

The background is a vibrant red with a dynamic pattern of light rays or lens flares emanating from the bottom-left corner, creating a sense of motion and energy.

LUCID

“Lifestyle taking on Medicine”

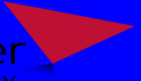
Professor Anna Campbell MBE
Professor of Clinical Exercise Science
Edinburgh Napier University
Director CanRehab Training

CELEBRATING 10 YEARS OF

LUCID

Outline of Talk

- Rationale for “exercise oncology”
- Benefits of staying active after a cancer diagnosis
- Putting evidence into practice
- How much activity is needed to get the benefits?
- Any questions...



Breast Cancer Specialist Nurse Glasgow, 2000

“I always tell my patients to rest, stay in bed and do nothing while they are on treatment for cancer...

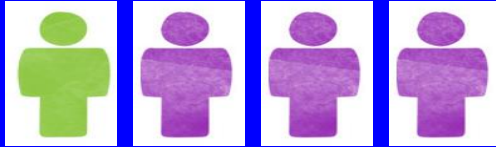
Is this the correct advice? Is there any evidence to show that I should be encouraging them to be active?”

Why exercise-based cancer rehabilitation?

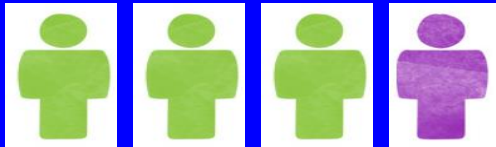
Cancer in the UK

- > 360,000 new cancer cases in the UK every year - that's nearly 1000 every day (2013-2015).
- Lifetime risk of being diagnosed with cancer is now 1 in 2
- Cancer survival has doubled in last 40 years
- 50% will survive cancer for 10 or more years
- 21 most common cancers:
 - 12 have ten-year survival >50%
 - Testicular, melanoma, prostate & Hodgkin lymphoma - survival > 80%.
 - Stomach, brain, oesophageal, lung & pancreatic cancers (difficult to diagnose and/or treat) survival is < 20%
- >4 million people will be living cancer by 2030 in the UK

LIVING WELL?



3 in 4 people living with cancer are in the survivorship stage¹



1 in 4 of them deal with consequences of their treatment²



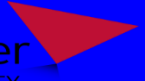
1 in 5 of cancer survivors may have unmet needs³

1. Maher J and McConnell H. New pathways of care for cancer survivors: adding the numbers. Br J Cancer. 2011. 105: S5-S10

2. Macmillan Cancer Support. *Throwing light on the consequences of cancer and its treatment*. 2013. London

3. Armes J et al. Patients' supportive care needs beyond the end of treatment: A prospective, longitudinal survey. Journal of Clinical Oncology. 2009. 27:36 6172-6179

The problem....



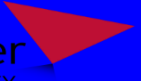
Chronic / late appearing side effects of cancer treatment:

Physical

- Fatigue
- Weight changes
- Reduced fitness - C/V & MSE
- Endocrine problems
- Osteoporosis
- Cardiotoxicity
- Lymphoedema
- Limited range of movement
- Pain and arthralgia
- Sexual dysfunction
- Incontinence

Psychological

- Lack of confidence
- Changes in body image
- Anxiety
- Depression
- Cognitive dysfunction
- Social isolation
- Loss of control
- Self esteem
- Helplessness



