

Appendix Five

Measurement Error

Table AP 5.1: Intra-observer error for Observer 1.

Measurement	N	TEM	SD	P	R
COBB	19	0.388316	1.748157	0.049341	0.950659
COBH	19	0.351313	1.914303	0.03368	0.96632
CNOR	19	0.368139	2.561532	0.020655	0.979345
CFMTN	20	0.367423	2.568485	0.020463	0.979537
CFMTNS	20	0.3	3.336485	0.008085	0.991915
CMAH	19	0.368853	2.723394	0.018344	0.981656
CMPL	19	0.436795	3.239085	0.018185	0.981815
CMPB	20	0.559911	3.744691	0.022357	0.977643
CMPH	20	0.342418	2.725755	0.015781	0.984219
CMSAST	18	0.4272	4.344566	0.009669	0.990331
CDGL	20	0.33541	3.415332	0.009645	0.990355
COCL	19	0.318715	2.427052	0.017244	0.982756
CECMIS	20	0.517446	2.27029	0.051948	0.948052
COPO	20	0.329393	3.824884	0.007416	0.992584
CBAPO	20	0.327872	3.4281	0.009147	0.990853
CFMTB	20	0.158114	4.840786	0.001067	0.998933
CBPO	20	0.158114	5.512043	0.000823	0.999177
CBZO	19	0	5.404737	0	1
CNMS	20	0	5.899875	0	1
CBAST	20	0.223607	5.97655	0.0014	0.9986
CLFMT	20	0.474342	6.519245	0.005294	0.994706
CLAST	20	0.241868	4.858207	0.002479	0.997521
MAL	19	0.27338	6.463575	0.001789	0.998211
MRH	19	0.341822	5.550354	0.003793	0.996207
MXRB	20	0.305369	3.629481	0.007079	0.992921
MIRB	20	0.182346	2.7932	0.004262	0.995738

$$\text{TEM} = \sqrt{\sum(d_i^2)/2n}, \text{ P} = (\text{TEM}^2/\text{SD}^2), \text{ R} = 1 - (\text{TEM}^2/\text{SD}^2)$$

Table AP 5.2: Intra-observer error for Observer 2.

Measurement	N	TEM	SD	P	R
SGL	10	0.58992	3.47981	0.02874	0.97126
SGB	10	0.1245	2.76015	0.00203	0.99797
SAL	10	0.51527	6.57354	0.00614	0.99386
SCL	10	0.57619	3.93303	0.02146	0.97854
SZAB	14	0.68269	3.71573	0.03376	0.96624
SZAW	14	0.64504	5.56926	0.01341	0.98659
SZAPA	14	0.48366	4.66615	0.01074	0.98926
SZSIA	14	0.45119	5.39992	0.00698	0.99302
SZS1	14	0.26592	2.64602	0.0101	0.9899
OCH	24	0.62915	13.7659	0.00209	0.99791
OCIB	22	0.5	9.29529	0.00289	0.99711
OCPL	22	0.62395	5.00566	0.01554	0.98446
OCIS	24	0.56125	8.39541	0.00447	0.99553
OCAH	24	0.65352	3.90154	0.02806	0.97194
OCASH	24	0.52698	4.90925	0.01152	0.98848
OCASB	21	0.39127	5.6849	0.00474	0.99526
TMLP	10	0.447214	5.433542	0.006774	0.993226
TMC	10	0.423084	3.71162	0.012993	0.987007
TLC	10	0.36606	3.513688	0.010854	0.989146

TEM= $\sqrt{\sum(d_i^2)/2n}$, P= (TEM²/SD²), R= 1- (TEM²/SD²)

Table AP 5.3: Intra-observer error for Observer 3.

Measurement	N	TEM	SD	P	R
CVML	8	0	10.33685	0	1
CVXMS	8	0.3937	1.652364	0.05677	0.94323
CVIMS	8	0.152069	1.29824	0.013721	0.986279
CVWA	8	0.093541	3.722098	0.000632	0.999368
CVWS	8	0.108972	3.422026	0.001014	0.998986
CVMC	8	0.67361	3.250945	0.042934	0.957066
CVLC	8	0.463006	2.981228	0.02412	0.97588
SGL	14	0.41833	3.479813	0.014452	0.985548
SGB	14	0.425944	2.760147	0.023814	0.976186
SAL	14	0.399106	6.573537	0.003686	0.996314
SCL	14	0.327872	3.93303	0.00695	0.99305
HML	10	0.316228	20.53319	0.000237	0.999763
HXMS	10	0.325576	2.165748	0.022599	0.977401
HIMS	10	0.252982	1.957416	0.016704	0.983296
HDT	10	0.189737	2.312308	0.006733	0.993267
HSIH	10	0.401871	3.910862	0.010559	0.989441
HAPH	10	0.4219	3.454448	0.014916	0.985084
HEB	10	0.177482	5.170292	0.001178	0.998822
HGT	10	0.324037	3.231435	0.010055	0.989945
RML	10	0.591608	17.28194	0.001172	0.998828
RXMS	10	0.340588	1.748966	0.037922	0.962078
RIMS	10	0.228035	1.205658	0.035773	0.964227
RGH	10	0.1	2.092943	0.002283	0.997717
RMLD	10	0.531507	2.744053	0.037517	0.962483
UML	10	0.387298	18.07994	0.000459	0.999541
UPL	10	0.591608	16.71438	0.001253	0.998747
UXMS	10	0.209762	1.970548	0.011331	0.988669

