

# Desenvolvimento na Infância

## Oficina: Curva de Crescimento

Discentes:

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Paulo Ricardo Higassiaraguti Rocha

Fenton and Kim *BMC Pediatrics* 2013, **13**:59  
<http://www.biomedcentral.com/1471-2431/13/59>



**TECHNICAL ADVANCE**

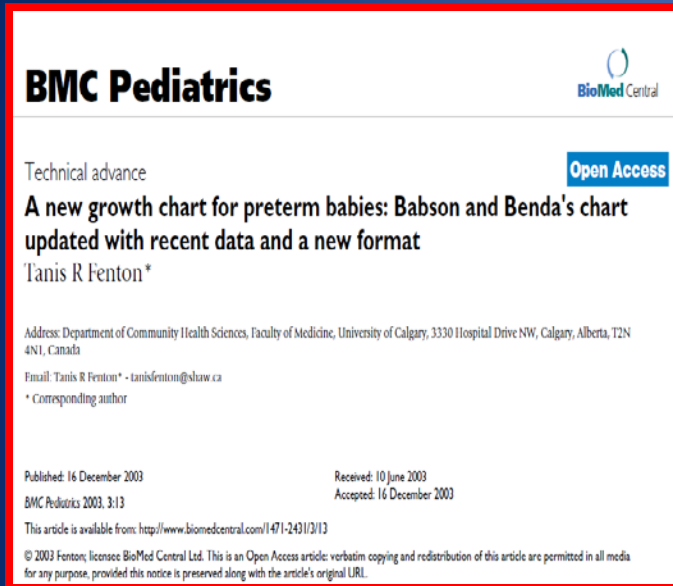
**Open Access**

A systematic review and meta-analysis to revise the Fenton growth chart for preterm infants

