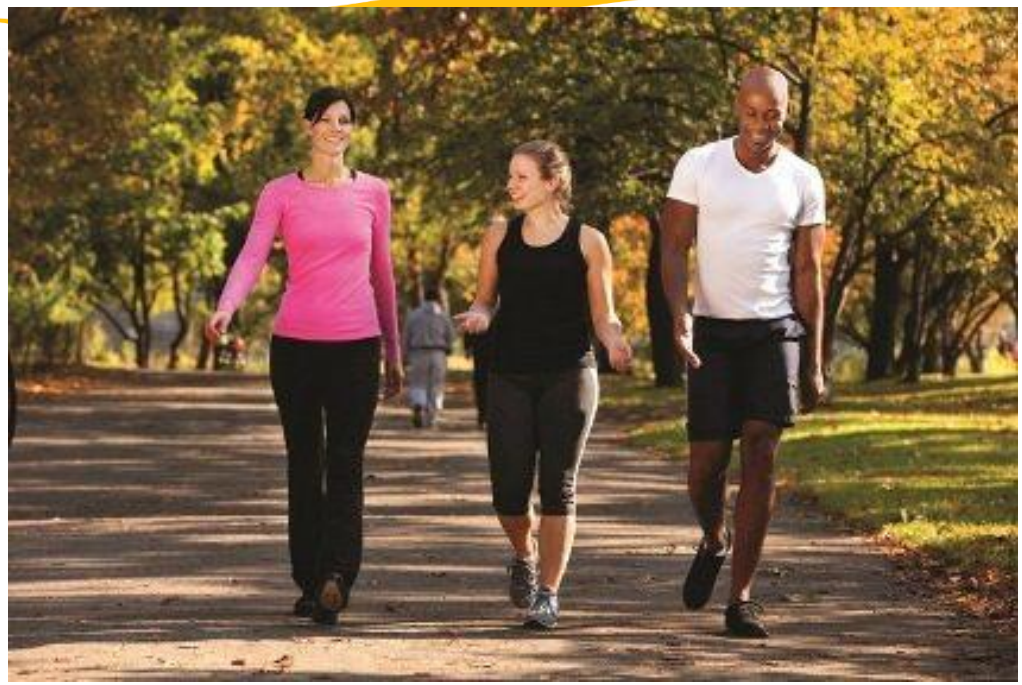
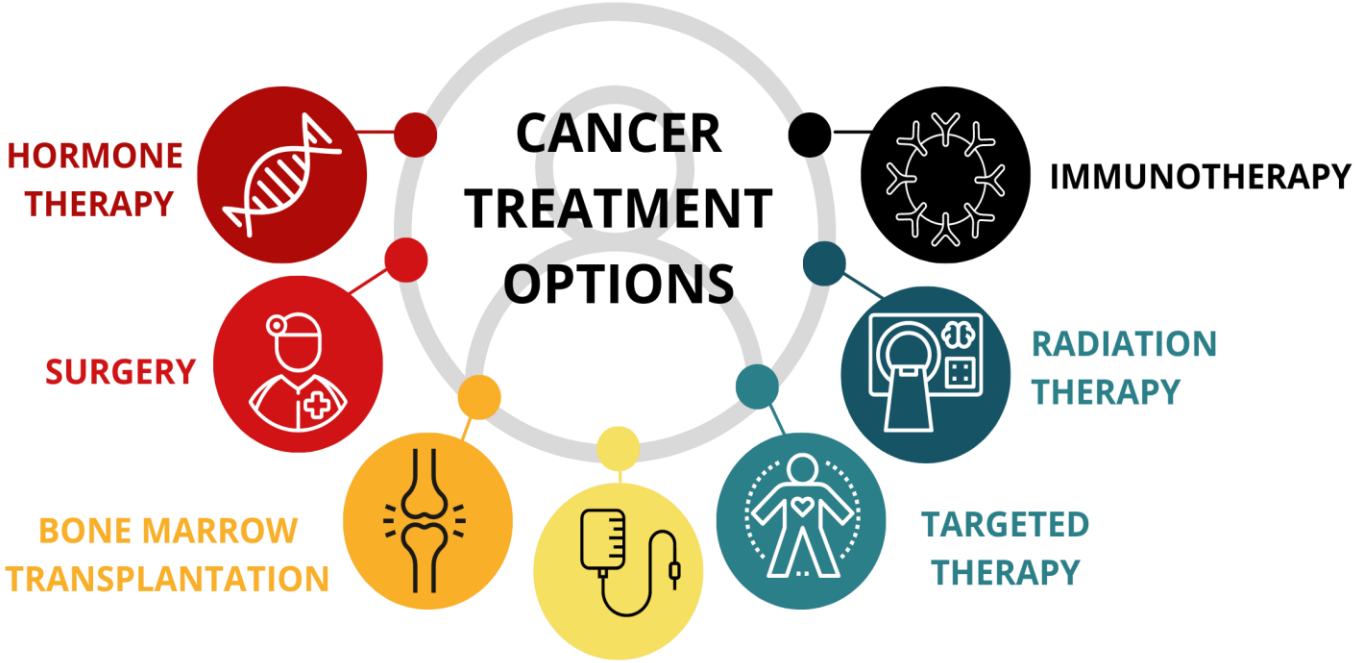
Benefits Of Exercise Throughout the Cancer Journey



