2012 Tallied-Facial-Soft-Tissue-Depth-Data: SUB-ADULTS 12 to 17 years

Soft Tissue Depth Measurement	Total Weighted Mean	n	Weighted Mean for s Studies	s	n
Median points					
g-g'	5.5	1690	5.5	1.0	1671
n-n'	8.0	2886	7.5	1.5	1883
mn-mn'	4.0	472	4.0	1.0	454
rhi-rhi'	2.5	851	2.5	0.5	832
sn-sn'	12.5	1353	12.0	2.5	1113
mp-mp'	15.0	2485	15.0	3.0	1500
ls-ls'	14.5	1918	14.5	2.5	1678
li-li'	15.5	1759	15.5	2.5	1519
mls-mls'	11.5	1819	11.5	2.0	1560
pg-pg'	11.5	3152	12.0	2.5	1909
gn-gn'	7.5	679	7.5	2.0	660
m-m'	8.0	223	8.0	2.5	223
Bilateral points					
mso-mso'	6.0	246	6.0	1.0	245
mio-mio'	7.0	251	7.0	1.5	250
acp-acp'	8.0	104	7.5	2.0	103
go-go'	13.5	239	13.5	4.5	238
zy-zy'	8.0	147	8.0	2.0	147
sC-sC'	11.0	104	11.0	2.5	103
iC-iC'	10.5	104	10.5	2.5	103
sM^2-$sM^{2'}$	27.0	104	27.0	4.0	103
iM_2-iM_2'	23.0	104	23.0	4.0	103
mr-mr'	19.5	142	19.5	4.5	142
mmb-mmb'	12.5	104	12.5	3.5	103

Soft tissue depth values have been rounded to the nearest 0.5mm.

Measurement points are defined and illustrated in: Stephan and Simpson 2008 Facial soft tissue depths in craniofacial identification (Part II). Journal of Forensic Sciences 53:1273-9.

Total Weighted Mean = weighted mean across all studies in the literature reporting a soft tissue depth mean for the corresponding landmark.

n = sample size used to calculate each weighted mean.

Weighted Mean for s Studies = data for investigations that reported standard deviations.

s = weighted standard deviation.

All studies used to generate the T-table should be cited when this T-table is used (see example provided below) and acknowledgements to CRANIOFACIALidentification.com should be given.

Features of the 2012 Sub-adult T-table

At pogonion the sample size increased from 3,020 individuals in 2008 to 3,152 individuals in 2012.

Nineteen of 23 "Total Weighted Mean" measurements did not change from 2008 to 2012 and of the four that did, two did not exceed a rounded difference of 0.5 mm.

The largest raw increase in a mean soft tissue depth was 0.6 mm at sn-sn' under the "Total Weighted Mean". The greatest reduction of a mean value was -3.5 mm at go-go', which occurred for both the "Total Weighted Mean", and the "Weighted Mean for *s* Studies". This go-go' change is consistent with previously elucidated trends (12), since the new data added at this landmark were derived from frontal cephalographs and the starting 2008 sample sizes were relatively small.

Updates made to the 2008 version:

1. Summary data from three other published studies have been used to produce the 2012 T-table. They are listed below in order of year published:

Gerasimov MM. Vosstanovlenie lica po cerepu. Moskva: Izdat. Akademii Nauk SSSR, 1955.
Utsuno H, Kageyama T, Deguchi T, Umemura Y, Yoshino M, Nakamura H, et al. Facial soft tissue thickness in skeletal type I Japanese children. Forensic Science International 2007;172:137-43.*
Utsuno H, Kageyama T, Uchida K, Yoshino M, Miyazawa H, Inoue K. Facial soft tissue thickness in Japanese children. Forensic Science International 2010;199:109.e1-.e6.
*The Utsuno et al. (2010) data completely replace the Utsuno et al. (2005) data; and replace the Utsuno et al. (2007) data except at the go-go' landmark.

2. Gerasimov's values were recalculated using raw data published in his original work (4) and only using individuals aged from 12 to 17 years (n = 12). Since Gerasimov's raw data were used, standard deviations have also been calculated and used to generate the T-table.

3. Comparisons to the 2008 T-Table have been made using a corrected value of "251" for the 2008 mio-mio' measurement under the "Total Weighted Mean".

4. The "No. of Samples" field has been removed from the T-table due to the inconsistent and arbitrary way in which authors have categorized their samples (often by age). Emphasis is now given to the total number of studies used to calculate the T-table (irrespective of the number of subsamples each concerns) and the overall sample size of the pooled results.