Tanis R Fenton<sup>1,2\*</sup> and Jae H Kim<sup>3</sup>

Fator de Impacto: 1,93

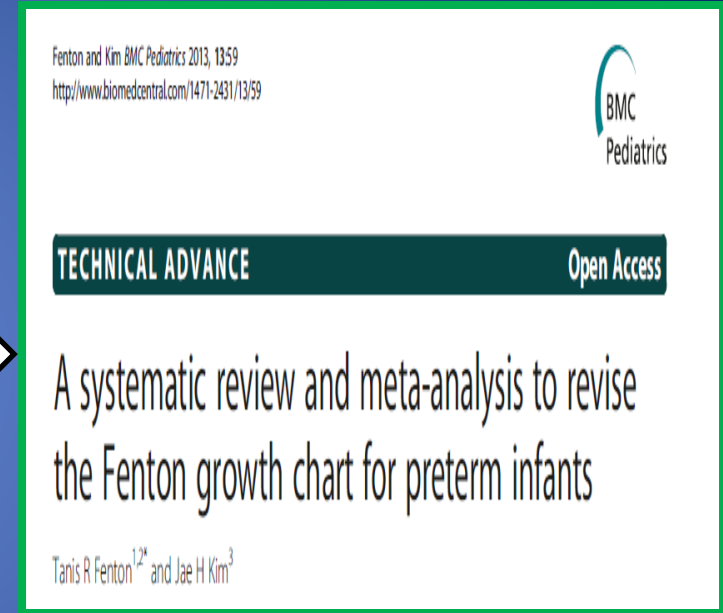
# INTRODUÇÃO



Ano: 2003

Revisão: Artigos de 1980 a 2002

Números de Citações: 571



Ano: 2013

Revisão: Artigos de 1987 a 2012

Números de Citações: 176

Curvas da Organização Mundial da Saúde

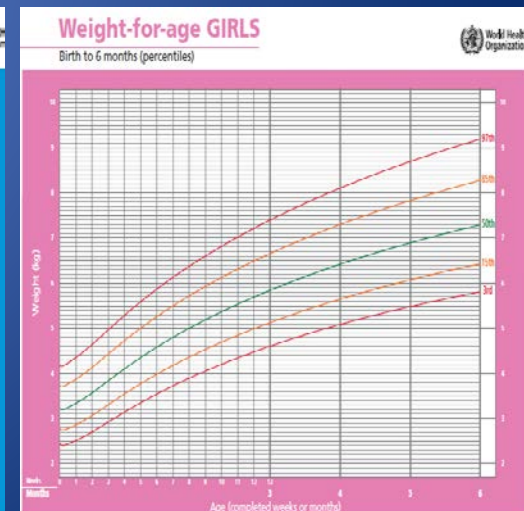
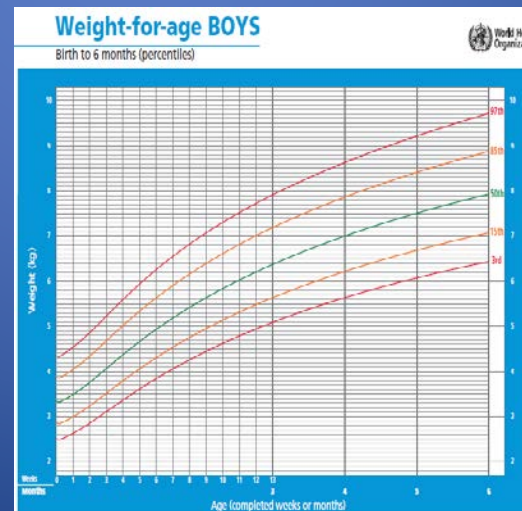
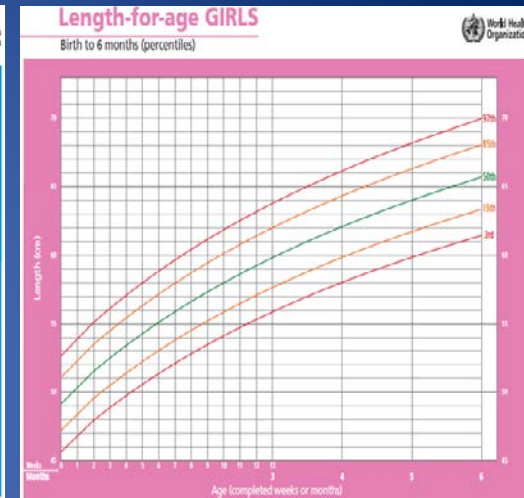
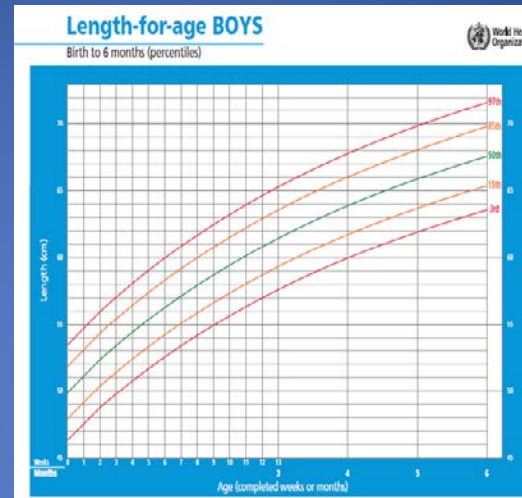
# INTRODUÇÃO

- Curva de Crescimento da Organização mundial da Saúde (2006).

- Estudo realizado em países desenvolvidos.

- Foram excluídos do estudo da OMS :

- Países em Desenvolvimento
- Mães que tiveram Planejamento/acompanhamento pré-natal
- Fatores de restrições de crescimento
- Crianças pré-termo





# OBJETIVOS



Revisar as curvas de crescimento de prematuros de Fenton 2003, especificamente:

- a) Utilizar dados recentes
- b) harmonizar o gráfico de crescimento pré-termo com as normas da OMS (2006),
- c) Realizar o alisamento dos dados entre prematuro e estimativas da OMS (2006) mantendo a integridade dos dados de 22 a 36 e a 50 semanas, (Interpolação das semanas 40,43, e 46)
- d) Elaborar curvas de crescimento específicas por gênero,
- e) Criar uma escala levando em consideração a idade real do participante ao invés de semanas concluídas



# MÉTODO

- Revisão Bibliográfica: MEDLINE e CINHALL
- Palavras-Chaves: “Pré-Termo Infância” ou “ Nascimento prematuro”; “Infância, Prematuro/Classificação ou Infância”; “Prematuro/ tamanho e desenvolvimento” ou “Infância, Prematuro/Estatística e dados numérico” ou “ Infância, muito baixo peso ao nascer” e Percentil ou Semanas e Peso ou Circunferência encefálica ou comprimento.

- a) Idade Gestacional Através de ultrassom
- b) Dados de idade gestacional  $\leq 24$  semanas
- c) A amostra de pelo menos 25.000 bebês, com mais de 500 crianças com idade inferior a 30 semanas;
- d) dados separados por gênero;
- e) Disponibilidade dos dados no artigo publicado
- f) Dados obtidos nos últimos 25 anos (1987 a 2012).