Table AP 5.3: Continued.

Measurement	N	TEM	SD	P	R
UIMS	10	0.358469	1.548838	0.053566	0.946434
URN	10	0.371484	2.984833	0.01549	0.98451
UOW	10	0.263629	2.573604	0.010493	0.989507
UCH	10	0.400625	3.396247	0.013915	0.986085
MC1L	12	0.198956	3.142691	0.004008	0.995992
MC2L	12	0.15	4.371929	0.001177	0.998823
MC3L	12	0.147196	4.373725	0.001133	0.998867
MC4L	12	0.409268	3.791994	0.011649	0.988351
MC5L	12	0.144338	3.48723	0.001713	0.998287
FML	12	0.408248	28.43253	0.000206	0.999794
FXMS	12	0.501664	2.817976	0.031692	0.968308
FIMS	12	0.296507	2.14355	0.019134	0.980866
FXST	12	0.49371	3.244254	0.023159	0.976841
FIST	12	0.285774	2.67506	0.011412	0.988588
FEB	12	0.408248	5.826881	0.004909	0.995091
FLE	12	0.456435	4.618045	0.009769	0.990231
FAPH	12	0.360555	3.823207	0.008894	0.991106
FSIH	12	0.419821	4.076237	0.010607	0.989393
FMLP	12	0.604497	7.753507	0.006078	0.993922
TML	10	0.921954	23.98814	0.001477	0.998523
TXNF	10	0.398121	3.506841	0.012888	0.987112
TINF	10	0.485798	2.566343	0.035833	0.964167
TMLP	10	0.447214	5.433542	0.006774	0.993226
TMC	10	0.471699	3.71162	0.016151	0.983849
TLC	10	0.442719	3.513688	0.015876	0.984124
CZL	8	0.353553	5.543182	0.004068	0.995932
CZB	8	0.661438	3.555919	0.0346	0.9654
CZH	8	0.612372	3.6917	0.027516	0.972484
TZL	8	0.829156	4.228297	0.038454	0.961546
TZB	8	0.5	3.236389	0.023868	0.976132
TZH	8	0.433013	2.497994	0.030048	0.969952
MT1L	8	0.315238	4.067021	0.006008	0.993992
MT2L	8	0.269258	4.651803	0.00335	0.99665
MT3L	8	0.108972	4.465801	0.000595	0.999405
MT4L	8	0.201556	4.723322	0.001821	0.998179
MT5L	8	0.111803	5.279206	0.000449	0.999551

$$\text{TEM} = \sqrt{\sum(d_i^2)/2n}, \text{P} = (\text{TEM}^2/\text{SD}^2), \text{R} = 1 - (\text{TEM}^2/\text{SD}^2)$$

Table AP 5.4: Intra-observer error for Observer 4.

Measurement	N	TEM	SD	P	R
CVML	6	0.408248	10.33685	0.00156	0.99844
CVXMS	6	0.104083	1.652364	0.003968	0.996032
CVIMS	6	0.184842	1.29824	0.020272	0.979728
CVWA	6	0.302765	3.722098	0.006617	0.993383
CVWS	6	0.523609	3.422026	0.023413	0.976587
CVMC	6	0.390512	3.250945	0.014429	0.985571
CVLC	6	0.397911	2.981228	0.017815	0.982185
HML	6	0.408248	20.53319	0.000395	0.999605
HXMS	6	0.339116	2.165748	0.024518	0.975482
HIMS	6	0.324037	1.957416	0.027405	0.972595
HDT	6	0.480451	2.312308	0.043172	0.956828

Table AP 5.4: Continued.