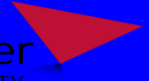
PHYSICAL ACTIVITY AND CANCER

WE ARE
MACMILLAN.
CANCER SUPPORT

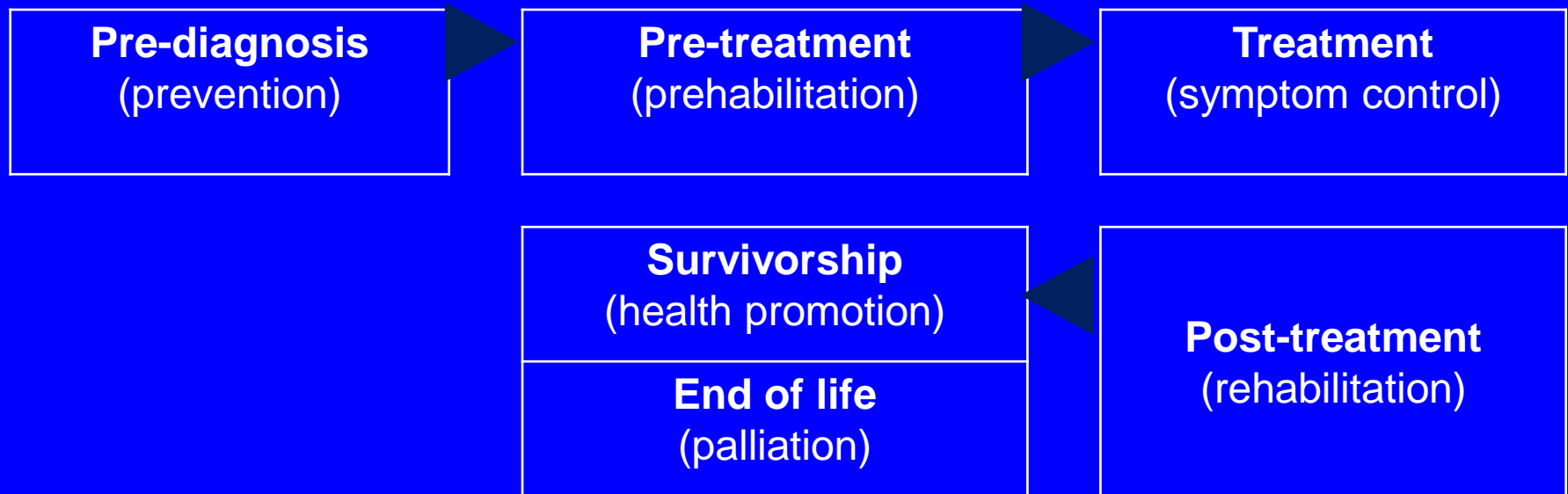
A concise evidence review

evidence that staying
active after diagnosis is
helpful?

Rigorous approach to
locate, appraise & grade
evidence as high, moderate,
low, or
very low quality.



EVERY STAGE OF CANCER CARE



Review of evidence: Staying active before cancer treatment “Fit for Surgery”

- 18 studies
- Mostly lung, colorectal & oesophageal cancer
- Walking or supervised aerobic activity
- Encouraging results: better cardiopulmonary fitness, less in-patient time and less post treatment complications
- Pre-prostatectomy pelvic floor exercises: help reverse incontinence
- NIHR study - PREPARE ABC - colorectal cancer

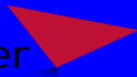
Review of evidence:

Staying active during cancer treatment

Outcome	Evidence	Grade
Physical Function	Significant increase in C/V fitness similar modest increases in muscular strength [ES 0.33) ; 17RCTs]	A
Fatigue	Small reduction in fatigue ([ES 0.18; 25RCTs]	A
Well being	Small improvements in depression & anxiety [ES 0.21; 6RCT] self esteem [ES 0.25; 3RCT] No effect on QoL [10 RCT]	A
Body composition	Slight increase in lean body tissue, significant reductions in body fat [ES 0.25; 7RCTs]	A

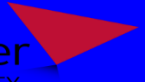
Effect sizes: 0.2 = small; 0.5 = moderate; 0.8 = large

Review of evidence: Staying active after cancer treatment



Outcome	Evidence	Grade
Physical Function	Significant increase in C/V fitness [ES 0.32) ; 14RCTs] large increases in muscular strength [ES 0.90) ; 7RCTs]	A
Fatigue	Significant lowering of fatigue [ES 0.54; 14RCTs]	A
Well being	Significant improvements in QoL [ES 0.29; 16RCT] anxiety [ES 0.43; 7RCT] and depression [ED 0.30; 10RCTs]	A
Body composition	Significant small reductions in body fat [ES 0.18; 15RCTs] and increases in muscle mass [ES 0.13; 5RCTs]	A

Other benefits of exercise...



Outcome

Grade

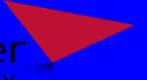
↑	Bone Health	B
↑	Range of Movement	B
↓	Lymphoedema	B
↑	Positive Mood	B
↓	“Chemo brain”	C
↓	Cardiotoxicity	C
↑	Immune system	C

Review of evidence:

Staying active with advanced cancer

- Increase in cardio-fitness (5 RCTs) and strength (5 RCTs) for patients with advanced cancer
- Controlled fatigue (6 RCTs) or reduced fatigue (3 RCTs)
- Improvements in sleep quality (2RCTs)
- Unclear effects on QOL (9 RCTs: 3 RCTs with improvements and 6 RCTs no change)
- Improvements in bone density with spinal bone metastases (1 RCT) 3-6 months *after resistance training*

“Patient preference is important, PA should be recommended to maintain independence and wellbeing towards end of life.”



Advanced Inoperable Lung Cancer

Does exercise stop the cancer coming back?