**Identification**

2436 records identified through  
database searching  
(Medline & Grey literature)

153 duplicates identified

**Screening**

**Eligibility**

**Included**

Figure 4 Flow diagram of studies identified, excluded and included in the systematic review.

# Resultados

**Table 2 Number of infants each week from each study**

Gestational age	Voight, 2010		Olsen, 2010		Bertino, 2010		Kramer, 2001		Roberts, 1999		Bonellie, 2008	
	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males
22	188	321	-	-	-	-	80	82	71	74	-	-
23	431	560	133	153	3	8	106	114	79	95	-	-
24	575	704	438	451	20	24	148	156	115	135	120	126
25	713	846	603	722	40	38	184	202	136	180	115	118
26	812	968	773	881	35	58	191	234	188	235	179	172
27	1073	1203	966	1030	52	61	188	254	231	284	174	177
28	1276	1536	1187	1281	79	63	287	330	287	361	246	239
29	1516	1838	1254	1505	70	72	299	392	325	397	245	265
30	1853	2212	1606	1992	107	114	390	467	440	571	317	313
31	2283	2956	2044	2460	126	140	461	584	548	743	136	148
32	*	*	3007	3677	165	183	795	997	877	1117	193	205
33	*	*	4186	5014	211	240	1055	1368	1200	1471	239	256
34	*	*	5936	7291	263	349	2018	2553	2086	2657	374	422
35	*	*	5082	6952	366	418	3391	4314	3418	4092	644	653
36	*	*	4690	7011	562	665	8203	9648	7320	8788	1048	1265
37	*	*	4372	6692	1291	1492	17308	19965	16105	18660	2006	2499
38	*	*	5755	8786	3524	3976	47516	51947	47809	51404	4630	6387
39	*	*	5978	8324	5295	5452	75068	77623	68846	72871	8699	10706
40	*	*	5529	7235	5672	5653	110738	112737	137570	141553	12644	14230

\* Not reported.