Dr Lisa Loughney (PhD)
Clinical Exercise Physiologist
Survivorship & Community Supports Manager

3 September 2022



CANCER DIAGNOSIS

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Common side effects during cancer treatment*

Dry mouth

Loss of appetite

Taste changes

Nausea and vomiting

Constipation or diarrhoea

Hair loss

Mouth sores

Skin and nail changes

Thinking and memory changes

Nerve and muscle effects

Sex and fertility

Blood impact e.g. anaemia, infections

Changes in hearing

Watery eyes

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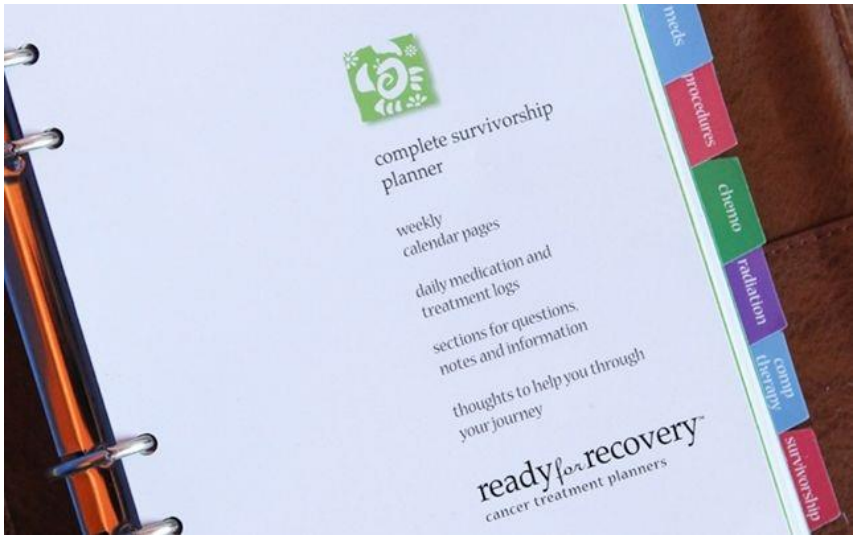
*Source: Cancer Council Australia

A CHEMOTHERAPY SCHEDULE MIGHT LOOK LIKE ONE OF THESE:

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1	Chemotherapy →				No chemo →		
Week 2	No chemo →						
Week 3	No chemo →						
Week 4	No chemo →						
Week 5	Chemotherapy →				No chemo →		

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1	Chemo	No chemo →					
Week 2	No chemo →						
Week 3	Chemo	No chemo →					
Week 4	No chemo →						
Week 5	Chemo	No chemo →					

	Mon	Tues	Wed	Thu	Fri	Sat	Sun
Week 1	Chemo	No chemo →					
Week 2	No chemo →						
Week 3	No chemo →						
Week 4	No chemo →						
Week 5	Chemo	No chemo →					



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Cancer treatments reduces fitness

European Journal of Surgical Oncology (EJSO)
Volume 40, Issue 10, October 2014, Pages 1313–1320

The effect of neoadjuvant chemotherapy on physical fitnes and survival in patients undergoing oesophagogastric can surgery

European Journal of Surgical Oncology (EJSO)
Volume 40, Issue 11, November 2014, Pages 1421–1428

The effects of neoadjuvant chemoradiotherapy on physical fitness and morbidity in rectal cancer surgery patients

M.A. West[a, b, f], L. Loughney[a, b, d], C.P. Barben[a], R. Sripadam[e], G.J. Kemp[f], M.P.W. Grocott[b, c, d], S. Jack[b, d]

PLoS One. 2020 Dec 9;15(12):e0242816. doi: 10.1371/journal.pone.0242816. eCollection 2020.

