test for mean differences in ratings of the unhealthy and healthy food sponsor products by condition.

**Conclusion:** This timely study will yield practical evidence on the utility of alternative, pro-health sport sponsorship options. Such evidence could help inform population-based strategies to modify the community junior sport sponsorship environment so as to foster healthy eating by children.

https://doi.org/10.1016/j.orcp.2016.10.222

222

## ''The Change Program'' — An Australian general practitioner delivered weight management program, results of a six month pilot implementation trial

Kirsty Douglas[1,*], Elizabeth Sturgiss[1], Nicholas Elmitt[1], Emily Haesler[1], Chris van Weel[2]

[1] *Academic Unit of General Practice, Australian National University, Garran, ACT, Australia*
[2] *Medical Centre, Radboud University, Nijmegen, Netherlands*

**Introduction:** General practitioners (GPs) need support and structured tools to assist them in managing patients with obesity. This six month implementation pilot based on Normalisation Process Theory aimed to assess the feasibility and acceptability of a weight management program (The Change Program) delivered by GPs within primary care.

**Methods:** The pilot study consisted of a single arm trial based on Normalisation Process Theory. GPs ($n = 12$) across five practices (four urban, one rural) were recruited via email and then recruited their own patients ($n = 23$). GPs were interviewed at time zero and 6 months and patients were interviewed at the end of the pilot. In addition, patients completed online surveys at time zero, 3 months and 6 months. Anthropometric data was collected using a file-based template.

**Findings:** Qualitative data analysis identified that GPs appreciated the structure of The Change Program and found it differed significantly from their usual consultation practices. They reported a significant increase in their confidence in managing obesity. Integration within daily practice would require activation of practice management systems to make the program sustainable. Patients found that establishing a constructive, collaborative working relationship with their GP was fundamental to their ongoing involvement in the program as well as meeting their weight loss and lifestyle change goals. Intention-to-treat analysis demonstrated that patients lost an average of 3.2% (SD 3.7, median 1.8%) of their body weight at 6 months with a range from −3.2% to 10.5%. Patients also provided feedback for improving The Change Program patient handbook.

**Conclusion:** This pilot study demonstrated that a GP-led weight management program is feasible and acceptable to GPs and their patients and suggested that a key determinant of success was to build on the values of person-centred primary healthcare. The positive results of this pilot confirm that a trial to assess overall effectiveness is needed.

https://doi.org/10.1016/j.orcp.2016.10.223

223

## Does eating more at night influence weight?

Mackenzie Fong*, Claire Madigan, Ian Caterson

*The Boden Institute, The University of Sydney, Camperdown, NSW, Australia*

**Background:** Although a belief commonly held by society, it is unclear whether eating a greater proportion of energy in the evening contributes to the development of obesity.

**Aim:** This systematic review investigates the association between the proportion of daily energy intake consumed in the evening and weight outcomes in adults.

**Methods:** A search of seven major databases yielded 6975 results published from 1928 to 2016. Of these, 94 full texts were reviewed and 13 studies were eligible for inclusion in the review. Studies were included if the primary outcomes were weight and BMI. Eligible studies needed to specify the proportion of daily energy intake consumed during the evening. As there is no consensus regarding the definition of 'evening' intake, we used broad definitions including; energy consumed after 19:00, energy consumed during and after the evening/main meal or the definition used by the authors. Eligible studies were cross sectional, cohort longitudinal and randomised controlled trials.

**Results:** Complete results for this review will be available by the conference dates.

**Discussion:** Understanding the relationship between the distribution of daily energy intake and weight may help to shape dietary recommendations for obesity prevention and treatment for

the general population and also specific groups such as night workers

https://doi.org/10.1016/j.orcp.2016.10.224

224

## Roux-en-Y Gastric bypass in the management of Prader-Willi Syndrome: An Australian Perspective

Kellie L. Fusco*, Gary Wittert, Philip A. Game

*University of Adelaide, Adelaide, SA, Australia*

Three patients (one female and two males) with Prader-Willi Syndrome (PWS) due to a micro-deletion on chromosome 15p have received a Roux-en-Y gastric bypass (RYGB) in Adelaide since May 2013. Length of follow up is between 3 years and 6 months with two being greater than 2 years.

