

ENDGAMES

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STATISTICAL QUESTION

Ecological studies: advantages and disadvantages

Researchers examined the association between child wellbeing and economic status in rich developed societies. An ecological cross sectional study design was used, with 23 of the richest 50 countries in the world included in the analysis. Child wellbeing was measured by the Unicef index of child wellbeing. Three macro-economic measures were used—material living standards (average income), the scale of differentiation in social status (income inequality), and social exclusion (children in relative poverty).

The overall Unicef index has 40 items that measure six dimensions—material wellbeing, health and safety, education, peer and family relationships, behaviours and risks, and young people’s own subjective sense of wellbeing. An item measuring relative poverty was removed before calculating the index of child wellbeing. Low scores indicated worse outcomes. Income inequality was measured as the ratio of the total annual household income received by the richest 20% of the population to that received by the poorest 20%. Therefore, larger values indicated greater inequality between the richest and poorest within a country. Child relative poverty was measured as the proportion of children aged 0-17 years in households with an income equivalent to less than the national median.

It was reported that the overall index of child wellbeing was negatively correlated with income inequality ($r=-0.64$, $P=0.001$) and proportion of children in relative poverty ($r=-0.67$, $P=0.001$), but not with average income ($r=0.15$, $P=0.50$). Therefore, countries with lower measures of child wellbeing had greater inequality of income and a higher proportion of children in relative poverty. The researchers concluded that improvements in child wellbeing in rich societies may depend more on reductions in inequality than on further economic growth.

Which of the following statements, if any, are true?

- The unit of analysis was the country
- It can be inferred that children with lower levels of wellbeing were more likely to be living in relative poverty
- It can be inferred that greater income inequality in a country caused worse outcomes for child wellbeing

Submitted by Philip Sedgwick

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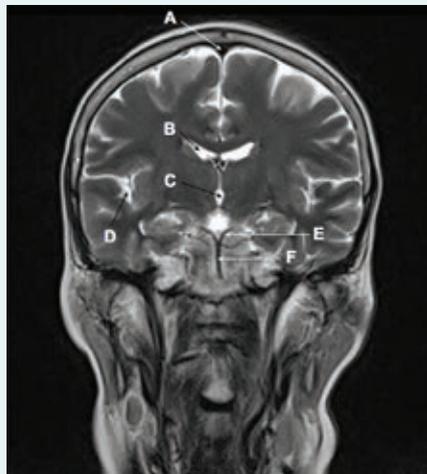
ANATOMY QUIZ

Coronal T2 weighted magnetic resonance image of the brain

Identify the structures labelled A, B, C, D, E, and F on this coronal T2 weighted magnetic resonance image of the brain.

Submitted by Lorna Mary Gibson and Daisy Mollison

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PICTURE QUIZ

An adolescent athlete with groin pain



A 14 year old boy felt a mild aching discomfort in his left groin while playing rugby but still continued to play. He subsequently tackled an opponent and developed a severe pain of sudden onset in the left upper thigh and groin. A “snapping” sound was heard and he fell to the ground. He was unable to bear weight on the left leg and appeared pale, clammy, and nauseated. His pitch-side vital observations were normal and he was offered combined gaseous nitrous oxide and oxygen for pain relief. Ice was applied to the area of maximum discomfort and he was accompanied to the emergency department in an ambulance. At the emergency department he was advised that he had probably “strained” a muscle and was given conservative advice. He was discharged with crutches and analgesia.

The next day he was seen by the school doctor, who documented that he could not fully bear weight on the left leg or actively flex his leg on the examination couch. A radiograph was arranged (figure) and the diagnosis made on the basis of the report.

- What is the most obvious abnormality seen on the radiograph?
- What is the likely diagnosis?
- Who is most at risk of sustaining such an injury?
- What is the standard management regimen for such an injury?
- What are the indications for surgical management of this injury?

Submitted by James Thing, Chris Coates, and Mike Bundy

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ANSWERS TO ENDGAMES, p XX [For long answers go to the Education channel on \[bmj.com\]\(http://bmj.com\)](#)

ANATOMY QUIZ Coronal T2 weighted magnetic resonance image of the brain

- A: Superior sagittal sinus
- B: Right lateral ventricle
- C: Third ventricle
- D: Right sylvian fissure
- E: Left posterior cerebral artery
- F: Basilar artery

STATISTICAL QUESTION

Ecological studies: advantages and disadvantages

Statement *a* is true, whereas *b* and *c* are false.

PICTURE QUIZ

An adolescent athlete with groin pain

- 1 There is bony irregularity and displacement of the lesser trochanter of the left femur.
- 2 The most likely diagnosis is an avulsion fracture of the lesser trochanter.
- 3 Young athletes, aged 11-17 years are most at risk. The secondary ossification centres for the lesser trochanter of the femur appear at age 11 and fuse by age 17. During this period, any substantial traction force exerted by the inserting musculotendinous unit—the iliopsoas insertion to the lesser trochanter—may result in a bony avulsion injury.
- 4 Avulsion fractures of the lesser trochanter in adolescents are generally treated conservatively. Management aims to restrict the precipitating activity or event and offload the affected area, with partial weight bearing using crutches until symptoms resolve (usually one to two weeks).
- 5 Surgery may be needed when there is a substantial degree of displacement of the avulsed fragment from the femoral origin. Proximal displacement of more than 2 cm would warrant an operative opinion.