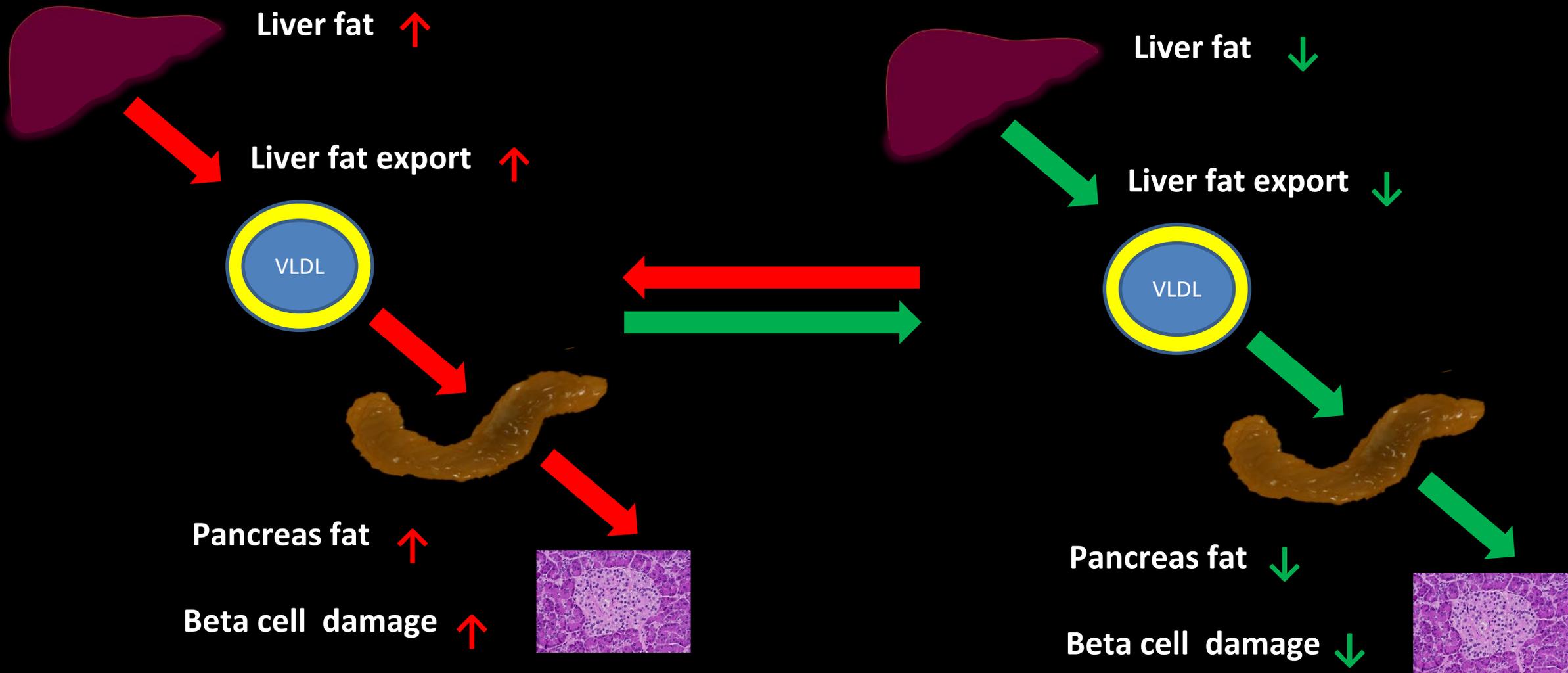
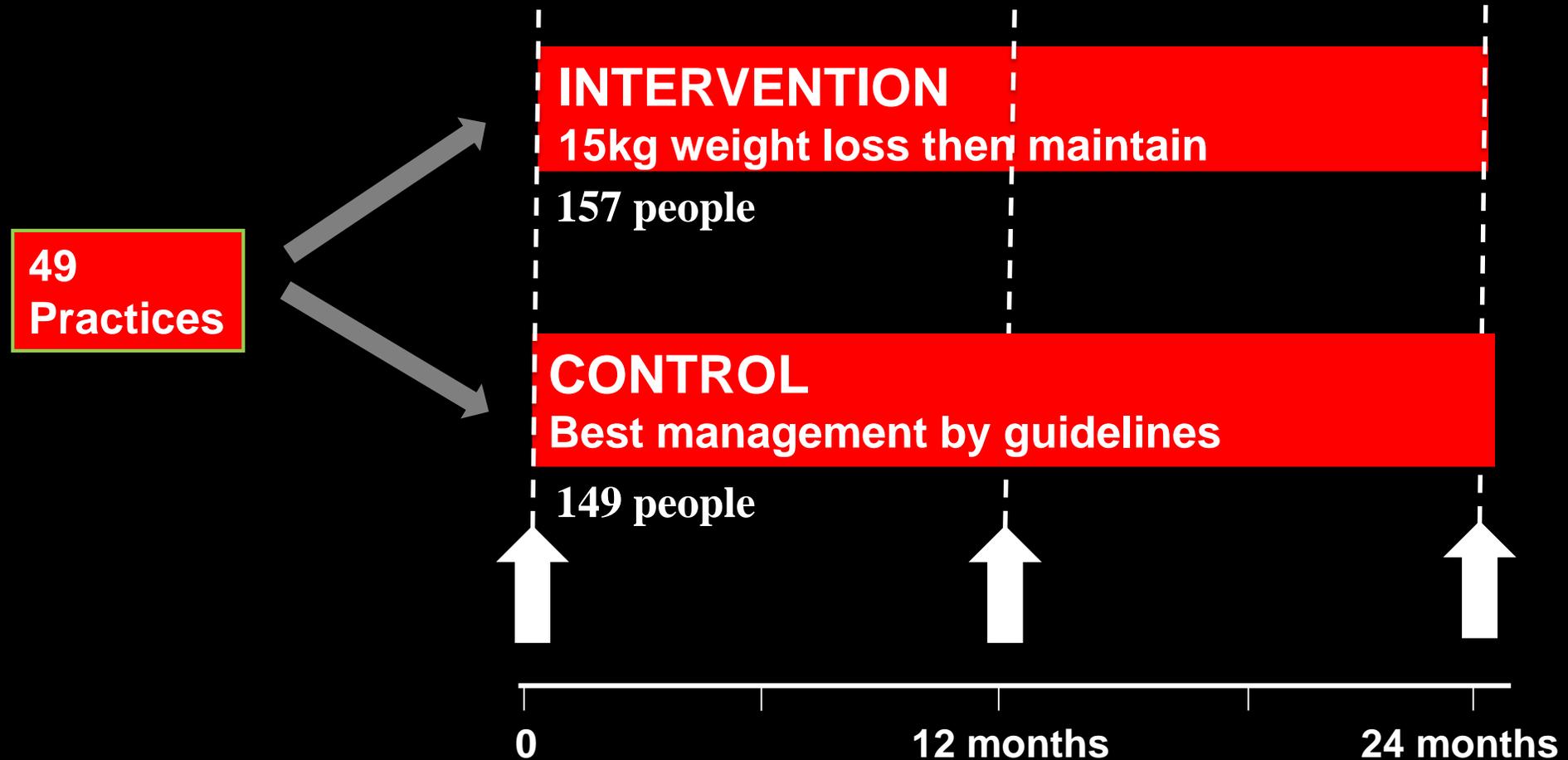


Summary : Why type 2 diabetes is reversible?