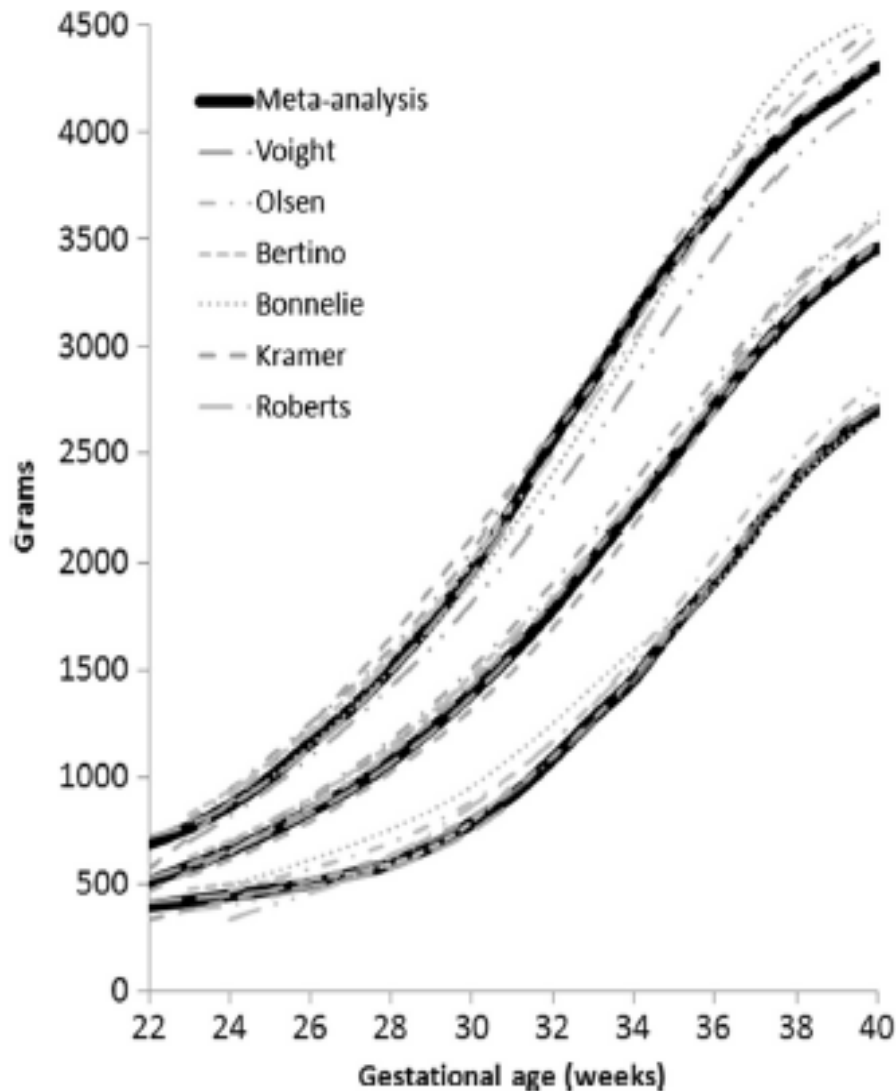


Figure 1 Boys birthweight centiles (3rd, 50th and 97th) from the six included studies, along with the boy's meta-analysis curves (bold).

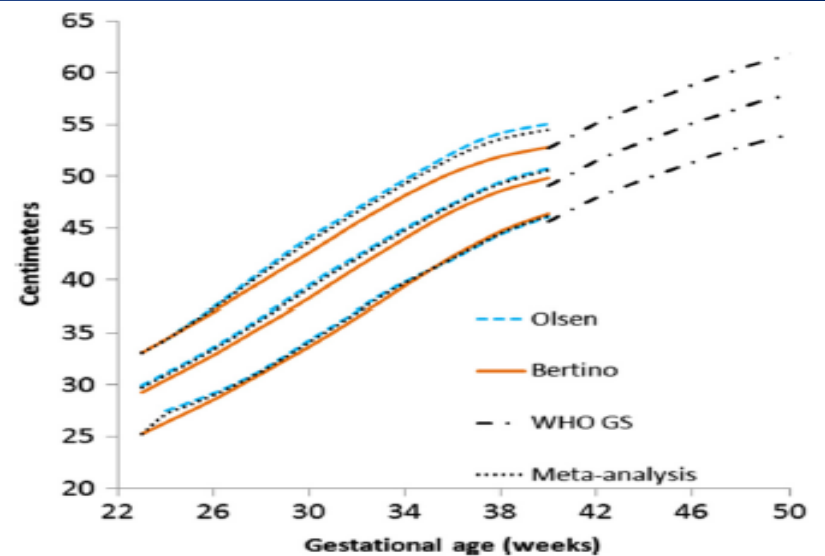


Figure 3 Girls length centiles (3rd, 50th and 97th) centiles from the included studies, along with the meta-analysis curves (dotted), and after 40 weeks, the World Health Organization centiles (dashed).

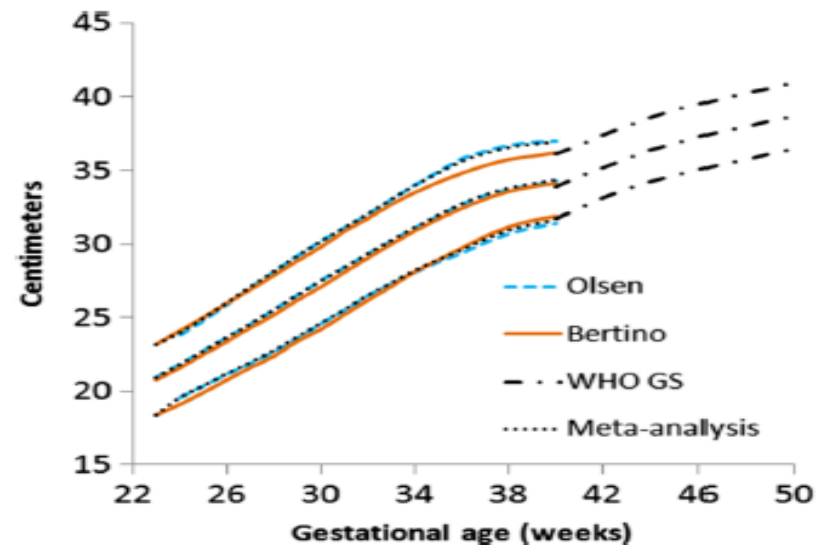


Figure 2 Girls head circumference centiles (3rd, 50th and 97th) centiles from the included studies, along with the girl's meta-analysis curves (dotted), and after 40 weeks, the World Health Organization centiles (dashed).



