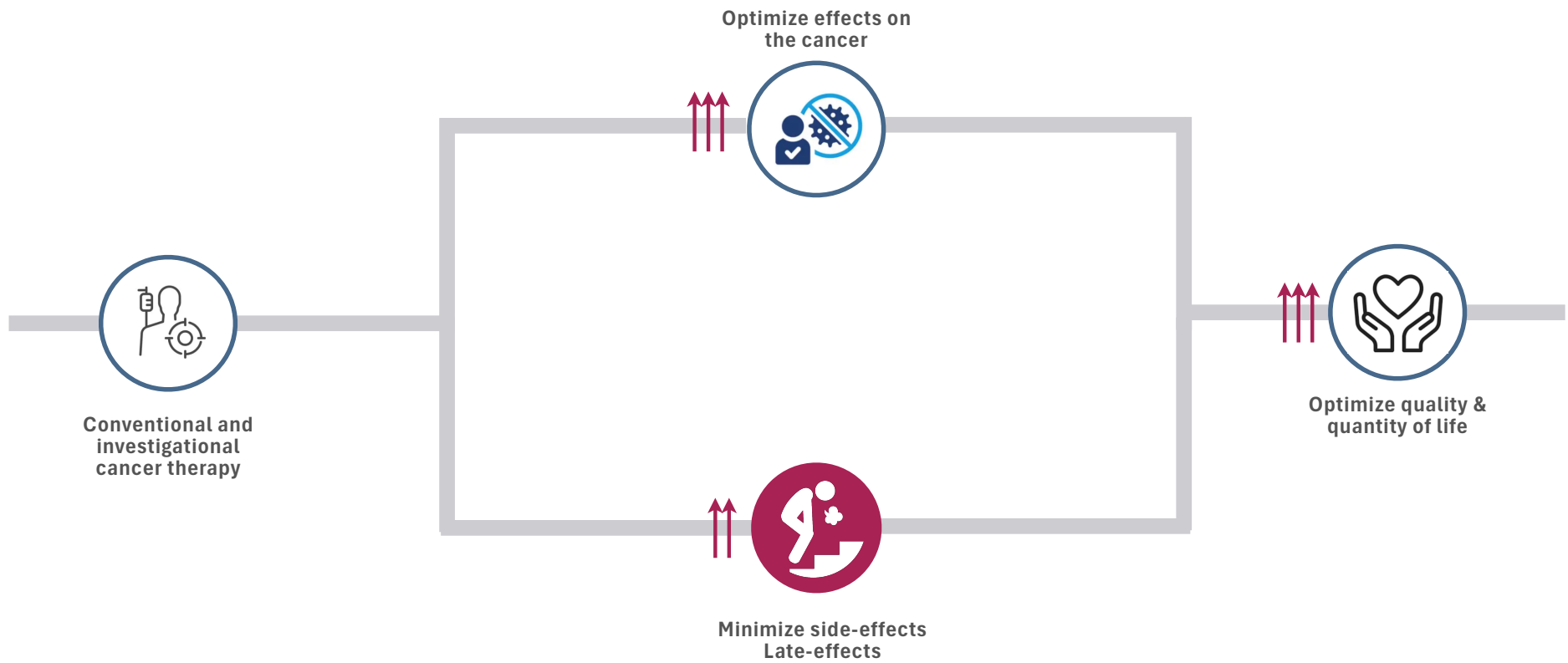




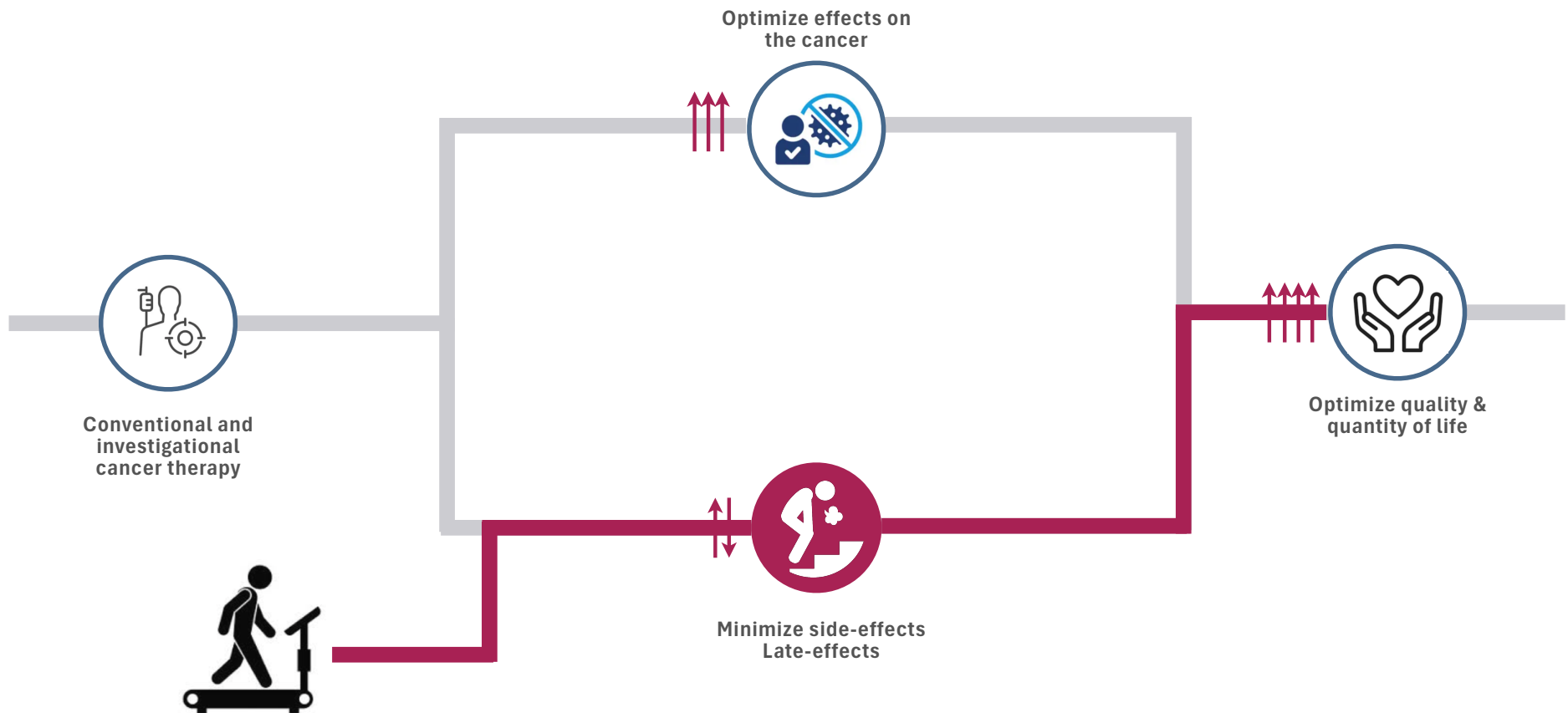
Exercise After Cancer: What We Know

Lee W. Jones, PhD
Head, Exercise-Oncology Program
Department of Population Sciences
Beckman Research Institute of City of Hope

The Goal of Cancer Care



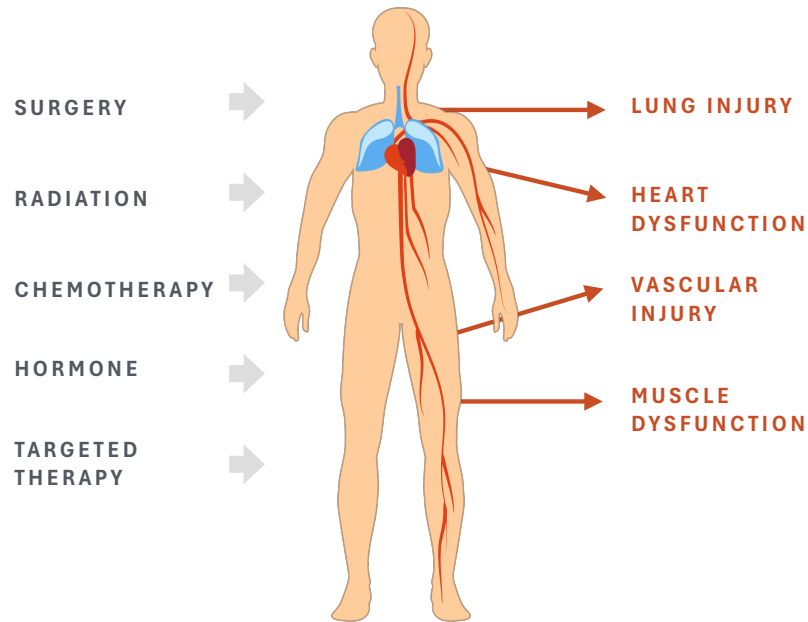