DiRECT – a study in routine NHS General Practice



Baseline data: analysed participants

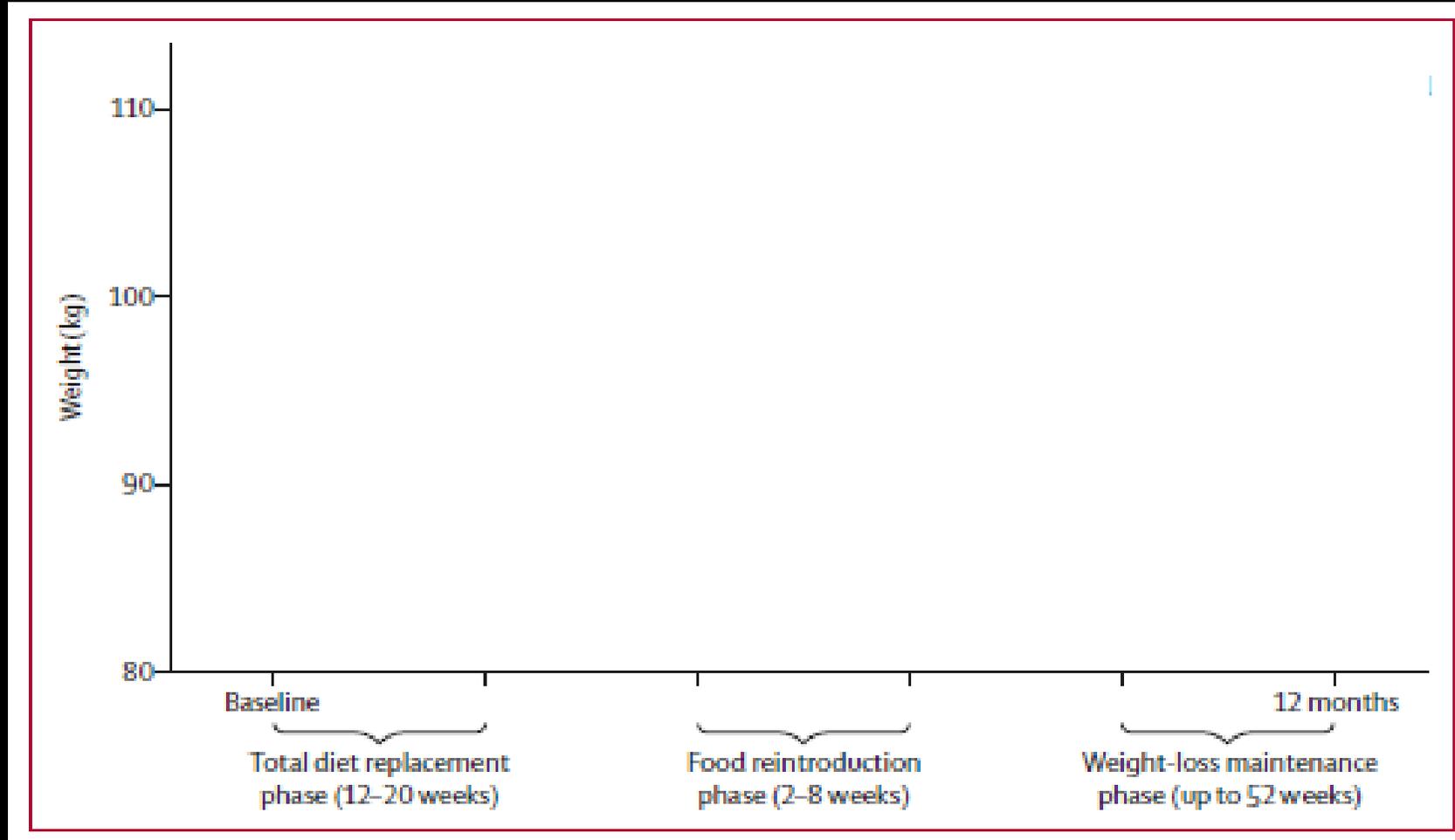
(100%)

Total number	298
Men / women	59% / 41%
Age (years)	54 (SD 7)
Weight (kg)	men 106 (SD 16) women 91 (SD 13)
BMI (kg/m ²)	35 (SD 4)

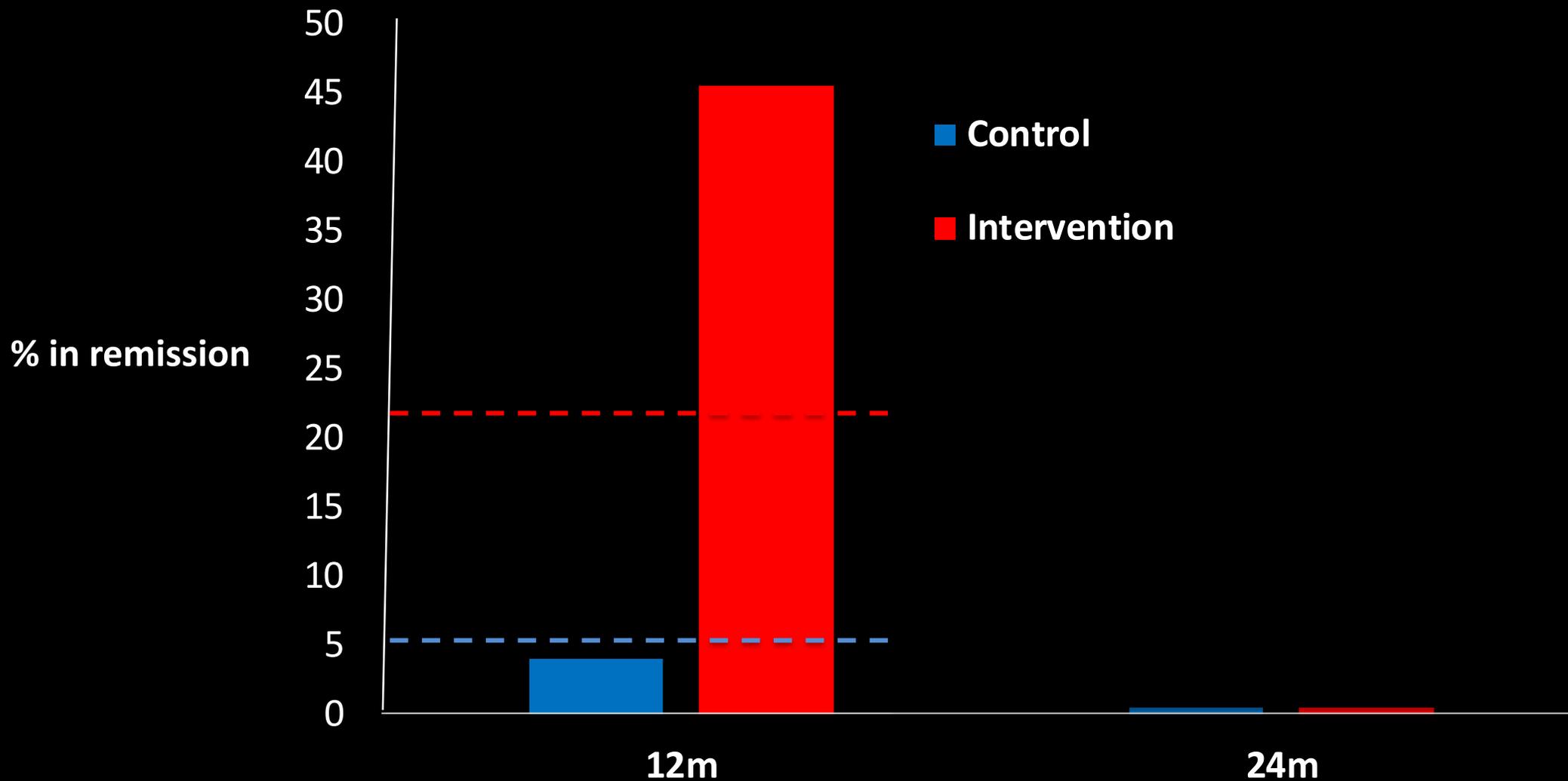
Duration of T2DM (y)	3.1 (SD 1.7)
HbA1c (mmol/mol)	59 (SD14) (7.6%)
Diet alone	24%
1 drug	48%
2+ drugs	28%
Blood Pressure	135/85
Smoking (current)	12%
Former	38%
Never	50%

