

ภาคผนวก ง
การวิเคราะห์ข้อมูล

การวิเคราะห์ข้อมูล

ตารางที่ 1

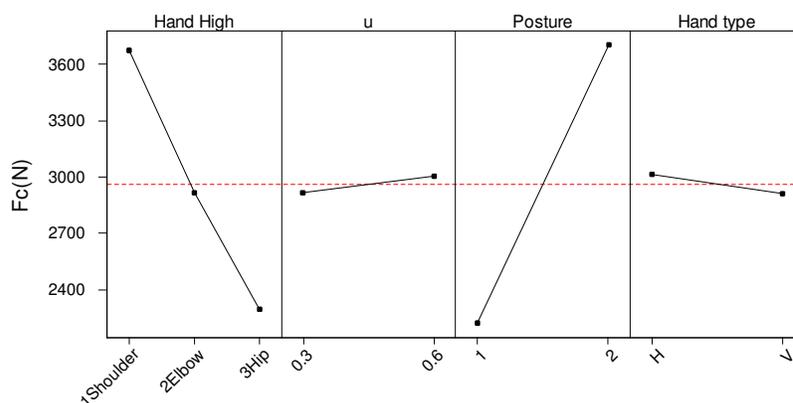
General Linear Model: Fc(N), Fshear(N) versus Hand High, u, ...

Factor	Type	Levels	Values
Hand Hig	fixed	3	1Shoulder 2Elbow 3Hip
u	fixed	2	0.3 0.6
Posture	fixed	2	1 2
Hand typ	fixed	2	H V

Analysis of Variance for Fc(N), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	74591714	74591714	37295857	58.38	0.000
u	1	533975	533975	533975	0.84	0.362
Posture	1	132434778	132434778	132434778	207.32	0.000
Hand typ	1	699474	699474	699474	1.09	0.297
Hand Hig*u	2	2610778	2610778	1305389	2.04	0.132
Hand Hig*Posture	2	4699085	4699085	2349543	3.68	0.027
Hand Hig*Hand typ	2	2832663	2832663	1416332	2.22	0.111
u*Posture	1	1746738	1746738	1746738	2.73	0.100
u*Hand typ	1	194742	194742	194742	0.30	0.581
Posture*Hand typ	1	3391	3391	3391	0.01	0.942
Hand Hig*u*Posture	2	3859362	3859362	1929681	3.02	0.051
Hand Hig*u*Hand typ	2	1039655	1039655	519828	0.81	0.445
Hand Hig*Posture*Hand typ	2	1994936	1994936	997468	1.56	0.212
u*Posture*Hand typ	1	9317	9317	9317	0.01	0.904
Hand Hig*u*Posture*Hand typ	2	855557	855557	427778	0.67	0.513
Error	216	137981360	137981360	638803		
Total	239	366087525				

Main Effects Plot - Data Means for Fc(N)

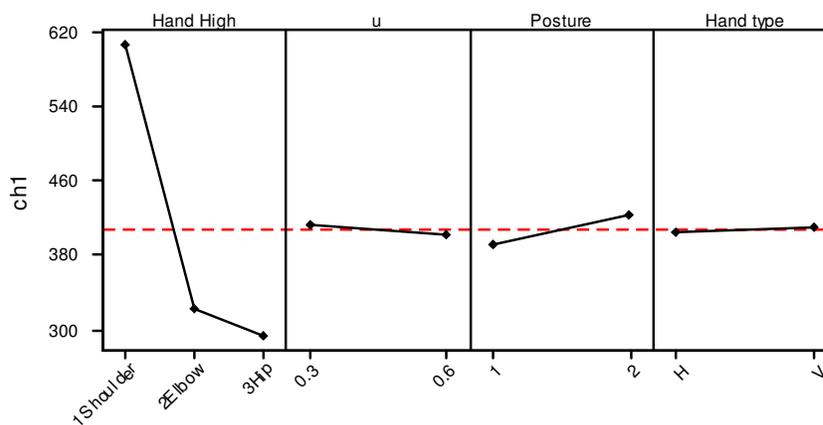


ตารางที่ 2

Analysis of Variance for ch1, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	4887091	4887091	2443546	46.85	0.000
u	1	4403	4403	4403	0.08	0.772
Posture	1	55632	55632	55632	1.07	0.303
Hand typ	1	2407	2407	2407	0.05	0.830
Hand Hig*u	2	71378	71378	35689	0.68	0.506
Hand Hig*Posture	2	1136004	1136004	568002	10.89	0.000
Hand Hig*Hand typ	2	26532	26532	13266	0.25	0.776
u*Posture	1	39938	39938	39938	0.77	0.383
u*Hand typ	1	9201	9201	9201	0.18	0.675
Posture*Hand typ	1	34177	34177	34177	0.66	0.419
Hand Hig*u*Posture	2	1189	1189	595	0.01	0.989
Hand Hig*u*Hand typ	2	3236	3236	1618	0.03	0.969
Hand Hig*Posture*Hand typ	2	26165	26165	13082	0.25	0.778
u*Posture*Hand typ	1	120	120	120	0.00	0.962
Hand Hig*u*Posture*Hand typ	2	16040	16040	8020	0.15	0.858
Error	216	11265502	11265502	52155		
Total	239	17579017				