Exercise: A “Single-Targeted” Intervention



What we Know

Cancer Treatment Causes “Accelerated” Physiological Aging

Cancer Treatment “Multiple-Hit”

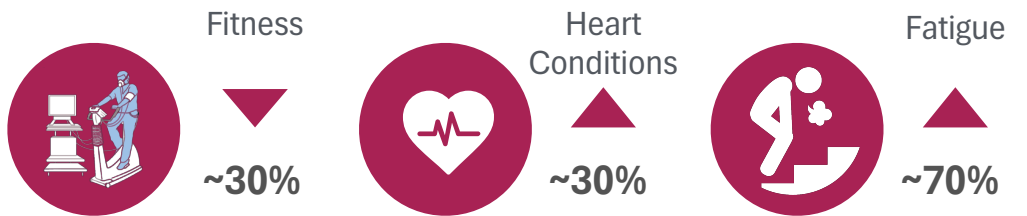


Global Measure: Fitness

Short-Term Impact



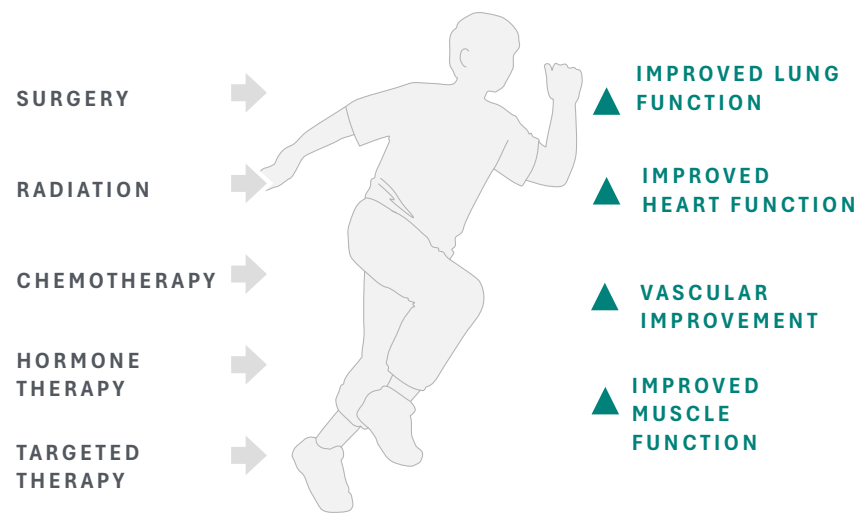
Long-Term Impact (>5 yrs after treatment completion)



