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Continuing secular trend in the pattern of growth in Sweden with specific gender differences

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Background/Aim

There has been a continuing secular trend in height, but the secular changes in the pattern of growth in Sweden is not known. By using QEPS, a new mathematic growth model, different components of the growth curve can be analyzed, comparing secular trends of prepubertal and pubertal patterns of growth in two Swedish birth cohorts born 1974 and 1990 (1,2).

Material

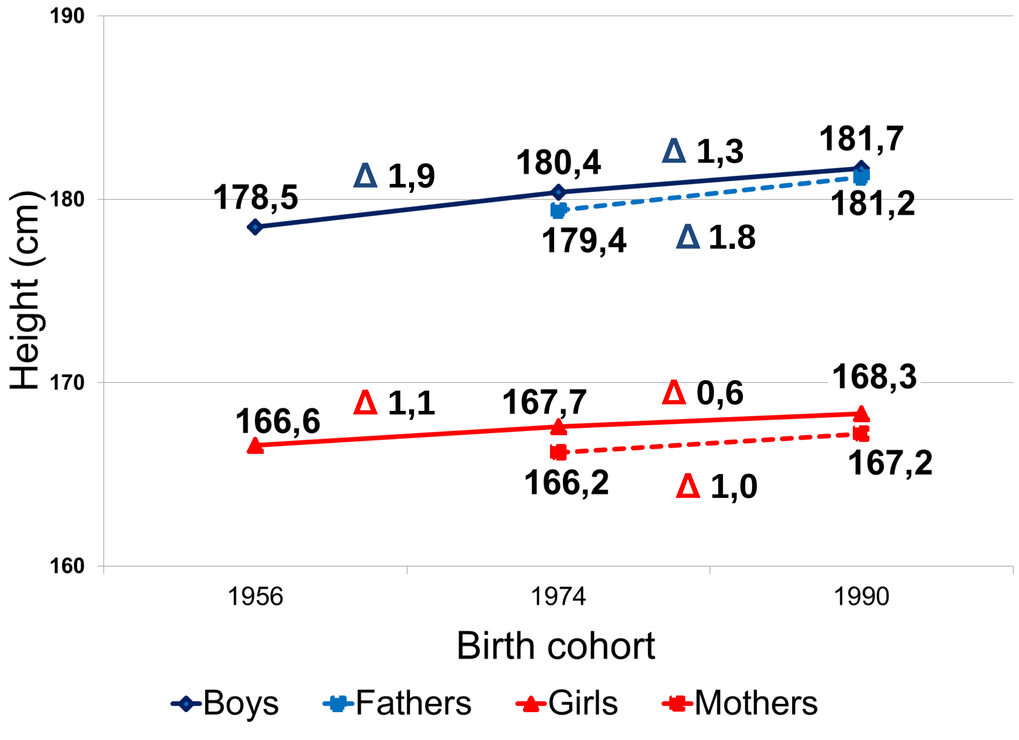
Two birth cohorts followed to adult height born around 1974 (1691 boys; 1666 girls) and 1990 (1647 boys; 1501 girls) being healthy, Nordic and born term.

Results:

Both boys and girls born 1990 compared to those born 1974 were longer and heavier at birth and had during the infancy growth component a more rapid growth (shorter Etimescale).

Boys -1990 had increased prepubertal growth ($p<0.0001$ for Qmax, Qheightscale), but their pubertal part of growth was not significantly changed. Their adult height increased 1.3 cm from 180.4 to 181.7.

Girls -1990 had increased prepubertal growth ($p<0.05$ for Qmax, Qheightscale). Their pubertal gain was increased ($p<0.001$ for Pmax, Pheightscale). Mean menarche age was 12.8 years in both cohorts. Adult height increased 0.6 cm from 167.7 to 168.3.



The results show a continuous secular trend for adult height compared to the Swedish1956 birth cohort (3). Parental heights of the individuals in the1974/1990 birth cohorts showed a similar pattern.

