

Exercise capacity and functional performance in patients with an HVAD left ventricular assist device (LVAD): Development 6 month after discharge from cardiac rehabilitation

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Background

Nowadays, treatment with left ventricular assist devices (LVAD) has been established. Adequate exercise capacity and functional performance is crucial for participation and integration in social life following LVAD implantation. Currently, there is only little evidence of the development of these values in the long term follow-up. The aim of this study was to evaluate the exercise capacity and functional performance at discharge from cardiac rehabilitation (CR) as well its further development during 6 months follow-up.

Methods

Prospective mono centre survey between 2016 and 2017 at Schüchtermann-Klinik. Included patients completed a 3-week CR following LVAD Implantation. At the end of CR, as well as 6 month later, following investigations were performed:

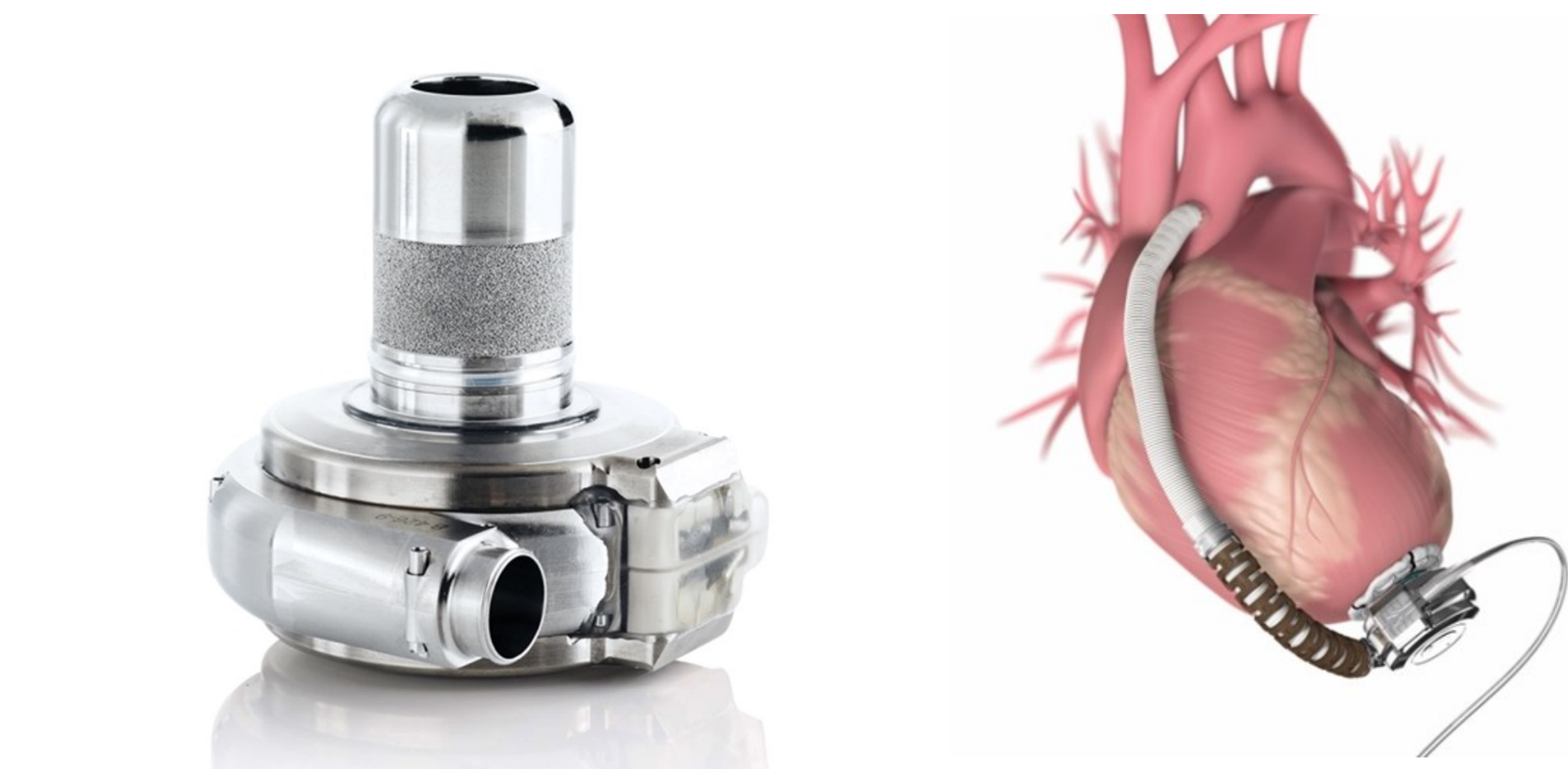
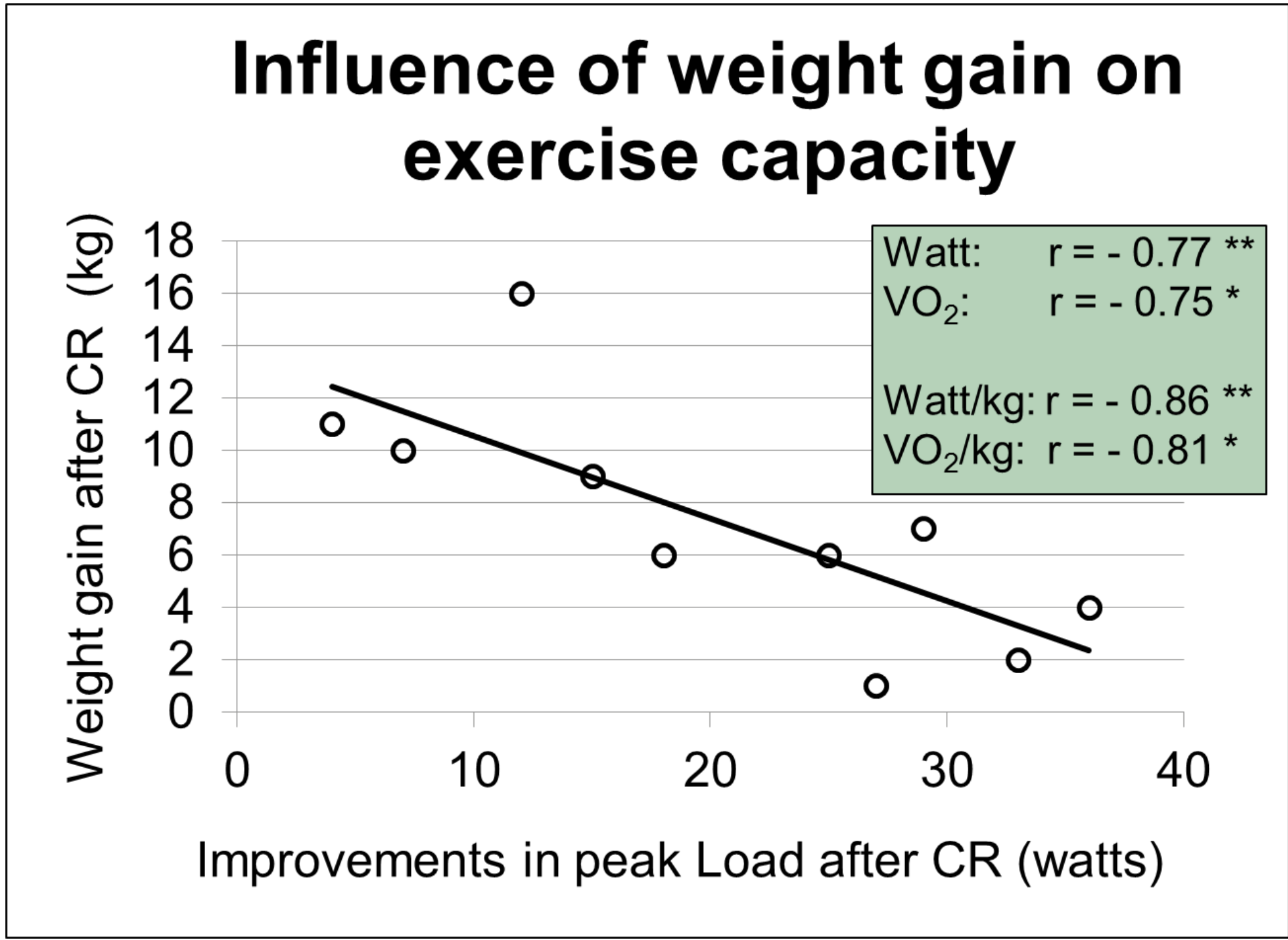