The Good News

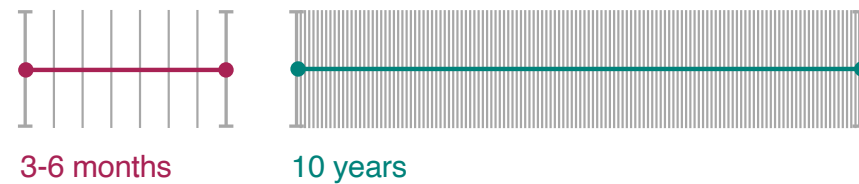
Exercise Attenuates “Accelerated” Physiological Aging

Exercise Prevents the “Multiple-Hit”



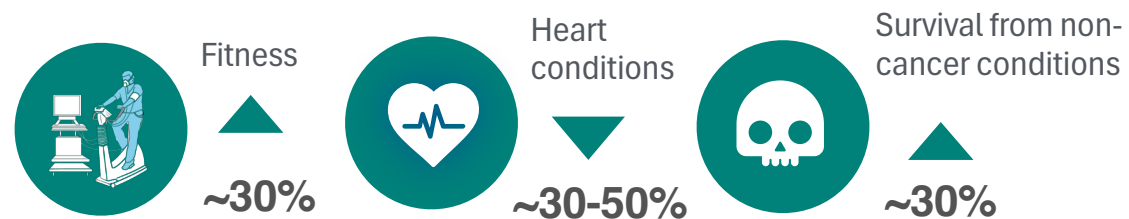
Global Measure: Fitness

Short-Term Impact (during treatment)

