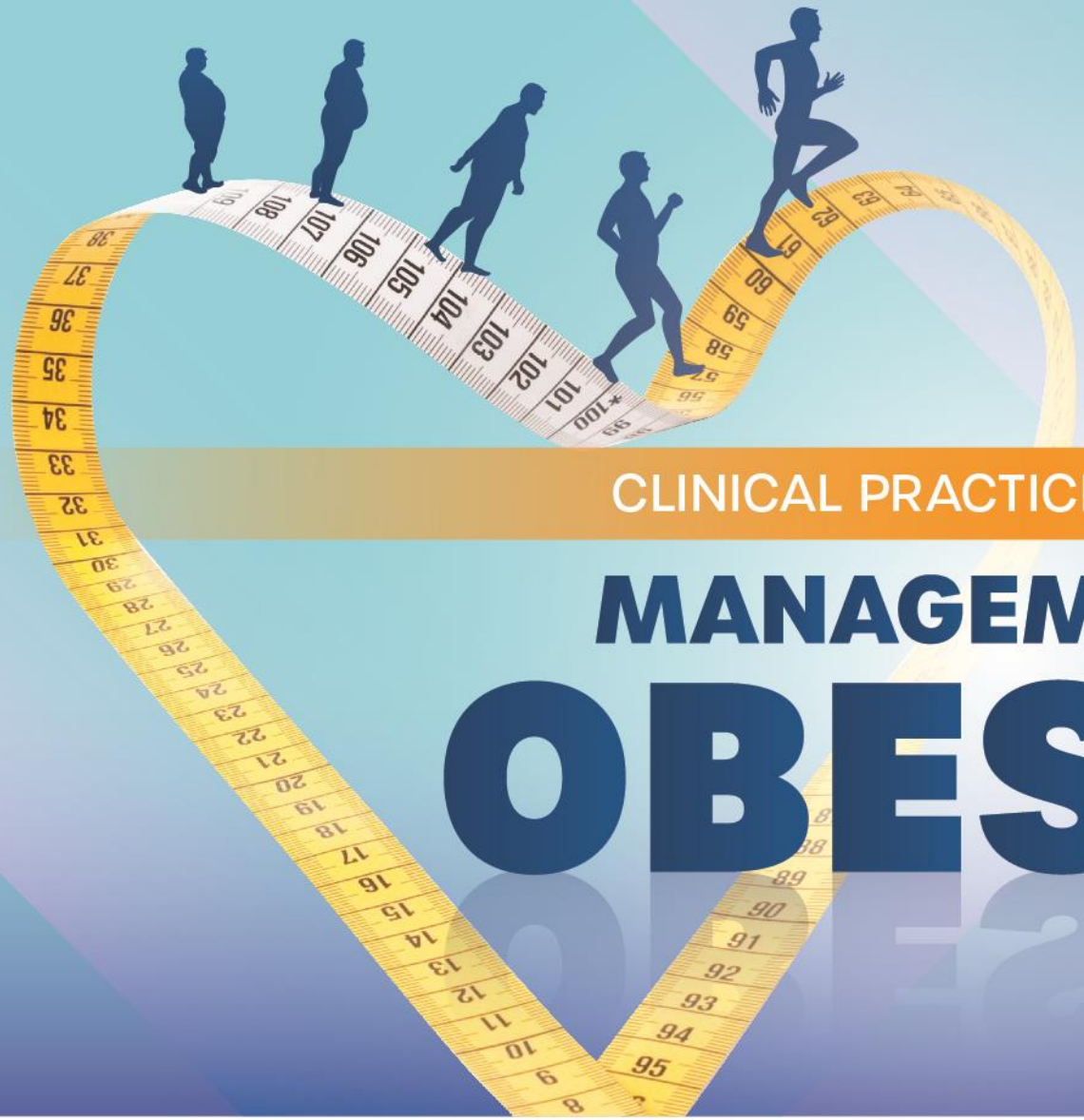


CLINICAL PRACTICE GUIDELINES

MANAGEMENT OF OBESITY

2ND EDITION (2023)

