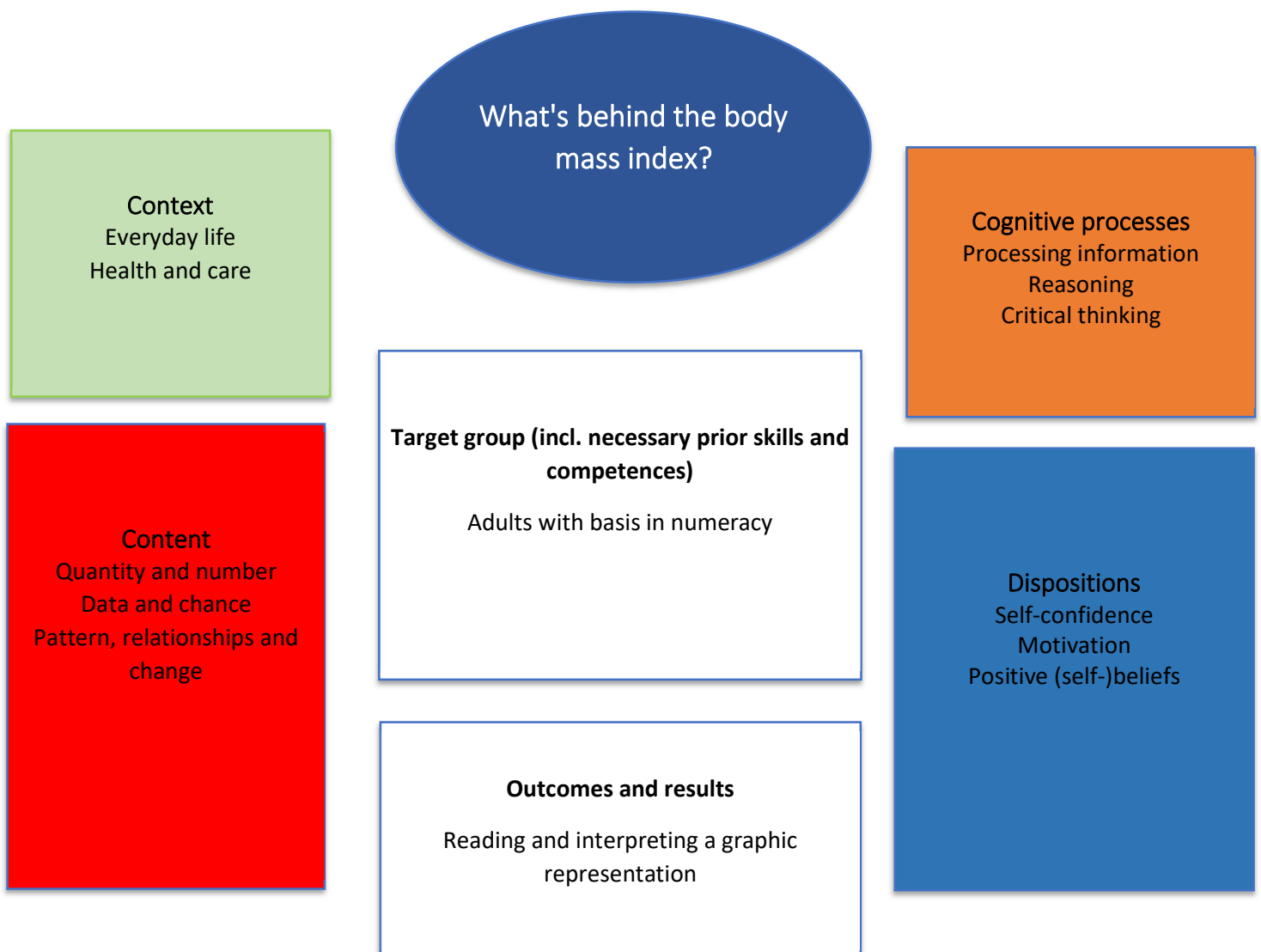


## What do growth curves and body mass index means?

During appointments with the paediatrician, children are weighed and measured, and the doctor then records these measurements on a growth curve in their health record. The aim is to compare them with established averages. But how do you read and interpret this data?