Intervention and Control groups
well balanced for all criteria

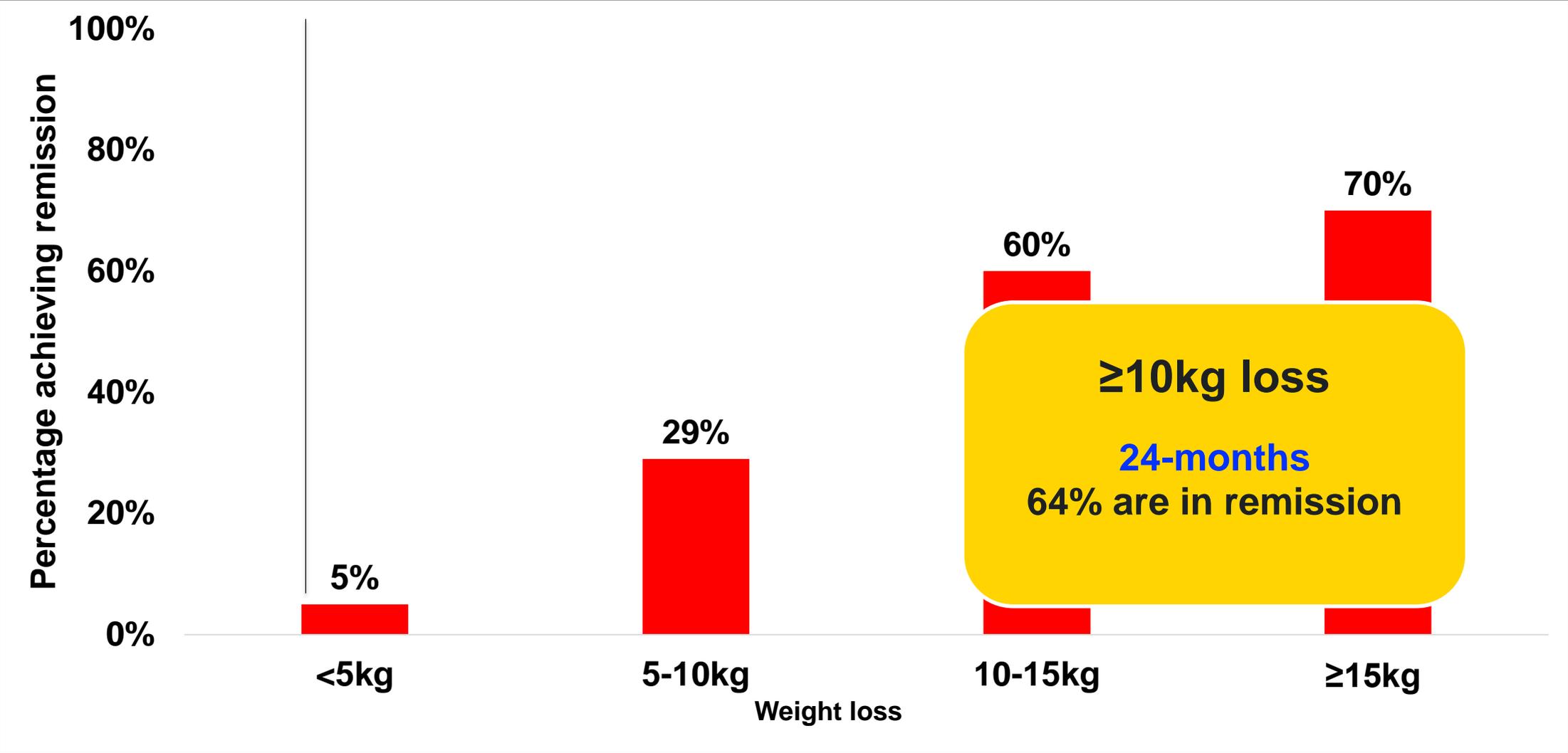
Results: weight changes over 12 months



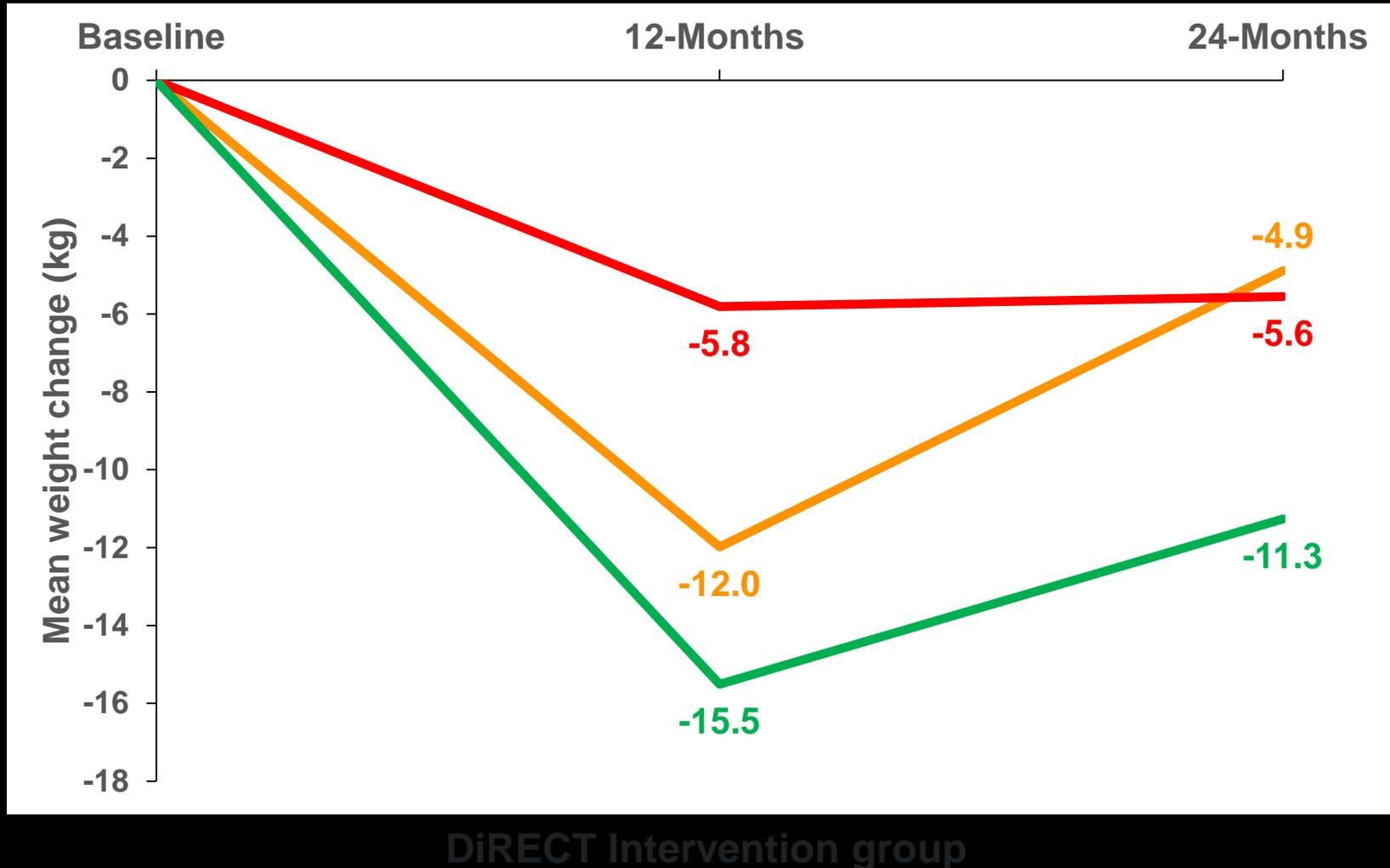
Remissions at 12 and 24 months



Remissions by 24-month weight loss: entire study population



Weight management is critical for T2D remission



No Remission at
12 or 24-months
n = 62 (42%)

Remission at
12 but not 24-months
n = 15 (10%)

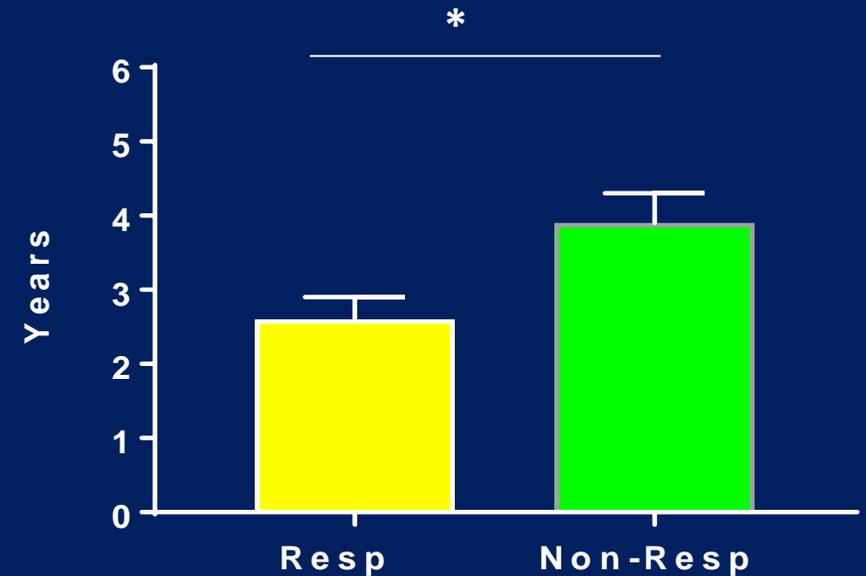
Remission at
12 and 24-Months
n = 48 (32%)