Physical, psychological and nutritional outcomes in a cohort of Irish patients with metastatic peritoneal malignancy scheduled for cytoreductive surgery (CRS) and heated intrapertioneal chemotherapy (HIPEC): An exploratory pilot study

Lisa Loughney [1 2 3], Noel McCaffrey [1 2], Claire M Timon [4], Joshua Grundy [5], Andrew McCarren [6], Ronan Cahill [7], Niall Moyna [2], Jurgen Mulsow [5]

(West et al 2014, Jack et al 2014, Loughney 2020)

Fit4Surgery

Importance of physical fitness in cancer

Contents lists available at SciVerse ScienceDirect
European Journal of Vascular and Endovascular Surgery
esvs Journal

People do better when they are FITTER

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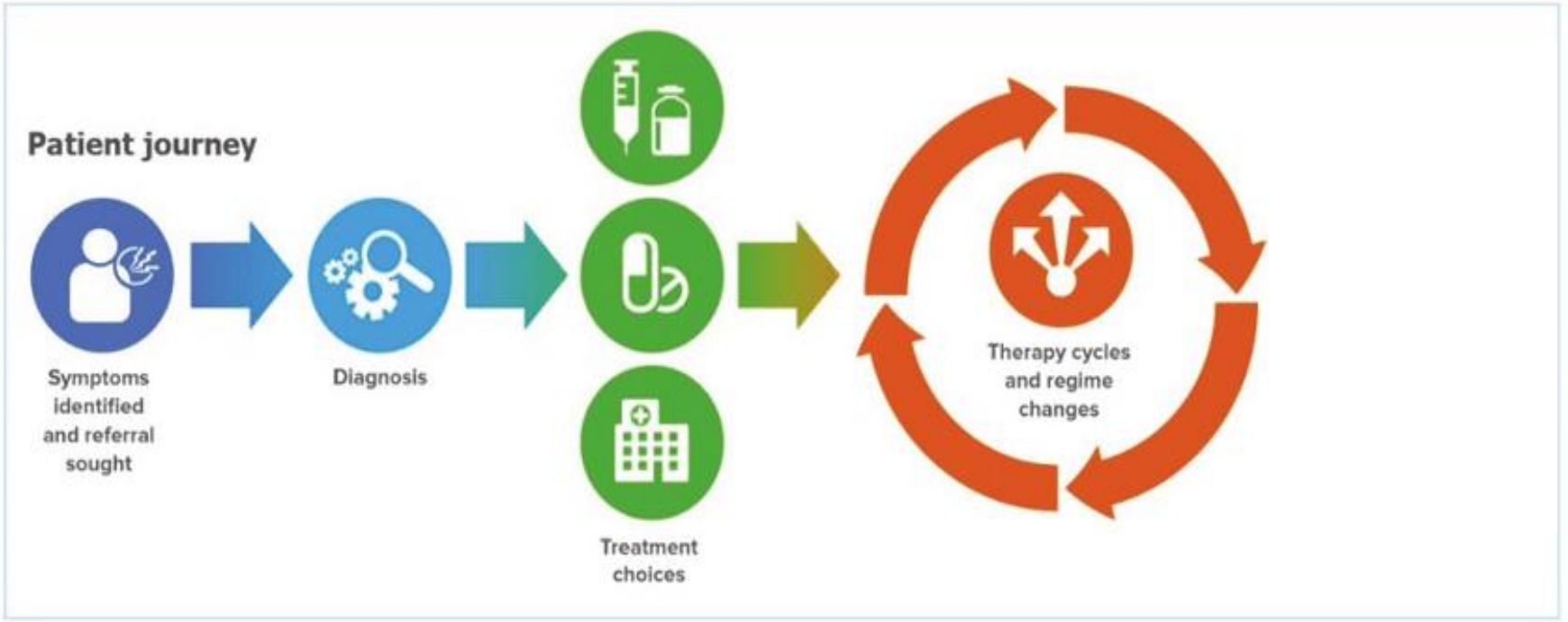

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Vs. pathway for a marathon runner….

