

New reference curves for weight-related body measurements in children

The charts were developed on the basis of data from the Bergen Growth Study that were collected from 2003–2006. Further details are to be found at www.vekststudien.no. Data from the Growth Study form the basis for national growth references for children aged 0–19 years; see reference 32.

The charts are based on a cross-sectional survey and thus pinpoint the position of the individual child compared with other children of the same sex and age. The median is specified as the 50th percentile, and 95 % of children are covered in the area between the third and the 97th percentile.

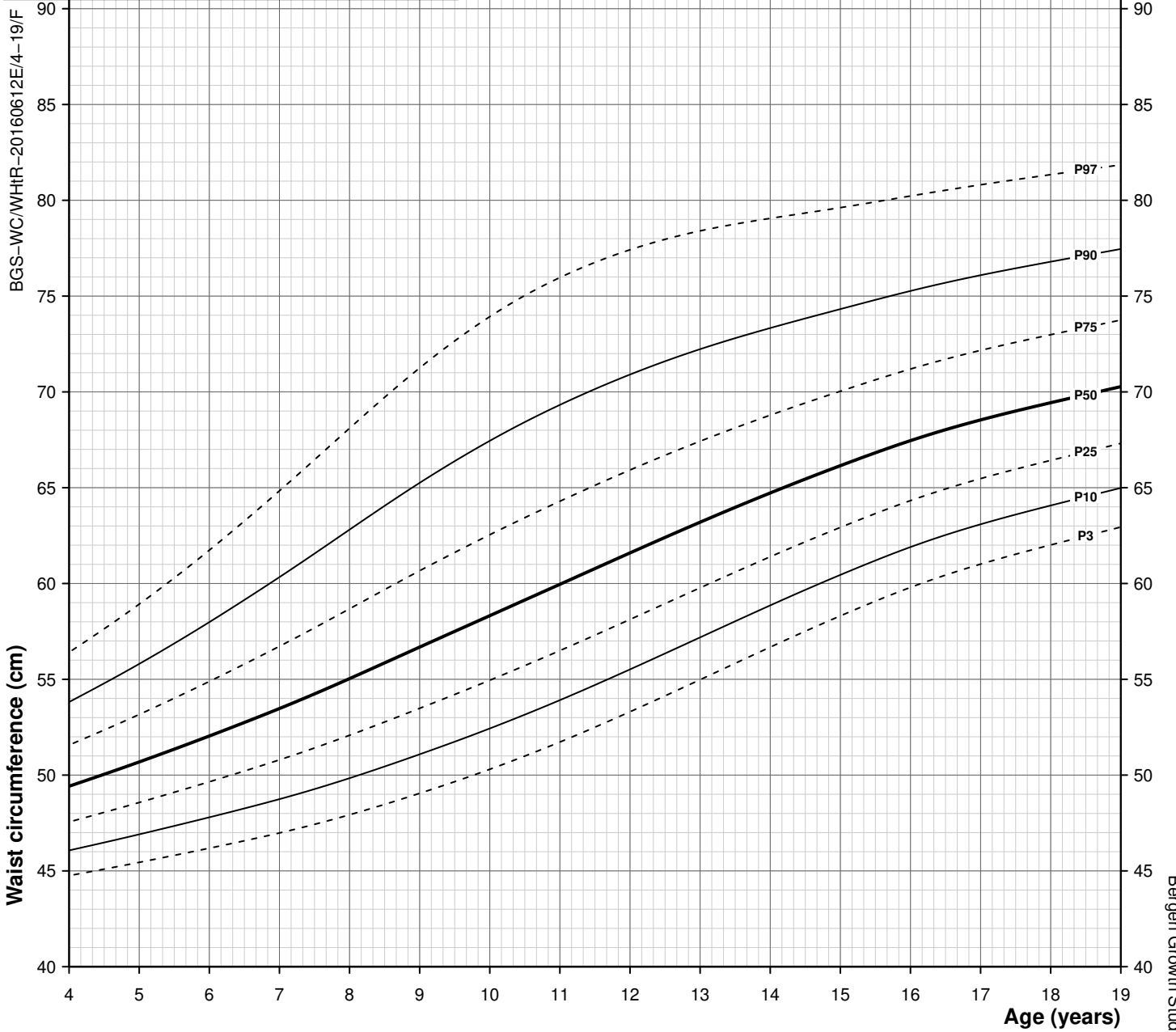
No cut-off points validated against clinical data were established for skinfolds or waist circumference. However, we investigated which skinfold and waist circumference values fitted best with the BMI-defined overweight and obesity by finding the highest possible specificity and acceptable sensitivity (see supplementary information in references 29 and 30). The skinfolds charts are for children aged 4–16 years. The cut-offs that best described BMI-defined overweight and obesity were the 84th and 90th percentiles, respectively. The waist circumference charts are for children aged 4–18 years. The cut-offs that best described BMI-defined overweight and obesity were the 85th and 95th percentiles, respectively. The waist-height ratio serves as a supplement to the waist circumference chart, and may be useful for assessing developments through repeated measurements. For children over 12 years old, there is reason to believe that repeated measurements higher than 0.5 indicate an increased health risk, while the data for younger children are not good enough at present to draw such conclusions.

