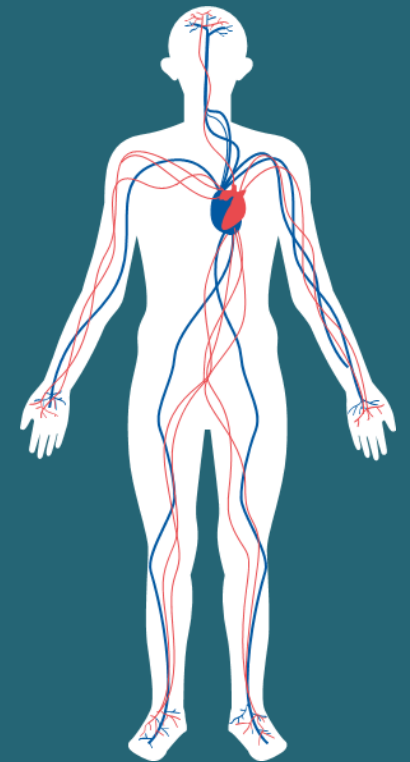


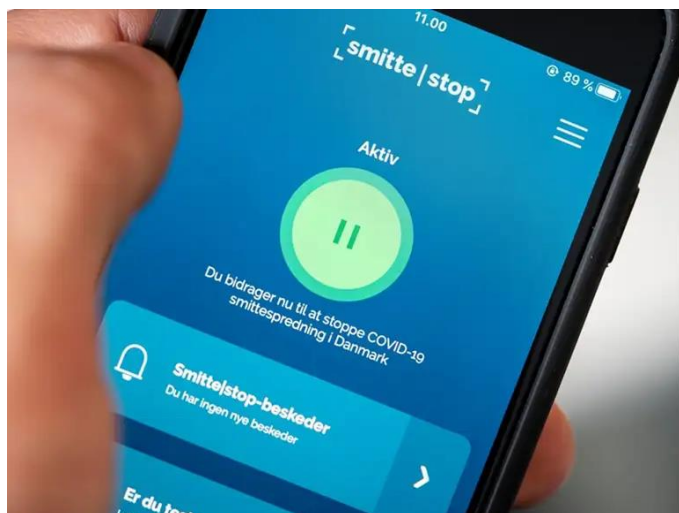


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# Senfølger efter virusinfektioner: Erfaringer med nedsat fysisk arbejdskapacitet hos patienter med senfølger efter COVID-19

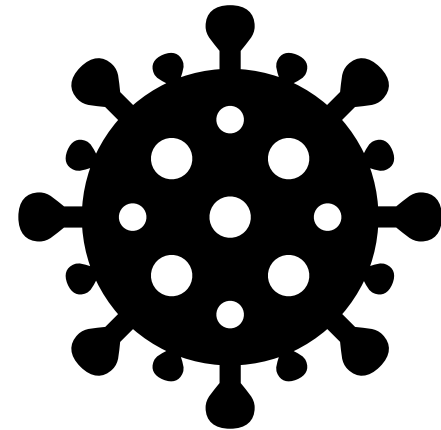


15. Marts 2025



## Senfølger efter COVID-19

- Åndenød
- Fatigue
- Muskeltræthed
- Kognitive udfordringer
- Nedsat fysisk ydeevne



## Formål med i dag

1. Når vi møder patienter med nedsat fysisk arbejdskapacitet, hvad kan vi få ud af at lave en max iltoptagelsestest?
2. Kan den viden vi fik under pandemien, bidrage med en forståelse, som kan anvendes til patienter med senfølger efter andre virusinfektioner



## Cardiopulmonary Exercise Testing in Patients With Long COVID

### Evaluating Functional Capacity and Exercise Limitations

*Lotte Sørensen, PhD; Camilla Lundgren Pedersen, PT; Mads Jønsson Andersen, MD, PhD; Johannes Martin Schmid, MD, PhD; Lisa Gregersen Oestergaard, PhD; Berit Schjøttz-Christensen, MD; and Søren Sperling, MD*

**BACKGROUND:** After COVID-19, some patients present with ongoing symptoms (eg, breathlessness, exercise limitations), even after mild acute infection.

**RESEARCH QUESTION:** What is the exercise capacity of patients diagnosed with long COVID and does it change from baseline to 1-year follow-up?

**STUDY DESIGN AND METHODS:** This retrospective case series included patients with persistent symptoms after a confirmed diagnosis of COVID-19. Exercise capacity was examined by cardiopulmonary exercise testing (CPET), and parameters related to performance, ventila-

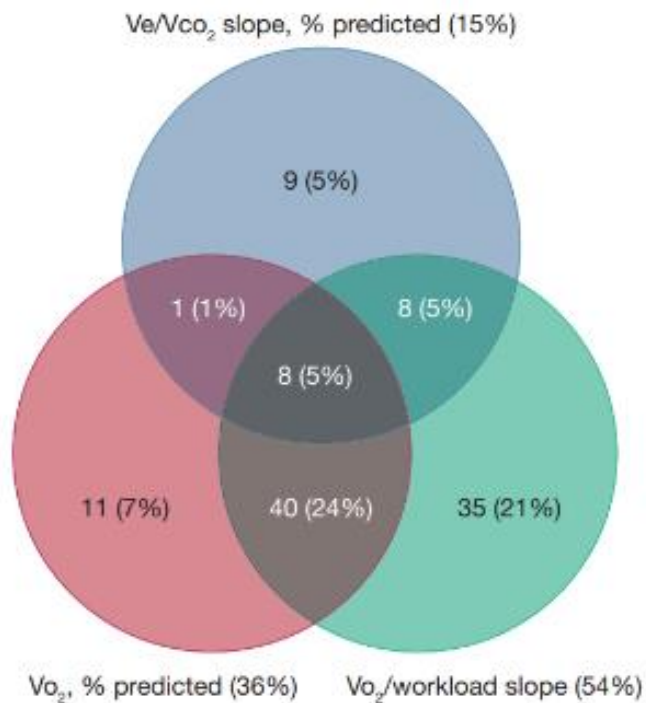
- April 2021 til maj 2023
- 169 patienter testet ved baseline
- Hovedparten blev set i senfølgeklinikken (baseline) mellem 8 og 16 mdr. efter infektion
- Heraf 41 patienter re-testet 1 år efter