Breast cancer: 30% risk reduction

Systematic review of 9 prospective cohort studies

Colorectal cancer: 50% risk reduction

Meyerhardt (2009) 2 cohorts: 9 hours/wk HR = 0.47 compared to no PA 8.6 years later

Prostate cancer:

1 study: 3+ hours vigorous activity per week = Cancer deaths 61% lower (Kenfield et al 2011)

Brain Tumour

243 patients with recurrent malignant brain tumours (Ruden et al, 2011): significantly **longer survival (22 months)** with higher physical activity (9 MET-h per week)

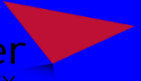
Lung cancer:

118 patients with inoperable lung cancer. Median survival was **12.89** months those < 3 hours PA compared with **25.63** months for those reporting >3 hours PA. (Jones 2012)

CHALLENGE, GAP4 RCTs next 5 years

Potential mechanisms for exercise's protective effects

- Growth factors: Insulin/ IGF-1/IGF-BP3
- Anti-inflammatory system - CRP, interleukins, adipocytokines
- Immune defence system: NK cells, T cells
- Sex steroid hormones: oestrogen, testosterone
- Antioxidant defence system/DNA damage/ apoptosis
- Angiogenesis / Hypoxic environment
- Direct effects on tumour cell gene expression



Current and future research in exercise oncology

- From aerobic exercise to other types of exercise eg **resistance, yoga, HIIT,**
- From after treatment to **prehab and palliative** settings
- From effect on QoL to direct effect on **tumour biology and treatment efficacy**
- From common side effects eg fatigue to specific side effects e.g. **bone metastases** and **cardiotoxicity**
- From efficacy trials to **effectiveness** trials



Gary's story

“On Tuesday, Gary begins 6 more sessions of chemotherapy. This time, the treatment is to mop up anything left behind after surgery.

In April, we didn't know how long we had as he had advanced pancreatic cancer. Now, the oncologist is talking about waving us off in 5 years time with Gary as a cancer survivor.

The treatment, the surgery, the nutrition & exercise have all played a role. We are so grateful. “

Measurement	Baseline	Week 4	% Change From Week 0-4	Week 8	% Change from Week 0-8	Week 12	% Change from Week 0-12
Body Mass (kg)	80.8	81.3	+0.62	81.1	+0.37	82.7	+2.35
Body Fat (%)	17.7	17.8	+0.56	18.6	+5.08	13.3	-24.86
Lean Mass (kg)	82.3	82.2	-0.12	81.4	-1.09	86.7	+5.35
Chair rise (s)*	7.8	7.98	+2.31	6.40	-17.95	7.08	-9.23
13-Stair climb (s)*	4.19	4.07	-2.86	4.31	+2.86	4.09	-2.39
6m backwards walk (s)*	4.78	4.36	-8.79	4.26	-10.88	4.48	-6.28
6m walk usual pace (s)*	4.94	4.06	-17.81	4.56	-7.69	4.21	-14.78
6m walk fast pace (s)*	3.65	3.18	-12.88	3.55	-2.74	3.38	-7.40
Toe Reach (cm)*	6.5	5	-23.08	5	-23.08	5	-23.08
Leg Press (Kg)	119	120	+0.84	125	+5.04	130	+9.24
Leg extension (Kg)	63	60	-4.76	63	0	63	0.00
Leg Curl (kg)	49	49	0	53	+8.16	53	+8.16
Calf Raise (kg)	110	119	+8.18	130	+18.18	135	+22.73
Rear kick (kg)	35	42	+20.00	49	+40.00	63	+80
Hip abduction (kg)	28	35	+25.00	42	+50.00	42	+50
Back Extension (Kg)	56	79	+41.07	83.6	+49.29	83.6	+49.29
Aerobic Capacity (ml/kg/min)	34	36	+5.8	37	+8.82	37	+8.82
Health-related quality of life	37	42*	+13.51	51*	+37.84	59*	+59.46
Pancreatic cancer-specific quality of life*	37	21*	-43.24	22*	-40.54	23*	-37.84
Cancer-related Fatigue*	23	5*	-78.26	3*	-86.97	3*	-113.04

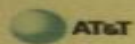


THE TEACHABLE MOMENT

Cancer diagnosis can signal an enhanced motivation to change lifestyle behaviours - become more receptive to health behaviour change interventions

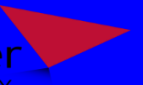
Rabin, C. (2009). Promoting Lifestyle Change Among Cancer Survivors: When Is the Teachable Moment? *American Journal of Lifestyle Medicine*;3:369–78.

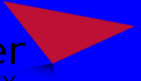
CALL ATT[®]
from the U.S.
the world.