Name _____

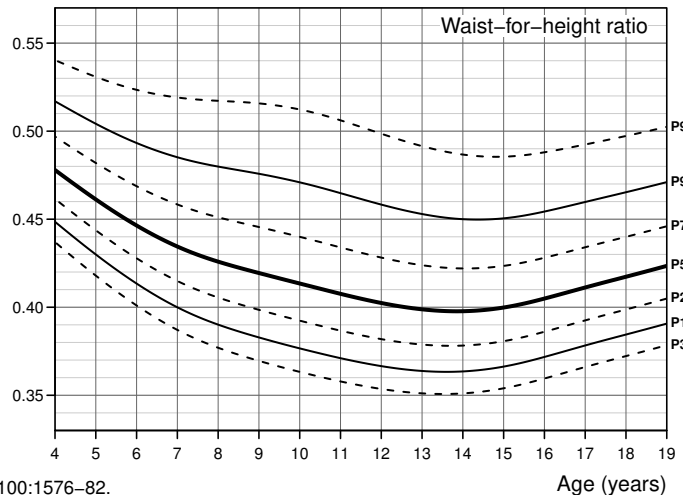
Date of birth _____

Waist circumference 4 – 19 years girls

The waist circumference is measured at the narrowest level between the costal margin and the crista iliaca. Measure halfway between these landmarks when the narrowest level is difficult to determine. Take the measurement at the end of a normal expiration.