Ministry of Health Malaysia

Malaysia Endocrine & Metabolic Society

Malaysian Association for the Study of Obesity

Malaysian Dietitians' Association

Family Medicine Specialists Association of Malaysia

Associate Professor Dr Zaharah Abdul Manaf

CALORIE: WHAT MATTERS MOST FOR BODY WEIGHT

Strategies for weight loss

Behaviour therapy

Diet

Exercise

Goals of diet therapy

Facilitate weight loss

Prevent weight gain

Improve cardiometabolic outcomes

Optimise nutrient adequacy

Main dietary approach for weight loss

Achieving a state of **negative energy (calorie) balance**

1. Primarily addresses **reduction in calorie intake**
2. Degree of weight loss reflects size of calorie reduction

Reference: 1. Academy of Nutrition and Dietetics. Adult Weight Management Evidence-based Nutrition Practice Guidelines. 2014. Available at: https://www.andeal.org/topic.cfm?menu=5276&cat=4688

Energy restriction: efficacy in weight management

- Systematic review of 18 RCTs[1]
- Population: Caucasian and Asian
- Three arms
  1. 300-1000 kcal/day deficit of daily energy requirement
  2. 1200-1800 kcal/day in metabolically healthy obese adults
  3. Usual intake
- Duration: 12-104 weeks

Parameters	Results
BMI	-2.70 kg/m^2 95% CI -4.01, -1.39
BP (systolic)	-4.73 mmHg 95% CI -7.12, -2.23
BP (diastolic)	-2.75 mmHg 95% CI -4.30, -1.21)
Triglycerides	-0.11 mmol/l 95% CI -0.16, -0.06)

There was significant association between ER diets and BMI changes ($p<0.0001$)

Reference: 1. Stelmach-Mardas M, et al. Nutrients. 2016;8(4):229.

Energy restriction: how much for weight loss?

How much should calorie intake be restricted for weight loss **in adults** with obesity & overweight?

To **achieve and maintain nutrient adequacy** and **reduce caloric intake** for an **initial weight loss of 0.5-1.0 kg/week**[1]

1. 1200-1500 kcal/day for women
2. 1500-1800 kcal/day for men
3. Reduce daily energy by 500-750 kcal from the usual daily intake

Reference: 1. Academy of Nutrition and Dietetics. Adult Weight Management Evidence-based Nutrition Practice Guidelines. 2014. Available at: https://www.andeal.org/topic.cfm?menu=5276&cat=4688

Does less calories = more weight loss?

N=125 women with obesity

6 months

1000 kcal/day

1500 kcal/day

+

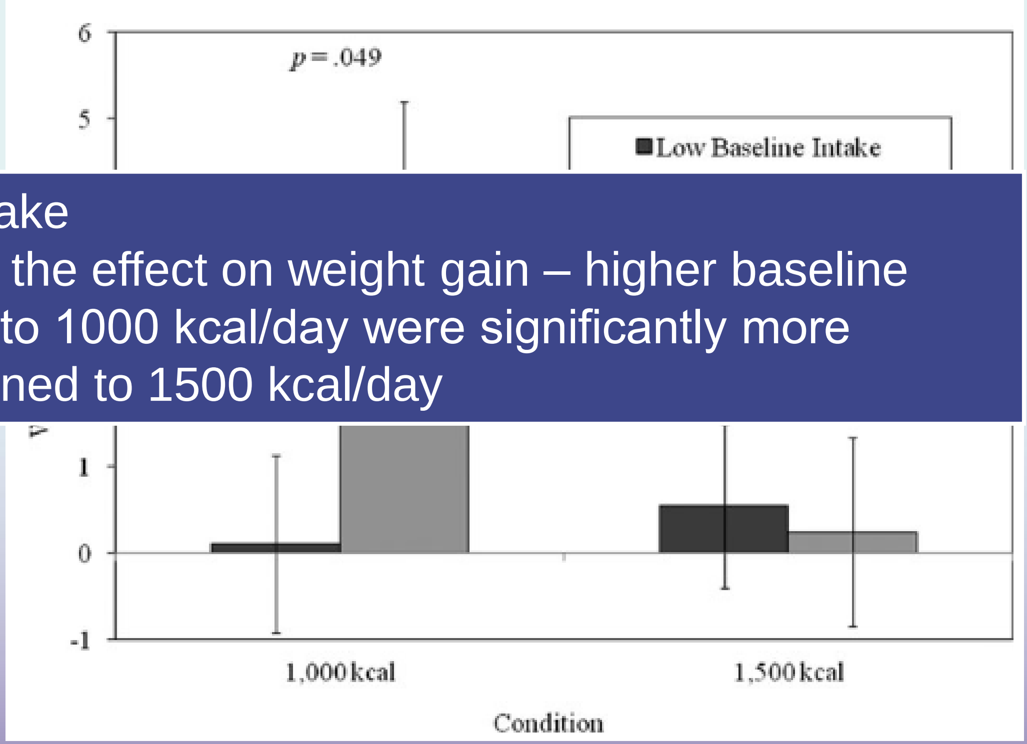
10,000 steps/day OR 3,000 steps above baseline + Behavioural therapy