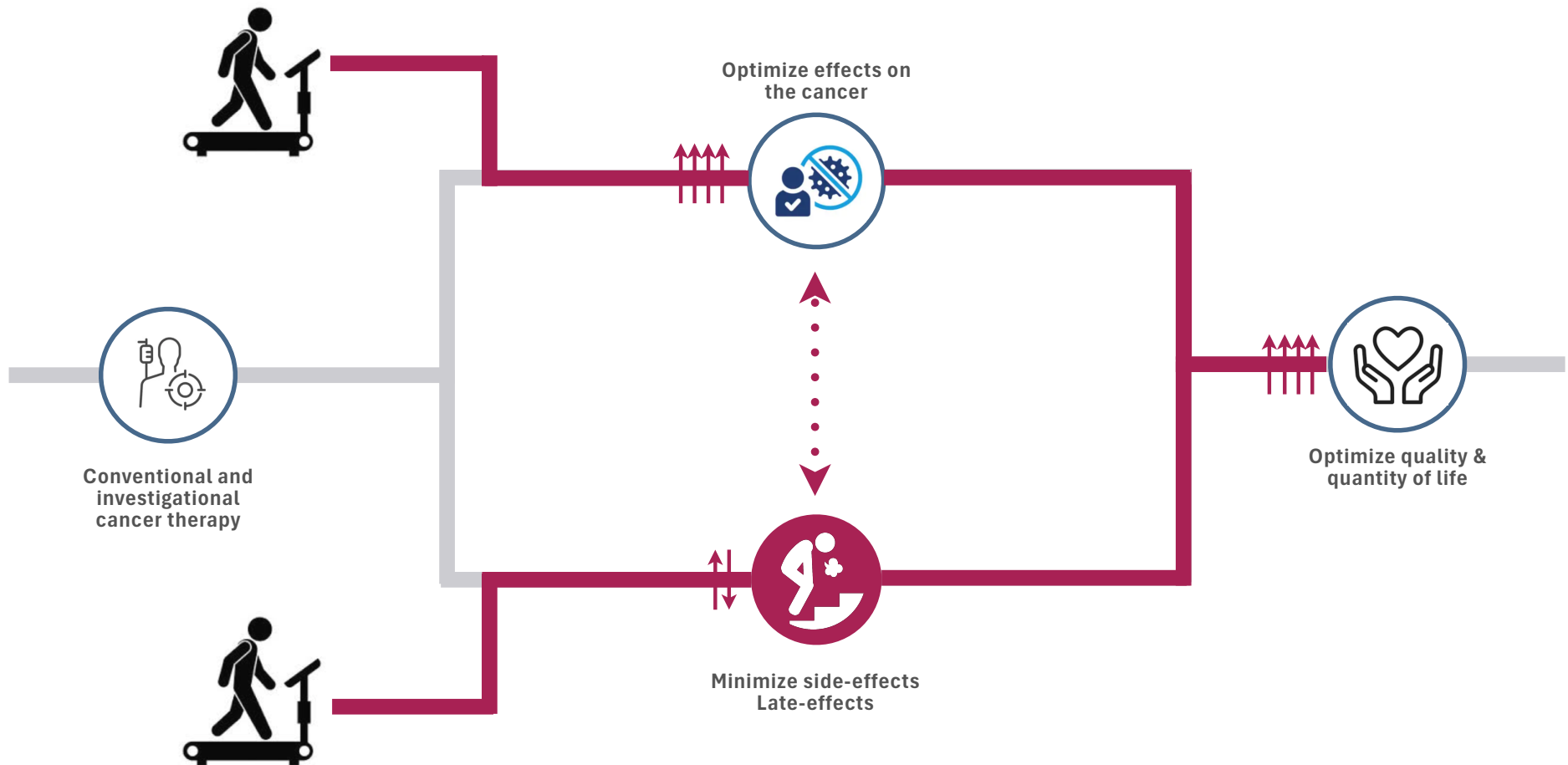


Completely prevents treatment-induced decline in fitness

Long-Term Impact (after treatment)



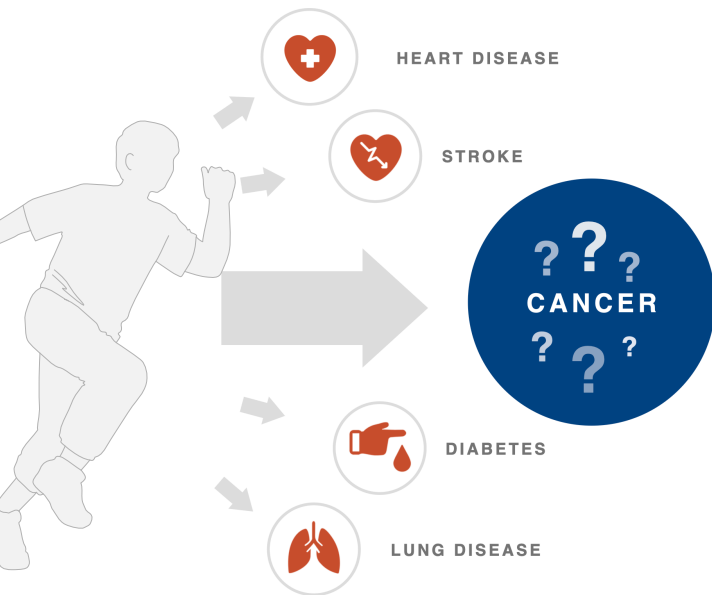
Exercise: A “Dual-Targeted” Strategy?



Exercise as Treatment for Cancer

Rationale

Current Situation



EXERCISE “STANDARD OF CARE” AFTER
DIAGNOSIS OF MANY CONDITIONS
EXCEPT CANCER

Our Mission

IS TO PROVE EXERCISE:

1. Is an **EFFECTIVE** treatment & preventive therapy for cancer.
2. **IMPROVES** the effectiveness of breast cancer therapies.

Our Approach

TO APPLY AN APPROACH USED TO DEVELOP NEW DRUG TREATMENTS TO **DEVELOP EXERCISE** AS CANCER TREATMENT.

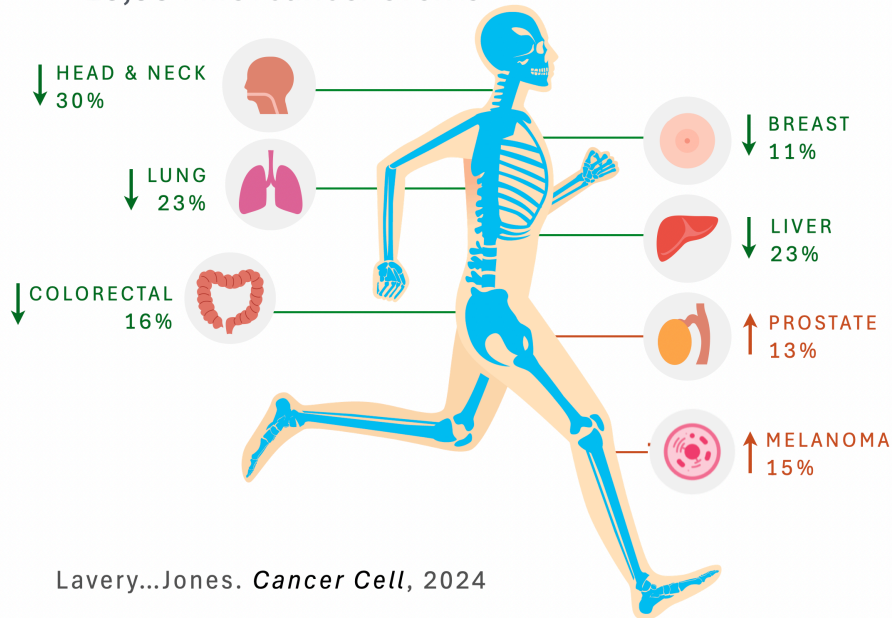
Key Questions

- ◆ Does exercise lower cancer progression in early studies?
- ◆ What is the right amount of exercise?
- ◆ Does exercise work better certain individuals than others?
- ◆ How does exercise inhibit cancer?

