

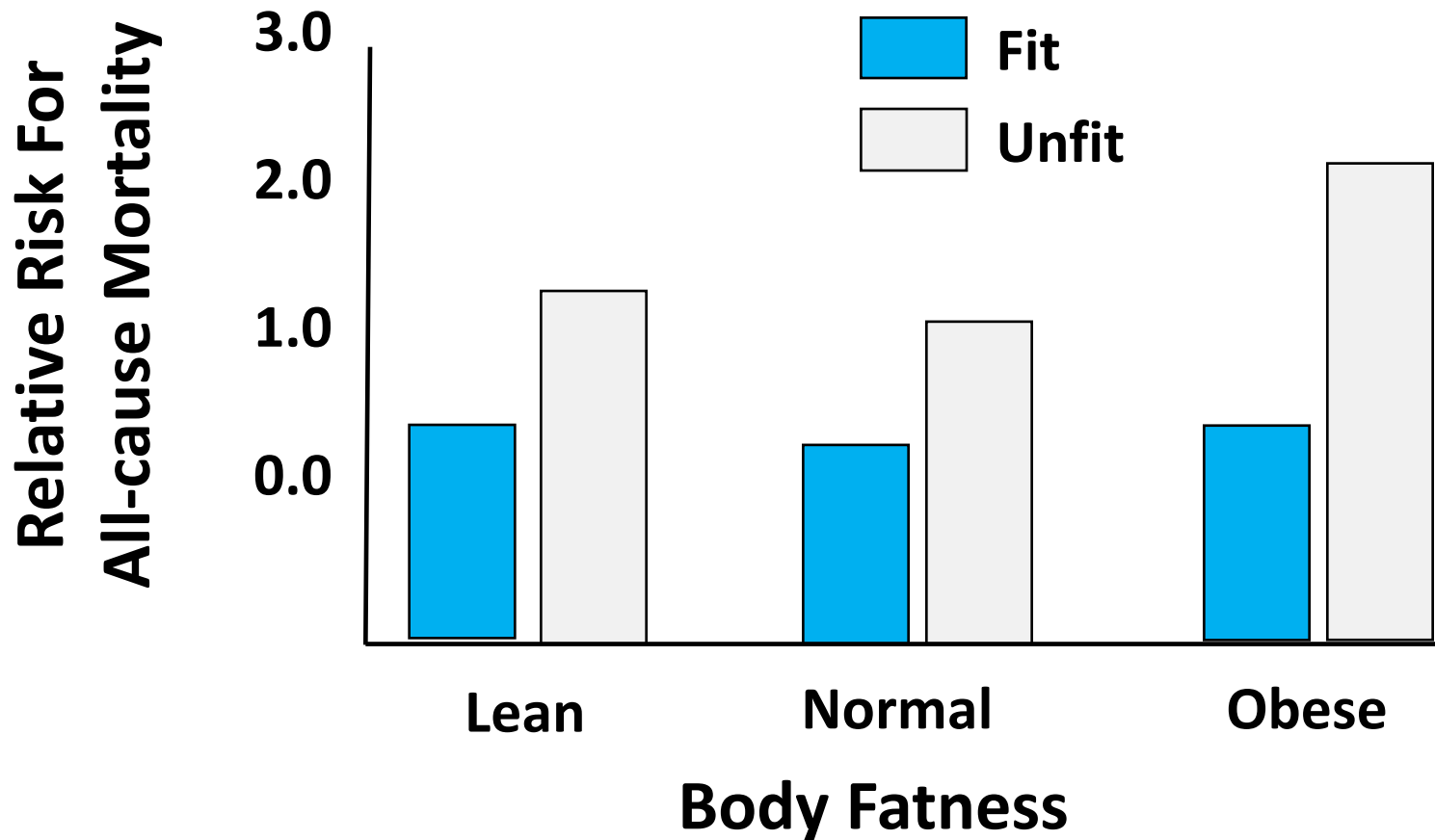


# Are our primary school graduates *physically literate?*

Evidence from the LOOK study

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# Aerobics Center Longitudinal Study



Lee et al. *Am. J. Clin. Nutr.* 69: 373-380, 1999.

## Vic Health study 2009

Seems to get it about right:

- \$1.2 billion *if we drank less alcohol*
- \$906 million *if more smokers quit*
- \$258 million *if more of us exercised*
- \$173 million *if more of us lost weight*
- \$92 million *if we ate more fruit and vegies*

## The LOOK study

- Is physical activity really that important in fast growing kids?
- Is physical education and sport in primary school children worth the effort and expense?

### And down the track...

- How important is lifestyle through childhood and adolescence to quality of life in old age?

# LOOK (Lifestyle of our Kids) Study – Primary School Phase

Telford RD et al The lifestyle of our Kids project : outline of methods J Sci Med Sport (2009)



# Some background findings:

**Do Australian children meet internationally recommended levels of physical activity?**

**Not even close...**

The recommended 1hr MVPA/day *was achieved by only:*

- **31%** of the 12 year-old boys
- **16%** of the 12 year-old girls

Telford RM et al. Longitudinal Patterns of Physical Activity. Int J of Behavioral Nutrition and Physical Activity (2013)

## Some background findings:

**How do our children shape up in overweight and obesity classifications?**

**Not too well...but typical of Australian kids**

- **23%** of the girls and **26%** of the boys *were classified as overweight or obese (by international BMI standards)*

*Telford RD et al. Determinants of Childhood Adiposity....Pediatric Obesity 2013*

Ok, so a lot of our kids are classified as too fat, and they don't move around as much as they used to, but are there early health implications?

Type 2 diabetes and cardiovascular disease are two forms of chronic disease known to be related to physical inactivity and obesity in adults

- Insulin Resistance is a risk factor for T2 D
- High LDL-cholesterol is a risk factor for CVD



## More background findings:

Is there evidence of elevated insulin resistance in our 12 year-olds, as they move into secondary school life?

Yes there is.....

At age 12, **23%** of boys and **31%** of girls had borderline or elevated insulin resistance .....and increased risk of Type 2 diabetes

Telford et al. Physical Education Can Improve Insulin Resistance: the LOOK Randomized Cluster Trial. Med Sci Sports Ex (2013)

## More background findings:

**What about cholesterol? Surely we can't be sending our primary school children into high school with elevated LDL cholesterol?**

**Yes we can unfortunately.....**

In our 12 year-olds: **19.7%** of the boys, and **16.3%** of the girls had blood LDL-cholesterol levels considered to be at risk  
(Using the American Heart Association classifications)

## Now the \$64,000 question.....

Could a well-designed physical activity program/PE/sport in primary school make a difference to the incidence of obesity, and prevalence of risk factors for Type 2 diabetes and CVD in our children?



## The LOOK Study Design

- Commenced in 2005
- 850 participants
- 29 schools
- Multiple research areas
- Longitudinal design
- Annual measurements from age 8 to 12 yrs
- Currently conducting follow up measures in the 16 year olds (2013)

## LOOK STUDY DESIGN

**A 4-year** randomized cluster  
intervention study in 29 primary schools  
(853 children)

**Intervention Group PE**  
13 schools

PE taught by  
Specialist PE teachers  
(Bluearth Foundation)

