) 20	0.44	0.57	19	7.6%	0.19 [-0.33, 0.71]	
Dal Negro 2012 (12 wk)		1.53	44	-0.31	0.57	44	7.8%	2.41 [1.93, 2.89]	
Khan 2016	0.6	1.41	30	-0.31	1.47	30	6.7%	0.60 [-0.13, 1.33]	
Pirabbasi 2016	0.09		13	-	1.47	18	5.3%	0.19 [-0.87, 1.25]	
Rafig 2017		0.93	19	-0.06		24	7.4%	0.07 [-0.50, 0.64]	
Subtotal (95% CI)	0.01	0.83	126	-0.00	0.50	135	34.8%	0.71 [-0.33, 1.75]	
Heterogeneity: Tau <sup>2</sup> = 1.2	o chiž –	66.00		/0 ~ 0 0	00043-			0.7 1 [-0.55, 1.75]	
Test for overall effect: Z =			ui – 4	(F < 0.0	0001),	1 - 85	70		
restion overall ellect. Z -	1.34 (F -	0.10)							
Total (95% CI)			392			400	100.0%	0.45 [0.07, 0.83]	◆
Heterogeneity: Tau <sup>2</sup> = 0.4	3; Chi <sup>2</sup> =	80.62	df = 14	‡ (P < 0.	00001	); I <sup>2</sup> = 8	3%	-	
Test for overall effect: Z =	2.31 (P =	0.02)		-					2 1 0 1 2
Test for subgroup differen	nces: Chi	² = ∩ 4	= 1b 9	1 (P = 0)	48) I <sup>z</sup>	= 0%			Favours (control) Favours (NS)

Figure S4. Forest plot of subgroup analysis results from body mass index changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

		NS			ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
5.1 fat-free mass (kg), (s	hort) <12	2wk							
Ahmadi 2020	2.85	4.65	23	0.78	2.62	21	7.4%	2.07 [-0.14, 4.28]	
Aldhahir 2021	-3	11.08	22	1	7.16	22	2.2%	-4.00 [-9.51, 1.51] 📍	
Broekhuizen 2005	1.2	2.2	38	1.1	2.1	42	11.9%	0.10 [-0.84, 1.04]	
Dal Negro 2012 (4 wk)	1.22	2.96	44	4.1	2.63	44	11.1%	-2.88 [-4.05, -1.71]	_ <b>_</b>
Deacon 2008	0.9	2.4	38	0.8	2.6	42	11.4%	0.10 [-1.00, 1.20]	
Steiner 2003	0.13	1.37	25	0.63	1.31	35	12.8%	-0.50 [-1.19, 0.19]	-
Subtotal (95% CI)			190			206	56.8%	-0.52 [-1.68, 0.65]	
Heterogeneity: Tau <sup>2</sup> = 1.4	5; Chi <sup>2</sup> =	25.34, (	df = 5 (F	P = 0.00	01); P	= 80%			
Test for overall effect: Z =	0.87 (P =	0.39)							
5.2 fat-free mass (kg), (le									
Baldi 2010	1.5	2.6	13	-0.1	2.3				
Dal Negro 2012 (12 wk)	3.66	2.97	44	3.8	2.95	44	10.9%	-0.14 [-1.38, 1.10]	
Fuld 2005	2	1.6	14	0.4	0.9	11	11.8%	1.60 [0.61, 2.59]	
Pirabbasi 2016	-2.82	6.14	13	-2.07	5.17	18	3.5%	-0.75 [-4.85, 3.35]	
Sugawara 2012	0.8	3.59	17	-0.1	1.19	14	8.7%	0.90 [-0.92, 2.72]	
Subtotal (95% CI)			101			100	43.2%	0.90 [0.04, 1.76]	◆
Heterogeneity: Tau <sup>2</sup> = 0.2	8; Chi <b>=</b> =	5.75, dt	= 4 (P	= 0.22);	<b> 2</b> = 30	0%			
Test for overall effect: Z =	2.06 (P =	0.04)							
Total (95% CI)			291			306	100.0%	0.07 [-0.81, 0.95]	+
Heterogeneity: Tau <sup>2</sup> = 1.4	6; Chi <sup>2</sup> =	44.53, (	df = 10	(P < 0.0	0001);	; <b>I²</b> = 78	%	-	-4 -2 0 2 4
Test for overall effect: Z =	0.15 (P =	0.88)							
Test for subgroup differer			df = 1	(P = 0.0)	16) F=	= 72.8%	5		Favours (control) Favours (NS)

Figure S5. Forest plot of subgroup analysis results from fat-free mass changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

		NS		C	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
6.1 fat-free mass index (	$ka/m^2$ ), s	short (	<12wk	)					
Ahmadi 2020	0.99	1.61	23	0.29	0.97	21	10.0%	0.70 [-0.08, 1.48]	
Aldhahir 2021	1	2.12	22	0	1.91	22	6.5%	1.00 [-0.19, 2.19]	
Dal Negro 2012 (4 wk)	0.36	1.33	44	0.06	1.39	44	12.2%	0.30 [-0.27, 0.87]	- <b>+-</b>
Gouzi 2019	0	1.24	31	0	1.56	26	10.3%	0.00 [-0.74, 0.74]	
Gurgun 2013	0.6	0.5	15	0.1	0.6	15	14.0%	0.50 [0.10, 0.90]	
Marinari 2013	3.7	3.84	30	-0.6	3.31	25	3.4%	4.30 [2.41, 6.19]	
Subtotal (95% CI)			165			153	56.4%	0.74 [0.14, 1.34]	
Heterogeneity: Tau <sup>2</sup> = 0.3	6; Chi <sup>z</sup> =	18.67	df = 5 (	P = 0.0	02); P	= 73%			
Test for overall effect: Z =	•				~				
6.2 fat-free mass index ( Dal Negro 2012 (12 wk) Pirabbasi 2016 Sugawara 2012 Subtotal (95% CI)	1.34 -1.02	1.52	≥12wk 44 13 17 74	-0.02 -0.78	1.38 1.9 0.67	44 18 14 <b>76</b>	13.4% 7.0% 14.4% <b>34.7</b> %	1.36 (0.75, 1.97) -0.24 (-1.58, 1.10) 0.20 (-0.31, 0.71) <b>0.53 (-0.41, 1.47)</b>	
Heterogeneity: Tau <sup>2</sup> = 0.5: Test for overall effect: Z =				P = 0.00	7); I² =	80%			
Total (95% Cl) Heterogeneity: Tau <sup>2</sup> = 0.3 <sup>2</sup>	•			(P = 0.0	004); I	<b>229</b> <sup>2</sup> = 729	<b>100.0</b> %	0.66 [0.21, 1.12]	
Test for overall effect: Z = Test for subaroup differer			·	1 (P = 0	.72). I <sup>z</sup>	= 0%			Favours [control] Favours [NS]