Association of Exercise and Cancer Outcomes

Cancer Prevention

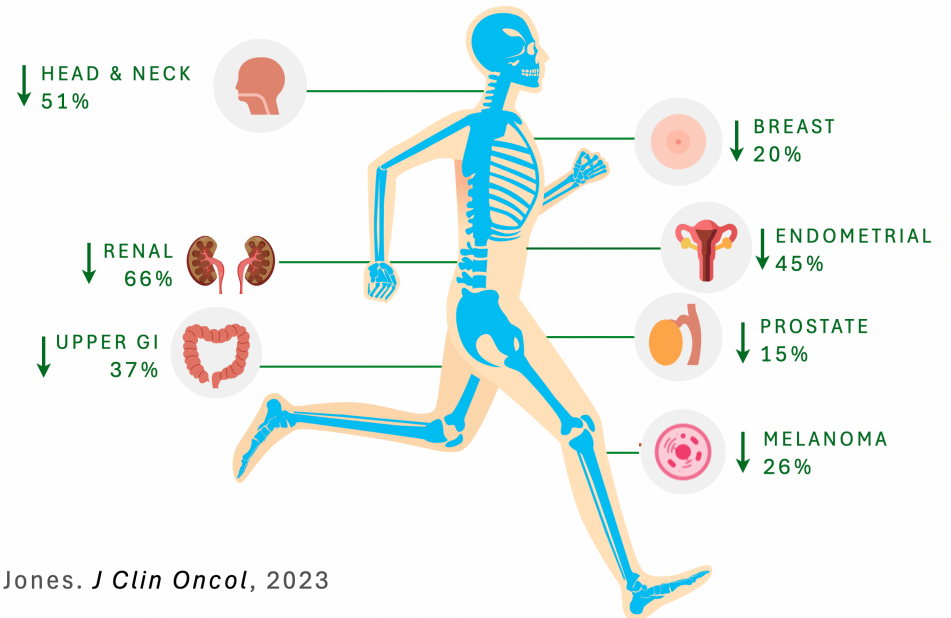
- Nationally-based sample of adults without cancer (n=60,045)
- ~18 yrs of median follow-up
- 15,954 first cancer events



Lavery...Jones. *Cancer Cell*, 2024

Cancer Treatment

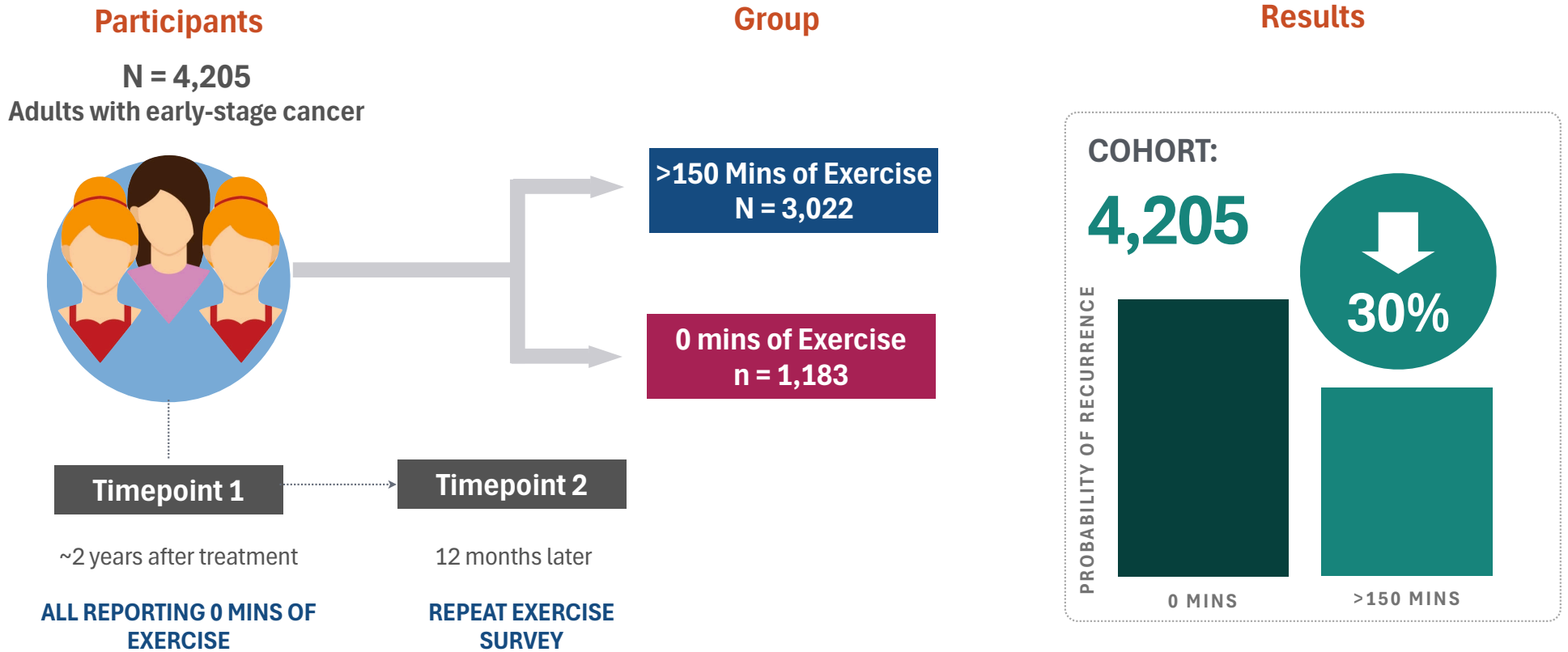
- Nationally-based pan-cancer sample (n=11,245)
- ~12 yrs of median follow-up
- 4,550 total deaths



Lavery...Jones. *J Clin Oncol*, 2023

Does Increasing Exercise Lower Cancer Progression?