Measurement	N	TEM	SD	P	R
HSIH	6	0.197906	3.910862	0.002561	0.997439
HAPH	6	0.398957	3.454448	0.013338	0.986662
HEB	6	0.460977	5.170292	0.007949	0.992051
HGT	6	0.334166	3.231435	0.010694	0.989306
RML	4	0	17.28194	0	1
RXMS	4	0.3937	1.748966	0.050672	0.949328
RIMS	4	0.190394	1.205658	0.024938	0.975062
RGH	4	0.061237	2.092943	0.000856	0.999144
RMLD	4	0.390512	2.744053	0.020253	0.979747
UML	4	0	18.07994	0	1
UPL	4	0.5	16.71438	0.000895	0.999105
UXMS	4	0.409268	1.970548	0.043136	0.956864
UIMS	4	0.061237	1.548838	0.001563	0.998437
URN	4	0.19685	2.984833	0.004349	0.995651
UOW	4	0.479583	2.573604	0.034725	0.965275
UCH	4	0.364005	3.396247	0.011487	0.988513
MC1L	1	0.070711	3.142691	0.000506	0.999494
MC2L	2	0.304138	4.371929	0.004839	0.995161
MC3L	2	0.452769	4.373725	0.010716	0.989284
MC4L	2	0.15	3.791994	0.001565	0.998435
MC5L	2	0.180278	3.48723	0.002673	0.997327
FML	4	0.353553	28.43253	0.000155	0.999845
FXMS	4	0.460977	2.817976	0.02676	0.97324
FIMS	4	0.295804	2.14355	0.019043	0.980957
FXST	4	0.455522	3.244254	0.019715	0.980285
FIST	4	0.455522	2.67506	0.028997	0.971003
FEB	4	0.5	5.826881	0.007363	0.992637
FLE	4	1	4.618045	0.04689	0.95311
FAPH	4	0.23184	3.823207	0.003677	0.996323
FSIH	4	0.49371	4.076237	0.01467	0.98533
FMLP	4	0.531507	7.753507	0.004699	0.995301
TML	2	0.707107	23.98814	0.000869	0.999131
TXNF	2	0.4272	3.506841	0.01484	0.98516
TINF	2	0.316228	2.566343	0.015183	0.984817
TMLP	2	0.5	5.433542	0.008468	0.991532
TMC	2	0.781025	3.71162	0.04428	0.95572
TLC	2	0.304138	3.513688	0.007492	0.992508
CZL	6	0.408248	5.543182	0.005424	0.994576
CZB	6	0.5	3.555919	0.019771	0.980229
CZH	6	0.288675	3.6917	0.006115	0.993885
TZL	6	0.408248	4.228297	0.009322	0.990678
TZB	6	0	3.236389	0	1
TZH	6	0.408248	2.497994	0.02671	0.97329
MT1L	6	0.546961	4.067021	0.018087	0.981913
MT2L	6	0.4272	4.651803	0.008434	0.991566
MT3L	6	0.343996	4.465801	0.005933	0.994067
MT4L	6	0.334166	4.723322	0.005005	0.994995
MT5L	6	0.168325	5.279206	0.001017	0.998983

$$\text{TEM} = \sqrt{\sum(d_i^2)/2n}, \text{P} = (\text{TEM}^2/\text{SD}^2), \text{R} = 1 - (\text{TEM}^2/\text{SD}^2)$$

Table AP 5.5: Inter-observer error. TEM of comparison of author's original measurement and Observers' replicates.

Measurement	N	TEM	SD	P	R
COBB	19	0.330868	1.748157	0.035822	0.964178
COBH	19	0.245486	1.914303	0.016445	0.983555
CNOR	19	1.771856	2.561532	0.478473	0.521527
CFMTN	19	1.242451	2.568485	0.233994	0.766006
CFMTNS	21	0.702885	3.336485	0.04438	0.95562
CMAH	18	0.4272	2.723394	0.024606	0.975394
CMPL	18	0.534114	3.239085	0.027191	0.972809
CMPB	20	0.521057	3.744691	0.019361	0.980639
CMPH	21	0.505447	2.725755	0.034386	0.965614
CMSAST	18	0.395109	4.344566	0.008271	0.991729
CDGL	19	0.549162	3.415332	0.025854	0.974146
COCL	20	0.423379	2.427052	0.03043	0.96957
CECMIS	20	0.492697	2.27029	0.047097	0.952903
COPO	19	0.381479	3.824884	0.009947	0.990053
CBAPO	20	0.444128	3.4281	0.016785	0.983215
CFMTB	20	0.503984	4.840786	0.010839	0.989161
CBPO	20	0.524404	5.512043	0.009051	0.990949
CBZO	20	0.41833	5.404737	0.005991	0.994009
CNMS	20	4.865696	5.899875	0.68015	0.31985
CBAST	20	0.774597	5.97655	0.016798	0.983202
CLFMT	20	0.547723	6.519245	0.007059	0.992941
CLAST	20	0.992975	4.858207	0.041776	0.958224
MAL	18	0.507718	6.463575	0.00617	0.99383
MRH	19	2.141384	5.550354	0.14885	0.85115
MXRB	20	0.306186	3.629481	0.007117	0.992883
MIRB	20	0.191703	2.7932	0.00471	0.99529
CVML	15	0.411906	10.33685	0.001588	0.998412
CVXMS	14	0.290934	1.652364	0.031001	0.968999
CVIMS	14	0.161466	1.29824	0.015469	0.984531
CVWA	14	0.572588	3.722098	0.023665	0.976335
CVWS	14	0.369846	3.422026	0.011681	0.988319
CVMC	14	0.63471	3.250945	0.038118	0.961882
CVLC	14	0.638077	2.981228	0.04581	0.95419
SGL	24	0.470151	3.479813	0.018254	0.981746
SGB	24	0.413572	2.760147	0.022451	0.977549
SAL	24	0.583274	6.573537	0.007873	0.992127
SCL	24	0.382971	3.93303	0.009481	0.990519
HML	16	0.433013	20.53319	0.000445	0.999555
HXMS	16	0.349106	2.165748	0.025984	0.974016
HIMS	16	0.320156	1.957416	0.026752	0.973248
HDT	16	0.324037	2.312308	0.019638	0.980362
HSIH	16	0.377492	3.910862	0.009317	0.990683
HAPH	16	0.40039	3.454448	0.013434	0.986566
HEB	16	0.359253	5.170292	0.004828	0.995172
HGT	16	0.222205	3.231435	0.004728	0.995272
RML	14	0.377964	17.28194	0.000478	0.999522
RXMS	14	0.323485	1.748966	0.03421	0.96579
RIMS	14	0.20702	1.205658	0.029483	0.970517
RGH	14	0.158114	2.092943	0.005707	0.994293
RMLD	14	0.581255	2.744053	0.044869	0.955131
UML	14	0.422577	18.07994	0.000546	0.999454