5. The "Estimated Minimum" and "Estimated Maximum" fields have been removed to avoid their misuse as precise data ranges. (These fields were originally included to show that some of the data were not normally distributed and, therefore, that their description using arithmetic means was far from ideal.)

Changes at a Glance: 2012 Sub-adult T-table compared to the 2008 version

Soft Tissue Depth Measurement	Diff. in the Total Weighted Mean	n Increased by	Diff. in the Weighted Mean for s Studies	Diff. in the s	n Increased by
Median points					
g-g'	0.0	132.0	0.0	0.0	132.0
n-n'	0.0	132.0	0.0	0.0	132.0
mn-mn'	0.0	0.0	0.0	0.0	0.0
rhi-rhi'	0.0	132.0	0.0	**-0.5**	132.0
sn-sn'	**0.5**	120.0	0.0	**0.5**	120.0
mp-mp'	0.0	0.0	**0.5**	0.0	0.0
ls-ls'	0.0	120.0	0.0	0.0	120.0
li-li'	0.0	120.0	0.0	0.0	120.0
mls-mls'	**0.5**	132.0	**0.5**	0.0	132.0
pg-pg'	0.0	132.0	0.0	0.0	132.0
gn-gn'	0.0	0.0	0.0	0.0	0.0
m-m'	**-1.0**	120.0	**-1.0**	0.0	120.0
Bilateral points					
mso-mso'	0.0	0.0	0.0	0.0	0.0
mio-mio'	0.0	0.0	0.0	0.0	0.0
acp-acp'	0.0	0.0	0.0	0.0	0.0
go-go'	**-3.5**	130.0	**-3.5**	**1.0**	130.0
zy-zy'	0.0	0.0	0.0	0.0	0.0
sC-sC'	0.0	0.0	0.0	0.0	0.0
iC-iC'	0.0	0.0	0.0	0.0	0.0
sM^2-$sM^{2'}$	0.0	0.0	0.0	0.0	0.0
iM_2-iM_2'	0.0	0.0	0.0	0.0	0.0
mr-mr'	0.0	0.0	0.0	0.0	0.0
mmb-mmb'	0.0	0.0	0.0	0.0	0.0

Soft tissue depth values have been rounded to the nearest 0.5mm.

Measurement points are defined and illustrated in: Stephan and Simpson 2008 Facial soft tissue depths in craniofacial identification (Part II). Journal of Forensic Sciences 53:1273-9.

Total Weighted Mean = weighted mean across all studies in the literature reporting a soft tissue depth mean for the corresponding landmark.

n = sample size used to calculate each weighted mean.

Weighted Mean for s Studies = data for investigations that reported standard deviations.

s = weighted standard deviation.

Citing the 2012 Sub-adult T-table

To correctly cite the T-tables three attributes are required:
1. In-text references to all papers used for the relevant T-table.
2. In-text references to the source of the original published T-table work (13).
3. Written acknowledgements to CRANIOFACIALidentification.com.

The following example meets these requirements:
….mean soft tissue depths of sub-adults from the 2012 Tallied-Facial-Soft-Tissue-Depth-Data were used in this study (11). This T-table uses weighted means and standard deviations to pool data across prior studies (1-10, 14-18) thereby providing soft tissue depths at nineteen commonly measured points. In contrast to single studies, the T-table holds three prime

advantages: i) systematic and random biases specific to each investigation/measurement method are pitched against one another to triangulate upon population parameters; ii) the data are based on very large sample sizes; and iii) small differences, relative to measurement errors, are not used to tenuously sub-categorize the data (13).

Reference List 2012 Sub-adult T-table

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12. Stephan CN, Simpson EK. Facial soft tissue depths in craniofacial identification (part I): an analytical review of the published adult data. J Forensic Sci 2008;53:1257-72.
13. Stephan CN, Simpson EK. Facial soft tissue depths in craniofacial identification (part II): an analytical review of the published sub-adult data. J Forensic Sci 2008;53:1273-9.
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16. Utsuno H, Kageyama T, Uchida K, Yoshino M, Miyazawa H, Inoue K. Facial soft tissue thickness in Japanese children. Forensic Sci Int 2010;199:109.e1-.e6.
17. Wilkinson CM. In vivo facial tissue depth measurements for White British children. J Forensic Sci 2002;47:459-65.
18. Williamson MA, Nawrocki SP, Rathbun TA. Variation in midfacial tissue thickness of African-American children. J Forensic Sci 2002;47:25-31.