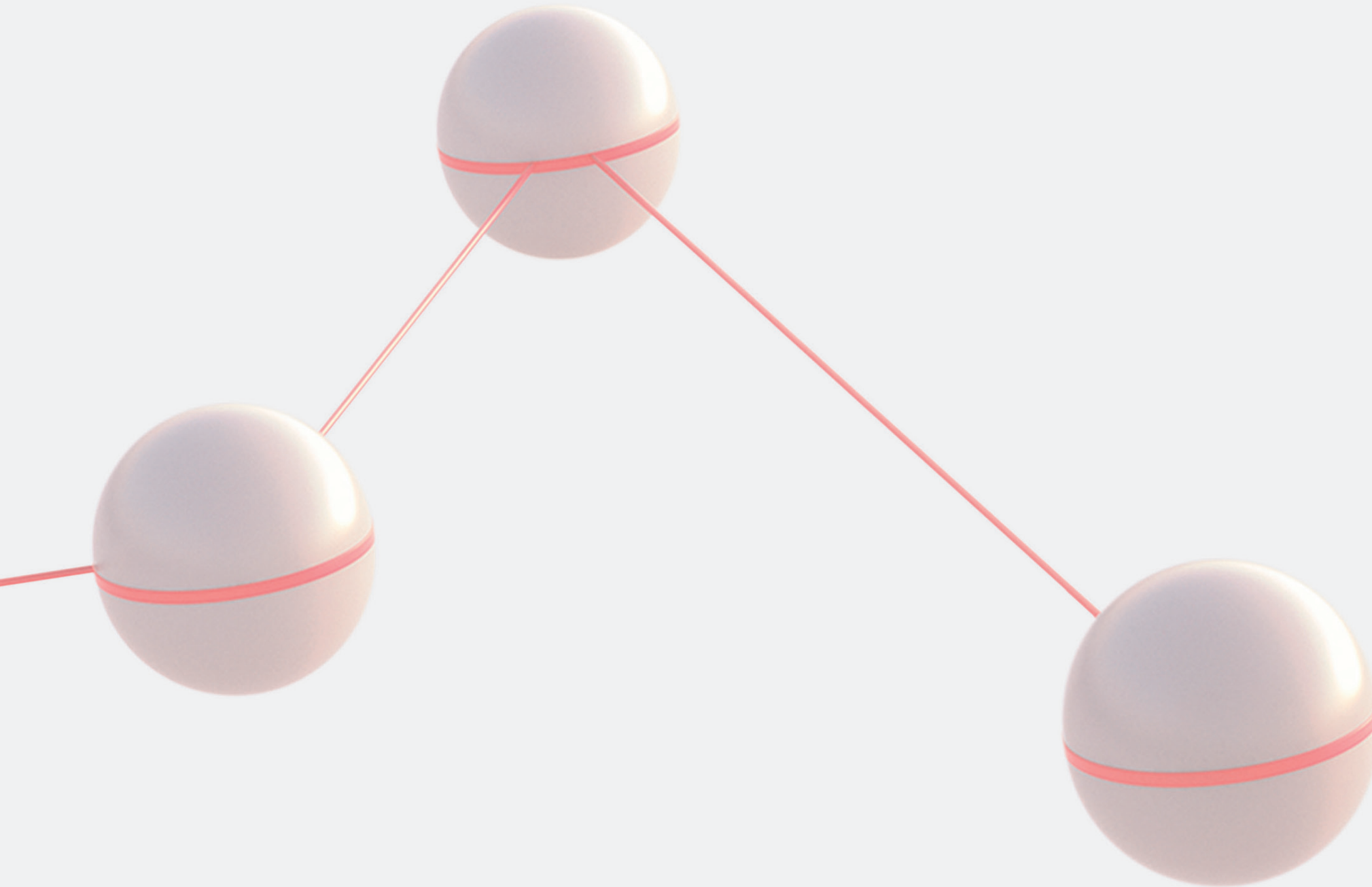
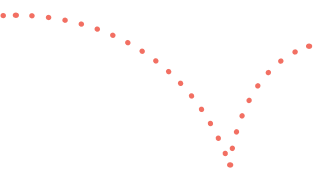


Exercise medicine



**Evidence
in motion**





Improving patient quality of life and reducing the impact of cancer on physical, physiological and social function

People living with cancer face unique health challenges as a result of their diagnosis and the impact of treatment on their physical and mental wellbeing. Survivors often experience a decline in overall physical fitness and quality of life. They also have a greater risk of cancer recurrence and mortality. In 2010, and more recently in 2019, the American College of Sports Medicine reported that exercise medicine could be safely prescribed to cancer patients to improve cancer-related outcomes.