	1,000 kcal		1,500 kcal	
	M	SE	M	SE
Months 0–6				
Months 7–12				
Months 0–12				

*P < 0.001 and **P = 0.025 for within-condition weight change across the specified time periods.

Weight changes in kg according to treatment conditions

- Greater weight loss with lower calorie intake
- Baseline caloric consumption moderated the effect on weight gain – higher baseline caloric intake (≥2000 kcal/day) assigned to 1000 kcal/day were significantly more susceptible to weight gain vs those assigned to 1500 kcal/day



Weight regain (mean ± SE) from months 7-12 according to treatment conditions and baseline caloric intake

Reference: 1. Nackers LM, et al. Obesity (Silver Spring). 2013;21(12):2481-2487.

Clinical implications

1. Caloric prescription should consider baseline caloric intake
2. For high baseline caloric intake:
   a. Based on % of their baseline intake (e.g. 25-50% reduction)
   b. Projected amount of weight change per week (e.g. 0.50-0.75 kg/week)

3. Take the upper range calorie recommendation for weight loss instead of a fixed energy intake

Reference: 1. Nackers LM, et al. Obesity (Silver Spring). 2013;21(12):2481-2487

Diet only vs diet + exercise for weight loss?

n=91 women with obesity
1,500 kcal/day
(diet only, DO)

+ Behaviour modification

n=95 women with obesity
1,500 kcal/day
Exercise
(diet + exercise, DE)

18 weeks intervention + 18 weeks maintenance

	DO (n = 95)	DE (n = 111)	Change	p value
Weight				
Fat loss				
Fat-free				
BMI	3.2 (2.1–4.3)	5.1 (3.8–6.4)	1.9 (1.4–2.3)	0.005[a]

Values in parentheses represent 95% confidence intervals. [a] Statistically significant difference ($p < 0.05$).

Moderate caloric restriction + moderate aerobic exercise = significant weight loss and improved body composition profile

Reference: 1. Andreou E, Ann Nutr Metab. 2011;59(2-4):187-192.

Nutrient adequacy of ER diet

Nutrient inadequacy can occur with caloric restriction[1]

The extent of inadequacy and the nutrients affected are dependent on:

- composition of the diet followed
- nutritional needs of the individual

The use of very low-calorie diet (VLCD) i.e. <800 kcal/day, as part of a comprehensive treatment plan should be prescribed **under the supervision of a medical team that includes a dietitian**