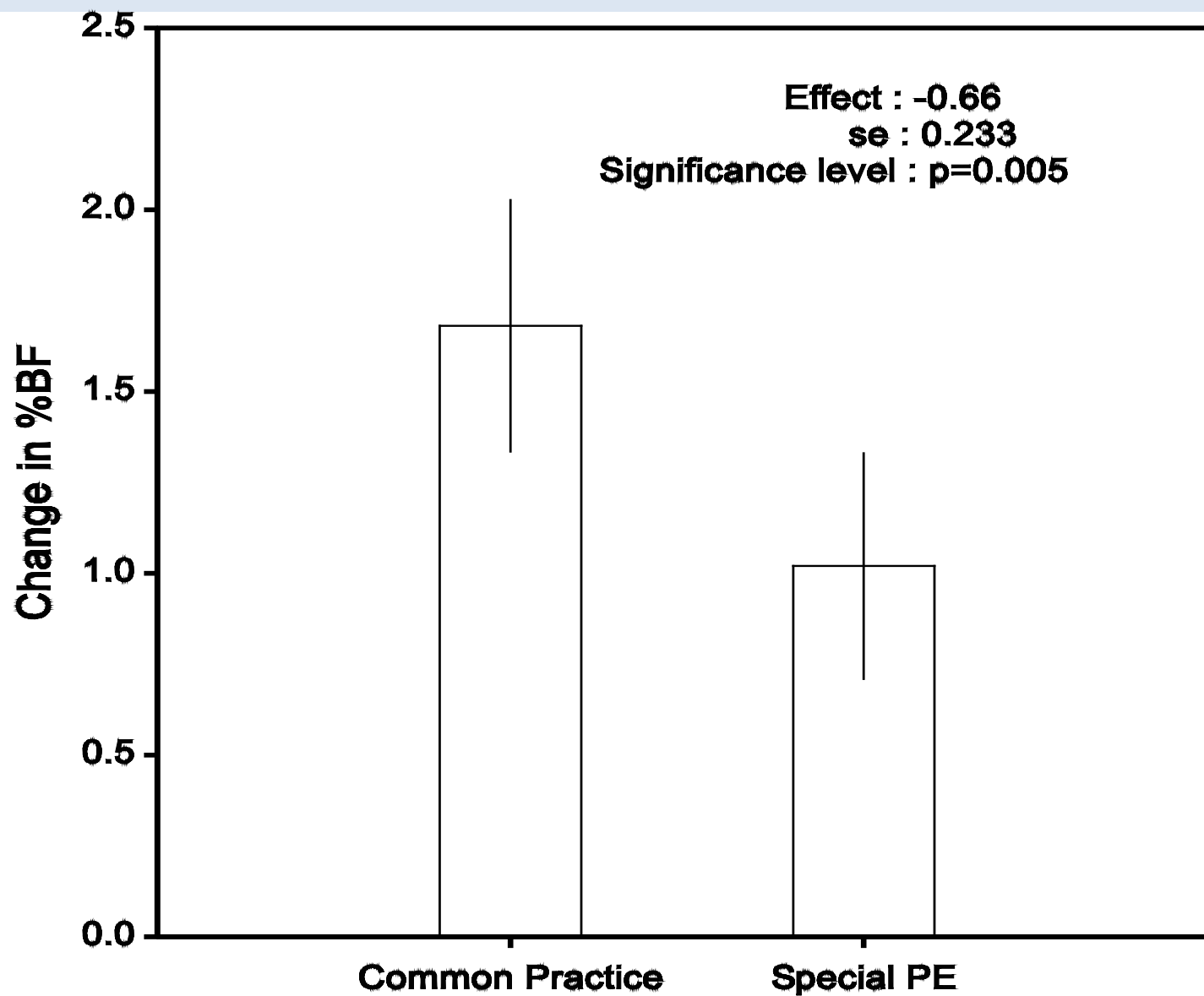
**Control Group PE**  
16 schools

PE taught by  
Classroom teachers

## Some results

Let's look at % body fat first....

Can well designed PE taught by trained PE specialists put the brakes on the increase in body fat in rapidly growing youngsters?



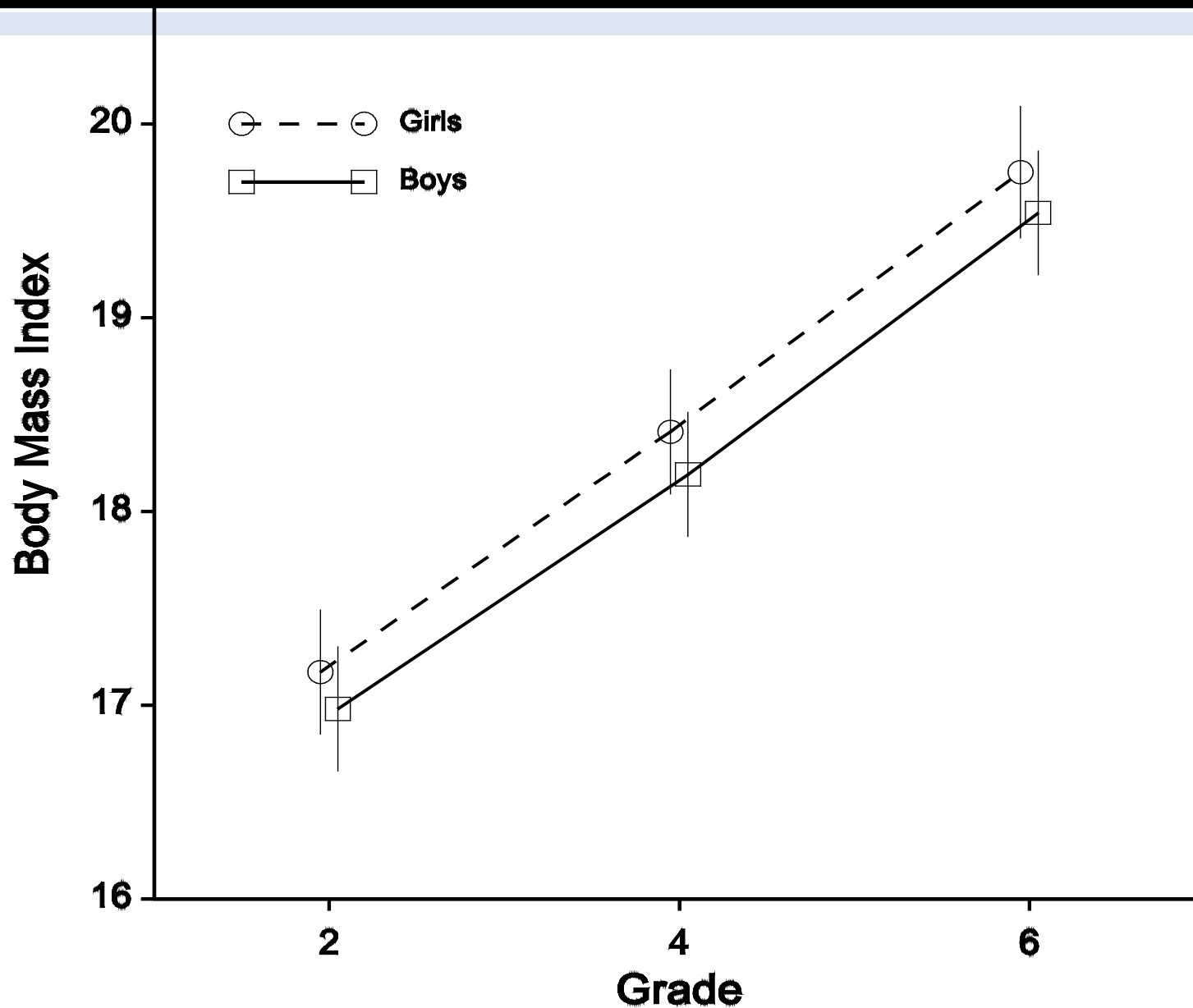
# But why have so many studies failed to show this?

