Report on Australasian Clinical Nutrition Society meetings in Australia

The Australasian Clinical Nutrition Society met for a joint meeting with the Australasian Society for the Study of Obesity in Melbourne, September 23- 24,1995.

Introduction

The meeting had 4 or 5 main sessions and additional free communication periods. The program commenced with a lecture on "Exercise and Obesity, The Impact on Weight Maintenance" by a visiting Professor, Professor Wim Saris MD PhD from the Nutrition Research Centre of the University of Limburg, Maastricht in the Netherlands. In his talk, Professor Saris, emphasised the role of exercise as the maintenance strategy in weight control. He discussed the potential advantages of exercise to counteract some of the self protecting physiological responses which occur during dieting. He raised the argument that in the light of a developing epidemic of obesity in affluent countries, despite the reduction in fat intake, that a combination of diet and physical activity is very necessary.

The free communication session which followed included talks as follows:

- "Increased Weight Gain in Transgenic Rats with Genetically Engineered Hepatic Insulin Resistance" *Joe Proietto, G Rosella, S Kaczmarczyk, S Andrikopoulos, L Baker, T Adams, J Zajac*
- "Economic analysis of Primary Prevention of NIDDM" *Leonie Segal, A Dalton*
- "Effects of Dexfenfluramine on Nutrient Oxidation and Metabolic Rate" *Boyd Swinburn, H Carmichael*
- "Is Intra-Abdominal Fat Mass a Major Determinant of Gender Differences in Insulin Sensitivity and Syndrome X?" *David Carey, L Campbell, B Doust, D J Chishom*

The second part of the morning consisted of the Symposium on "Aspects of Paediatric Obesity," chaired by Louise Baur. The first talk was given by Kate Steinbeck who addressed the issue of "Controversial Management Issues in Paediatric Obesity: Is there a Place for Very Low Energy Diets and Appetite Suppressants". This was followed by a second talk from Wim Saris on "The role of Physical Activity in Paediatric Obesity" and by a program from the Perth research group on "Changing Dietary and Physical Activity Behaviour in Children via Home Based Programs".

The second Symposium of the day was organised by Madeleine Ball, on behalf of ACNS and was on Body Fat Measurement. This included an introduction to the area, and then an "Overview of the Different Measurements of Body Fat" by Boyd Strauss. This was followed by a talk given by Louise Baur on "Body Composition and Body Fat in Children and Adolescents "and a talk by Mark Wahlqvist on "Obesity in the Elderly". Abstracts of these talks are printed at the end of this report.

After the formal talks there was a choice of three workshops and this allowed people to follow up their individual interest, depending on their particular background. Boyd Strauss and Dan Stroud ran a workshop on "Body Fat Measurement and Quality Assurance". Robin Bainbridge and Kate Gibbons ran a hands on session on "Body Composition Measurements in Primary Health Care". Ian Caterson and Sharon Marks discussed some interesting case histories concerned with obesity.

On the Sunday morning there was a scientific update on the "Genetic Aspects of Obesity" and Jim Goding from the Alfred Hospital, Melbourne, gave a talk on "The OB Gene: What is its Function in Obesity and its Future in Treatment?" Discussion, much of which focussed on the newly discovered hormone leptin, was led by Len Storlein from Woollongong, Australia. The Plenary Lecture on "The Origins and Consequences of Childhood Obesity" was given by William Dietz MD PhD, from the New England Medical Centre and Tufts University School of Medicine, Boston, Massachusetts. In this talk he discussed the fact that childhood obesity has become one of the most prevalent nutritional diseases amongst children and adolescents in the developed world. He explained that several periods in childhood seemed to represent periods of high risk for the development of obesity: these include the prenatal period, the period of adiposity rebound between ages 5 and 7 and adolescence. It appears that morbidity associated with obesity is particularly associated with obesity of adolescent onset. Long term follow-up of adults obese at adolescence demonstrated an increased risk of mortality in men, and increased cardiovascular morbidity in both genders that appear independent of the effect of adult fatness. Although the mechanisms of this and intra-abdominal fat accumulation, which may be a contributor, are not well understood, contributing factors may include the sex hormones, activity, alcohol use, smoking and stress. Professor Dietz felt that early and effective prevention or treatment of childhood and adolescent obesity may have a major impact on the morbidity and mortality associated with adult disease.

