

## **Standing Committee on Health and Ageing- Inquiry into Obesity**

### **A LOOK Research Group Preventative Medicine Perspective**

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## **A. The Lifestyle of our Kids (LOOK) project**

This is a Commonwealth Education Trust and Commonwealth Institute (Australia) funded longitudinal investigation with a physical activity intervention. It is NOT a survey; it is a multidisciplinary, longitudinal investigation involving a physical activity intervention in 800 children.

### **LOOK investigates**

- how each of physical activity, nutrition and obesity impacts upon physical and psychological health in childhood;
- the impact of childhood lifestyle on health in later life; and
- just how important early physical education really is.

### **References:**

Telford RD. *Commonwealth Health Ministers' Year-book 2007*;

Telford RD, et al., *The lifestyle of our kids (LOOK) project: Outline of methods, J Sic Med Sport (2007)*.

LOOK (Lifestyle Of Our Kids)

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## **B. A paradigm shift in Lifestyle Preventive medicine.**

- Recognize physical inactivity, poor quality nutrition as the primary causes of chronic disease.
- Recognize obesity mainly as symptomatic of the primary causes.

And...

- Target these primary causes in a positive manner and so reduce the negative “hype” surrounding obesity.

### **Rationale:**

Current **physiological evidence** implicates:

- (a) **Physical inactivity** and
- (b) **Poor quality nutrition**, especially a disproportionate intake of saturated fat and sugar

As potent disruptive influences on our biochemistry and a direct cause of metabolically-related chronic disease, in particular Type 2 diabetes

and with regard to

- (c) **Obesity**: there is evidence that overloaded fat cells independently result in metabolic disruption but the evidence that fat cells act independently of physical inactivity and poor nutrition in a significant manner is not clear. For example, at what level of fatness do cells become damaging to health? What are the precise mechanisms? Currently we are not sure<sup>1</sup>.

### **References**

1. Telford R.D. (2007) *Low Physical activity and Obesity: Causes of Chronic Disease or Simply Predictors?* . *Medicine and Science in Exercise and Sport* Vol. 39, No. 8, pp. 1233–1240, 200

Current **epidemiological evidence** corroborates this position: a physically active individual is likely to be healthy even if measured as overweight or obese; and a lean but physically inactive person is likely to be unhealthy<sup>1,2</sup>.

### **References**

1. Lee, C. D., SN. Blair and A. S.Jackson. *Cardiorespiratory fitness, body composition, and all-cause and cardiovascular disease mortality in men. Am. J. Clin. Nutr.* 69:373–380, 1999  
 2. Sui X, et al. *Cardiorespiratory Fitness and Adiposity as Mortality Predictors in Older Adults. JAMA.* 2007; 298(21):2507-2516

This paradigm shift in no way condones obesity, and is perfectly consistent with reducing population incidence of obesity. Most importantly it facilitates a positive approach to lifestyle changes, de-emphasizing “dieting” in childhood.

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## **C. A realistic population-based strategy.**

### **The Strategy: Preventative Medicine in Childhood.**

**Increase the physical activity of Australian children through appointment of Physical Education Coordinators, each working within a cluster of primary schools.**

**Rationale behind the strategy:** Early attention to childhood lifestyle is vital. The LOOK Study has found that strong relationships between physical activity, fitness and body fat levels are already established in Australian children at 8 years old.<sup>1,2</sup> The most sensible preventative medical strategies will begin early.

#### **References**

*1 Telford RM et al Relationships between Physical Activity, Obesity, and Fitness in Australian 8 year-olds. Medicine and Science of Sports and Exercise (abs) May 2007*

*2. Telford RD et al Relationships of Indices of Insulin Resistance with Physical Activity, Body composition, Fat and Sugar intake, and fitness in 8-10 year old Australians (paper in preparation).*

**Detail of the strategy:** We propose appointment of school/community physical educators each responsible to a cluster of schools.