Figure S6. Forest plot of subgroup analysis results from fat-free mass index changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

		NS		0	Control		1	Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
7.1 handgrip strength, sh	nort (<12	wk)							
Ahmadi 2020	2.76	3.81	23	0.2	4.54	21	9.0%	0.60 [-0.00, 1.21]	
Aldhahir 2021	2	5.5	22	3	12.16	22	9.1%	-0.10 [-0.70, 0.49]	
Dal Negro 2012 (4 wk)	0.5	0.76	44	-0.2	1.18	44	10.0%	0.70 [0.27, 1.13]	
Deutz 2021	1.56	7	109	-0.34	6.5	105	10.7%	0.28 [0.01, 0.55]	
Faager 2006	6.8	39.18	12	16.6	60.37	10	7.6%	-0.19 [-1.03, 0.65]	
Lewis 1987	1.8	7.17	10	0.5	13.47	11	7.6%	0.11 [-0.74, 0.97]	
Steiner 2003	0.64	1.6	25	-0.05	2.1	35	9.5%	0.36 [-0.16, 0.87]	+
Subtotal (95% CI)			245			248	63.5%	0.32 [0.11, 0.54]	•
Heterogeneity: Tau <sup>2</sup> = 0.0:	2; Chi <sup>2</sup> =	7.51, df	= 6 (P	= 0.28);	I <sup>2</sup> = 209	%			
Test for overall effect: Z =									
7.2 handgrip strength, lo									
Dal Negro 2012 (12 wk)	1.6	0.85	44	-0.6	0.97	44	10.2%	2.39 [1.84, 2.94]	
Rafiq 2017	-0.04	2.73	19	0.16	3.89	24	9.9%	-0.06 [-0.66, 0.54]	
Zanforlini 2022	-0.1	4	25	1	4.9	24	10.2%	-0.24 [-0.80, 0.32]	
Subtotal (95% CI)			88			92	30.3%	0.70 [-1.00, 2.40]	
Heterogeneity: Tau <sup>2</sup> = 2.1	6; Chi <b>=</b> =	52.77, (	df = 2 (f	° < 0.00	001); I²	= 96%			
Test for overall effect: Z =	0.81 (P =	0.42)							
Total (95% CI)			333			340	100.0%	0.40 [-0.05, 0.85]	•
Heterogeneity: Tau <sup>2</sup> = 0.4	4: Chi² =	65.22 (	df = 9 fB	- - < ∩ ∩∩	001) <sup>,</sup> I <sup>2</sup>	= 86%			
Test for overall effect: Z =				5.00	//	0070			-2 -1 0 1 2
restion overall effect. Z =	1120 -	0.00)							Favours (control) Favours (NS)

Figure S7. Forest plot of subgroup analysis results from handgrip strength changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

		NS		С	ontrol		5	Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% Cl
8.1 quadriceps muscle	strength	, short i	(<12wk	()					
Ahnfeldt-Mollerup 2015	0.27	0.7	28	0.22	0.63	25	8.4%	0.07 [-0.47, 0.61]	
Broekhuizen 2005	-2	27.91	7	21	29.44	5	1.7%	-0.74 [-1.95, 0.46]	
de Bisschop 2021	3.2	3.8	24	4.1	5.3	29	8.4%	-0.19 [-0.73, 0.35]	
Faager 2006	19.6	11.1	38	23.1	17	42	12.7%	-0.24 [-0.68, 0.20]	
Fuld 2005	9	21	38	12	24	42	12.7%	-0.13 [-0.57, 0.31]	
Gouzi 2019	9	26.03	31	0	35.73	26	9.0%	0.29 [-0.24, 0.81]	
Laviolette 2010 (8 wk)	1.5	6.11	12	0.7	7.81	10	3.5%	0.11 [-0.73, 0.95]	
Steiner 2003	17.4	34.28	25	3.6	34.06	35	9.1%	0.40 [-0.12, 0.92]	
Subtotal (95% CI)			203			214	<b>65.5</b> %	-0.00 [-0.20, 0.19]	<b>•</b>
Heterogeneity: Chi <sup>2</sup> = 6.9	8, df = 7	(P = 0.4)	3); I <b>2</b> =	0%					
Test for overall effect: Z =	0.05 (P =	= 0.96)							
8.2 quadriceps muscle	strength	, long (B	≥12wk	c)					
Hornikx 2012	15	16	24	7	19	25	8.0%	0.45 [-0.12, 1.02]	+
Laviolette 2010 (16 wk)	2.6	6	10	-3	8.24	10	3.1%	0.74 [-0.17, 1.66]	
							3.170	0.74 [-0.17, 1.66]	
van de Bool 2017	13.6	31.86	38	10.8	29.27	35	12.2%	0.09 [-0.37, 0.55]	_ <b>-</b>
	13.6 5.1	31.86 20.5	38 25	10.8 -5.6	29.27 22				
van de Bool 2017 Zanforlini 2022 Subtotal (95% CI)						35	12.2%	0.09 [-0.37, 0.55]	 ◆
Zanforlini 2022 Subtotal (95% CI)	5.1	20.5	25 97	-5.6		35 24	12.2% 8.0%	0.09 [-0.37, 0.55] 0.50 [-0.07, 1.06]	•
Zanforlini 2022 Subtotal (95% Cl) Heterogeneity: Chi² = 2.3	5.1 31, df = 3	20.5 (P = 0.5	25 97	-5.6		35 24	12.2% 8.0%	0.09 [-0.37, 0.55] 0.50 [-0.07, 1.06]	•
Zanforlini 2022	5.1 31, df = 3	20.5 (P = 0.5	25 97	-5.6		35 24 94	12.2% 8.0%	0.09 [-0.37, 0.55] 0.50 [-0.07, 1.06]	•
Zanforlini 2022 Subtotal (95% CI) Heterogeneity: Chi <sup>2</sup> = 2.3 Test for overall effect: Z = Total (95% CI)	5.1 31, df = 3 = 2.38 (P	20.5 (P = 0.5 = 0.02)	25 97 i1); I <sup>2</sup> = 300	-5.6 0%	22	35 24 94	12.2% 8.0% 3 <b>1.3</b> %	0.09 [-0.37, 0.55] 0.50 [-0.07, 1.06] 0.35 [0.06, 0.64]	
Zanforlini 2022 Subtotal (95% CI) Heterogeneity: Chi <sup>2</sup> = 2.3 Test for overall effect: Z =	5.1 31, df = 3 = 2.38 (P .30, df = 1	20.5 (P = 0.5 = 0.02) 11 (P = 1	25 97 i1); I <sup>2</sup> = 300	-5.6 0%	22	35 24 94	12.2% 8.0% 3 <b>1.3</b> %	0.09 [-0.37, 0.55] 0.50 [-0.07, 1.06] 0.35 [0.06, 0.64]	-2 -1 0 1 Favours [control] Favours [NS]