Main Effects Plot - Data Means for ch1



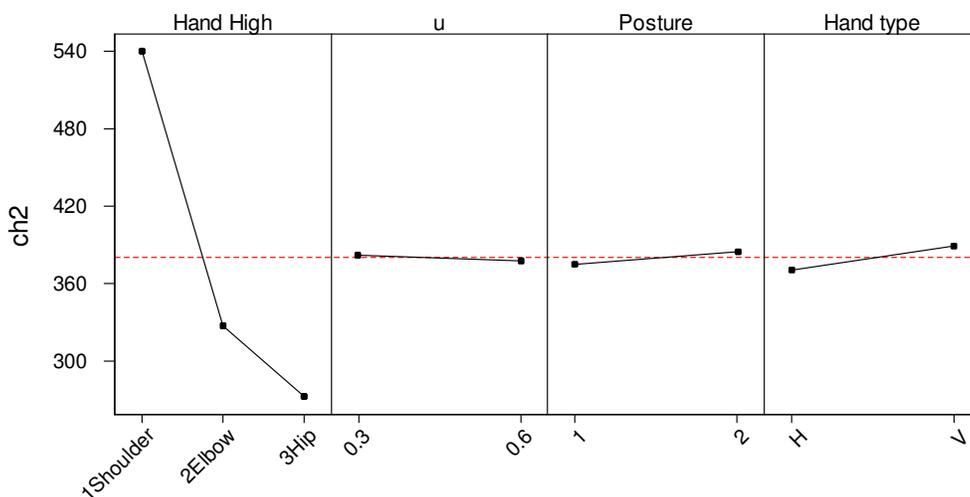
ภาพที่ 2

ตารางที่ 3

Analysis of Variance for ch2, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	3188796	3188796	1594398	20.57	0.000
u	1	1441	1441	1441	0.02	0.892
Posture	1	4914	4914	4914	0.06	0.801
Hand typ	1	20240	20240	20240	0.26	0.610
Hand Hig*u	2	28905	28905	14453	0.19	0.830
Hand Hig*Posture	2	331548	331548	165774	2.14	0.120
Hand Hig*Hand typ	2	99226	99226	49613	0.64	0.528
u*Posture	1	6510	6510	6510	0.08	0.772
u*Hand typ	1	7260	7260	7260	0.09	0.760
Posture*Hand typ	1	26083	26083	26083	0.34	0.562
Hand Hig*u*Posture	2	17597	17597	8799	0.11	0.893
Hand Hig*u*Hand typ	2	11554	11554	5777	0.07	0.928
Hand Hig*Posture*Hand typ	2	5088	5088	2544	0.03	0.968
u*Posture*Hand typ	1	3792	3792	3792	0.05	0.825
Hand Hig*u*Posture*Hand typ	2	2184	2184	1092	0.01	0.986
Error	216	16740682	16740682	77503		
Total	239	20495822				

Main Effects Plot - Data Means for ch2



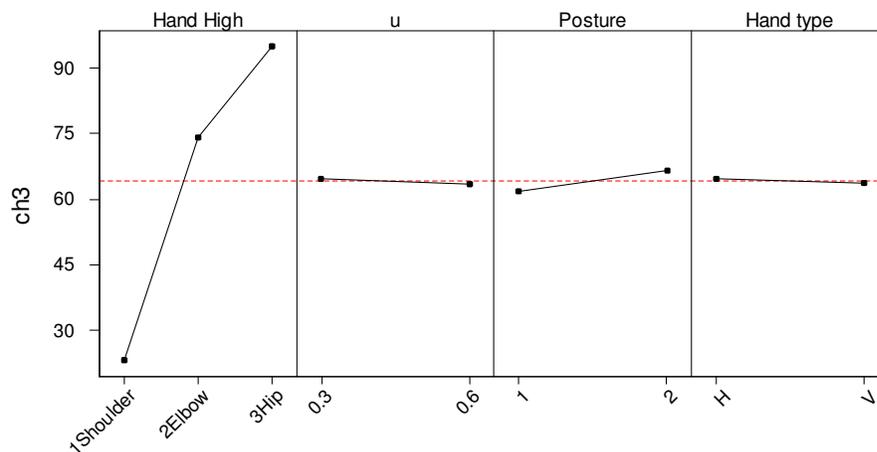
ภาพที่ 3

ตารางที่ 4

Analysis of Variance for ch3, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	218799	218799	109399	44.08	0.000
u	1	93	93	93	0.04	0.847
Posture	1	1311	1311	1311	0.53	0.468
Hand typ	1	50	50	50	0.02	0.888
Hand Hig*u	2	1461	1461	730	0.29	0.745
Hand Hig*Posture	2	5488	5488	2744	1.11	0.333
Hand Hig*Hand typ	2	1491	1491	745	0.30	0.741
u*Posture	1	2633	2633	2633	1.06	0.304
u*Hand typ	1	1378	1378	1378	0.56	0.457
Posture*Hand typ	1	67	67	67	0.03	0.869
Hand Hig*u*Posture	2	1406	1406	703	0.28	0.754
Hand Hig*u*Hand typ	2	444	444	222	0.09	0.914
Hand Hig*Posture*Hand typ	2	623	623	311	0.13	0.882
u*Posture*Hand typ	1	17	17	17	0.01	0.935
Hand Hig*u*Posture*Hand typ	2	457	457	229	0.09	0.912
Error	216	536040	536040	2482		
Total	239	771756				

Main Effects Plot - Data Means for ch3



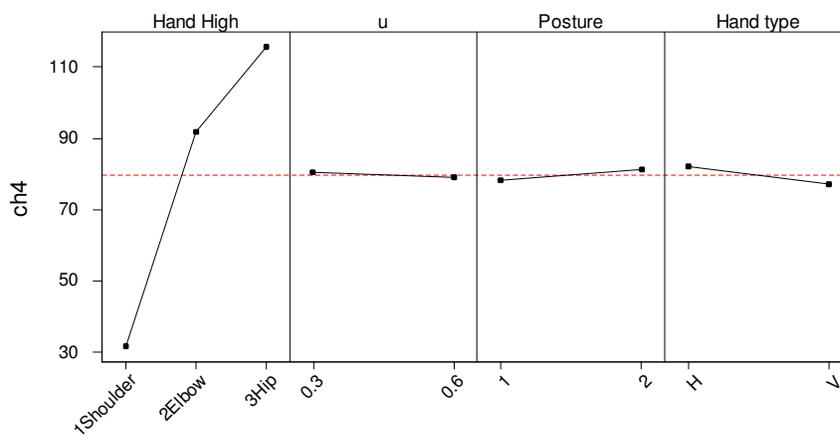
ภาพที่ 4

ตารางที่ 5

Analysis of Variance for ch4, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	299642	299642	149821	44.70	0.000
u	1	94	94	94	0.03	0.867
Posture	1	608	608	608	0.18	0.671
Hand typ	1	1421	1421	1421	0.42	0.516
Hand Hig*u	2	4808	4808	2404	0.72	0.489
Hand Hig*Posture	2	2454	2454	1227	0.37	0.694
Hand Hig*Hand typ	2	1292	1292	646	0.19	0.825
u*Posture	1	138	138	138	0.04	0.839
u*Hand typ	1	2233	2233	2233	0.67	0.415
Posture*Hand typ	1	129	129	129	0.04	0.845
Hand Hig*u*Posture	2	410	410	205	0.06	0.941
Hand Hig*u*Hand typ	2	79	79	39	0.01	0.988
Hand Hig*Posture*Hand typ	2	212	212	106	0.03	0.969
u*Posture*Hand typ	1	516	516	516	0.15	0.695
Hand Hig*u*Posture*Hand typ	2	389	389	194	0.06	0.944
Error	216	724023	724023	3352		
Total	239	1038446				

