

# Physical literacy in primary school children



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# Objectives

- Detail the current obesity rates, physical activity levels and recommended guidelines for primary aged school children
- Findings of a recent study we have conducted
- Suggest why focusing on movement training skills (MTS) may be a **piece in the jigsaw** towards changing the future health of the nation, keeping teenagers out of trouble and improving the future of British sport

# Background



- The NCMP (2007/08) revealed that 26.4% of Reception and 39.7% of Year 6 children in Coventry are overweight or obese
- National average: 25.4% and 37.5% respectively
- Debate for the causes of increased pediatric obesity



- Evidence indicates that physical inactivity plays a contributing role (Hills *et al.*, 2007)
- Opportunities for children to be active are declining (car journeys to school have doubled, safety outside, computer games, money etc)
- Time devoted to PE = 2 hours/week
- Activity during these sessions?

- Only 1/3 of UK children aged 2-11 years old meet physical activity guidelines
- Guidelines have changed over the years:
  - 30 min of moderate- vigorous activity per day (ACSM, 1988)
  - 60 min/day and twice a week exercise to improve bone health, muscular strength and flexibility (Biddle *et al.*, 1998)
  - 90 min of moderate intensity activity per day (Anderson *et al.*, 2006)

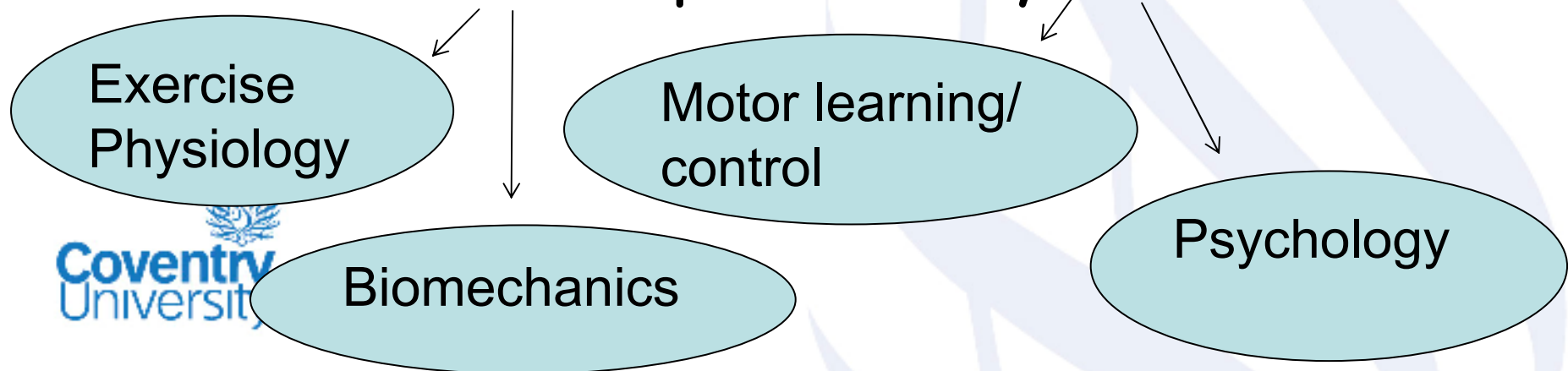
- How do we reverse the trend???

- Exercise participation declines from childhood to adolescence (*Gorely et al., 2004*)
- Fitness in adolescence is closely related to fitness in adulthood (*Twisk et al., 1995*)
- Adolescents not participating in regular sport/activity are possibly more likely to hang around on the streets
- Targeting adolescent years= too late!!!
- Need to target **primary school children.**

# Physical literacy

- Term under constant review
- Literacy thought to include components of knowledge, understanding, thinking, communication & application (Mandigo *et al.*, 2003)
- To be physically literate a person moves with poise, economy and confidence across a variety of activities (Whitehead, 2001)
- More recent definitions include importance of culture, self-esteem, motivation and social responsibility

- The development of physical literacy starts with the development of fundamental motor skills (LTAD model)
- Motor development models suggest many levels through which a child must progress to achieve motor proficiency...



- Mastery of fundamental motor skills/ movement skills provides the foundation for the development of sport specific skills (Haubenstricker & Seefeldt, 1986)
- Motor skill proficiency tracks with childhood (Branta *et al.*, 1984) therefore do children with better motor skills become more active teenagers?? And thus adults??