The second morning Symposium was on "The Role of the GP in the Management of Obesity "and included papers by Tony Helman, Peter Howell, Andre Jones-Roberts and Christopher Olszewski.

In the afternoon free communication session there were interesting papers including several from ACNS members including Ian Caterson's group with their paper on the "Treatment of Obese Men with Co-Morbidity" and Ian Puddey and Laurie Beilin's group with the talk on "The Effects of a 6 Month Exercise Program on Body Weight and Body Composition in Sedentary Older Women".

The final Symposium of the session was on Food Labelling - Facts and Fallacy. In this session David Briggs discussed "Labelling and the Review of Foods Standards Code" and Wendy Morgan talked about "Food Labelling - Reaching the Masses". The abstract of David's talk is included below.

The meeting was attended by some 250 people from a range of different backgrounds and the contributions from ACNS members were an important part of the program. The abstracts from a few of these presentations and of posters that were presented by ACNS members have been included below.

The next ACNS meeting will be held in Sydney on September 30, 1996 at a similar time to ASSO and in cooperation with the Nutrition Society of Australia. We hope to have a good attendance and meetings as interesting as in 1995.

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I. Symposium - Aspects of Paediatric Obesity

Body composition and body fat in children and adolescents

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At birth, term infants have approximately 15% of their body mass as fat. The % fat mass increases during the first year, subsequently decreases and stabilises until puberty. Females have a higher proportion of body fat, even in early childhood, a difference which clearly becomes more pronounced during the pubertal growth spurt.

Measurement of fat mass in childhood using body composition techniques has several limitations. Many techniques may need to be specifically validated for use in small subjects while some are not appropriate for use in young children (eg radiation risk, or the need for subjects to lie still). Furthermore, most body composition techniques assume a constant density or chemical composition of the lean body mass (LBM [= body mass - fat mass]), an assumption that is not valid in children. The LBM at birth is relatively fluid-overloaded; during growth the water content of the LBM decreases and its protein and mineral content (and hence density) increases until at least puberty. Therefore, use of age-and sex-adjusted constants to determine LBM (and hence fat mass) is advised (Lohman, Exerc Sport Sci Rev, 1986).

Anthropometry provides a practical measure of adiposity, suitable for clinical use or population studies. Body mass index (BMI; weight/height^2) is highly correlated with % fat mass, even in childhood. BMI should be compared with reference population values, although actual cut-points for excess adiposity are arbitrary (Lazarus et al, J Paediatr Child Health, 1995). There are practical difficulties in the measurement of skinfold thickness in obese, as distinct to lean, subjects. Skinfold-based prediction equations for determining % fat mass need to be restricted to the populations from which they were derived.

A validation study of the Ben-Tovim Walker body attitudes questionnaire in girls 12-16 years

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A methodological problem for research investigating body-related attitudes in children and adolescents is the use of adult tools that have only been previously validated in adult populations. The primary aim of the present study was to examine the convergent validity of one psychometrically sound instrument of body attitudes, the Ben-Tovim Walker Body Attitudes Questionnaire (BAQ), in a sample of 12-16 year old females. This was achieved by examining the association between scores obtained on each BAQ subscale with scores obtained on two widely used and validated tools in adolescent body research; the Body Shape Questionnaire (BSQ) and the Eating Disorders Inventory Body Dissatisfaction Subscale (EDI-BD). Girls from Years 8 to 10 were recruited from three private schools (n = 206). Participants completed standard demographic questions and the BAQ, BSQ, and EDI-BD. Height and weight were measured to calculate Body Mass Index (BMI).

Strong and significant positive correlations were observed with both the BSQI and EDI-BD2 for four BAQ subscales; feeling fat (r^1 = 0.82; r^2 = 0.76), body disparagement (r^1 = 0.65; r^2 =0.60), salience weight/shape (r^1 = 0.72; r^2 = 0.54), and lower body fat (r^1 = 0.64; r^2 = 0.60), all $p<0.001$. The attractiveness subscale showed significant negative relationships (r^1 = -0.33; r^2 = -0.40) and those for the Strength/fitness subscale were not significant (r^1 = -0.25; r^2 = 0.31). These results indicate that BAQ can be used in a young female group to assess attitudes towards feeling fat, body disparagement, salience and lower body fat with a similar degree of validity to that observed in a female adult sample (Ben-Tovim and Walker, 1991).