Main Effects Plot - Data Means for ch4

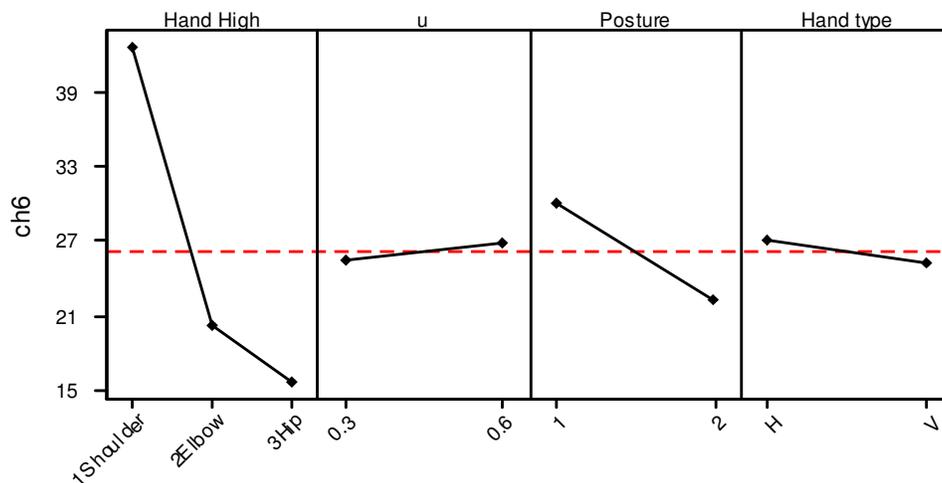


ตารางที่ 6

Analysis of Variance for ch6, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	33276.6	33276.6	16638.3	23.78	0.000
u	1	135.0	135.0	135.0	0.19	0.661
Posture	1	3697.3	3697.3	3697.3	5.28	0.022
Hand typ	1	205.3	205.3	205.3	0.29	0.589
Hand Hig*u	2	754.3	754.3	377.2	0.54	0.584
Hand Hig*Posture	2	781.9	781.9	390.9	0.56	0.573
Hand Hig*Hand typ	2	2117.7	2117.7	1058.9	1.51	0.223
u*Posture	1	11.3	11.3	11.3	0.02	0.899
u*Hand typ	1	64.1	64.1	64.1	0.09	0.762
Posture*Hand typ	1	114.8	114.8	114.8	0.16	0.686
Hand Hig*u*Posture	2	145.2	145.2	72.6	0.10	0.901
Hand Hig*u*Hand typ	2	1364.2	1364.2	682.1	0.97	0.379
Hand Hig*Posture*Hand typ	2	398.2	398.2	199.1	0.28	0.753
u*Posture*Hand typ	1	86.4	86.4	86.4	0.12	0.726
Hand Hig*u*Posture*Hand typ	2	642.9	642.9	321.4	0.46	0.632
Error	216	151144.2	151144.2	699.7		
Total	239	194939.6				

Main Effects Plot - Data Means for ch6



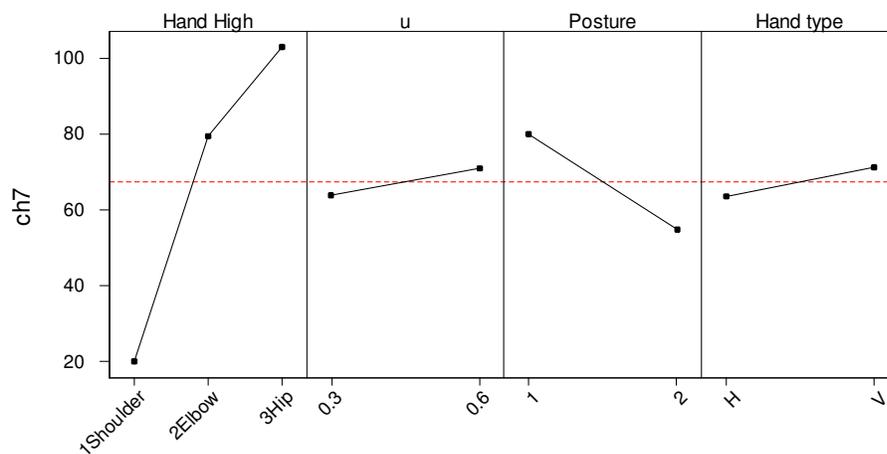
ภาพที่ 6

ตารางที่ 7

Analysis of Variance for ch7, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	291132	291132	145566	30.11	0.000
u	1	2905	2905	2905	0.60	0.439
Posture	1	38229	38229	38229	7.91	0.005
Hand typ	1	3398	3398	3398	0.70	0.403
Hand Hig*u	2	3191	3191	1596	0.33	0.719
Hand Hig*Posture	2	25569	25569	12785	2.64	0.073
Hand Hig*Hand typ	2	18108	18108	9054	1.87	0.156
u*Posture	1	1247	1247	1247	0.26	0.612
u*Hand typ	1	1202	1202	1202	0.25	0.619
Posture*Hand typ	1	739	739	739	0.15	0.696
Hand Hig*u*Posture	2	1311	1311	656	0.14	0.873
Hand Hig*u*Hand typ	2	1290	1290	645	0.13	0.875
Hand Hig*Posture*Hand typ	2	2870	2870	1435	0.30	0.743
u*Posture*Hand typ	1	3488	3488	3488	0.72	0.397
Hand Hig*u*Posture*						
Hand typ	2	2899	2899	1450	0.30	0.741
Error	216	1044230	1044230	4834		
Total	239	1441806				