Date	Waist (cm)	Height (cm)	Waist/Height



Bergen Growth Study. PB Júlíusson, M Roelants, R Bjerknes © 2016

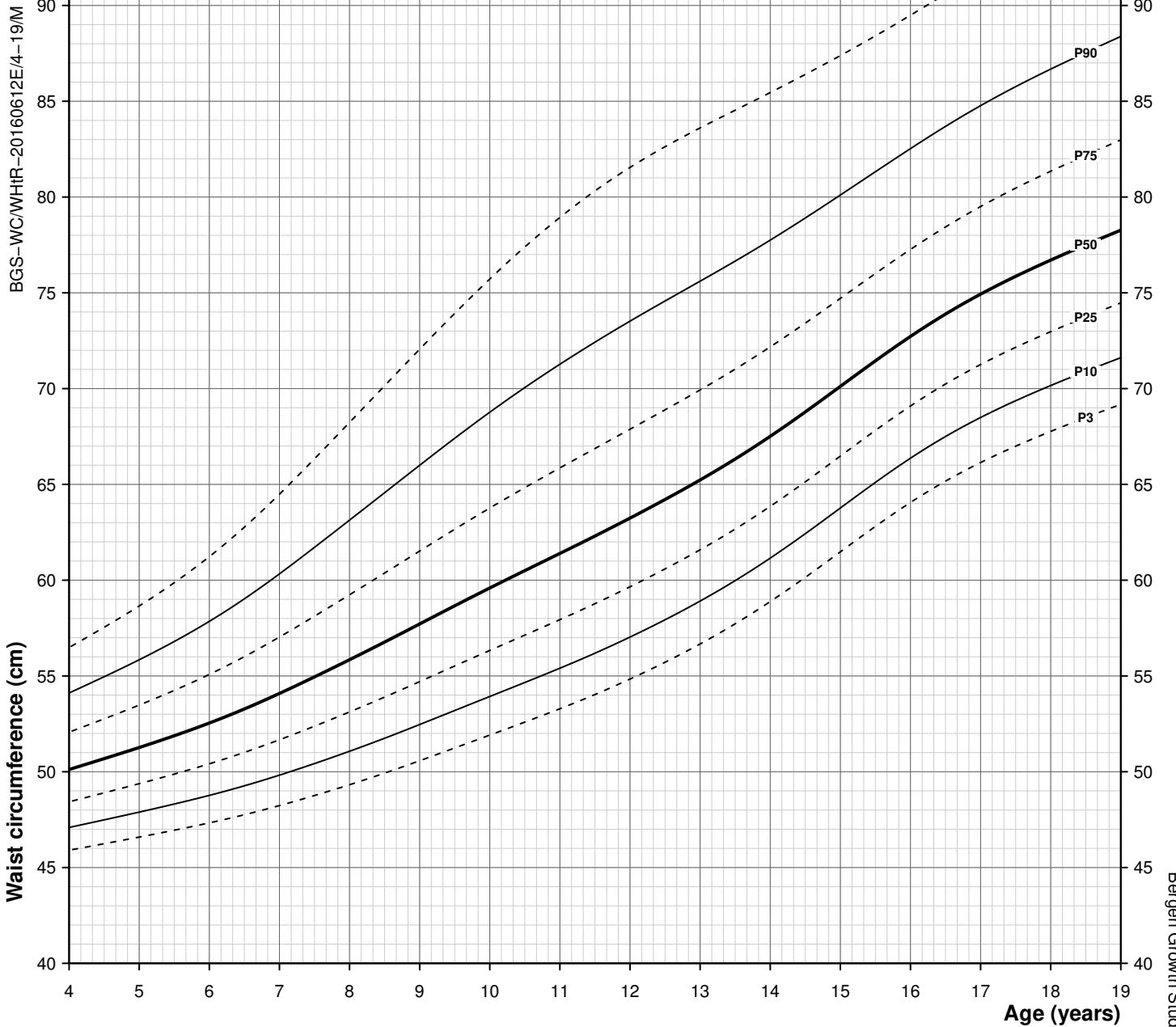
Brannsether B, Roelants M, Bjerknes R, Júlíusson P. Acta Paediatrica 2011;100:1576–82.
 Júlíusson PB, Roelants M, Eide GE, Moster D, Juul A, Hauspie R, Waaler PE, Bjerknes R. Tidsskr Nor Laegeforen. 2009;129:281–6.

Name _____

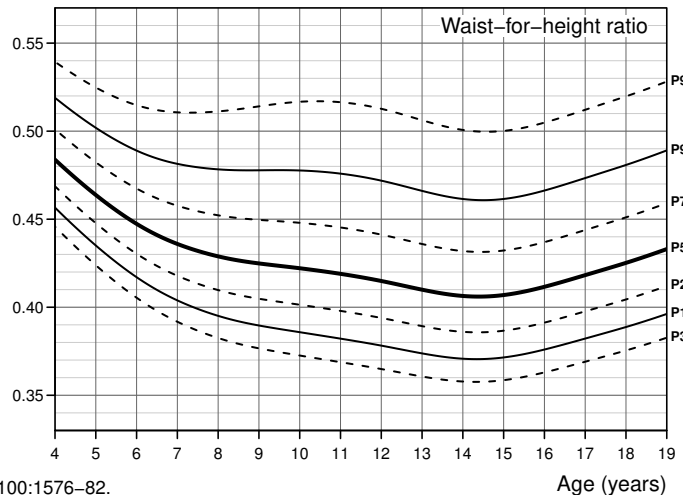
Date of birth _____

Waist circumference 4 – 19 years **boys**

The waist circumference is measured at the narrowest level between the costal margin and the crista iliaca. Measure halfway between these landmarks when the narrowest level is difficult to determine. Take the measurement at the end of a normal expiration.