We then examined the interaction between the BAQ subscale scores and subjects age, ethnicity, social class and BMI category. BMI category was the only parameter to show a significant interaction with four BAQ subscale scores, $p<0.01$. This was also observed for BSQ and EDI-BD scores, $p<0.01$. These results suggest the BAQ is a valid tool for assessing body-related attitudes of girls 12-16 years. The findings of this study therefore extend the research utility of the BAQ for use in young females (12-16 years).

Changing dietary and physical activity behaviour in children via home based programs

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This randomised controlled trial assessed the effectiveness and practicality of a school and home based health program aimed at long term improvements in dietary and physical activity habits. A physical activity enrichment program was also evaluated with a subset of children identified as at higher cardiovascular risk by body fat, physical fitness, blood pressure and cholesterol variables.

At the beginning of the 1993 school year, all children enrolled in Year 6 classes at 18 randomly chosen schools were invited to participate in the project. An 81.7% positive response provided a sample size of 804 children.

Effects of the two-term program were tested both immediately post-intervention and after a further 26 weeks. Baseline results indicated that children spent 3 times more leisure time watching television than doing even moderate physical activity. About a

quarter of the sample were overweight, and a third were either unfit or had undesirably high blood cholesterol levels. 13% derived more than 40% of their dietary energy from fat. The exercise program produced substantial short-term improvements in fitness, which were partially eroded when measured 6 months later. Short-term reductions were also found in fat and salt intakes in children at schools with the enrichment program, despite only small improvements in health attitudes and health knowledge scores.

A program which combines home based activities with school activities was shown to produce short term changes in dietary intake and physical fitness. However, the short duration programs did not achieve long-term changes, and continuing programs which impact on the child's behaviour at home and school are needed.

II. Symposium - Body Fat and Composition Measurement

Techniques for measuring fat mass

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It is increasingly possible and necessary to be selective in the use of body compositional techniques to assess body fat. The table which follows is a basis for such selection.

Technique	Compartment	Precision	Side-effects	Portability	Cost	Applicability	Availability
BMI	Total Body	=1%	None	Bedside Communities	Cheap	Epidemiology Classification	Universal
Skinfolds	Total Body	6-20%	Undressing	Bedside Communities	Cheap	Epidemiology Individuals	Universal
Waist Circ	Abdominal	=5%	Undressing	Bedside Communities	Cheap	Epidemiology Individuals	Universal
AH Ratio	Abdominal	=5%	Undressing	Bedside Communities	Cheap	Epidemiology Individuals	Universal
Sagittal Ht	Visceral	=5%	Undressing	Bedside Communities	Cheap	Epidemiology Individuals	Universal
UWW	Total Body	=2%	Undressing	Laboratory	Moderate	Healthy Young Adults	BC/ Sports Laboratories
DEXA	Total Body Regional	=2-4%	Radiation 1mSv	Laboratory Hospital	Moderate	Obesity Wasting Osteoporosis	Widespread in 1st World
Xenon	Total Body	7-8%		Laboratory	?	?	No longer performed
CT	Total Body Subcutaneous Visceral	=5%	Radiation 50mSv	Hospital	Expensive	Syndrome X Diseases	Limited by other clinical needs
MRI	Total Body Subcutaneous Visceral	=5%	Claustrophobia	Hospital	Expensive	Syndrome X Diseases	Limited by other clinical needs
IVNAA Carbon	Total Body	=5%	Radiation20mSv	Laboratory	Moderate	Obesity Wasting Disorders	Specialised BC Laboratories
By Difference*	Total Body	Various	Various	Various	Various	Various	Various

Difference Methods Weight • Fat Free Mass (FFM) where FFM is derived from: BIA (bioelectrical impedance) TBK (total body potassium) TBW (total body water). Each method (direct and by difference) has different assumptions. Where regression of one technique on another is used eg. Skinfolds/ BIA on UWW the conversion formulae are population/disease specific.

Abbreviations: BMI is body mass index (weight/height^2) in kg/m^2); AH ratio is abdominal: hip ratio, as defined by the WHO Expert Commission on Anthropometry; Saggital Ht is Saggital height, measured supine as a maximal abdominal diameter at the umbilicus; UWW is under water weight to obtain bone density; DEXA is dual energy X-ray absorptiometry; CT is computerised tomography; MRI is magnetic resonance imaging; IVNAA is *in vivo* neutron activation analysis for total body nitrogen and other elements like chlorine.