Research: From pilot study to community-based physical activity programmes (2000 – 2012)

Edinburgh Napier
UNIVERSITY





The Glasgow Studies (2000-2012)

- 2000: Pilot study with 23 women with breast cancer- *selected?*
- 2003: CRUK Glasgow Study - randomised control trial
- Women with breast cancer on chemotherapy or radiotherapy
- **Dedicated recruiters**
- Group exercise classes
- Twice a week for 12 weeks
- **7 Glasgow city council venues and classes (morning afternoon & eve / weekends also)**
- **Behaviour change component**



Results

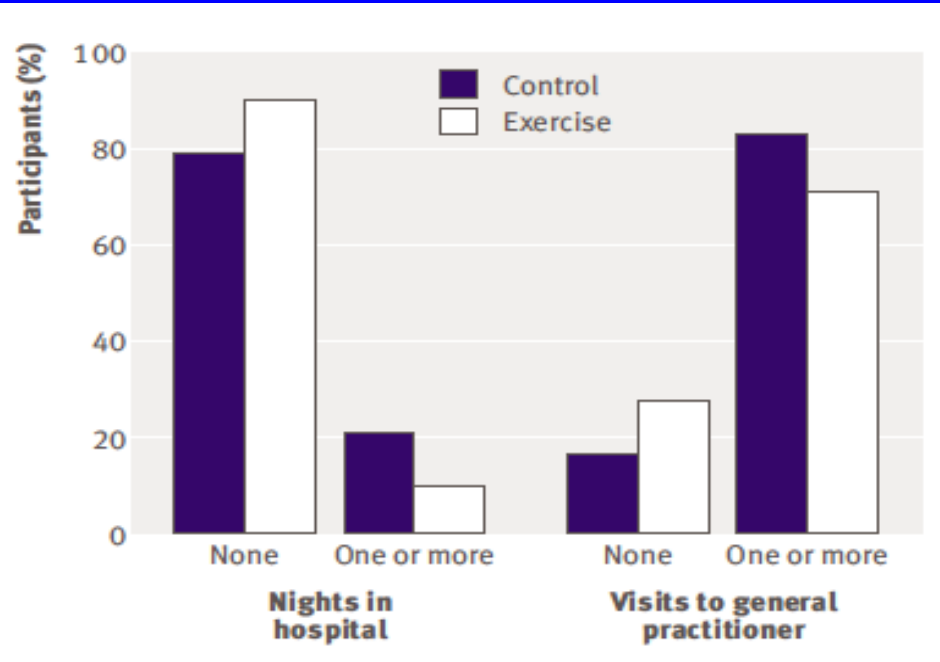
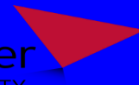


Fig 3 | Percentages of patients in the control and intervention groups who reported at least one night in hospital or at least one visit to their general practitioner during the study

- ▶ Cost for exercise programme was ~£300 / woman
- ▶ It was safe
- ▶ Long term physical and psychological benefits
- ▶ Participants spent significant less nights in hospital and less visits to GP
- ▶ An economic saving to NHS of £1507 per person
- ▶ Intervention achieved conventional standards of cost-effectiveness (QALYs)

Mutrie N, Campbell, A, Whyte, F, McConnachie, A., Emslie, C., Lee, L., Kearney, N., Walker, A., Ritchie D. (2007. British Medical Journal **334** 517-524

5 year follow up



- Of the 203 women in the original study, 114 attended the 18 months follow up and 87 at 5 years.
- Women in the original exercise group still reported significantly more leisure time physical activity and a more positive mood than women in the original control group.
- Those engaging in sufficient physical activity recorded a larger decrease in depression levels at all follow-up points

Established CanRehab

Edinburgh Napier UNIVERSITY

education and training company



education and training for health and fitness professionals



active
training
awards
2017

Winner

Cancer Rehabilitation training programmes for fitness and health professionals

- Home
- Fitness Workshops
- Health Workshops
- Tutors
- Evidence
- Contact

Telephone: 0131 550 459 4018
Email: info@canrehab.co.uk

Exercise Based Cancer Rehabilitation

CanRehab leads the way in providing cancer rehabilitation seminars, workshops and training programmes in the UK. We offer educational and professional support to anyone wishing to develop exercise based rehabilitation programmes for cancer patients. We currently organise and run training programmes for health professionals, charities and members of the leisure industry.

[Dates, Venues and Application Form >>](#) [Courses for health professionals >>](#) [Courses for fitness instructors >>](#) [CanRehab Tutors >>](#) [Evidence and guidelines >>](#) [Contact >>](#)

This was hands down the best course I've been on in 8 years as a physio. It

If you are interested in providing safe and effective group and/or individualised exercise programmes for patients during

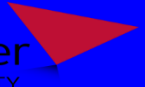
NEW - January 2012 Newsletter

[September 2011 Newsletter](#)
[November 2010 Newsletter](#)
[January 2010 Newsletter](#)

First U.K. training provider to offer a Level 4 Qualification Cancer & Exercise Rehabilitation

Funding for first cancer exercise community programme in UK

Edinburgh Napier
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THE UNDERRATED 'WONDER DRUG'