Figure S8. Forest plot of subgroup analysis results from quadriceps muscle strength changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

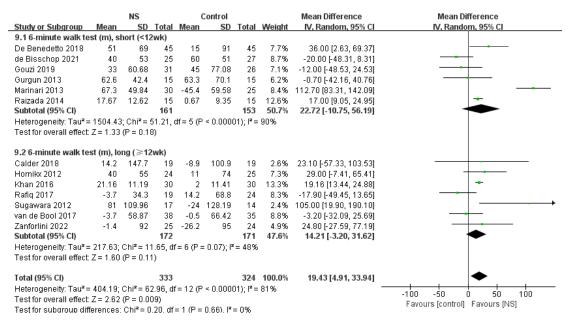


Figure S9. Forest plot of subgroup analysis results from 6-minute walk test changes in response to nutrient supplements based on different intervention periods in people with chronic obstructive pulmonary disease.

		NS			ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean						Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
10.1 body weight (kg),	presence o	of pulr	nonary	rehabil	itation				
Aldhahir 2021	1	3.03	22	1	2.94	22	4.9%	0.00 [-1.76, 1.76]	
Baldi 2010	3.8	2.6	13	-0.1	1.1	13	5.2%	3.90 [2.37, 5.43]	
Broekhuizen 2005	2	2.3	38	1.6	2.7	42	5.9%	0.40 [-0.70, 1.50]	
de Bisschop 2021	-0.6	1.6	25	-0.8	1.9	29	6.1%	0.20 [-0.73, 1.13]	<b>_</b>
Deacon 2008	0.7	1.67	38	0.2	1.93	42	6.3%	0.50 [-0.29, 1.29]	+
Faager 2006	1.24	3.2	13	1.04	3.1	10	3.6%	0.20 [-2.39, 2.79]	
Fuld 2005	0.4	2.9	14	-0.3	1	11	5.1%	0.70 [-0.93, 2.33]	
Gurgun 2013	1.1	0.9	15	0.6	0.7	15	6.6%	0.50 [-0.08, 1.08]	+
Laviolette 2010	-0.09	2.42	10	-1.14	2.59	10	4.2%	1.05 [-1.15, 3.25]	
Steiner 2003	0.63	1.5	25	-0.58	1.5	35	6.4%	1.21 [0.44, 1.98]	
Sugawara 2012	1.3	1.57	17	-0.2	0.97	14	6.2%	1.50 [0.60, 2.40]	│ <del>─</del>
van de Bool 2017	1.9	1.99	38	0.3	2.28	35	6.1%	1.60 [0.61, 2.59]	
Subtotal (95% CI)			268			278	66.5%	0.97 [0.48, 1.45]	•
Heterogeneity: Tau <sup>2</sup> = 0	).38; Chi <sup>2</sup> =	26.07	df = 11	(P = 0.	006); I	<sup>2</sup> = 58%	6		
Test for overall effect: Z	= 3.88 (P =	: 0.000	)1)						
10.2 body weight (kg),	absence of	f pulm	onary i	ehabilit	ation				
Ahmadi 2020	0.52	2.19	23	0.64	2.68	21	5.0%	-0.12 [-1.57, 1.33]	
Calder 2018	1.81	2.91	20	1.38	1.74	19	5.0%	0.43 [-1.07, 1.93]	
Dal Negro 2012	5.53	3.81	44	-1.89	1.73	44	5.4%	7.42 [6.18, 8.66]	
Khan 2016	1.48	1.98	30	-0.17	2.6	30	5.5%	1.65 [0.48, 2.82]	
	1 1	0.63	10	0.3	0.88	11	6.2%	0.80 [0.15, 1.45]	_ <b></b>
Lewis 1987	1.1						4 5 64	4 60 5 0 4 4 0 4 71	
		2.02	15	-0.53	2.9	15	4.5%	1.68 [-0.11, 3.47]	
Lewis 1987 Raizada 2014 <b>Subtotal (95% CI)</b>			15 142	-0.53	2.9	15 140	4.5% 31.5%	1.98 [-0.18, 4.14]	
Raizada 2014 Subtotal (95% CI)	1.15	2.02	142			140	31.5%		
Raizada 2014	1.15 6.82; Chi <sup>z</sup> =	2.02 98.35	142 df = 5			140	31.5%		
Raizada 2014 <b>Subtotal (95% CI)</b> Heterogeneity: Tau <sup>2</sup> = 6	1.15 6.82; Chi <sup>z</sup> =	2.02 98.35	142 df = 5			140  ² = 95	31.5%		•
Raizada 2014 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = 6 Test for overall effect: Z Total (95% CI)	1.15 6.82; Chi <sup>z</sup> = := 1.80 (P =	2.02 98.35 0.07)	142 df = 5 410	(P < 0.0	0001);	140  ² = 95 418	31.5% % 100.0%	1.98 [-0.18, 4.14]	
Raizada 2014 Subtotal (95% CI) Heterogeneity: Tau <sup>2</sup> = 6 Test for overall effect: Z	1.15 5.82; Chi <sup>2</sup> = := 1.80 (P = .98; Chi <sup>2</sup> =	2.02 98.35 0.07) 134.1	142 , df = 5 410 3, df = 1	(P < 0.0	0001);	140  ² = 95 418	31.5% % 100.0%	1.98 [-0.18, 4.14]	-4 -2 0 2 4 Favours [control] Favours [NS]