### Overview “Growth curves and BMI”



Main information	
Content	Quantity and number Graphical representation of data
Target group	All learners who know the basics of numeracy
Learning intention	Numeracy for personal issues
Duration	1 lesson
Material and resources	Learners' health records or models of curves from the health record
Group size	6 to 10 learners
Problem statement	<p>Monitoring children's growth, particularly their body mass index, is a public health issue, particularly to prevent the risk of obesity.</p> <p>Growth charts are included in children's health record books, and are added to as paediatric examinations are carried out.</p> <p>But these curves are complex, and can give cause for concern if you don't know how to read and/or interpret them. Developing these numeracy skills is therefore a key factor in empowering parents.</p>
Working questions	<ul style="list-style-type: none"> <li>- What data are shown on these curves?</li> <li>- What are the units?</li> <li>- What are the relationships?</li> <li>- How do I enter and extract data?</li> <li>- How can I compare my child's situation with the expected average?</li> </ul>
Learning outcomes and results	<ul style="list-style-type: none"> <li>- Identify data on a complex graph</li> <li>- Reading and interpreting data in relation to an average</li> </ul>
Reference to National Qualification Frame	Optional (country's decision)

Working plan

Time (lessons)	Description of content/activities	Material	Methodical and didactic information <sup>1</sup>
15'	<p><b>Introduction</b></p> <p>The teacher projects the image in Appendix 1, and asks the learners what these images remind them of, each separately and the 2 together.</p> <p><i>The ideas to come up with are: measurements, height, weight, kg, cm, curve, graph, increase, etc. and perhaps overweight/obesity.</i></p> <p>The teacher then shows the images in Appendix 2.</p> <p>Does this mean anything to the learners? Do they have a health record, for themselves or for their children? What's in it, what's it for?</p> <p>Is there a link between the 2 appendixes? What is it?</p> <p>The health record is used to record children's height and weight during paediatric check-ups, and together we're going to find out how these curves work.</p>	<p>Appendix 1 Appendix 2</p>	<p>Questioning Discussing</p>
45'	<p><b>Exploration</b></p> <p>The teacher forms 2 sub-groups, distributing appendix 3 to one and appendix 4 to the other.</p> <p>The first task is to identify the data shown on the tables, both lexical and numerical.</p> <p>Each sub-group identifies them and tries to explain them.</p>	<p>Appendix 3 Appendix 4</p>	<p>Collaborative learning  Discussing</p>

<sup>1</sup> for description and explanation of kinds of tasks, HITs and other background information please consult the teachers' guide



	<p>With regard to the curves themselves, the trainer will be careful to observe the construction of the graphs: starting point, maximum values, graduations and "implicit" values, etc.</p> <p>He will encourage each sub-group to put forward hypotheses about the construction of the curves: the significance of the 'M line' and the dotted-lines in particular.</p> <p>Each sub-group then presents its graph and explains its hypotheses.</p> <p>The trainer, if necessary, completes, rephrases and clarifies the data, both the units used and the meanings of "median value" and percentages for weight curves.</p> <p>He makes sure that all the participants have understood the principle.</p> <p>He then distributes the other appendix to each sub-group, inviting participants to "hunt for differences".</p> <p>These are then discussed in the large group, and clarified if necessary.</p> <p>Finally, by projecting one or other of the appendices, the trainer asks the participants to read the data, for example "what is the average weight of an 18-month-old boy?"; "if a girl is 80cm tall at 13 months, is she average?"</p> <p>It is therefore very important to return to the notion of the average, and to the precautions to be taken when reading these graphs: they are used to take account of the child's development, but this does not mean that you should always 'stick' to the "M line".</p> <p>On the other hand, significant deviations should be seen as warning signs.</p>		
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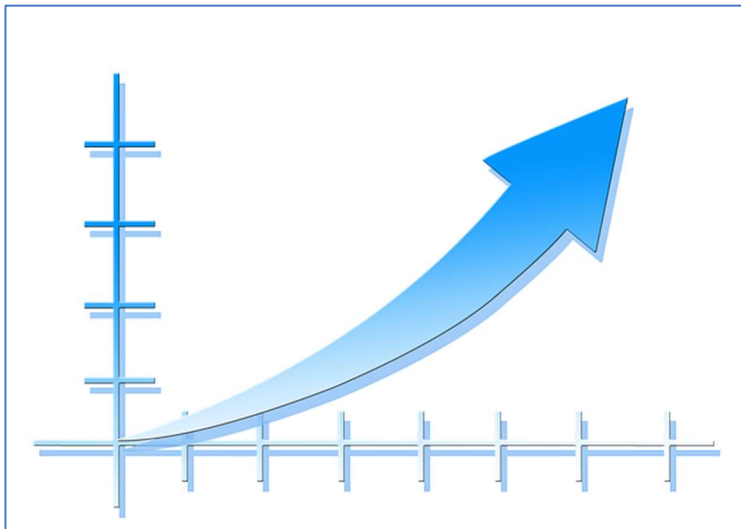