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A life-changing prescription for every patient

At GenesisCare, we have been inspired by the powerful evidence for this therapeutic approach and have taken steps to integrate exercise medicine into our cancer care pathway on an opt-out basis. Exercise medicine is already available at four of our centres across the UK and we are committed to rolling this out across our entire network. We have implemented a centre-wide programme based on the framework provided by the Exercise and Sports Science Australia position statement.¹

100 patients participated in our pilot study and all reported immediate and lasting benefit. We are now committed to helping all of our patients achieve the advantages that exercise medicine can provide.

It is part of our unique approach to cancer care which treats the whole person, not just their cancer. We are committed to finding new and innovative approaches that work alongside conventional cancer treatments to help patients achieve the best possible life outcomes.

References:

1. Hayes et al., 2019; JSAMS

The GenesisCare exercise clinic

Exercise medicine is a targeted prescription of exercise for the treatment and prevention of disease, amelioration of side effects and an adjuvant for other treatments. Numerous studies have shown the potential of exercise medicine to improve outcomes for people with cancer, by enhancing patient quality of life and reducing the impact of cancer on physical, physiological, social and economic function.

Following the successful pilot at our centre in Windsor, we are now introducing this evidence-based approach to exercise medicine for all GenesisCare patients.

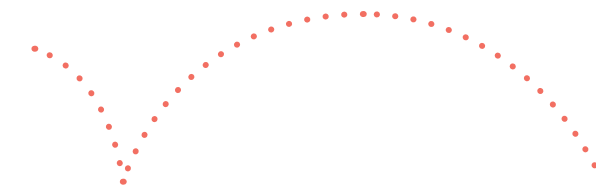
Each patient is given a personalised exercise medicine prescription that is tailored to their specific needs. This considers their cancer type, stage and grade, as well as the side effects of their cancer and their treatment. Importantly, it also considers the patient's own goals for their health and recovery.

The programme is provided on site in a purpose-designed gym containing a range of modern equipment for cardiovascular and resistance training, as well as flexibility and balance activities. It typically involves a 12-week supervised programme, with two sessions per week of up to 45 minutes.

Throughout, our physiotherapists work closely with patients to monitor changes in their health and side effects, adjusting the exercise prescription accordingly during treatment to support and motivate patients to achieve their goals.

The exercise medicine prescription is based on a thorough assessment that includes a 1RM (one-repetition maximum) test to measure strength capacity before the programme. Patient-driven goals are also a key feature of success. Compliance is not measured by attendance but by adherence to the prescribed activities. Patients are encouraged to work at their own pace and explore the contribution that exercise can play in their overall health as well as ameliorating side effects.

People with cancer have many concerns and may not prioritise exercise but our experience to date shows a positive uptake. Many who have undertaken our 12-week programme have realised the true benefits and take away a new confidence in their ability, together with a motivation to continue the principles of exercise medicine after their treatment has finished.