Novel Observational Study



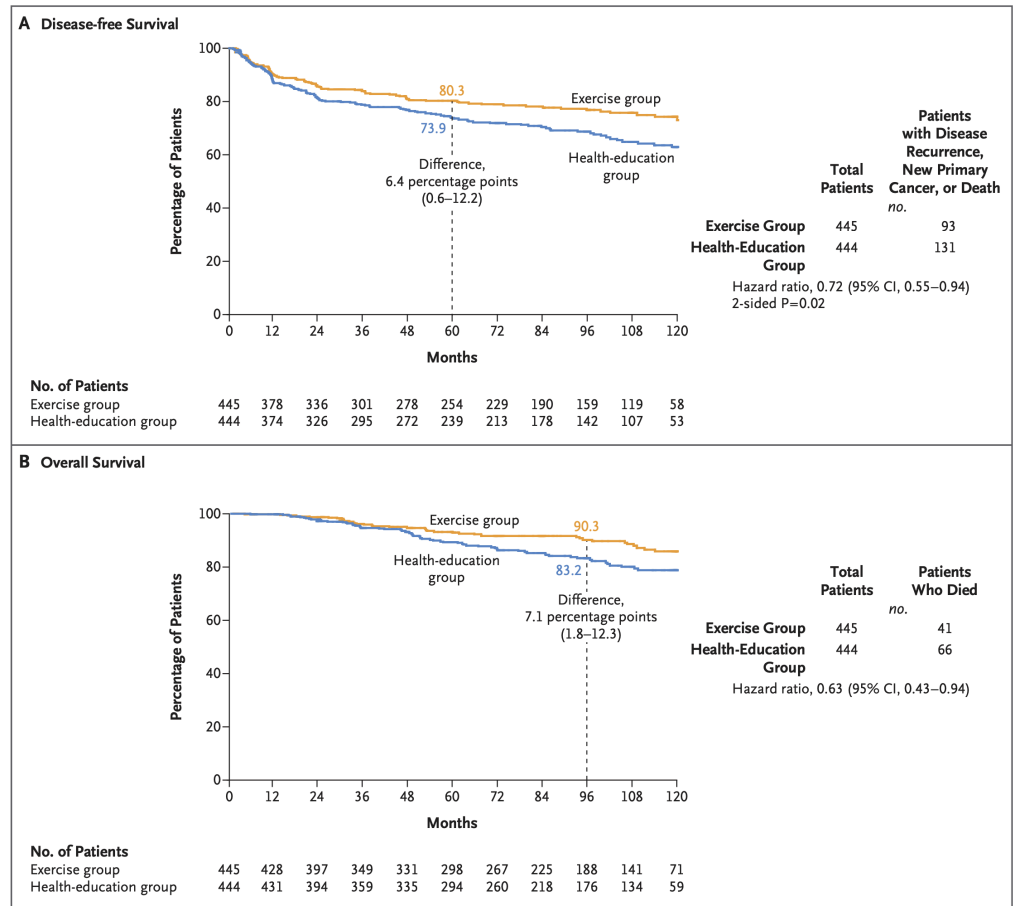
Does Increasing Exercise Lower Cancer Progression?

CHALLENGE Trial



Structured Exercise after Adjuvant Chemotherapy for Colon Cancer

Courneya et al. *N Engl J Med*, 2025

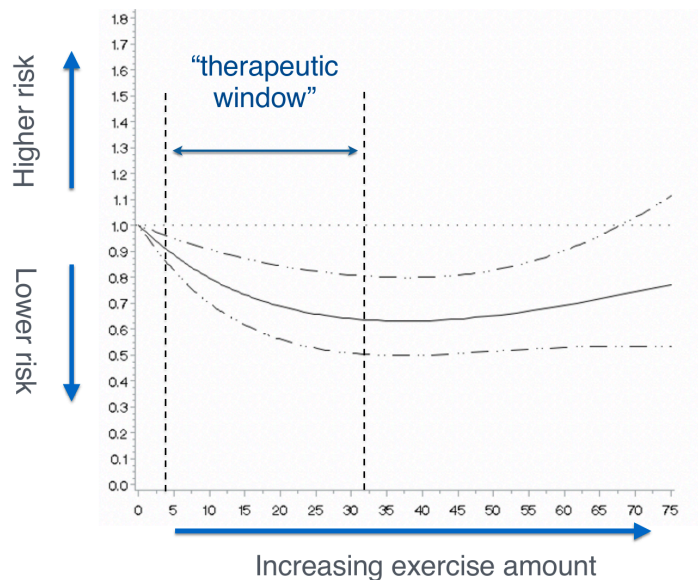


What is the Right Amount (Dose) of Exercise?