	<p>Finally, the trainer gives each sub-group the second appendix, with another "hunt for differences" followed by a pooling of the results.</p> <p>To make sure everyone understands, the trainer distributes the appendixes to everyone and asks them to note down the average height and weight of a boy/girl at a given age.</p>		Individual
30'	<p><b>Body mass index</b></p> <p>The participants are now ready to tackle the final graphic representation. The trainer first asks the participants if they know the body mass index. The trainer collects the answers, and completes and clarifies if necessary. He emphasised the informative nature of this index, and, as with growth curves, indicated that only significant deviations should give cause for alarm.</p> <p>He then hands out appendix 7 or 8 to the participants, asking them to find the BMI formula, to identify the limits of the different states ('normal', 'thin', 'overweight', 'obese'), and so on.</p> <p>Finally, he invites the participants to calculate their own BMI, and presents them with the diagram in Appendix 9, which represents the IMS in a different form.</p>	<p>Appendix 7 Appendix 8</p>	<p>Discussing</p>
15'	<p><b>Transfer</b></p> <p>As well as perhaps feeling more at ease at paediatric appointments, or in relation to their own situation, learners are now able to read graphic representations of data.</p> <p>During this final discussion period, it may be useful to identify and list other graphs that learners come across in their daily or professional lives: price curves, production curves, temperature readings from a cold room, etc.</p>	<p>Appendix 9</p>	<p>Discussing</p> <p>Self-reflexing</p>

