APPENDIX 1

METHODS

Potential confounders

Anthropometry

Height (cm), weight (kg) and waist circumference (cm) were measured with participants wearing normal light sporting clothes. Body mass index (BMI) was calculated using the following formula: $weight/(height/100)^2$. BMI was then dichotomized into underweight/normal weight and overweight/obese using sex- and age-specific thresholds for overweight.[1] BMI has been criticized as a measure of overweight in the younger population, so an alternative measure waist-to-height-ratio which is more sensitive to predicting lifestyle disorders such as diabetes and cardiovascular diseases [2] was also included and calculated by the formula: waist circumference/height. All equipment used in the assessments is described in detail elsewhere.[3]

Physical fitness

Firstly, a 10x5 m shuttle run test (sec) was used to measure sprint-agility.[4] Currently, there is no available study on the reliability of the 10x5 m shuttle run test, but the reliability for a similar version (4x10 m) has been shown to be acceptable in the same age group.[5, 6] Then a handgrip strength test (kg) was performed twice by using the dominant hand and the highest value from the two attempts was used in the analyses. Aerobic fitness was measured by the Andersen test (m), which is a 10-minute intermittent running test (intervals of 15 sec running, 15 sec rest) where the total running length is a valid estimate of VO_2max.[7] The handgrip strength test and Andersen test have been shown to be reliable.[8-10] The requisite equipment and test procedures are described in detail elsewhere.[3]

Contact and collision sport

The study participants were asked about their participation in 25 common Danish sporting activities for example "Have you participated in basketball during the past year?" with response options "yes" or "no". It was possible to indicate participation in more than one sport and there was an open field for adding additional activities they had participated in during the past year. Sporting activities that involved physical contact with other players or having elements of collision where players could fall hard to the ground were categorized as contact and collision sports, e.g. football (soccer) and martial arts. Examples of non-contact or collision sports are golf and badminton. Classification of contact and collision sports was based on a list from Committee on Sports Medicine and Fitness and included also the following activities from the list of sports activities with "limited contact": handball, gymnastics, skateboard, rollerblading, and BMX cycling.[11]

REFERENCES

1. Cole TJ, Bellizzi MC, Flegal KM, Dietz WH. Establishing a standard definition for child overweight and obesity worldwide: international survey. *BMJ* 2000;320(7244):1240-3.
2. Browning LM, Hsieh SD, Ashwell M. A systematic review of waist-to-height ratio as a screening tool for the prediction of cardiovascular disease and diabetes: 0.5 could be a suitable global boundary value. *Nutr Res Rev* 2010;23(2):247-69.

3. Toftager M, Christiansen LB, Kristensen PL, Troelsen J. SPACE for physical activity--a multicomponent intervention study: study design and baseline findings from a cluster randomized controlled trial. *BMC Public Health* 2011;11:777.

4. *Eurofit: Eurofit Tests of Physical Fitness*. 2. edition ed: Strasbourg, 1993.

5. Ortega FB, Artero EG, Ruiz JR, et al. Reliability of health-related physical fitness tests in European adolescents. The HELENA Study. *Int J Obes (Lond)* 2008;32 Suppl 5:S49-57.

6. Vicente-Rodriguez G, Rey-Lopez JP, Ruiz JR, et al. Interrater reliability and time measurement validity of speed-agility field tests in adolescents. *J Strength Cond Res* 2011;25(7):2059-63.

7. Andersen LB, Andersen TE, Andersen E, Anderssen SA. An intermittent running test to estimate maximal oxygen uptake: the Andersen test. *J Sports Med Phys Fitness* 2008;48(4):434-7.

8. Ahler T, Bendiksen M, Krustrup P, Wedderkopp N. Aerobic fitness testing in 6- to 9-year-old children: reliability and validity of a modified Yo-Yo IR1 test and the Andersen test. *Eur J Appl Physiol* 2012;112(3):871-6.

9. Ruiz JR, Espana-Romero V, Ortega FB, Sjostrom M, Castillo MJ, Gutierrez A. Hand span influences optimal grip span in male and female teenagers. *J Hand Surg Am* 2006;31(8):1367-72.

10. Espana-Romero V, Artero EG, Santaliestra-Pasias AM, Gutierrez A, Castillo MJ, Ruiz JR. Hand span influences optimal grip span in boys and girls aged 6 to 12 years. *J Hand Surg Am* 2008;33(3):378-84.

11. Committee on Sports, Medicine and Fitness. American Academy of Pediatrics: Medical conditions affecting sports participation. *Pediatrics* 2001;107(5):1205-9.