FULL MARATHON TRAINING PLAN

WEEK	PHASE	M	T	W	T	F	S	S
1	Build	Shakeout run 40-60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Speedwork (2 sets)	Shakeout run 40-60 minutes	Rest day	LSD 9 miles
2	Build	Shakeout run 40-60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Speedwork (3 sets)	Shakeout run 40-60 minutes	Rest day	LSD 11 miles (2.5 mile @ race pace)
3	Build	Shakeout run 40-60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Speedwork (4 sets)	Shakeout run 40-60 minutes	Rest day	LSD 13 miles (3 mile @ race pace)
4	Recover	Shakeout run 30-40 minutes	Tempo run 20 minutes	Rest day	Cross-training	Shakeout run 30-40 minutes	Rest day	LSD 5K
5	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Hill Repeats (4 sets)	Shakeout run 60 minutes	Rest day	LSD 15 miles (3.5 mile @ race pace)
6	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Speedwork (4 sets)	Shakeout run 60 minutes	Rest day	LSD 16.5 miles (4.5 mile @ race pace)
7	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Speedwork (4 sets)	Shakeout run 60 minutes	Rest day	LSD 18.5 miles (5 mile @ race pace)
8	Recover	Shakeout run 40 minutes	Tempo run 20 minutes	Rest day	Cross-training	Shakeout run 40 minutes	Rest day	LSD 7.5 miles
9	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Hill Repeats (2 sets)	Shakeout run 60 minutes	Rest day	LSD 20.5 miles (5.5 mile @ race pace)
10	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Hill Repeats (3 sets)	Shakeout run 60 minutes	Rest day	LSD 22 miles (6 mile @ race pace)
11	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Hill Repeats (4 sets)	Shakeout run 60 minutes	Rest day	LSD 23 miles (7 mile @ race pace)
12	Recover	Shakeout run 40 minutes	Tempo run 20 minutes	Rest day	Cross-training	Shakeout run 40 minutes	Rest day	LSD 9 miles
13	Build	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Hill Repeats (4 sets)	Shakeout run 60 minutes	Rest day	LSD 23 miles (7.5 mile @ race pace)
14	Taper	Shakeout run 60 minutes	Tempo run 30 minutes	Rest/Optional Cross-Train	Hill Repeats (4 sets)	Shakeout run 60 minutes	Rest day	LSD 12.5 miles (6 mile @ race pace)
15	Taper	Shakeout run 60 minutes	Race Day Prep set 10-30-10	Rest day	Race Day Prep set 10-30-10	Shakeout run 60 minutes	Rest day	LSD 9 miles (5 mile @ race pace)
16	Taper	Shakeout run 40 minutes	Race Day Prep set 10-20-10	Rest day	Race Day Prep set 10-20-10	Shakeout run 40 minutes	Rest day	RACE DAY

BY LEWIS MORRISON *MSC, CSEP-CEP, FMS2, PEAK CENTRE FOR HUMAN PERFORMANCE*

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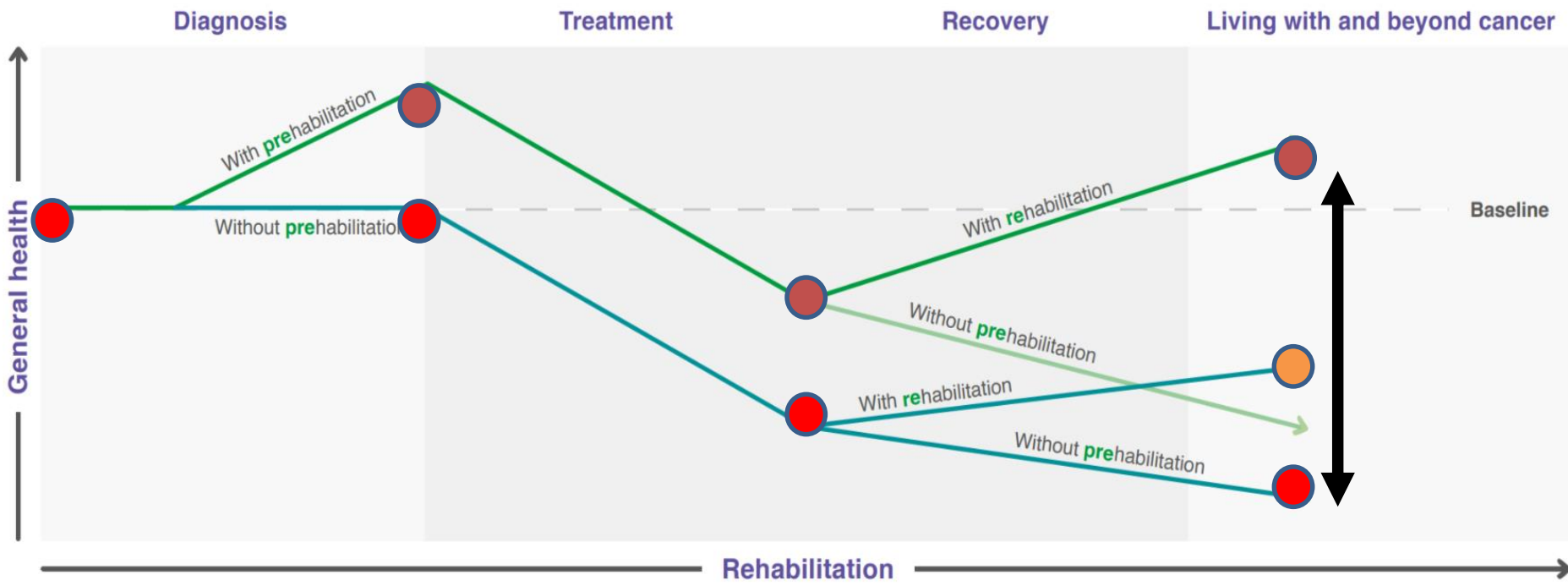
Get patients physically & psychologically prepared for the "event"

Irish Cancer Society

WE ARE MACMILLAN. CANCER SUPPORT

IMPROVING CANCER CARE
BEFORE TREATMENT EVEN STARTS



Preventative

Prehabilitation includes screening, assessment and, where appropriate, the development of a Personalised Prehabilitation Care Plan (PPCP) as part of an overall care plan.

