Appendix

I.a. **Data analysis of Gross Motor Function Measure (walking) scores of Neurodevelopmental Technique Group**

Table 1: Pre test, Mid test and Post test values of MTUG test, GMFM, Gait stride length (RT and LT) of neurodevelopmental technique (n=12) on spastic diplegia children.

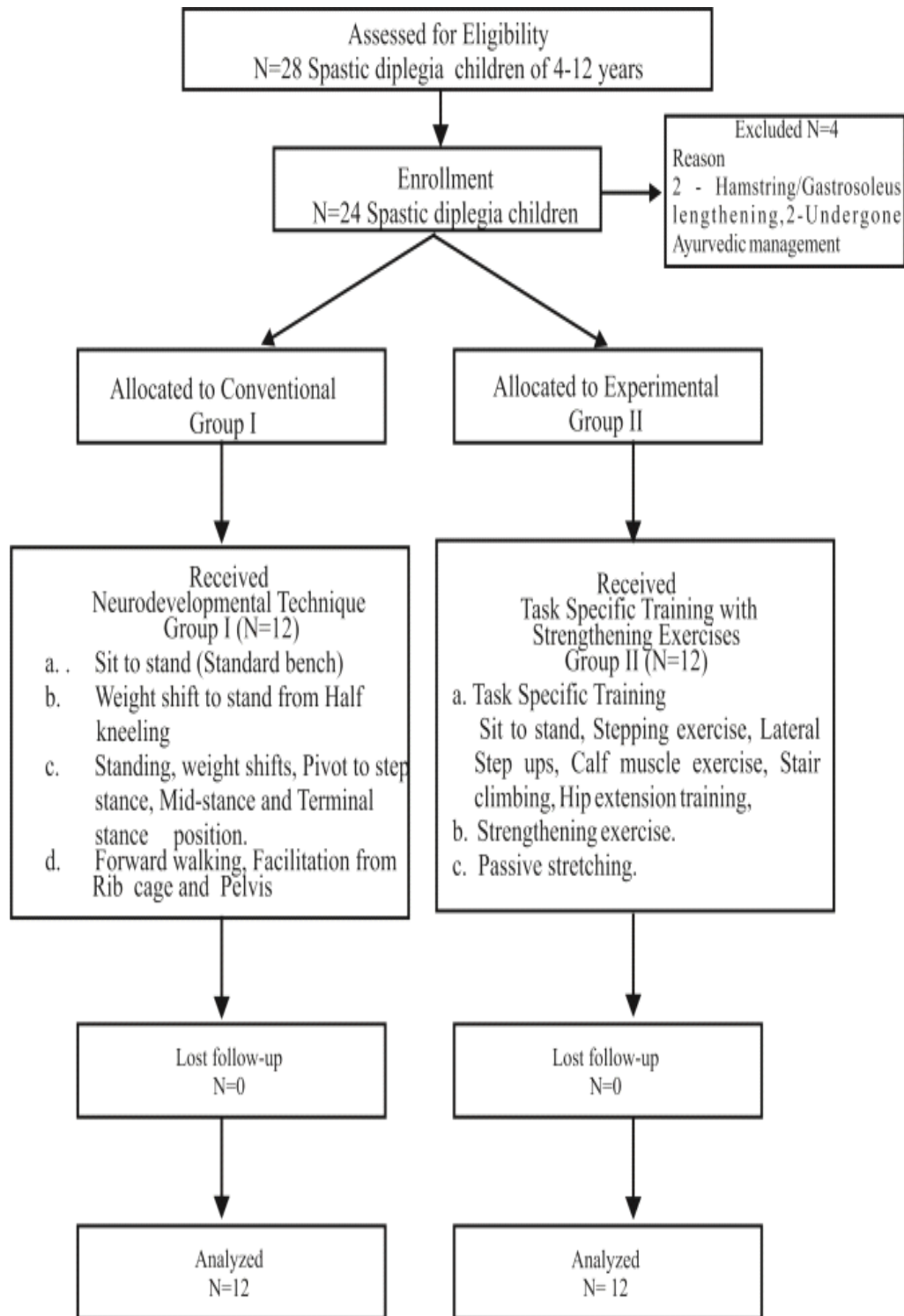| N | Age/ Sex | Gross Motor Function Classification System (GMFCS)- Level II | | | | | | | | | | | |
		Modified Timed Up and Go test (seconds)			Gross Motor Function Measure Walking (Score)			Gait Stride Length					
								Right Lower limb (centimetres)			Left Lower limb (centimetres)		
		Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post
1	9/M	28	24	22	28	31	32	65	66	66.5	65	65.5	67.5
2	10/M	28	25	24	25	26	30	63	63.5	64	62	63	63.5
3	7/M	29	28	26	22	23	26	58	59	61	57	59	61
4	8/M	28	25	23	23	24	28	59	61	64	59	61	64
5	6/M	28	26	24	25	28	30	57	58	61	57	58	61
6	10/M	29	28	23	25	26	30	59.5	61	63	59	61	63
7	11/F	26	22	21	28	30	33	65	66	66	63	65.5	68.5
8	10/F	29	25	24	26	30	31	66	67.5	68.5	66	67.5	68
9	10/M	28	26	23	28	26	30	65	66.5	68	65	66.5	68
10	8/M	27	26	23	25	28	28	58	59.5	61.5	58	59	61
11	10/M	27	26	23	28	30	32	65	65.5	66	65	65.5	66
12	11/M	27	26	24	25	26	30	66	67	67.5	66	67	67

N- No. of Patients, M – Male; F-Female; Ht- Height ; Wt- Weight ; Pre - Pre-Test;   Mid - Mid-test (2 months); Post-Post-test (4 months); RT-Right, LT-Left.