Total body protein change in growth hormone deficient (GHD) adults on recombinant human growth hormone

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Objectives. The study aim was to assess whether total body protein is reduced in adults with growth hormone deficiency (GHD) and to study the effect of growth hormone (GH) therapy using a recombinant product known as genotropin on total body protein (TBP) in GHD adults.

Design. The study was divided into two pans: Pan I was of double-blind, parallel design with patients randomised to receive either genotropin or placebo for 6 months Pan II was an open treatment with genotropin in all patients for a further 6 months.

Patients GH adults, which were defined as isolated or part-of-hypopituitarism, aged 18-64 years, male (n=34) and females (n=23) were included in this study. Seventy-five healthy controls matched for age, height and weight, were also included in this study.

Method. Total body nitrogen (TBN) was measured by *in vivo* neutron activation analysis (IVNAA) at baseline, 6 and 12 months. Measurements of TBN were standardised for age, sex and height by calculation of a nitrogen index (NI).

Results. GHD adults and healthy controls, both males and females, did not differ in age (40.2 vs 40.6y), weight (76.8 vs 80.7kg) or height (176.2 vs 172.4cm), but body mass index (BMI) of male patients was significantly greater than that of male healthy controls (24.6 vs 27 kg/m^2, P<0.05).

GHD adults did not have a depicted TBP compared to healthy controls (11.3 vs 12.2 kg in males, 7.5 vs 7.9 kg in females); NI also did not differ between GHD adults and healthy controls (0.98 vs 1.01 in males, 0.93 vs 1.00 in females).

At the end of 6 months, the group receiving GH therapy exhibited a trend towards an increase in TBN [mean ± SEM: 1.65 ± 0.08kg (baseline) vs 1.70 ± 0.09kg (6 months), p = 0.05] and a significant increase in NI [0.94 ± 0.03 (baseline) vs 0.99 ± 0 03 (6 months). p<0.05]. The placebo group demonstrated no significant change in either TBN or NI.

At the end of 12 months, the group receiving GH therapy for twelve months demonstrated a significant increase in both TBN [1.65 ± 0.08 kg (baseline) vs 1.77 ± 0.09 kg (12 months) p<0.01] and NI [0.94 ± 0.03 (baseline) vs 1.01 ± 0.03 (12 months), p<0.05] The group receiving GH therapy for only 6 months also exhibited a trend towards an increase in TBN [1.46 ± 0.08 kg (baseline) vs 1.52 ± 0.08 kg (12 months) p = 005] and a significant increase in NI [0.96 ± 0.03 (baseline) vs 1.01 ± 0.03 (12 months), p < 0.05].

Conclusion. In this study, TBP in GHD adults was comparable to normal values. After GH treatment, TBP increased significantly, suggesting that long-term GH therapy impacts favourably on TBP stores in GHD adults.

Obesity in the elderly

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The prevalence of obesity and overweight, judged by BMI (Body Mass Index) and AHR (abdominal : hip ratio), in over 70 years old populations, who have apparently successfully aged, is vastly different. Cross-cultural comparisons are available from the IUNS (International Union of Nutritional Sciences) Food Habits in Later Life Study[1]. The prospective studies of Steen et al[2] also indicate that overweight is more tolerable in the aged, from a mortality point of view, than in younger individuals. Thus, whilst over-fatness may preserve health risks for the aged, like for diabetes and cardiovascular disease and for the mechanical difficulties that arise, efforts to reduce it need to be more circumspect than in those young people with a different risk benefit ratio.

A problem in assessing fatness in the elderly is the age-related decline in lean mass, and the consequent need to make more direct assessments by way of skinfold thickness and/or circumferences, whilst, at the same time, allowing for certain pathologies like fluid retention with congestive cardiac failure. The World Health Organisation Expert Committee on Anthropometry has recommended regular use of knee height, mid calf circumference and mid calf skinfold in the aged, unless peripheral oedema prevents the mid calf measurements from being indicative of lean and fat mass. A calf circumference (CC) to knee height relationship (CC/KH^2) may serve as a surrogate for BMI (Weight/Height^2).

For reasons of overall nutritional health, food restriction in the elderly should be secondary to the combination of increased food nutrient density and increased physical activity in the management of overfatness in the aged.