- The role of this person would be:
  - (a) In-school, in-class and playground physical education professional development and teaching support to the class-room teacher and
  - (b) Facilitation of parental and community involvement in physical activity including after-school activity programs
- The model is currently in practice and being evaluated (LOOK Bluearth intervention)
- There would be potential engagement of 100% of children
- Government and Private collaboration with a very similar model is already in place through the Bluearth Institute in numerous schools around Australia. Testimony of principals, teachers and children indicates widespread success. The LOOK project is studying its impact.

#### **D. How much fatter are our children? Are we sure? Measurement problems.**

Scientists investigating paediatric obesity need to get their measurement procedures tidied up.

- Data relating to childhood obesity is on shaky grounds because scientists are not sure that they can measure overweight and obesity with appropriate validity and reliability<sup>1</sup>.
- The LOOK study has identified problems in the pre-pubertal age group and made appropriate suggestions for their correction, as referenced below.
- The question “Are our kids really that much fatter than a few decades ago, or just bigger?” is a relevant one. BMI and even % body fat can be misleading in pre-pubertal children<sup>2</sup>.

#### **References:**

1. Telford RD et al *Discordance in Body Composition Assessment in 8 year old children* accepted for publication March 2008, *Annals of Human Biology*

2. Telford RD and Cunningham RB *Reformulation of BMI and %BF to remove the height bias in 8 year-olds*, accepted for publication *Obesity Research*, April 2008).

## E. Strategies for Identification and Treatment of the At-Risk Child: A Clinical Perspective.

Children of low fitness, low physical activity, and high body fat need to be identified early using efficient cost-effective processes. This would be best achieved in the school setting, where we have access to all children. Specific attention needs to be given to modifying the lifestyle of these children.

### **Our strategies depend on two main steps.**

- Step1: Identification of low fitness, low physical activity, and high percent body fat in the school setting. This can be performed by the physical education coordinator, with school nursing staff or opportunistically by other health care specialists (eg. GP or practice nurse).
- Step2: Referral to specialist health care providers (eg. Multidisciplinary team including specialist nurse practitioner, or nurse with exercise physiologist, psychosocial counsellor, dietician) who work alongside parents and teachers in conjunction with the medical General Practitioner. .

### **Defining the Problem: Physical inactivity, poor quality nutrition, (and so an imbalance of energy intake and output and obesity).**

Notwithstanding problems associated with classifying obesity, the percentage of Australians who are defined as overweight and obese by BMI is has risen steadily between 1985-1997<sup>1,2</sup> with a more recent disproportionate rise in those from more disadvantaged backgrounds<sup>3</sup>. This statistic suggests a concomitant decrease in physical activity of sufficient quantity and quality to maintain good health, and probably also reflects an increased consumption of high calorie-dense food.

In our submission we refer to the “at risk” child; at risk of metabolic dysfunction, including but not limited to increased risk of Type 2 diabetes in later life. The “at risk” child is one who is insufficiently physically active, whose dietary intake is of poor nutritional value, and who is likely to be but not necessarily be overweight or obese. Particular attention should be paid to those with a genetic background predisposing such risk.

We have proposed the paradigm shift of dealing directly with health, adopting a positive approach to prevention, increasing physical activity and good nutrition. However, whilst we emphasize that overweight or obesity seem to present predominantly as markers of risk of chronic disease there is no doubt that obesity itself (i.e. the fatty tissue) has its own impact upon health. This occurs not only through a negative feedback loop in making physical activity more difficult, but through an emerging , albeit uncertain, bank of knowledge implicating the endocrine function of adipose tissue in human disease..

The condition of “morbid obesity”, whether or not its main dangers relate to the associated lack of physical inactivity or not, is certainly a reality in some Australian children. The seriousness of this problem requires systematic identification and treatment. Some of the problems associated with this condition are illustrated in Figure 1

