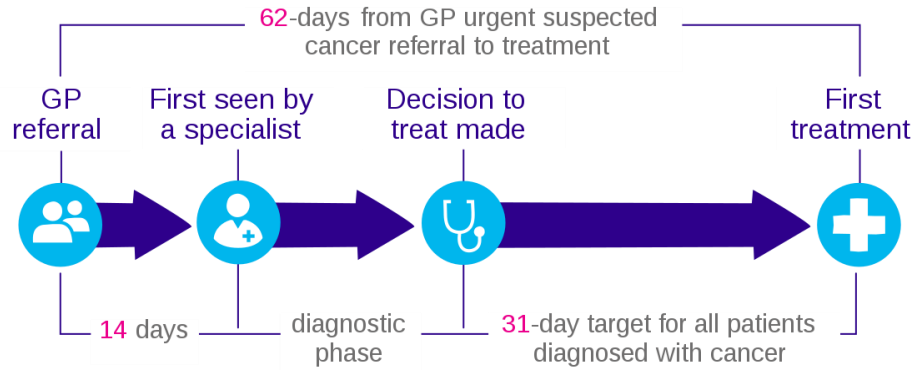
Barts Health NHS Trust

Exercise Prescription in Prehab

Jack Jones –
Exercise Physiologist

Current service

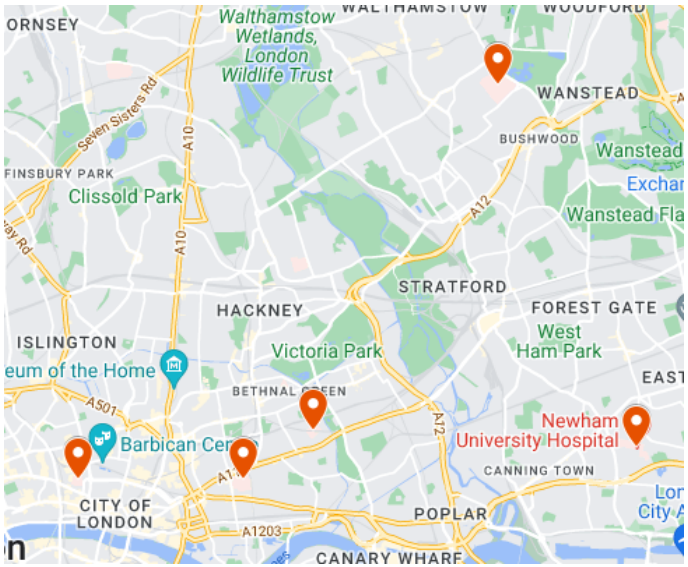
1 x Physiotherapist, 4x Exercise Physiologists
1 x Dietician, 1 x Occupational Therapist



Early referral is key – picking patients up at 'first seen by a specialist' to maximise time

Just 2 weeks has been enough to show improvements from Prehab!

<u>All pre-op patients can benefit</u>
Most Benefit Seen: Poor PS, Frail, multiple co-morbidities, complex surgical plan, neoadjuvant etc.



Clinics at all sites

Who do we see?

- Lung
- HPB
- Colorectal
- Gynae-onc
- Breast

Overall Prehab Aims

Pre-Operatively

- Cardiorespiratory fitness 
- Nutritional status 
- Muscular strength & endurance (LL) 
- Quality of life 
- Encourage smoking cessation 

Post-Operatively

- Length of stay 
- Post-op complications 
- Improved recovery 

Prehabilitation Pathway

1

Recruitment:
- Surgical MDT Discussions
- Direct clinic referrals

2

Initial Assessment:
- Social & medical history
- 6MWT, 60s STS
- Questionnaires
- Nutritional assessment