Reference

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III. Pathogenesis of obesity and its complications

Relation between skeletal muscle fibre type and adiposity in women

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Recent evidence in both male rats and humans indicates that the relative proportions of the major skeletal muscle fibre types influence insulin action, aerobic capacity and body fat accumulation such that a high proportion of Type 2b fibres is linked to development of insulin resistance and obesity. (IJO 19 (suppl 2): 32. 1995; J Clin Invest 80:415, 1987). The aim of the present study was to investigate the relationships between body mass index (BMI; wt/h^2) and skeletal muscle fibre type in non-diabetic adult women (27 Australians, 12 American Pima Indians). Skeletal muscle was obtained by percutaneous biopsy of the vastus lateralis, while histochemical staining of serial muscle sections was performed using the standard myosin ATPase method and muscle oxidative capacity determined by NADH staining. Increased BMI (mean = 32 4±1.3; range = 19.1-47.6) was associated with decreased oxidative capacity of muscle (r = -0.36, p = 0.03) and with decreased % of oxidative Type I fibres (r = 0.42, p = 0.009). In agreement, increased BMI was positively correlated with the % of less oxidative Type 2b fibres (r = 0.56, p = 0.004). These relationships extend associations previously found between percentage body fat and muscle fibre type proportions in males (IJO 19(suppl 3):211, 1995). The males from previous studies and the females of this study fall on similar regression lines relating these variables. In summary, obesity is closely associated with an increased proportion of glycolytic Type 2b fibres and a reduced proportion of Type I (oxidative) fibres. The results suggest that fibre type profile and the oxidative capacity of skeletal muscle may be important in the development of obesity.

Effects of haemodialysis on oxidation of low density lipoproteins and lipid peroxides

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Patients with chronic renal failure have a substantially increased risk of death from cardiovascular disease compared with age-matched individuals from the general population. Furthermore, the risk of coronary heart disease (CHD) remains high in patients treated by haemodialysis. Thus, treatments to counteract uraemia do not decrease and may even increase CHD risk. Factors responsible for the development of atherosclerosis in chronic renal failure are not well-known.

Peroxidation of low density lipoproteins (LDL) may be involved in the development of atherosclerosis which is prevalent in patients with chronic renal failure.

We determined the acute effect of haemodialysis on copper ion catalysed oxidation of LDL *in vitro*, in 13 haemodialysis patients to observe whether the process of haemodialysis had an acute effect on LDL oxidation.

Levels of the LDL oxidation variables, including lag phase and maximum production of conjugated dienes, and the organic lipid peroxide content of LDL were not significantly different before and after haemodialysis and 24 hours later.

IV. Management of Obesity

Improved insulin sensitivity during the hypocaloric phase of VLED-induced weight loss is due to increased non-oxidative glycolysis

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Insulin resistance in obesity is associated with decreased whole body glucose disposal and reduced activities of key enzymes of glucose metabolism. The effects of a very low energy diet (VLED) on insulin sensitivity were investigated in 8 nondiabetic obese subjects (6M/2F; BMI: 39.7 ± 1.5) both before and after a weight loss of 10.7 ± 1%. Glucose oxidation was measured by indirect calorimetry during the euglycemic hyperinsulinaemic clamp (40mU/m^2/min) and muscle biopsies were taken after the clamp for determination of pyruvate dehydrogenase (PDHCa) and glycogen synthase (GS) activities.

The lack of improvement in glucose oxidation or PDHCa is consistent with increased fatty acids being available for oxidation as indicated by the high circulating NEFA levels. The lack of an increase in GS activity (either active or total) suggests that the improvement in non-oxidative glucose disposal is due to increased non-oxidative glycolysis. Follow up studies are needed to see if further improvements in insulin sensitivity can be seen after completion of the VLED regime and placement on an isocaloric weight maintenance diet.

	Pre VLED	post VLED
Fasting Serum Levels		
Insulin (pM)	108 ± 11	63 ± 15*
NEFA's (mM)	0.63 ± 0.06	1.10 ± 0.20*
Glucose disposal (mg/min/g body wt/pM insulin)		
Total	3.41± 0.42	5.91 ± 0.77**
Oxidative	1.84 ± 0.28	2.40 ± 0.41
Non-oxidative	1.57 ± 0.42	3.51 ± 0.67*
Insulin-stimulated PDHCa activity (mU/g wet wt)		
Active 27.0 ± 4.17	18.04 ± 6.96	
Insulin-stimulated GS activity (μmol/min/g wet wt)		
Active	2.63 ±0.49	1.98 ±0.24
Total	4.46 ± 0.65	3.78 ± 0.65

Effects of dexfenfluramine on nutrient oxidation and metabolic rate

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Dexfenfluramine (dF) is thought to suppress appetite by a central mechanism of inhibiting neuronal reuptake of serotonin. We tested whether dF may also have a peripheral effect on respiratory quotient (RQ) or resting metabolic rate (RMR), both of which could also influence fat balance.

