Results

Differences in techniques

The means, mean differences and standard deviations of the differences of the measuremens of Steiner's, McNamara's and Ricketts for the two techniques are separately shown in Table 1, 2 and 3 respectively. For the overall result, there were statistically significant mean differences for 10 of the 30 measurements (p>0.05) which were SNA, Upper 1 to NA, Interincisal angle, Midface length, Lower anterior facial height (LAFH), Pogonion to Nasion-perpendicular, Upper 1 to AV, Lower facial height angle (LFH angle), A point convexity, Lower 1 to A-Po (mm) and Lower 1 to A-Po (degree). These ten measurements can be defined as 3 of the 11, 4 of the 10 and 4 of the 9 measurements for the Steiner's, McNamara's and Ricketts analyses, respectively.

As a result, thirty-three percent of the variables had mean differences between methods that were statistically significant. It may imply that nearly seventy percent of the whole measurements obtained from LS were statistically not different from LC.

Correlation of methods

Correlation coefficients between both methods were shown (Table1,2 and 3). Twenty-three of the 30 variables had statistically significant correlation coefficients ($\gamma > 0.37$) which was 6 of the 11, 9 of the 10 and 8 of the 9 measurements for the Steiner's, McNamara's and Ricketts analyses, respectively. These indicated that both methods had strong correlations between each other in the percentage of seventy-seven.

Table 1

Means, mean differences, individual standard deviations, and correlation coeffiecients

between methods of Steiner's analysis

Measurements	Lat ceph (mean)	Lat skull (mean)	Difference (mean)	P-value	SD of difference	Correlation coefficient
SNA	84.2609	84.3717	-0.1109	0.729	2.1562	0.785
SNB	80.9391	81.8978	-0.9587	0.000	1.6846	0.883
ANB	3.3174	4.3543	-1.0370	0.577	12.5262	0.169
Upper 1 to NA	25.9391	29.5696	-3.6304	0.009	8.9865	0.624
Upper 1 to NA (mm)	6.4848	9.4696	-2.9848	0.087	11.5784	0.298
Lower 1 to NB	29.7109	31.5413	-1.8304	0.128	8.0099	0.696
Lower 1 to NB (mm)	7.7609	9.5065	-1.7457	0.304	11.3875	0.340
Pogonion to NB	0.4609	1.9370	-1.4761	0.446	13.0329	0.076
Interincisal angle	121.0391	118.1652	2.8739	0.000	4.9063	0.911
SN to OP	12.9130	14.0370	-1.1239	0.487	10.8709	0.356
SN to GoGn	31.4571	31.1588	0.2983	0.218	1.6206	0.951

Table 2

Means, mean differences, individual standard deviations, and correlation coeffiecients

between methods of McNamara analysis

Measurements	Lat ceph (mean)	Lat skull (mean)	Difference (mean)	P-value	SD of difference	Correlation coefficient
A to N perp	0.4826	0.5739	-0.913	0.783	2.2383	0.832
Mand length	122.5848	118.9022	3.6826	0.106	15.1525	0.557
Midface length	91.2304	89.0326	2.4978	0.000	3.0327	0.748
Max-Mand diff	31.7152	32.0500	-0.3348	0.621	4.5571	0.801
LAFH	71.3435	69.9978	1.3457	0.000	1.8738	0.967
Mand pl angle	26.7565	26.2717	0.4848	0.194	2.4952	0.918
Facial axis	86.7696	86.5413	0.2283	0.305	1.4933	0.929
Pg to N perp	-5.5304	-4.0761	-1.4543	0.001	2.9015	0.904
Upper 1 to AV	6.6978	8.0478	-1.3500	0.000	1.8145	0.858
Lower 1 to A-PG	5.3587	7.9761	-2.6174	0.154	12.2545	0.243

Table 3

Means, mean differences, individual standard deviations, and correlation coeffiecients

between methods of Ricketts' analysis

Measurements	Lat ceph (mean)	Lat skull (mean)	Difference (mean)	P-value	SD of difference	Correlation coefficient
Facial axis	86.7696	86.5783	0.1913	0.385	1.4796	0.931
Facial depth	87.4435	86.0891	1.3543	0.330	9.3226	0.252
Mand plane	26.7565	26.7196	0.0369	0.940	3.3231	0.860
LFH angle	46.9761	47.5391	-0.5630	0.042	1.8265	0.935
Mand arc	34.9848	35.1717	-0.1870	0.658	2.8418	0.889
A pt convexity	3.2957	2.6326	0.6630	0.003	1.4361	0.886
Lower 1 to A-Po (mm)	5.3587	6.1630	-0.8043	0.000	1.0981	0.939
Upper 6 to PTV	17.7674	17.3522	0.4152	0.373	3.1274	0.713
Lower 1 to A-Po\	26.7543	27.9609	-1.2065	0.006	2.8651	0.888