



Sheffield Teaching Hospitals
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EXERCISE TO BOOST THE IMMUNE SYSTEM DURING CANCER TREATMENT

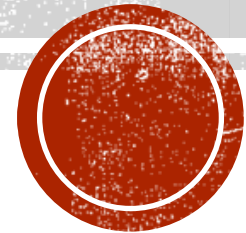
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BACKGROUND

- Immune checkpoint inhibitors (ICIs)
 - Immune system activation
 - Multiple cancer settings
- <40% of patients benefit from ICIs
- Mesothelioma <1% of cancer cases,
- incidence 2,718 / year in UK
 - **Hot tumour** some ICI responsiveness
- Pancreatic cancer is 10th most common
- incidence 10,452 / year in UK
 - **Cold tumour** with low immunogenicity

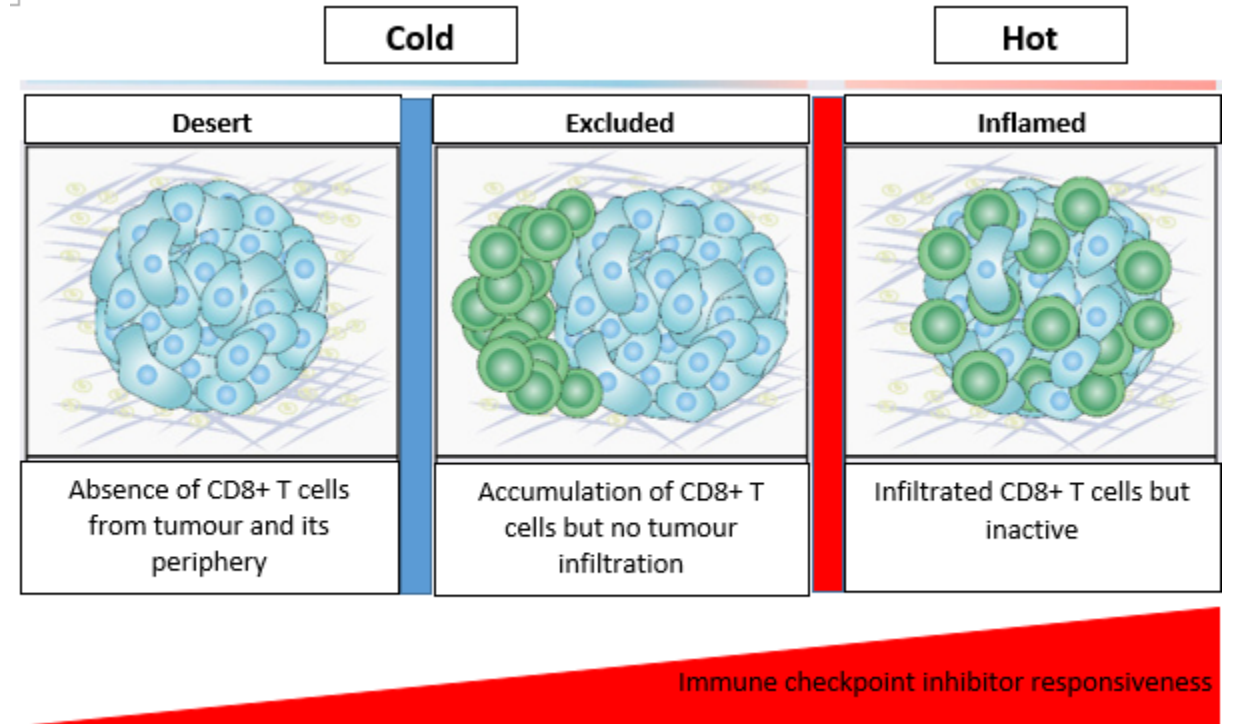


Image adapted from. : Liu YT et al ⁶ Turning cold tumors into hot tumors by improving T-cell infiltration



BACKGROUND

- **Exercise** is a form of physical activity involving organised and repetitive bodily movements.
- **Exercise in patients with cancer**
 - improve survival
 - reduce cancer-related and treatment related tiredness
 - reduce cancer recurrence
 - **boost immune system**