This includes exercise, nutrition and psychological support interventions based on need, with continual monitoring and evaluation. The patient may go through this stage several times

Restorative

Prehabilitation can significantly improve the patient's ability to cope with effects of treatment of all kinds, including surgery, chemotherapy, radiotherapy, immunotherapy and treatment for palliative care.

People with treatable but not curable cancer may also benefit. It can help reduce the amount of time spent in hospital and lead to better quality of life.

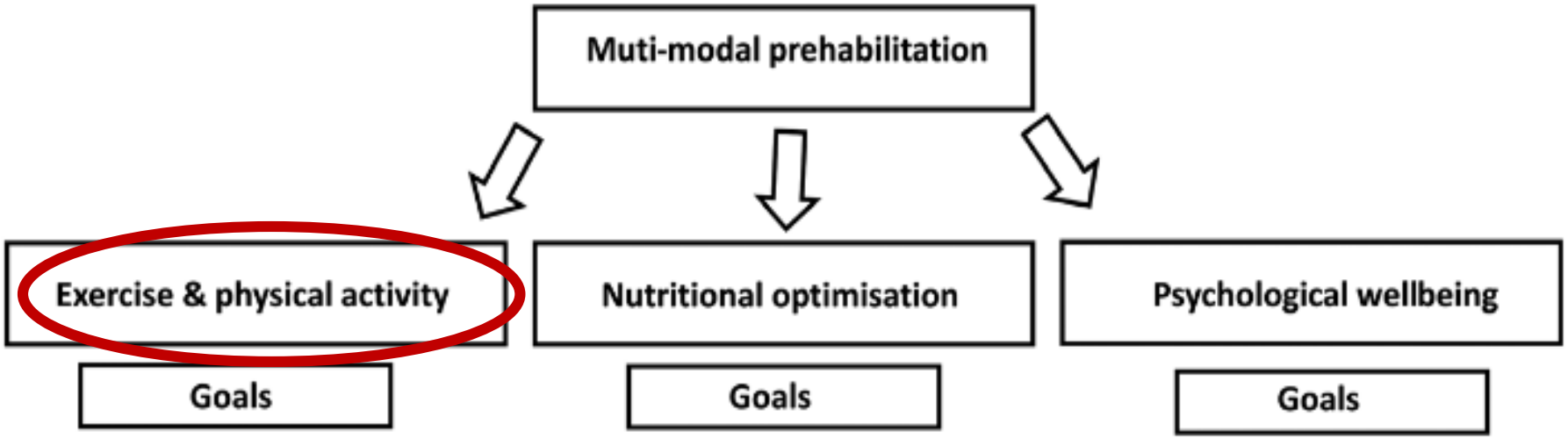
Following treatment, the focus is restorative. Ideally, the patient will have an outcome assessment and will continue smoothly into rehabilitation and beyond.

By giving all patients, including people with treatable but not curable cancer

Supportive and/or palliative

At this stage, we continue to reinforce the core principles of the programme, with health and wellbeing activities and cancer care reviews.

The patient can enjoy lifelong benefits from behaviours learned earlier. If there is further treatment, the patient goes through the cycle again.



Goals

- To prescribe a targeted and individualised exercise programme (cardiovascular, resistance, flexibility and balance training)
- To encourage daily physical activity that totals at least 30 min per day
- To reduce sitting or sedentary time
- To change long term behavior to include a more active lifestyle

Goals

- To better understand how the patient is eating and to identify where deficiencies are occurring
- To provide feedback as to how the patient can optimise their nutrition
- To identify patients who are malnourished
- To provide nutritional supplementation for patients who have been identified as having deficiencies

Goals

- To identify patients who require psychological intervention (using e.g. SF-36, HADS)
- To provide anxiety reducing techniques for all patients, based on preference

Scheede-Begdahl 2019

Irish Cancer Society

Irish Cancer Society

We should all aim to achieve the following:

30 Minutes a Day
which can be
3 x 10 minute sessions

5 Days a Week

Perform at a Moderate Intensity

- **You should feel warmer**
- **Breathe faster**
- **Raise your heart rate**

Try Physical Activities such as:

Walking / Running / Cycling / Swimming / Gardening

For more information visit
www.getirelandactive.ie

Irish Cancer Society

Exercise Intensity

Light	Moderate	Vigorous
Walking slowly	Walking very brisk	Hiking
Sitting using computer	Cleaning heavy (washing windows, hoovering, mopping)	Jogging
Standing, light work (cooking, washing dishes)	Cutting the lawn	Shovelling
Fishing sitting	Light cycling	Carrying heavy loads
Playing most instruments	Badminton	Fast cycling
	Tennis doubles	Basketball/soccer game
		Tennis singles

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Intensity Is Important

Engaging in 27 MET-hours/week (6HRS OF BRISK WALKING)

Vs.

engaging in <3 MET-hours/week (3HRS OF SLOW WALKING)

50% reduced risk of colorectal cancer-specific death
and death from any cause (Meyerhdart 2006)

Irish Cancer Society

Effects of Exercise on Health-Related Outcomes in Those with Cancer

What can exercise do?