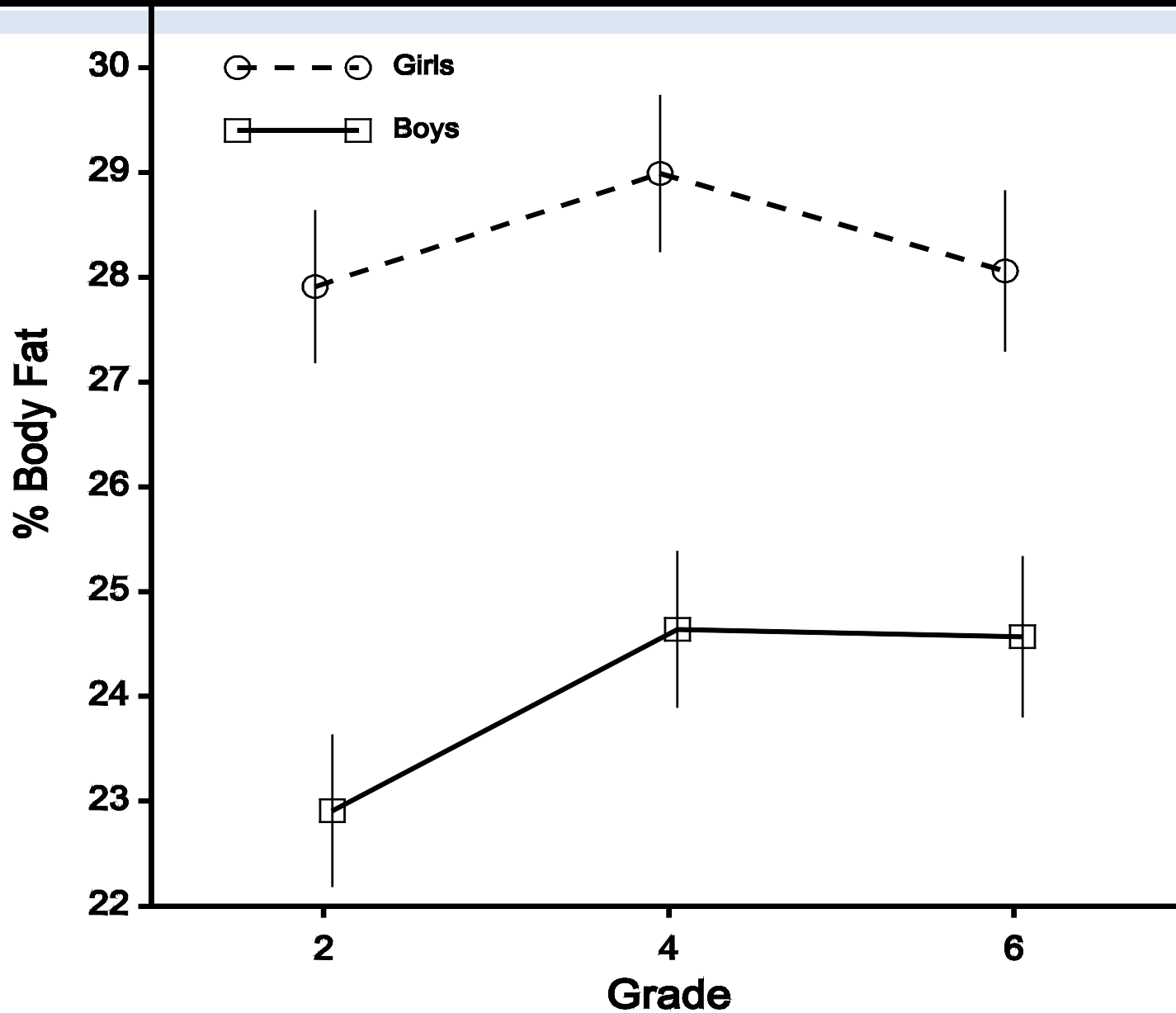
There are probably many reasons.....type of intervention, duration of intervention, numbers of clusters of schools, numbers of individuals, objectivity of the measurement of adiposity..... and by the way...

Here is one common measurement that has seriously flawed more than just a few published longitudinal studies....

BMI ....







## Some findings

So far, we've seen that sustainable, well constructed PE, as distinct from a training program, can make a beneficial impact on adiposity

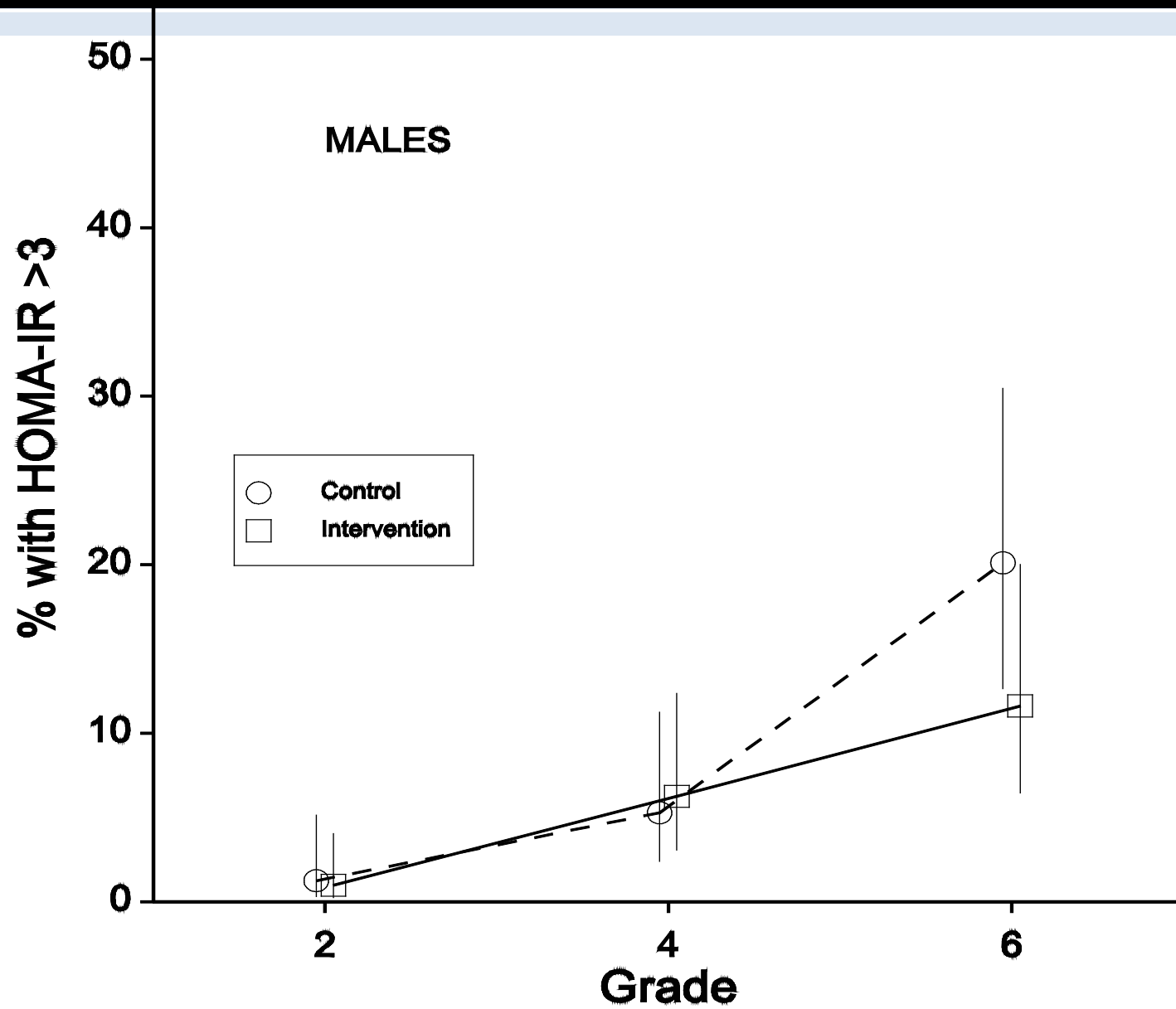
What about on the incidence of insulin resistance in primary school kids?

## Insulin Resistance (IR)

**With no differences in IR at baseline....**

by grade 6 the intervention had lowered IR by 14% (1-31%) in the boys and by 9% (5-26%) in the girls

and % children with  $IR > 3$ , a cutoff point for metabolic risk, was lower in specialist PE group than control, at 22% v 31%,  $p=0.03$ .



# What about Cholesterol?

**Did the specialized PE program have an effect on those elevated values?**

**Yes, it did**

With no significant difference at baseline, by grade 6 (age 12) there was a significantly lower incidence of elevated LDL-C in the intervention group compared with the control group (14% vs. 23%,  $p=0.02$ ).