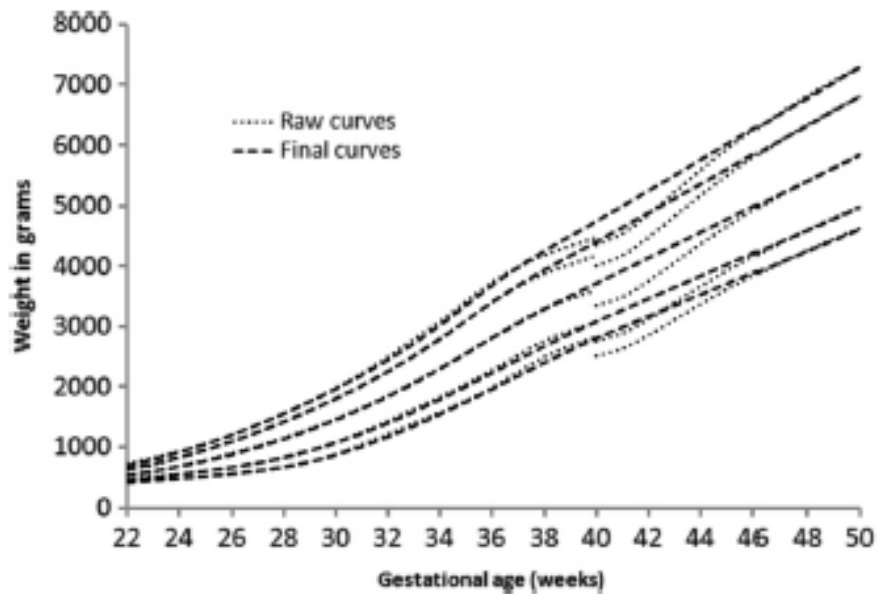


Figure 5 Boys meta-analysis weight curves (dotted) with the final smoothed growth chart curves (dashed).

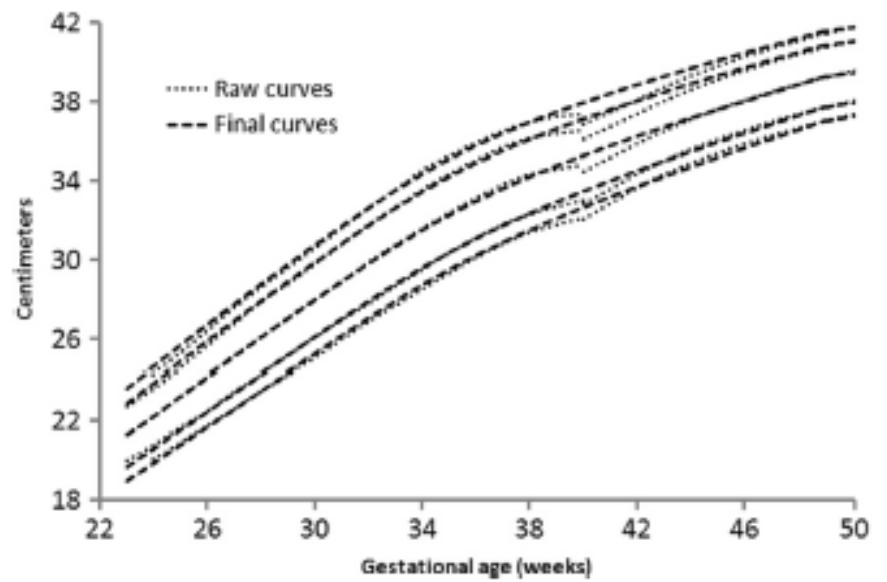


Figure 6 Boys meta-analysis head circumference curves (dotted) with the final smoothed growth chart curves (dashed).

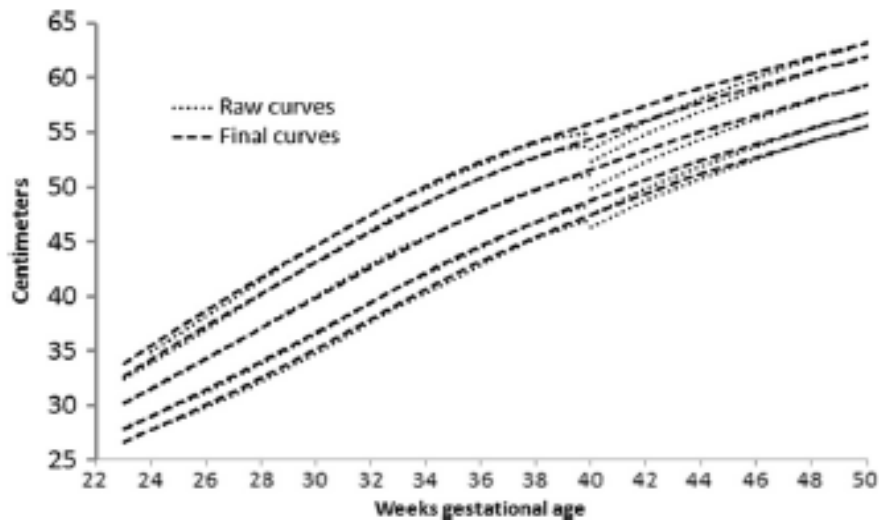


Figure 7 Boys meta-analysis length curves (dotted) with the final smoothed growth chart curves (dashed).



