

EXERCISE AND NUTRITION FOR HNC

A RANDOMIZED PILOT TRIAL

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ABSTRACT

- **Introduction:** Patients with head and neck cancer (HNC) experience involuntary weight loss that has a negative impact on physical function, morbidity and survival. Exercise and nutrition interventions can potentially counteract declines in body weight.
- **Objectives:** To evaluate the feasibility of an exercise and nutrition intervention during radiotherapy (RT) and to examine preliminary effects on skeletal muscle mass.
- **Methods:** Patients with HNC were randomized to an exercise and nutrition intervention during or after RT. The intervention consisted of progressive resistance training (PRT) and oral nutritional supplements (ONS). Feasibility outcomes were tracked weekly and muscle mass was assessed by computerized tomography (CT) images before and after the 6 week RT period.
- **Results:** Twenty patients were randomized to the intervention during RT. Adherence to PRT and ONS was 81 % and 57 %. The intervention showed a trend in mitigating loss of muscle mass compared to the control group (-1.7 cm²/m² vs. -4.0 cm²/m², p=0.063), with a medium effect size (d = 0.79) in favor of the intervention.
- **Conclusion:** An exercise and nutrition intervention is feasible for HNC patients during RT and potentially effective to prevent weight loss through mitigating muscle wasting.

METHODS

Skeletal muscle mass was measured by cross-sectional computerized tomography (CT) images at the 3rd lumbar vertebra (CT Big Bore, Royal Philips, the Netherlands). Cross-sectional images at the L3 region provide precise estimates of body composition, including regional abdominal adipose tissue, skeletal muscle mass and waist circumference.



RESULTS

Twenty patients were randomized to the intervention during RT. The overall adherence to the supervised PRT sessions during RT was 81%, with 89 % completing more than half of the exercise sessions. Adherence to ONS during RT was 57 %, with 39 % ingesting ONS every weekday and 56 % discontinuing in week 3/4 due to swallowing difficulties.

The difference in change of muscle mass was 2.3 cm²/m² (p=0.063) between the intervention and control group, with an effect size of 0.79 in favor of the intervention.

Table 1. Within-group and between-group difference in muscle mass (cm²/m²) from pre to post radiotherapy (week 0 to 6)

	Within-group Mean (SD)	Between-groups Mean (SD)	d
Muscle mass			
Intervention	-1.7** (2.6)	2.3* (1.1)	0.79
Control	-4.0** (3.0)		

*p≤0.10 (trend only), **p<0.05, d=effect size

CONCLUSIONS

- Resistance training seems to be a feasible and acceptable intervention for HNC patients during RT
- An exercise and nutrition intervention during RT seem to mitigate muscle wasting compared to standard care, calling for future full-scale RCTs involving interventions throughout the treatment trajectory

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