Baseline determinants of return to non-diabetic glucose control (Tyneside cohort)

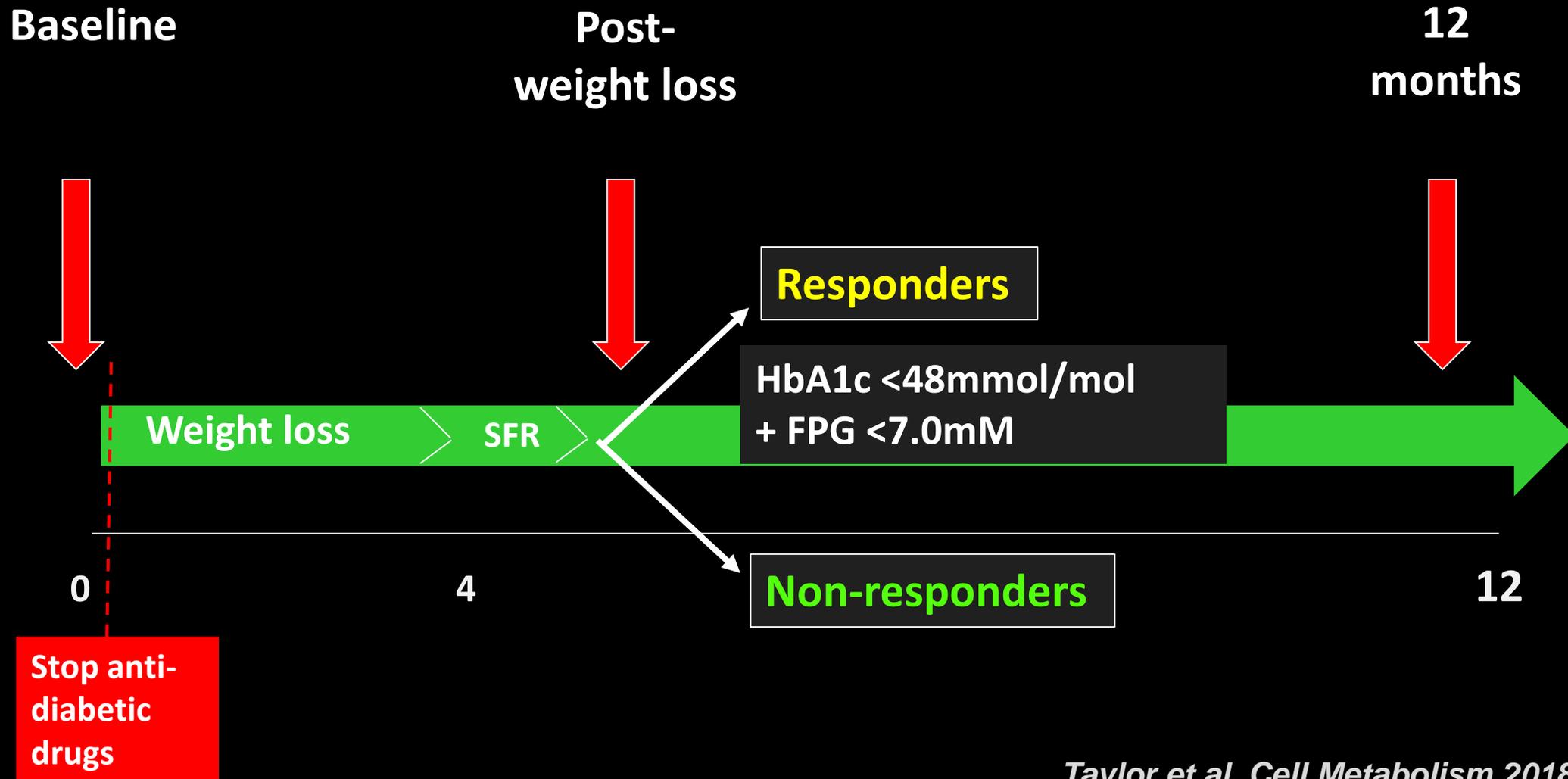


	Responder	Non-responder
Age	53 ± 1	53 ± 2
Weight	101 ± 3	102 ± 4
Sex	17/23	9/9
HbA1c	58±2	63±2*
Fasting insulin	108±10	77±9*

Duration of diabetes

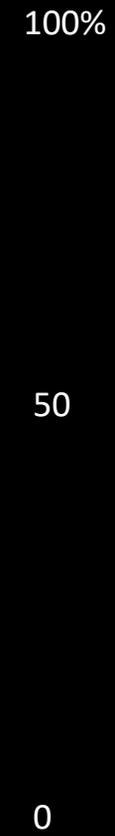
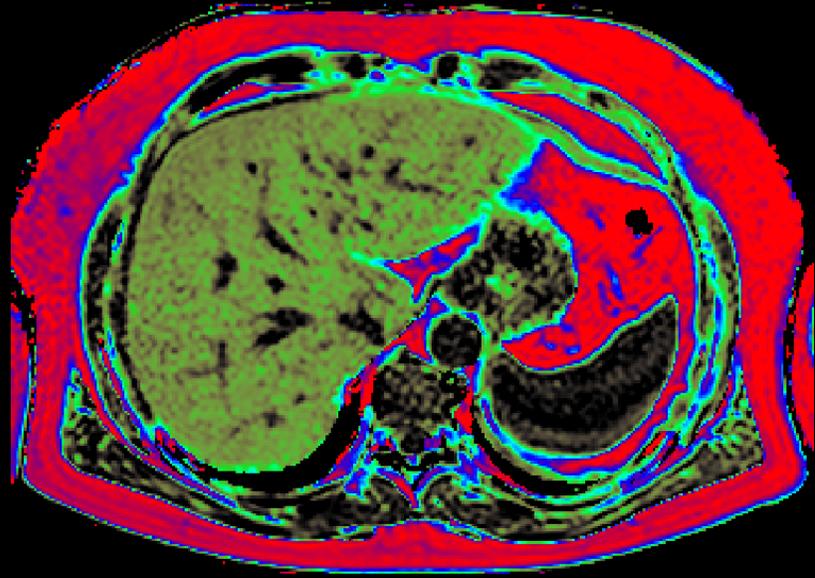


Protocol for pathophysiological studies

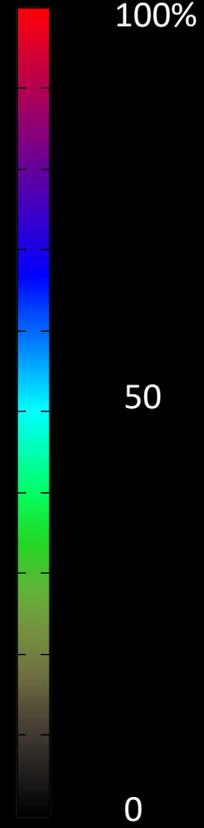
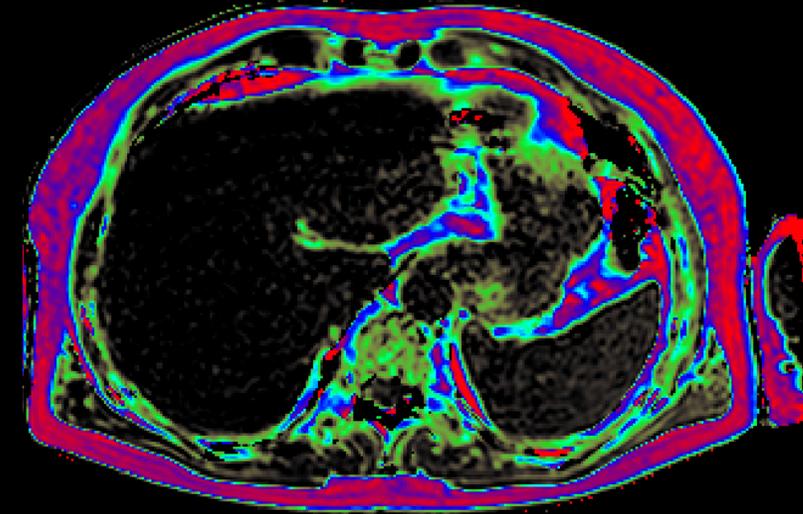