**TABLE 2 ] Baseline Cardiopulmonary Exercise Testing Parameters at Peak Exercise (N = 169)**

Variable	Mean (95% CI)	Cutoff Abnormal Value	Abnormal Values
<b>Performance</b>			
Workload (peak), W	172 (162-182)	...	...
Workload, % predicted	125 (119-132)	≤ 84%	32 (19)
$\dot{V}_{O_2}$ peak, mL/min	2,008 (1,908-2,108)	...	...
$\dot{V}_{O_2}$ peak, mL/kg/min	24.4 (23.1-25.7)	...	...
$\dot{V}_{O_2}$ , mL/kg/min, % predicted	97 (92-101)	≤ 84%	60 (36)
<b>Circulation</b>			
Peak heart rate, beats/min	155 (152-159)	...	...
Heart rate, % predicted	90 (88-91)	≤ 90%	77 (46)
Oxygen pulse peak, mL/bpm	12.9 (12.3-13.5)	...	...
Oxygen pulse, % predicted	107 (103-112)	≤ 80%	28 (17)
$\dot{V}_{O_2}$ /workload slope, mL/min/W	8.1 (7.8-8.4)	< 8.4 mL/min/W	91 (54)
Peak systolic BP, mmHg	184 (179-190)	...	...
Peak diastolic BP, mmHg	85.1 (82.9-87.2)	...	...
<b>Ventilation</b>			
Peak $V_E$ , L/min	77.9 (73.7-82.2)	...	...
$V_E$ , % predicted	77 (73-81)	< 85%	115 (68)
Peak breathing frequency	35 (34-36)	≥ 60 breaths/min	2 (1)
Breathing reserve, % (n = 65)	39 (35-44)	< 15%	5 (8)
Peak RER	1.18 (1.17-1.20)	< 1.10	27 (16)
<b>Gas exchange</b>			
$V_E/V_{CO_2}$ slope	29.2 (28.2-30.1)	≥ 34	26 (15)
Lowest $Sa_{O_2}$ , %	99 (98-100) <sup>a</sup>	< 95%	7 (4)
$\dot{V}_{O_2}$ at VT/ $\dot{V}_{O_2}$ peak, %	71 (69-73)	≤ 40%	0 (0)



# Overlap af patienter?



# 1 års follow-up

- Ingen signifikante ændringer i CPET parametre trods mere fysisk aktivitet

	Før	Baseline	1 år
Physical fitness			
Very good	12	1	1
Good	20	2	5
Moderate	7	5	9
Poor	1	16	17
Very poor	0	16	8

## Udbytte af iltoptagelsestest

- Iltoptagelsestest kan noget....
- Patienterne var glade for at blive testet
- De følte sig set og hørt, der var noget objektivt, som var anormalt
- Vi fandt ikke noget "farligt"
- Guidet ift. træningszoner/intensitet
- Fysioterapeuters særlige fokus på aktivitet er vigtigt

# Post virale syndromer generelt

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## From Invasive Cardiopulmonary Testing of Patients With Myalgic Encephalomyelitis/Chronic Fatigue Syndrome

Articles

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**Primary Research**

### How does post COVID differ from other post-viral conditions in childhood and adolescence (0–20 years old)? A systematic review

Chiara Minotti,<sup>a,b</sup> Carla McKenzie,<sup>c</sup> Isabelle Dewandel,<sup>c</sup> Carlen Bekker,<sup>c</sup> Giulia Stumolo,<sup>a</sup> Denis Doni,<sup>a</sup> Carlo Gioiando,<sup>a</sup> Marieke M. Van Der Zalm,<sup>c,d</sup> and Daniele Donà<sup>a,d</sup>

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<sup>b</sup>PhD Program in Clinical Research, University Children's Hospital Basel, University of Basel, Switzerland  
<sup>c</sup>Desmond Tutu TB Centre, Department of Pediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

**Summary**  
**Background** Post Coronavirus disease (COVID) and other post-viral infection syndromes present an overlap of pathogenesis, onset, progression, and symptom profile. We aimed to systematically describe studies on post-viral

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## Exercise Pathophysiology in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome and Postacute Sequelae of SARS-CoV-2

### More in Common Than Not?

Phillip Joseph, MD; Inderjit Singh, MD; Rudolf Oliveira, MD, PhD; Christine A. Capone, MD, MPH; Mary P. Mullen, MD, PhD; Dane B. Cook, PhD; Mary Catherine Stovall, BS; Johanna Squires, MSc; Kristine Madsen, MS; Aaron B. Waxman, MD, PhD; and David M. System, MD

**TOPIC IMPORTANCE:** Postacute sequelae of SARS-CoV-2 (PASC) is a long-term consequence of acute infection from COVID-19. Clinical overlap between PASC and myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) has been observed, with shared symptoms including intractable fatigue, postexertional malaise, and orthostatic intolerance. The

