



**GROWTH-AND-OBESITY ENHANCED-ROADMAPS OF CHILDREN**  
**Concluding Talk of the Second Conference on**  
**Anthromathematics & Sport Mathematics**  
**held at Government College, Hyderabad**  
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**Additional File**  
**Clinical Case Studies**

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## *Quantitative Recommendations for Gaining Mass — Wasted Child*

Second-generation solution of children’s wasting problem — calculations done using enhanced growth charts

*Compare with:* [http://www.ngds-ku.org/Presentations/Sport\\_Mathematics/Additional\\_File.pdf](http://www.ngds-ku.org/Presentations/Sport_Mathematics/Additional_File.pdf) (pp 13-14)

**NGDS-BLA-2011-5085/H (SGPP-KHI-20110614-01/01)**

**Table 1. Adult-Mid-Parental (Target) and Army-Cutoff Heights**

Father’s Height: 172.01 *cm* • Mother’s Height: 162.94 *cm*

<i>BOY/GIRL=(FATHER+MOTHER ± 13)/2</i>	<i>Target Boy</i>	<i>Army-Cutoff Boy</i>	<i>Target Girl</i>	<i>Army-Cutoff Girl</i>
Height ( <i>cm</i> )	173.98	162.56 <i>cm</i>	160.98	157.48 <i>cm</i>
Height ( <i>ft-in</i> )	5 <i>ft</i> 8.49 <i>in</i>	5 <i>ft</i> 4.00 <i>in</i>	5 <i>ft</i> 3.38 <i>in</i>	5 <i>ft</i> 2.00 <i>in</i>
Percentile	35.68	2.72	36.49	19.36

Army-cutoff values are based on selection standards for the Armed Forces of Pakistan.

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## Quantitative Recommendations for Gaining Mass — Wasted Child

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NGDS-BLA-2011-5085/H (SGPP-KHI-20110614-01/01)