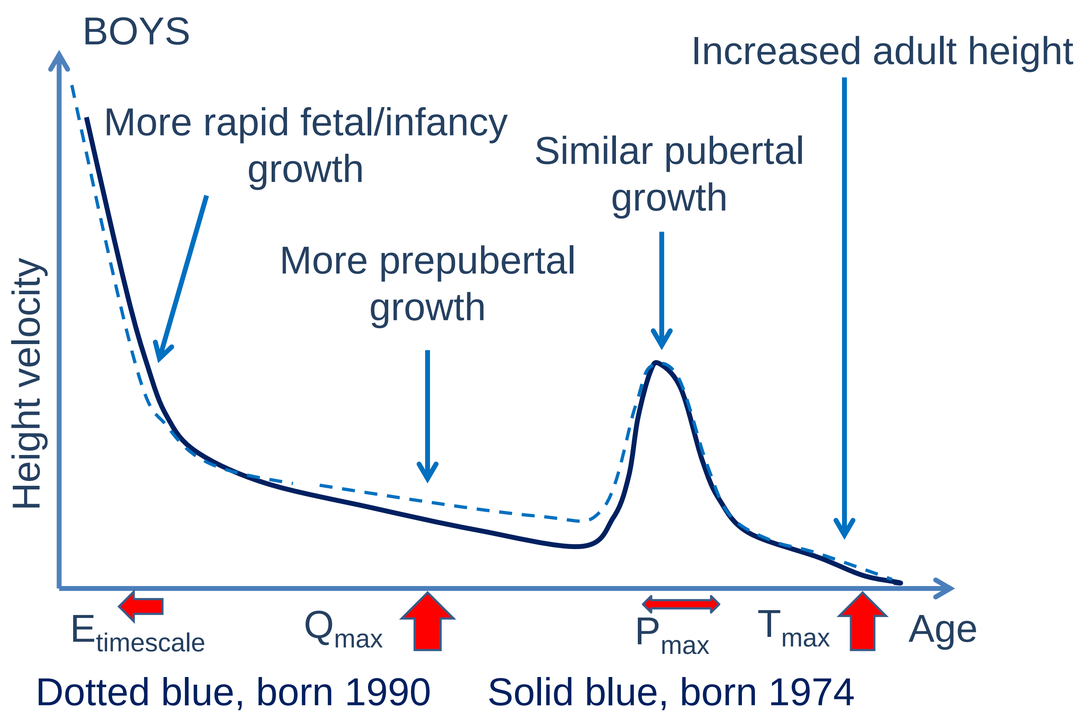
Methods

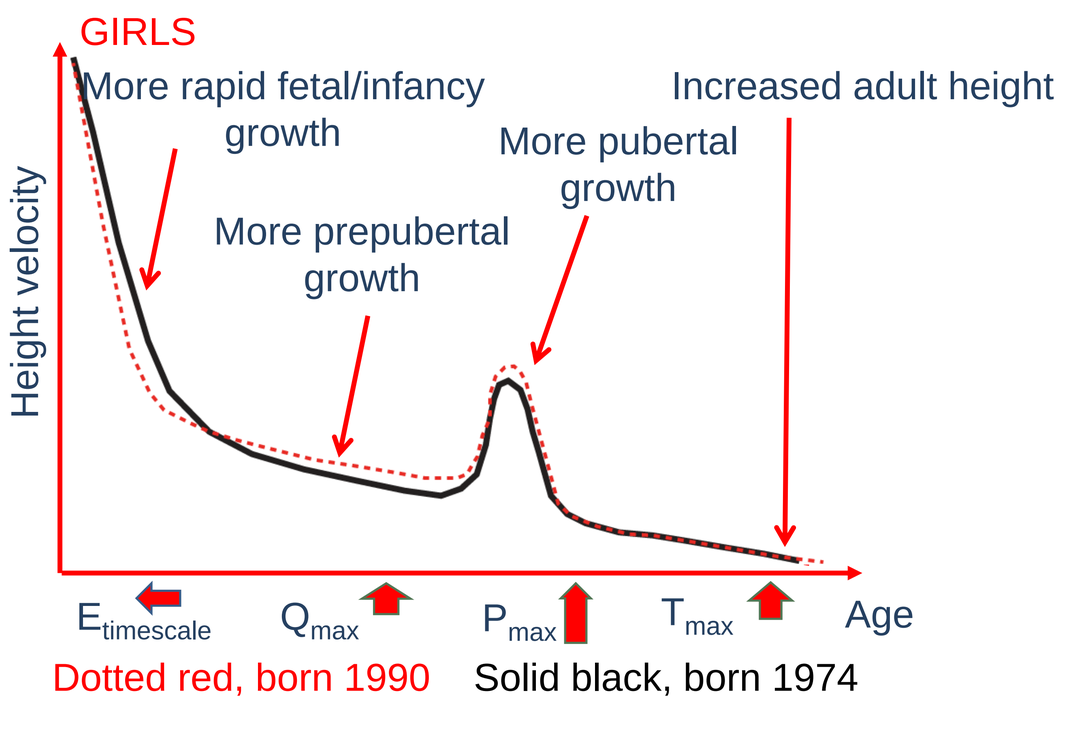
The different growth functions of the QEPS-model: (Q)uadratic, (E)xponential, (P)ubertal, and (S)top function were estimated with corresponding maximum values at adult height and tempo adjusting "time scale ratios" of E and P.
Onset of puberty is defined as the time when 5% of the pubertal part (AgeP05) is attained, mid puberty at 50% (AgeP50).