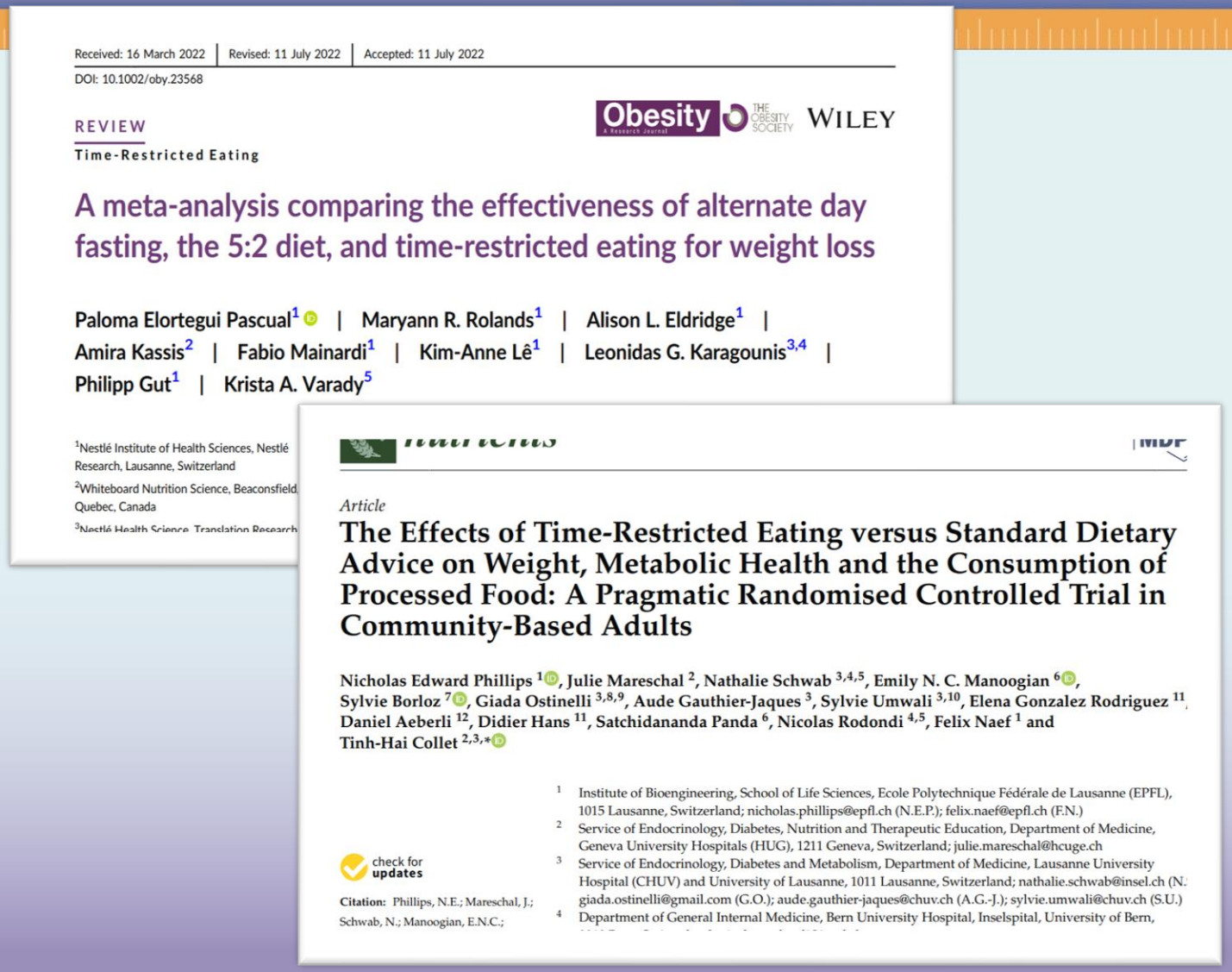
Reference: 1. Yumuk V, et al. Obes Facts. 2015;8(6):402-424.

Intermittent fasting (IF)

4 main types used to study the effects of IF

1. Alternate-day fasting (ADF)
   - No calorie consumption on fasting days
2. Alternate-day modified fasting (ADMF)
   - Less than 25% baseline energy needs caloric consumption on fasting days
3. Time-restricted fasting (TRF)
   - Restricting food intake to specific time periods of the day
4. Ramadhan fasting

IF vs calorie restricted diet (CRD)



Received: 16 March 2022 | Revised: 11 July 2022 | Accepted: 11 July 2022

DOI: 10.1002/oby.23568

Obesity THE OBESITY SOCIETY WILEY

REVIEW

Time-Restricted Eating

A meta-analysis comparing the effectiveness of alternate day fasting, the 5:2 diet, and time-restricted eating for weight loss

Paloma Elortegui Pascual[1] | Maryann R. Rolands[1] | Alison L. Eldridge[1] | Amira Kassis[2] | Fabio Mainardi[1] | Kim-Anne Lê[1] | Leonidas G. Karagounis[3,4] | Philipp Gut[1] | Krista A. Varady[5]

[1]Nestlé Institute of Health Sciences, Nestlé Research, Lausanne, Switzerland

[2]Whiteboard Nutrition Science, Beaconsfield, Quebec, Canada

[3]Nestlé Health Science, Translation Research

nutrients MDPI

Article

The Effects of Time-Restricted Eating versus Standard Dietary Advice on Weight, Metabolic Health and the Consumption of Processed Food: A Pragmatic Randomised Controlled Trial in Community-Based Adults