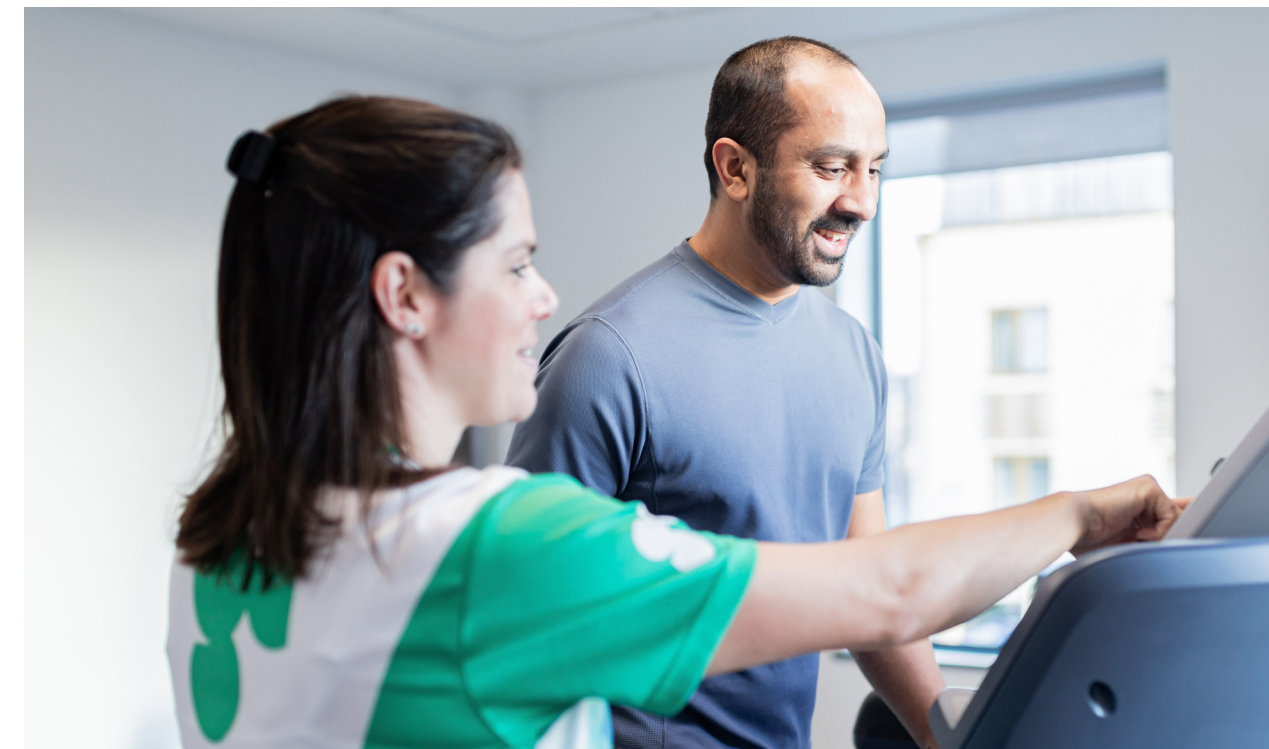


Aerobic

20 minutes per exercise
Avoid 2 consecutive days
without exercise
Intensity: Moderate

Resistance

At least 2 sessions per week
At least 48 hours' recovery
Intensity: Moderate to high



100 patients participated in our pilot study and all reported immediate and lasting benefit

Exercise and the tumour micro-environment

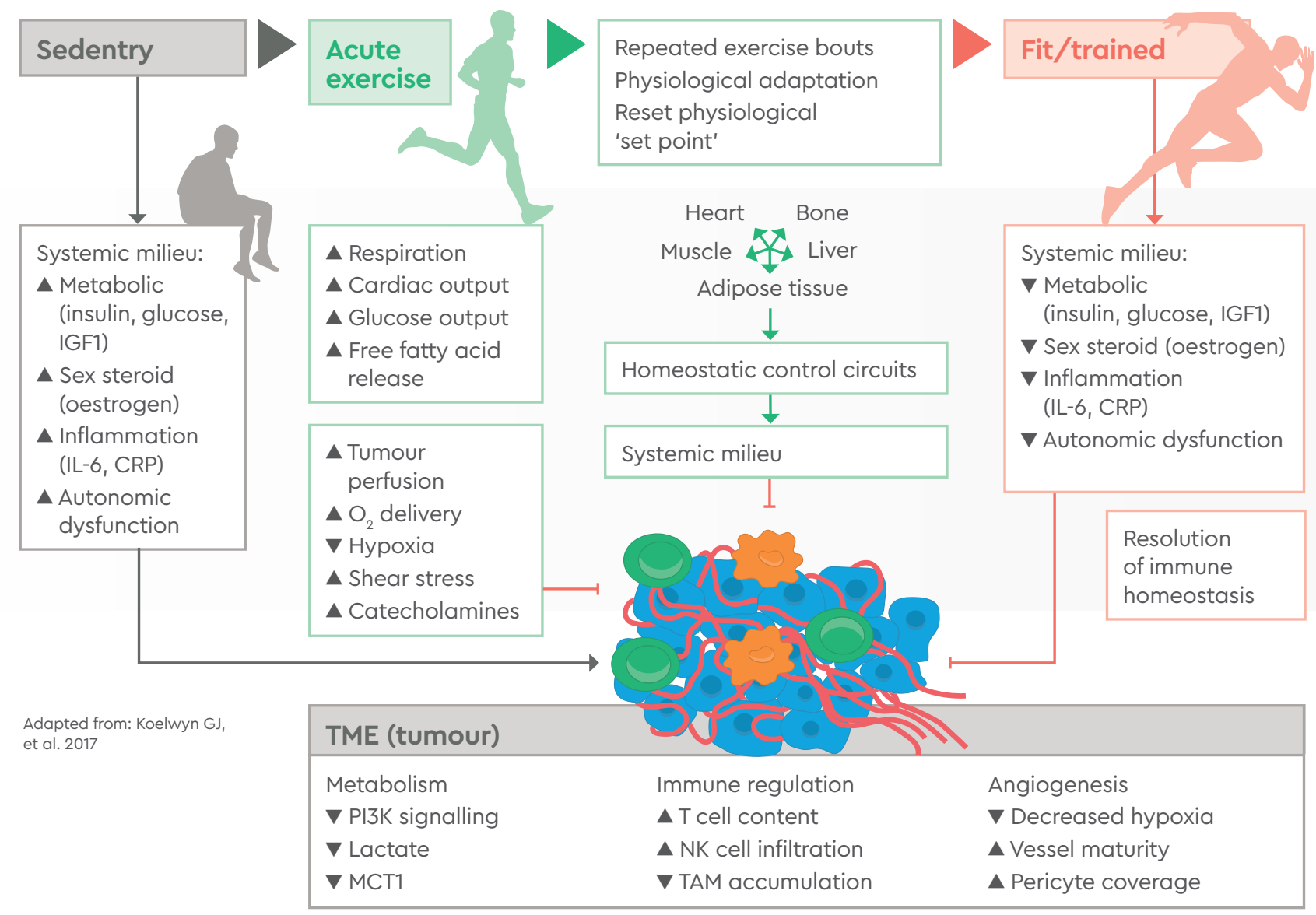
There are many processes involved in tumour growth including inflammation, angiogenesis, metabolic control, cell proliferation, and immune resistance.