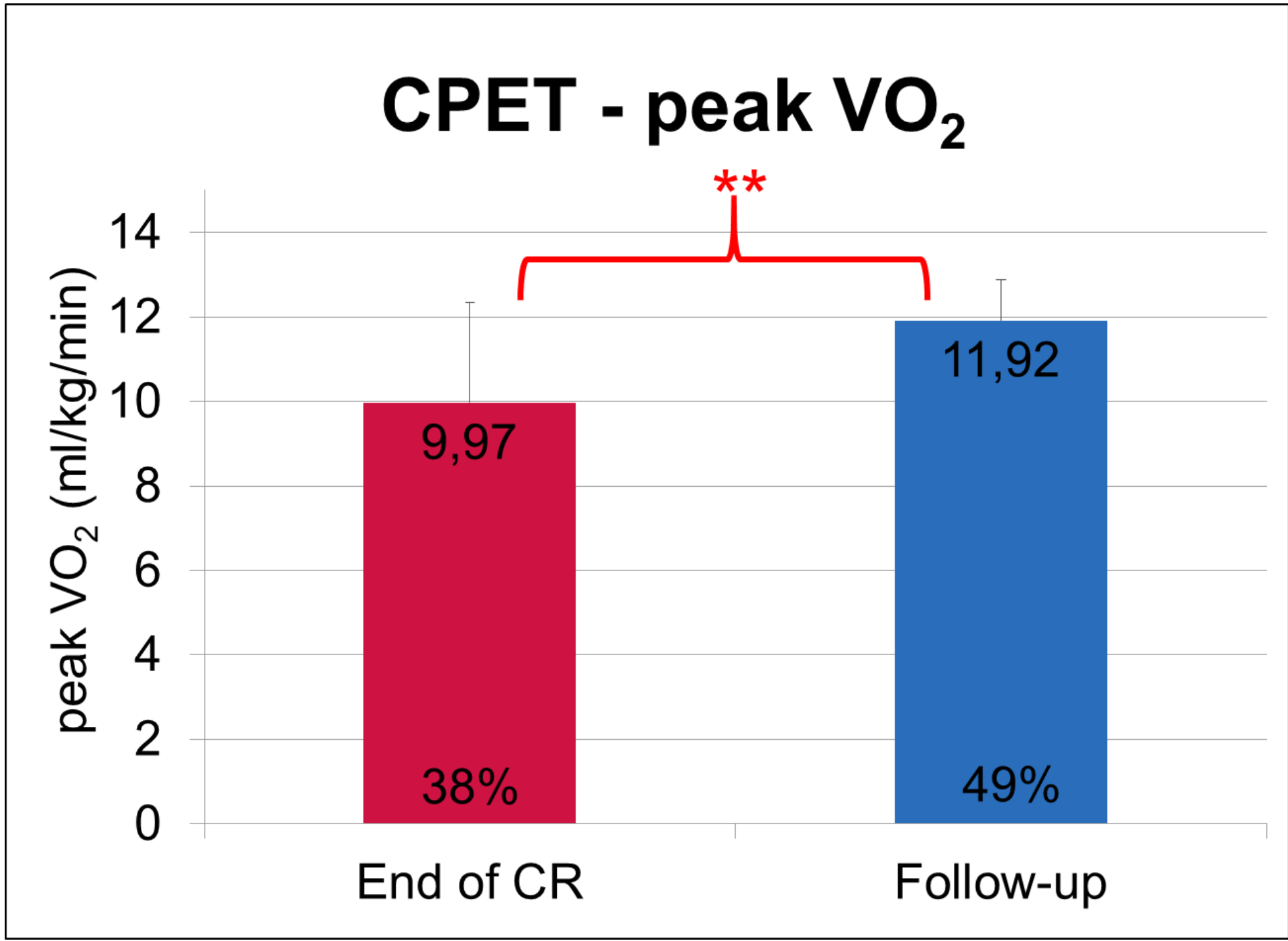
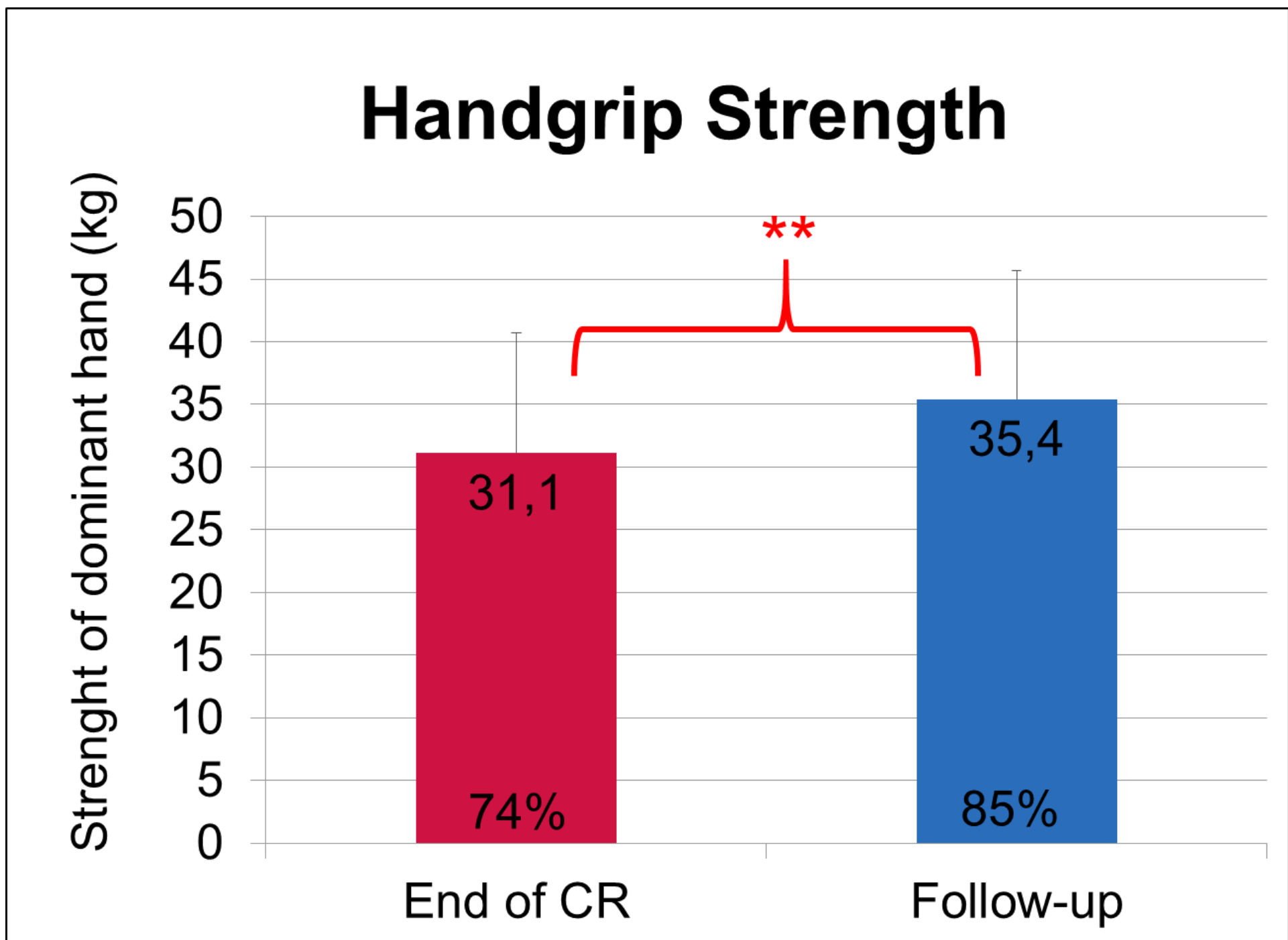
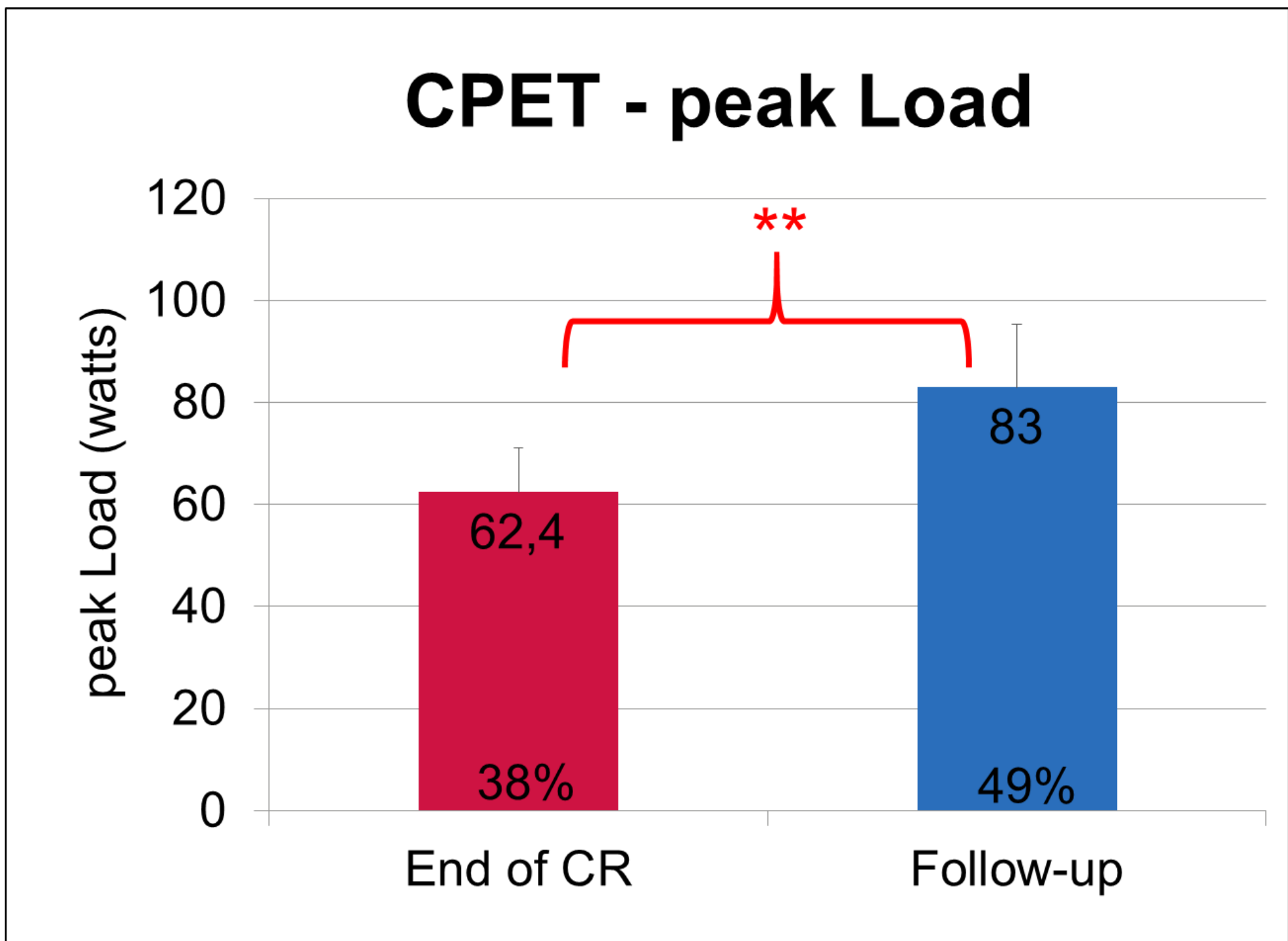
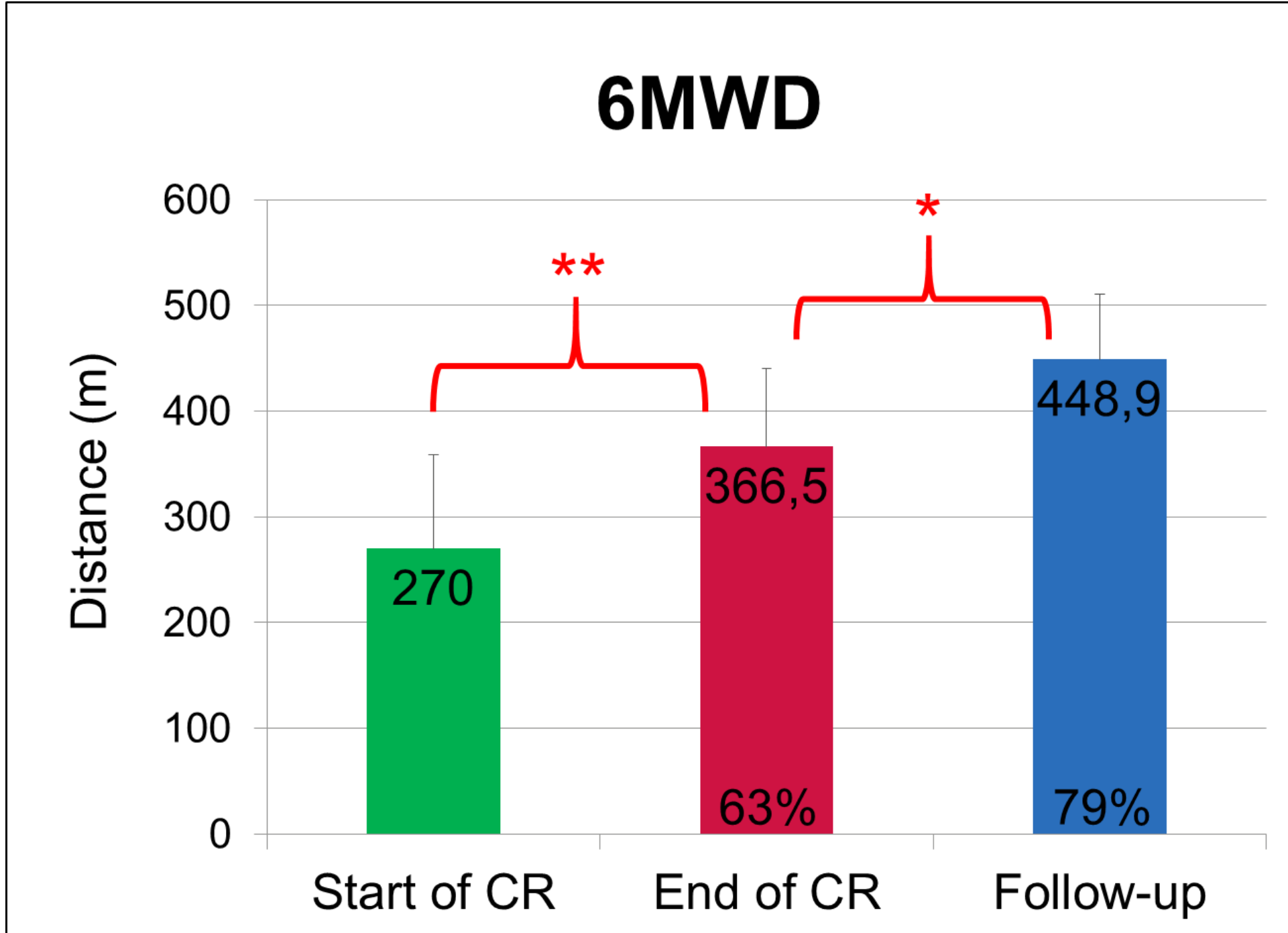
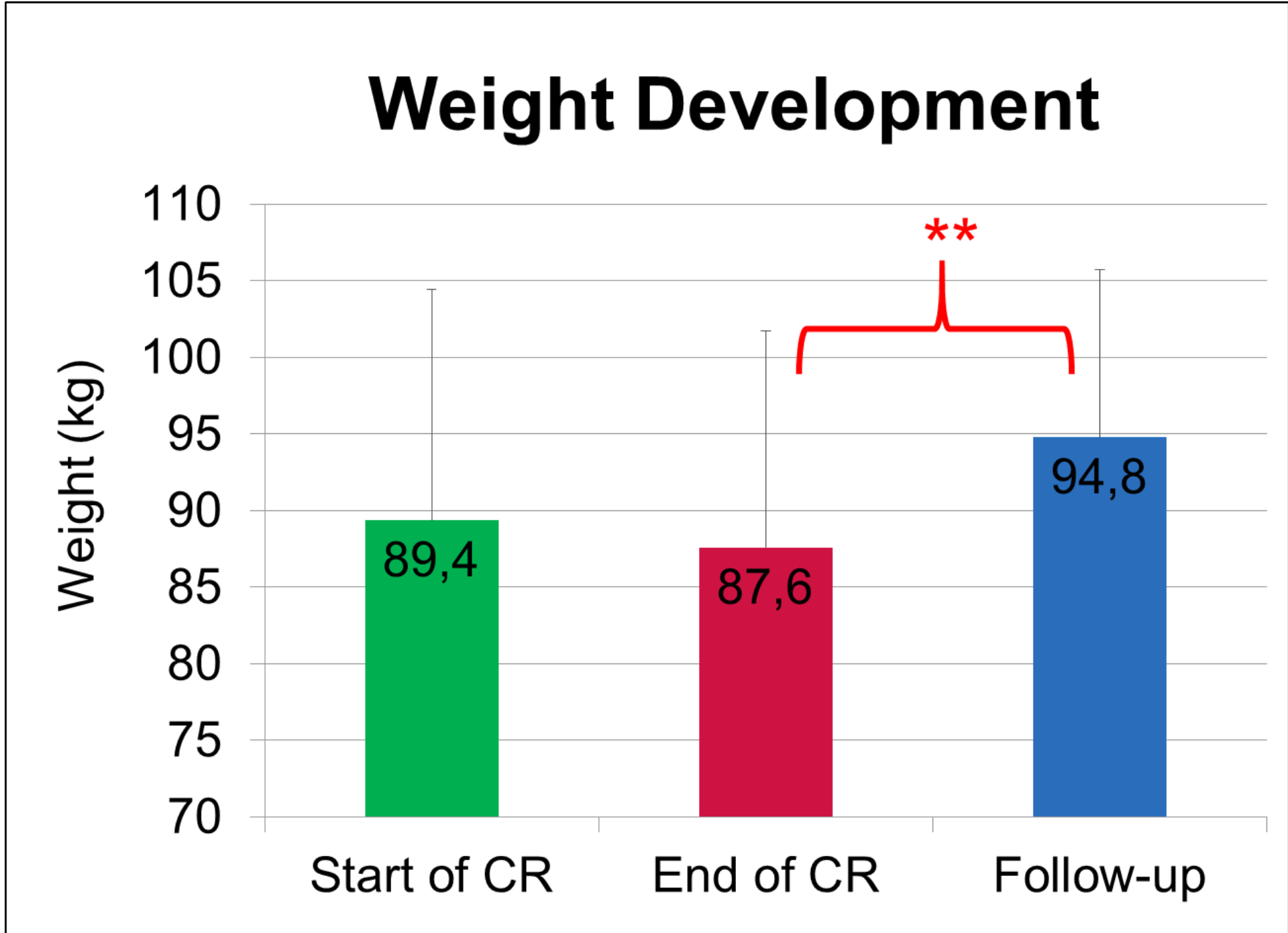
- CPET (bicycle, ramp protocol, 10 watts/min)
- 6-Minute Walking Test
- Handgrip Strength Test (Jamar Dynamometer)

The study was approved by the Ethics Committee of the German Sport University Cologne (134/2015).