# The study

- Does a 15 min active warm-up (including MTS) impact upon agility performance in primary school children?

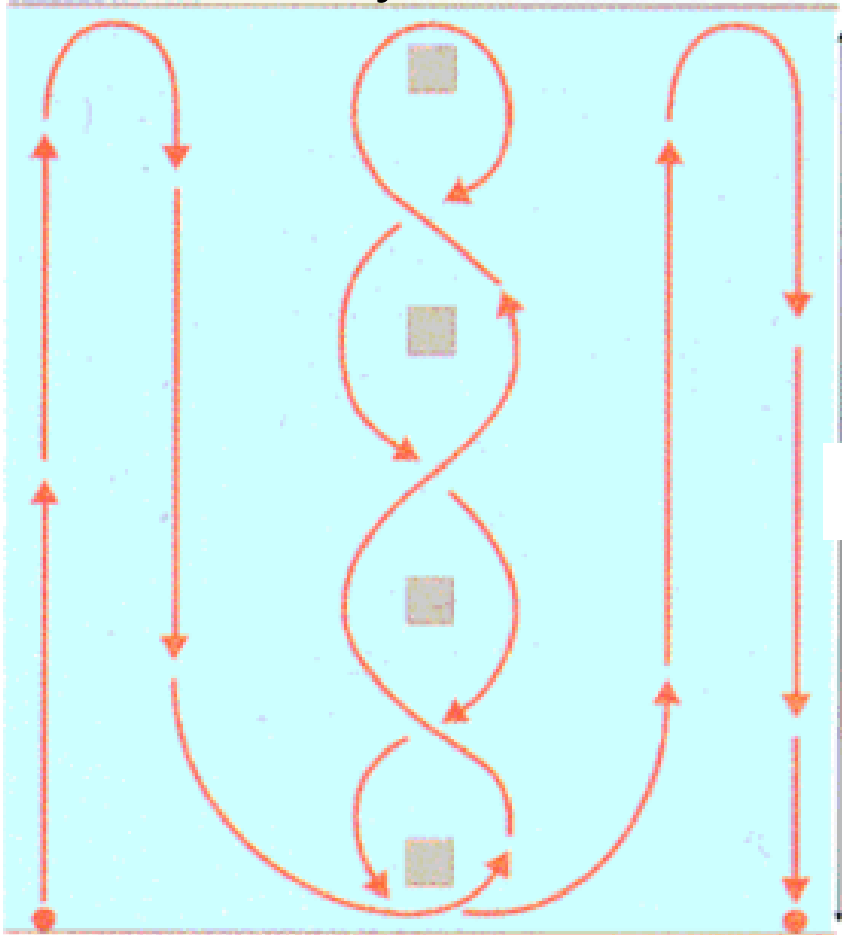
# Methods

- 29 year 5 (Mean age  $9.6 \pm 0.5$  years) children from a local primary school
  - Quickest of 3 Illinois agility tests recorded and ranked in order (quickest to slowest)
  - Class split into 2 equal ability groups
  - One group received 15 min warmup at beginning of every PE lesson for 4 weeks (8 sessions)
  - Control group performed normal PE lesson
  - HR continuously recorded for 3 children in each group
- 2 factor ANOVA analysed the results