Nicholas Edward Phillips [1], Julie Mareschal [2], Nathalie Schwab [3,4,5], Emily N. C. Manoogian [6], Sylvie Borloz [7], Giada Ostinelli [3,8,9], Aude Gauthier-Jaques [3], Sylvie Umwali [3,10], Elena Gonzalez Rodriguez [11], Daniel Aeberli [12], Didier Hans [11], Satchidananda Panda [6], Nicolas Rodondi [4,5], Felix Naef [1] and Tinh-Hai Collet [2,3,*]

[1] Institute of Bioengineering, School of Life Sciences, Ecole Polytechnique Fédérale de Lausanne (EPFL), 1015 Lausanne, Switzerland; nicholas.phillips@epfl.ch (N.E.P.); felix.naef@epfl.ch (F.N.)

[2] Service of Endocrinology, Diabetes, Nutrition and Therapeutic Education, Department of Medicine, Geneva University Hospitals (HUG), 1211 Geneva, Switzerland; julie.mareschal@hcuge.ch

[3] Service of Endocrinology, Diabetes and Metabolism, Department of Medicine, Lausanne University Hospital (CHUV) and University of Lausanne, 1011 Lausanne, Switzerland; nathalie.schwab@insel.ch (N.; giada.ostinelli@gmail.com (G.O.); aude.gauthier-jaques@chuv.ch (A.G.-J.); sylvie.umwali@chuv.ch (S.U.)

[4] Department of General Internal Medicine, Bern University Hospital, Inselspital, University of Bern,

check for updates

Citation: Phillips, N.E.; Mareschal, J.; Schwab, N.; Manoogian, E.N.C.;

- IF is **comparable to CRD** for weight loss
- The degree of weight loss **depends on the cumulative caloric restriction**
- Little is known about long-term sustainability and health effects

References: 1. Pascual PE, et al. Obesity. 2023;31(S1):9-21. 2. Phillips NE, et al. Nutrients. 2021;13(3):1042.

OPEN ACCESS Freely available online

PLOS ONE

Low Carbohydrate versus Isoenergetic Balanced Diets for Reducing Weight and Cardiovascular Risk: A Systematic Review and Meta-Analysis

Celeste E. Naude[1]*, Anel Schoonees[1], Marjanne Senekal[2], Taryn Young[1,3], Paul Garner[4], Jimmy Volmink[1,3]

1 Centre for Evidence-based Health Care, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa, **2** Division of Human Nutrition, Department of Human Biology, Faculty of Health Sciences, University of Cape Town, Cape Town, South Africa, **3** South African Cochrane Centre, South African Medical

- Short- and long-term studies
- Adults with overweight and obesity with or without T2DM

Low carbohydrate (CHO) diet
(<40% of total energy + high fat/high protein diet)
vs
Balanced isocaloric diet
(40-65% CHO of total energy)

- 3-6 months -0.74 kg; 95% CI -1.49, 0.01
- 1-2 years :-0.48 kg; 95% CI -1.44, 0.49
- There was also no significant difference in CV risk factors

No different in weight loss

Reference: Naude CE, et al. PLoS One. 2014;9(7):e100652.

Received: 13 August 2017 | Revised: 24 October 2017 | Accepted: 14 November 2017
DOI: 10.1111/dom.13164

WILEY

ORIGINAL ARTICLE

Effects of an energy-restricted low-carbohydrate, high unsaturated fat/low saturated fat diet versus a high-carbohydrate, low-fat diet in type 2 diabetes: A 2-year randomized clinical trial

Jeannie Tay PhD[1,2,6] | Campbell H. Thompson MD[2] | Natalie D. Luscombe-Marsh PhD[1] | Thomas P. Wycherley PhD[3] | Manny Noakes PhD[1] | Jonathan D. Buckley PhD[3] | Gary A. Wittert MD[2] | William S. Yancy Jr MD[4,5] | Grant D. Brinkworth PhD[1]

[1]Commonwealth Scientific and Industrial Research Organisation (CSIRO) – Health and

Aim: To examine whether a low-carbohydrate, high-unsaturated/low-saturated fat diet

Low-CHO (LC):	**HIGH-CHO (HC):**
CHO 14% Protein 28% Fat 58% (<10% saturated)	CHO 53% (overall glycaemic index 46; low) Protein 17% Fat 30% (<10% saturated)
Energy prescription: Moderate calorie restriction of 30% 500-1000 kcal/day deficit (1357-2143 kcal/day)	
Biweekly consultation with dietician x 12 weeks. Monthly thereafter.	
Physical activity: 60 mins moderate intensity aerobic + resistance exercise x 3 days/week under supervision	

Reference: Tay J, et al. Diab Obes Metab. 2017;20:858-871.