Figure S10. Forest plot of subgroup analysis results from body weight changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

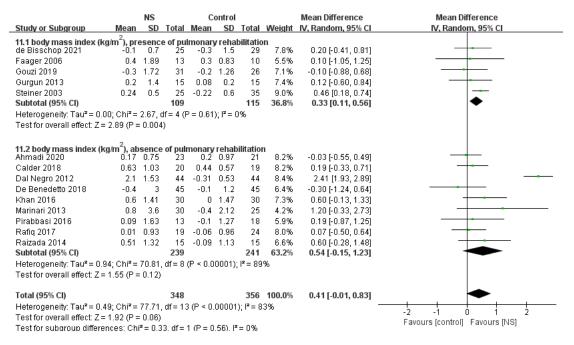


Figure S11. Forest plot of subgroup analysis results from body mass index changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

		NS			ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
12.1 fat-free mass (kg)	), presence	e of puli	monary	/ rehabi	ilitatio	1			
Aldhahir 2021	-3	11.08	22	1	7.16	22	1.4%	-4.00 [-9.51, 1.51]	←
Baldi 2010	1.5	2.6	13	-0.1	2.3	13	7.9%	1.60 [-0.29, 3.49]	
Broekhuizen 2005	1.2	2.2	38	1.1	2.1	42	15.2%	0.10 [-0.84, 1.04]	<b>_</b>
Deacon 2008	0.9	2.4	38	0.8	2.6	42	13.7%	0.10 [-1.00, 1.20]	<b>_</b>
Fuld 2005	2	1.6	14	0.4	0.9	11	14.7%	1.60 [0.61, 2.59]	
Steiner 2003	0.13	1.37	25	0.63	1.31	35	17.7%	-0.50 [-1.19, 0.19]	
Sugawara 2012	0.8	3.59	17	-0.1	1.19	14	8.3%	0.90 [-0.92, 2.72]	
Subtotal (95% CI)			167			179	78.8%	0.41 [-0.38, 1.21]	
Test for overall effect: Z 12.2 fat-free mass (kg)			nonary	rehabil	itation				
Ahmadi 2020	2.85	4.65	23	0.78	2.62	21	6.4%	2.07 [-0.14, 4.28]	+
Dal Negro 2012	3.66	2.97	44	3.8	2.95	44	12.4%	-0.14 [-1.38, 1.10]	
Pirabbasi 2016 Subtotal (95% CI)	-2.82	6.14	13 80	-2.07	5.17	18 83	2.3% <b>21.2</b> %	-0.75 [-4.85, 3.35] <b>0.49 [-1.10, 2.07]</b>	
Heterogeneity: Tau <sup>2</sup> = 0 Test for overall effect: Z			f = 2 (P	= 0.20)	<b>2</b> = 38	3%			
Total (95% CI)			247			262	100.0%	0.42 [-0.24, 1.08]	◆
	CO. O. 2	10 77 .	df – 0 /8	P = 0.02	$f(\mathbf{r}^2 = f$	54%			
Heterogeneity: Tau <sup>2</sup> = 0	.52; Unif =	19.07	ur – a (i						
Heterogeneity: Tau² = 0 Test for overall effect: Z			ui – 3 (i						-4 -2 Ó 2 4 Favours (control) Favours (NS)

Figure S12. Forest plot of subgroup analysis results from fat-free mass changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

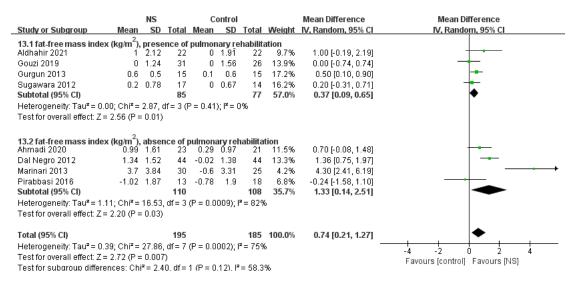


Figure S13. Forest plot of subgroup analysis results from fat-free mass index changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

		NS			ontrol			Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Random, 95% Cl	IV, Random, 95% Cl
14.1 handgrip strength,	presence	e of pulr	nonary	rehabi	litation				
Aldhahir 2021	2	5.5	22	3	12.16	22	10.1%	-0.10 [-0.70, 0.49]	
Faager 2006	6.8	39.18	12	16.6	60.37	10	8.6%	-0.19 [-1.03, 0.65]	
Steiner 2003	0.64	1.6	25	-0.05	2.1	35	10.5%	0.36 [-0.16, 0.87]	
Subtotal (95% CI)			59			67	29.3%	0.10 [-0.26, 0.45]	<b>•</b>
Heterogeneity: Tau <sup>2</sup> = 0.	00; Chi <sup>2</sup> =	1.86, df	= 2 (P	= 0.40);	$ ^{2} = 0\%$				
Test for overall effect: Z	= 0.53 (P =	0.59)							
14.2 handgrip strength	absence	of pulm	ionary	rehabili	tation				
Ahmadi 2020	2.76	3.81	23	0.2	4.54	21	10.0%	0.60 [-0.00, 1.21]	
Dal Negro 2012	1.6	0.85	44	-0.6	0.97	44	10.3%	2.39 [1.84, 2.94]	
De Benedetto 2018	0.71	4.18	20	-0.14	3.26	20	9.9%	0.22 [-0.40, 0.84]	
Deutz 2021	1.56	7	109	-0.34	6.5	105	11.6%	0.28 [0.01, 0.55]	
Lewis 1987	1.8	7.17	10	0.5	13.47	11	8.6%	0.11 [-0.74, 0.97]	
Rafiq 2017	-0.04	2.73	19	0.16	3.89	24	10.0%	-0.06 [-0.66, 0.54]	
Zanforlini 2022	-0.1	4	25	1	4.9	24	10.3%	-0.24 [-0.80, 0.32]	
Subtotal (95% CI)			250			249	70.7%	0.48 [-0.15, 1.11]	
Heterogeneity: Tau <sup>2</sup> = 0.	63; Chi <sup>2</sup> =	58.85, (	df = 6 (F	< 0.00	001); I <sup>z</sup>	= 90%			
Test for overall effect: Z	= 1.49 (P =	0.14)							
Total (95% CI)			309			316	100.0%	0.35 [-0.11, 0.81]	•
Heterogeneity: Tau <sup>2</sup> = 0.	46; Chi <sup>2</sup> =	63.62, (	df = 9 (F	P < 0.00	001); I <sup>z</sup>	= 86%			-2 -1 0 1 2
Test for overall effect: Z:	= 1.49 (P =	0.14)							
Test for subaroup differ	ences: Chi	r = 1.09	. df = 1	(P = 0.3)	30), I <sup>2</sup> =	7.8%			Favours [control] Favours [NS]