There are several systemic factors involved in the modulation of these processes including insulin/glucose metabolism, immune function, inflammation, sex steroid hormones, oxidative stress, genomic instability and myokines. Physical activity affects these circulating factors (collectively, the systemic milieu) in a way that influences cellular process and tumour growth.¹

In a sedentary person, levels of sex steroid hormones and insulin are raised and the metabolism is less efficient.

Sudden, intense exercise can have a short-term positive effect by increasing blood flow to the tumour, thereby increasing oxygenation and delivery of vasodilators. This decreases hypoxia within the tumour. Sustained, repetitive exercise leads to permanent changes in metabolism and improved efficiency of physiological processes. The effects are believed to be wide-ranging and include reduced circulation of insulin, glucose and sex steroid hormones, a reduction in inflammation and enhanced immune function. These all create an unfavourable tumour micro-environment (TME), depriving the tumour of the resources needed for growth.

Exercise-dependent regulation of the tumour microenvironment



Adapted from: Koelwyn GJ, et al. 2017

References:
1. Patel et al., 2019; MSSE

Exercise – an evidence-based approach



In 2010 and again in 2019, the American College of Sports Medicine International Multidisciplinary Roundtable reviewed available evidence in support of developing prescriptive exercise medicine programmes for people with cancer.¹ They concluded that specific doses of aerobic training, resistance training, or combined aerobic and resistance training could all improve common cancer-related health outcomes, including anxiety, depressive symptoms, fatigue, physical functioning and health-related quality of life.

The following exercise-related outcomes can be achieved before and after cancer treatment.

Moderate-intensity aerobic training performed three times per week and for at least 12 weeks or twice weekly combined aerobic plus resistance training lasting 6 to 12 weeks can significantly reduce anxiety and depressive symptoms.¹

Moderate-intensity aerobic training three times per week for at least 12 weeks can significantly reduce cancer-related fatigue.¹

Combined moderate intensity aerobic and resistance exercise performed two to three times per week for at least 12 weeks results in improvements in health-related quality of life (HRQoL).¹

Moderate-intensity aerobic training, resistance training or combined aerobic plus resistance training performed three times weekly for 8 to 12 weeks can significantly improve self-reported physical function.¹

References:

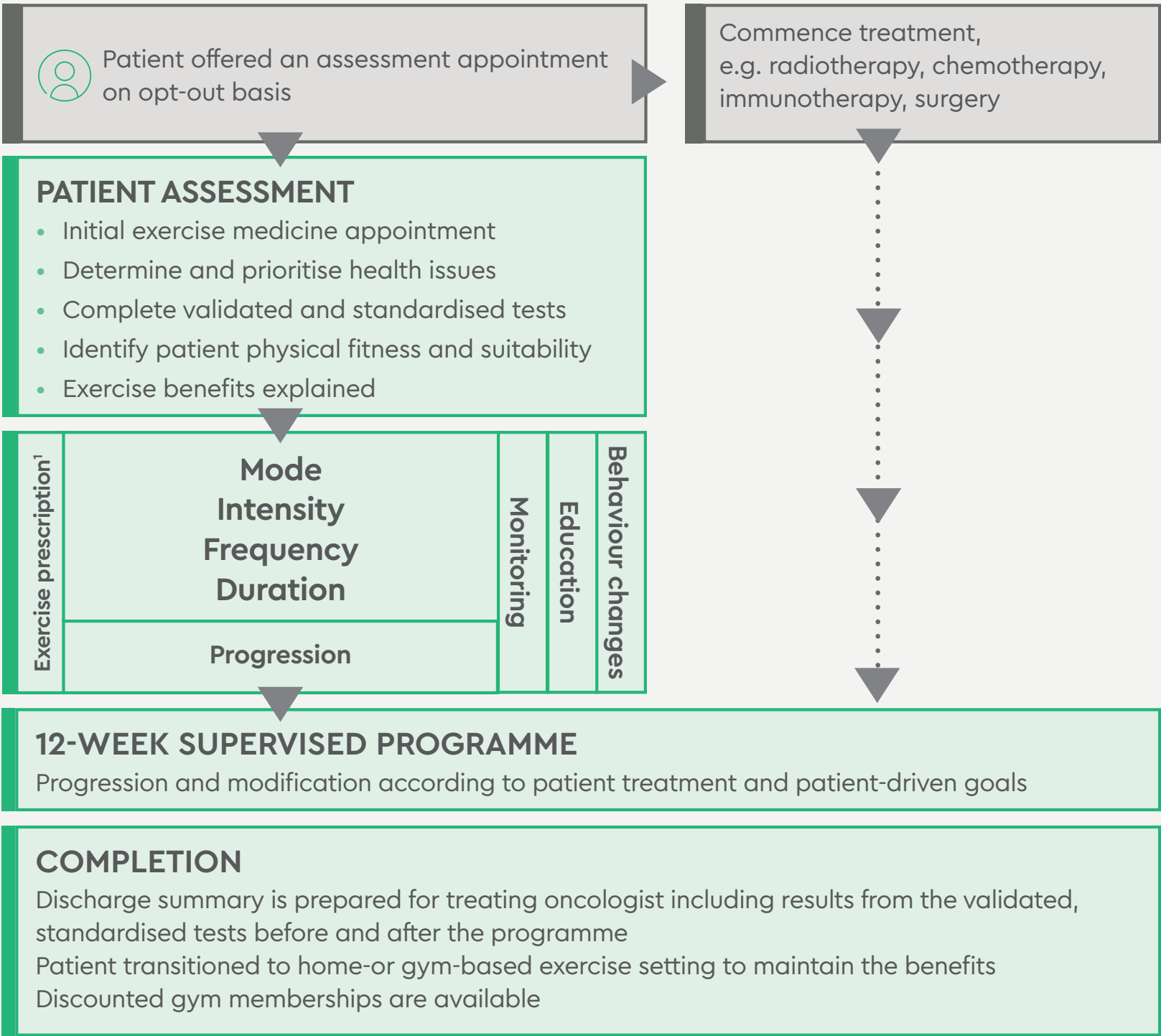
1. Campbell et al., 2019; MSSE

The pathway to lasting change

Exercise medicine is complimentary and almost all patients will benefit, although each prescription is tailored to their specific cancer type, treatment and other comorbidities.

The GenesisCare admin team will provide the patient with information about the exercise medicine programme and offer an assessment appointment. At the initial assessment appointment and on completion of the programme, patients will complete validated, standardised tests to measure quality of life, fatigue, mental health, bio-electrical impedance, functional capacity and muscle strength.

At the end of the 12-week programme, our goal is for patients to naturally embrace exercise as a lifestyle choice. It is an important and positive take away from their care experience.