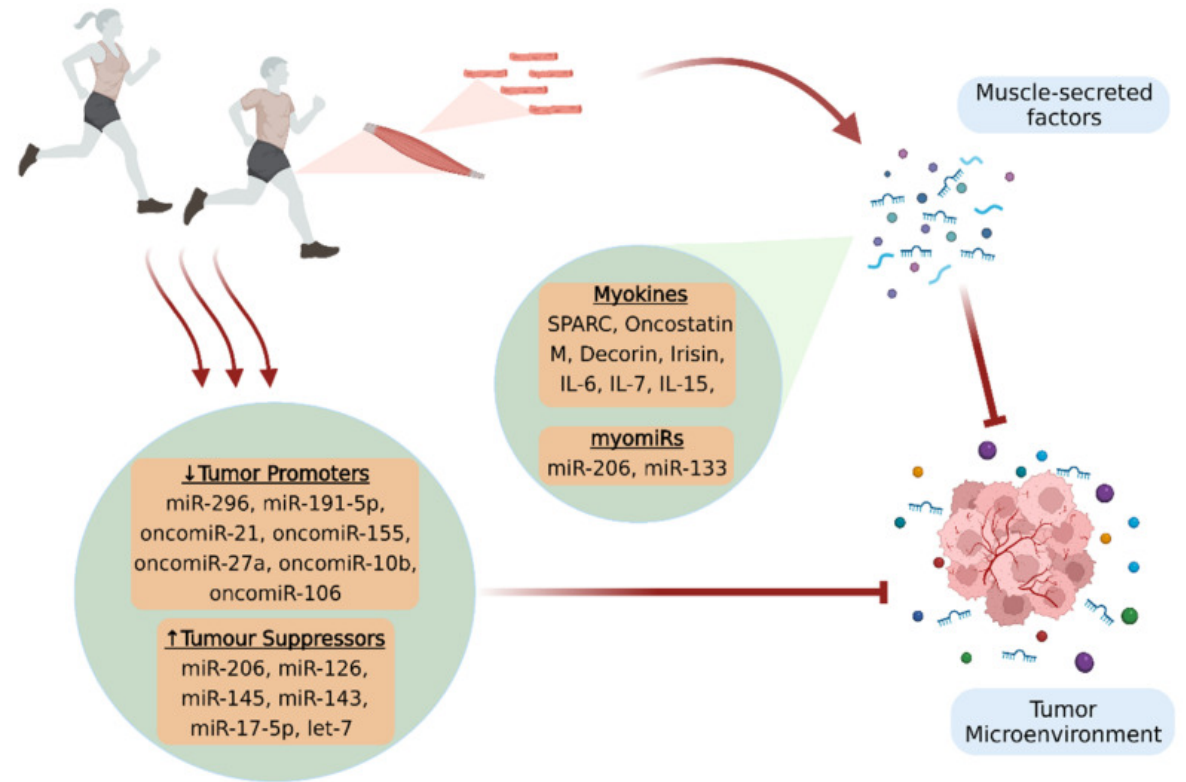


Image taken from:
Papadopetraki et al⁸ Physical Exercise Restrains
Cancer Progression through Muscle-Derived Factors.



WHAT IS THE PURPOSE OF THE STUDY?

Provide more
information
for a robust
RCT

Does exercise lead to an
influx of circulating
immune modulators in
patients with
mesothelioma and
pancreatic cancer?

Feasibility Study:
**Is the planned exercise
activity acceptable to
patients with mesothelioma
and pancreatic cancer who
are receiving cancer
treatment?**



WHAT DOES THE STUDY INVOLVE?

- Study based in Sheffield
 - 10-15 patients with mesothelioma
 - 10-15 patients with pancreatic cancer
- Attend the Advanced Wellbeing Research Centre



One weekly supervised session

- Exercise specialist
- Moderate intensity Interval exercise bicycle
- Resistance training
- Groups of 3-4