Appendix 1



*Kalhh @pixabay.com*



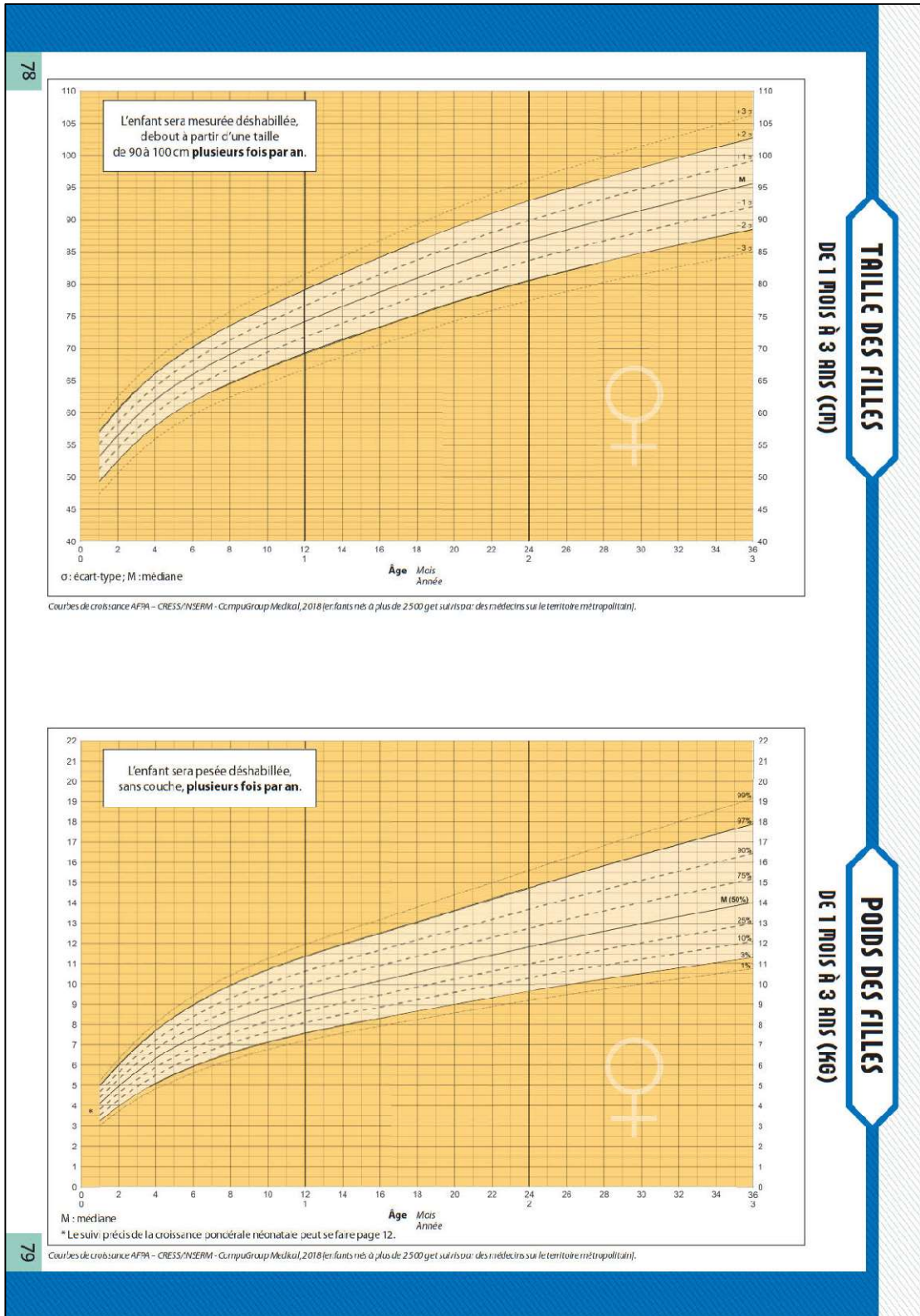
*Geralt @pixabay.com*