PROFESSOR
JANE MAHER
MACMILLAN CHIEF MEDICAL OFFICER

Macmillan's Move More Programme

Lancashire Copier
UNIVERSITY



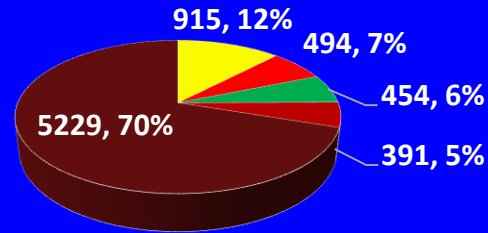
**WE ARE
MACMILLAN.
CANCER SUPPORT**

WE ARE
MACMILLAN.
CANCER SUPPORT

MOVE MORE NORTHERN IRELAND



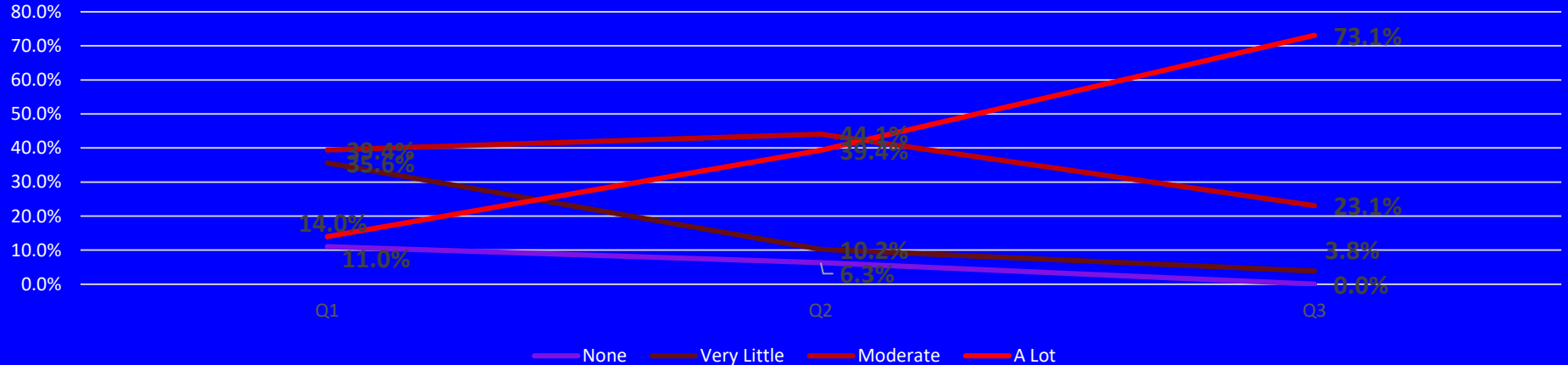
Behaviour Change Support Provided

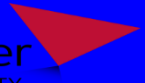


Referral Follow Ups
Follow Up 1 Completed

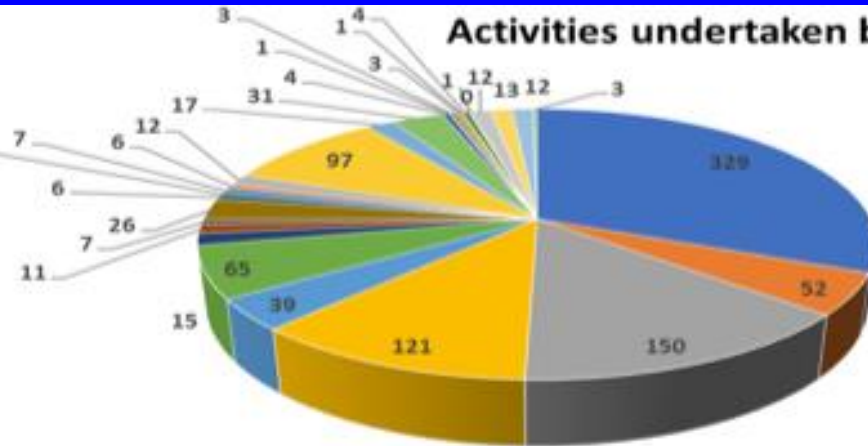
Brief Intervention Completed
Follow Up 2 Completed

Physical Activity Levels





Activities undertaken by Participants



- Cancer Specific Classes
- Walking - Independent
- Active At Home
- Aqua Aerobics
- Running
- Walking Football
- Cycling
- Leisure Facility Member
- Yoga
- Strength & Balance
- Chi Me
- Chair Based Exercise
- Water Based Exercise
- Sport
- Gym - Supported
- Walking - Group Walk
- Move More DVD
- Swimming
- Dance
- Exercise Referral
- Relaxation / Mindfulness
- Gardening
- Gym
- Pilates
- Tai Chi
- Exercise to Music
- Circuit Training
- Water Polo
- Gym - Independent
- Other

Movemore Scotland



Exercise Oncology International Task Force

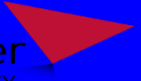
3 Papers released this Thursday



- Evidence and Mechanisms Primary and Secondary Cancer Prevention
- New International Exercise Guidelines
- Implementation of exercise programmes in clinical and community settings

**What do I need to do
to get the benefits?**

BUT... IS IT SAFE?