Main Effects Plot - Data Means for ch7



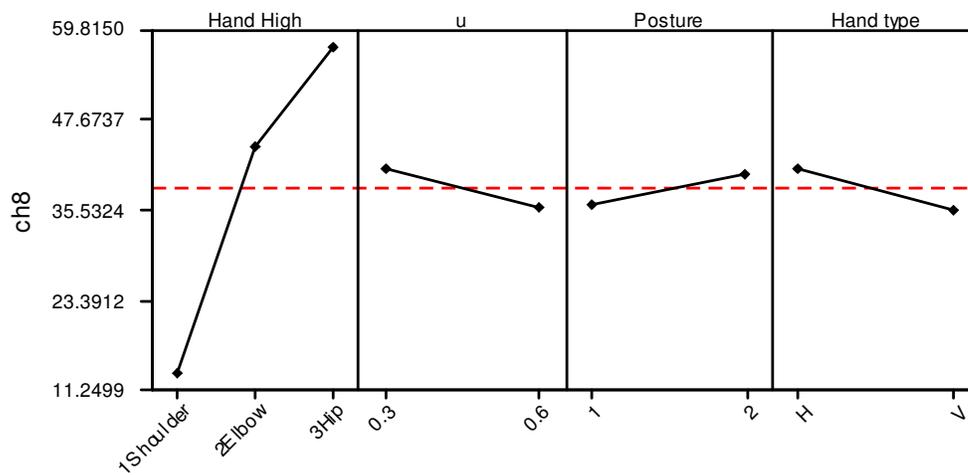
ภาพที่ 7

ตารางที่ 8

Analysis of Variance for ch8, using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	81368	81368	40684	14.21	0.000
u	1	1675	1675	1675	0.58	0.445
Posture	1	1009	1009	1009	0.35	0.553
Hand typ	1	1915	1915	1915	0.67	0.414
Hand Hig*u	2	1782	1782	891	0.31	0.733
Hand Hig*Posture	2	194	194	97	0.03	0.967
Hand Hig*Hand typ	2	3155	3155	1578	0.55	0.577
u*Posture	1	18	18	18	0.01	0.937
u*Hand typ	1	187	187	187	0.07	0.798
Posture*Hand typ	1	1084	1084	1084	0.38	0.539
Hand Hig*u*Posture	2	174	174	87	0.03	0.970
Hand Hig*u*Hand typ	2	2733	2733	1367	0.48	0.621
Hand Hig*Posture*Hand typ	2	1629	1629	814	0.28	0.753
u*Posture*Hand typ	1	154	154	154	0.05	0.817
Hand Hig*u*Posture*Hand typ	2	1035	1035	518	0.18	0.835
Error	216	618399	618399	2863		
Total	239	716511				

Main Effects Plot - Data Means for ch8



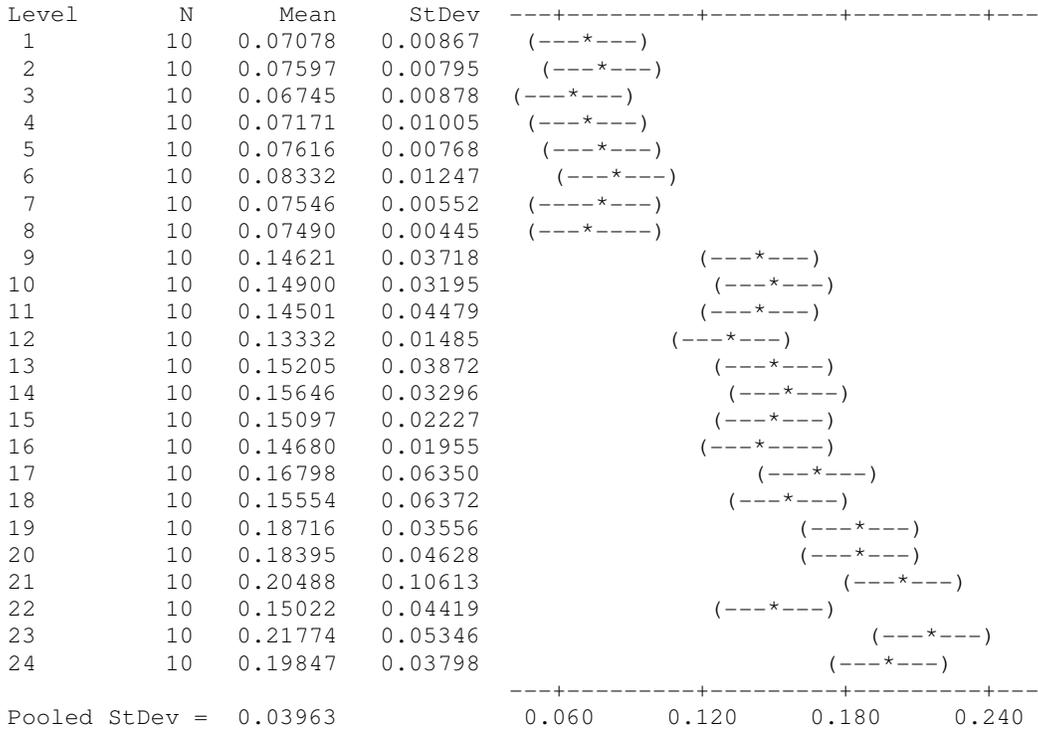
ภาพที่ 8

One-way ANOVA: Fp/Fc versus Run

Analysis of Variance for Fp/Fc

Source	DF	SS	MS	F	P
Run	23	0.53654	0.02333	14.85	0.000
Error	216	0.33920	0.00157		
Total	239	0.87574			