Figure S14. Forest plot of subgroup analysis results from handgrip strength changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

		NS		C	ontrol		:	Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% Cl
15.1 quadriceps muscle	strengt	h, prese	ence of	pulmoi	nary reh	nabilita	tion		
Ahnfeldt-Mollerup 2015	0.27	0.7	28	0.22	0.63	25	9.2%	0.07 [-0.47, 0.61]	
Broekhuizen 2005	-2	27.91	7	21	29.44	5	1.8%	-0.74 [-1.95, 0.46]	
de Bisschop 2021	3.2	3.8	24	4.1	5.3	29	9.1%	-0.19 [-0.73, 0.35]	
Faager 2006	19.6	11.1	38	23.1	17	42	13.8%	-0.24 [-0.68, 0.20]	
Fuld 2005	9	21	38	12	24	42	13.9%	-0.13 [-0.57, 0.31]	
Gouzi 2019	9	26.03	31	0	35.73	26	9.7%	0.29 [-0.24, 0.81]	
Hornikx 2012	15	16	24	7	19	25	8.3%	0.45 [-0.12, 1.02]	
Laviolette 2010	2.6	6	10	-3	8.24	10	3.2%	0.74 [-0.17, 1.66]	
Steiner 2003	17.4	34.28	25	3.6	34.06	35	10.0%	0.40 [-0.12, 0.92]	
van de Bool 2017	13.6	31.86	38	10.8	29.27	35	12.7%	0.09 [-0.37, 0.55]	
Subtotal (95% CI)			263			274	91.7%	0.07 [-0.10, 0.24]	<b>*</b>
Heterogeneity: Chi <sup>2</sup> = 11.	34, df = 9	9 (P = 0.	.25); I <sup>z</sup> =	= 21%					
Test for overall effect: Z =	0.81 (P	= 0.42)							
15.2 quadriceps muscle	strengt	h, absei	nce of	pulmon	ary reh	abilitat	ion		
Zanforlini 2022	5.1	20.5	25	-5.6	22	24	7.9%	0.50 [-0.07, 1.06]	
Subtotal (95% CI)			25			24	7.9%	0.50 [-0.07, 1.06]	
Heterogeneity: Not applic	able								
Test for overall effect: Z =	1.71 (P	= 0.09)							
Total (95% CI)			288			298	100.0%	0.11 [-0.06, 0.27]	•
Heterogeneity: Chi <sup>2</sup> = 13.	30, df = 1	10 (P = I	0.21); l <sup>a</sup>	= 25%					-2 -1 0 1 2
Test for overall effect: Z =	1.27 (P :	= 0.20)							-2 -1 U 1 2 Favours (control) Favours (NS)
Test for subaroup differe	nces: Ch	1 <sup>7</sup> = 1 91	6 df = 1	(P = 0)	16) IZ-	10 n%			Favours (control) Favours (NS)

Figure S15. Forest plot of subgroup analysis results from quadriceps muscle strength changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

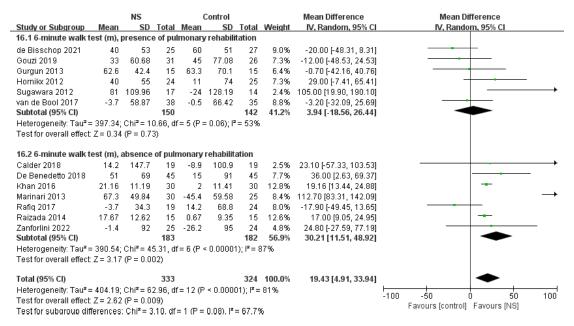


Figure S16. Forest plot of subgroup analysis results from 6-minute walk test changes in response to nutrient supplements based on the presence or absence of pulmonary rehabilitation in people with chronic obstructive pulmonary disease.

		NS		С	ontrol			Mean Difference	Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fixed, 95% Cl
17.1 body mass inde									
Raizada 2014	0.51	1.32	15	-0.09		15	6.5%	0.60 [-0.28, 1.48]	
Steiner 2003	0.24	0.5	25	-0.22	0.6	35	64.9%	0.46 [0.18, 0.74]	
Subtotal (95% CI)			40			50	71.4%	0.47 [0.21, 0.74]	-
Heterogeneity: Chi <sup>2</sup> =	0.09, df	= 1 (P	= 0.77)	; I <b>z</b> = 09	6				
Test for overall effect:	Z = 3.48	(P = 0	).0005)						
17.2 body mass inde Gouzi 2019 Pirabbasi 2016 Rafiq 2017 Subtotal (95% CI) Heterogeneity: Chi <sup>2</sup> =	-0.3 0.09 0.01	1.72 1.63 0.93	31 13 19 <b>63</b>	-0.2 -0.1 -0.06	1.26 1.27 0.96	pleme 26 18 24 68	8.4% 4.5%	-0.10 [-0.88, 0.68] 0.19 [-0.87, 1.25] 0.07 [-0.50, 0.64] <b>0.04 [-0.38, 0.46]</b>	
Test for overall effect:				., ,	•				
Total (95% CI)			103			118	100.0%	0.35 [0.12, 0.57]	•
Heterogeneity: Chi <sup>2</sup> =	3.22, df	= 4 (P	= 0.52)	; I <sup>2</sup> = 09	6				
Test for overall effect:	Z = 3.04	(P = 0	).002)						1 0.0 0 0.0 1
Test for subaroup diff	ferences	Chi <b></b> ≊∘	= 2.92.	df = 1 (ł	P = 0.0	9), <b> </b> <sup>2</sup> =	65.8%		Favours (control) Favours (NS)

Figure S17. Forest plot of subgroup analysis results from body mass index changes in response to nutrient supplements (NS) based on the types of NS in people with chronic obstructive pulmonary disease.