**Table 2. Growth-and-Obesity Roadmap of Hr. S.**

Gender: Female • Date of Birth: 2005-04-10

<i>Checkup</i>	<i>1<sup>st</sup></i>	<i>2<sup>nd</sup></i>	<i>3<sup>rd</sup></i>
Date of Checkup	2012-07-15	2013-05-15	2013-11-21
Age ( <i>years</i> )	7.26	8.10	8.62
Dress Code	0/0.5	0/0.5	0/0.5
Cumulative-Scoliosis-Risk Weightage	9.50	10.25	15.25
Height ( <i>cm</i> )	119.36	124.53	126.45
Height ( <i>ft-in</i> )	3 <i>ft</i> 10.99 <i>in</i>	4 <i>ft</i> 1.03 <i>in</i>	4 <i>ft</i> 1.78 <i>in</i>
Percentile-for-Height	24.63	27.08	23.09
Estimated-Adult Height ( <i>cm</i> )	158.87	159.33	158.46
Estimated-Adult Height ( <i>ft-in</i> )	5 <i>ft</i> 2.55 <i>in</i>	5 <i>ft</i> 2.73 <i>in</i>	5 <i>ft</i> 2.39 <i>in</i>
Current-Age-MP Height ( <b><i>cm</i></b> )	121.15	126.00	128.76
Δ Height <i>w. r. t.</i> Current-Age-MP ( <i>cm</i> )	-1.79	-1.47	-2.29
Δ Height <i>w. r. t.</i> Current-Age-MP ( <i>in</i> )	-0.70	-0.58	-0.90
Status (pertaining-to-height)	1.48% STUNTED	1.17% STUNTED	1.78% STUNTED
Current-Age- Army-Cutoff Height ( <i>cm</i> )	118.28	122.99	125.64
Δ Height <i>w. r. t.</i> Army-Cutoff ( <i>cm</i> )	+1.08	+1.54	+0.81
Δ Height <i>w. r. t.</i> Army-Cutoff ( <i>in</i> )	+0.43	+0.61	+0.32
Reference Height ( <i>cm</i> )	121.15	126.00	128.76
Percentile-for-Reference-Height	36.49	36.49	36.49
Age of Prediction, A+ ( <i>years</i> )	7.77	8.60	9.11
Reference Height, at A+ ( <i>cm</i> )	124.14	128.67	131.23
Height — to be gained ( <i>cm</i> )	4.78	4.14	4.78
<b>Height — to be gained per month (<i>cm/month</i>)</b>	<b>0.80</b>	<b>0.69</b>	<b>0.80</b>
Height — to be gained per month ( <i>in/month</i> )	0.31	0.27	0.31
Gross Mass ( <i>kg</i> )	19.19	21.90	22.53
Clothing Correction ( <i>kg</i> )	0	0	0
Net Mass ( <i>kg</i> )	19.19	21.90	22.53
Net Weight ( <i>lb-oz</i> )	42 <i>lb</i> 5.02 <i>oz</i>	48 <i>lb</i> 4.63 <i>oz</i>	49 <i>lb</i> 10.86 <i>oz</i>
Percentile-for-Net-Mass	8.13	14.74	10.30
Estimated-Adult Mass ( <i>kg</i> )	47.60	49.68	48.46
Estimated-Adult Weight ( <i>lb-oz</i> )	104 <i>lb</i> 15.37 <i>oz</i>	109 <i>lb</i> 8.67 <i>oz</i>	106 <i>lb</i> 13.82 <i>oz</i>
<b>BMI: Body-Mass Index (<i>kg/m<sup>2</sup></i>)</b>	13.47	14.12	14.09
Estimated-Adult BMI ( <i>kg/m<sup>2</sup></i> )	18.86	19.57	19.30
Optimal Mass ( <i>kg</i> )	21.15	23.47	24.39
Optimal Weight ( <i>lb-oz</i> )	46 <i>lb</i> 10.25 <i>oz</i>	51 <i>lb</i> 11.94 <i>oz</i>	53 <i>lb</i> 12.36 <i>oz</i>
Δ Mass-for-Height ( <i>kg</i> )	-1.96	-1.57	-1.86
Δ Weight-for-Height ( <i>lb-oz</i> )	-4 <i>lb</i> 5.23 <i>oz</i>	-3 <i>lb</i> 7.31 <i>oz</i>	-4 <i>lb</i> 1.50 <i>oz</i>
Status (pertaining-to-mass)	9.28% WASTED	6.68% WASTED	7.61% WASTED
Optimal Mass for Reference Height, at A+ ( <i>kg</i> )	23.57	25.98	27.64
Mass — to be gained ( <i>kg</i> )	4.38	4.08	5.11
<b>Mass — to be gained per month (<i>kg/month</i>)</b>	<b>0.73</b>	<b>0.68</b>	<b>0.85</b>
Weight — to be gained per month ( <i>lb-oz/month</i> )	1 <i>lb</i> 9.75 <i>oz</i>	1 <i>lb</i> 8.01 <i>oz</i>	1 <i>lb</i> 13.98 <i>oz</i>

## *Quantitative Recommendations for Reducing Mass — Obese Child*

Second-generation solution of children’s obesity problem — calculations done using enhanced growth charts

*Compare with:* [http://www.ngds-ku.org/Presentations/Sport\\_Mathematics/Additional\\_File.pdf](http://www.ngds-ku.org/Presentations/Sport_Mathematics/Additional_File.pdf) (pp 15-16)

**SGPP-KHI-20060412-01/01**

**Table 3. Adult-Mid-Parental (Target) and Army-Cutoff Heights**

Father’s Height: 165.70 *cm* • Mother’s Height: 155.73 *cm*

<i>BOY/GIRL=(FATHER+MOTHER ± 13)/2</i>	<i>Target Boy</i>	<i>Army-Cutoff Boy</i>	<i>Target Girl</i>	<i>Army-Cutoff Girl</i>
Height ( <i>cm</i> )	167.22	162.56 <i>cm</i>	154.22	157.48 <i>cm</i>
Height ( <i>ft-in</i> )	5 ft 5.83 <i>in</i>	5 ft 4.00 <i>in</i>	5 ft 0.72 <i>in</i>	5 ft 2.00 <i>in</i>
Percentile	9.36	2.72	8.81	19.36

Army-cutoff values are based on selection standards for the Armed Forces of Pakistan.