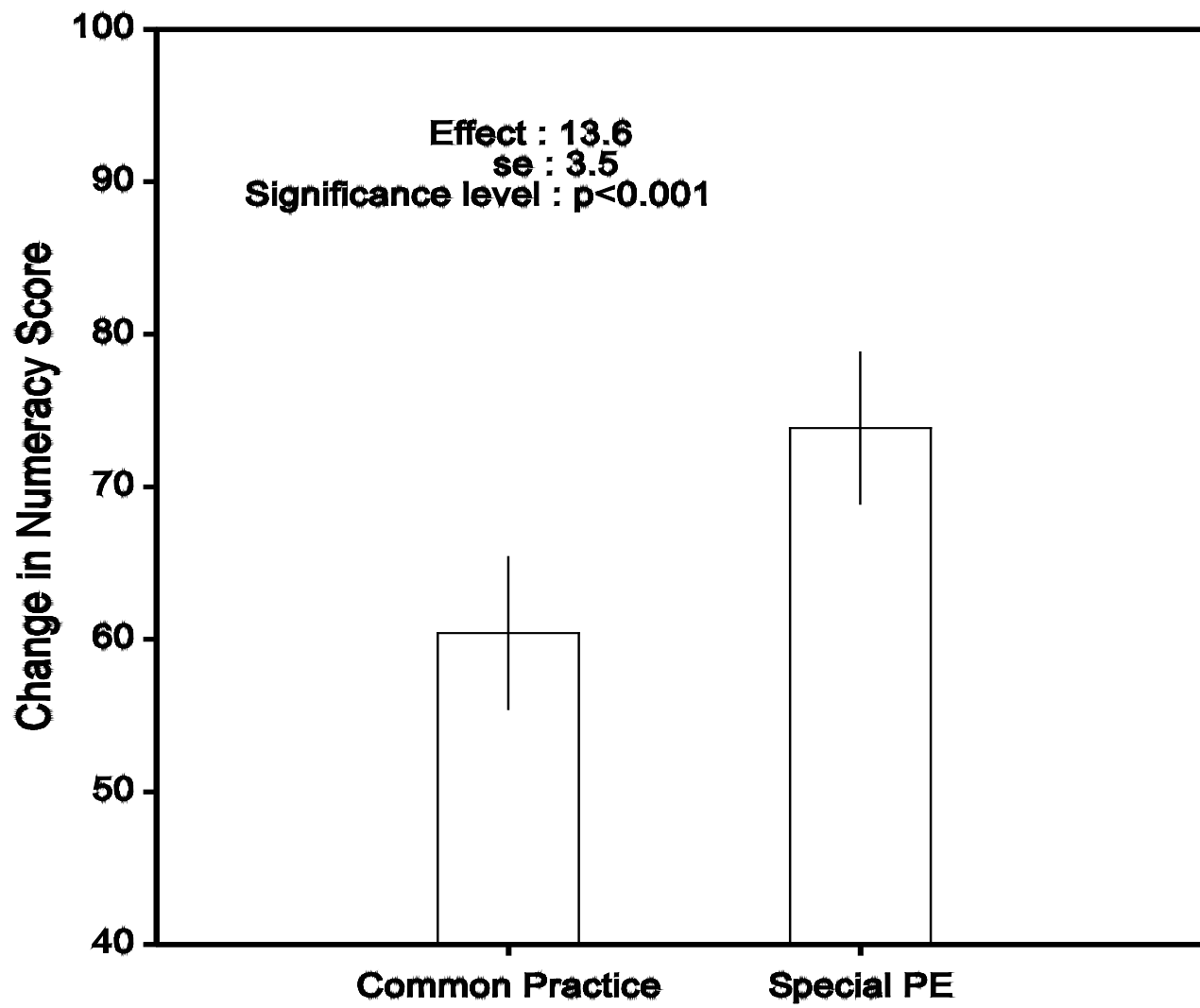
Telford RD et al. Physical education and Blood Lipid concentrations in Children: the LOOK randomized cluster trial PLOS One (2013)

**“Fair enough, but we only have so much time at school and literacy and numeracy development is a priority...NAPLAN may not be a perfect academic assessment but my school needs to improve and I really can’t afford to miss any more valuable class time by taking PE and sport....”**

**But is that right? Is PE and sport really detrimental to learning? We can only really tell in a randomized controlled trial....**

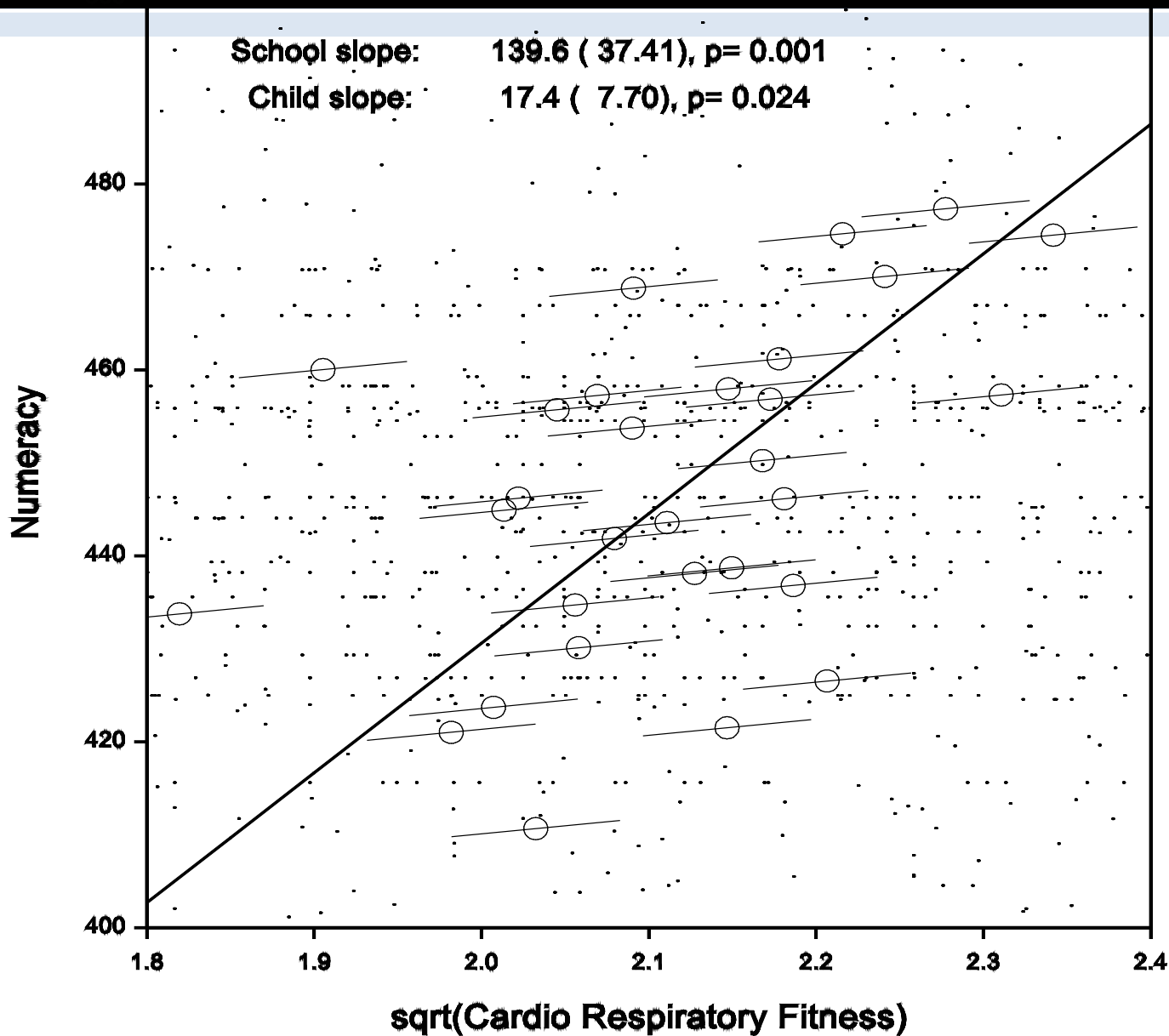
Inn our RCT we measured the *improvements* in NAPLAN in all the LOOK children between grade 3 and grade 5...those who took the Bluearth specialised PE classes and those who did not....