Observational and Animal Study Data

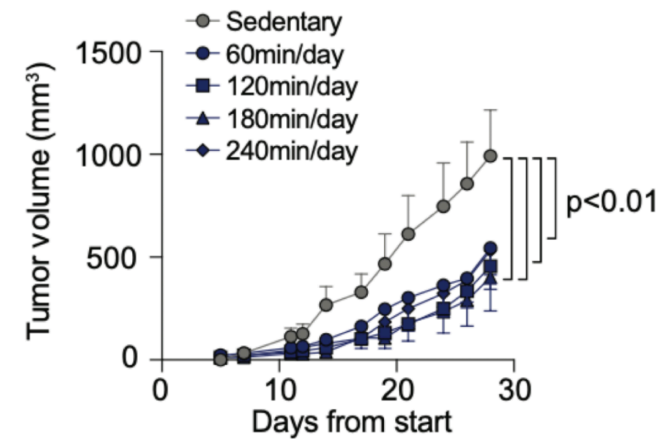
CANTO Study

- Nationally-based cohort of primary breast cancer (n=10,457)
- 508 recurrence events



Preclinical Study

- Female immune-competent mice
- 4T1 - triple negative mouse breast cancer cell line

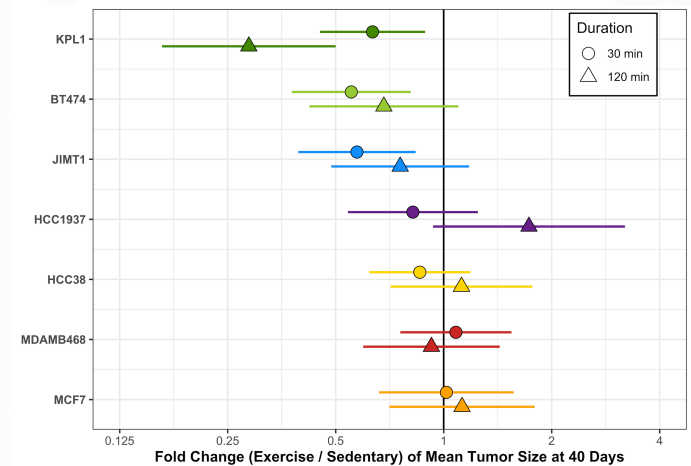
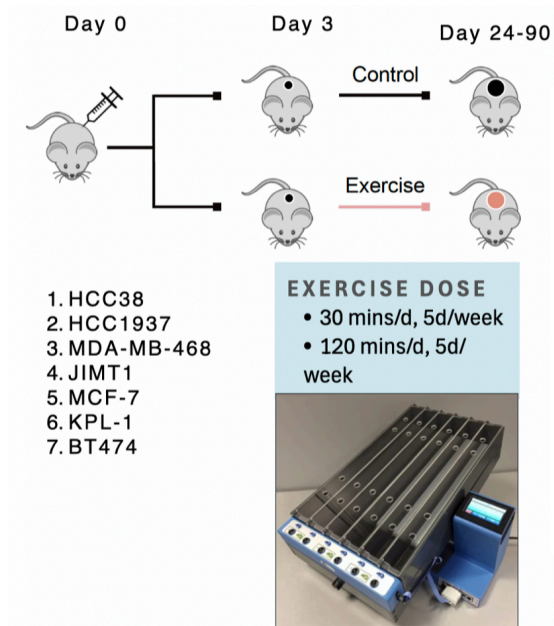
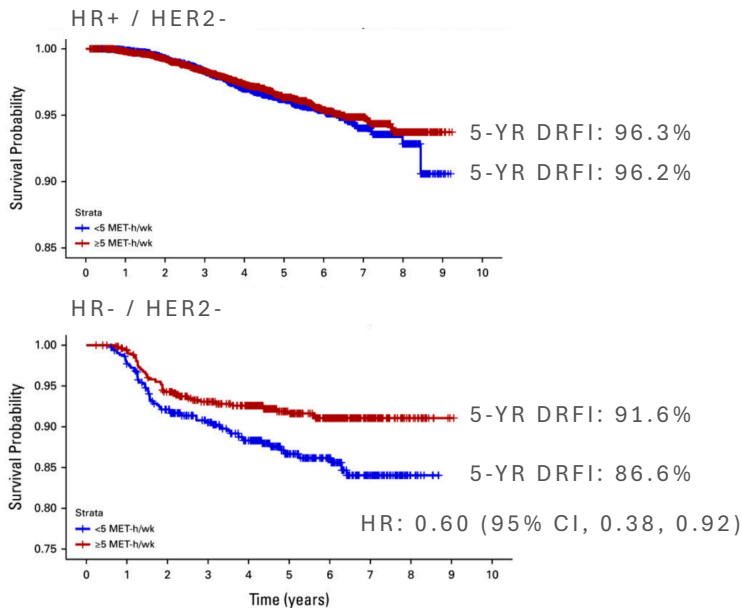


Does Exercise Work Better for Certain Individuals Than Others?