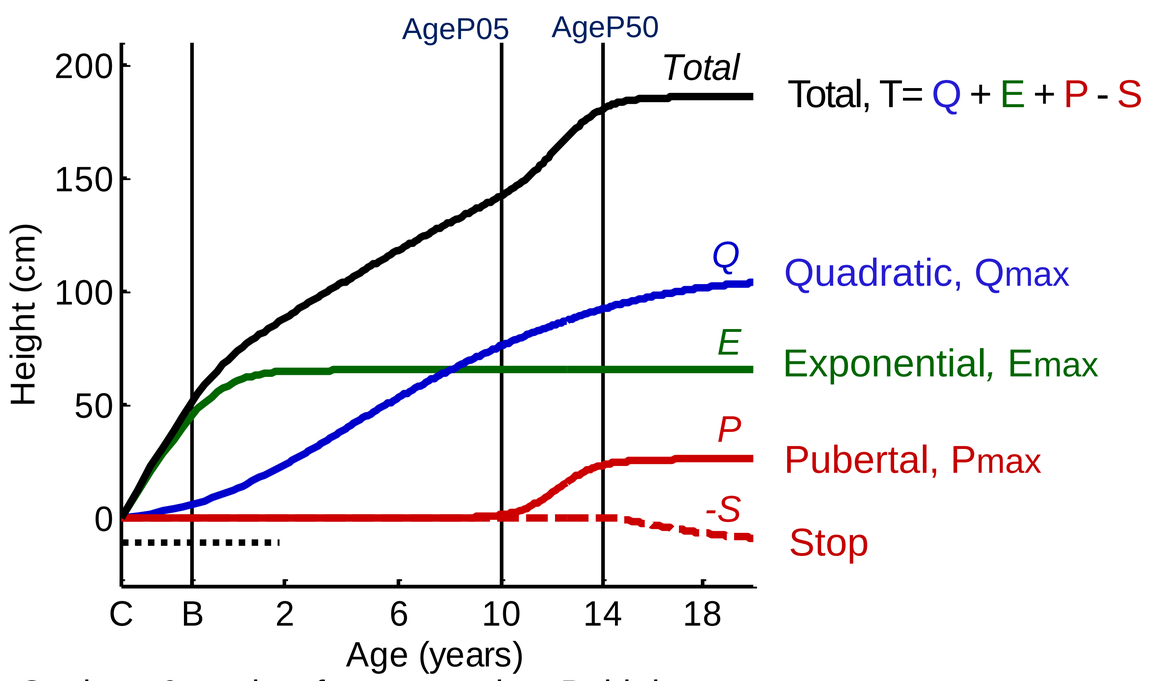
References:
1. Albertsson Wikland K et al., Acta Paediatr., 2002, 91:739-54
2. Sjoberg A. et al, Acta Paediatr., 2012, 101:964-72
3. Karlberg P. et al, Acta Paediatr., 1976, 258:7-76

Conclusion

In cohorts born 16-yrs a part; a secular trend with increasing adult height was found; 1.3 cm in boys, due to more prepubertal growth and 0.6 cm in girls, due to more pubertal growth.







C=about 6 weeks after conception, B=birth.

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Disclosure: Nothing to declare.