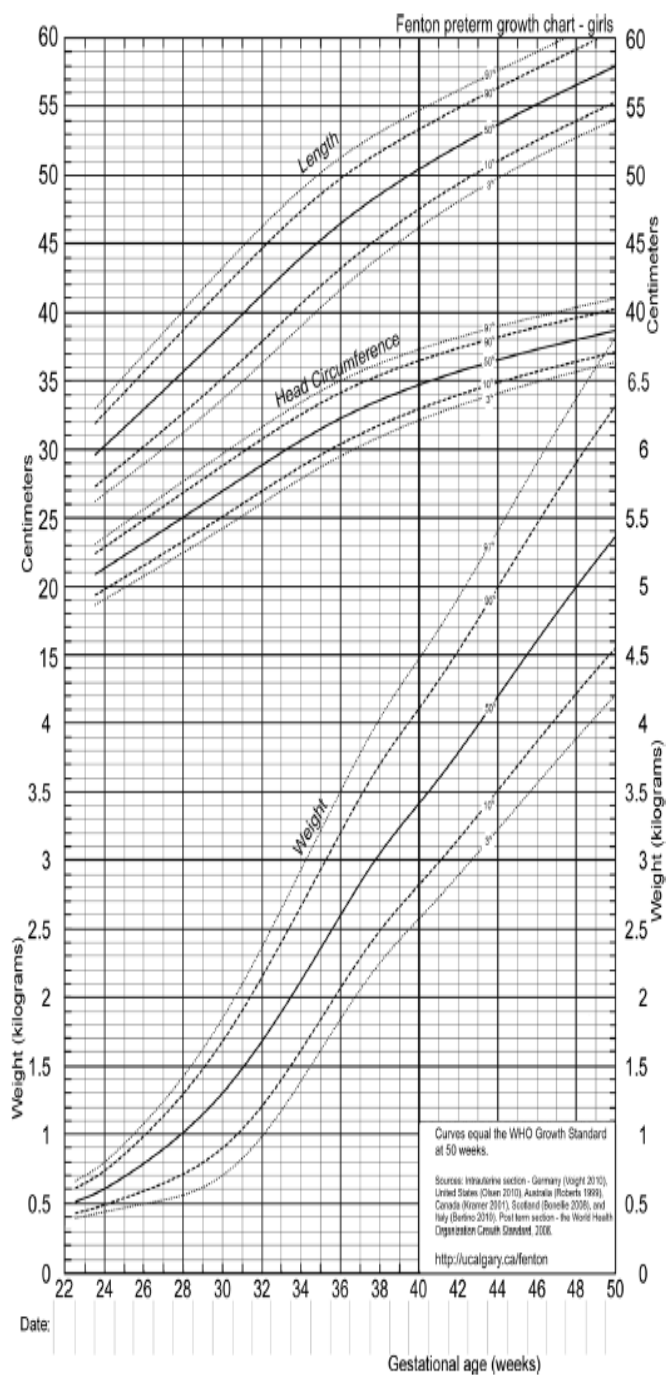


Figure 8 Revised growth chart for girls.