Individual 95% CIs For Mean
Based on Pooled StDev

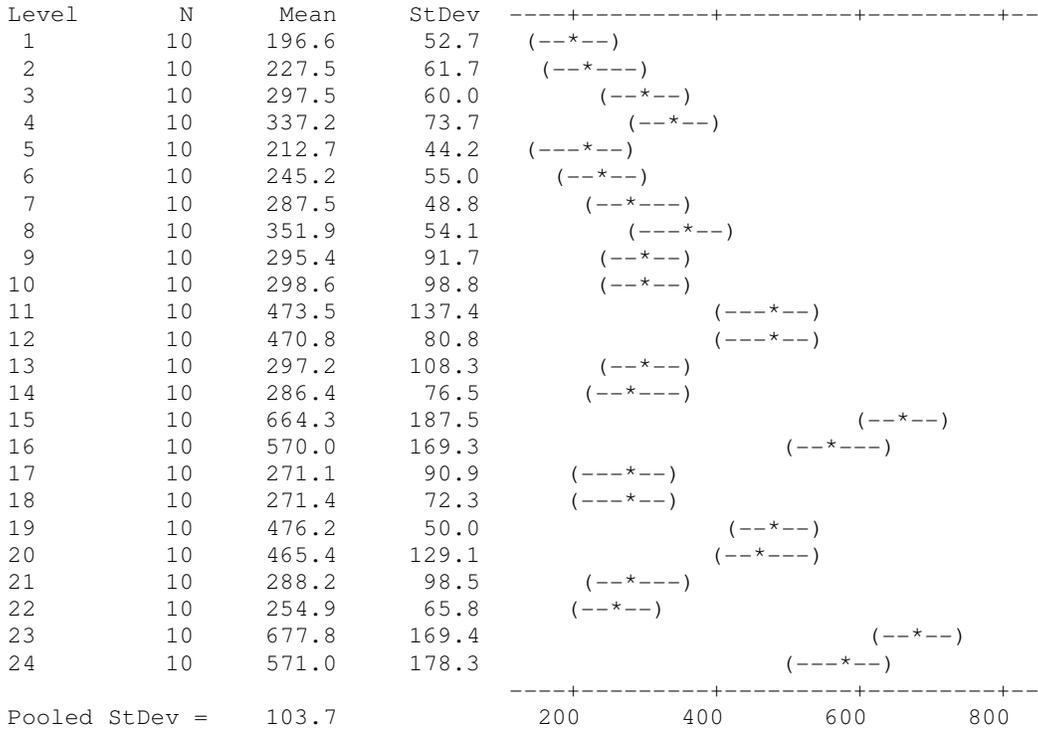


One-way ANOVA: Fp(N) versus Run

Analysis of Variance for Fp(N)

Source	DF	SS	MS	F	P
Posture_	23	4692372	204016	18.97	0.000
Error	216	2323092	10755		
Total	239	7015464			

Individual 95% CIs For Mean
Based on Pooled StDev



ตารางที่ 9

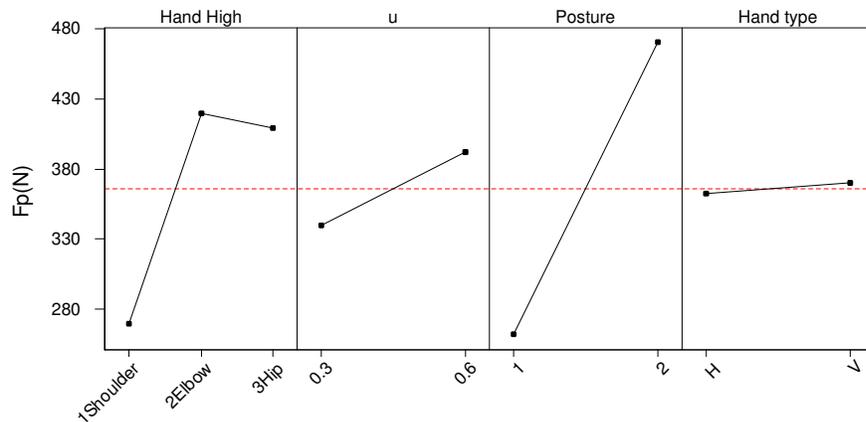
General Linear Model: Fp(N) versus Hand High, u, Posture, Hand type

Factor	Type	Levels	Values
Hand Hig	fixed	3	1Shoulder 2Elbow 3Hip
u	fixed	2	0.3 0.6
Posture	fixed	2	1 2
Hand typ	fixed	2	H V

Analysis of Variance for Fp(N), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Hand Hig	2	1125552	1125552	562776	52.33	0.000
u	1	163178	163178	163178	15.17	0.000
Posture	1	2599590	2599590	2599590	241.71	0.000
Hand typ	1	3215	3215	3215	0.30	0.585
Hand Hig*u	2	54817	54817	27408	2.55	0.081
Hand Hig*Posture	2	370726	370726	185363	17.23	0.000
Hand Hig*Hand typ	2	73874	73874	36937	3.43	0.034
u*Posture	1	139251	139251	139251	12.95	0.000
u*Hand typ	1	18198	18198	18198	1.69	0.195
Posture*Hand typ	1	7394	7394	7394	0.69	0.408
Hand Hig*u*Posture	2	92232	92232	46116	4.29	0.015
Hand Hig*u*Hand typ	2	17658	17658	8829	0.82	0.441
Hand Hig*Posture*Hand typ	2	13588	13588	6794	0.63	0.533
u*Posture*Hand typ	1	5707	5707	5707	0.53	0.467
Hand Hig*u*Posture*Hand typ	2	7393	7393	3697	0.34	0.710
Error	216	2323092	2323092	10755		
Total	239	7015464				

Main Effects Plot - Data Means for Fp(N)