**"EXERCISE IS SAFE
BOTH DURING AND AFTER
MOST TYPES OF
CANCER TREATMENT."**

Schmitz, K.H., Courneya, K.S., Matthews, C., Demark-Wahnefried, W., GALVÃO, D.A., Pinto, B.M, et al. (2010). American College of Sports Medicine Roundtable on Exercise Guidelines for Cancer Survivors. *Medicine & Science in Sports & Exercise*; 42:1409–26.

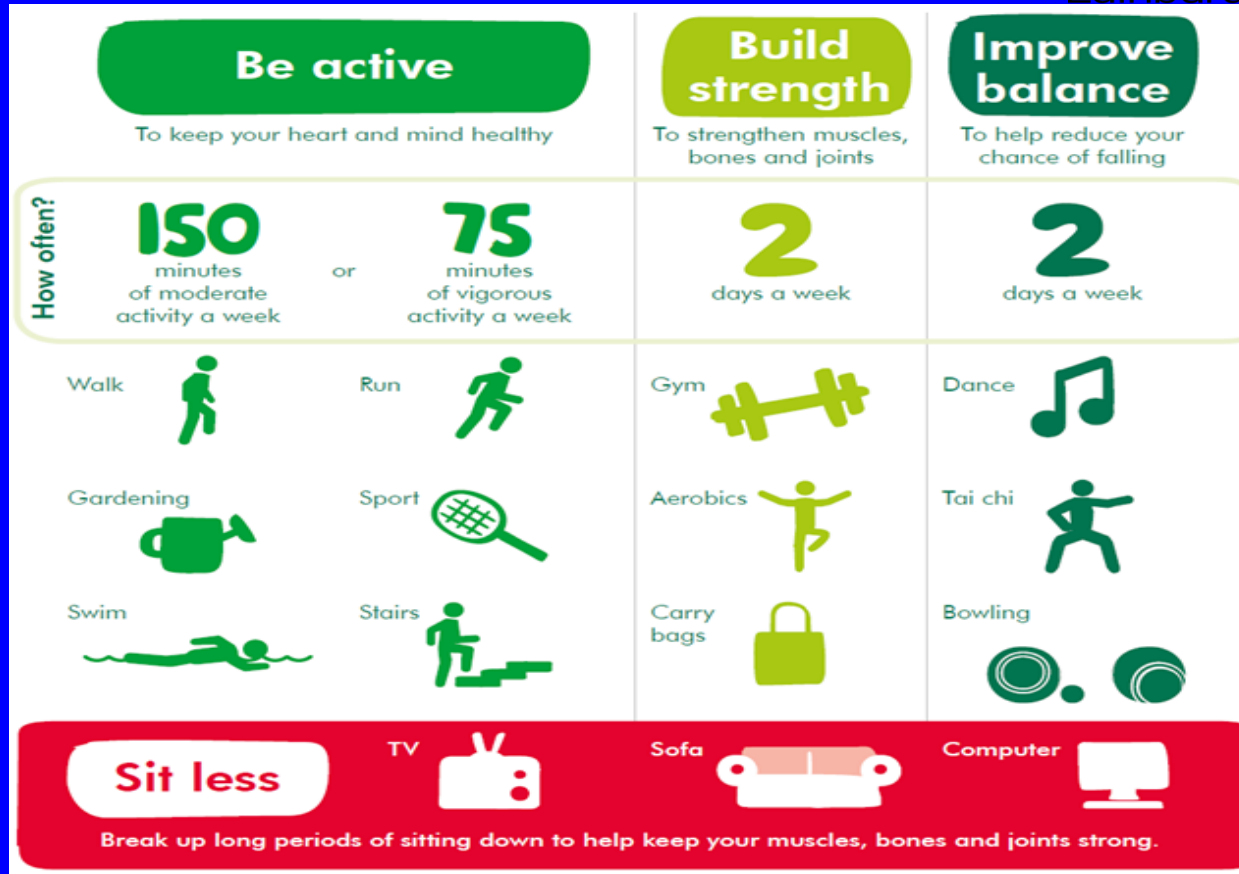
Activity Recommendations

Exercise can be safely performed during and after cancer treatment, if individual limitations are considered.

All cancer survivors, including those with existing disease or who are undergoing difficult treatments, should be encouraged, as a minimum, to avoid being sedentary.

Unless advised otherwise, follow the physical activity guidelines provided for the general UK population

HOW ACTIVE & HOW OFTEN?