The first patient was a female (age 40, BMI 55.2 kg/m$^2$) who had obstructive sleep apnoea (OSA) and central sleep apnoea (treated with BiPap), type 2 diabetes mellitus (T2DM) (treated orally with Metformin), hypogonadism (treated with topical testosterone) and chronic lower limb oedema. The second patient a male (age 30; BMI 46.7 kg/m$^2$) had poorly controlled T2DM, OSA, and chronic lower limb oedema with recurrent ulceration and infection. The third patient, a male (age 22, BMI 47.7 kg/m$^2$) had hypogonadism (treated with topical).

| Patient | Pre surgery | | | 12 months Post Surgery[a] | | |
|---|---|---|---|---|---|---|
| | Weight (kg) | Height (cm) | BMI (kg/m$^2$) | Weight (kg) | Height (cm) | BMI (kg/m$^2$) |
| 1 | 116 | 145 | 45 | 82 | 145 | 39 |
| 2 | 121 | 161 | 46.7 | 74 | 161 | 28 |
| 3 | 119 | 157 | 48.3 | 102 | 157 | 41.7 |

[a] Patient 3 data is 4 months post surgery.

All patients have shown a marked decrease in leg oedema, much improved diabetes control (patients 1 and 2) and self-reported improvements in satiation. Bariatric surgery is not currently considered a treatment for PWS however the degree of success seen within these patients should allow for national trial.

https://doi.org/10.1016/j.orcp.2016.10.225

225

## Utility of the oxygen uptake efficiency slope in participants with overweight/obesity and type 2 diabetes

Trishan Gajanand*, Matthew Wallen, Katrin Dias, Shelley E. Keating, Jeff S. Coombes

*School of Human Movement and Nutrition Sciences, The University of Queensland, Brisbane, Queensland, Australia*

**Background:** Higher cardiorespiratory fitness is associated with a reduced risk of all-cause and cardiovascular disease mortality in healthy individuals. This relationship is also true for those with type 2 diabetes (T2D). Cardiopulmonary exercise tests to determine cardiorespiratory fitness (measured as peak oxygen uptake [$V^{\bullet}O_2$peak]) may not always be achievable in those with T2D. Intrinsic factors such as lack of motivation or peripheral fatigue, along with limitations in personnel required to supervise the exercise test in high-risk individuals, limit the utility of the test. The oxygen uptake efficiency slope (OUES) represents the efficiency of the body to extract oxygen from ventilation and measuring this during submaximal efforts may be a valid measure of cardiorespiratory fitness. The aim of this study was to compare the association between submaximal OUES and $V^{\bullet}O_2$peak in participants with T2D.

**Methods:** Eight adults (59 ± 7 years) with overweight/obesity (BMI = 37.5 ± 6.1 kg/m$^2$) and T2D (glycated haemoglobin [$HbA_{1c}$] 63 ± 11 mmol/mol) completed a maximal graded cardiopulmonary exercise test on a treadmill. $V^{\bullet}O_2$peak was determined as the mean of the three continuously high ten second measurements attained during the test. The OUES was calculated as the slope of oxygen uptake against the logarithm of total ventilation for the entire test [$V^{\bullet}O_2$ (L/min) = m(log$V^{\bullet}$E) + B, where m = OUES]. Correlation between $V^{\bullet}O_2$peak and the OUES was determined via Pearson's correlation coefficient. Statistical significance was set at $p < 0.05$. Values are reported as means ± SD.

**Results:** Participants' $V^{\bullet}O_{2peak}$ was 2.4 ± 0.5 L/min and OUES 2.1 ± 0.9. The correlation between $V^{\bullet}O_{2peak}$ and the OUES was strong and significant ($r = 0.8$; $p = 0.019$).

**Conclusion:** The OUES displayed a strong and significant association with $V^{\bullet}O_2$peak. This suggests that the OUES may offer a valid submaximal