		NS		C	ontrol			Mean Difference	Mea	n Difference	
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% CI	IV, Fi	ixed, 95% Cl	
18.1 fat-free mass ir	idex (ka/	m <sup>2</sup> ). e	neravi	nutrient	suppl	lement	s				
Aldhahir 2021	1	2.12	22	0	1.91	22	0.2% T	1.00 [-0.19, 2.19]			
Sugawara 2012	0.2	0.78	17	0	0.67	14	55.5%	0.20 [-0.31, 0.71]			
Subtotal (95% CI)			39			36	65.7%	0.32 [-0.15, 0.79]			
Heterogeneity: Chi2=	= 1.46, df	= 1 (P	= 0.23	); l <sup>2</sup> = 32	?%						
Test for overall effect	: Z = 1.35	i (P = 1	0.18)								
										[	
18.2 fat-free mass ir	ndex (kg/	m2), n	on-ene	ergy nut	rient s	supplei	nents				
Gouzi 2019	0	1.24	31	0	1.56	26	15.4%	0.00 [-0.74, 0.74]		<b></b>	
Pirabbasi 2016	-1.02	1.87	13	-0.78	1.9	18	4.7%	-0.24 [-1.58, 1.10]		-	
Subtotal (95% CI)			44			44	20.1%	-0.06 [-0.71, 0.59]			
Heterogeneity: Chi <sup>2</sup> =	0.09, df	= 1 (P	= 0.76)	); <b>I²</b> = 09	6						
Test for overall effect	: Z = 0.17	(P = 0	).87)								
Total (95% CI)			83			80	100.0%	0.19 [-0.19, 0.57]		•	
Heterogeneity: Chi <sup>2</sup> =	: 2.42, df	= 3 (P	= 0.49	); <b>I</b> <sup>2</sup> = 09	6						
Test for overall effect									-2 -1	U 1 Ferrerure (NIC)	2
Test for subaroup dif			,	df = 1 (8	P = 0.3	35), l² =	0%		Favours (cont	rol] Favours (NS)	

Figure S18. Forest plot of subgroup analysis results from fat-free mass index changes in response to nutrient supplements (NS) based on the types of NS in people with chronic obstructive pulmonary disease.

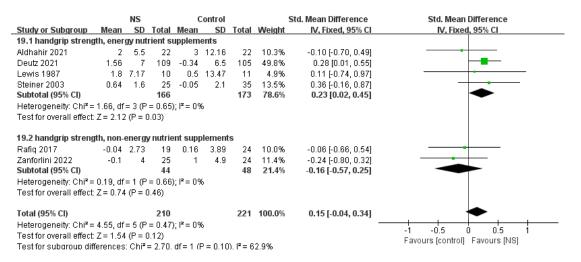


Figure S19. Forest plot of subgroup analysis results from handgrip strength changes in response to nutrient supplements (NS) based on the types of NS in people with chronic obstructive pulmonary disease.

		NS		C	ontrol			Std. Mean Difference	Std. Mean Difference
Study or Subgroup	Mean	SD	Total	Mean	SD	Total	Weight	IV, Fixed, 95% Cl	IV, Fixed, 95% Cl
20.1 quadriceps mus	scle stre	ngth, e	nergy r	nutrient	supple	ments			
Steiner 2003	17.4	34.28	25	3.6	34.06	35	20.3%	0.40 [-0.12, 0.92]	+
van de Bool 2017	13.6	31.86	38	10.8	29.27	35	25.9%	0.09 [-0.37, 0.55]	
Subtotal (95% CI)			63			70	46.2%	0.23 [-0.12, 0.57]	
Heterogeneity: Chi <sup>2</sup> =	0.76, df	= 1 (P =	: 0.38);	$ ^{2} = 0\%$					
Test for overall effect:	Z=1.29	(P = 0.	20)						
20.2 quadriceps mus	scle stre	ngth, n	on-ene	rgy nuti	rient su	pplem	ents		
Gouzi 2019	9	26.03	31	0	35.73	26	18.0%	0.29 [-0.24, 0.81]	
Hornikx 2012	15	16	24	7	19	25	15.4%	0.45 [-0.12, 1.02]	
Zanforlini 2022	5.1	20.5	25	-5.6	22	24	15.3%	0.50 [-0.07, 1.06]	
Subtotal (95% CI)			80			75	48.7%	0.40 [0.08, 0.72]	<b>•</b>
Heterogeneity: Chi <sup>2</sup> =	0.31, df	= 2 (P =	= 0.86);	I <sup>2</sup> = 0%					
Test for overall effect:	Z = 2.48	(P = 0.	01)						
Total (95% CI)			143			145	100.0%	0.32 [0.09, 0.56]	◆
Heterogeneity: Chi <sup>2</sup> =	1.62, df	= 4 (P =	: 0.81);	l² = 0%				-	
Test for overall effect:	Z = 2.69	(P = 0.	007)						Favours [control] Favours [NS]
Test for subaroup dif	ferences	: Chi <sup>z</sup> =	0.55. d	f=1 (P	= 0.46).	. I² = 09	6		ravours (control) Favours (NO)

Figure S20. Forest plot of subgroup analysis results from quadriceps muscle strength changes in response to nutrient supplements (NS) based on the types of NS in people with chronic obstructive pulmonary disease.

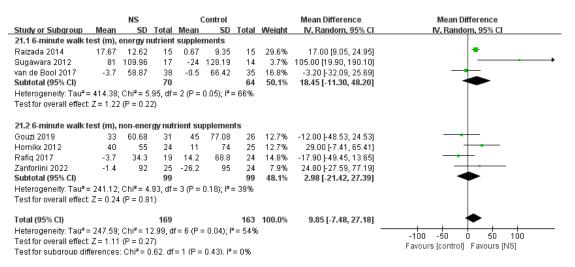


Figure S21. Forest plot of subgroup analysis results from 6-minute walk test changes in response to nutrient supplements (NS) based on the types of NS in people with chronic obstructive pulmonary disease.

