



Standard Tables of Body Measurements for Children, Infant Sizes—Preemie to 24 Months¹

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INTRODUCTION

These tables were developed from data published by various research organizations. This standard takes into consideration infants' growth patterns reflected in the 2002 charts for the National Center for Health Statistics,² the 1977 Anthropometric Study of U.S. Infants and Children conducted by the University of Michigan,³ AnthroKids, Anthropometric Data of Children⁴, and the 2000 CDC Growth Charts for the United States.⁵ All sudden shifts of proportion have been eliminated so as to reflect the gradual growth and development of the infant. To verify the proposed body measurements, a three-dimensional Avatar was created in the size range by Alvanon Inc.⁶ for a visual reference and is displayed in the documentation.¹

1. Scope

1.1 These tables list body measurements of infants' sizes. Although these are body measurements, they can be used as a baseline in designing apparel for infants in this size range when considering such factors as fabric type, ease for body movement, styling, and fit.

1.2 These tables list body measurements for the complete range of infant sizing.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system must be used independently of the other, without combining values in any way.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 *ASTM Standards:*⁷

D123 Terminology Relating to Textiles

D5219 Terminology Relating to Body Dimensions for Apparel Sizing

2.2 *ISO Standard:*

ISO 3635 Size Designation of Clothes, Definitions, and Body Measurement Procedures⁷

3. Terminology

3.1 *Definitions:*

3.1.1 For definitions relating to body dimensions, refer to Terminology **D5219**.

3.1.2 For definitions of other textile terms used in this standard, refer to Terminology **D123**.

4. Significance and Use

4.1 The use of the body measurement information in **Tables 1 and 2** will assist manufacturers in developing patterns and garments that are consistent with the current anthropometric characteristics of the population of interest. This practice should in turn reduce or minimize consumer confusion and dissatisfaction related to apparel sizing. (Also refer to ISO 3635 Size Designation Procedures.)

¹ These tables are under the jurisdiction of ASTM Committee **D13** on Textiles and are the direct responsibility of Subcommittee **D13.55** on Body Measurement for Apparel Sizing.

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² U.S. Department of Commerce, *Voluntary Product Standard: Body Measurement for the Sizing of Children's Apparel*, NIST Publication No. PS 54–172, Washington, D.C.

³ Available from National Center for Health Statistics.

⁴ Snyder, Lawrence, *Anthropometry of Infants, Children, and Youth to Age 18*, University of Michigan, May 1977.

⁵ 2000 CDC Growth Charts for the United States: Methods and Development, National Center for Health Statistics, *Vital Health Stat*, 11 (246), 2002.

⁶ Alvanon, Inc. 145 W 30th Street, Suite 1000, New York, NY 10001.