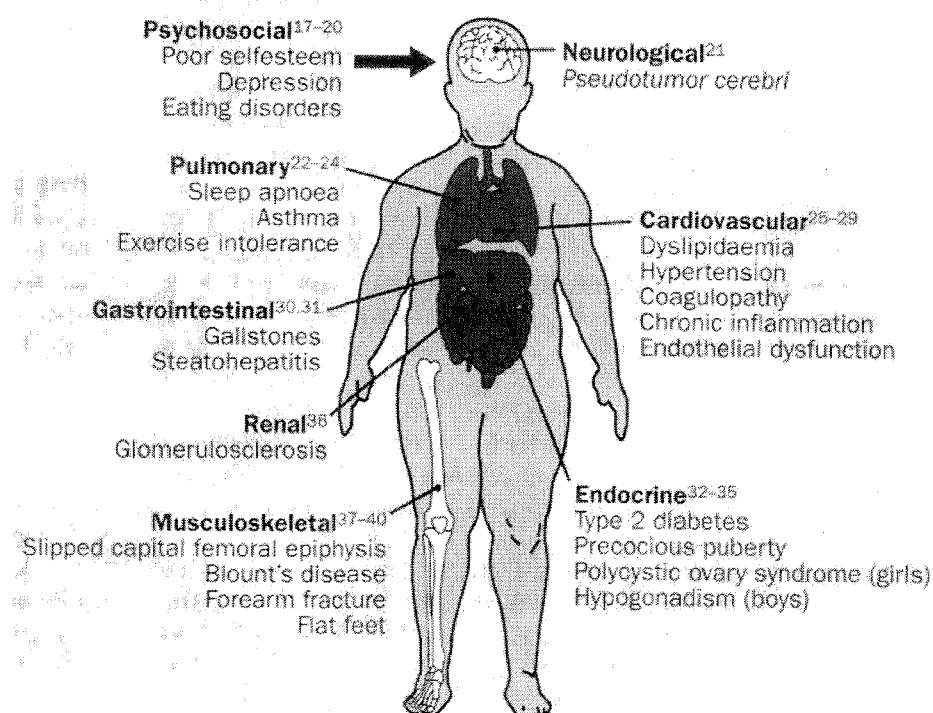


Figure 1 From Ebbeling, Pawlak, Ludwig, *The Lancet* 2002; 360: 473-82.

### **Familial, social, developmental and ethnicity influences.**

It is evident that familial trends exist. Overweight inactive parents tend to produce overweight, inactive young people who in turn become overweight inactive adults, placing them at risk of all of the associated co-morbid conditions; with concomitant health cost implications. The prevalence of these complications vary with the financial security of the community and family, the age of the child, the chronicity of their inactivity, nutritional intake and body fat problem, and their ethnicity.

### **Measuring the Problem – should we?**

**Yes, but measure the right things, the right way, and with due sensitivity to the child's feeling regarding "fatness".**

There is concern in the research community that measuring people will label them and make them less likely to participate in solutions to the problem. However, accurate identification of the size of the problem is a prerequisite to adequately resourcing the intervention process, and evaluation of outcomes is essential to determining the effectiveness of any intervention.

Given that direct problems leading to chronic disease arise from physical inactivity and poor nutritional choices, we are in firm support of measuring the problem. We believe that measurement of physical activity and nutritional intake, deficiencies in which are the prime causes of metabolic disease, are possibly more important measures than body composition. However we recognise the importance of measuring indices of body fat to establish longitudinal trends and individual symptom of risk. In the child at risk to chronic metabolic disease, it may well be that monitoring physical activity and nutritional quality may be a fundamentally more

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sensible and sensitive approach to removing risk than simply targeting body fat. It is not within the scope of this submission to describe methods, but reducing risk by increasing physical activity and developing the ability to choose and enjoy nutritious food is entirely achievable by the model we propose incorporating the Physical Education Coordinators, the teachers and the parents, with referral to the appropriate health care specialists in extreme cases.

Government leadership is critical and may require morally, ethically, and scientifically sound decisions rather than those based on popular and/or fiscal considerations. Evaluation of the effectiveness of interventions currently being trialled and implementation of those that have been proven is a priority. Cost effective interventions as have occurred with cigarette advertising, need to happen with food advertising<sup>4</sup>.

## Strategy

We have listed in the previous sections a major strategy to combat chronic disease in our children. This is the implementation of a system of Physical Education Coordinators bridging school and community support for 100% of children in our community, through the school system and incorporating after-school strategies.