3

Exercise Intervention:
- 2 x/wk F2F
- Independent Home Exercise

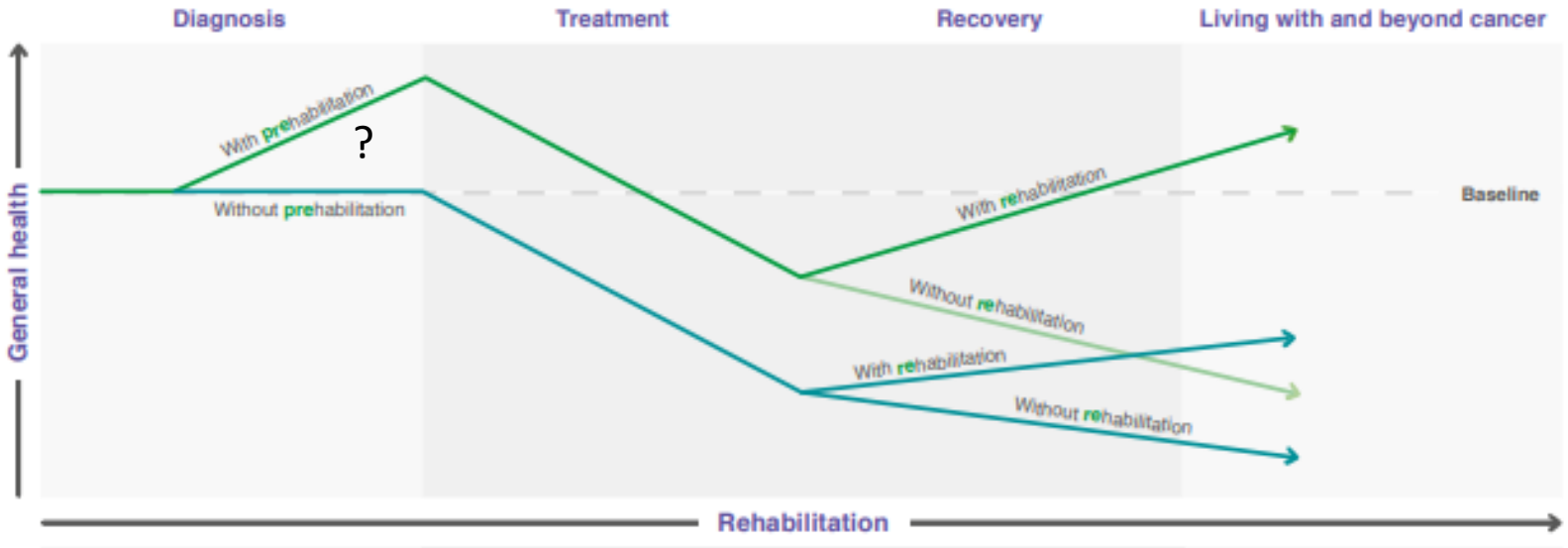
4

Repeat Outcome Measures:
- Quantify changes

5

Follow-up Post-Discharge:
- LOS, post-op complications, re-admissions

Prehab in the cancer care pathway



Exercise

Nutrition

Psychological support and behaviour change

" Exercise is a subset of physical activity that is planned, structured, and repetitive and has a **goal of improved physical fitness**"

Pre-operative Exercise Goals

Increase Cardiovascular Fitness

Why?

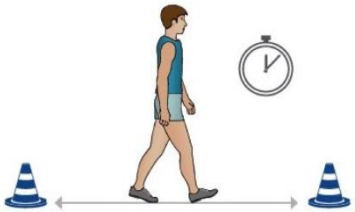
- Improved tolerance to general anaesthetic
- Better able to tolerate the increase in metabolic demand post-operatively
- Reduced risks of post-op complications
- Anti-inflammatory effect
- Empowering for patients during stressful period

Increase Muscular Strength

Why?

- Improve mobility status pre-operatively
- Increased mobility post-op reduces risk of blood clot
- Improved upper limb strength to support with bed mobility post-op
- Pain management
- Feel good factor!

Outcome Measure:
6 minute walk Test

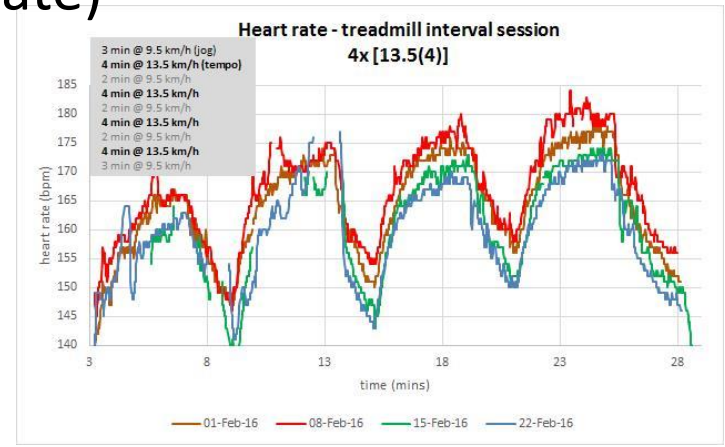


MD+CALC

Outcome Measure:
1 min Sit-to-Stand Test

Cardiovascular Exercise prescription:

- Anything is better than nothing - most benefit is seen for those least active
- **Aim = 150 mins moderate / 75 mins vigorous per week**
- **Aim = 2 Structured Cardiovascular Exercise Session per week**
- Frequency, intensity, time, type, **volume monitored and progressed** throughout programme
- More intense exercise seems to be most effective in short window of time (HIIT - where appropriate)



Real World Challenges

- Complex PMH – COPD, HTN, T2DM, CVD
- Limited by muscular deconditioning
- High Symptom burden (fatigue)
- Structured exercise requires high motivation / understanding
- Unable to tolerate “HIIT”