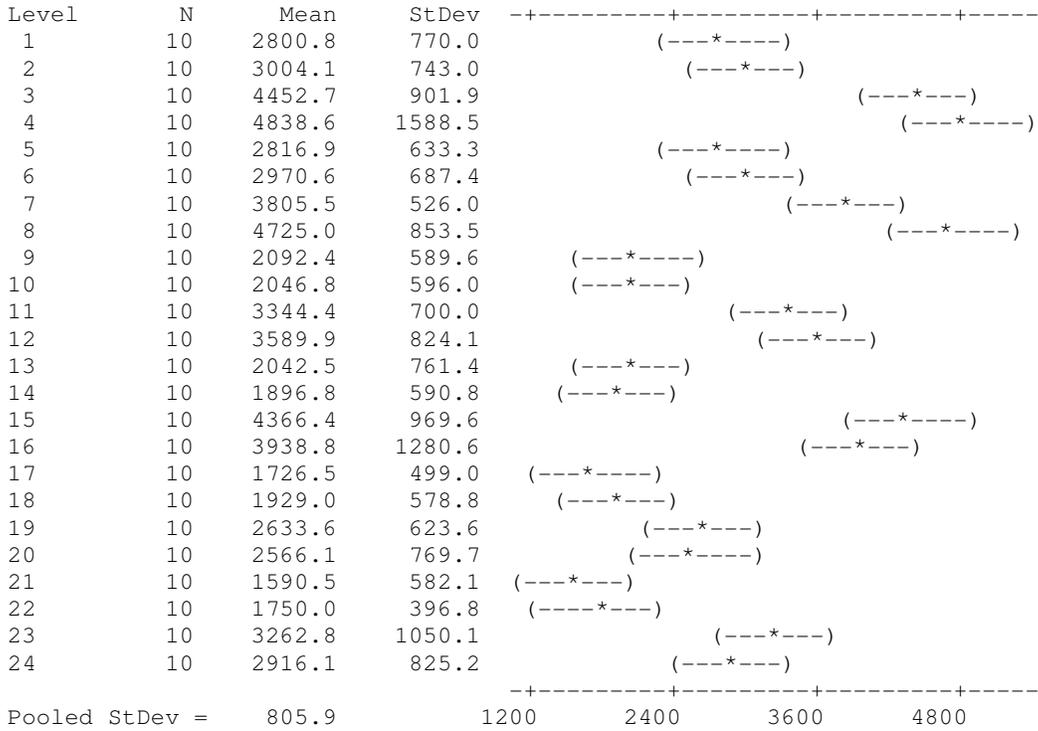
ภาพที่ 9

One-way ANOVA: Fc(N) versus Run

Analysis of Variance for Fc(N)

Source	DF	SS	MS	F	P
Posture_	23	229539480	9979977	15.37	0.000
Error	216	140279801	649444		
Total	239	369819281			

Individual 95% CIs For Mean
Based on Pooled StDev



One-way ANOVA: ch1 versus Run

Analysis of Variance for ch1

Source	DF	SS	MS	F	P
Posture_	23	6313514	274501	5.26	0.000
Error	216	11265502	52155		
Total	239	17579017			

Individual 95% CIs For Mean
Based on Pooled StDev

Level	N	Mean	StDev	CI
1	10	660.1	250.1	(-----*-----)
2	10	679.6	300.5	(-----*-----)
3	10	557.0	249.8	(-----*-----)
4	10	510.4	307.8	(-----*-----)
5	10	704.2	309.4	(-----*-----)
6	10	716.8	306.6	(-----*-----)
7	10	583.4	251.6	(-----*-----)
8	10	455.3	288.0	(-----*-----)
9	10	222.8	182.7	(-----*-----)
10	10	240.4	108.3	(-----*-----)
11	10	384.9	185.2	(-----*-----)
12	10	396.7	225.7	(-----*-----)
13	10	273.1	213.6	(-----*-----)
14	10	266.3	199.3	(-----*-----)
15	10	392.8	199.5	(-----*-----)
16	10	386.2	233.4	(-----*-----)
17	10	220.1	183.9	(-----*-----)
18	10	277.0	189.8	(-----*-----)
19	10	405.7	194.0	(-----*-----)
20	10	382.8	212.2	(-----*-----)
21	10	218.8	217.7	(-----*-----)
22	10	224.2	182.7	(-----*-----)
23	10	301.2	165.0	(-----*-----)
24	10	312.4	188.0	(-----*-----)

Pooled StDev = 228.4

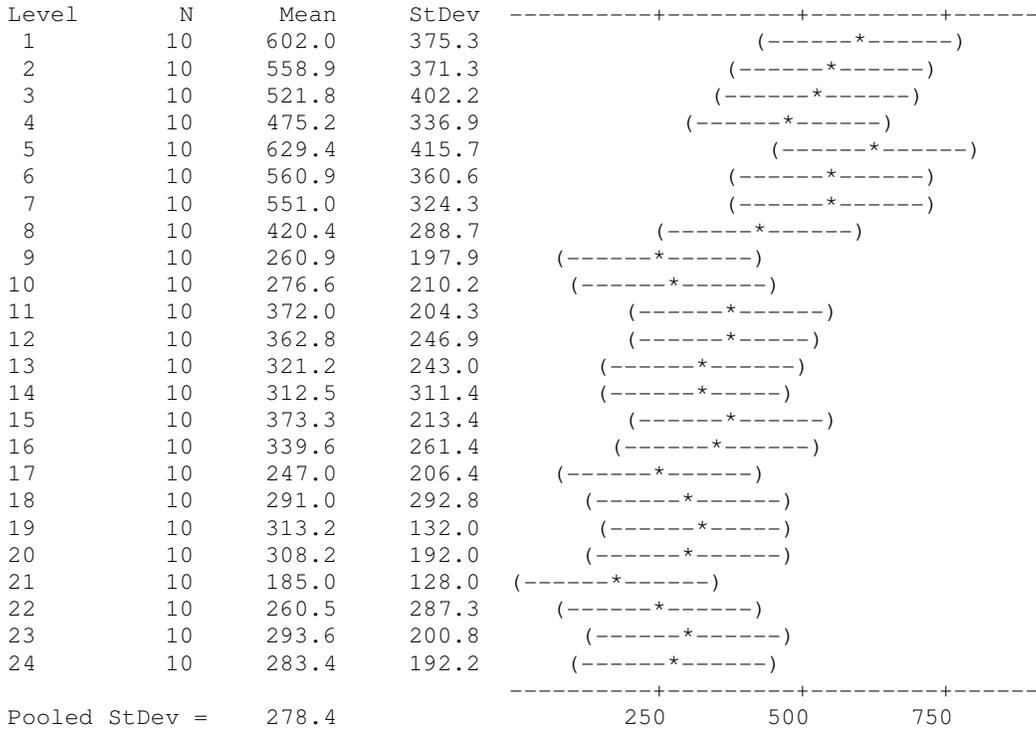
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One-way ANOVA: ch2 versus Run