One weekly un-supervised

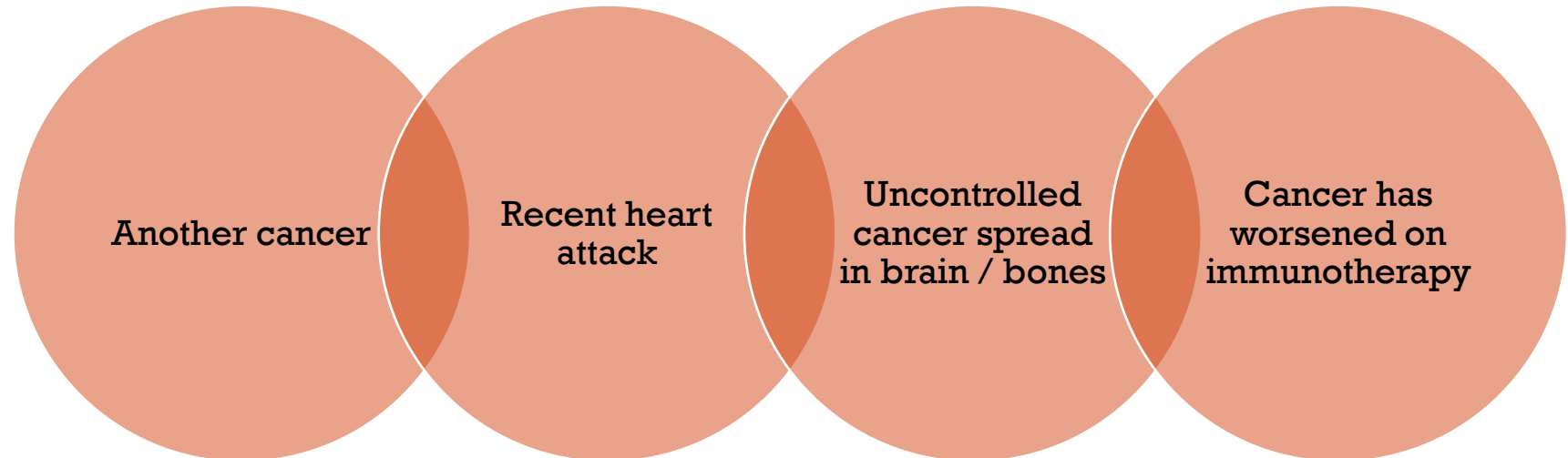
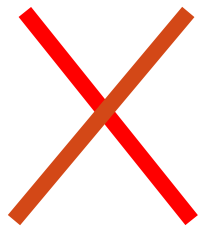
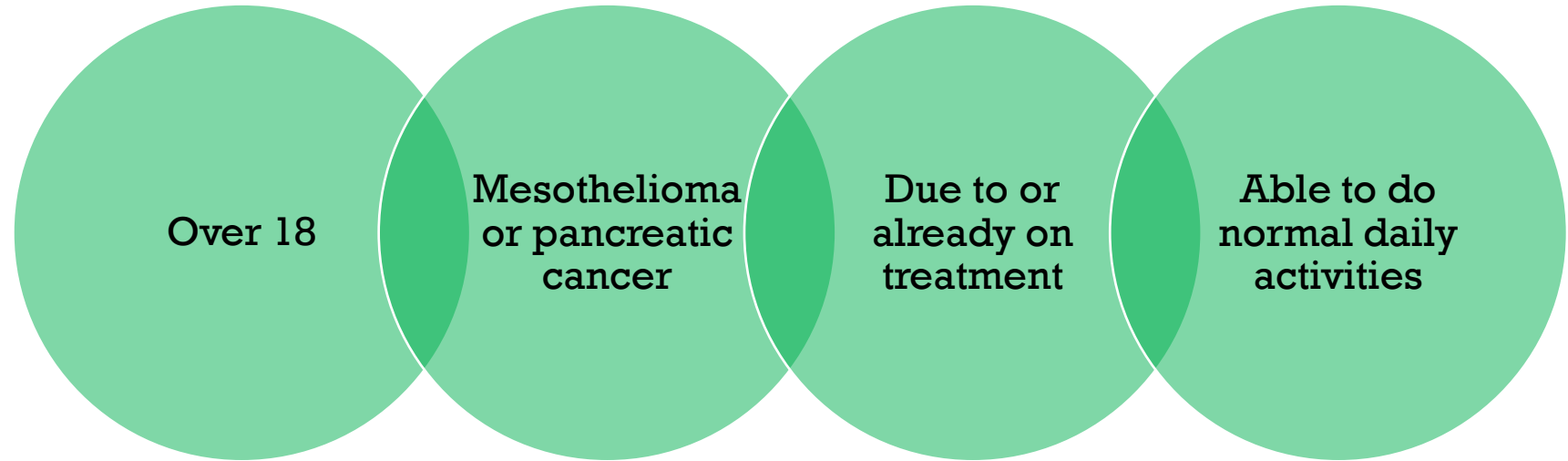
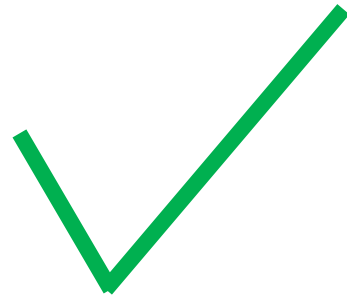
- Personally tailored plan from exercise specialist

3 months

- Alongside cancer treatment
- Lung function tests and medical imaging
- Blood tests before and after exercise