Methodology – Fat quantification by MRI

Liver fat: 22.3%



Liver fat: 0.9%

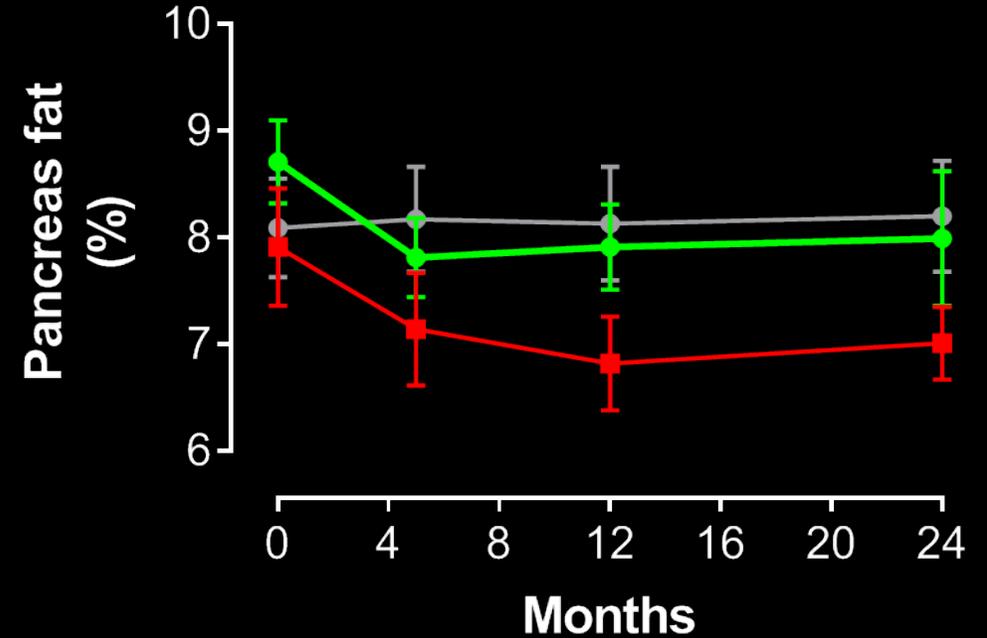
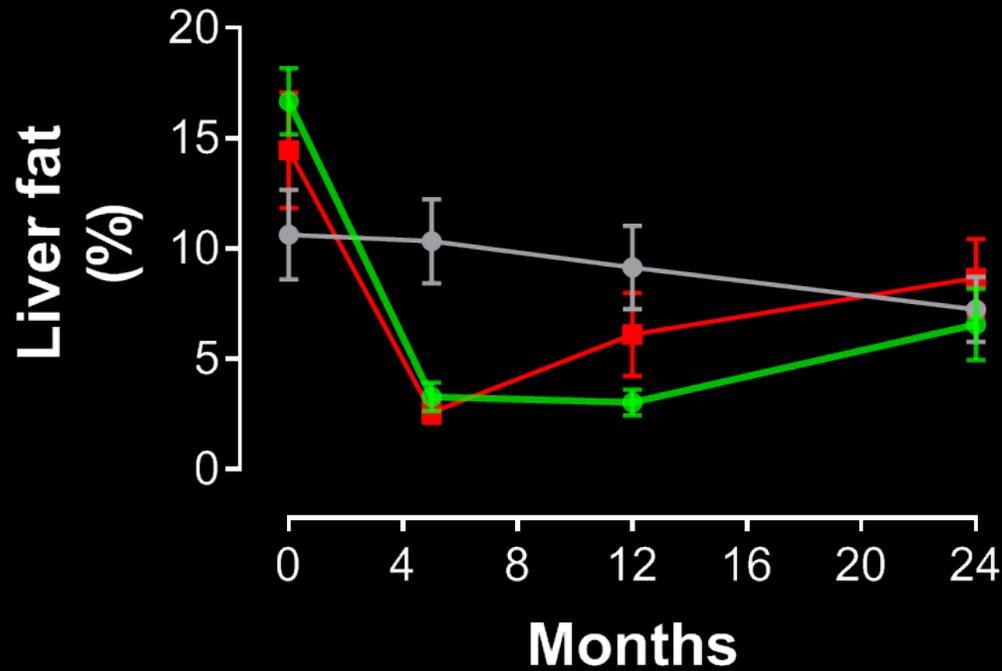


Baseline
Male/58 Years
BMI: 37.9 KG/m²

Post weight loss
BMI: 28.5 KG/m²

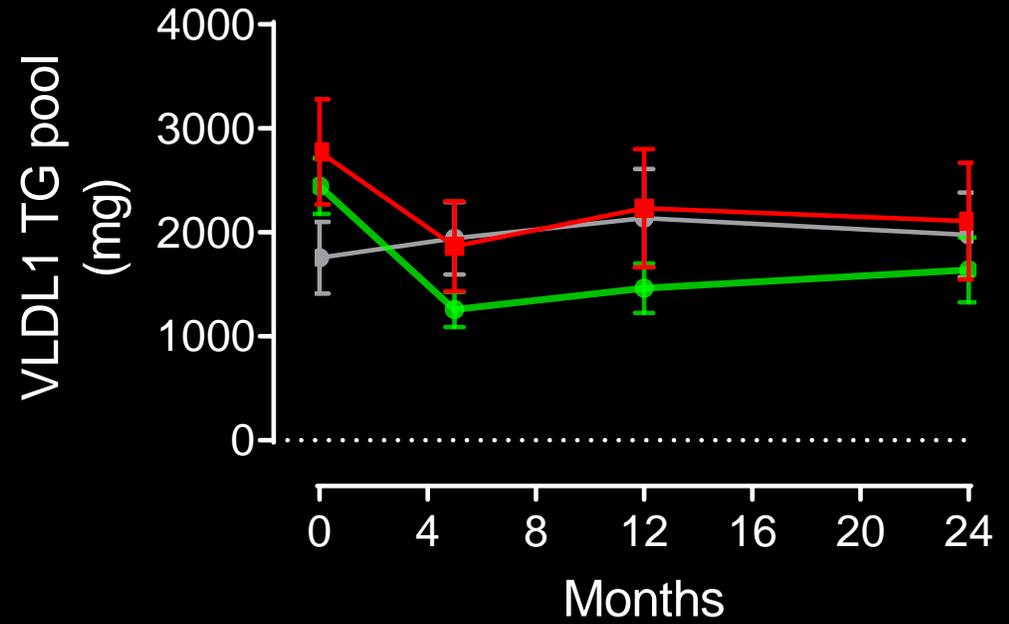
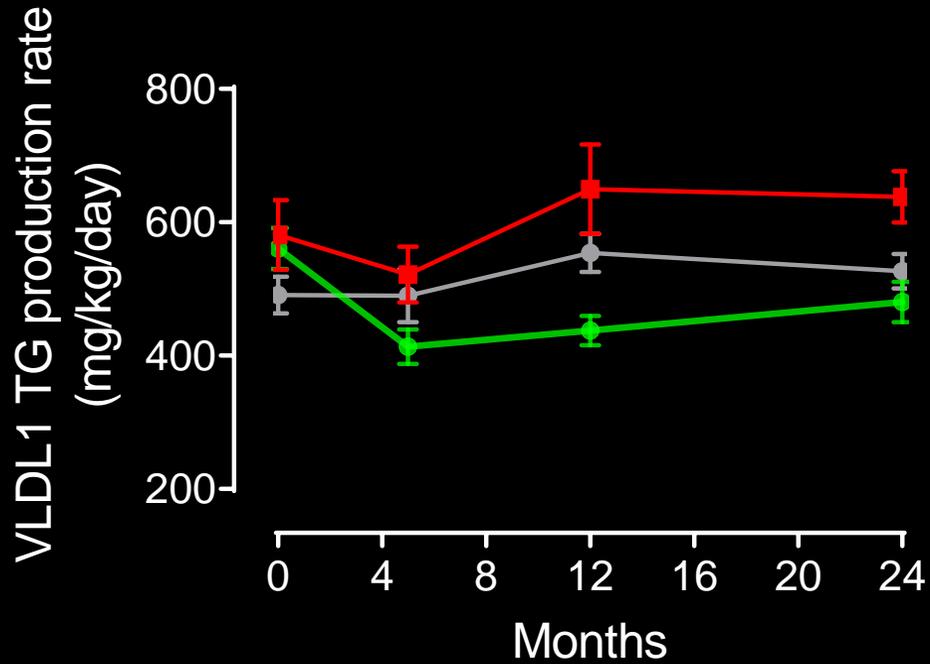
Changes in liver and pancreas fat