⁷ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

TABLE 1 Infant Sizes Preemie to 24 Months Body Measurements, SI Units

Size	Preemie	Newborn	3M	6M	9M	12M	18M	24M
Body Weight, kg	up to 2.49	2.72 to 4.31	4.54 to 6.58	6.80 to 8.16	8.39 to 9.98	10.21 to 11.34	11.57 to 12.70	12.93 to 13.61
Girth Measurements								
Head Girth	34.93	38.10	42.23	44.77	46.04	47.31	48.58	50.80
Neck Base Girth	18.42	20.32	21.27	22.54	23.18	23.81	24.77	25.72
Chest/Bust	34.93	39.37	43.18	45.72	46.99	48.26	50.17	52.07
Waist	35.56	40.64	44.45	46.99	48.26	49.53	51.44	53.34
Hip/Seat	35.56	40.64	44.45	46.99	48.26	49.53	51.44	53.34
Thigh	17.78	20.32	23.81	25.72	26.67	27.62	28.89	29.85
Knee	12.70	15.24	17.15	18.42	19.05	19.69	20.64	21.59
Calf	11.43	14.29	16.83	18.10	19.05	19.69	20.64	20.96
Ankle	9.53	11.11	11.43	12.38	12.70	13.02	13.65	13.97
Armseye Girth	12.70	13.97	15.88	17.46	19.05	19.69	20.96	21.59
Upper-Arm	10.16	12.07	13.02	13.65	13.97	14.29	14.92	15.56
Elbow	10.16	11.75	13.02	13.65	13.97	14.29	14.92	15.88
Wrist	8.57	9.21	9.53	9.84	10.48	10.80	11.11	11.43
Trunk Length (total vertical)	46.99	54.93	60.96	66.99	71.12	73.98	78.74	85.73
Vertical Measurements								
Height, cm	up to 44.45	46.99 to 52.07	57.15 to 60.96	62.23 to 68.58	69.85 to 73.66	74.93 to 77.47	78.74 to 83.82	85.09 to 90.17
Height for calculations	44.45	52.07	60.96	68.58	73.66	77.47	83.82	88.90
Head and Neck Length	13.02	13.34	14.61	15.24	15.56	16.19	16.51	17.15
Cervicale Height	31.43	38.74	46.36	53.34	57.79	61.25	67.31	71.76
Cervicale to Knee	22.86	28.26	32.70	37.15	40.01	42.23	46.04	50.17
Center Back Waist Length	12.38	13.97	15.56	17.15	18.42	19.37	20.96	22.54
Center Front Waist Length	11.11	13.02	14.61	15.88	16.83	17.46	18.73	20.32
Scye Depth	4.76	5.40	6.03	6.67	7.30	7.62	7.62	7.94
Waist to Hip	2.86	4.76	5.72	6.99	7.62	7.94	8.26	8.89
Waist to Knee	10.80	14.61	17.15	20.32	22.23	23.50	25.72	28.26
Waist Height	19.37	25.08	30.80	36.51	40.01	42.55	46.99	49.85
Hip Height	16.51	20.32	25.08	29.53	32.39	34.61	38.74	40.96
Crotch Height	13.03	17.15	21.59	25.72	28.58	30.48	33.97	35.56
Rise Height	6.35	8.26	9.21	10.80	11.43	12.07	13.02	13.97
Knee Height	8.57	10.48	13.65	16.19	17.78	19.05	21.27	21.59
Ankle Height	2.54	2.54	3.49	3.81	4.13	4.13	4.45	5.08
Width and Length Measurements								
Crotch Length (total)	19.37	25.50	26.04	28.89	30.80	31.75	33.66	37.47
Shoulder Length	3.49	4.45	4.76	5.72	6.03	6.35	5.99	7.30
Across Back Shoulder	14.92	16.83	18.10	19.69	20.64	21.59	22.54	23.50
Upper Front Chest Width	12.07	14.29	15.56	17.15	18.42	19.05	20.32	20.64
Cervicale to Wrist Length	22.86	27.31	30.16	33.34	35.56	37.15	39.69	44.45
Shoulder and Arm Length	19.37	23.50	26.35	29.21	31.75	33.02	35.56	40.01
Arm Length	15.88	19.05	21.59	23.81	25.72	26.67	28.58	32.70
Hand Length	4.76	5.40	6.03	6.99	7.94	8.57	9.53	9.84
Hand Width	4.45	4.45	5.08	5.72	6.35	6.99	7.30	7.94
Foot Length	7.30	8.26	8.89	10.16	11.11	11.43	12.38	13.34
Foot Width	3.49	4.13	4.45	4.76	5.08	5.08	5.40	5.72

5. Apparatus

5.1 *Tape Measure*, dimensionally stable and approximately 1.5-cm [$\frac{1}{2}$ -in.] wide and graduated accurately in cm [$\frac{1}{16}$ -in.].

5.2 *Plastic Goniometer*, to measure the radian (degree) of shoulder slope.

5.3 *Scale*, standard, calibrated, body weight type.

5.4 *Metal Ruler*.

6. Procedure

6.1 General:

6.1.1 For all vertical measurements and most horizontal measurements, subject is to be lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.1.2 Take measurements over regular undergarments normally worn.

6.1.3 Take all measurements from the same side of the body for consistency.

6.1.4 Refer to Terminology **D5219** for the location of all points to be measured.

6.2 Body Measurements:

6.2.1 *Body Weight*—Weight as measured on a calibrated scale, taken with the subject in undergarments.

6.2.2 *Head Girth*—Measure the maximum horizontal circumference of the head above the ears.

6.2.3 *Neck Base Girth*—Measure the circumference of the neck, taken over the cervicale at the back and the top of the collarbone at the front.