Date	Waist (cm)	Height (cm)	Waist/Height



Bergen Growth Study, PB Júlíusson, M Roelants, R Bjerknes © 2016

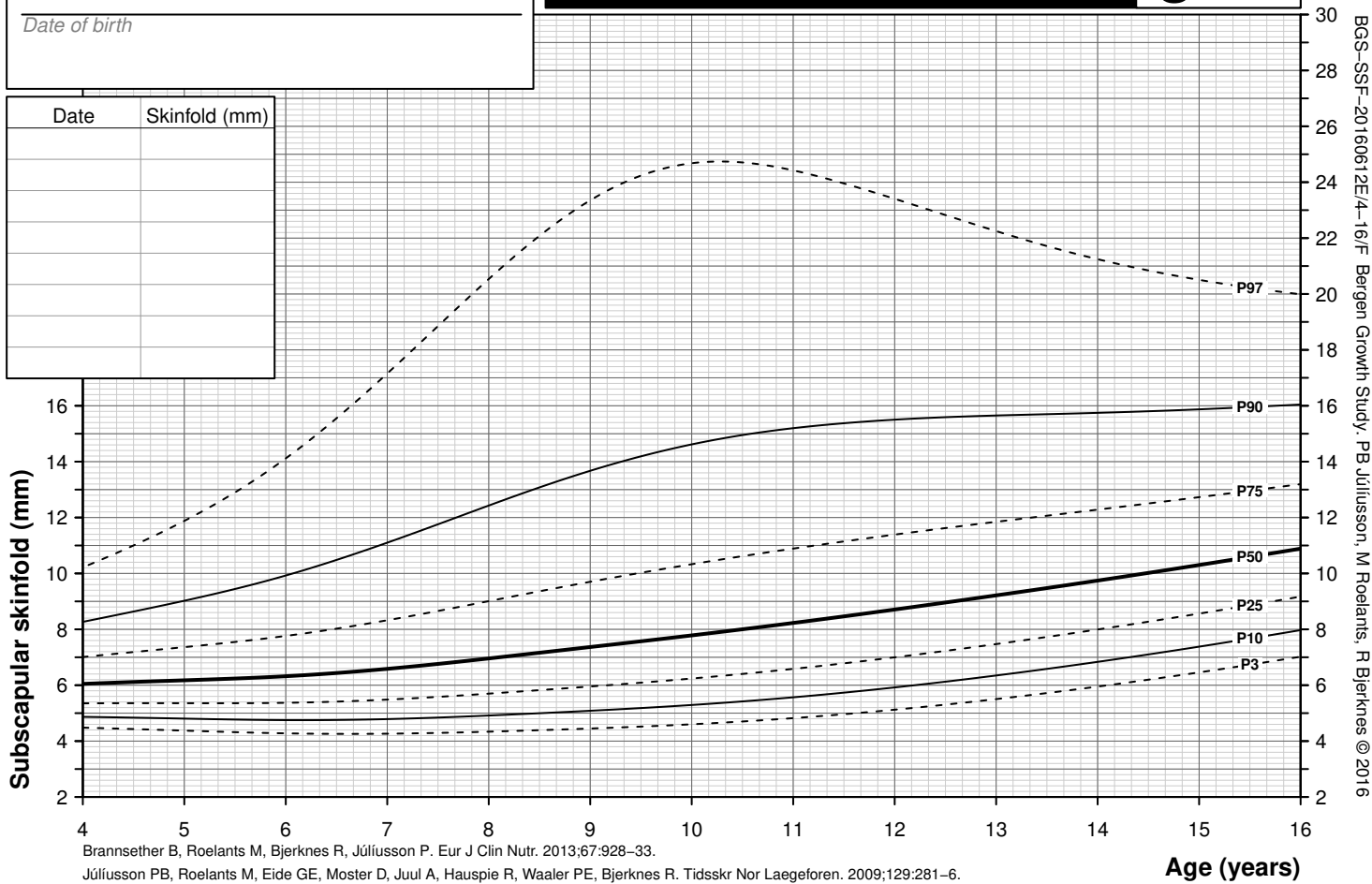
Brannsether B, Roelants M, Bjerknes R, Júlíusson P. Acta Paediatrica 2011;100:1576–82.
 Júlíusson PB, Roelants M, Eide GE, Moster D, Juul A, Hauspie R, Waaler PE, Bjerknes R. Tidsskr Nor Laegeforen. 2009;129:281–6.