Monitoring Exercise Intensity



6			
7	very very light	a doddle!	whistle!
8			
9	very light	a skoosh!	sing!
10			
11	fairly light		
12		nae bother!	talk!
13	somewhat hard	pechin!	
14			
15	hard		
16		puffed!	
17	very hard	exhausted!	gasp!
18			
19	very very hard	worn oot!	
20			

CanRehab Retreats

support/ nominate/promote



10th – 17th September 2020

“Lifestyle taking on Medicine”

Take home messages..

- Convincing rationale for providing exercise as a part of cancer care package
- Evidence is strong that exercise interventions have short & long term physical & psychological benefits
- Emerging evidence that exercise reduces risk of cancer recurrence and improves treatment efficacy
- MoveMore programmes available with trained instructors UK wide
- After a cancer diagnosis: Movement Matters!

Acknowledgements

Edinburgh Napier
UNIVERSITY

Many research colleagues, students, health professionals, charities, fitness instructors and cancer survivors have contributed to this journey from pilot to programmes..



Thank you for listening!



@Canrehab

anna.campbell@canrehab.co.uk

The background is a vibrant red with a dynamic pattern of light rays or lens flares emanating from the bottom-left corner, creating a sense of motion and energy.

LUCID

Lifestyle taking on medicine

Tim McCarthy
The McCarthy Consultancy

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My Story



Where have you come from ?

Why are you here ?

Where are you going ?

Where have I come from?



EXECUTIVE

SPORTS

PERSONAL

MEDIA & COMM

ABOUT

The McCarthy Consultancy

Offers Executive Coaching, Business Consultancy and
Communication Coaching

And provides you with a blueprint to deal with the
issue

And will support you through the issue and beyond

January 2017

30 years in Financial Services

20 years as CEO in Greenfield
& Established businesses

Set up new business

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What was going on?

Simply going too often to the bathroom at night

The Tests

PSA

Physical Prostate Test

Bladder Test

Cat Scan

Deep rooted MRI



The results

PSA level of 6 (5 is average)

Slightly enlarged

Not fully releasing

Completely Clear

Completely Clear

Benign prostatic hyperplasia

Biopsy 17th February 2018

Results due 28th February 2018

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The day that changed my life

