

Effectiveness of a home-based pre-habilitation program in lung transplant candidates: a retrospective chart review

Rationale

➤ In Canada, most lung transplant programs offer mandatory hospital-based pre-transplant exercise programs

➤ Home-based programs offer an alternative way to provide exercise pre-transplant

➤ It gives access to rehabilitation to a larger number of patients and it may be associated with lower healthcare cost.

➤ **Objectives:** 1) describe the changes in functional exercise capacity (6-minute walk distance (6MWD)) in LTx candidates who participated in a home-based exercise program and 2) determine the relationship between changes in functional exercise capacity pre-transplant and post-transplant variables.

Methods

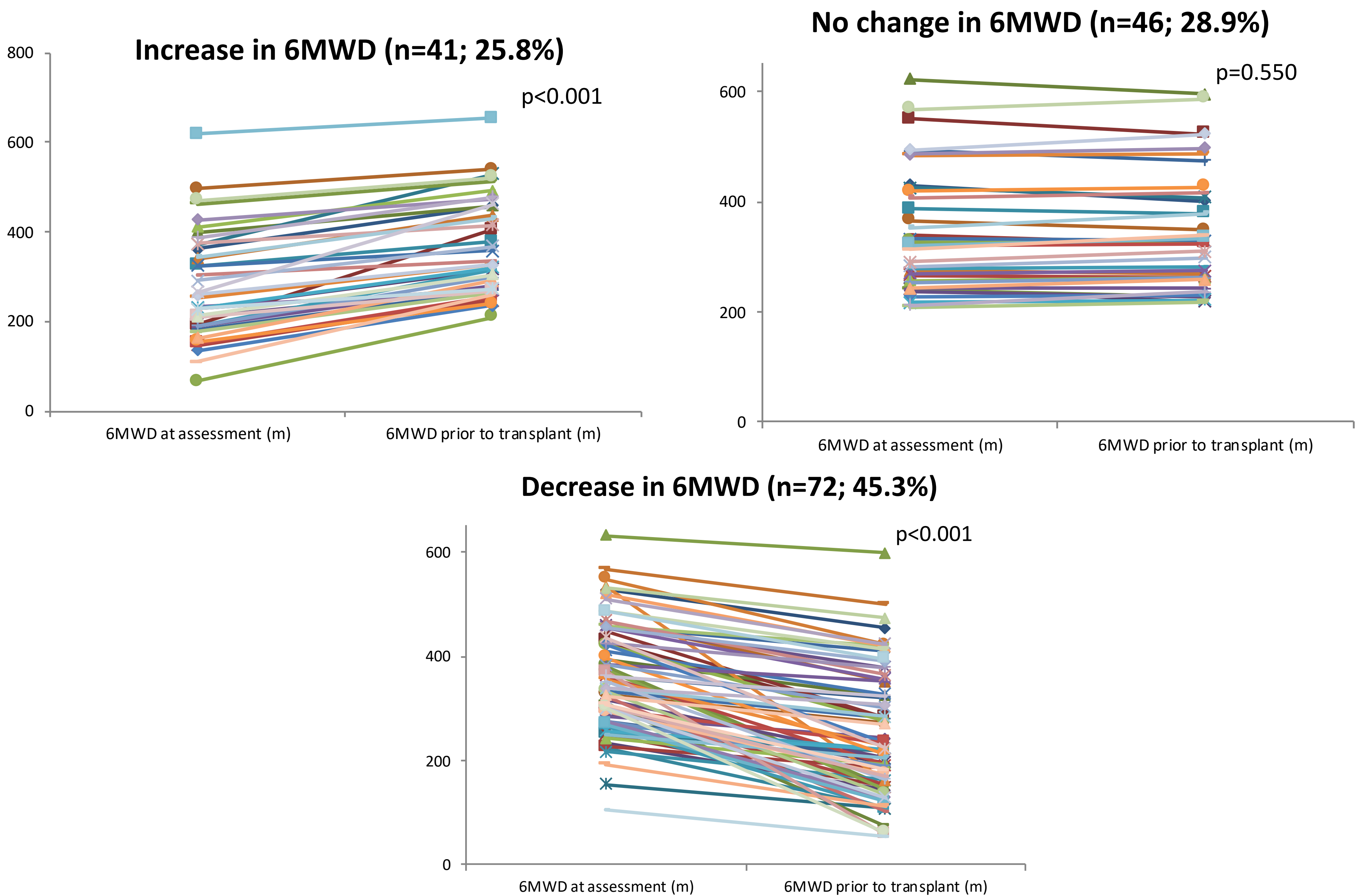
➤ **Retrospective cohort study** of individuals who received a LTx between 2011-2015, participated in a home-based exercise program while waiting for transplantation.

➤ **Outcomes:** 6MWD at 3 time points: time of assessment for transplant, last test prior to transplant and one-month post-transplant. Other variables included: age, sex, primary diagnosis, date of transplantation, BMI, total hospital length of stay (LOS), ICU LOS and time on mechanical ventilation .

Type of exercise	Frequency	Duration/Repetition
Warm-up exercises	Daily, before each training session	5- 10 repetitions of upper and lower limb exercises.
Aerobic Training (stationary cycling or treadmill or walking indoor or climb stairs)	5x/week	Total of a minimum of 30 minutes
Strength training (using free weights or elastic bands)	3x/week	3 series of 10 repetitions of each muscle group
Stretching/Cool down	Daily, at the end of the session	5- 10 minutes

Results

Participants' demographics and clinical characteristics					
	Total patients (n=159)	Increase 6MWD (n=41)	No change 6MWD (n=46)	Decrease 6MWD (n=72)	P-value
Age (years)	49.8 ± 14.0	47.7 ± 15.4	49.9 ± 13.1	50.9 ± 13.7	0.503
Gender: M/F n (%)	91 (57.2)/68 (42.8)	24 (58.5)/17 (41.5)	20 (43.5)/ 26 (56.5)	47 (65.3)/ 25 (34.7)	0.064
Primary Diagnosis- n (%)					0.018
COPD	50 (31.4)	13 (31.7)	12 (26.1)	17 (23.6)	
Cystic fibrosis	42 (26.4)	19 (46.3)	16 (34.8)	15 (20.8)	
IPF	39 (24.5)	4 (9.8)	9 (19.6)	26 (36.1)	
Others	28 (17.6)	5 (12.2)	9 (19.6)	14 (19.4)	
LOS on waiting list (days) [m(IQR)]	699 (485- 942)	636 (465- 973)	746 (592- 956)	704 (387- 903)	0.486
Time on mechanical ventilation (hours) [m(IQR)]	21 (15- 45)	18 (14- 35)	17 (15- 35)	28 (15- 59)	0.053
Post-transplant Intensive Care LOS (days) [m(IQR)]	6.6 (3- 12)	5.7 (3- 9)	5.8 (3- 13)	7 (5- 14)	0.560
Total hospital LOS (days) [m(IQR)]	23 (18- 35)	24 (19- 33)	23 (18- 37)	22 (18- 36)	0.819



➤ **Weak negative** correlation: change in 6MWD prior to transplant and time on mechanical ventilation (r= -0.185; p=0.034).

➤ On multiple linear regression, change in 6MWD prior to transplant **was not** associated with the time on mechanical ventilation, total hospital LOS nor ICU LOS when adjusted for age, gender, BMI.

Conclusions

➤ The majority of the patients (54.7%) were able to either increase or maintain their 6MWD by participating in a home-based pre-habilitation program while on the waiting list. These results are similar to what has been found for hospital-based programs in lung transplant candidates.