Table AP 5.5: Continued.

Measurement	N	TEM	SD	P	R
UPL	14	0.681385	16.71438	0.001662	0.998338
UXMS	14	0.322933	1.970548	0.026857	0.973143
UIMS	14	0.327872	1.548838	0.044812	0.955188
URN	14	0.505329	2.984833	0.028662	0.971338
UOW	14	0.422154	2.573604	0.026907	0.973093
UCH	14	0.413176	3.396247	0.0148	0.9852
MC1L	13	0.109193	3.142691	0.001207	0.998793
MC2L	14	0.268594	4.371929	0.003774	0.996226
MC3L	14	0.138873	4.373725	0.001008	0.998992
MC4L	14	0.15698	3.791994	0.001714	0.998286
MC5L	14	0.174233	3.48723	0.002496	0.997504
SZAB	14	0.675066	3.715727	0.033007	0.966993
SZAW	14	0.49353	5.569261	0.007853	0.992147
SZAPA	14	0.645866	4.666154	0.019159	0.980841
SZSIA	14	0.725554	5.399918	0.018054	0.981946
SZS1	14	0.29032	2.646021	0.012038	0.987962
OCH	24	0.433013	13.76591	0.000989	0.999011
OCIB	22	0.603023	9.295295	0.004209	0.995791
OCPL	22	0.565685	5.005665	0.012771	0.987229
OCIS	24	0.596168	8.395412	0.005043	0.994957
OCAH	24	0.5058	3.901541	0.016807	0.983193
OCASH	24	0.52698	4.909249	0.011523	0.988477
OCASB	21	0.46291	5.684897	0.006631	0.993369
FML	16	0.559017	28.43253	0.000387	0.999613
FXMS	16	0.37081	2.817976	0.017315	0.982685
FIMS	16	0.249374	2.14355	0.013534	0.986466
FXST	16	0.361421	3.244254	0.012411	0.987589
FIST	16	0.470704	2.67506	0.030962	0.969038
FEB	16	0.5	5.826881	0.007363	0.992637
FLE	16	0.559017	4.618045	0.014653	0.985347
FAPH	16	0.2136	3.823207	0.003121	0.996879
FSIH	16	0.427931	4.076237	0.011021	0.988979
FMLP	16	0.57364	7.753507	0.005474	0.994526
TML	12	0.57735	23.98814	0.000579	0.999421
TXNF	12	0.478278	3.506841	0.018601	0.981399
TINF	12	0.340955	2.566343	0.017651	0.982349
TMLP	20	0.612372	5.433542	0.012702	0.987298
TMC	22	0.613855	3.71162	0.027353	0.972647
TLC	22	0.397435	3.513688	0.012794	0.987206
CZL	16	0.661438	5.543182	0.014238	0.985762
CZB	16	0.426102	3.555919	0.014359	0.985641
CZH	16	0.507752	3.6917	0.018917	0.981083
TZL	14	0.46291	4.228297	0.011986	0.988014
TZB	14	0.377964	3.236389	0.013639	0.986361
TZH	14	0.534522	2.497994	0.045788	0.954212
MT1L	14	0.345894	4.067021	0.007233	0.992767
MT2L	14	0.298807	4.651803	0.004126	0.995874
MT3L	14	0.175255	4.465801	0.00154	0.99846
MT4L	14	0.1476	4.723322	0.000977	0.999023
MT5L	14	0.15698	5.279206	0.000884	0.999116

$$\text{TEM} = \sqrt{\sum(d_i^2)/2n}, \text{P} = (\text{TEM}^2/\text{SD}^2), \text{R} = 1 - (\text{TEM}^2/\text{SD}^2)$$

Table AP 5.6: Intra-observer error. Pooled error of asymmetry for Observers 1-4, two-way ANOVA.