- **Prevention of 7 common cancers***
  Dose: 2018 Physical Activity Guidelines for Americans: 150-300 min/week moderate or 75-150 min/week vigorous aerobic exercise
- **Survival of 3 common cancers****
  Dose: Exact dose of physical activity needed to reduce cancer-specific or all-cause mortality is not yet known; Overall more activity appears to lead to better risk reduction

**bladder, breast, colon, endometrial, esophageal, kidney and stomach cancers*
***breast, colon and prostate cancers*

Overall, avoid inactivity, and to improve general health, aim to achieve the current physical activity guidelines for health (150 min/week aerobic exercise and 2x/week strength training).

Outcome	Aerobic Only	Resistance Only	Combination (Aerobic + Resistance)
Strong Evidence	Dose	Dose	Dose
Cancer-related fatigue	**3x**/week for **30** min per session of moderate intensity	**2x**/week of **2** sets of **12-15** reps for major muscle groups at moderate intensity	**3x**/week for **30** min per session of moderate aerobic exercise, plus **2x**/week of resistance training **2** sets of **12-15** reps for major muscle groups at moderate intensity
Health-related quality of life	**2-3x**/week for **30-60** min per session of moderate to vigorous	**2x**/week of **2** sets of **8-15** reps for major muscle groups at a moderate to vigorous intensity	**2-3x**/week for **20-30** min per session of moderate aerobic exercise plus **2x**/week of resistance training **2** sets of **8-15** reps for major muscle groups at moderate to vigorous intensity
Physical Function	**3x**/week for **30-60** min per session of moderate to vigorous	**2-3x**/week of **2** sets of **8-12** reps for major muscle groups at moderate to vigorous intensity	**3x**/week for **20-40** min per session of moderate to vigorous aerobic exercise, plus **2-3x**/week of resistance training **2** sets of **8-12** reps for major muscle group at moderate to vigorous intensity
Anxiety	**3x**/week for **30-60** min per session of moderate to vigorous	Insufficient evidence	**2-3x**/week for **20-40** min of moderate to vigorous aerobic exercise plus **2x**/week of resistance training of **2** sets, **8-12** reps for major muscle groups at moderate to vigorous intensity
Depression	**3x**/week for **30-60** min per session of moderate to vigorous	Insufficient evidence	**2-3x**/week for **20-40** min of moderate to vigorous aerobic exercise plus **2x**/week of resistance training of **2** sets, **8-12** reps for major muscle groups at moderate to vigorous intensity
Lymphedema	Insufficient evidence	**2-3x**/week of progressive, supervised, program for major muscle groups does not exacerbate lymphedema	Insufficient evidence
Moderate Evidence			
Bone health	Insufficient evidence	**2-3x**/week of moderate to vigorous resistance training plus high impact training (sufficient to generate ground reaction force of **3-4** time body weight) for at least **12** months	Insufficient evidence
Sleep	**3-4x**/week for **30-40** min per session of moderate intensity	Insufficient evidence	Insufficient evidence

Citation: bit.ly/cancer_exercise_guidelines

Moderate intensity (40%-59% heart rate reserve or VO_2R) to vigorous intensity (60%-89% heart rate reserve or VO_2R) is recommended.

ExeRxcise is Medicine | AMERICAN COLLEGE of SPORTS MEDICINE

Cancer Related Fatigue

Aerobic: **3x**/week for **30** min per session of moderate intensity

Resistance: **2x**/week of **2** sets of **12-15** reps for major muscle groups of moderate intensity

Health Related Quality of Life

Aerobic: **3x**/week for **30-60** min per session of moderate intensity

Resistance: **2x**/week of **2** sets of **8-15** reps for major muscle groups of moderate to vigorous intensity

Physical Function

Aerobic: **3x**/week for **30-60** min per session of moderate intensity

Resistance: **2x**/week of **2** sets of **8-15** reps for major muscle groups of moderate to vigorous intensity

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Anxiety

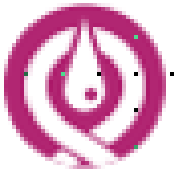
Aerobic: **3x**/week for **30-60** min per session of moderate to vigorous intensity

Resistance: Insufficient evidence

Depression

Aerobic: **3x**/week for **30-60** min per session of moderate to vigorous intensity

Resistance: **2x**/week of **2** sets of **8-15** reps for major muscle groups of moderate intensity



Lymphedema

Aerobic: Insufficient evidence

Resistance **2-3x**/week of progressive supervised programme for major muscle groups does not exacerbate lymphedema

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How to measure physical activity levels?