Table S1. Search formulas employed to screen electronic databases for interature search					
PubMed     Search for query					
#1	"Pulmonary Disease, Chronic Obstructive"[Mesh]	64,282			
#2	(((((((((((((((((Chronic Obstructive Lung Disease[Title/Abstract]) OR (Chronic Obstructive Pulmonary Diseases[Title/Abstract])) OR (COAD[Title/Abstract])) OR (COPD[Title/Abstract])) OR (Chronic Obstructive Airway Disease[Title/Abstract])) OR (Chronic Obstructive Pulmonary Disease[Title/Abstract])) OR (Airflow Obstruction, Chronic[Title/Abstract])) OR (Airflow Obstructions, Chronic[Title/Abstract])) OR (Chronic Airflow Obstructions, Title/Abstract])) OR (Chronic Airflow Obstructions[Title/Abstract])) OR (Chronic Airflow Obstruction[Title/Abstract])) OR (Chronic Airflow Obstruction[Title/Abstract])) OR (Chronic Airflow Obstruction[Title/Abstract]))	79,298			
#3	#1 OR #2	100,554			
#4	((((((((((((((((((((((((((((((((((((((	841,984			
#5	"Sarcopenia"[Mesh]	7,913			
#6	<pre>((((((((((((((((((((((((((((((((((((</pre>	677,897			

 Table S1. Search formulas employed to screen electronic databases for literature search

	strength[Title/Abstract])) OR ("Muscle Fatigue"[Mesh])) OR (muscle fatigue[Title/Abstract])) OR ("Muscle	
	Weakness"[Mesh])) OR (muscle weakness[Title/Abstract])) OR (muscular weakness[Title/Abstract])	
#7	#5 OR #6	677,897
#8	"randomized controlled trial[Publication Type] OR randomized[Title/Abstract] OR placebo[Title/Abstract] "	962,772
#9	#3 AND #4 AND #7 AND #8	143
Emb	ase	
#1	'chronic obstructive lung disease'/exp	160398
#2	chronic obstructive lung disease:ab,ti OR chronic obstructive pulmonary disease:ab,ti OR coad:ab,ti OR copd:ab,ti OR chronic obstructive airway disease:ab,ti OR chronic obstructive pulmonary disease:ab,ti OR airflow obstruction,	133746
#2	chronic:ab,ti OR airflow obstructions, chronic:ab, ti OR chronic airflow obstructions:ab,ti OR chronic airflow obstruction:ab,ti	155740
#3	supplement* OR (nutritional AND intervention*) OR (nutrition AND intervention*) OR (nutrition AND support) OR (nutritional AND support) OR (nutritional AND recommendation) OR (nutritional AND therapy) OR (nutrition AND therapy) OR (nutrition AND therapy) OR (enriched AND meal*) OR ons OR fsmp OR (sip AND feed) OR (sip AND nutrition) OR (oral AND nutrition)	2610573
#4	sarcopenia/exp	16356
#5	muscle atrophy/exp	53789
#6	skeletal muscle/exp	403428
#7	body composition/exp	118449
#8	malnutrition/exp	193323
#9	muscle strength/exp	83882
#10	hand strength/exp	34844
#11	muscle fatigue/exp	14083
#12	muscle weakness/exp	423971
#13	sarcopeni*:ab,ti OR myopeni*:ab,ti OR muscle loss:ab,ti OR muscle depletion:ab,ti OR muscle wasting:ab,ti OR muscle in the muscle reduction:ab,ti OR reduced muscle:ab,ti OR depleted muscle:ab,ti OR muscle attenuation:ab,ti OR muscle	280184

	alteration:ab,ti OR loss of muscle:ab,ti OR muscular atrophy:ab,ti OR muscle, skeletal:ab,ti OR muscle mass:ab,ti	
	OR psoas muscle:ab,ti OR fat free mass:ab,ti OR lean mass:ab,ti OR muscle index:ab,ti OR muscle size:ab,ti OR	
	muscle thick ness:ab,ti OR body composition:ab,ti OR malnutrition:ab,ti OR muscle strength:ab,ti OR muscular	
	strength:ab,ti OR muscle power:ab,ti OR muscle function:ab,ti OR hand strength:ab,ti OR handgrip strength:ab,ti	
	OR grip strength:ab,ti OR mu scle fatigue:ab,ti OR muscle weakness:ab,ti OR muscular weakness:ab,ti	
#14	randomized controlled trial:ab,ti OR randomized:ab,ti OR placebo:ab,ti	1051911
#15	#1 OR #2	186603
#16	#4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13	1223202
#17	#3 AND #14 AND #15 AND #16	243
The	Cochrane Library	
#1	MeSH descriptor: [Pulmonary Disease, Chronic Obstructive] explode all trees	6337
#2	(Chronic Obstructive Lung Disease):ti,ab,kw OR (Chronic Obstructive Pulmonary Diseases):ti,ab,kw OR (COAD):ti,ab,kw OR (COPD):ti,ab,kw OR (Chronic Obstructive Airway Disease):ti,ab,kw OR (Chronic Obstructive Pulmonary Disease):ti,ab,kw OR (Airflow Obstruction, Chronic):ti,ab,kw OR (Airflow Obstructions, Chronic):ti,ab,kw OR (Chronic Airflow Obstructions):ti,ab,kw OR (Chronic Airflow Obstruction):ti,ab,kw	22954
#3	#1 or #2	23242
#4	(supplement*) OR (nutritional intervention*) OR (nutrition intervention*) OR (nutrition support) OR (nutritional support) OR (nutritional recommendation) OR (nutrition recommendation) OR (nutritional therapy) OR (nutrition therapy) OR (enriched meal*) OR (ONS) OR (FSMP) OR (sip feed) OR (sip nutrition) OR (oral nutrition)	139294
#5	MeSH descriptor: [Sarcopenia] explode all trees	616
#6	MeSH descriptor: [Muscular Atrophy] explode all trees	990
#7	MeSH descriptor: [Muscle, Skeletal] explode all trees	13303
#8	MeSH descriptor: [Body Composition] explode all trees	5697
#9	MeSH descriptor: [Malnutrition] explode all trees	4728
#10	MeSH descriptor: [Muscle Strength] explode all trees	6700
#11	MeSH descriptor: [Hand Strength] explode all trees	1725