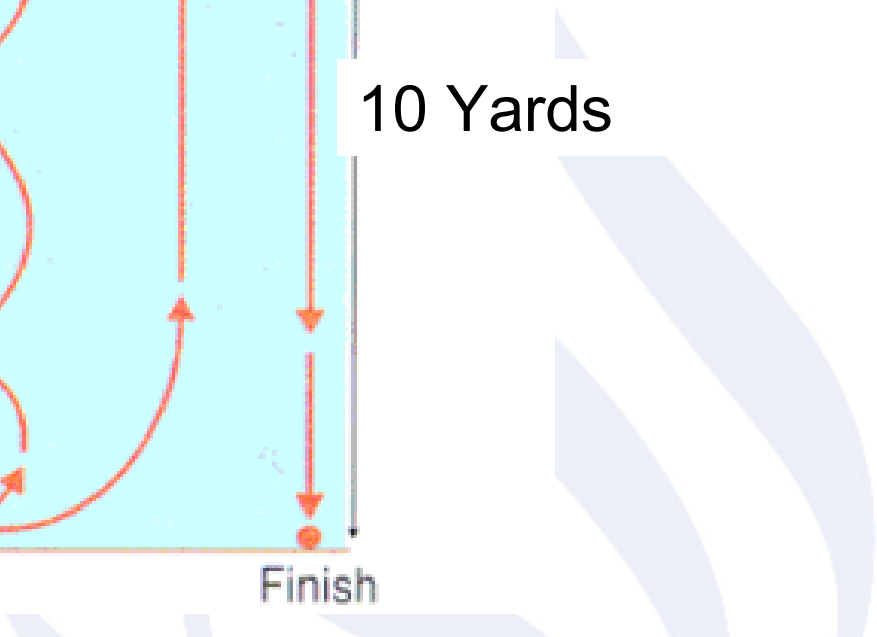


5 yards

Far line



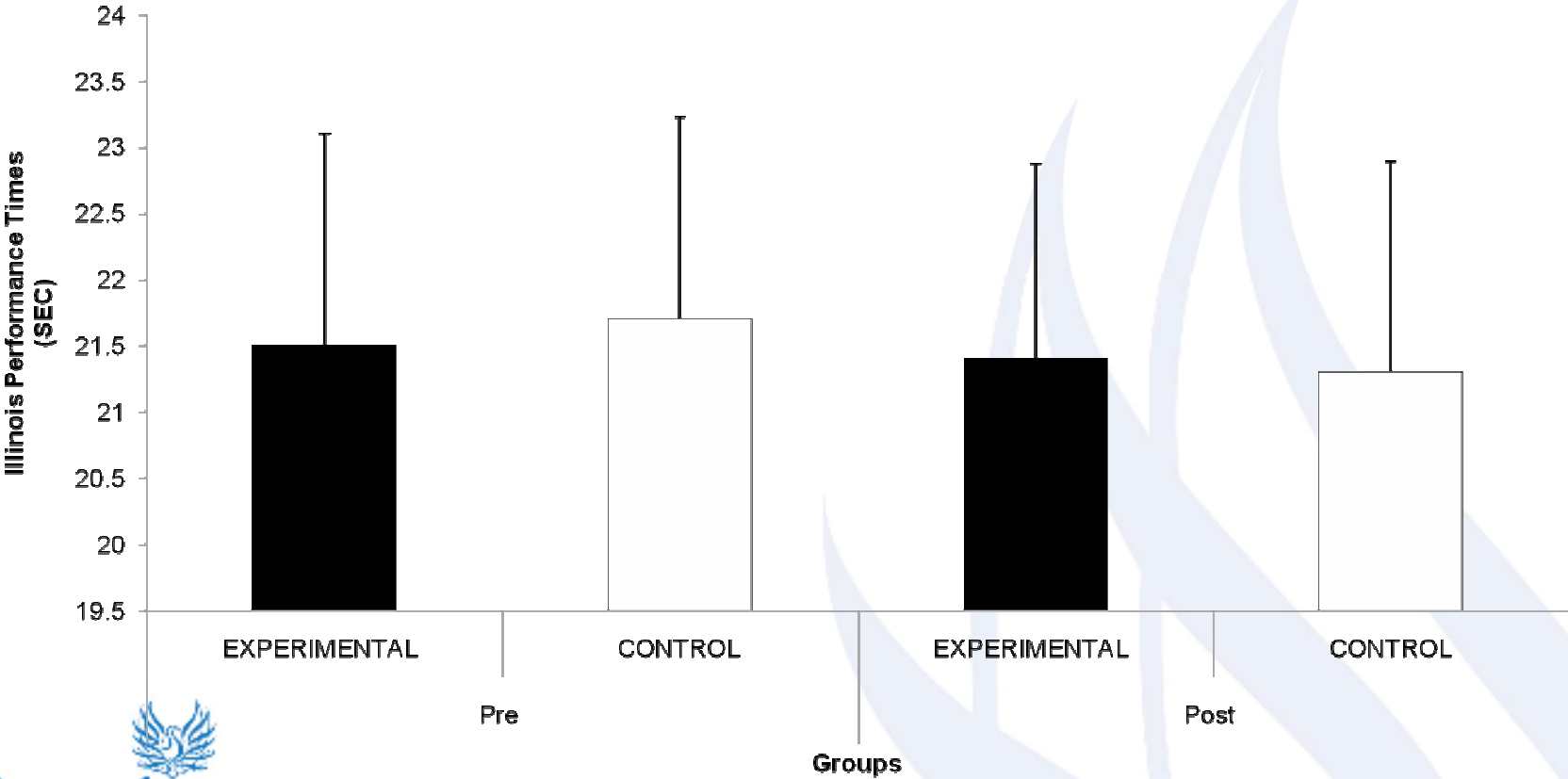
10 Yards



# Results

- No significant differences ( $P > 0.05$ ) in agility performance times within or between the experimental and control groups both pre ( $21.5 \pm 1.59$  and  $21.7 \pm 1.52$  sec respectively) and post intervention ( $21.4 \pm 1.47$  sec and  $21.3 \pm 1.59$  sec respectively)