Questionnaires vs. physical activity monitors

90% of people with cancer (150min/week of moderate PA) – self reported

Vs.

<50% using PA monitors

Using physical activity monitors/FIBITS may be helpful

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EMPOWERMENT

Irish Cancer Society

Ability to walk 150 min/week and undertake resistance/strength exercise 2/week

Needs support based on disease/TX/side effects/co-morbidities

Inactive/sedentary/co-morbidities/ contemplative/low self-efficacy or TX related indication (i.e. Major surgery)

Universal

- Exercise booklets
- Exercise webinars
- Healthy lifestyle websites
- Self-management webinars

Targeted

- Group/1-to-1 support in community aiming to increase frequency, intensity and duration to get as near to 150 min/week by surgery/TX.
- Some supervision + structured exercise for those sufficiently active: 30-150 min/wk or low self-efficacy

Specialised

Fully supervised exercise intervention delivered by a qualified cancer exercise professional

Self Management

Community (ExWell Medical) Referral

Supervised Support

Irish Cancer Society

Partnership

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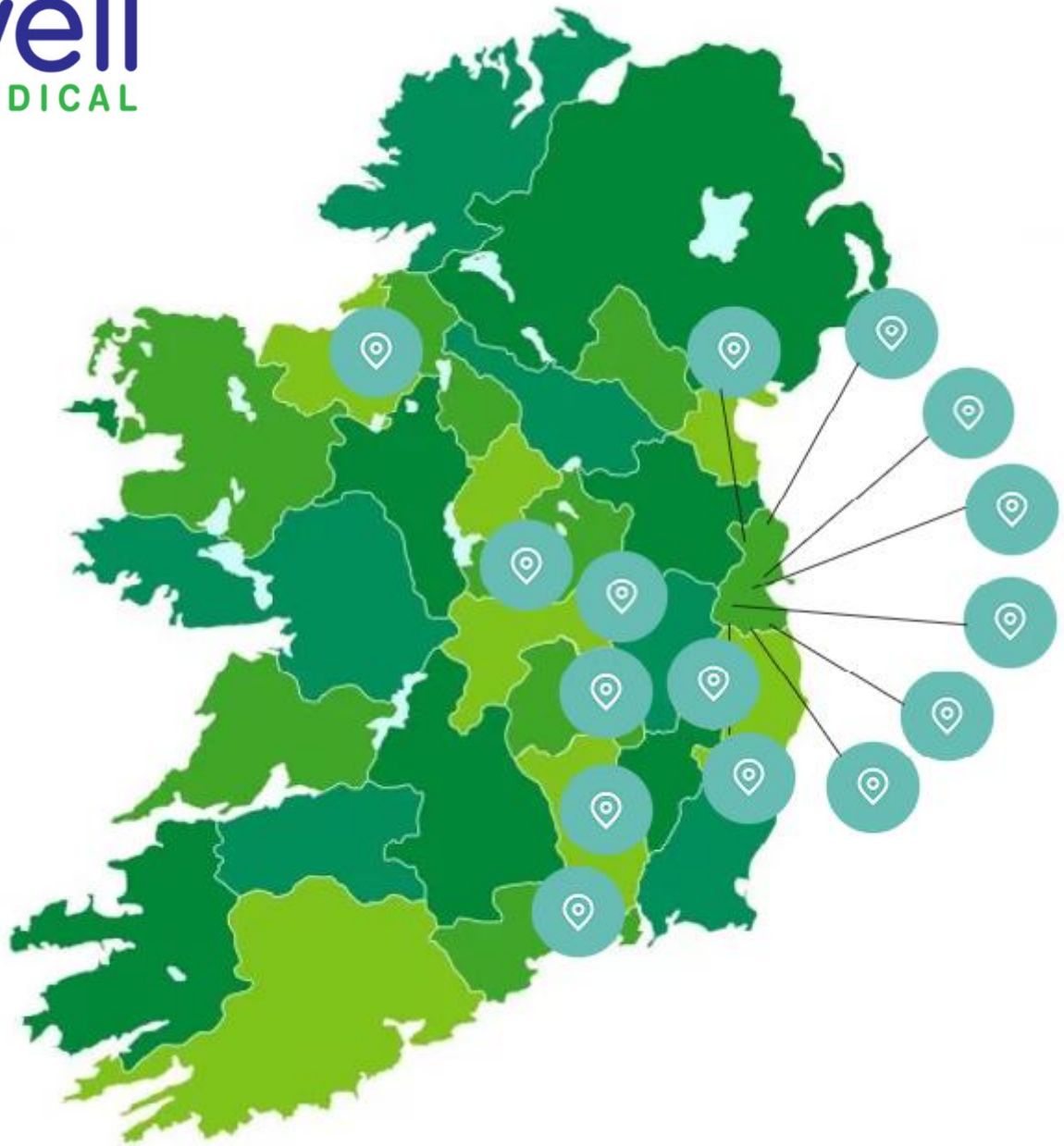
Community-based Exercise rehabilitation