Received: 13 August 2017 | Revised: 24 October 2017 | Accepted: 14 November 2017
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Aim: To examine whether a low-carbohydrate, high-unsaturated/low-saturated fat diet

Results

Parameters	LC	HC
Weigh reduction (kg)	-6.8 (-8.8, -4.7)	-6.6 (-8.8, -4.5)
Body fat reduction (kg)	-4.3 (-6.2, -2.4)	-4.6 (-6.6, -2.7)
Medication reduction (unit)	-0.5 (-0.6,-0.3)	-0.2 (-0.4, -0.02) [p=0.03]

- Isocaloric diet containing either high CHO (53% from total energy) or low CHO (14% from total energy + low saturated fatty acids) resulted **a comparable reduction of body weight in adults with obesity and T2DM**
- The **low CHO** diet resulted in **greater reduction in requirements for glucose lowering drugs** in the 2-year clinical trial

Low or high glycaemic index (GI)/glycaemic load (GL)

Low GI/GL **not superior** to high GI/GL for **body weight reduction** in adult with **BMI ≥25 kg/m²**

Low GI/GL **greater body weight reduction** in adult with **BMI ≥30 kg/m²** *(-0.93 kg, 95% CI -1.73, -0.12)*

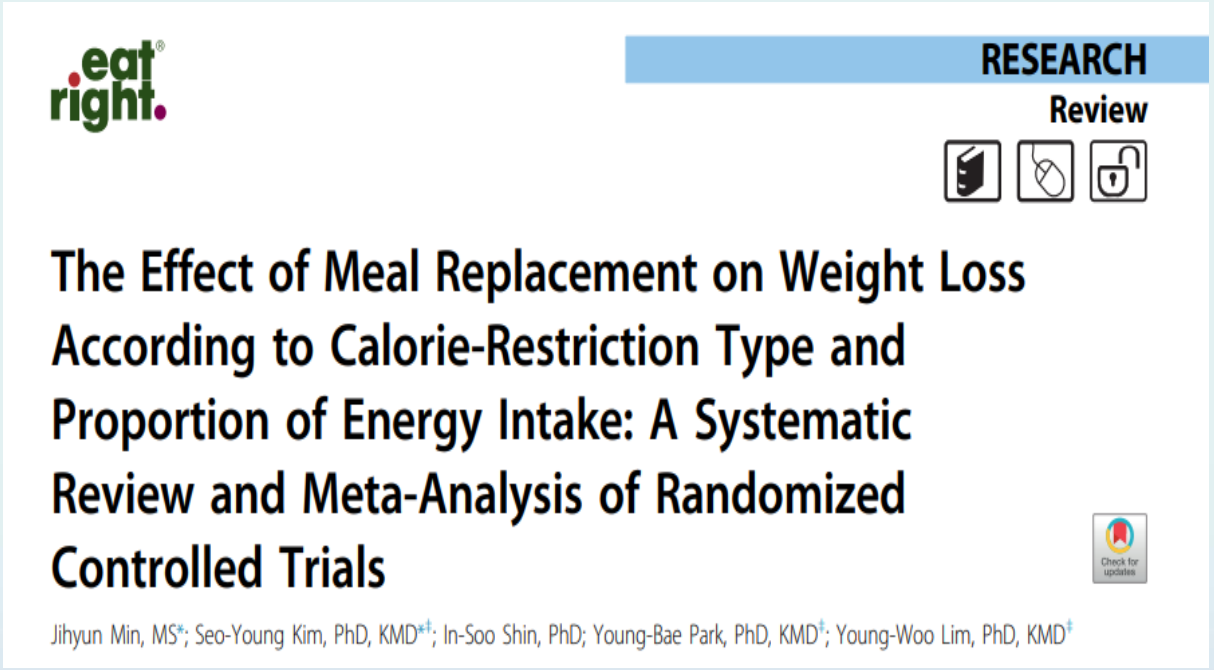
Low GI/GL reduced fasting blood glucose and fasting insulin vs high GI/GL

NO DIFFERENCE

- Fat mass
- Fat-free mass
- Waist circumference
- Lipid profile

Reference: Perin L, et al. J Hum Nutr Diet. 2022. doi:10.1111/jhn.13029

Calorie restriction with meal replacement (MR) vs conventional calorie restriction for weight loss



eat right.