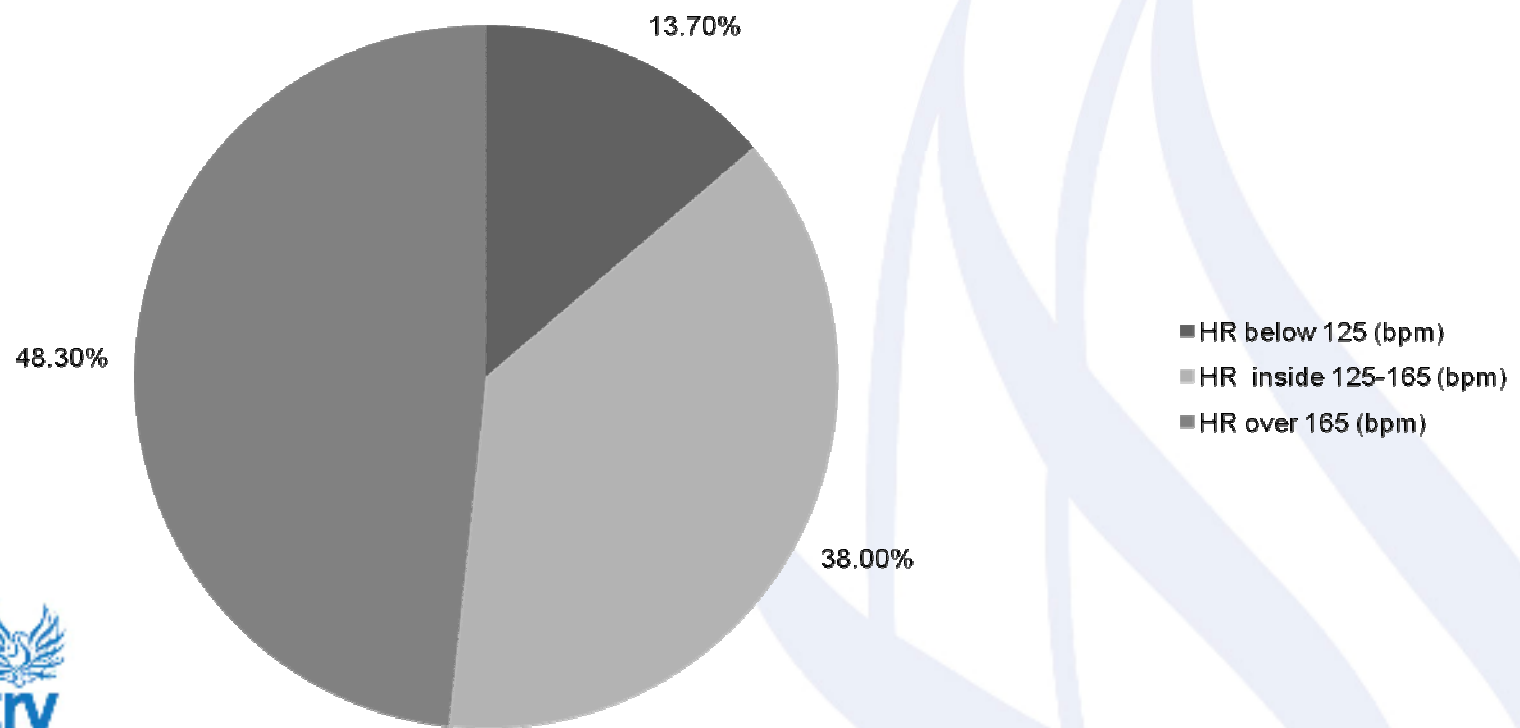
# Illinois Agility Test



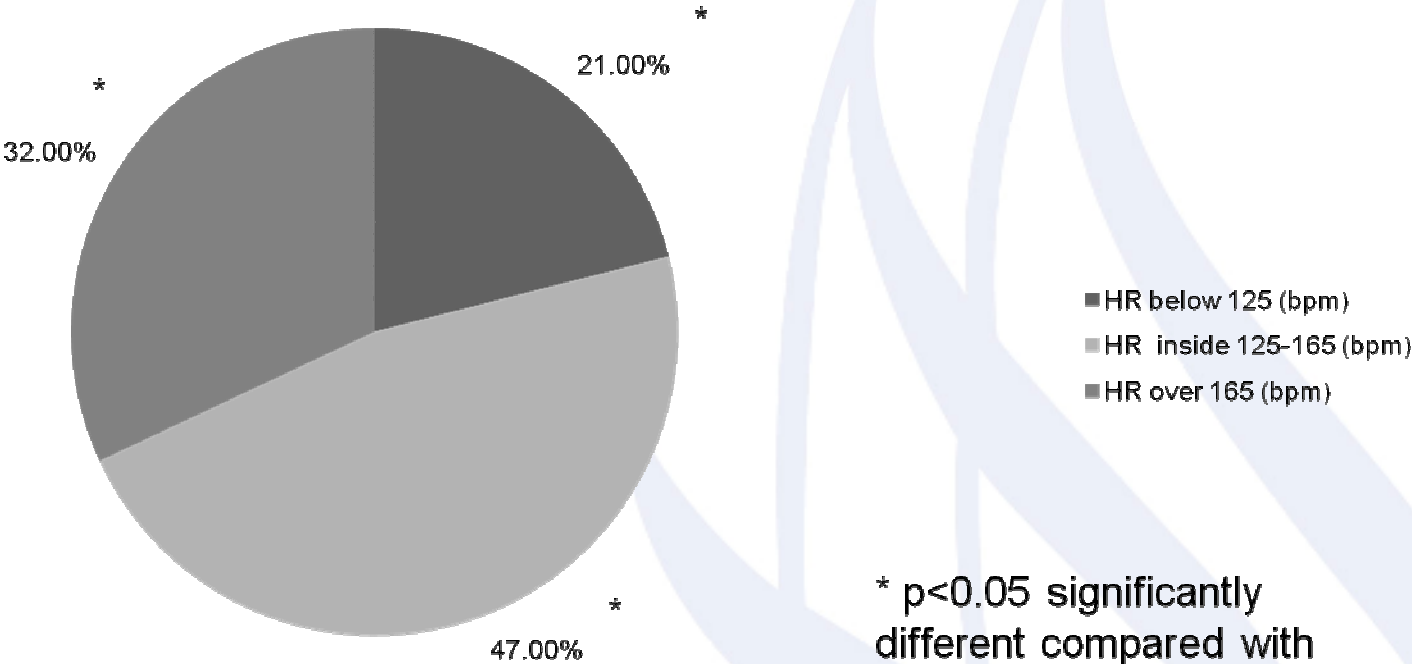
# Heart rate data

- The percentage of time spent in various HR zones (<125 beats.min<sup>-1</sup>, 125-165 beats.min<sup>-1</sup> and >165 beats.min<sup>-1</sup>) were calculated, during MTS 13.7%, 38% and 48.3% of time was spent in each HR zone respectively, compared with 21%, 47% and 32% in PE.

## Heart Rate Intensity Zones - Experimental



# Heart Rate Intensity Zones - Control



\* p<0.05 significantly different compared with experimental group

# Conclusions

- 8 x 15 minute sessions of MTS is not adequate to see improvements in agility performance of primary school children
- Heart rate is significantly higher for a longer period of time during the MTS warm-up ( $P < 0.05$ ) compared with normal PE warm-up

# References

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- Barnett, L.M., Van Beurden, E., Morgan, P.J., Brooks, L.O. & Beard, J.R. (2008) Does childhoods Motor Skill Proficiency Predict Adolescent Fitness? *Medicine & Science in Sports & Exercise* 40 2137-2144
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- Hills, A., King, N., & Armstrong, T. (2007) The contribution of physical activity and sedentary behaviors to the growth and development of children and adolescents: implications for overweight and obesity. *Sports Medicine* 32 533-545
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Thank you for listening



# Warm-up sessions

- Session 1: Running mechanics
- Sessions 2-8:  
7 min drills (across 10 m track) including walking, skip, butt flick, fast feet, high knees, strides, turning.  
8 min games developed to increase HR, work on skills to improve speed and agility