Caters for individuals with a range of chronic diseases / abilities

Onsite Exercise



Online Exercise

Phone Support

ExWell@Home For Cancer

A home-based exercise programme to support people with cancer

Irish Cancer Society

ExWell@Home For Cancer

A home-based exercise programme to support people with cancer

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DELIVERY PARTNERS

Waterford Institute *of* Technology

Log/Track Your Exercise

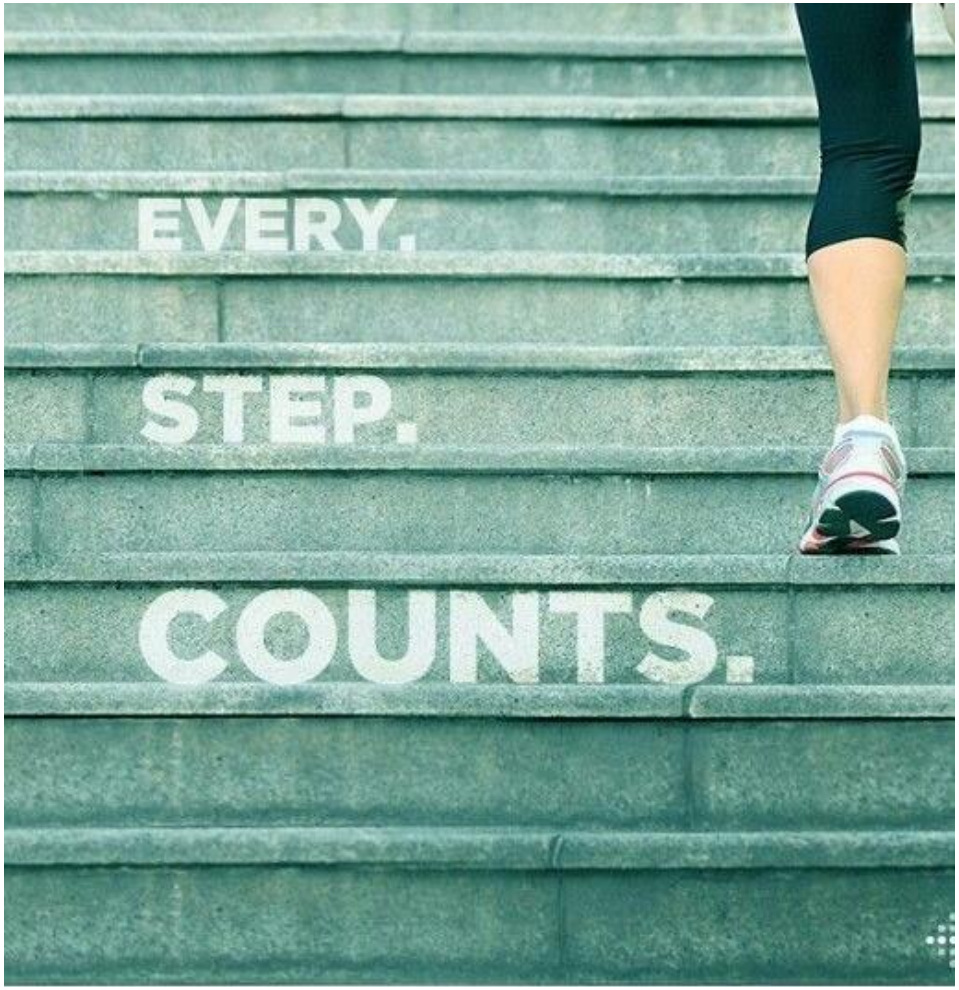
EXERCISE TRACKING SHEET												
CIRCLE EACH DAY YOU EXERCISE												
Month	Day											
	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
	25	26	27	28	29	30	31					
	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
	25	26	27	28	29	30	31					
	1	2	3	4	5	6	7	8	9	10	11	12
	13	14	15	16	17	18	19	20	21	22	23	24
	25	26	27	28	29	30	31					

TRACK YOUR EXERCISE FOR EACH DAY					
Date	Step count	Exercise (what type)	Intensity (how hard)	Time (how long)	Notes

Take home message

Exercise training throughout the cancer care journey and beyond is important


SOMETHING
IS BETTER
THAN
NOTHING



MOVE
MORE

Video Link:

Home (exwell.ie)

@exwell_medical