Solutions

- Use outcome measures to guide appropriate starting point
- Shorter intervals to expose to higher intensities
- Encourage increased physical activity at higher intensities – activity tracker

- Education on importance of exercise pre-operatively
- Qualified Exercise Physiologist to prescribe and progress programme

Resistance Training - Exercise prescription:

Resistance training – “Organized process of exercising with various types of resistance to enhance muscular fitness” (Bushman, 2017)

- **Individualised** to patient functional baseline and clinical background
- **Frequency** – 2- 3 days per week (alternating days)
- **Intensity** – Using repetitions in reserve (RIR) – aiming to reach 1-3 RIR if appropriate, for 2 sets of 8-15 repetitions
- **Type** – Sessions should have 5-7 exercises. Prioritising multi-joint strength exercises (Squats, Leg Press, Rows)

Real world challenges

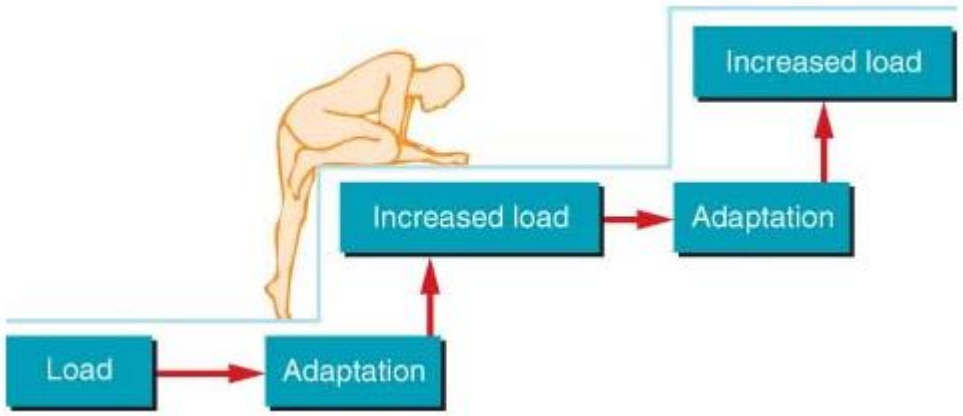
- Complex Past Medical History – COPD, HTN, T2DM, CVD
- Joint pain / limitations
- Significant deconditioning
- High Symptom burden (fatigue)
- High quality resistance training requires high motivation

Solutions

- **Exercise is safe for complex patients** – monitor and adapt for contraindications
- Adapting exercises to joint limitations – Reduce ROM
- Extended rest period to ensure appropriate effort
- Encourage simple home exercise programmes to maximise weekly dosage (Sit –to-stand)
- Qualified Exercise Physiologist to prescribe and progress programme

Exercise prescription:

Progressive overload



Cardiovascular Exercise:

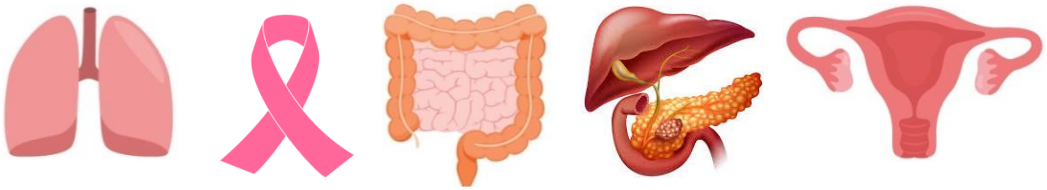
- ↑ total duration
- ↑ intensity (watts, speed, % heart rate)
- ↓ rest periods

Resistance Training:

- ↑ reps at same load
- ↑ load
- ↑ number of sets per muscle group
- ↑ Range of motion

Results so far…

680



Age = 67, Co-morbidity index = 5.6, Deprivation index = 4
Adherence rate = **96%**

Average number of:

7

sessions

=

Average improvement of:

70m!

(30m is clinically significant improvement)

+

Average improvement of:

9 stands!

(5 is clinically significant improvement)

=

Reduced hospital LOS and grade 3 or > POC

Reduced unplanned 30-day A&E attendances

Great patient feedback!

References

Summary for Resistance Exercise

Laza-Cagigas, Roberto, et al. "Commentary: Key Aspects of Multimodal Prehabilitation in Surgical Patients With Cancer. A Practical Approach to Integrating Resistance Exercise Programs." *Evaluation & the Health Professions* 47.3 (2024): 336-342.

Exercise Guidelines for Cancer

Campbell, Kristin L., et al. "Exercise guidelines for cancer survivors: consensus statement from international multidisciplinary roundtable." *Medicine and science in sports and exercise* 51.11 (2019): 2375.

Implementation of HIIT in pre-hab

Weston, Matthew, et al. "High-intensity interval training (HIT) for effective and time-efficient pre-surgical exercise interventions." *Perioperative Medicine* 5 (2016): 1-9.