Measurement	Sides X Individuals				Error		%Error	Repeatability
	df	MS	F	P	df	MS	ME3	ME5
COBB	8	2.103	22.179	<0.0001	36	9.48	4.51	0.7018
COBH	8	1.047	20.051	<0.0001	36	5.22	4.99	0.6792
CNOR	8	3.546	52.602	<0.0001	36	6.7	1.90	0.8515
CFMTN	9	3.648	62.715	<0.0001	40	5.8	1.60	0.8606
CFMTNS	9	5.942	115.009	<0.0001	40	5.2	0.87	0.9194
CMAH	8	2.730	42.601	<0.0001	36	6.41	2.35	0.8221
CMPL	8	5.188	51.407	<0.0001	36	10.09	1.94	0.8485
CMPB	9	9.237	68.251	<0.0001	40	13.53	1.46	0.8706
CMPH	9	0.317	6.812	<0.0001	40	4.650	14.67	0.3676
CMSAST	8	6.669	59.529	<0.0001	36	11.2	1.68	0.8667
CDGL	9	4.675	91.364	<0.0001	40	5.12	1.10	0.9004
COCL	9	97.428	1637.442	<0.0001	40	5.95	0.06	0.9939
CECMIS	9	3.209	21.782	<0.0001	40	14.73	4.59	0.6751
COPO	9	7.796	115.492	<0.0001	40	6.8	0.87	0.9197
CBAPO	9	4.550	74.994	<0.0001	40	6.1	1.33	0.8809
CFMTB	9	12.572	754.333	<0.0001	40	1.7	0.13	0.9869
CBPO	9	11.861	711.667	<0.0001	40	1.7	0.14	0.9861
CBZO	8	3.167	-----	<0.0001	36	0.0	0.00	1
CNMS	9	18.600	-----	<0.0001	40	0	0.00	1
CBAST	9	6.083	365.001	<0.0001	40	2	0.27	0.9733
CLFMT	9	17.600	150.857	<0.0001	40	12	0.66	0.9374
CLAST	9	13.680	344.872	<0.0001	40	4.0	0.29	0.9717
MAL	8	6.996	190.789	<0.0001	36	3.7	0.52	0.9547
MRH	8	1.038	18.087	<0.0001	36	5.740	5.53	0.655
MXRB	9	5.709	142.123	<0.0001	40	4.0	0.70	0.9338
MIRB	9	1.905	114.293	<0.0001	40	1.67	0.88	0.9189
CVML	6	15.369	215.167	<0.0001	14	7.1	0.46	0.9683
CVXMS	6	0.300	3.217	0.0336	14	9.320	31.07	0.2405
CVIMS	6	0.017	0.611	0.7181	14	2.790	164.12	-0.0588
CVWA	6	2.114	47.734	<0.0001	14	4.43	2.10	0.8697
CVWS	6	2.303	18.531	<0.0001	14	12.43	5.40	0.7146
CVMC	6	3.286	10.121	0.0002	14	32.46	9.88	0.5658
CVLC	6	3.014	15.832	<0.0001	14	19.040	6.32	0.6794
SGL	7	1.585	5.503	0.0003	32	28.80	18.17	0.3601
SGB	7	1.888	4.801	0.0009	32	39.31	20.82	0.3221
SAL	7	11.890	43.091	<0.0001	32	27.59	2.32	0.8403
SCL	7	0.884	3.174	0.0115	32	27.85	31.50	0.2137
HML	7	24.571	196.571	<0.0001	16	13	0.51	0.9607
HXMS	7	0.967	8.842	0.0002	16	10.94	11.31	0.495
HIMS	7	0.318	4.004	0.0102	16	7.94	24.97	0.273
HDT	7	0.125	1.388	0.2764	16	9.03	72.24	0.0462
HSIH	7	1.067	9.229	0.0001	16	11.56	10.83	0.5071
HAPH	7	1.249	7.308	0.0005	16	17.09	13.68	0.4409
HEB	7	0.931	9.373	0.0001	16	9.9	10.68	0.5114
HGT	7	0.293	2.724	0.0459	16	10.75	36.69	0.1773
RML	6	4.119	16.476	<0.0001	14	25	6.07	0.6886
RXMS	6	0.424	3.332	0.0297	14	12.710	29.98	0.2499
RIMS	6	0.148	3.120	0.0372	14	4.750	32.09	0.2325
RGH	6	0.663	80.739	<0.0001	14	0.82	1.24	0.9193
RMLD	6	0.603	2.457	0.0778	14	24.54	40.70	0.1723

Table AP 5.6: Continued.