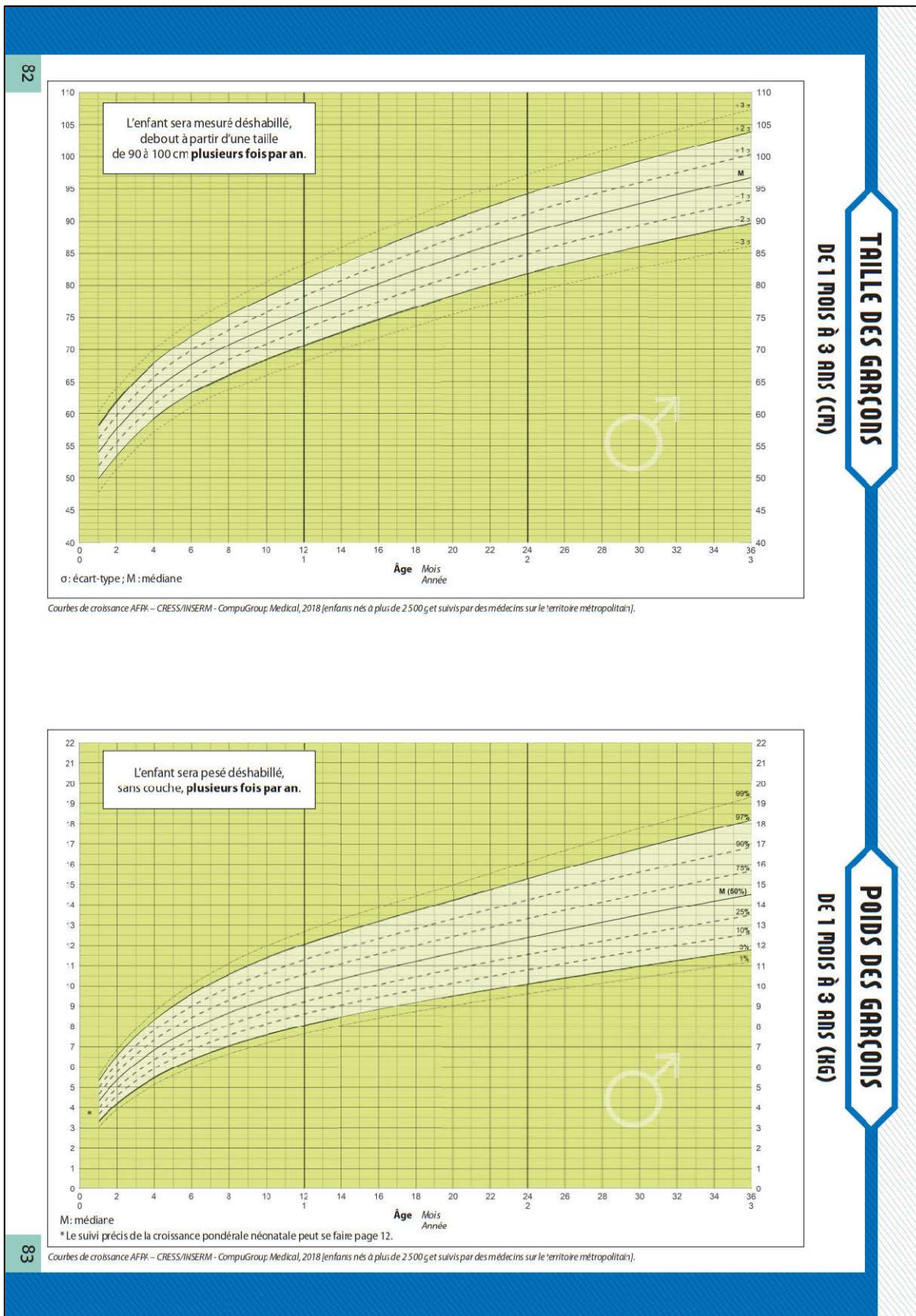




Appendix 3



Appendix 4

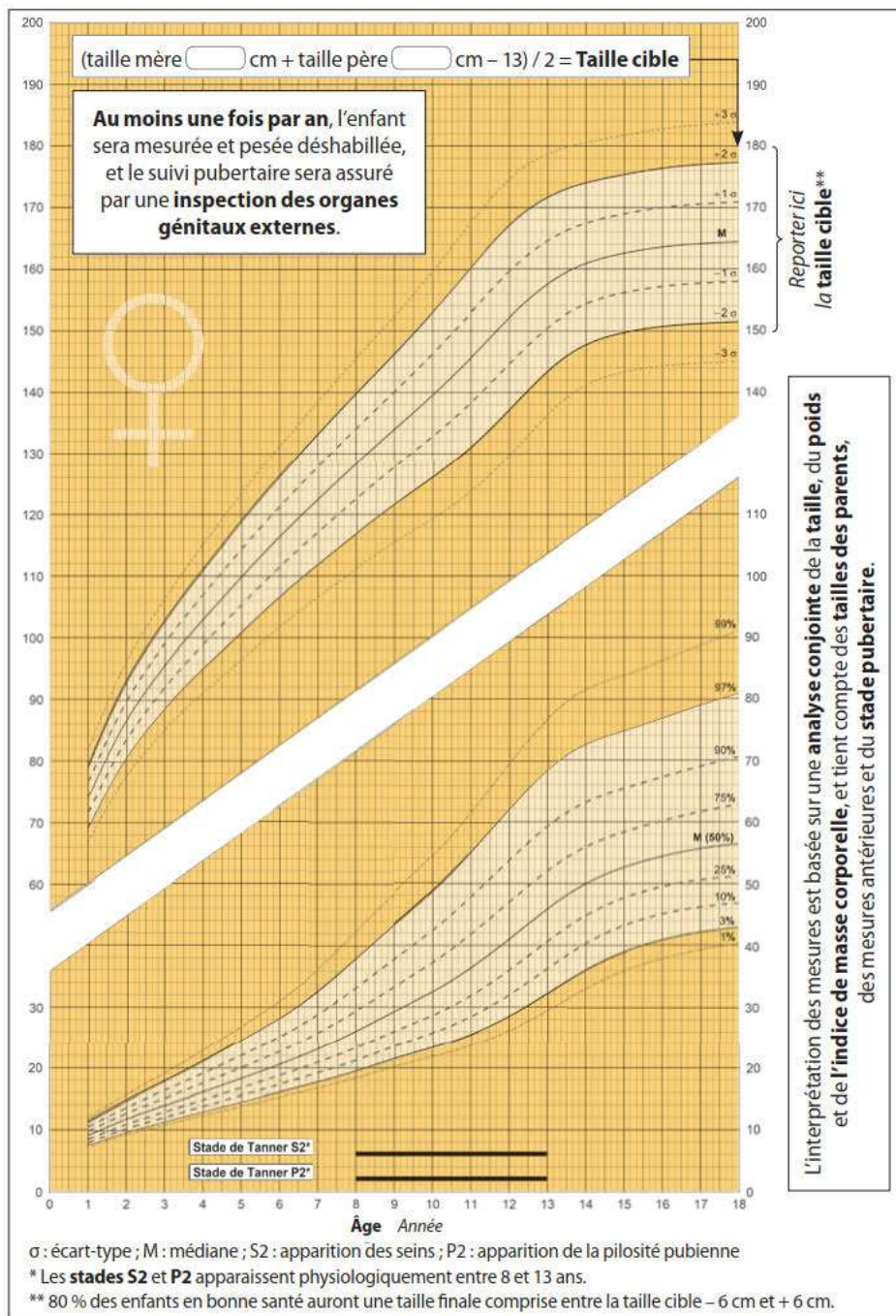




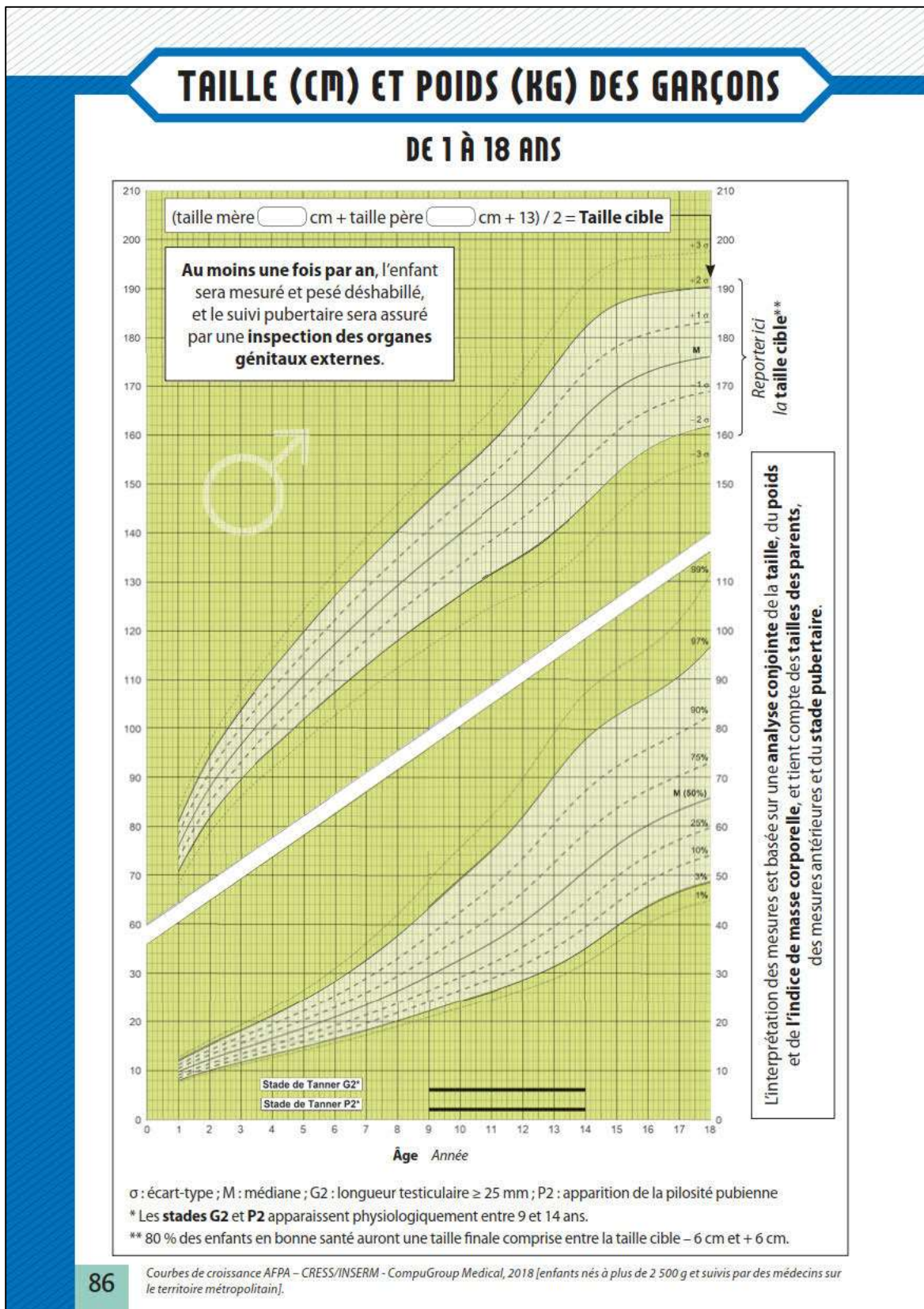