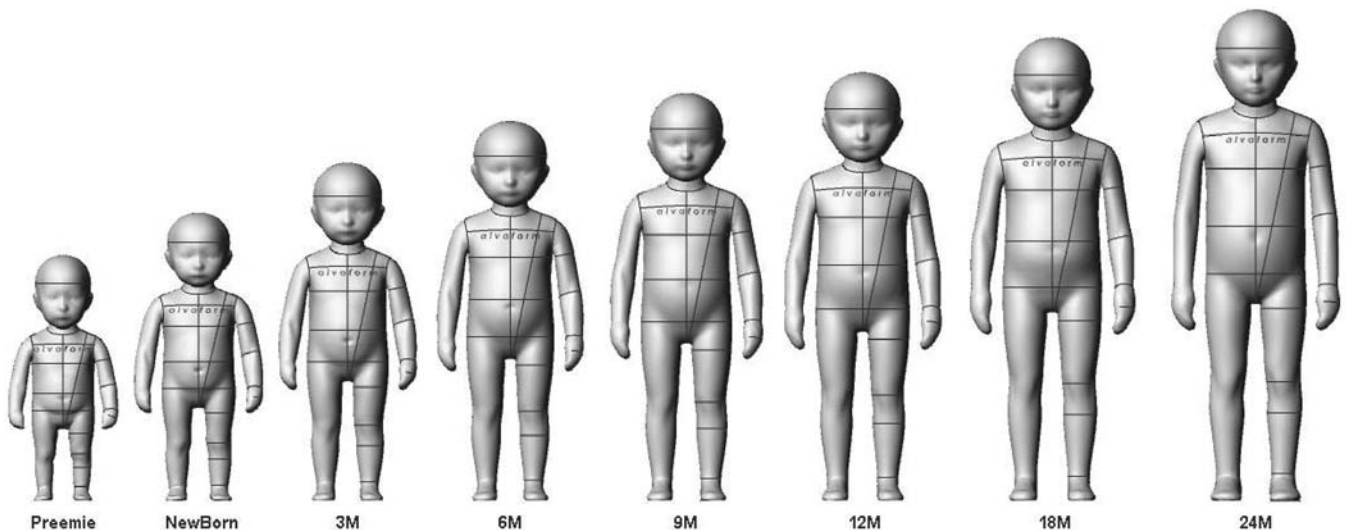
6.2.4 *Chest/Bust Girth*—Measure the horizontal circumference around the body, taken under the arms and across the fullest part of the chest/bust apex including the lower portion of the shoulder blades.

6.2.5 *Waist Girth*—Measure the minimum horizontal circumference around the body at waist height.

6.2.6 *Hip Girth*—Measure the maximum horizontal circumference around the body at hip height.