Measurement	Sides X Individuals				Error		%Error	Repeatability
	df	MS	F	P	df	MS	ME3	ME5
UML	6	9.726	90.778	<0.0001	14	11	1.10	0.9277
UPL	6	13.667	42.519	<0.0001	14	32	2.35	0.8557
UXMS	6	0.552	6.967	0.0014	14	7.930	14.37	0.4602
UIMS	6	0.398	4.285	0.0117	14	9.290	23.34	0.3194
URN	6	1.650	15.048	<0.0001	14	10.96	6.64	0.6674
UOW	6	2.781	24.111	<0.0001	14	11.54	4.15	0.7675
UCH	6	2.123	13.920	<0.0001	14	15.25	7.18	0.6486
MC1L	5	0.783	19.792	<0.0001	12	3.96	5.06	0.758
MC2L	6	0.641	19.711	<0.0001	14	3.3	5.07	0.7277
MC3L	6	0.815	17.037	<0.0001	14	4.8	5.88	0.6961
MC4L	6	0.254	1.732	0.1861	14	14.68	57.80	0.0946
MC5L	6	1.573	69.915	<0.0001	14	2.25	1.43	0.9078
SZAB	6	3.371	7.234	0.0011	14	46.61	13.83	0.471
SZAW	6	8.361	20.094	<0.0001	14	41.61	4.98	0.7317
SZAPA	6	5.125	21.907	<0.0001	14	23.39	4.56	0.7492
SZSIA	6	16.173	79.446	<0.0001	14	20.4	1.26	0.9181
SZS1	6	0.787	11.133	0.0001	14	7.07	8.98	0.5914
OCH	11	3.703	9.354	<0.0001	24	40	10.69	0.4104
OCIB	9	6.833	27.333	<0.0001	20	25	3.66	0.7248
OCPL	9	0.881	3.103	0.0167	20	28.4	32.24	0.1737
OCIS	11	1.687	5.356	0.0003	24	31.5	18.67	0.2663
OCAH	11	0.773	1.810	0.1087	24	42.7	55.25	0.0632
OCASH	11	25.393	91.439	<0.0001	24	27.77	1.09	0.8829
OCASB	8	1.976	16.243	<0.0001	18	12.2	6.16	0.6288
FML	7	14.067	90.029	<0.0001	16	16	1.11	0.9176
FXMS	7	1.621	6.703	0.0008	16	24.19	14.92	0.4162
FIMS	7	0.232	2.647	0.0506	16	8.78	37.84	0.1707
FXST	7	1.952	8.316	0.0002	16	23.47	12.02	0.4777
FIST	7	0.861	7.613	0.0004	16	11.31	13.14	0.4526
FEB	7	0.786	4.190	0.0084	16	18.8	23.85	0.2851
FLE	7	3.281	8.077	0.0003	16	40.6	12.38	0.4694
FAPH	7	0.201	1.812	0.1537	16	11.09	55.17	0.0922
FSIH	7	1.212	6.276	0.0012	16	19.31	15.93	0.3974
FMLP	7	4.378	12.701	<0.0001	16	34.5	7.87	0.5939
TML	5	16.842	21.274	<0.0001	12	79	4.70	0.7716
TXNF	5	1.386	8.527	0.0012	12	16.25	11.72	0.5564
TINF	5	0.588	2.756	0.0697	12	21.33	36.28	0.2264
TMLP	8	0.251	0.902	0.5297	26	27.9	111.08	-0.011
TMC	8	0.852	3.703	0.0052	26	23.00	27.00	0.231
TLC	8	0.905	5.874	0.0003	26	15.40	17.02	0.3513
CZL	6	2.071	14.500	<0.0001	14	14.3	6.90	0.6585
CZB	6	0.583	1.633	0.2103	14	35.71	61.25	0.083
CZH	6	1.571	6.286	0.0022	14	25.00	15.91	0.4302
TZL	6	0.536	1.154	0.3832	14	46.43	86.62	0.0215
TZB	6	0.905	6.333	0.0022	14	14.29	15.79	0.4324
TZH	6	0.702	3.933	0.0163	14	17.86	25.44	0.2953
MT1L	6	1.328	7.180	0.0012	14	18.5	13.93	0.4689
MT2L	6	1.692	14.142	<0.0001	14	12.0	7.07	0.6525
MT3L	6	1.013	17.619	<0.0001	14	5.8	5.68	0.7036
MT4L	6	0.346	4.864	0.0070	14	7.1	20.55	0.3557
MT5L	6	2.165	112.247	<0.0001	14	1.9	0.89	0.9408

Table AP 5.7: Inter-observer error. Comparison between Observers 1-4 and author for error of asymmetry, two-way ANOVA.