Obese subjects were randomised to dF (n = 11, age = 49 ± 3 years, weight = 95.8 ± 2.6kg, BMI = 32.8 ± 0.6) or placebo (n = 9, age = 45 ± 3 years, weight = 91.6 ± 4.2kg, BMI = 32.3 ± 0.9). Acute response (3 hr) to 30 mg stat orally and chronic response (3 months) to 15mg bd were assessed by indirect calorimetry.

There were no acute effects on RQ or RMR. There were no chronic effects on RMR. RQ, however, decreased significantly ($p<0.01$) after 3 months in the dF group (0.904 ± 0.018 to 0.856 ± 0.011) compared to the placebo group (0.902 ± 0.012 to 0.910 ± 0.014). In a multiple regression model, this decrease remained significant ($p<0.0002$, $p = 0.06$) after adjustment for group differences in sex ratio, recent weight change, recent total energy intake, and recent nutrient intake mix. Similar results were found with non-protein RQ.

We conclude that dF may chronically alter the nutrient oxidation mix such that there is a greater proportion of fat oxidation. According to Flatt's model for nutrient balance, this would be the equivalent of a reduced fat intake and should promote weight loss. dF may have peripheral as well as central actions to promote fat loss.

The effects of a 6 month exercise programme on body weight and body composition in sedentary older women

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We have assessed in 126 healthy, but sedentary women aged 40-65 years whether a moderate or vigorous exercise programme for 6 months can influence body mass or composition in the absence of formal calorie restriction.

Subjects were randomly assigned to either a centre-based exercise programme or a home-based programme 3 times a week for 6 months. They were further assigned to exercise at either moderate intensity (40-55% Hr_{res}) or brisk intensity (65-80% Hr_{res}). Thirty women were recruited from the electoral roll to provide a comparison group. Body mass, body composition (duel energy x-ray absorptiometry) were measured before and after intervention. Subjects were asked to make no changes to their usual dietary habits.

The exercise groups had a significant improvement in fitness assessed from maximum oxygen consumption compared to the comparison group ($P<0.05$). There was no change in body mass. Fat mass decreased and lean mass increased significantly in the exercise versus the comparison groups ($P<0.05$). These changes were seen predominantly in decreases in trunk fat and increases in trunk lean mass.

In conclusion, in the absence of formal calorie restriction 6 months of moderate or vigorous intensity exercise does not significantly change body mass but can favourably influence body composition.

Prader-Willi Syndrome - obesity, behaviour problems, undermanaged, under known

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Obesity management of adults with Prader-Willi Syndrome (PWS) is a major problem. With earlier diagnosis and intervention affected people have greater longevity than previously reported. This adult clinic was established to develop highly specialised care required by this group as they become too old for paediatric services. Over the last four years 20 patients (12F:8M) satisfying major diagnostic criteria have attended. Genetic testing showed deletions in 8 patients, uniparental disomy in 3 and nondeleted nondisomic in 1. The mean age is 24.0 ± 1.5 yr. The initial BMI was 38.9 ± 1.9 kg/m^2. More than 50% of the patients have signs of obstructive sleep apnoea, 4 have diabetes, 4 are on hormone replacement therapy. Eight have been reported to display increasingly severe temper tantrums. Long term care of these patients is a major management dilemma as rarely do their eating and psychological behaviours suit standard supervised or shared environments. As independence develops obesity escalates. Restricted living conditions as well as regular exercise are the keys to successful management of adults with PWS.

Within our community there exists a great need for further education of professionals and carers as well as family support for those associated with adults with this most difficult syndrome.
(Results - mean±SEM)

Dexfenfluramine and an *ad libitum*, reduced-fat diet: effects on body composition, dietary intake and blood lipids

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Dexfenfluramine (dF) is an anorexigenic drug which enhances weight loss while on traditional low calorie diets. We tested dF in the context of an *ad libitum*, reduced-fat (ALRF) diet to determine its effect on dietary fat intake, body composition and other measures.