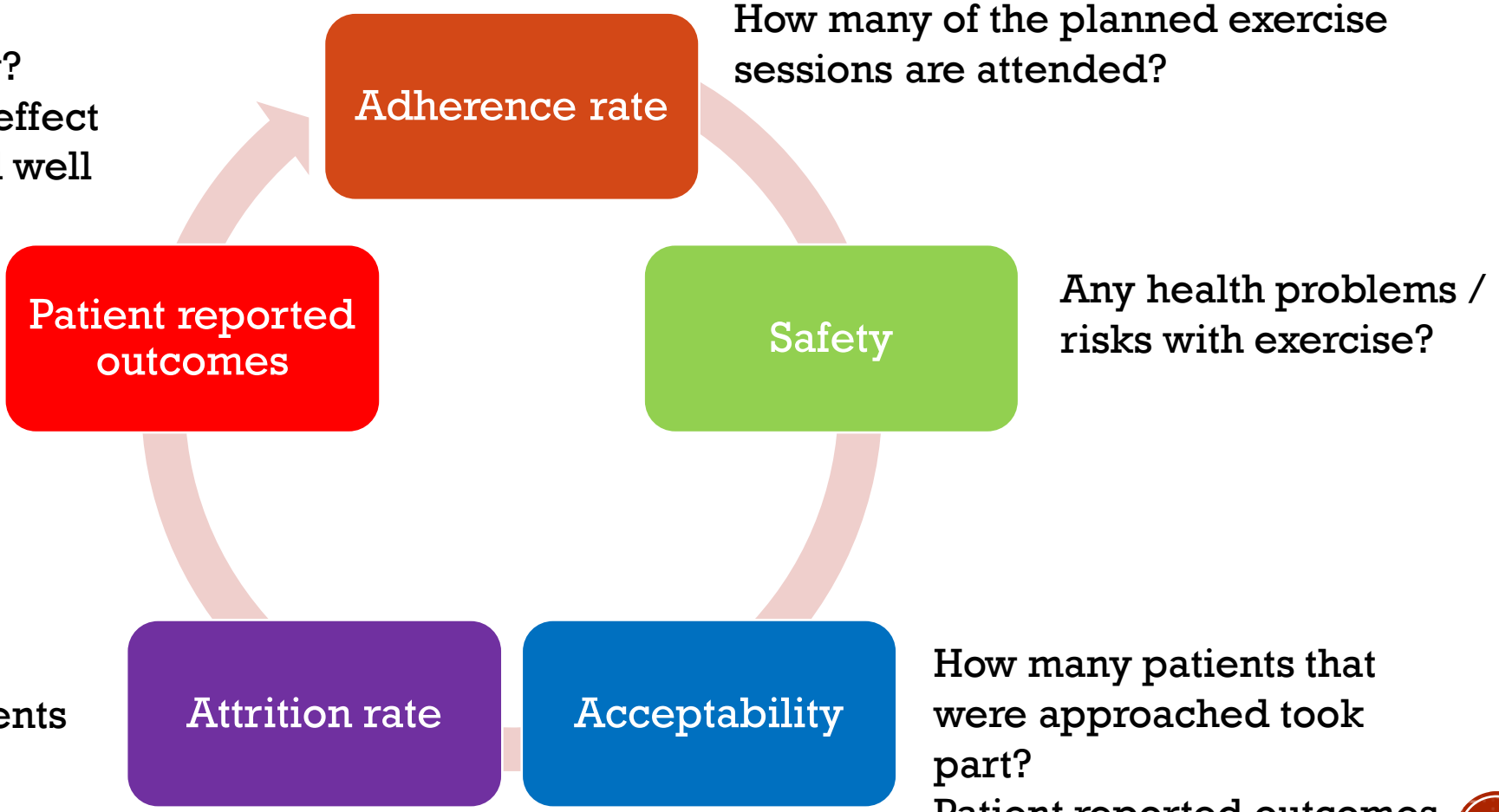


INCLUSION AND EXCLUSION CRITERIA



WHAT ARE WE LOOKING FOR?

Physical well being?
Improved adverse effect
tolerability? Mental well
being?



How many of the planned exercise sessions are attended?

Any health problems / risks with exercise?

How many patients that were approached took part?

How many patients dropped out?

Patient reported outcomes



SECONDARY OUTCOMES

BLOOD

- T cells, B cells, mononuclear cells by flow cytometry
- Myokines / cytokines by cytokine bead array

LUNGS

- Aerobic capacity – FEV / VO₂ max

IMAGING

- CT scans at baseline and 3 months



IMPACT AND TRANSLATIONAL RESEARCH

Essential data

- Acceptability of exercise
- Basis to design robust RCT

Hypothesis

- We hypothesise that exercise will be a feasible and efficacious intervention for patients
- Improving immunotherapy responsiveness in both 'hot and cold tumours'

National guidelines

- Incorporate into national guidelines
- Implement in clinical practice



PATIENT AND PUBLIC INVOLVEMENT

- Extremely important at all stages – work together to improve study in all aspects
- PPI workshop attendance
- Discussion with experience members of cancer focus groups
- Presented at Mesothelioma Research Centre UK PPI panel

Very interesting topic, patients would like to do something to help themselves..

This study is important, I feel I have done so well with my immunotherapy by being physically active..

I have lost muscle mass, I would like a combination of aerobic exercise and resistance training..



THANK YOU VERY MUCH