Analysis of Variance for ch2

Source	DF	SS	MS	F	P
Posture_	23	3755140	163267	2.11	0.003
Error	216	16740682	77503		
Total	239	20495822			

Individual 95% CIs For Mean
Based on Pooled StDev

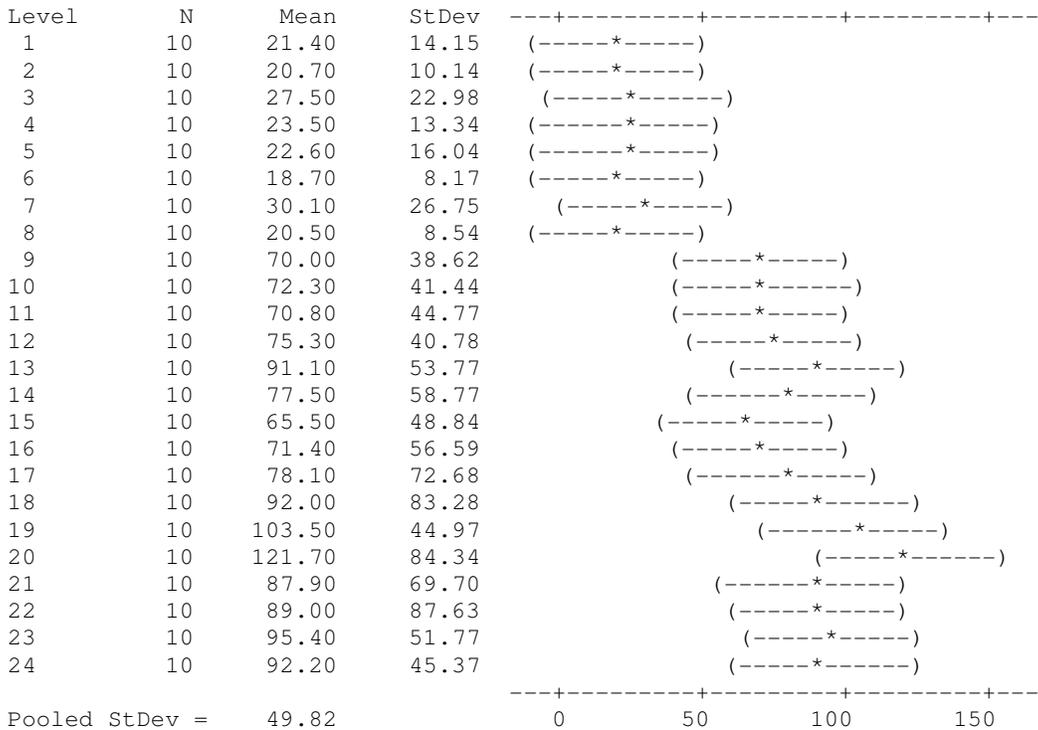


One-way ANOVA: ch3 versus Run

Analysis of Variance for ch3

Source	DF	SS	MS	F	P
Posture_	23	235716	10249	4.13	0.000
Error	216	536040	2482		
Total	239	771756			

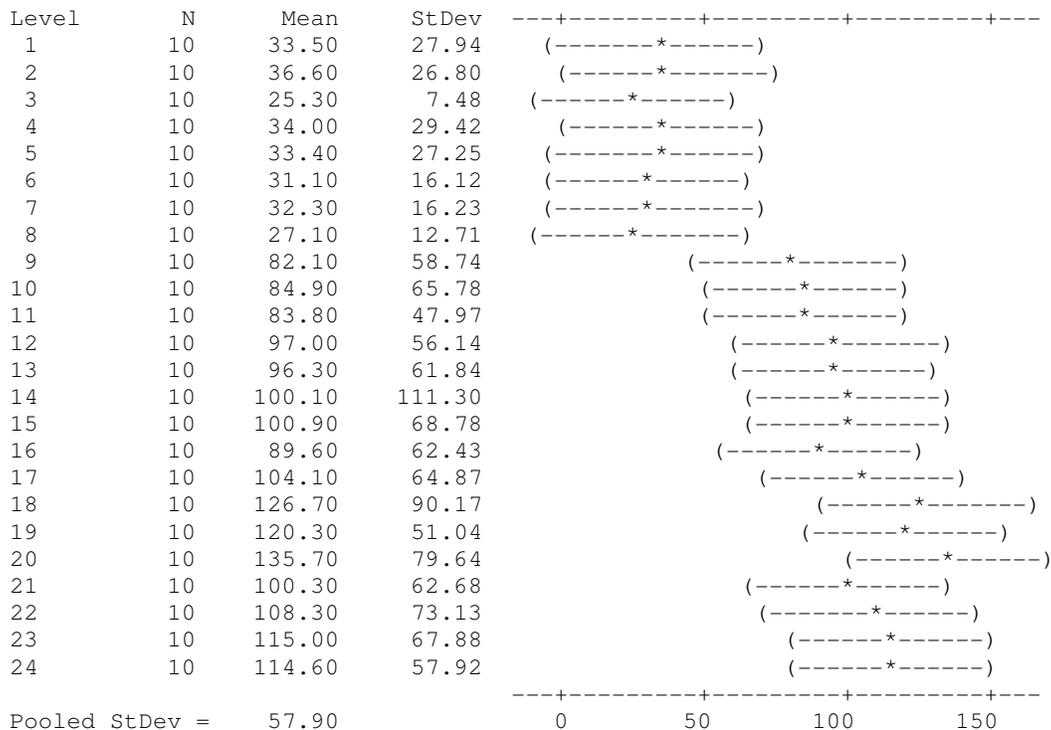
Individual 95% CIs For Mean
Based on Pooled StDev