However, whilst we feel this strategy to be one of potentially significant impact, we do not imply that this is a solution in itself. The physical inactivity-nutrition-obesity problem in children is one requiring a coordinated and multi-pronged approach embraced through the school, community, food supply industries, with government at the local, state and federal levels facilitating and leading the charge.

Additional areas to be addressed include:

- Reducing small screen time (computer, electronic games and TV).
- Providing better transport solutions to promote greater physical activity and make cars less attractive.
- Dietary manoeuvres focused on reducing energy density, portion size and eating speed
- Reducing barriers to identifying and discouraging consumption of energy dense foods, whilst encouraging consumption of nutrient dense foods, including fruit and vegetables. Financial considerations may be warranted, especially to low income families.
- People also need to be empowered to identify triggers to non-nutritive eating and be provided with distractions when these arise. The following table summarises some and expands on some of these points.



**Table 1** summarizes problems, barriers and potential solutions related to the child “at risk” to physical inactivity, low fitness and obesity. It should be noted that our strategies also relate to the roles of the School-Community Physical Educator as put forward in our Strategy for all children.

| <b><u>Problems</u></b>                            | <b><u>Barriers</u></b>  | <b><u>Strategies</u></b>  |
|---|---|---|
| <b>Identification</b>                             | <i>Cost effective gate keeping<br/>Inadequate measurement methods<br/>Resistance to measurement of body composition</i>                   | <ul style="list-style-type: none"> <li>- Non-discriminatory evaluations at key ages .e.g. by School/community physical education co-ordinators (as per strategy 1 above)</li> <li>- Everyone checked and referral system to health practitioners (fitness, diet, medical)</li> <li>- Revise methods of Measurement to improve flawed measures such as BMI.</li> </ul> |
| <b>Acceptability</b>                              | <i>Knowledge/ readiness to accept help<br/>Perception of seriousness<br/>Helplessness and hopelessness</i>                                | <ul style="list-style-type: none"> <li>- De-stigmatising the message with a positive not punitive approach especially by PE coordinators</li> <li>- Integrated psychological support</li> <li>- Consulting representatives from key groups</li> </ul>   |
| <b>Awareness</b>                                  | <i>Not aware there is a problem<br/>“big boned” “it’s all genetic”</i>  | <ul style="list-style-type: none"> <li>- Champions :cultural leaders, sports/other identities ; PE coordinator facilitated</li> <li>- Consistent Message at all levels Schools, media, work place</li> </ul>  |
| <b>Access</b>                                     | <i>Centralised vs. local</i>  | <ul style="list-style-type: none"> <li>- Take the intervention to the people Facilitating referrals (PE coordinator role) through Schools, media, Internet</li> </ul>   |
| <b>Infrastructure</b>                             | <i>Environmental Factors<br/>Perceived or actual safety<br/>Technology dependence</i>   | <ul style="list-style-type: none"> <li>- Town planning: Fun spaces; Incidental activity; safe areas; car free spaces (e.g. town centres)</li> <li>- Fostering community spirit (again a role for the PE school-community coordinator)</li> </ul>  |
| <b>Participation</b>                              | <i>Family factors<br/>Work ethic<br/>Single parent/ low income families<br/>Income vs. programme cost<br/>Inclusiveness vs. targeting</i> | <ul style="list-style-type: none"> <li>- Physical Education Coordinator to bridge the family school gap</li> <li>- Affordable housing with safe play areas</li> <li>- Parenting programmes generating Eating and exercising together (PE Coordinator role)</li> <li>- Low cost high gain interventions for at-risk child</li> </ul>                                   |
| <b>Effectiveness and Evaluation of Strategies</b> | <i>Knowledge about effective interventions<br/>Lack of translational support for effective programmes</i>                                 | <ul style="list-style-type: none"> <li>- Specific interdisciplinary research to evaluate on intervention strategies; diet, physical activity, psychological, medical; social teams to work together (LOOK Project is one such model).</li> <li>- Government/ private enterprise support</li> </ul>  |
| <b>Financial Incentive-based strategies</b>       | <i>Cost of adopting healthy lifestyle is a barrier especially to low income families.<br/>Cost of interventions for “at risk” child</i>   | <ul style="list-style-type: none"> <li>- Legislation</li> <li>- Restricting food advertising; government assistance to offset high cost of fruit and vegetables.</li> <li>- Increased Medical rebates for appropriate preventative medicine procedures (blood tests, fitness and nutrition health care)</li> </ul>  |

- In **Figure 2** below we propose a schema which extends the concepts encapsulated in the NHS and Kaiser Permanente Pyramid of care proposed by Professor L. Baur as part of her separate submission to this Inquiry.

