Early initiated postoperative rehabilitation prevents a temporary deterioration in fatigue and HRQoL in patients with operable lung cancer: A randomized trial

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Background

Despite significant improvements in terms of treatment efficacy and tolerability, lung cancer has a disappointing long-term survival rate and patients are generally symptomatic and clinically vulnerable

Objective

The Postoperative Rehabilitation in **Operation for LUng CAncer** (PROLUCA) investigated in a municipality setting the effect of early (14 days) versus late initiated (14 weeks) postoperative rehabilitation in patients with operable lung cancer on exercise capacity, fatigue and Health Related Quality of Life (HRQoL)

Methods

- A two-armed randomized controlled trial with an early rehabilitation group (14 days after surgery (ERG)) or a control arm with a late rehabilitation group (14 weeks after surgery (LRG)) Figure 1 Timeline
- The primary outcome was a change in maximum oxygen consumption (VO₂peak) from baseline to post intervention 26 weeks following lung resection
- Secondary outcomes were measured with EORTC QLQ C30 and FACT-L measured at the following time-points; baseline, 14 weeks, 26 weeks and 52 weeks after surgery

Figure 1: Timeline of the PROLUCA trial





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Results

- From April 2013 to June 2016 119 patients were randomized to the ERG and 116 to the LRG (figure 2 Flow chart)
- Due to the impact of the surgery a decrease in VO₂peak was expected in both groups from baseline to 14 weeks (table 1)
- The LRG had both a significant decrease in VO₂peak (p <0.001) and deterioration in fatigue (p=0.017) (table 1)
- In the ERG there was a minimal but significant (p=0.027) decrease in VO₂peak and a minor deterioration in fatigue from baseline to 14 weeks post surgery (table 1)
- In the ERG, HRQoL showed a continuous improvement up to 26 weeks post surgery after which HRQoL decreased after further 26 weeks without structured intervention (figure 3)
- In the LRG results showed a non-significant deterioration over the first 14 weeks post surgery, and an increase in HRQoL after participation in the 12 weeks rehabilitation program, but without reaching the same level as the early group (figure 3)





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Table 1.	VO2peak is e	expressed	d ml O	2/mi	n, Abb	reviat	ions: SD	, standa	rd deviati	on; Cl, co	nfide	nce inter	val	
Group	N	Mean	SD	N	Mean	n SD	change	e 95	5% CI	Pr > t	Diff	. 95%	CI P	
					Baseli	ine	14 Wee	ks						
ERG	108	1590	435	69	1503	421	-66	-124	1 to -7	0.027	-139	9 -224 t	o - <0.00	
LRG	98	1591	526	63	1394	432	-202	-263	to -141	<0.001		54	1	
14 weeks 26 Weeks														
ERG	68	1510	407	56	1503	401	17	-34	to 68	0.504	-142	2 67 to 214	<0.001	
LRG	63	1472	445	45	1641	488	159	-104	to -214	<0.001	-	10 214		
Baseline 26 Weeks (primary outcome)														
ERG	108	1612	420	59	1536	462	-46	-104	to 12	0.119	-3	-88 to -82	0.945	
LRG	98	1687	521	47	1626	462	-43	-105	to 18	0.167				
					Baseli	ine	52 Wee	ks						
	100													
ERG	108	1583	419	50	1510	387	-44	-119) to 31	0.244	11	-96 to 11	0.834 9	
LRG	98	1721	515	44	1639	474	-56	-133	to 22	0.158		10 11		
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Scores are presented in mean with standard deviation. A high score indicate good health-related quality of life-* Indicates a P-value below 0.05

Conclusion

Early postoperative exercise after lung cancer surgery avoid a temporary deterioration in VO₂peak, fatigue and HRQoL

Acknowledgement

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Clinical impact

To relieve the postoperative burden of lung cancer surgery this study indicates the importance of starting exercise early after surgery

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