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## Quantitative Recommendations for Reducing Mass — Obese Child

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SGPP-KHI-20060412-01/01

**Table 4. Growth-and-Obesity Roadmap of Z. J.**

Gender: Female • Date of Birth: 1996-09-23

<i>Checkup</i>	<i>1<sup>st</sup></i>	<i>2<sup>nd</sup></i>	<i>3<sup>rd</sup></i>
Date of Checkup	2007-05-13	2007-10-07	2008-06-15
Age ( <i>years</i> )	10.63	11.04	11.73
Dress Code	0/0.5	0/0.5	0/0.5
Cumulative-Scoliosis-Risk Weightage	0.50	1.00	6.00
Height ( <i>cm</i> )	136.41	139.70	146.53
Height ( <i>ft-in</i> )	4 <i>ft</i> 5.71 <i>in</i>	4 <i>ft</i> 7.00 <i>in</i>	4 <i>ft</i> 9.69 <i>in</i>
Percentile-for-Height	23.18	26.76	36.69
Estimated-Adult Height ( <i>cm</i> )	158.49	159.27	161.01
Estimated-Adult Height ( <i>ft-in</i> )	5 <i>ft</i> 2.40 <i>in</i>	5 <i>ft</i> 2.71 <i>in</i>	5 <i>ft</i> 3.39 <i>in</i>
Current-Age-MP Height ( <i>cm</i> )	131.88	134.11	138.74
Δ Height <i>w. r. t.</i> Current-Age-MP ( <i>cm</i> )	+4.53	+5.59	+7.79
Δ Height <i>w. r. t.</i> Current-Age-MP ( <i>in</i> )	+1.78	+2.20	+3.07
Status (pertaining-to-height)	3.43% TALL	4.17% TALL	5.61% TALL
Current-Age- Army-Cutoff Height ( <i>cm</i> )	135.42	137.80	142.57
Δ Height <i>w. r. t.</i> Army-Cutoff ( <i>cm</i> )	+0.99	+1.90	+3.96
Δ Height <i>w. r. t.</i> Army-Cutoff ( <i>in</i> )	+0.39	+0.75	+1.56
Reference Height ( <i>cm</i> )	136.41	139.70	146.53
Percentile-for-Reference-Height	23.18	26.76	36.69
Age of Prediction, A+ ( <i>years</i> )	11.14	11.54	12.23
Reference Height, at A+ ( <i>cm</i> )	139.52	143.16	150.06
Height — to be gained ( <i>cm</i> )	3.11	3.46	3.53
<b>Height — to be gained per month (<i>cm/month</i>)</b>	<b>0.52</b>	<b>0.58</b>	<b>0.59</b>
Height — to be gained per month ( <i>in/month</i> )	0.20	0.23	0.23
Gross Mass ( <i>kg</i> )	42.50	46.50	49.60
Clothing Correction ( <i>kg</i> )	0	0	0
Net Mass ( <i>kg</i> )	42.50	46.50	49.60
Net Weight ( <i>lb-oz</i> )	93 <i>lb</i> 11.40 <i>oz</i>	102 <i>lb</i> 8.52 <i>oz</i>	109 <i>lb</i> 5.89 <i>oz</i>
Percentile-for-Net-Mass	78.36	82.41	80.85
Estimated-Adult Mass ( <i>kg</i> )	67.98	70.54	69.56
Estimated-Adult Weight ( <i>lb-oz</i> )	149 <i>lb</i> 14.41 <i>oz</i>	102 <i>lb</i> 8.52 <i>oz</i>	153 <i>lb</i> 5.97 <i>oz</i>
<b>BMI: Body-Mass Index (<math>kg/m^2</math>)</b>	22.84	23.83	23.10
Estimated-Adult BMI ( $kg/m^2$ )	27.07	27.81	26.83
Optimal Mass ( <i>kg</i> )	30.94	33.16	37.82
Optimal Weight ( <i>lb-oz</i> )	68 <i>lb</i> 3.70 <i>oz</i>	73 <i>lb</i> 1.79 <i>oz</i>	83 <i>lb</i> 6.19 <i>oz</i>
Δ Mass-for-Height ( <i>kg</i> )	+11.56	+13.34	+11.78
Δ Weight-for-Height ( <i>lb-oz</i> )	+25 <i>lb</i> 7.70 <i>oz</i>	+29 <i>lb</i> 6.73 <i>oz</i>	+25 <i>lb</i> 15.70 <i>oz</i>
Status (pertaining-to-mass)	37.35% OBESE	40.24% OBESE	31.16% OBESE
Optimal Mass for Reference Height, at A+ ( <i>kg</i> )	32.83	38.23	39.88
Mass — to be lost ( <i>kg</i> )	9.67	8.27	9.72
<b>Mass — to be lost per month (<i>kg/month</i>)</b>	<b>1.61</b>	<b>1.38</b>	<b>1.62</b>
Weight — to be lost per month ( <i>lb-oz/month</i> )	3 <i>lb</i> 8.80 <i>oz</i>	3 <i>lb</i> 0.69 <i>oz</i>	3 <i>lb</i> 9.15 <i>oz</i>