- Interestingly, even before teachers knew we were going to explore the effect of the PE intervention on NAPLAN scores....
- Some classroom teachers with the Specialist PE classes commented that they thought the children were concentrating better in class..

- **If PE can make a difference to NAPLAN...**
- **do “fitter” schools have better literacy and numeracy?**
- **Surely not, or more schools would be getting in on the act!**

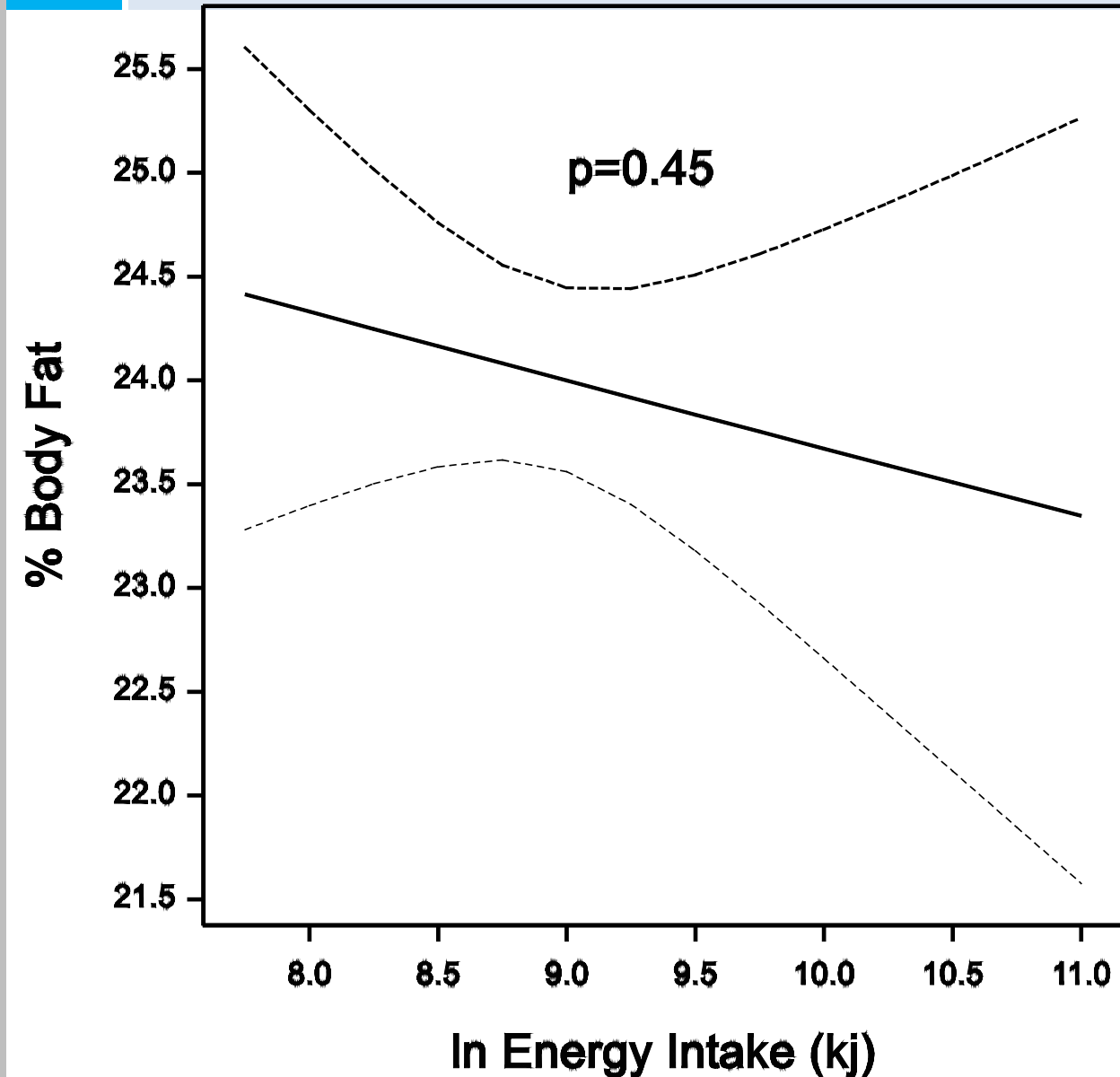


**Back to the Obesity issue.....because it's the buzz topic, and junk food and sugar is on the tip of everyone's tongue**

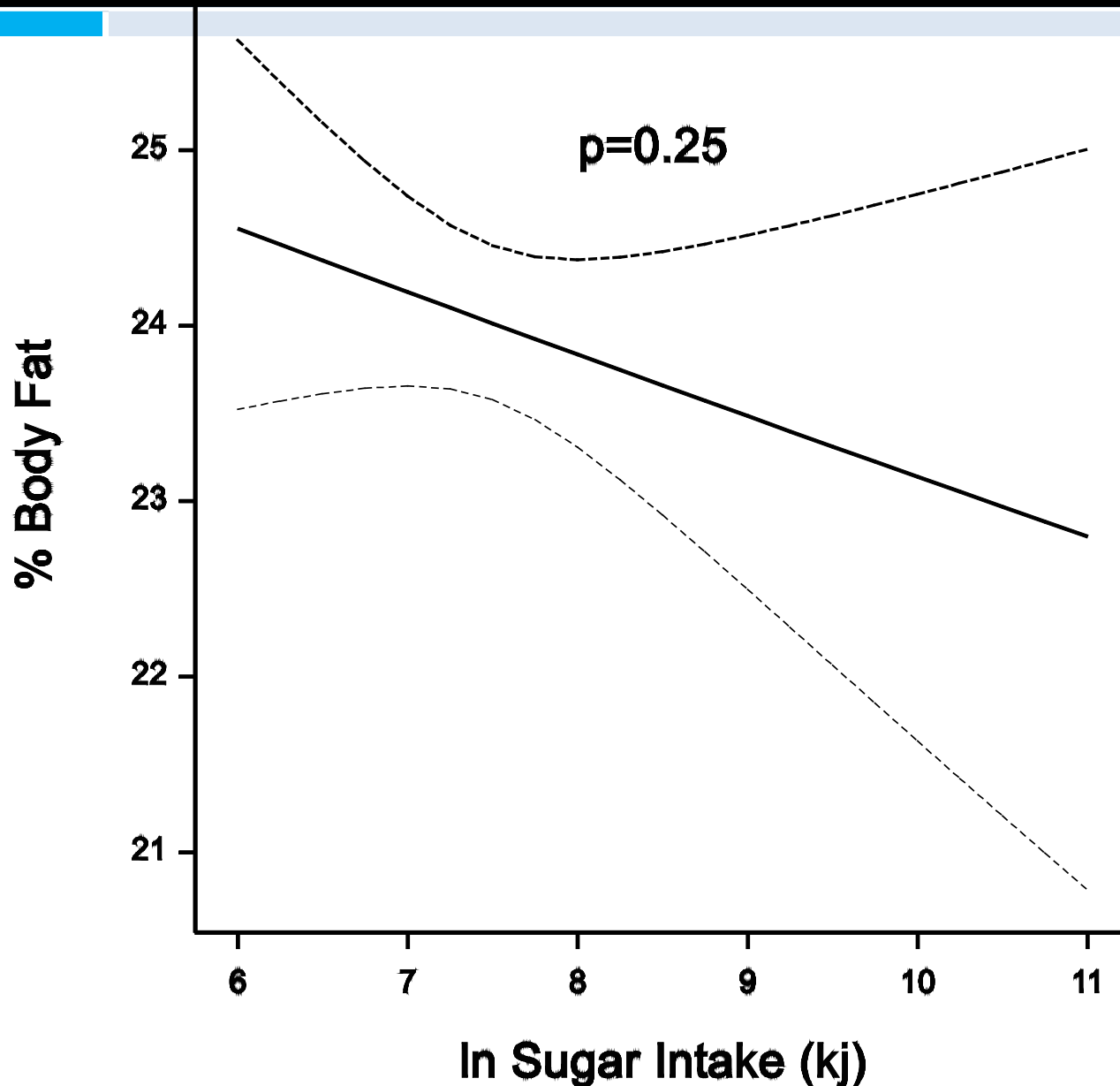
**So we measured kilojoule, sugar and fat intake at age of 8,10, and 12y to see if we could throw some light on what actually drives body composition in *young healthy* children**

