

## Poster Abstract – Original Research

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### Title:

Effectiveness of a combined lifestyle intervention using dietary counseling and exercise in obese older adults with T2D (the PROBE study)

### 1. Introduction / Objectives / Methodology / Results / Conclusion

#### Introduction

Current guidelines for T2D focus on weight loss, with loss of muscle mass as potential negative side effect. This study evaluated the effect of a 3-month combined lifestyle intervention of dietary counseling and exercise on body composition and glycemic control in older adults with T2D.

#### Methodology

Older adults between 55-85y with obesity and (pre-)T2D followed a hypocaloric diet (-600 kcal/day) including 10x/week a 21g whey protein drink enriched with leucine and vitamin D (150 kcal) or isocaloric control drink, combined with resistance and interval training provided by personal trainers (3x/wk, 1 hour). Participants received individual dietary counselling (6 sessions, 2½h in total) and 1-hour educational group sessions biweekly. At baseline and after 3 months, body weight, total lean body mass (TLBM), fat mass, visceral fat, waist circumference, HbA1c, 400m walk time, and leg strength (10-RM legpress) were recorded. Changes in study parameters were tested using a paired samples t-test ( $p < 0.05$ ).

#### Results

Dropout rate in this combined lifestyle intervention was 15% (18/123 participants). Mean age was  $66 \pm 6$  y and 65% was male. Subjects lost  $2.7 \pm 3.0$  kg ( $p < 0.001$ ) body weight, while TLBM was preserved ( $+0.1 \pm 1.9$  kg,  $p = 0.62$ ) and fat mass was reduced ( $-2.6 \pm 2.3$  kg,  $p < 0.001$ ). Waist circumference ( $-4 \pm 4$  cm,  $p < 0.001$ ), visceral fat ( $-8 \pm 17\%$ ,  $p < 0.001$ ), and HbA1c decreased ( $-4.9 \pm 7.8$  mmol/mol,  $p < 0.001$ ) and 29% of participants lowered their diabetes medication. 400m walk time decreased ( $-9 \pm 27$  s,  $p = 0.002$ ) and leg strength increased ( $+52 \pm 42$  kg,  $p < 0.001$ ). Participants consuming the protein drink increased TLBM compared to control group ( $+0.56$  vs.  $-0.34$  kg,  $p = 0.017$ ).

### Conclusion

The combined lifestyle intervention using dietary counseling and exercise preserved muscle mass during weight loss and improved HbA1c and physical performance in obese older adults with T2D. Combination with a whey protein drink enriched with leucine and vitamin D increased muscle mass during the intervention.

### 2. three key references:

Trouwborst I, Verreijen A, Memelink R, Massanet P, Boirie Y, Weijs P, Tieland M. Exercise and Nutrition Strategies to Counteract Sarcopenic Obesity. *Nutrients* 2018;10(5). pii: E605. doi: 10.3390/nu10050605.

Verreijen AM, Verlaan S, Engberink MF, Swinkels S, de Vogel-van den Bosch J, Weijs PJ. A high whey protein-, leucine-, and vitamin D-enriched supplement preserves muscle mass during intentional weight loss in obese older adults: a double-blind randomized controlled trial. *The American Journal of Clinical Nutrition* 2015;2:279–86.

### 3. three specific key messages:

1. A combined lifestyle intervention using dietary counseling and exercise preserves muscle mass during weight loss, and improves HbA1c and physical performance in obese older adults with T2D.
2. Ingestion of a whey protein drink enriched with leucine and vitamin D increased muscle mass.
3. This multi-disciplinary treatment provided by dietitians and personal trainers had a low dropout rate.