Appendix 5

**TAILLE (CM) ET POIDS (KG) DES FILLES**

**DE 1 À 18 ANS**



Appendix 6

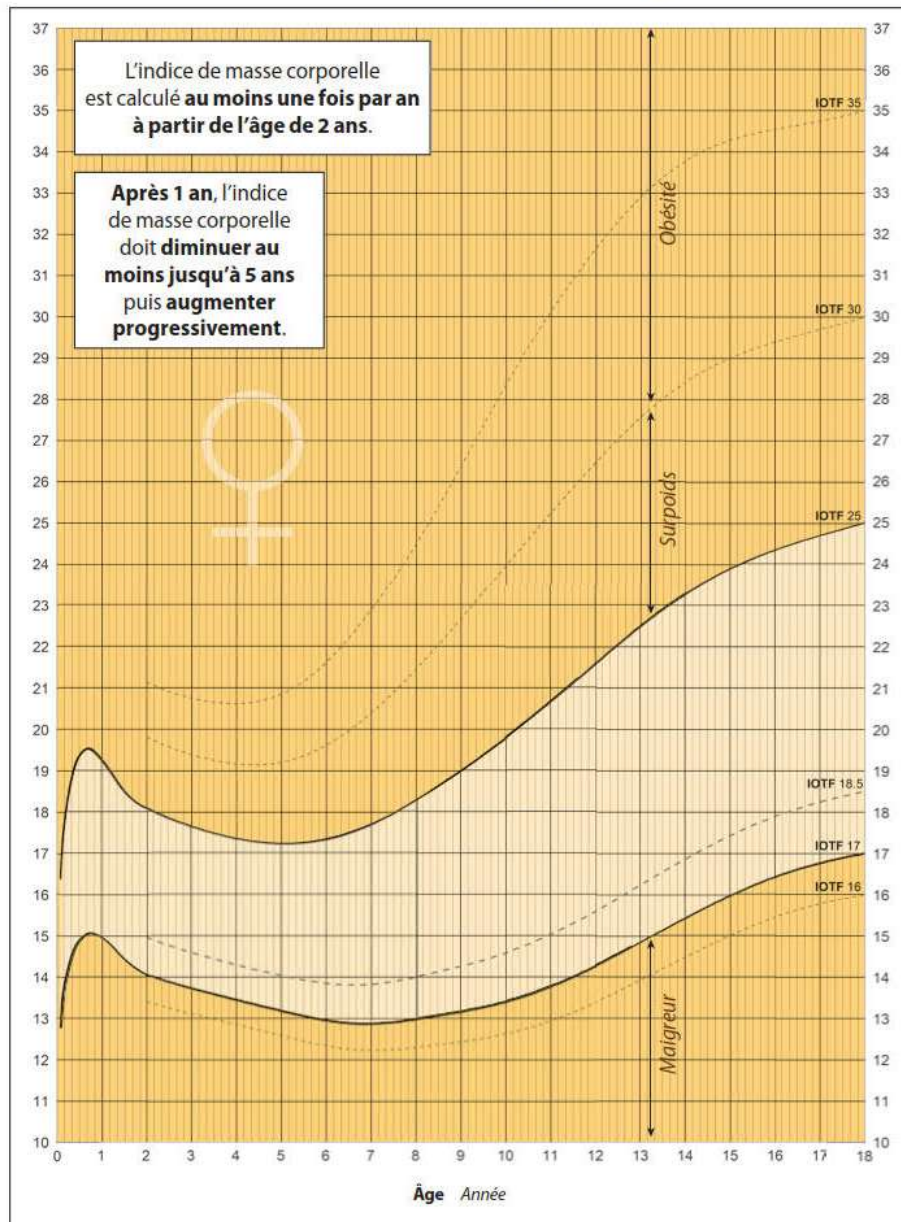




Appendix 7

## INDICE DE MASSE CORPORELLE DES FILLES

DE 1 MOIS À 18 ANS (KG/M<sup>2</sup>)