## What do you think?

- Too many Calories ?
- Too much sugar and soft drinks?
- Too much fat?
- Too little physical activity?
- All of the above
- None of the above, it's just genetics

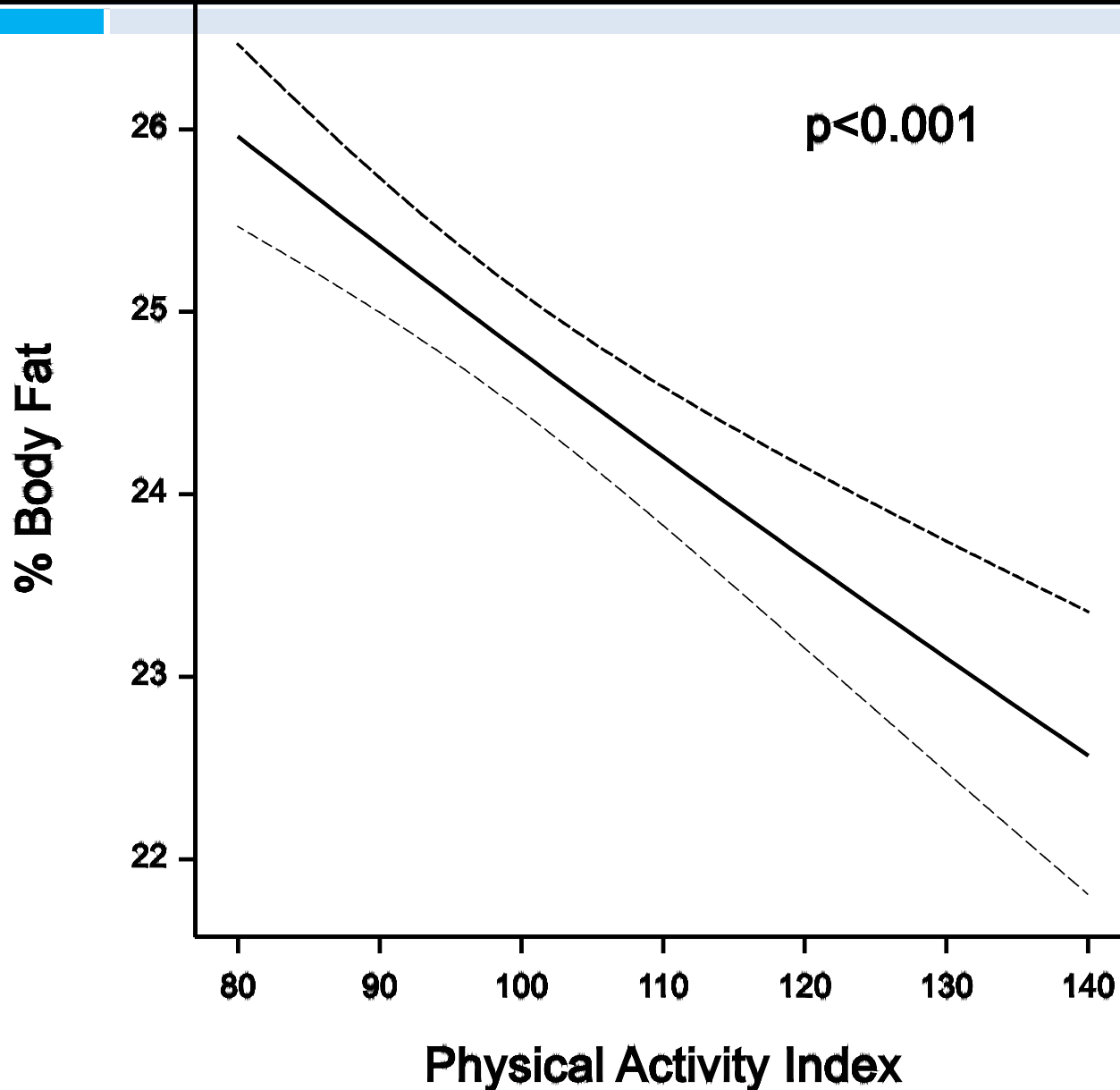


**What's this? The fatter kids didn't eat more? Could this really be true?**



**And fatter children actually tended to eat less sugar i.e. leaner children tended to eat more sugar**



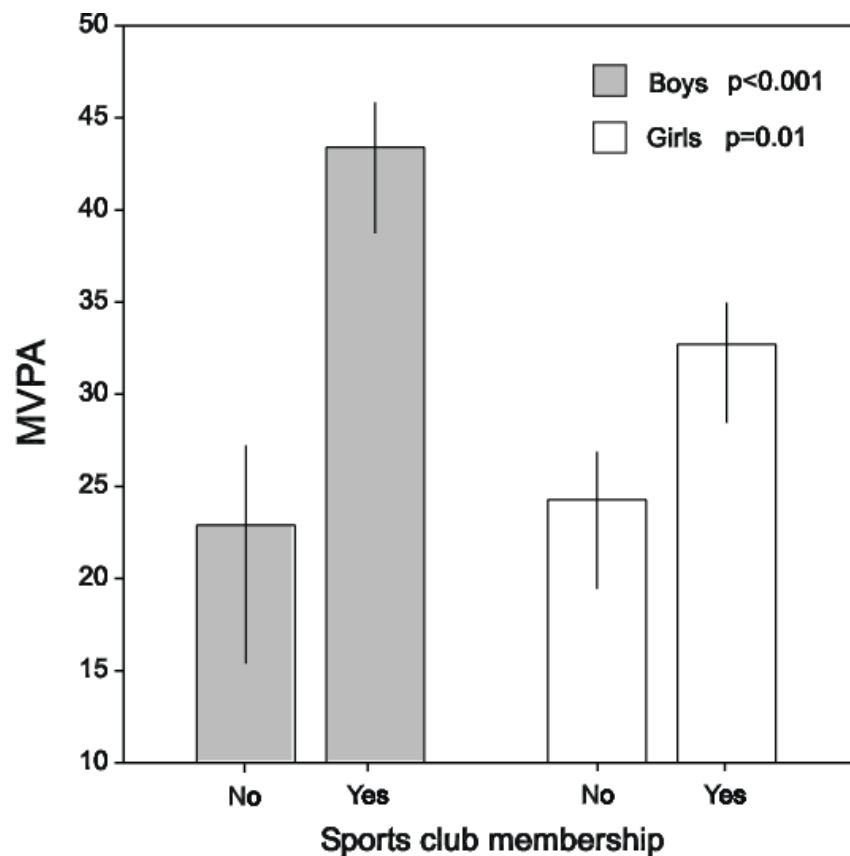
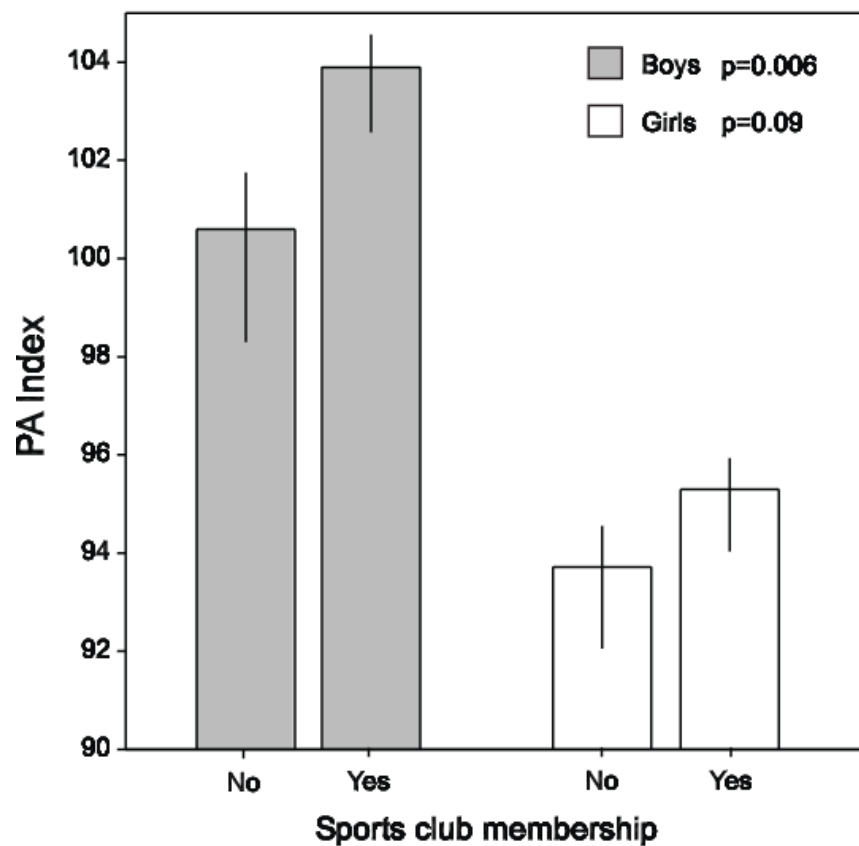