Measurement	Sides X Individuals				Error		%Error	Repeatability
	df	MS	F	p	df	MS	ME3	ME5
COBB	8	1.409	12.465	<0.0001	18	0.113	8.02	0.5602
COBH	8	0.871	13.940	<0.0001	18	0.063	7.17	0.5898
CNOR	8	2.805	0.963	0.4934	18	2.913	103.8	-0.0041
CFMTN	9	2.626	1.452	0.2323	20	1.809	68.9	0.0433
CFMTNS	9	3.268	18.518	<0.0001	20	0.177	5.4	0.6366
CMAH	7	1.488	8.164	0.0003	16	0.182	12.25	0.4725
CMPL	8	4.785	16.954	<0.0001	18	0.282	5.90	0.6393
CMPB	9	4.638	15.695	<0.0001	20	0.296	6.37	0.5951
CMPH	9	0.572	2.405	0.0491	20	0.478	83.520	0.0193
CMSAST	8	3.844	24.626	<0.0001	18	0.156	4.06	0.7241
CDGL	9	3.590	11.525	<0.0001	20	0.312	8.68	0.5128
COCL	8	6.617	38.862	<0.0001	18	0.170	2.57	0.8079
CECMIS	9	1.494	5.795	0.0005	20	0.299	20.02	0.2855
COPO	9	4.620	29.149	<0.0001	20	0.159	3.4	0.7379
CBAPO	9	2.327	12.858	<0.0001	20	0.181	7.8	0.5425
CFMTB	9	8.447	30.717	<0.0001	20	0.275	3.3	0.7482
CBPO	9	7.544	30.178	<0.0001	20	0.250	3.3	0.7448
CBZO	8	1.625	9.750	<0.0001	18	0.167	10.3	0.493
CNMS	9	10.392	0.439	0.8976	20	23.675	227.8	-0.0594
CBAST	9	3.844	6.407	0.0003	20	0.600	15.6	0.351
CLFMT	9	10.044	33.482	<0.0001	20	0.300	3	0.7646
CLAST	9	8.474	8.595	<0.0001	20	0.986	11.6	0.4316
MAL	8	4.379	17.595	<0.0001	18	0.249	5.7	0.6484
MRH	8	1.031	0.238	0.9778	18	4.327	419.5	-0.0925
MXRB	9	3.971	41.366	<0.0001	20	0.096	2.42	0.8015
MIRB	9	1.241	33.779	<0.0001	20	0.037	2.96	0.7662
CVML	6	14.810	82.933	<0.0001	14	0.179	1.2	0.9213
CVXMS	6	0.224	2.646	0.0627	14	0.085	37.800	0.1903
CVIMS	6	0.055	2.110	0.1172	14	0.026	47.400	0.1368
CVWA	6	1.637	4.994	0.0062	14	0.328	20.02	0.3633
CVWS	6	2.230	16.301	<0.0001	14	0.137	6.13	0.6861
CVMC	6	2.109	5.235	0.0051	14	0.403	19.10	0.377
CVLC	6	2.761	6.783	0.0016	14	0.407	14.740	0.4524
SGL	7	1.386	6.775	<0.0001	32	0.205	14.76	0.4192
SGB	7	1.485	8.481	<0.0001	32	0.175	11.79	0.4832
SAL	7	9.937	30.270	<0.0001	32	0.328	3.30	0.7854
SCL	7	0.849	6.144	0.0001	32	0.138	16.28	0.3914
HML	7	24.429	130.286	<0.0001	16	0.187	1	0.9417
HXMS	7	0.696	5.714	0.0019	16	0.122	17.50	0.3708
HIMS	7	0.316	3.080	0.0296	16	0.103	32.47	0.2063
HDT	7	0.129	1.225	0.3456	16	0.105	81.65	0.0273
HSIH	7	0.776	5.442	0.0024	16	0.143	18.38	0.357
HAPH	7	1.050	6.547	0.0009	16	0.160	15.27	0.4095
HEB	7	1.175	9.107	0.0001	16	0.129	11.0	0.5033
HGT	7	0.276	5.595	0.0021	16	0.049	17.87	0.3649
RML	6	3.917	27.417	<0.0001	14	0.143	4	0.7905
RXMS	6	0.481	4.595	0.0088	14	0.105	21.760	0.3393
RIMS	6	0.192	4.489	0.0097	14	0.043	22.280	0.3327
RGH	6	0.682	27.262	<0.0001	14	0.025	3.67	0.7895
RMLD	6	0.484	1.432	0.2708	14	0.338	69.85	0.0581

Table AP 5.7: Continued.