RESEARCH

Review

The Effect of Meal Replacement on Weight Loss According to Calorie-Restriction Type and Proportion of Energy Intake: A Systematic Review and Meta-Analysis of Randomized Controlled Trials

Jihyun Min, MS*; Seo-Young Kim, PhD, KMD*‡; In-Soo Shin, PhD; Young-Bae Park, PhD, KMD†; Young-Woo Lim, PhD, KMD‡

MR plan: Part of a structured calorie restriction diet that replaced ≥60% of the total daily energy intake

22 RCTs

1,982 patients who were overweight/obese

Meal replacement-based plans, **replacing 3 meals/day for 3-6 months** resulted in **greater weight loss** than conventional food-based low energy diet

Weight management interventions by a dietitian: efficacy

A systemic review & meta-analysis of 62 randomised controlled trials

Interventions ≥1 month

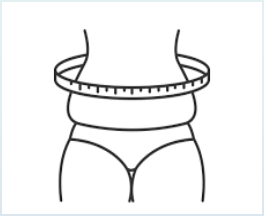
By dietitian vs usual care/no intervention

Results: Significant benefits

Significant improvements in:

1.5 kg/m^2

4.01%



3.45 cm

3.04 mm Hg systolic BP
0.98 mm Hg diastolic BP

Reference: Morgan-Bathke M, et al. J Acad Nutr Diet. 2022; doi:10.1016/j.jand.2022.03.014

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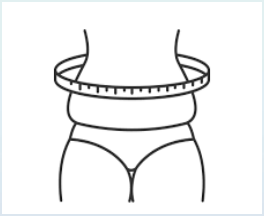

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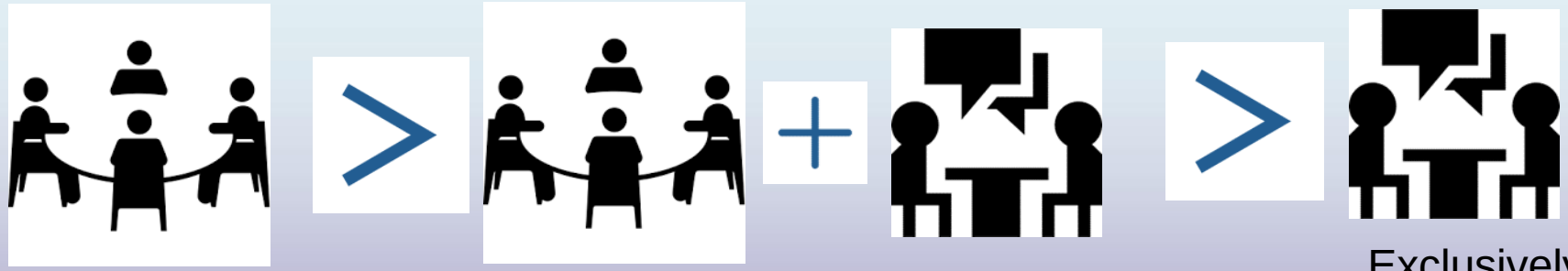
Weight management interventions by a dietitian: efficacy

In-person or telehealth

Exclusively in-person = In-person and remote > Exclusively remote

Individual or group



Exclusively group > Group and individual > Exclusively individual

Reference: Morgan-Bathke M, et al. J Acad Nutr Diet. 2022; doi:10.1016/j.jand.2022.03.014