The simple explanation:  
fatter children simply don't move as much as the leaner kids

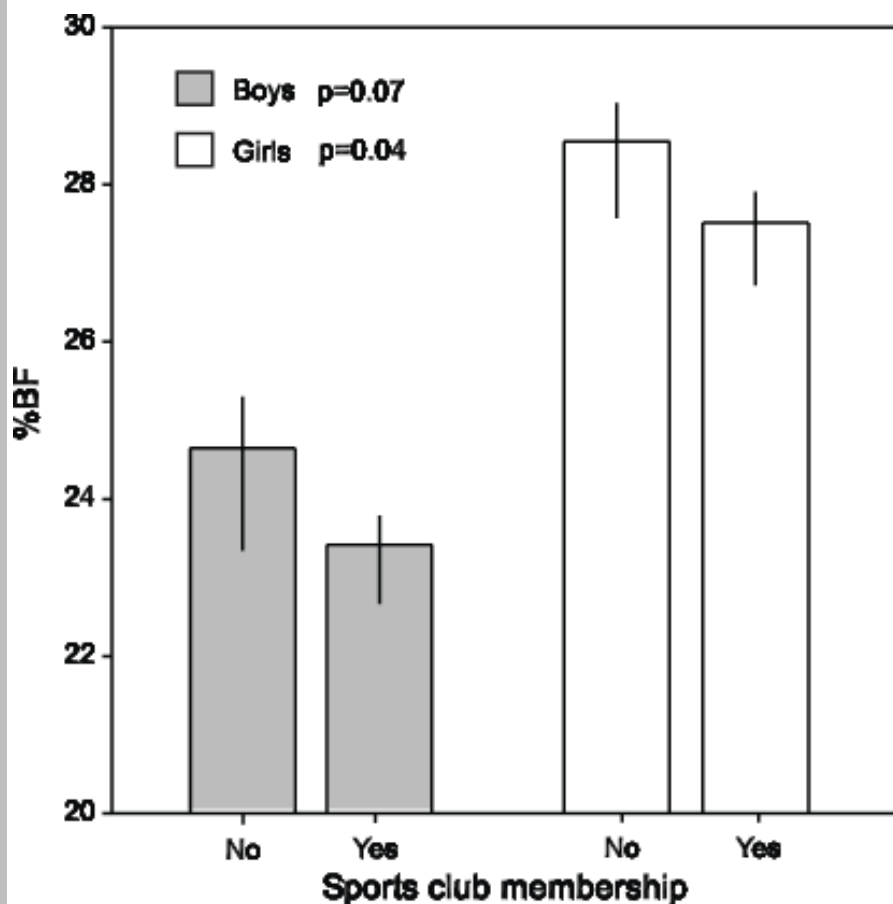
But try telling that to those with preconceived dietary notions!

**Sport....Is all that taxiing around on the weekend to the courts and fields and pools really worth the effort?**

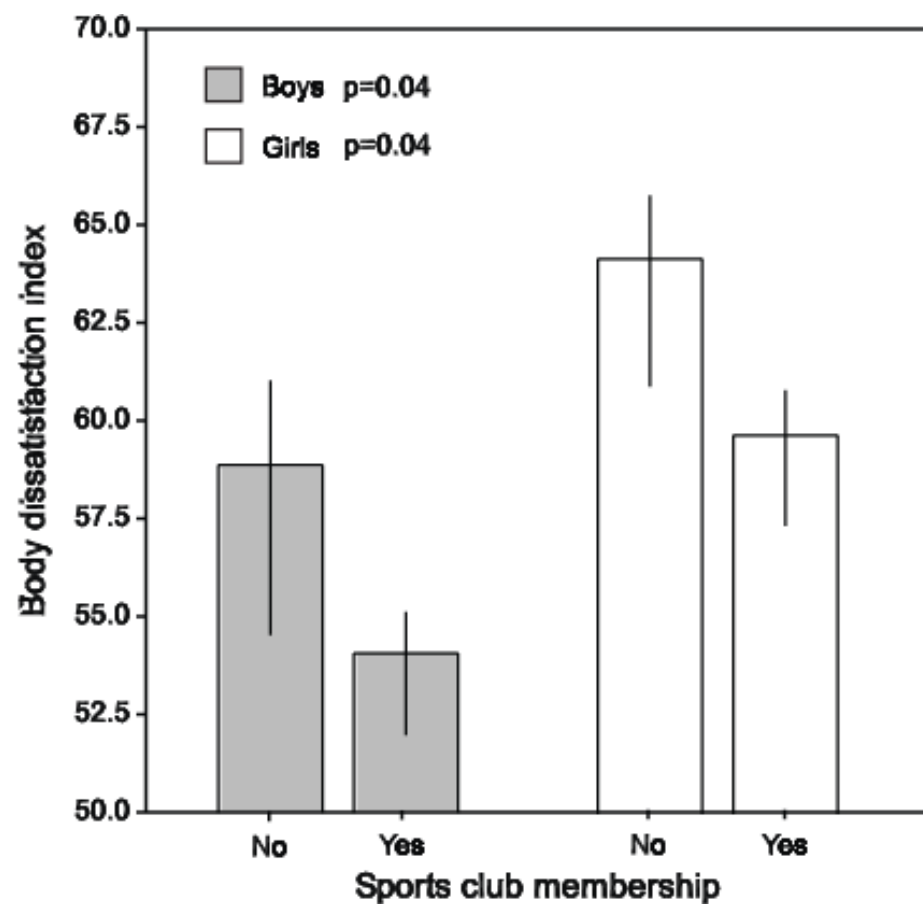
## Well.....here's the effect on daily average physical activity