Observational and Animal Study Data

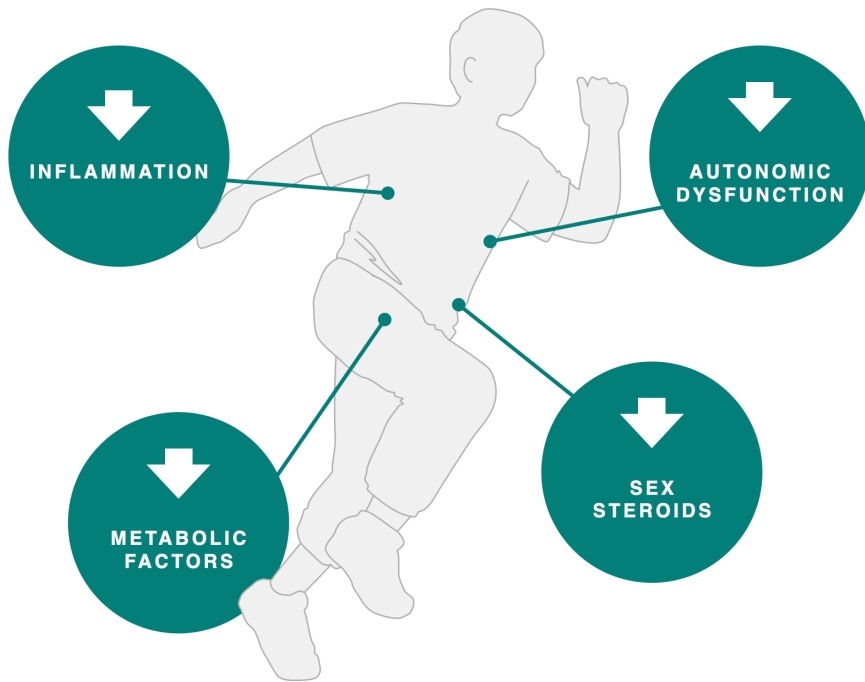
CANTO Study

- Nationally-based cohort of early-stage breast cancer patients in France (n=10,359)
- One-time exercise survey: **at diagnosis**

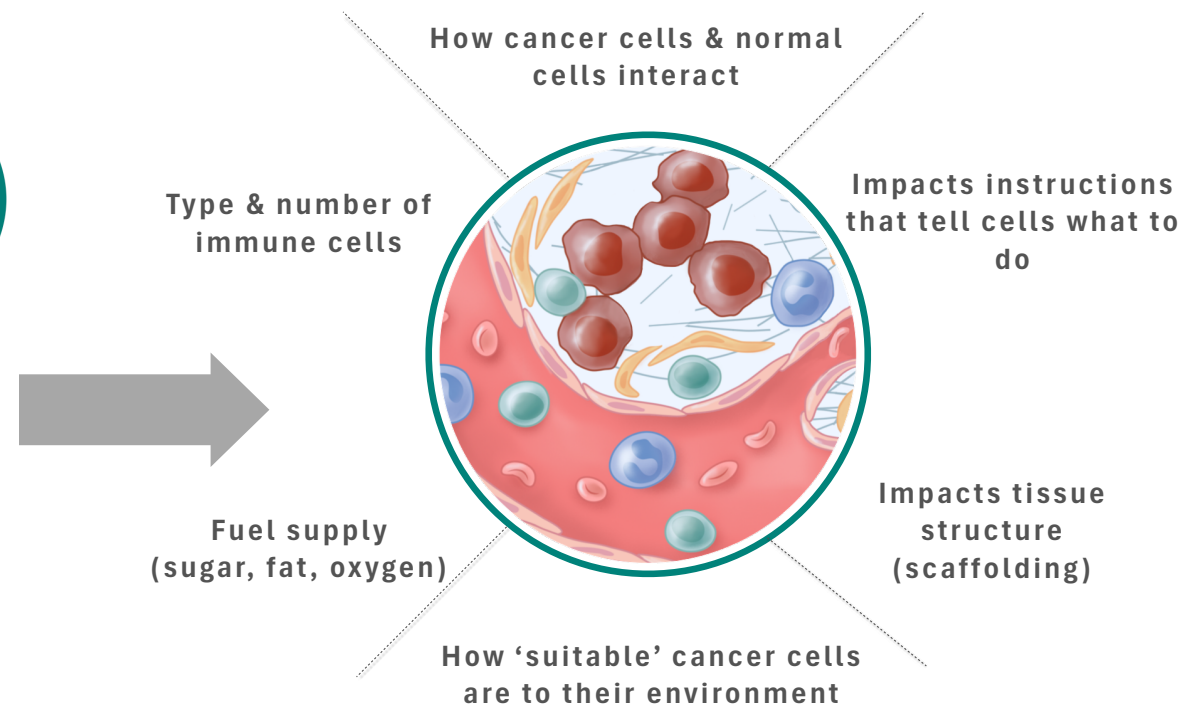


How Does Exercise Inhibit Cancer Progression?

Effects on Circulating Factors in Blood



Effects in Cancer Tissue



Exercise as Treatment for Cancer

Where Do We Stand?

Our Approach

TO APPLY AN APPROACH USED TO DEVELOP NEW DRUG TREATMENTS TO
DEVELOP EXERCISE AS CANCER TREATMENT.

Key Questions

- ◆ Does exercise lower cancer progression in early studies?
- ◆ What is the right amount of exercise?
- ◆ Does exercise work better certain individuals than others?
- ◆ How does exercise inhibit cancer progression?

Current Status

- ✓ Solid observational & animal data
- ✓ 150 - 225 minutes per week
- ? To be determined
- ✓ Multiple different mechanisms; immune important

What Next?

CLINICAL STUDIES TO INVESTIGATE
IF PROVIDING EXERCISE TO ADULTS
AT RISK OR WITH CANCER CAN:

- 1. Slow it down (prevent it from appearing in the 1st place / prevent it from coming back?)**
- 2. Improves how cancer responds to standard therapy**

Major Take Home Messages

Strong Evidence To Support The Beneficial Impact Of Exercise To Lower Treatment Side-Effects

1

Emerging Data That Exercise *Could* Impact Disease Progression & Improve Treatment Response, BUT Need More Evidence

2

“Optimal” Prescription Depends On Goal & Individual, But 150 - 225 Mins/Week Of Aerobic Exercise (Resistance +)

3