One-way ANOVA: ch4 versus Run

Analysis of Variance for ch4

Source	DF	SS	MS	F	P
Posture_	23	314423	13671	4.08	0.000
Error	216	724023	3352		
Total	239	1038446			

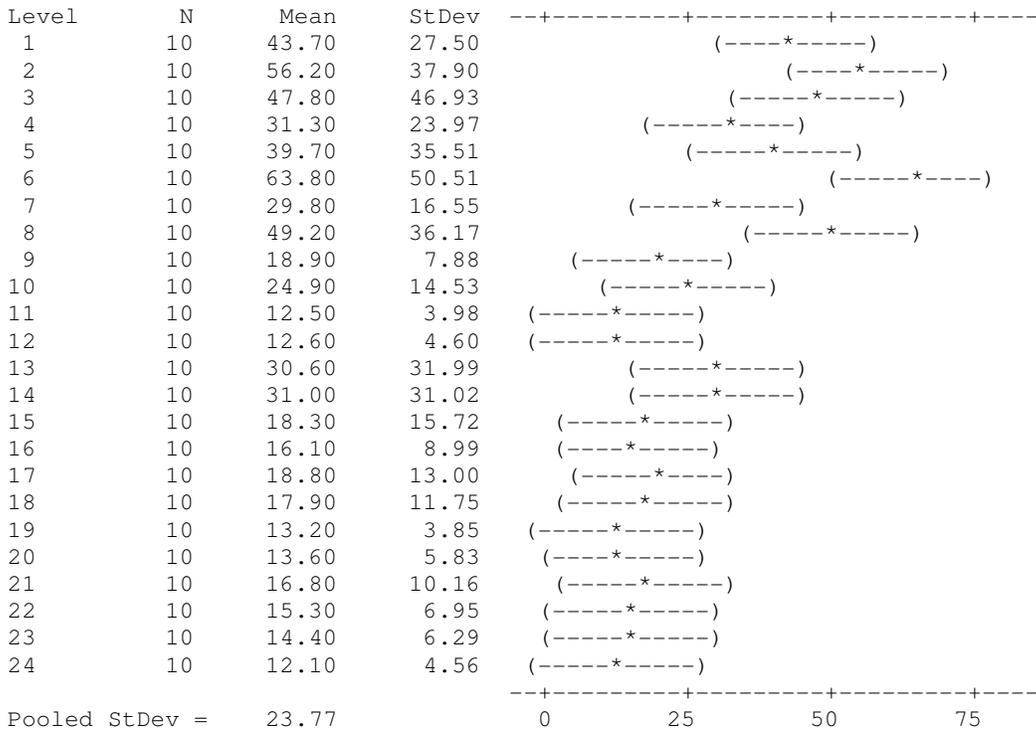
Individual 95% CIs For Mean
Based on Pooled StDev

One-way ANOVA: ch5 versus Run

Analysis of Variance for ch5

Source	DF	SS	MS	F	P
Posture_	23	54517	2370	4.20	0.000
Error	216	122000	565		
Total	239	176517			

Individual 95% CIs For Mean
Based on Pooled StDev

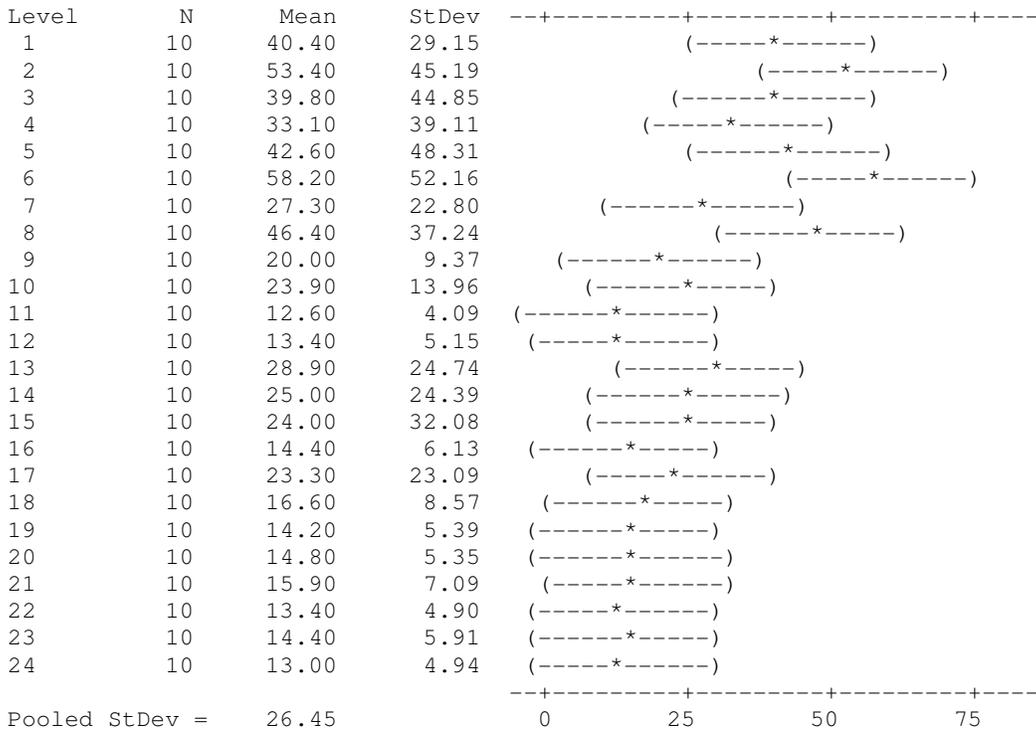


One-way ANOVA: ch6 versus Run

Analysis of Variance for ch6

Source	DF	SS	MS	F	P
Posture_	23	43795	1904	2.72	0.000
Error	216	151144	700		
Total	239	194940			

Individual 95% CIs For Mean
Based on Pooled StDev



One-way ANOVA: ch8 versus Run

Analysis of Variance for ch8

Source	DF	SS	MS	F	P
Posture_	23	98112	4266	1.49	0.076
Error	216	618399	2863		
Total	239	716511			

Individual 95% CIs For Mean
Based on Pooled StDev