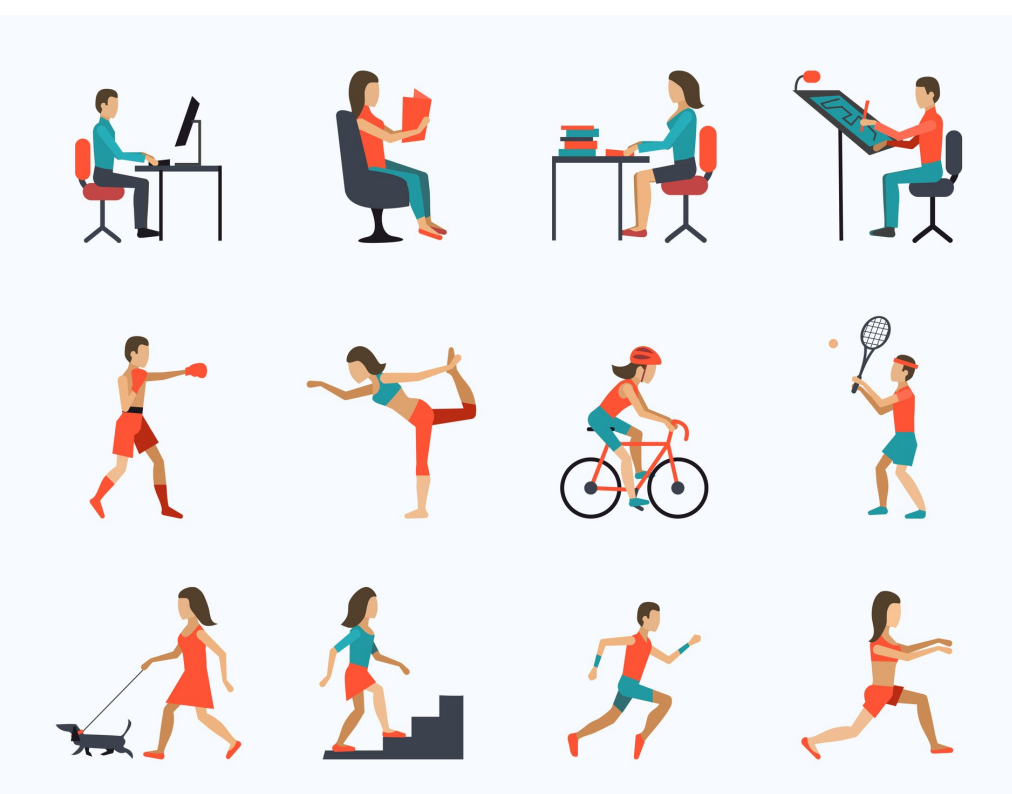


Results

Patient characteristics				
	$\bar{x}$	sd	n	%
General				
Included			10	
Age (years)	62.5	(5.5)		
Male			10	(100)
Body mass index	27.0	(2.7)		
Etiology of Heart Failure				
ICM			5	(50)
DCM			5	(50)
Disease state before LVAD-Implantation				
NYHA Class	4	(0)		
INTERMACS Class	2.7	(0.5)		
LVEF (%)	15.1	(5.5)		
LVAD				
Model HVAD (HeartWare)			10	(100)
Speed (rpm)	2750	(127)		
Intention to treat				
DT			5	(50)
BTT			5	(50)
Comorbidities before LVAD-Implantation				
Hypertension			10	(100)
Coronary artery disease			5	(50)
Renal failure			4	(40)
Atrial fibrillation			2	(20)
Diabetes mellitus			1	(10)
Respiratory diseases			1	(10)
Cerebrovascular accident			1	(10)
Time				
Implantation to CR (days)	21.3	(11.3)		
Implantation to End of CR (days)	43.7	(11.3)		
Implantation to Follow-up (days)	259	(35)		



Discussion



Exercise capacity and functional performance improved over time following CR. However, peak values remain clearly below predicted values (49 %). In contrast the improvements achieved in functional performance (up to 85 % of predicted) and at anaerobic threshold are more pronounced. This is an interesting finding since submaximal exercise capacity is related to the ability to perform activities of daily living. The significant weight gain after discharge from cardiac rehabilitation observed is notable. An effective weight management should be targeted.