- Non-Responders
- Responders
- Relapsers



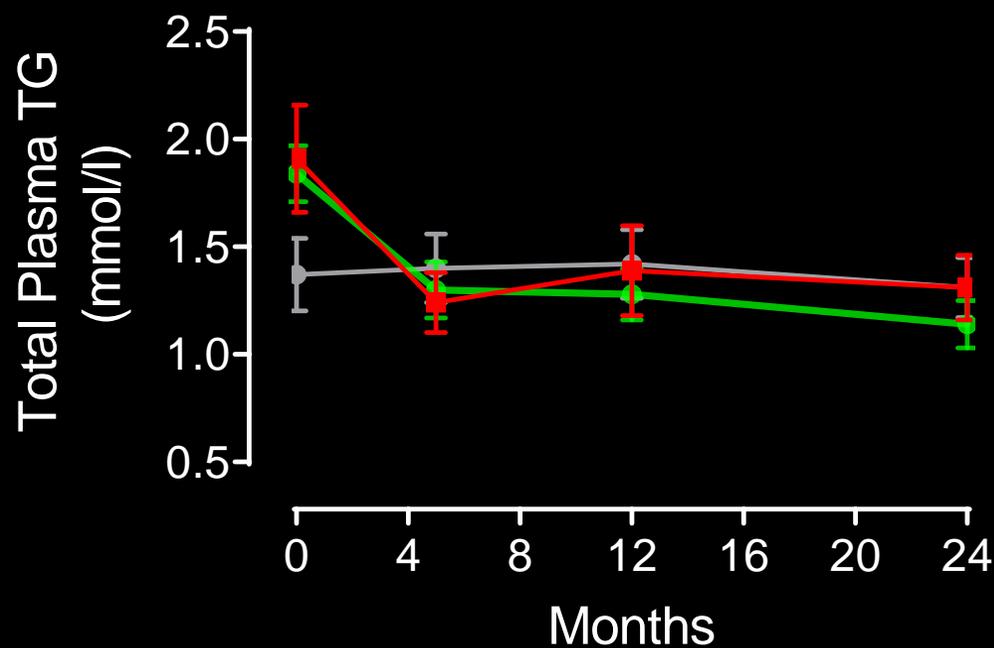
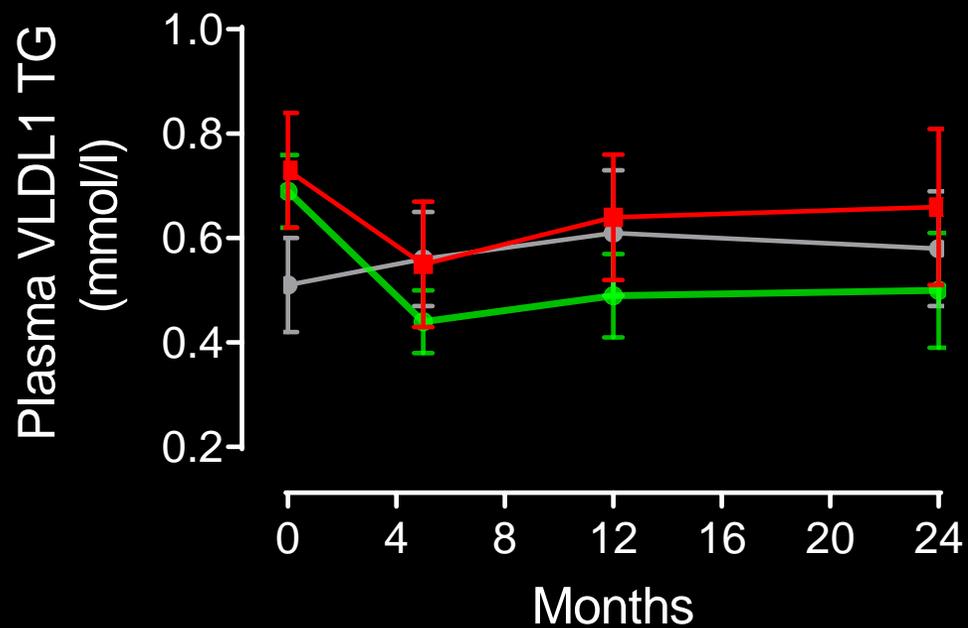
Change in hepatic triglyceride export

- Responders
- Controls
- Nonresponders



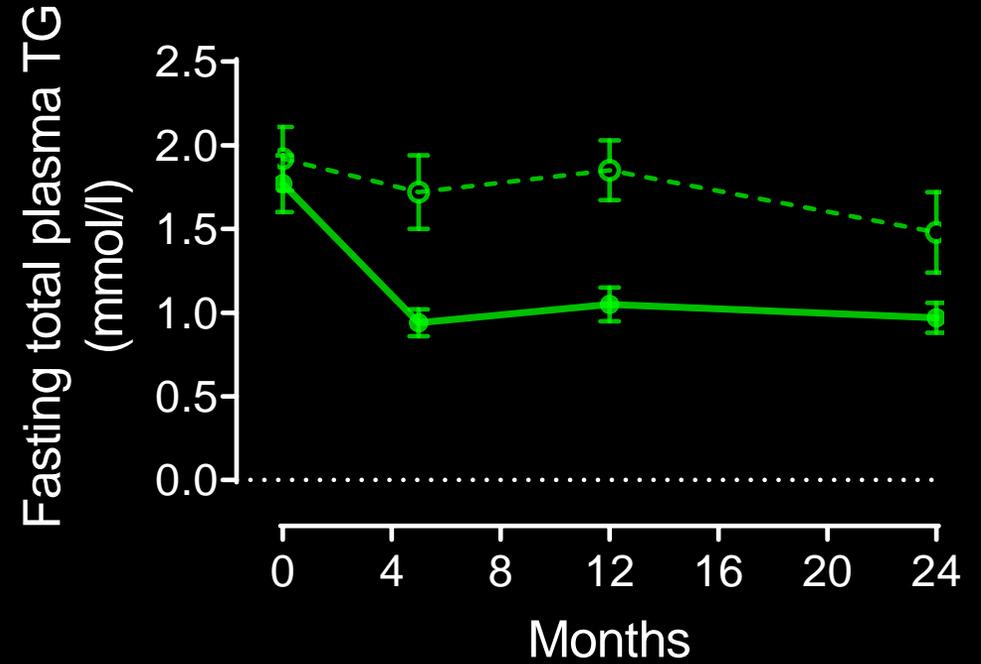
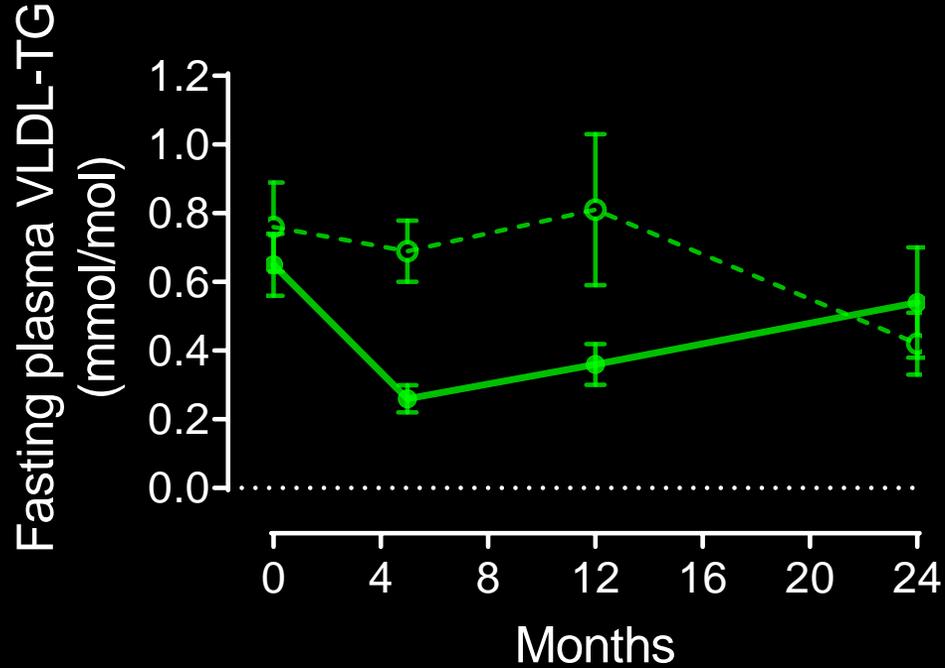
Change in plasma VLDL1-TG and total triglyceride