References:
1. Hayes et al., 2019; JSAMS

Case studies

■ Patient A

Patient A was a 55-year-old female with breast cancer who had radiotherapy at our Windsor centre. Although she was not a regular exerciser before, she was exceptionally motivated to complete her prescribed programme which concentrated on reducing fat and increasing muscle strength.

At her re-assessment on programme completion, she showed outstanding improvements in functional capacity, moving up three levels from 'below average' to 'good' in the three-minute step test. She also greatly improved her muscle strength; in one-repetition maximum (1RM) tests she went from a 66kg seated row to 86kg and an 80kg leg press to 89kg.

As well as physical improvements, Patient A also showed a reduction in fatigue (from 31 before the programme to 41 on completion

in the FACIT Fatigue Scale – a higher number indicating improved energy levels), depression and, significantly, anxiety (from 10 to 8 and 13 to 3 respectively in the HAD Scale).

Her scores in the SF-36 questionnaire showed improvements in various quality of life areas. These included role limitation due to emotional problems or physical problems (from 0% to 67% and 0% to 100% respectively), emotional wellbeing (28% to 84%) and social functioning (50% to 88%).

During the programme, Patient A changed her lifestyle to clean up her diet and make exercise an integral part of her life. She has moved from the contemplative stage of exercise behavioural change to the action stage, having now joined a gym with confidence to continue her strength and cardiovascular programme.

■ Patient B

Patient B was a 58-year-old male with prostate cancer who initially started an exercise medicine programme alongside his chemotherapy treatment at our Windsor centre. Unfortunately, he was unable to complete the full course due to the heavy side effects he experienced. His initial programme was focused on improving fatigue and he showed improvements in the FACIT Fatigue Scale from 15 to 33.

However, between starting the programme and initial discharge, he lost muscle mass (3.8kg) and muscle strength (with his 1RM chest press changing from 50kg to 41kg), despite a weight loss of only 0.8kg.

He started the programme again while later undergoing radiotherapy. This course was tailored to reduce fat while building up his muscle

mass and maintaining earlier improvements in fatigue. His body fat dropped from 33.1% to 29.9% and he gained 2.9kg of muscle mass. His fatigue improved further from 33 on initial discharge to 38.

He also improved his functional capacity and his SF-36 scores showed improvements in quality of life, particularly with regards to social functioning and health change.

"The exercise medicine programme motivated me to make positive changes to my future health and life"

Patient A

Our centres



- 1

Nottingham
- 2

Birmingham
- 3

Cambridge
- 4

Milton Keynes
- 5

Oxford
- 6

Elstree
- 7

Chelmsford
- 8

Bristol
- 9

Windsor
- 10

London
- 11

Guildford
- 12

Maidstone
- 13

Southampton
- 14

Portsmouth

Exercise medicine at GenesisCare

			MRI	CT	PET/CT	Advanced radiotherapy	Advanced radiotherapy – VMAT, SGRT	Palliative radiotherapy – SABR	Spacing gel	Chemotherapy	Theranostics – ¹⁷⁷ Lutetium PSMA	Exercise medicine
3	Cambridge	T 01223 907 600 F 01638 662 134		●		●	●	●	●		●	●
4	Milton Keynes	T 01908 467 700 F 01908 238 415		●		●	●	●	●		●	●
6	Elstree	T 02082 369 040 F 02082 369 041	●	●		●	●	●	●		●	●
8	Bristol	T 01454 456 500 F 01454 456 502	●	●		●	●	●	●		●	●
9	Windsor	T 01753 418 444 F 01753 864 036	●	●	●	●	●	●	●	●	●	●
10	London	T 02074 605 626 F 02074 605 622	●	●	●	●	●	●	●		●	●
12	Maidstone	T 01732 207 000 F 01732 841 333		●		●	●	●	●		●	●

● ● On site at GenesisCare ● At local partner hospitals ● Coming soon



When required, we will help our patients with transport depending on treatment and locations. Please enquire for more details.



GenesisCare is recognised by all private medical insurers, including Bupa, AXA PPP, Aviva and Vitality.



Refer a patient

For more information about exercise medicine
at GenesisCare or to refer a patient:

08081 569 565 | enquiries@genesiscare.co.uk

Our well-appointed
centres provide
a clean, safe
and comfortable
environment for
exercise, with the
latest equipment,
changing and
shower facilities,
refreshments and
post-exercise
relaxation areas