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# Examining the effects of a new training concept during the initial phase of androgen deprivation therapy in men with prostate cancer

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Background
Global prostate cancer cases are projected to double to 2.9 million annually by 2040. While androgen deprivation therapy (ADT) is a cornerstone of treatment, it induces rapid and severe adverse effects, including loss of lean mass and increased fat mass. Intervening during the initial phase of ADT is critical, yet a significant evidence gap persists regarding effective, scalable exercise programs and their underlying cellular mechanisms. National guidelines in Sweden recommend supervised exercise; however, resource limitations create a substantial gap between guidelines and practice. This study evaluates a high-intensity program designed to bridge this gap.
Purpose
The primary aim of this study is to determine whether a high-intensity exercise program using cost- and space-efficient equipment can mitigate ADT-related side effects during the initial phase of treatment.
Methods
This study is a multicenter, two-arm randomized clinical trial aiming to recruit 48 men (aged 50-80) with intermediate- to high-risk prostate cancer initiating ADT and scheduled for radiotherapy with curative intent. The intervention group will participate in 12 weeks of twice-weekly supervised sessions, combining high-intensity interval training on a cycle ergometer with resistance training using a mobile flywheel device. The control group will receive usual care. Primary endpoints are cardiorespiratory fitness and isometric squat strength. Secondary endpoints include body composition, physical function, patient-reported outcomes, and molecular analyses from muscle and adipose tissue biopsies.
Significance and implications
This research directly addresses the gap by testing a scalable exercise model designed to overcome known implementation barriers in clinical settings. By evaluating the intervention in both hospital and university settings, this study will provide crucial insights into its real-world feasibility and translational potential. Ultimately, this work will generate evidence to guide the integration of cost-efficient, high-intensity exercise into routine care for men initiating ADT, improving patient outcomes during a critical window of physiological vulnerability.

## Keywords

Prostate Cancer, Androgen Deprivation Therapy, High-Intensity Interval Training, Flywheel Resistance Exercise

## Conflict of Interest & Ethical Approval

yes

## Abstract submitters declaration

yes

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