Subscapular skinfold 4 – 16 years **girls**

Name _____

Date of birth _____

Date	Skinfold (mm)

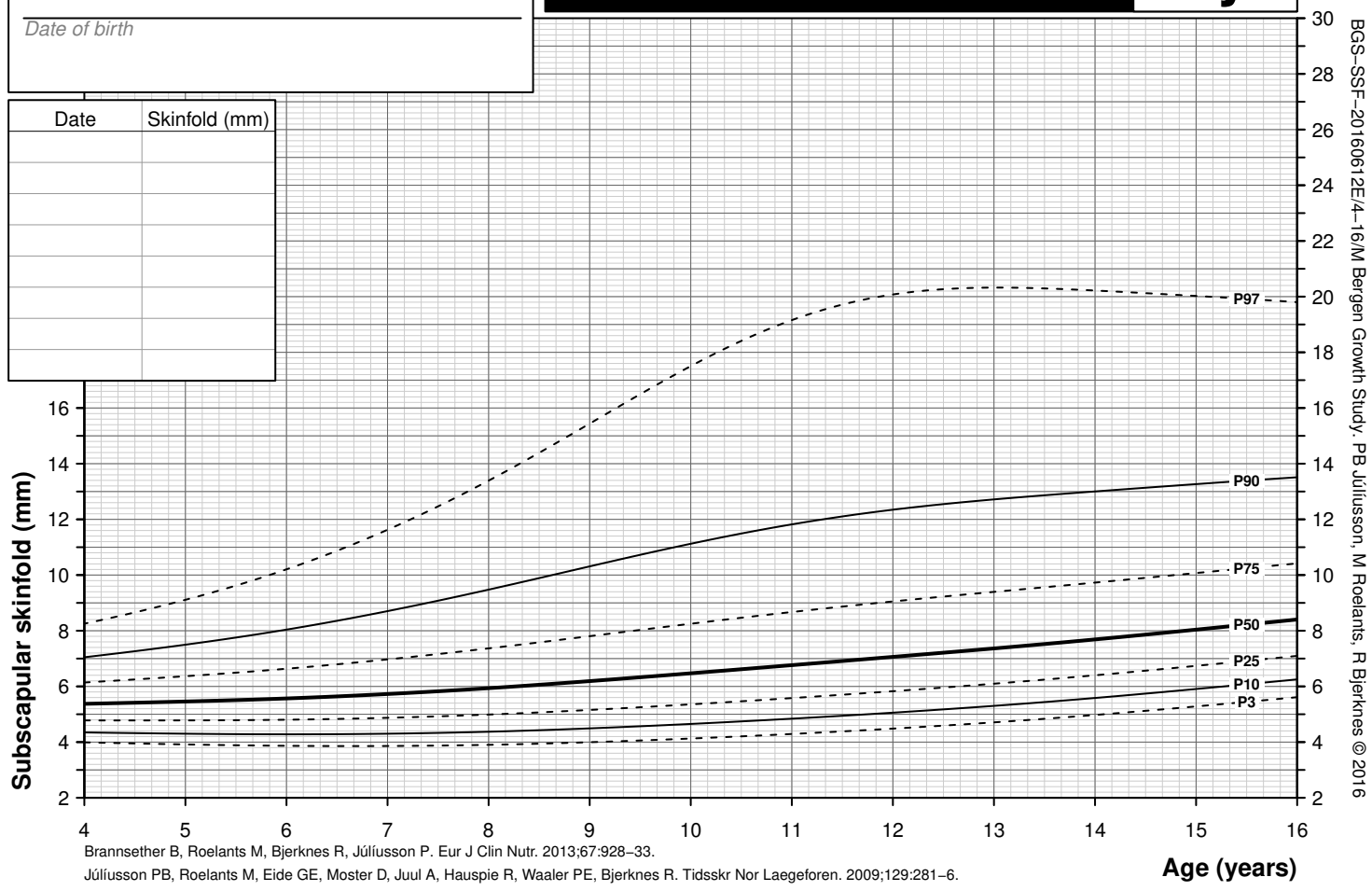


Subscapular skinfold 4 – 16 years **boys**

Name _____

Date of birth _____

Date	Skinfold (mm)



BGS-SSF-20160612E/4-16/M Bergen Growth Study, PB Júlíusson, M Roelants, R Bjerknes © 2016