- Responders
- Controls
- Nonresponders

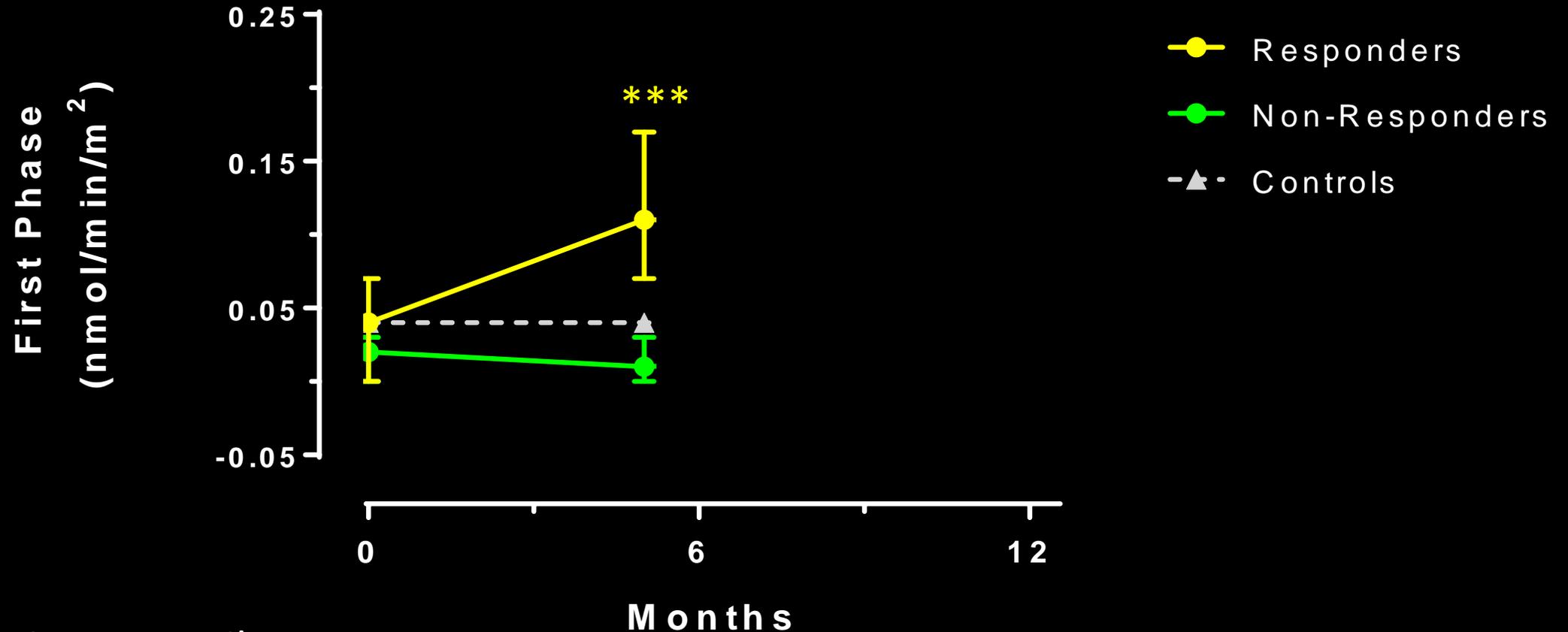


Effect of degree of weight loss on plasma TG

- W. loss < 15%
- W. loss > 15%

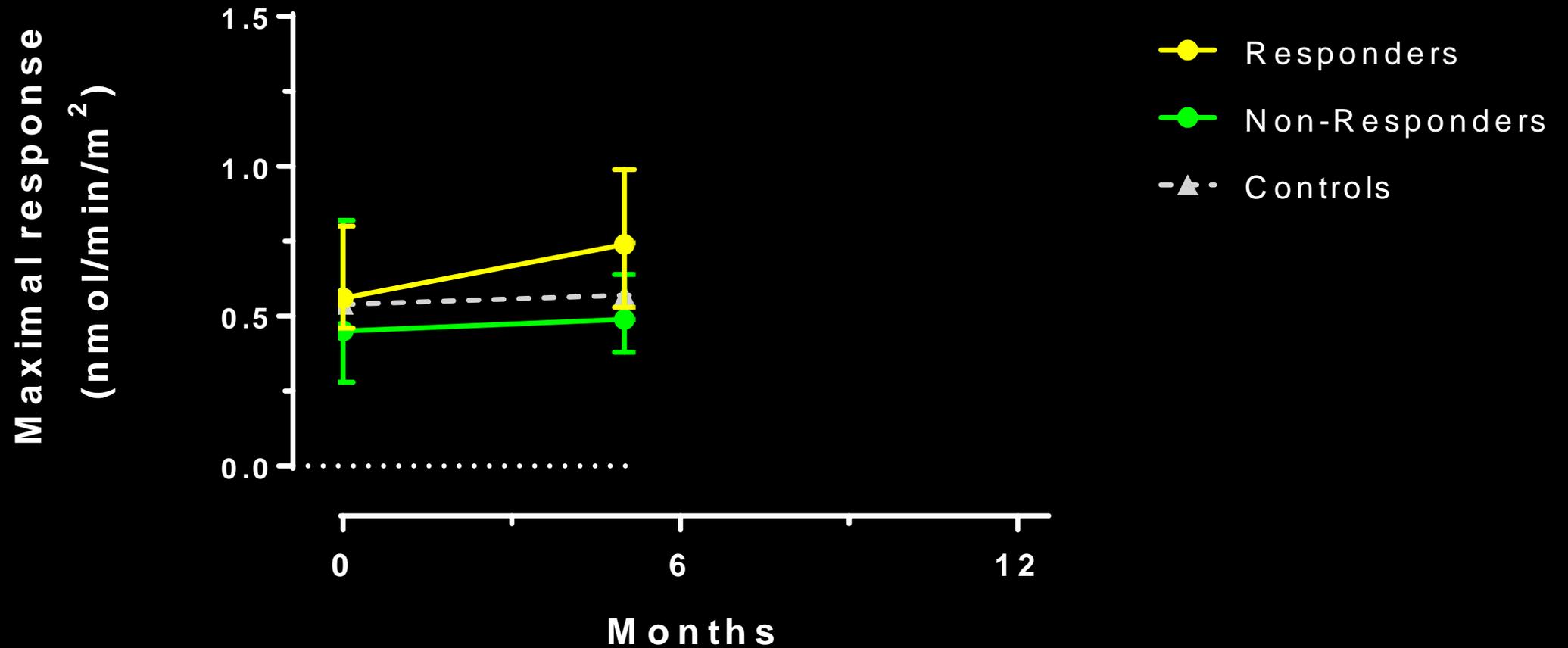


Change in acute insulin secretion



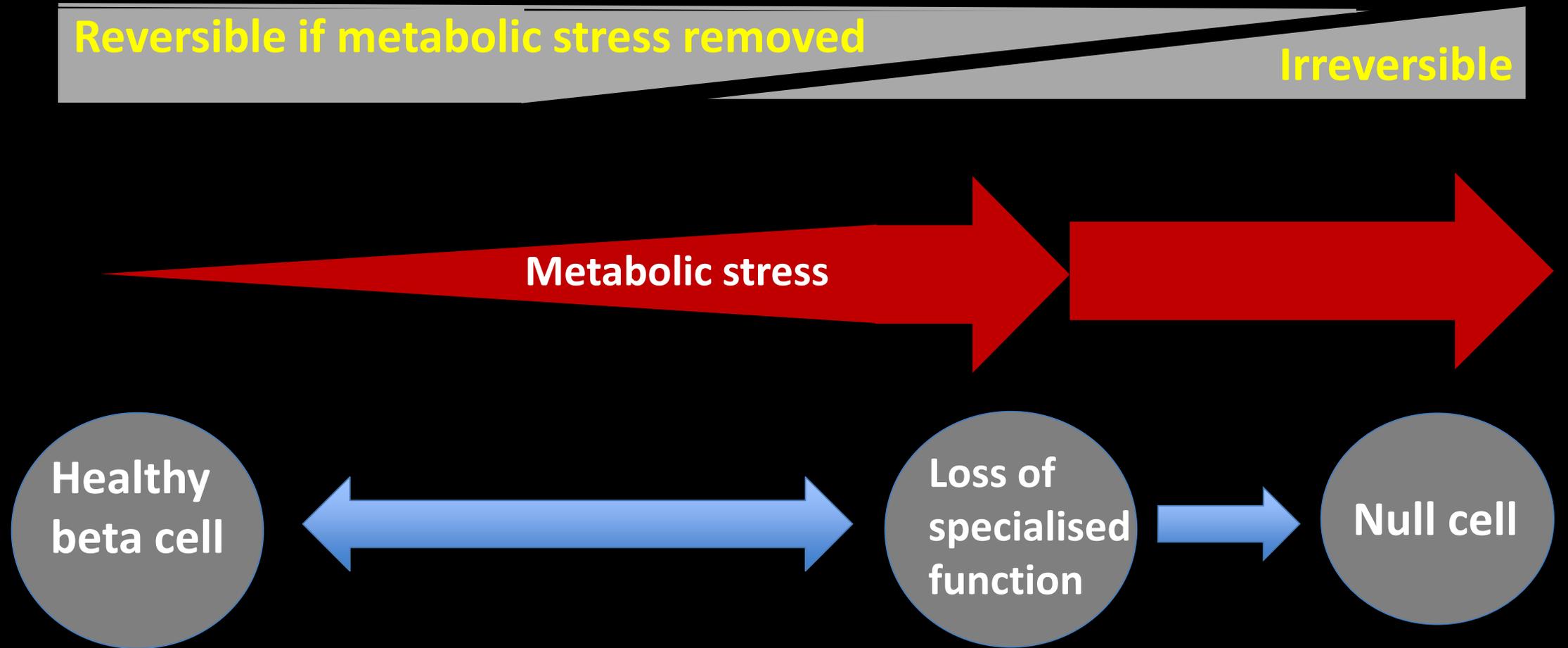
Median \pm interquartile

Change in maximal insulin secretion

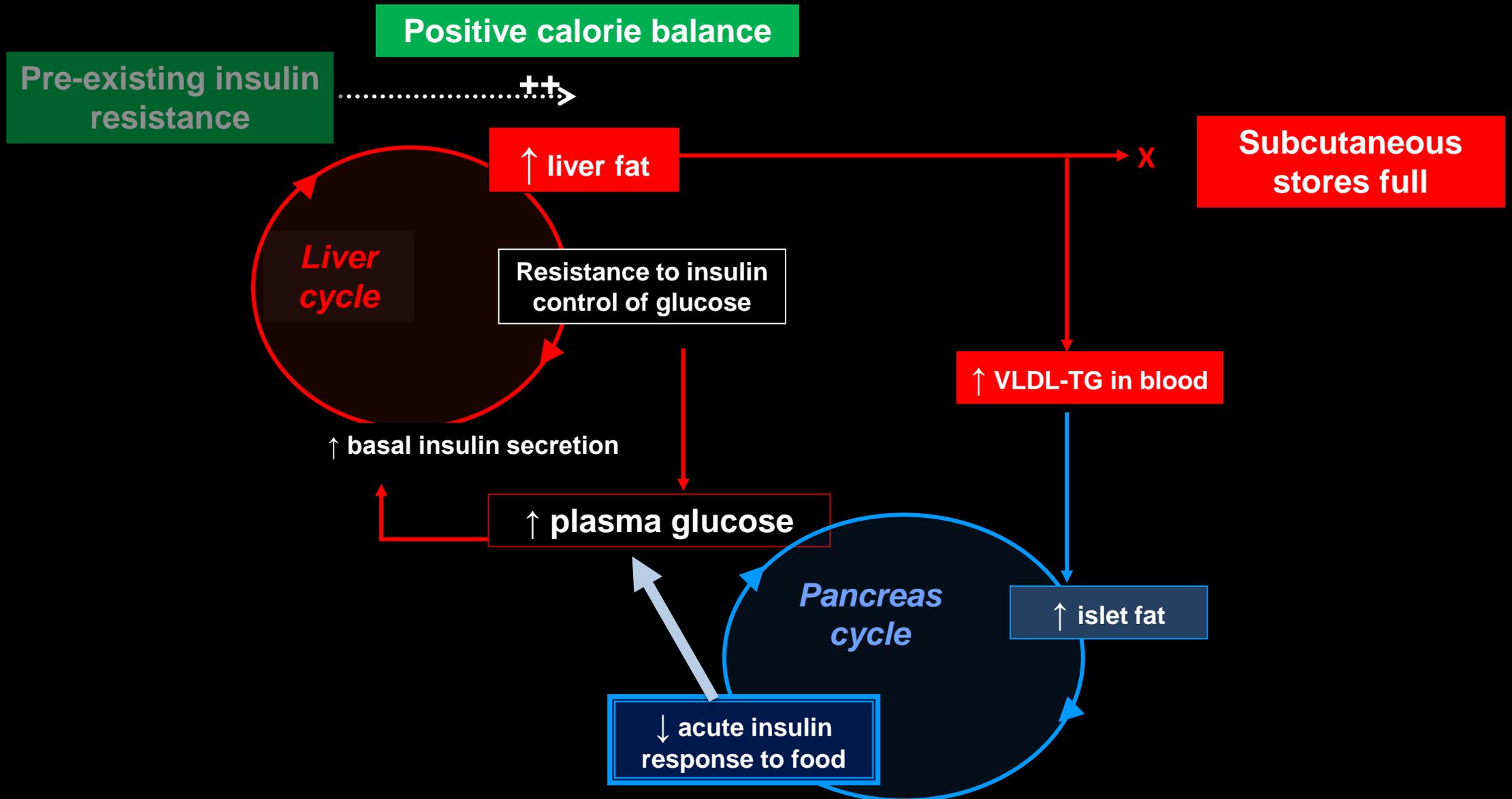


Median ± interquartile

Dedifferentiation explains the beta cell in type 2 diabetes



The Twin Cycle Hypothesis: Aetiology of Type 2 diabetes



“Diet” for weight loss

Simple

Practical

Spouse/partner on board

Time efficient

Not

Compensatory eating renders
exercise counterproductive
during weight loss

Facilitators

Behaviour-regulation strategies (examples)

- Avoidance,
- Distraction
- Breaking the goal down
- Drinking water
- Modifying the diet
- Reminding oneself of the goals
- Planning,
- Removing food from environment
- Social disclosure
- Weighting up pros and cons



Initial
motivation

Adherence to the Total Diet Replacement

Food

Barriers

Emotional and cognitive barriers

- Boredom with the regime
- Life events and stress
- Body shape dissatisfaction
- Lack of self-efficacy
- Lack of social support

Environmental barriers

- Presence of shops with food
- Traveling
- Going out and socializing
- Lack of opportunity to speak with other participants

Process barriers

- Dissatisfaction with outcomes
- Dislike of the product
- Hunger, cravings, and lapses

Destabilisation

Re-designing of the "Foodrobe"

Summary : Why type 2 diabetes is reversible?