Weight management interventions by a dietitian: efficacy

Dietitian only or multidisciplinary team

Multidisciplinary team

>

Dietitian alone

No. of contact with dietitian

≥ 5 contacts > 1-4 contacts

Frequency of contact with dietitian

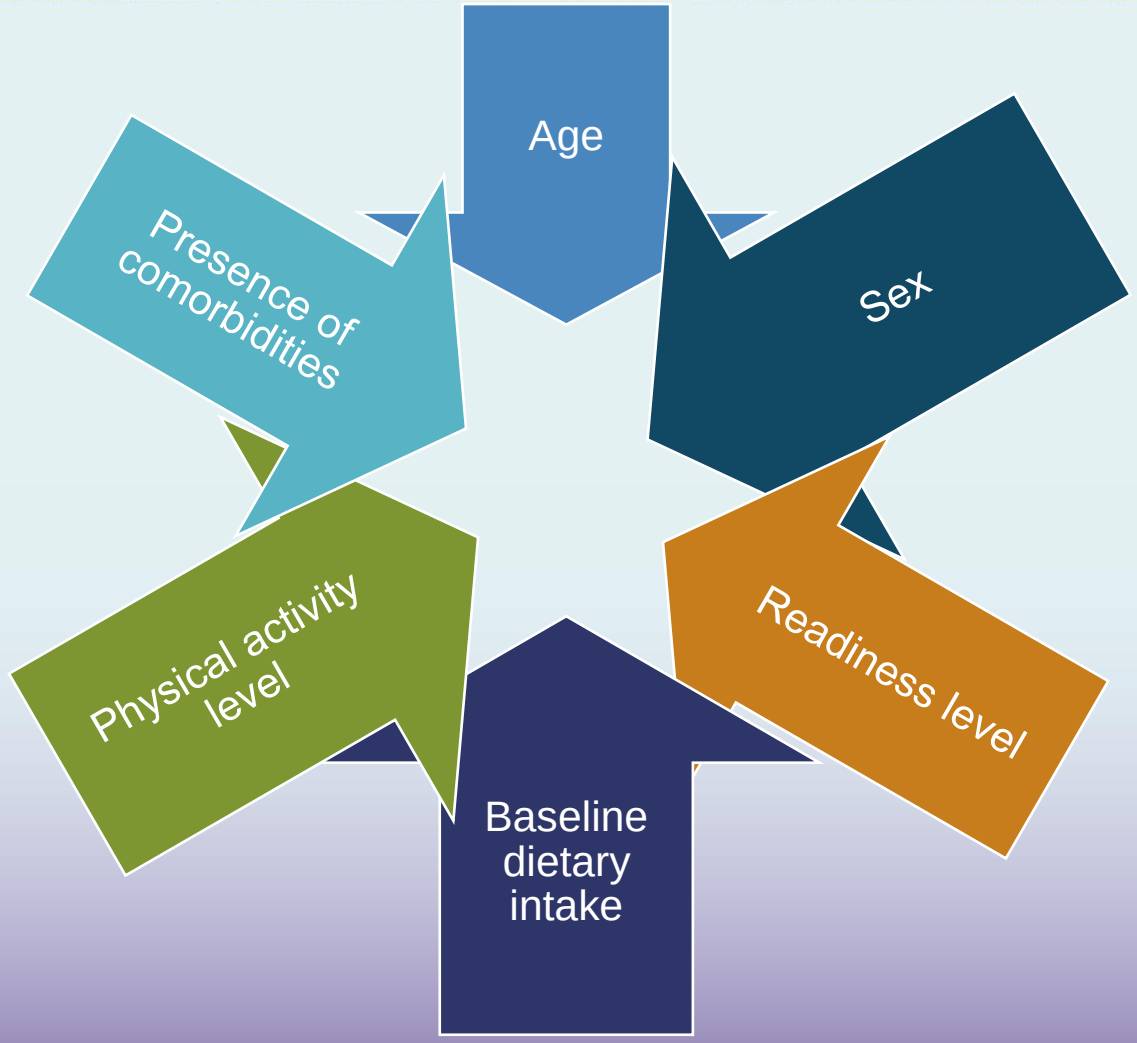
≥4x/ mth > 1-3x/mth > <1x/ mth

Intervention duration

≥12 mths > 6-12 mth > <6 mths

Reference: Morgan-Bathke M, et al. J Acad Nutr Diet. 2022; doi:10.1016/j.jand.2022.03.014

Factors to consider before prescribing ER diet for weight loss



Take home messages

- Calorie deficit is the primary aim to produce weight loss

- Low calorie balanced diet is as effective as isocaloric low fat, low CHO in producing weight loss
- Intermittent fasting (calorie consumption within recommendation) can be used as a strategy to achieve weight loss and comparable to low calorie balanced diet

- Meal replacement or intermittent fasting may be used as part of structured calorie restriction diet

- Nutrition interventions that are safe, effective, nutritionally adequate, culturally acceptable and affordable for long-term adherence should be considered for adults living with obesity

Thank you!