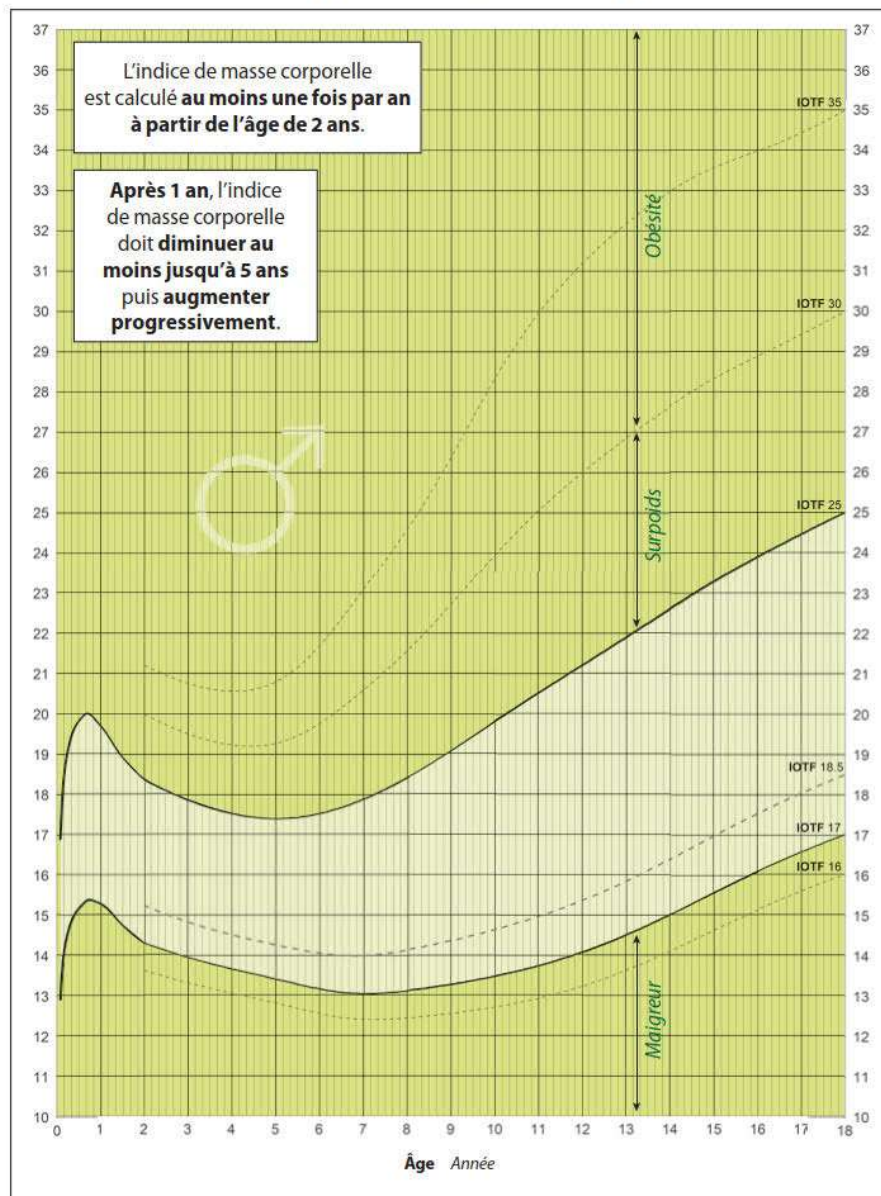


Après 2 ans : courbes de l'International Obesity Task Force (IOTF). Cole TJ, Lobstein T. *Pediatric Obesity* 2012.  
Avant 2 ans : courbes actualisées d'enfants nés à plus de 2 500 g suivis par des médecins de France métropolitaine. Courbes AFPA – CRESS/INSERM – CompuGroup Medical, 2018.

Appendix 8

## INDICE DE MASSE CORPORELLE DES GARÇONS

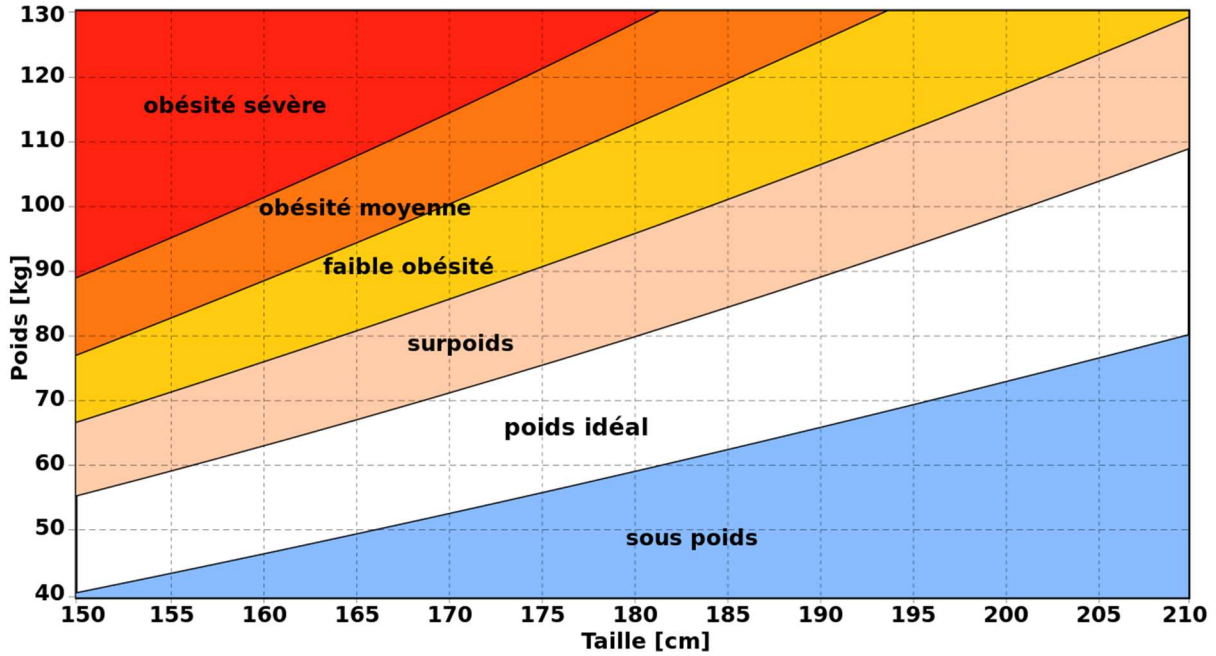
DE 1 MOIS À 18 ANS (KG/M<sup>2</sup>)



Après 2 ans : courbes de l'International Obesity Task Force (IOTF). Cole TJ, Lobstein T. *Pediatric Obesity* 2012.  
Avant 2 ans : courbes actualisées d'enfants nés à plus de 2 500 g suivis par des médecins de France métropolitaine. Courbes AFPA - CRESS/INSERM - CompuGroup Medical, 2018.

Appendix 9

Graphique de l'indice de masse corporelle des adultes



Par Sarang — Travail personnel basé sur : BMI en.svg de Bibi Saint-Pol, Domaine public, <https://commons.wikimedia.org/w/index.php?curid=114347950>