TABLE 2 Infant Sizes Preemie to 24 Months Body Measurements, Inch-Pound Units

Size	Preemie	Newborn	3M	6M	9M	12M	18M	24M
Body Weight, lb	up to 5½	6 to 9½	10 to 14½	15 to 18	18½ to 22	22½ to 25	25½ to 28	28½ to 30
Girth Measurements								
Head Girth	13¾	15	16⅝	17⅝	18⅞	18⅝	19⅞	20
Neck Base Girth	7¼	8	8⅝	8⅞	9⅞	9⅞	9¾	10⅞
Chest/Bust	13¾	15½	17	18	18½	19	19¾	20½
Waist	14	16	17½	18½	19	19½	20¼	21
Hip/Seat	14	16	17½	18½	19	19½	20¼	21
Thigh	7	8	9⅞	10⅞	10½	10⅞	11⅞	11¾
Knee	5	6	6¾	7¼	7½	7¾	8⅞	8½
Calf	4½	5⅞	6⅞	7⅞	7½	7¾	8⅞	8¼
Ankle	3¾	4⅞	4½	4⅞	5	5⅞	5⅞	5½
Armscye Girth	5	5½	6¼	6⅞	7½	7¾	8¼	8½
Upper-Arm	4	4¾	5⅞	5⅞	5½	5⅞	5⅞	6⅞
Elbow	4	4⅞	5⅞	5⅞	5½	5⅞	5⅞	6¼
Wrist	3⅞	3⅞	3¾	3⅞	4⅞	4¼	4⅞	4½
Trunk Length (total vertical)	18½	21⅞	24	26⅞	28	29⅞	31	33¾
Vertical Measurements								
Height, in.	up to 17½	18 ½ to 20½	22 ½ to 24	24 ½ to 27	27 ½ to 29	29 ½ to 30½	31 to 33	33 ½ to 35 ½
Height for Calculations	17½	20½	24	27	29	30½	33	35
Head and Neck Length	5⅞	5¼	5¾	6	6⅞	6⅞	6½	6¾
Cervicale Height	12¾	15¼	18¼	21	22¾	24⅞	26½	28¼
Cervicale to Knee	9	11⅞	12⅞	14⅞	15¾	16⅞	18⅞	19¾
Center Back Waist Length	4⅞	5½	6⅞	6¾	7¼	7⅞	8¼	8⅞
Center Front Waist Length	4⅞	5⅞	5¾	6¼	6⅞	6⅞	7⅞	8
Scye Depth	1⅞	2⅞	2⅞	2⅞	2⅞	3	3	3⅞
Waist to Hip	1⅞	1⅞	2¼	2¾	3	3⅞	3¼	3½
Waist to Knee	4¼	5¾	6¾	8	8¾	9¼	10⅞	11⅞
Waist Height	7⅞	9⅞	12⅞	14⅞	15¾	16¾	18½	19⅞
Hip Height	6½	8	9⅞	11⅞	12¾	13⅞	15¼	16⅞
Crotch Height	5⅞	6¾	8½	10⅞	11¼	12	13⅞	14
Rise Height	2½	3¼	3⅞	4¼	4½	4¾	5⅞	5½
Knee Height	3⅞	4⅞	5⅞	6⅞	7	7½	8⅞	8½
Ankle Height	1	1	1⅞	1½	1⅞	1⅞	1¾	2
Width and Length Measurements								
Crotch Length (total)	7⅞	9¼	10¼	11⅞	12⅞	12½	13¼	14¾
Shoulder Length	1⅞	1¾	1⅞	2¼	2⅞	2½	2¾	2⅞
Across Back Shoulder	5⅞	6⅞	7⅞	7¾	8⅞	8½	8⅞	9¼
Upper Front Chest Width	4¾	5⅞	6⅞	6¾	7¼	7½	8	8⅞
Cervicale to Wrist Length	9	10¾	11⅞	13⅞	14	14⅞	15⅞	17½
Shoulder and Arm Length	7⅞	9¼	10⅞	11½	12½	13	14	15¾
Arm Length	6¼	7½	8½	9⅞	10⅞	10½	11¼	12⅞
Hand Length	1⅞	2⅞	2⅞	2¾	3⅞	3⅞	3¾	3⅞
Hand Width	1¾	1¾	2	2¼	2½	2¾	2⅞	3⅞
Foot Length	2⅞	3¼	3½	4	4⅞	4½	4⅞	5¼
Foot Width	1⅞	1⅞	1¾	1⅞	2	2	2⅞	2¼