## *The Third-Generation Solution of Childhood-Obesity Problem*

to be launched on **Thursday, June 1, 2015**

in a research paper entitled

**OPTIMAL-MASS MANAGMENT IN OBESE CHILDREN**

Kamal SA, *International Journal of Biology and Biotechnology*, **12 (3)**: 381-391, 2015

<http://www.ngds-ku.org/Papers/J38.pdf>

*First-Generation Solution of Childhood-Obesity Problem*

proposed on Wednesday, September 4, 2013 during

**The First Conference on Anthromathematics**

<http://www.ngds-ku.org/Anthromathematics/2013/Anthromathematics2013.pdf>

**GROWTH-AND-OBESITY ROADMAPS OF CHILDREN**

*Theoretical Background:* <http://www.ngds-ku.org/Presentations/Roadmap.pdf>

*Examples:* [http://www.ngds-ku.org/Presentations/Sport\\_Mathematics/Additional\\_File.pdf](http://www.ngds-ku.org/Presentations/Sport_Mathematics/Additional_File.pdf) (pp. 13-16)

*The Second-Generation Solution of Childhood-Obesity Problem*

proposed on Thursday, September 4, 2014 during

**The Second Conference on Anthromathematics and Sport Mathematics**

<http://www.ngds-ku.org/Anthromathematics/2014/Anthromathematics2014.pdf>

**GROWTH-AND-OBESITY ENHANCED-ROADMAPS OF CHILDREN**

*Theoretical Background:* <http://www.ngds-ku.org/Presentations/Enhanced.pdf>

*Examples:* [http://www.ngds-ku.org/Presentations/Enhanced/Additional\\_File.pdf](http://www.ngds-ku.org/Presentations/Enhanced/Additional_File.pdf) (pp. 2-5)

*Web address of the main document:*

**Abstract of Concluding Talk of ANTHROMATHEMATICS 2014**

**GROWTH-AND-OBESITY ENHANCED-ROADMAPS OF CHILDREN**

<http://www.ngds-ku.org/Presentations/Enhanced.pdf>

*Web address of this document:*

**Additional File**

**CLINICAL CASE STUDIES**

[http://www.ngds-ku.org/Presentations/Enhanced/Additional\\_File.pdf](http://www.ngds-ku.org/Presentations/Enhanced/Additional_File.pdf)