Measurement	Sides X Individuals				Error		%Error	Repeatability
	df	MS	F	p	df	MS	ME3	ME5
UML	6	10.619	59.467	<0.0001	14	0.179	2	0.8931
UPL	6	13.155	28.333	<0.0001	14	0.464	4	0.7961
UXMS	6	0.826	7.925	0.0007	14	0.104	12.620	0.4973
UIMS	6	0.317	2.952	0.0446	14	0.107	33.870	0.2181
URN	6	0.910	3.563	0.0235	14	0.255	28.06	0.268
UOW	6	2.445	13.721	<0.0001	14	0.178	7.29	0.6451
UCH	6	2.805	16.433	<0.0001	14	0.171	6.09	0.688
MC1L	5	0.713	57.013	<0.0001	12	0.013	1.75	0.9033
MC2L	6	0.721	10.000	0.0002	14	0.072	10.0	0.5625
MC3L	6	0.807	41.821	<0.0001	14	0.019	2.4	0.8536
MC4L	6	0.570	23.126	<0.0001	14	0.025	4.32	0.7597
MC5L	6	1.749	57.612	<0.0001	14	0.030	1.74	0.89
SZAB	6	3.736	8.198	0.0006	14	0.456	12.20	0.507
SZAW	6	7.594	31.178	<0.0001	14	0.244	3.21	0.8117
SZAPA	6	4.205	10.080	0.0002	14	0.417	9.92	0.5647
SZSIA	6	15.959	30.316	<0.0001	14	0.526	3.3	0.8072
SZS1	6	0.913	10.831	0.0001	14	0.084	9.23	0.5841
OCH	11	3.475	18.535	<0.0001	24	0.187	5	0.5937
OCIB	9	7.358	19.622	<0.0001	20	0.375	5	0.6506
OCPL	9	1.586	4.548	0.0023	20	0.349	22.0	0.2619
OCIS	11	1.241	3.493	0.0050	24	0.355	28.6	0.172
OCAH	11	0.470	1.835	0.1035	24	0.256	54.5	0.0651
OCASH	11	25.099	90.380	<0.0001	24	0.278	1.11	0.8816
OCASB	8	1.683	7.726	0.0002	18	0.218	12.9	0.4277
FML	7	12.625	40.400	<0.0001	16	0.312	2	0.8312
FXMS	7	1.809	13.153	<0.0001	16	0.138	7.60	0.603
FIMS	7	0.376	6.047	0.0014	16	0.062	16.54	0.3868
FXST	7	2.176	16.660	<0.0001	16	0.131	6.00	0.6619
FIST	7	0.513	2.315	0.0780	16	0.222	43.21	0.1411
FEB	7	0.482	1.929	0.1310	16	0.250	51.9	0.104
FLE	7	3.143	10.057	0.0001	16	0.312	9.9	0.531
FAPH	7	0.168	3.691	0.0145	16	0.046	27.09	0.2517
FSIH	7	1.071	5.847	0.0017	16	0.183	17.10	0.3773
FMLP	7	4.456	13.542	<0.0001	16	0.329	7.4	0.6105
TML	5	16.067	48.200	<0.0001	12	0.333	2	0.8872
TXNF	5	0.971	4.247	0.0187	12	0.229	23.55	0.3511
TINF	5	0.501	4.313	0.0177	12	0.116	23.19	0.3557
TMLP	8	0.422	1.415	0.2368	26	0.298	70.7	0.0441
TMC	8	0.786	2.446	0.0404	26	0.321	40.89	0.1384
TLC	8	0.661	3.343	0.0092	26	0.198	29.91	0.2066
CZL	6	2.071	4.143	0.0133	14	0.500	24.1	0.3099
CZB	6	0.833	5.833	0.0032	14	0.143	17.14	0.4084
CZH	6	1.060	4.944	0.0065	14	0.214	20.23	0.3604
TZL	6	1.238	5.778	0.0033	14	0.214	17.31	0.4057
TZB	6	0.405	2.833	0.0508	14	0.143	35.29	0.2076
TZH	6	0.583	2.042	0.1272	14	0.286	48.98	0.1295
MT1L	6	1.389	11.609	0.0001	14	0.120	8.6	0.6025
MT2L	6	1.182	13.241	<0.0001	14	0.089	7.6	0.6362
MT3L	6	1.097	35.702	<0.0001	14	0.031	2.8	0.8321
MT4L	6	0.314	14.410	<0.0001	14	0.022	6.9	0.657
MT5L	6	2.187	88.763	<0.0001	14	0.025	1.1	0.9261