## on %Body Fat



## on Body Dissatisfaction



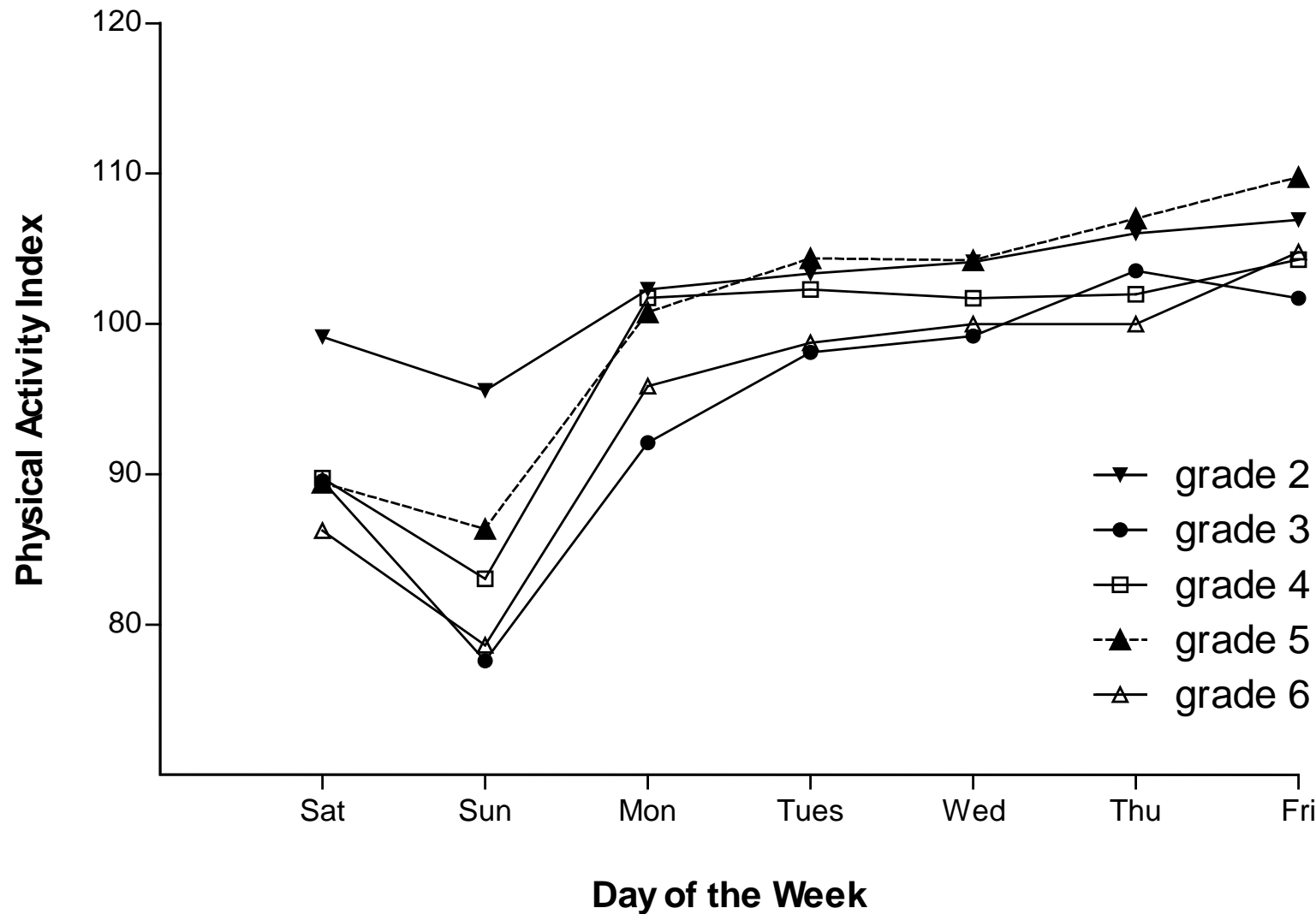
## ALL IN ALL? **A no-brainer.**

**Full marks to the taxi driving parents! You are doing your kids a huge favour.**

**BUT**....We have to have a quiet word to our coaches about their responsibilities to physical literacy on competition day.. It's not just about winning!

Let me show you why.....

## It's a lazy weekend...every year...



## Final Comment

- ***Physical literacy is vitally important to the health, physical and psychological development of children.***
- **..and because it usually doesn't just happen naturally in our 21<sup>st</sup> century kids**
- ***Parents, teachers and coaches of junior teams play a vital roles in developing a child's physical literacy that may last a lifetime.***

## Where to now?

**Proven:** Well-designed Sport and PE is vital to the health and development of 21<sup>st</sup> century children

**Problem: In a word... Funding.** Putting a PE teacher in every public primary school might not be economically realistic, at least in the next decade or so....and anyway, one PE teacher in an average size primary school would go nowhere near catering for the 30 min/dat of PE set down in many modern s curricula.



It seems that the future of PE in the short and medium term in public schools in most Australian jurisdictions is in the hands of the generalist classroom teacher

But it is evident that the majority of multi-tasking classroom teachers, irrespective of how much PE training they may have received at uni, require assistance to approach the effectiveness of a trained specialist

And the evidence for this you have seen!

## A proposal.....

**What if generalist teachers had access to a trained physical educator whose role was to provide assistance with the systematic planning and delivery of lessons through all grades?**

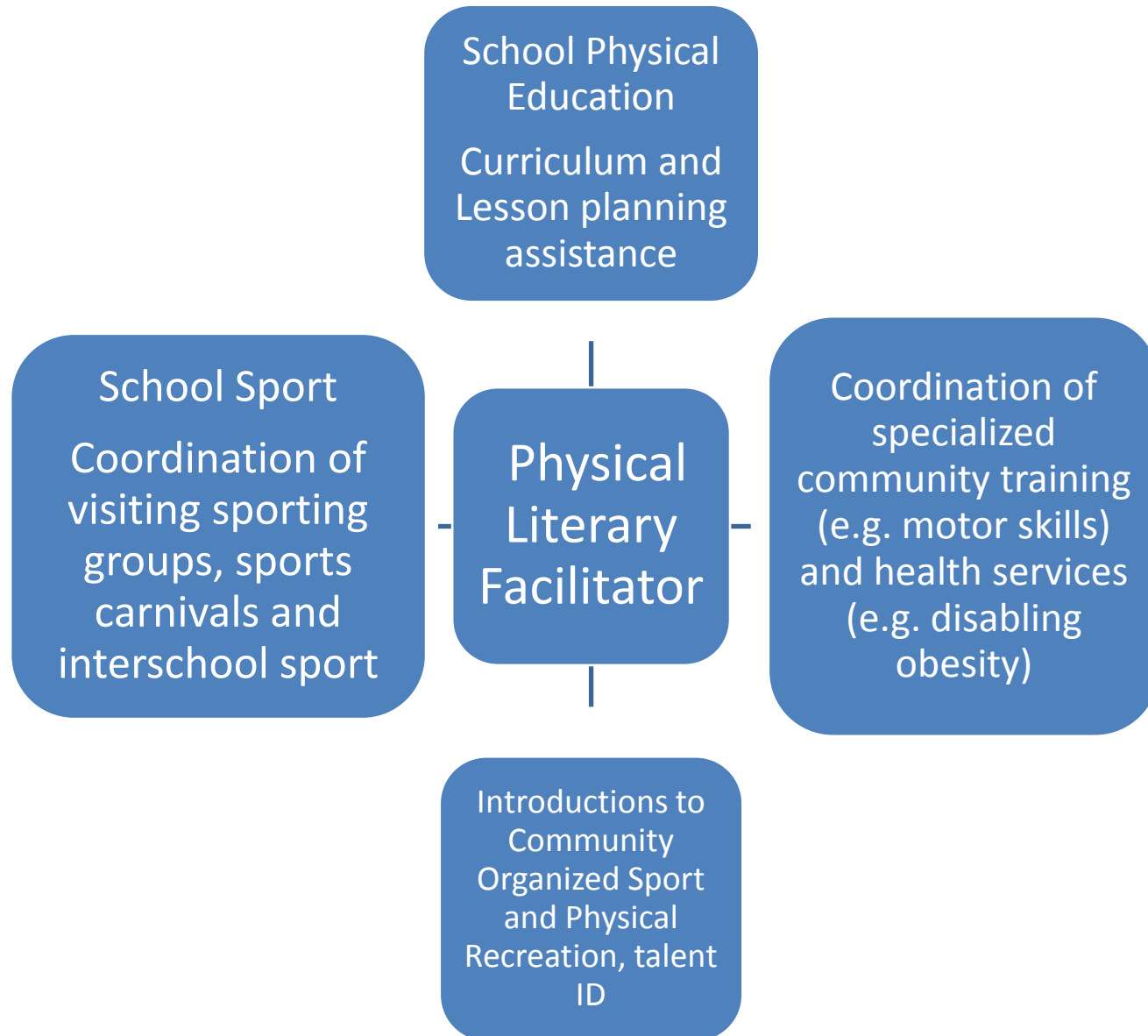
**And what if this person, who would not be tied down with daily teaching commitments, was given further responsibility to link the school and the community with underlying objective being to facilitate increased physical literacy?**

**This person might be associated with a group of 5-8 schools, depending on size and demographics**

**The school/community**

**Physical Literacy Facilitator....**

Whose role might look something like.....



Worth trialling?