Evaluating cut-offs for automatic growth screening in Swedish children – using the Finnish growth monitoring algorithm

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Abstract 457 P1-P170

Introduction

Growth charts provide excellent help to the pediatric team in identifying abnormal growth patterns. However, the evaluation is highly dependent on the skills of the clinician.

A computerized automatic screening system will add quality and patient safety in finding children with disorders affecting growth. Such screening system has been developed and tested in Finland and resulted in earlier detection of growth disorders[1-3].

Objectives

The overall aim is to study if growth charts with mathematical decision making tools could be used to identify children with abnormal growth.

Here, we examine if screening algorithms developed in one country could be used in another country and if differences in growth references being used in different countries needs to be adjusted for.

Conclusions

Algorithms developed in Finland are useful to identify Swedish children with abnormal growth, with similar outcome of the screening (SIC) result in Sweden 3.3% with that of the screening result in Finland of 3.1%[1].

There seem to be no influence of the two countries different references used.

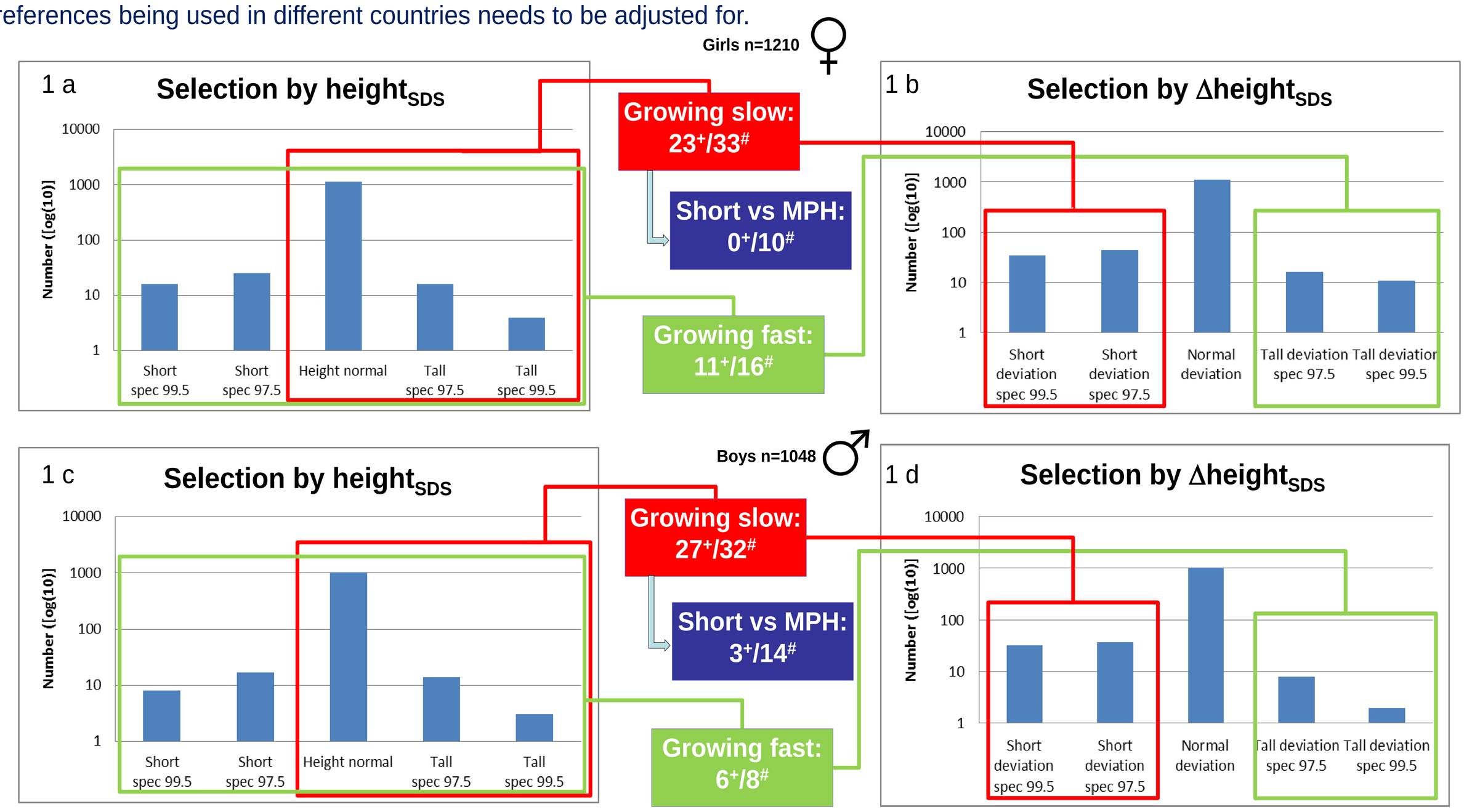

Fig 1. Number of children identified using Finnish algorithm specificity of +97.5 and #99.5 %. Top row for girls (a,b), bottom row boys (c,d).

Left panels shows selection using height$_{SDS}$ (a,c) and right panels by deviation in height$_{SDS}$, i.e. height velocity (b,d). Red squares shows number of children identified by decreased height$_{SDS}$, green by increased height$_{SDS}$, and blue those identified by being short in relation to parents but not by other selection criteria.

Material/methods

The study population was selected from the *GrowUp1974 Gothenburg* community based cohort of 5111 final grade school children who were born in Sweden around 1974[4]. All 2258 children that had measurement of height at age 4-8 years, with a preceding measurement as well as heights of parents, were included in the analysis. Mean age of these children were 5.9 years (SD 0.46). Their preceding measurement occurred at 4-6 years, with mean 4.6 years (SD=0.53).

For the analysis we used the Finnish screening criteria[1] for height$_{SDS}$, Δheight$_{SDS}$ and distance from midparental target height at specificity 97.5 and 99.5 %. These criteria were combined with Swedish growth reference[4].

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Results

Using the Finnish algorithms *99.5 % screening specificity*,

- 23 children (1.0 %) were identified as short and 7 (0,3 %) as tall using height$_{SDS}$, Fig 1 a,c, left panels.
- 64 children (2.8 %) were identified as growing slowly and 14 (0.6 %) as growing fast by Δheight$_{SDS}$ Fig 1 b,d right panels.
- 21 children (0.9 %) were identified as short and 6 (0.3 %) as tall by the difference from mid parental height$_{SDS}$.
- Combining the selection criteria identified 75 children (3.3 %) with growth failure and 23 (1.0 %) with growth access. Using *screening specificity of 97.5 %* 124 (5.5 %) and 73 (3.2 %) were identified, respectively.

References:

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