This model uses low cost identification and risk categorisation. This needs to be a non-medical approach for most, given that medical interventions in lower levels lack cost-effectiveness. Our strategy of introducing Physical Education Coordinators in Primary School is consistent with this approach. Historically, most programmes have been piece-meal and have arisen independently of each other. The inevitable mistrust of one group or service for another and the duplication and inefficiencies of the administrative infrastructure have resulted in unnecessary expense. A unified bipartisan approach is needed with seamless vertical and horizontal integration of care. We also need robust and reliable measurement procedures to determine who should enter each level given uncertainties surrounding some interventions.

Adequate resourcing of the two inner groups with appropriately qualified integrated interdisciplinary teams and clinics is critical. This needs to include appropriate governance and the infrastructure necessary to support these initiatives. All major hospitals require dedicated clinical services to deal with individuals in the inner circle with appropriate seamless mechanisms for transition from paediatric to adult services as individuals move from paediatric to adult care. Much more research is needed into efficacious interventions including the role of pharmacological and surgical interventions at the severest end of the spectrum in both age groups.

In addition to the necessary education of the community and the health profession we need to introduce incentives for health educators and medical professionals to prioritise physical activity and nutritional management as part of preventative health care.

### **References for Part E**

1. Booth ML, Chey T, Wake M, et al. Change in the prevalence of overweight and obesity among young Australians, 1969–1997. *Am J Clin Nutr* 77: 29–36 2003;
2. Lazarus R, Wake M, Hesketh K, Waters E. Change in body mass index in Australian primary school children, 1985–1997. *Int J Obes Relat Metab Disord*; 24: 679–684.2000;
3. Stamatakis E, Primatesta P, Chinn S, Rona R, Falaschetti E. Overweight and obesity trends from 1974 to 2003 in English children: what is the role of socioeconomic factors? *Arch Dis Child*; 90: 999–1004.2005;
4. Marketing Of food And Non-Alcoholic Beverages To Children. Report of a WHO Forum and Technical Meeting Oslo, Norway, 2-5 2006;
5. Dixon HG, Scully ML, Wakefield MA et al. The effects of television advertisements for junk food versus nutritious food on children's food attitudes and preferences *Social Science & Medicine* 65 1311–1323 2.

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**Public Health Initiatives**

- **Attitude**
  - Work ethic
- **Environment**
  - Town Planning
  - Car Free Space
  - Active Transport and more efficient public transport
  - Community Building
  - Safety
- **Education**
  - Workforce education
  - School physical education
  - Cradle to grave approach
  - Consistent message all levels
- **Nutrition**
  - no boundaries
  - cultural and group relevant message
- **Legislation**
  - responsible TV food advertising)
  - fat type/ content of takeaway food
- **Training of Health Professionals**
  - Community/ school physical/health educators
  - Medical/ nursing/ exercise physiology/ psychology
- **Evaluation and Research**
  - Effectiveness
  - Cost benefit
  - EVIDENCE IS CRITICAL.



**Figure 2. Targeting Australia's Health Problem**



Commonwealth Institute  
**LOOK (Lifestyle of our Kids) Study**

**We strongly urge the government to support the acquisition of solid evidence through applied research on:**

- (a) The immediate impact of physical activity and nutrition and physical education, on the physical and psychological health of Australian children and
- (b) The impact of Primary school physical education and physical activity on health in adolescence and adulthood.

**The Lifestyle of our Kids (LOOK) project acknowledges the financial support and encouragement of the Commonwealth Education Trust (London, UK) and the Bluearth Institute (Melbourne, Australia) for provision of the four-year long physical activity and education program used as our intervention .**