#12	MeSH descriptor: [Muscle Fatigue] explode all trees	1050
#13	MeSH descriptor: [Muscle Weakness] explode all trees	609
#14	(sarcopeni*):ti,ab,kw OR (myopeni*):ti,ab,kw OR (muscle loss):ti,ab,kw OR (muscle depletion):ti,ab,kw OR (muscle wasting):ti,ab,kw OR (muscle reduction):ti,ab,kw OR (reduced muscle):ti,ab,kw OR (depleted muscle):ti,ab,kw OR (muscle attenuation):ti,ab,kw OR (muscle alteration):ti,ab,kw OR (loss of muscle):ti,ab,kw OR (muscular atrophy):ti,ab,kw OR (muscle atrophy):ti,ab,kw OR (skeletal muscle):ti,ab,kw OR (muscle mass):ti,ab,kw OR (psoas muscle):ti,ab,kw OR (fat free mass):ti,ab,kw OR (lean mass):ti,ab,kw OR (muscle index):ti,ab,kw OR (muscle size):ti,ab,kw OR (muscle thickness):ti,ab,kw OR (body composition):ti,ab,kw OR (muscle function):ti,ab,kw OR (muscle strength):ti,ab,kw OR (muscle strength):ti,ab,kw OR (muscle function):ti,ab,kw OR (muscle function):ti,ab,kw OR (muscle fatigue):ti,ab,kw OR (muscle fatigue):ti,a	86904
#15	#5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14	92503
#16	#3 AND #4 AND #15	371
Web	of Science	
#1	TS=(Pulmonary Disease, Chronic Obstructive or Chronic Obstructive Lung Disease or Chronic Obstructive Pulmonary Diseases or COAD or COPD or Chronic Obstructive Airway Disease or Chronic Obstructive Pulmonary Disease or Airflow Obstruction, Chronic or Airflow Obstructions, Chronic or Chronic Airflow Obstructions or Chronic Airflow Obstruction)	105,404
#2	TS=(supplement* or nutritional intervention* or nutrition intervention* or nutrition support or nutritional support or nutritional recommendation or nutrition recommendation or nutritional therapy or nutrition therapy or enriched meal* or ONS or FSMP or sip feed or sip nutrition or oral nutrition)	694,069
#3	TS=(Sarcopenia or sarcopeni* or myopeni* or muscle loss or muscle depletion or muscle wasting or muscle reduction or reduced muscle or depleted muscle or muscle attenuation or muscle alteration or loss of muscle or Muscular Atrophy or muscular atrophy or muscle atrophy or Muscle, Skeletal or skeletal muscle or muscle mass or psoas muscle or fat free mass or lean mass or muscle index or muscle size or muscle thickness or Body Composition or body composition or Malnutrition or malnutrition or Muscle Strength or muscle strength or muscular strength or muscle power or muscle	859,315

	function or Hand Strength or Hand Strength or handgrip strength or grip strength or Muscle Fatigue or muscle fatigue	
	or Muscle Weakness or muscle weakness or muscular weakness)	
#4	TS=(randomized controlled trial or randomized or placebo)	1,117,630
#5	#1 AND #2 AND #3 AND #4	187
Ovid		
	(Pulmonary Disease, Chronic Obstructive or Chronic Obstructive Lung Disease or Chronic Obstructive Pulmonary	
#1	Diseases or COAD or COPD or Chronic Obstructive Airway Disease or Chronic Obstructive Pulmonary Disease or	78236
#1	Airflow Obstruction, Chronic or Airflow Obstructions, Chronic or Chronic Airflow Obstructions or Chronic Airflow	/8230
	Obstruction).ti,ab,kw.	
	(supplement* or nutritional intervention* or nutrition intervention* or nutrition support or nutritional support or	
#2	nutritional recommendation or nutrition recommendation or nutritional therapy or nutrition therapy or enriched meal*	410475
	or ONS or FSMP or sip feed or sip nutrition or oral nutrition).ti,ab,kw.	
	(Sarcopenia or sarcopeni* or myopeni* or muscle loss or muscle depletion or muscle wasting or muscle reduction or	
	reduced muscle or depleted muscle or muscle attenuation or muscle alteration or loss of muscle or Muscular Atrophy	
	or muscular atrophy or muscle atrophy or Muscle, Skeletal or skeletal muscle or muscle mass or psoas muscle or fat	
#3	free mass or lean mass or muscle index or muscle size or muscle thickness or Body Composition or body composition	302186
	or Malnutrition or malnutrition or Muscle Strength or muscle strength or muscular strength or muscle power or muscle	
	function or Hand Strength or Hand Strength or handgrip strength or grip strength or Muscle Fatigue or muscle fatigue	
	or Muscle Weakness or muscle weakness or muscular weakness).ti,ab,kw.	
#4	(randomized controlled trial or randomized or placebo).ti,ab,kw.	737776
#5	1 AND 2 AND 3 AND 4	76
Scop	us	

TITLE-ABS-KEY ( "pulmonary disease, chronic obstructive" OR "chronic obstructive lung disease" OR "chronic obstructive pulmonary diseases" OR "coad" OR "copd" OR "chronic obstructive airway disease" OR "chronic

- #1 obstructive pulmonary disease" OR "airflow obstruction, chronic" OR "airflow obstructions, chronic" OR "chronic 145,607 airflow obstructions" OR "chronic airflow obstruction" )
  - Show less

ALL ("supplement\*" OR "nutritional intervention\*" OR "nutrition intervention\*" OR "nutrition support" OR "nutritional support" OR "nutritional recommendation" OR "nutrition recommendation" OR "nutritional

- #2 therapy" OR "nutrition therapy" OR "enriched meal\*" OR "ons" OR "fsmp" OR "sip feed" OR "sip nutrition" OR "oral 62,032,663 nutrition" )
  - Show less

	TITLE-ABS-KEY ("sarcopenia" OR "sarcopeni*" OR "myopeni*" OR "muscle loss" OR "muscle	
	depletion" OR "muscle wasting" OR "muscle reduction" OR "reduced muscle" OR "depleted muscle" OR "muscle	
	attenuation" OR "muscle alteration" OR "loss of muscle" OR "muscular atrophy" OR "muscular atrophy" OR "muscle	
	atrophy" OR "muscle, skeletal" OR "skeletal muscle" OR "muscle mass" OR "psoas muscle" OR "fat free	
#3	mass" OR "lean mass" OR "muscle index" OR "muscle size" OR "muscle thickness" OR "body	622,527
#3	composition" OR "body composition" OR "malnutrition" OR "malnutrition" OR "muscle strength" OR "muscle	022,327
	strength" OR "muscular strength" OR "muscle power" OR "muscle function" OR "hand strength" OR "hand	
	strength" OR "handgrip strength" OR "grip strength" OR "muscle fatigue" OR "muscle fatigue" OR "muscle	
	weakness" OR "muscle weakness" OR "muscular weakness" )	
	Show less	

#4 TITLE-ABS-KEY ( "randomized controlled trial" O	("randomized" OR "placebo") 1,440,348
#5 #1 AND #2 AND #3 AND #4	899