

# The Effects of Strength Training on Muscle Wasting, Fat Mass and Quality of Life in Men with Prostate Cancer Undergoing Androgen Deprivation Therapy: a Meta-Analysis.



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## Background

- In 2013, the probability of a man developing prostate cancer (PCa) was 1 in 6, sitting on top of the charts as the single most common area for men to develop cancer [4].
- The most common form of treatment in New Zealand is a funded prescription medicine called Zoladex (Goserelin), an anti androgen medication that reduces the production of testosterone that can fuel the growth of the cancer.
- Suppression of testosterone production can be related with considerable side effects including muscle atrophy (sarcopenia/wasting), changes in weight (typically an increase in weight from oestrogen levels dominating in the body due to the lack of testosterone production).
- Physical activity focussing on strength training in particular has been proposed as a favourable strategy to reverse the side effects of Androgen deprivation therapy (ADT), especially that of muscle wasting and changes in body composition.

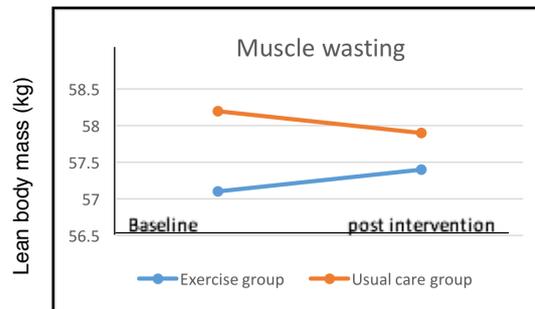
## Purpose

The aim of this meta-analysis is to synthesise the existing evidence of the effects of strength training on the reduction of muscle wasting, quality of life and fat mass in men with Prostate cancer.

## Methods

- A thorough literature search for 12-16 week strength training intervention trials with men with PCa published between 2008 and 2018, was performed using computerised searches on the databases; Ebscohost, Proquest, Scivers, Mendely, PUBmed, Medline Sport discus and Google Scholar.
- The database searches produced 5,650 articles which were then accessed for eligibility by using titles and abstracts. 4,096 articles were then excluded from the search after not meeting the relative inclusion criteria
- Leaving 25 studies for review. Of the 25 articles, 19 articles were excluded after not meeting the full inclusion criteria. Leaving 6 articles which were relevant to intervention trials using strength training to access muscle wasting, quality of life and fat mass, along with other intervention modalities, among men with PCa.
- The studies included 453 male patients, of which 215 men were allocated into an exercise intervention group to complete a strength training regime over a period of 12-16 weeks. The studies included men that were initiating their ADT treatment or were currently being treated with ADT.
- All data retrieved was analysed to find baseline and intervention results in relation to muscle wasting, quality of life and fat mass. Each study analysed reported their data results with *p* value was used to interpret all data to find differences between mean pre and post values of intervention and usual care groups [5]. A *p* value of less than 0.05 was considered a significant difference for each of the reviewed studies.

## Overall findings

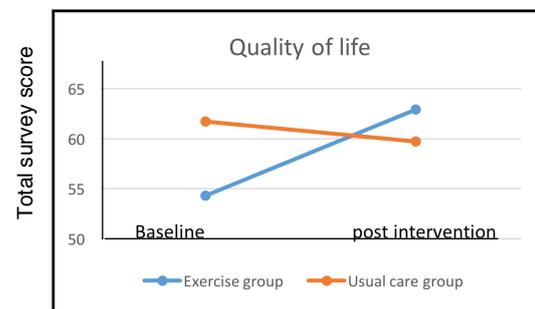


### Muscle wasting

Muscle wasting was assessed in four studies [2, 6, 7, 8] with dual x-ray absorptiometry (DXA).

Exercise intervention groups showed decreases in muscle wasting.

Usual care group results showed continuous muscle wasting.

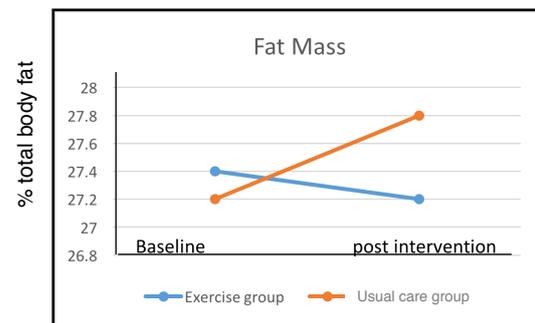


### Quality of life

Quality of life was measured in four studies [1,2,6,7] with The Medical Outcomes Study 36-Item Short Form Health Survey (SF-36).

Results showed that training had a positive effect on quality of life in the exercise group.

Quality of life did not improve in usual care groups.



### Fat mass

Three studies assessed fat mass [2, 5, 8]. Fat mass were assessed by DXA.

Results from the exercise group show a very slight decrease in fat mass. Fat mass was maintained but did not increase over the period of the study.

Usual care groups continued to show increases in fat mass over the period of the study.

## Conclusion

In the current meta-analysis, we were able to conclude that strength training is a beneficial approach to decreasing muscle wasting, and improving quality of life. Further study will need to be completed to determine whether there is a clear improvement in reduction of fat mass in patients with PCa. Strength training should be incorporated into cancer rehabilitation programmes for men diagnosed with prostate cancer and undergoing ADT as it shows to have a positive effect on adverse effects of ADT.

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