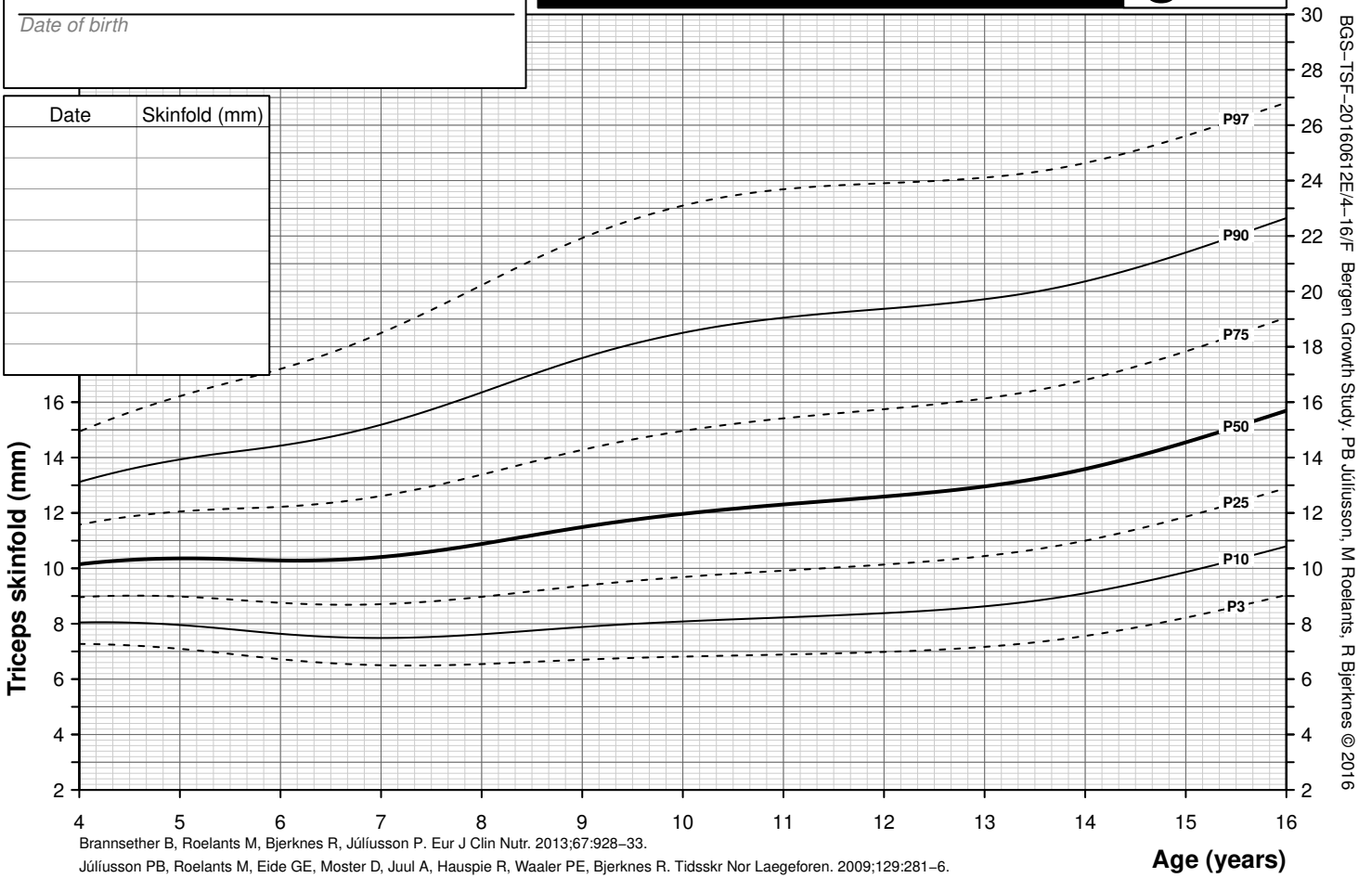
Name _____

Date of birth _____

Triceps skinfold 4 – 16 years

girls

Date	Skinfold (mm)



BGS-TSF-20160612E/4-16/F Bergen Growth Study, PB Júlíusson, M Roelants, R Bjerknes © 2016

Name _____

Date of birth _____

Triceps skinfold 4 – 16 years

boys

Date	Skinfold (mm)