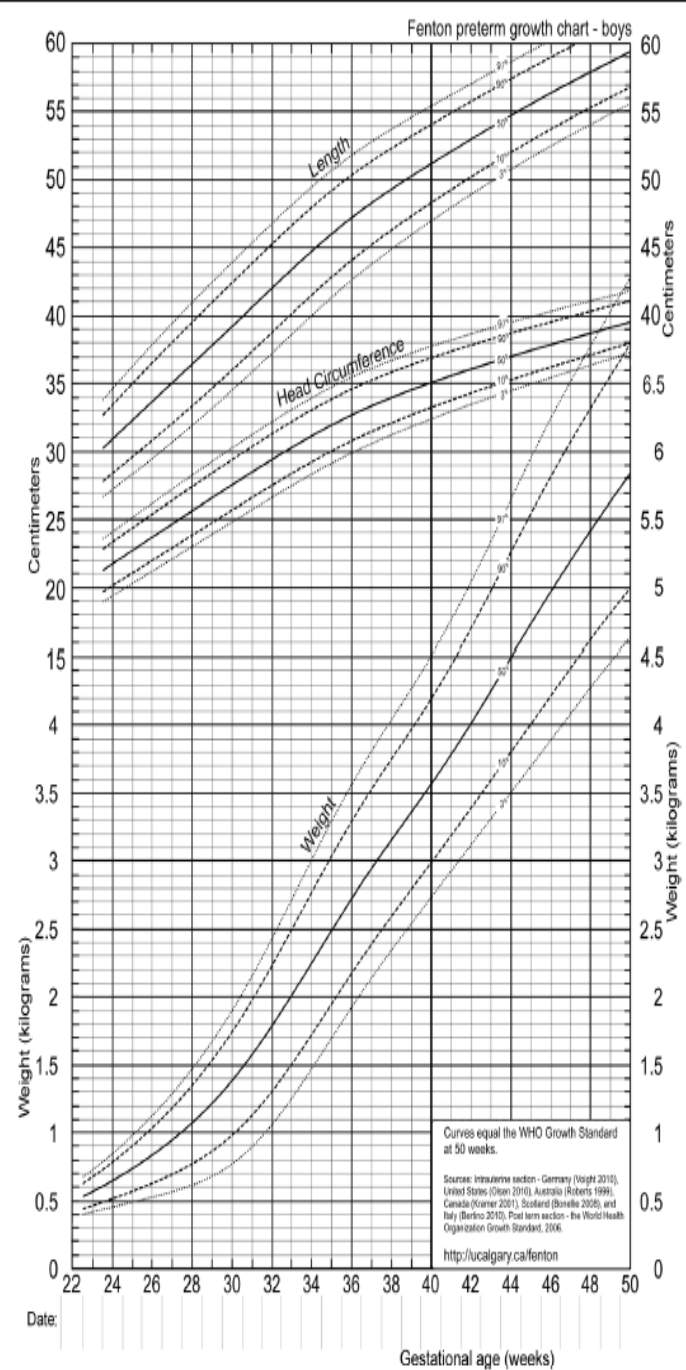


Figure 9 Revised growth chart for boys.

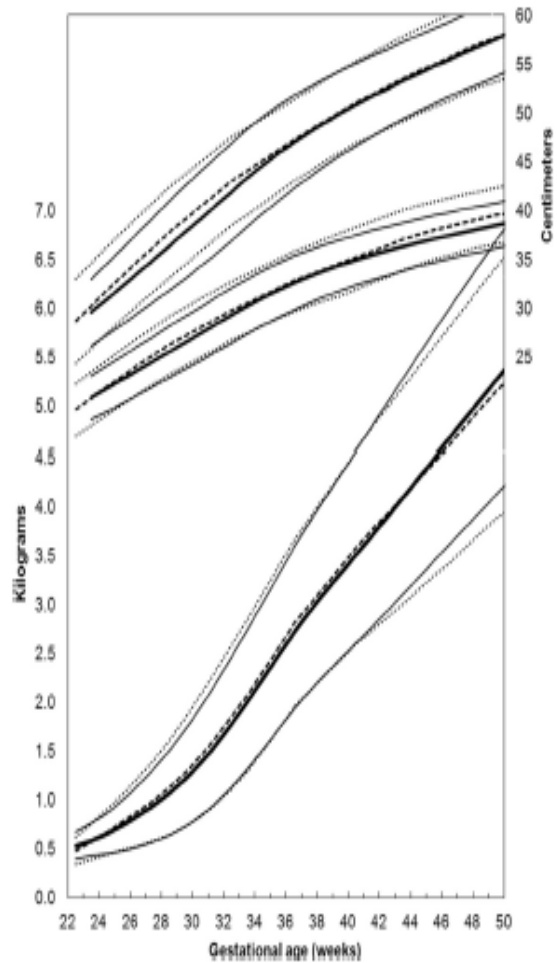


Figure 10 Comparison of the revised growth chart for girls (solid curves) and the 2003 Fenton growth chart (dashed curves) 3rd, 50th, and 97th percentile curves for length, head circumference, and weight. Both the 2003 and the revised growth curves are shown shifted to actual weeks.