FIG. 1 Avatar 1 – Infant Front View

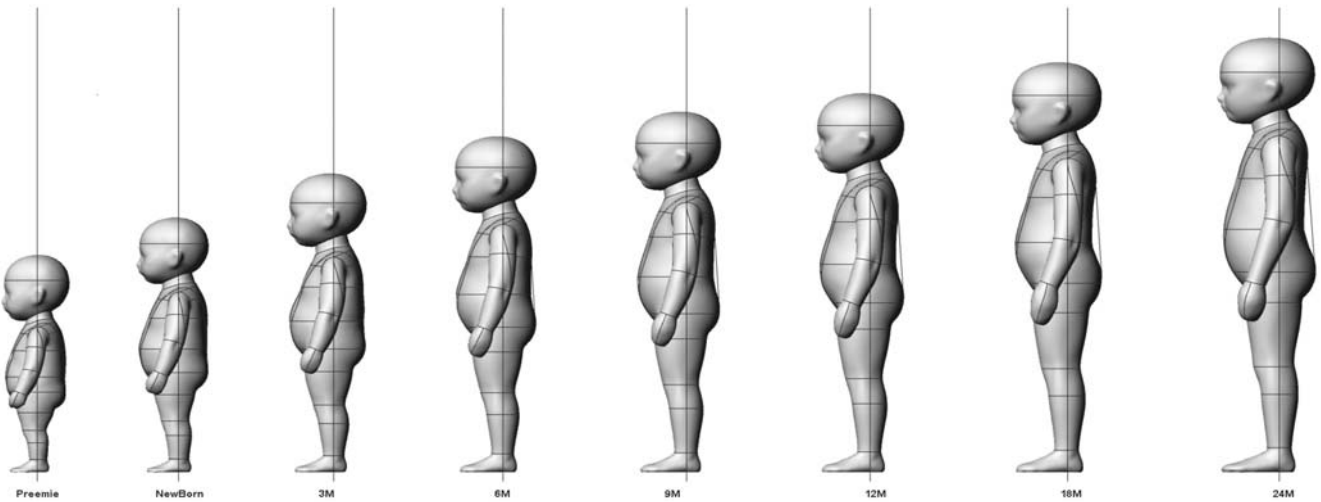


FIG. 2 Avatar 2 – Infant Side View

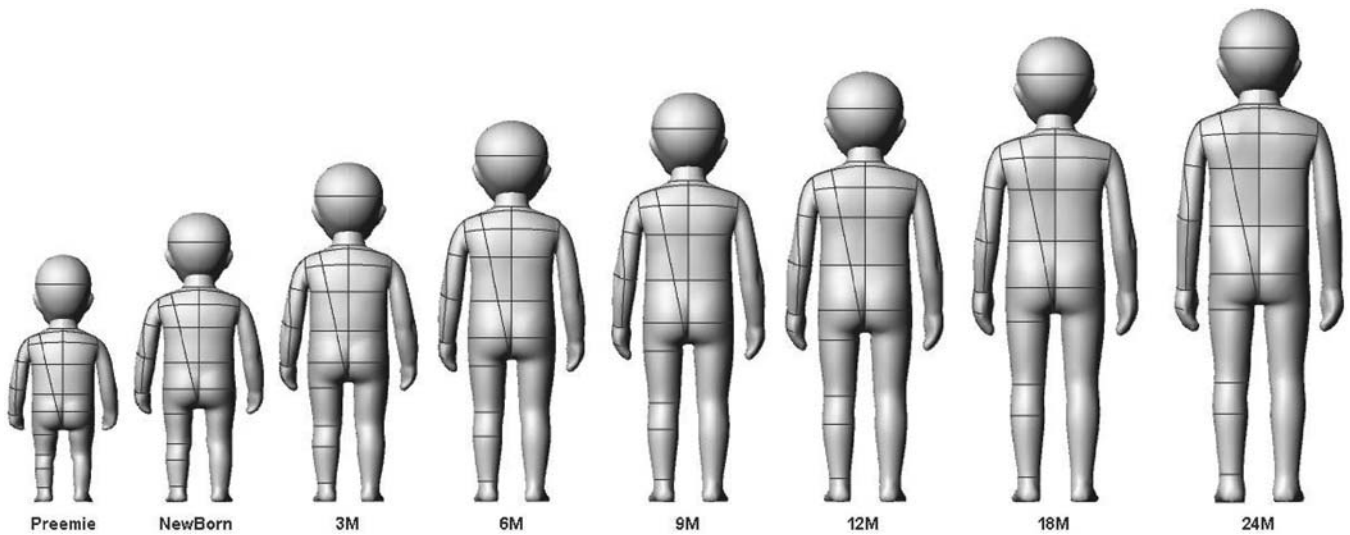


FIG. 3 Avatar 3 – Infant Back View

6.2.7 *Thigh Girth*—Measure the maximum horizontal circumference of the upper leg, taken close to the crotch.

6.2.8 *Knee Girth*—Measure the maximum horizontal circumference of the knee, taken over the kneecap with the leg straight.

6.2.9 *Calf Girth*—Measure the maximum horizontal circumference of the lower leg, taken between the knee and the ankle.

6.2.10 *Ankle Girth*—Measure the maximum horizontal circumference of the ankle, taken over the greatest prominence of the ankle bones.

6.2.11 *Armscye Girth*—Measure the circumference from the shoulder joint through the front break-point, the armpit, the back-break point, and to the starting point, taken with the arms down.

6.2.12 *Upper-Arm Girth*—Measure the maximum circumference of the arm, taken midway between the elbow and shoulder joints with the arm bent 1.57 rad (90°).

6.2.13 *Elbow Girth*—Measure the maximum circumference of the elbow, taken over the outer prominence of the elbow bone with the arm bent 1.57 rad (90°).

6.2.14 *Wrist Girth*—Measure the maximum circumference of the wrist, taken over the inner and outer prominence of the wrist bones.

6.2.15 *Trunk Length (Total Vertical)*—Measure the circumference taken from a point on the right shoulder midway between the neck base and shoulder joint, down the back, through the crotch, and up over the prominence of the right chest/bust apex to the starting point, avoiding constriction at the crotch.