During a 3 month run-in period on ALRF diet alone, there were significant reductions ($p<0.0001$) in body weight (-2.9kg), total energy intake (-572 kcals), fat intake (-50.6g) and protein intake (-12.0g) as well as percent calories from fat, carbohydrate and protein and blood lipids and blood pressure.

Additional treatment for 3 months with dF caused significant decreases in total body weight (-4.1 kg), fat mass (-2.9 kg), lean body mass (-1.1 kg) and percent body fat (-1.7%), total energy intake (-98 kcals), serum cholesterol (-0.25 mM) and triglycerides (-0.35 mM). Dietary fat intake was maintained at the low level (44g daily) achieved during the run-in period. In contrast, the only changes in the placebo group were nonsignificant trends towards increasing dietary fat intake, and consequently, total energy intake.

These results suggest that dF augments weight loss while on an ALRF diet and may also have beneficial effects on body composition and blood lipids in patients. It is probable that dF allows continued adherence to a low fat diet by reducing the intake of higher fat foods.

Non-sustained weight loss and metabolic improvement following a VLED regimen

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Obesity, in particular central obesity. is a complex clinical disorder commonly associated with hypertension, hyperinsulinaemia, dyslipidaemia and increased risk of cardiovascular disease The effects of a Very Low Energy Diet (VLED)-induced weight loss on these obesity-linked abnormalities was investigated.

Eleven non-diabetic clinically obese subjects (7M, 4W) followed a VLED for 12 weeks or until body weight was decreased by 10-15%. Basal metabolic rate (BMR), sagittal depth (SD), blood pressure (BP), lipid profiles and fasting insulin were assessed before and immediately after the diet regime and where possible 9-12 months after completion of the VLED. There was no contact with the subjects during this period.

None of the significant improvements seen post VLED were significantly different to pre VLED levels at follow up. The degree of change in the metabolic parameters was related to the amount of weight regain. VLEDs are efficient at producing rapid weight loss and improvements in risk factors associated with obesity. However. subsequent weight gain, accompanied by loss of these benefits, suggests that ongoing consultations could be important for weight maintenance.

	Pre	Post	Follow-up
	n=11	n=11	n=5-7
Weight(kg)	118.0±4.3	103.5±4.3*	113.5±6.3
BMI(kg/m^2)	40.6±1.4	36.2±1.4*	39.4±2.3
SD(cm)	27.5±3.4	23.1±3.5*	26.6±6.0
BMR(kcal/24hr)	1896±83	1773±106	2133±221
Tchol (mmol/l)	5.42±0.26	4.07±0.31**	5.14±0.40
LDL-C	3.60±0.29	2.52±0.32*	3.06±0.41
HDL-C	1.02±0.07	1.06±0.06	1.10±0.06
TG	1.80±0.11	1.10±0.08***	1.78±0.18
Insulin (pmol/L)	117±14	76±14*	98±22

$p<0.05$, $^{**}p<0.01$, $^{***}p<0.001$ compared to pre VLED values

V. Food labelling

Labelling and the review of the food standards code

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Food sold in Australia must comply with standards that are contained in the Food Standards Code. The Code contains standards for the labelling and date marking of food, the use of additives, limits on contaminants and specifications for the identity composition and analysis of certain foods. The National Food Authority, an independent statutory body established in 1991, is responsible for developing food standards in Australia. Many of the standards in the Code were developed under earlier regulatory systems and are inconsistent with the Authority's current objectives and policies. To promote consistency and reflect its objectives and policies in all standards, the Authority is currently undertaking a review of the Code, including the requirements for food labelling.

To make a prudent selection from the wide range of foods that is generally available, it is important that consumers are able to identify foods which, as part of an overall diet, provide the necessary balance between nutrient and energy intake essential to good health. Careful consideration needs to be given to what information should be required on food labels and how it is to be presented so that consumers can make this choice. A review of the current labelling provisions of nutritional significance and some possible new directions will be presented. Labelling requirements of nutritional significance to be discussed include the use and limitations of the nutrition information panel, the specific requirements for low joule and carbohydrate modified foods and the prohibition of certain claims. The use of the recently introduced code of practice on nutrient claims in food in providing consumers with consistent and meaningful information about claims using terms such as high, low, reduced, lite, diet, etc. will be described.

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