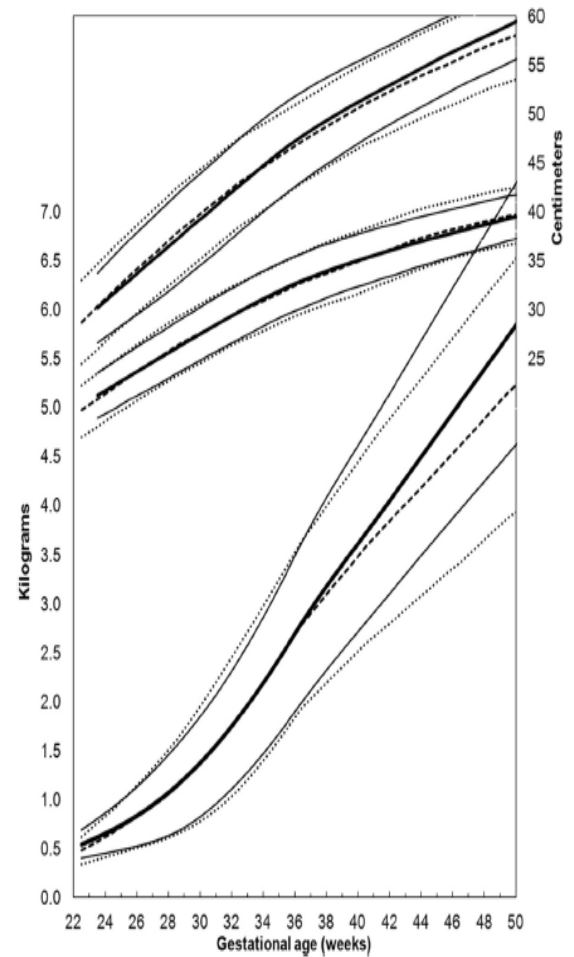


Figure 11 Comparison of the revised growth chart for boys (solid curves) and the 2003 Fenton growth chart (dashed curves) 3rd, 50th, and 97th percentile curves for length, head circumference, and weight. Both the 2003 and the revised growth curves are shown shifted to actual weeks.



# DISCUSSÃO E CONCLUSÃO

- Curvas para Meninos e Meninas.
- Tamanho amostra de aproximadamente 4 milhões de crianças.
- Dados de países desenvolvidos: Alemanha, Itália, Estados Unidos, Austrália, Escócia e Canadá.
- Plotagem com a idade exata do bebê.
- O ganho de peso entre as semanas 22 a 50.
- Diferença entre os dados da OMS (2006) apresenta maior ganho de peso quando comparado à curva anterior.





## Welcome To the Fenton Preterm Growth Chart webp

HOME 2013 GROWTH CHART GROWTH CHART APP 2013 LANGUAGES OTHER PAPERS 2003 GROWTH CHART

### Two Apps are available based on the 2013 Fenton Growth Charts

1. A full growth chart plotting App, that also provides exact percentiles and z-scores based on actual age
2. A calculator that provides exact percentiles and z-scores based on completed weeks

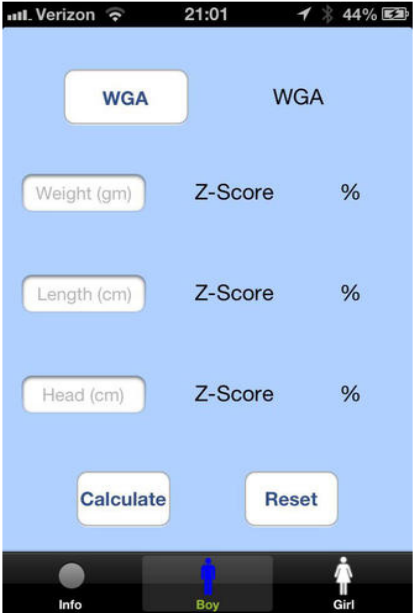
*Details and download instructions below:*

1. A Preterm Growth Chart App that shows babies growth patterns (weight, head circumference, and length) on the Fenton 2013 growth charts is now available. This App only works on Apple iPhones and iPads that have an Operating System of iOS 8 or greater.

*"I love this growth chart App, that you can enter the data every few days and see the baby's growth pattern on the growth chart. It also provides Z scores for each measurement. This App is much easier to use than paper copies of the growth charts, and I like that you can e-mail the growth chart too." Sarah McKenna, Pediatric Dietitian*



2. A calculator that provides exact percentiles and



Verizon 21:01 44%

WGA WGA

Weight (gm)	Z-Score	%
Length (cm)	Z-Score	%
Head (cm)	Z-Score	%

Calculate Reset

Info Boy Girl

<http://www.ucalgary.ca/fenton/>