6.2.16 *Height*—Measure the straight distance from the top of the head to the soles of the feet, taken while subject is lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.17 *Head and Neck Length (Infant Special Case)*—Measure the distance from the crown of the head to the

cervicale (contour), taken with the head erect and the neck unbent, with subject lying down flat with legs extended.

6.2.18 *Cervicale Height (Special Infant Case)*—Measure the straight distance from the cervicale to the soles of the feet, taken with subject lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.19 *Cervicale to Knee Height (Infant Special Case)*—Measure the straight distance from the cervicale to a point level with the midpoint of the back of the knee (or crease), taken with subject lying down flat with legs extended.

6.2.20 *Center Back Waist Length*—Measure from the cervicale to the center back waist level, taken along the spine (contour).

6.2.21 *Center Front Waist Length*—Measure from the center front neck base line to the center front waist level (contour).

6.2.22 *Scye Depth*—Measure the vertical distance from the cervicale to the back-break point level, taken with the arms down.

6.2.23 *Waist to Hip Height (Infant Special Case)*—Measure the straight distance from the waist level to the hip girth level, taken along the side of the body with subject lying down flat with legs extended.

6.2.24 *Waist to Knee (Infant Special Case)*—Measure the straight distance from the waist level to a point level with the midpoint of the back of the knee (or crease), taken along the side of the body with subject lying down flat with legs extended.

6.2.25 *Waist Height (Infant Special Case)*—Measure the straight distance from the waist level to the soles of the feet along the side of the body, taken with subject lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.26 *Hip Height (Infant Special Case)*—Measure the straight distance from the hip girth level to the soles of the feet along the side of the body, taken with subject lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.27 *Crotch Height (Infant Special Case)*—Measure the straight distance from the midpoint of the crotch to the soles of the feet, taken with subject lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.28 *Rise Height*—Measure the vertical distance from the waist level at the side of the torso to the flat surface, taken with subject sitting on hard, flat surface.

6.2.29 *Knee Height*—Measure the plumb line distance from the knee midpoint to the soles of the feet. (*Infant Special Case*), measure the straight distance from the midpoint (or crease) of the knee to the soles of the feet, taken with subject lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.30 *Ankle Height (Infant Special Case)*—Measure the straight distance from the prominence of the outer ankle bone to the soles of the feet, taken with subject lying down flat with legs extended and foot positioned at 1.57 rad (90°) to the leg.

6.2.31 *Crotch Length (Total Vertical)*—Measure the distance from waist level at the center front, through the crotch and to the waist level at the center back, avoiding constriction at the crotch.

6.2.32 *Shoulder Length*—Measure the distance from the side of the neck base to the top of the shoulder joint, taken with the arm down.

6.2.33 *Across Back Shoulder*—Measure the horizontal distance across the back from the top of one shoulder joint to the top of the other shoulder joint, taken with the arms down.

6.2.34 *Front Chest Width*—Measure the horizontal distance across the chest from the front break-point, taken with the arms down.

6.2.35 *Cervicale to Wrist*—Measure the distance from the cervicale over top of the shoulder joint, along the outside of the arm, over the elbow to the prominent wrist bone, taken with the arm bent at 1.57 rad (90°) and the hand placed on the hip.

6.2.36 *Shoulder and Arm Length*—Measure the distance from the side of the neck base across the shoulder joint and along the outside of the arm over the elbow to the prominent wrist bone, taken with the arm bent 1.57 rad (90°) and the hand placed on the hip.

6.2.37 *Arm Length*—Measure the distance from the top of the shoulder joint along the outside of the arm over the elbow to the prominent wrist bone, taken with the arm bent at 1.57 rad (90°) and the hand placed on the hip.

6.2.38 *Hand Length*—Measure the straight distance from the prominence of the longest finger to the inner wrist bone, taken across the palm of the hand with fingers together and palm flat (use a stable, flat ruler).

6.2.39 *Hand Width*—Measure the maximum width across the palm of the hand excluding the thumb, taken with fingers together and palm flat (use a stable, flat ruler).

6.2.40 *Foot Length*—Measure the straight distance from the prominence of the back of the heel to the prominence of the longest toe, taken with the foot on a flat surface without shoes (use a stable, flat ruler).

6.2.41 *Foot Width*—Measure the straight distance from one side of the foot to the other side at the widest part, taken with the subject standing and without shoes (use a stable, flat ruler).

7. Keywords

7.1 apparel; body measurements; garment sizes; infants; tables

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