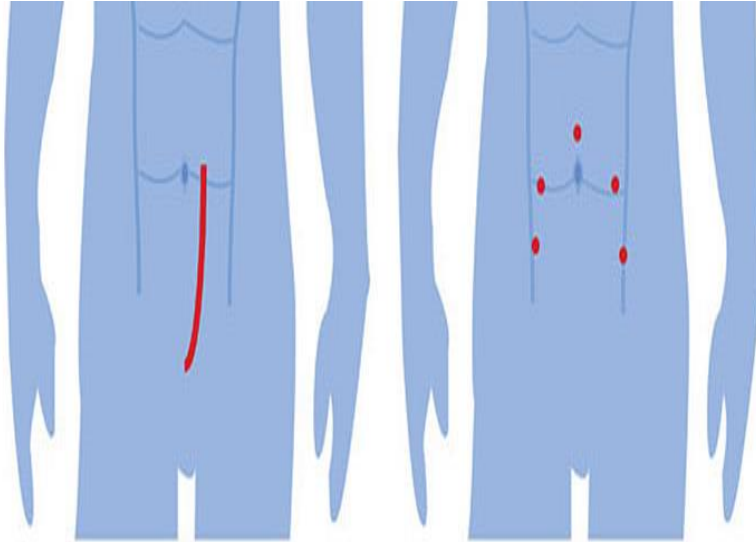
Wednesday 28th February 2018

11.01 am



CELEBRATING 10 YEARS OF **LUCID**

Meet the surgeon – Monday March 5th 2018



Open Prostatectomy Incision

da Vinci Prostatectomy Incisions



CELEBRATING 10 YEARS OF

LUCID

Surgery

Tuesday 13th March 2019



CELEBRATING 10 YEARS OF **LUCID**

Official Diagnosis Post Surgery



Chemotherapy Explained
Dr. Maccon Keane
Consultant Medical Oncologist

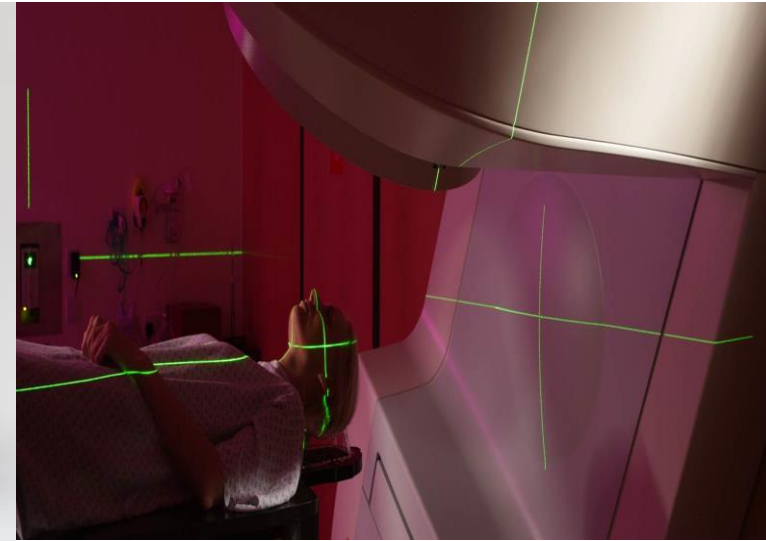


**Prostate
Adenocarcinoma
(pT3bN1, IPSA 8.7,
Gleason 5+5=10)**

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18 weeks of chemo
35 days of Radiotherapy
2 years of Hormone treatment



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OMG!

The Side Effects

Fatigue
Hair loss
Diarrhea
Easy Bruising and Bleeding
Constipation
Infections
Bladder problems
Weight changes
Changes in libido and sexual function

Chemo brain – affects concentration

More Side Effects

Anemia (low red blood cell counts
Nausea
Vomiting
Lead taste in mouth
Nerve & Muscle problems – numbness, tingling & pain
Skin & nail changes
Mouth, tongue and throat problems
Mood changes
Hot flushes

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The Visual Journey

LUCID

Where am I Today ?



**Nutrition
Exercise
Mindset**

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Where am I going?



EXECUTIVE

SPORTS

PERSONAL

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ABOUT

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Communication Coaching

And provides you with a blueprint to deal with the
issue

And will support you through the issue and beyond

Look forward not backwards

Enjoy my family

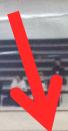
Grow my business

Golf and exercise

“We should look on the past with gratitude,
on the present with enthusiasm,
and on the future with confidence.”

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Booster for Mac

By ROY CURTIS

DAWN MILK dynamo Timmy McCarthy is destined to play a place in the Irish pre-Olympic basketball squad as a Chinese player at 16, McCarthy joined on the Holland by the Karl Bu...

Timmy McCarthy

star and Irish cap

A profi...

McCarthy — MAN FOR ALL SPORTS

Monday, February 12

By ROY CURTIS

McCarthy is a versatile athlete who has excelled in a wide range of sports. He is a member of the Irish national basketball team and has also represented Ireland in football, rugby, and tennis. McCarthy's athletic prowess is a result of his dedication and hard work. He is a role model for young athletes and is a true inspiration for all who follow him.



The Player Who Won't Give Up!

By NOEL SPILLANE



McCarthy

By NOEL SPILLANE

McCarthy is a versatile athlete who has excelled in a wide range of sports. He is a member of the Irish national basketball team and has also represented Ireland in football, rugby, and tennis. McCarthy's athletic prowess is a result of his dedication and hard work. He is a role model for young athletes and is a true inspiration for all who follow him.

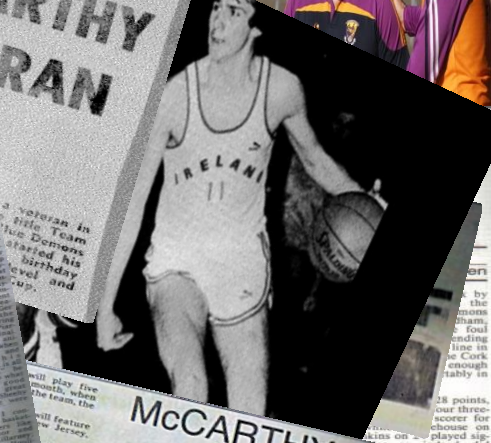
Basketball Notes

He has captured his country, managed the 2000 European Cup squad, and followers of the game will identify him as RTE's expert on the sport.

TIM MCCARTHY — A VETERAN AT

By ROY CURTIS

Tim McCarthy is a veteran of the sport. He has played for many years and has won many titles. He is a true professional and is a role model for all who follow him.



McCarthy LEADS IRISH TEAM

By NOEL SPILLANE



Left out: Tom Wilkinson (left), Brendan O'Flaherty



McCarthy is a versatile athlete who has excelled in a wide range of sports. He is a member of the Irish national basketball team and has also represented Ireland in football, rugby, and tennis. McCarthy's athletic prowess is a result of his dedication and hard work. He is a role model for young athletes and is a true inspiration for all who follow him.



Thank You



WWW.themccarthyconsultancy.com

CELEBRATING 10 YEARS OF

LUCID

The background is a vibrant red with a dynamic pattern of light rays or lens flares emanating from the bottom-left corner, creating a sense of motion and energy.

LUCID