Table 2: Pre-test, mid test and Post-test values of MTUG test, GMFM, gait stride length (RT and LT) of task specific training with strengthening exercise (N=12) on spastic diplegia children.

N	Age/Sex	Gross Motor Function Classification System (GMFCS)- Level II											
		Modified Timed Up and Go test (Seconds)			Gross Motor Function Measure Walking (Score)			Gait Stride Length					
								Right Lower limb (centimetres)			Left Lower limb (centimetres)		
		Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post
1	9/M	26	22	21	24	29	30	65	68	69	64.5	68	69
2	11/M	28	26	23	23	26	31	65	66	68	64.5	66	68
3	7/F	28	27	24	23	27	30	56	57	59	55	57	59
4	9/M	27	26	23	25	29	32	65	67	68	65	67	68
5	6/M	26	22	21	22	29	30	59	60	63	58	60	63
6	8/M	28	27	23	22	28	31	59	63	64	59	63	64.5
7	9/M	26	23	21	25	28	32	66	66	68	63	66	68
8	11/F	26	22	21	25	28	32	65	66	68	65	66	68
9	11/M	28	27	21	26	28	30	65	68	69	65	68	69
10	10/M	27	24	21	25	29	32	66	68	68	66	68	68.5
11	8/F	27	26	22	20	28	32	64	65	67	64	65	66.5
12	9/M	27	23	21	20	28	32	65	66	68	65	66	68

N- No. of Patients, M – Male; F-Female; Ht- Height ; Wt- Weight ; Pre - Pre-Test;   Mid - Mid-test (2 months); Post-Post-test (4 months); RT-Right, LT-Left.

Figure 1: Flow chart representation.


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                    ┌─────────────────────────────────────┐
                    │        Assessed for Eligibility      │
                    │  N=28 Spastic diplegia children of   │
                    │             4-12 years              │
                    └─────────────────────────────────────┘
                                    │
                                    ▼                        ┌──────────────────────────┐
                    ┌─────────────────────────────┐         │      Excluded N=4        │
                    │        Enrollment           │         │ Reason                   │
                    │  N=24 Spastic diplegia      │────────▶│ 2 - Hamstring/Gastrosoleus│
                    │         children            │         │ lengthening,2-Undergone  │
                    └─────────────────────────────┘         │ Ayurvedic management     │
                           │             │                  └──────────────────────────┘
              ┌────────────┘             └────────────┐
              ▼                                        ▼
┌──────────────────────────┐          ┌──────────────────────────┐
│ Allocated to Conventional│          │ Allocated to Experimental│
│        Group I           │          │        Group II          │
└──────────────────────────┘          └──────────────────────────┘
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Allocated to Conventional Group I

Allocated to Experimental Group II

Received Neurodevelopmental Technique Group I (N=12)

a. . Sit to stand (Standard bench)
b. Weight shift to stand from Half kneeling
c. Standing, weight shifts, Pivot to step stance, Mid-stance and Terminal stance position.
d. Forward walking, Facilitation from Rib cage and Pelvis

Received Task Specific Training with Strengthening Exercises Group II (N=12)

a. Task Specific Training
Sit to stand, Stepping exercise, Lateral Step ups, Calf muscle exercise, Stair climbing, Hip extension training,
b. Strengthening exercise.
c. Passive stretching.

Lost follow-up N=0

Lost follow-up N=0

Analyzed N=12

Analyzed N= 12

Table 3: Mean and standard deviation of pre-test, mid test and post test scores of GMFM walking of neurodevelopmental technique group.

Variable	Mean	Std. Deviation	N
GMFM walking-Pre	25.6667	2.0151	12
GMFM walking-Mid	27.3333	2.5702	12
GMFM walking-Post	30.0000	1.9540	12

Table 4: Repeated measures ANOVA for GMFM walking of neurodevelopmental technique group.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Periods	114.667	2	57.333	63.067	*
Error	20.000	22	.909		

Significant difference: F -ratio value 63.067 is greater than the table value of 3.443 at 0.05% level of significance

Table 5: Newman-Keul's Test on difference between treatment means of GMFM walking scores for neurodevelopmental technique.

Treatment		Pre	Mid	Post	R	RCV
Mean		25.667	27.333	30.000		
Pre	25.667		1.67	4.33	3	0.978
Mid	27.333			2.67	2	0.808
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			0.808	0.978		

Significant difference exists between pre-test and mid test, mid test and post-test and pre-test and post-test scores of GMFM walking for Neurodevelopmental Technique group at 0.05% level.

Figure 2: Graphical representation of pre-test, mid test and post-test mean scores of GMFM walking of neurodevelopmental technique group
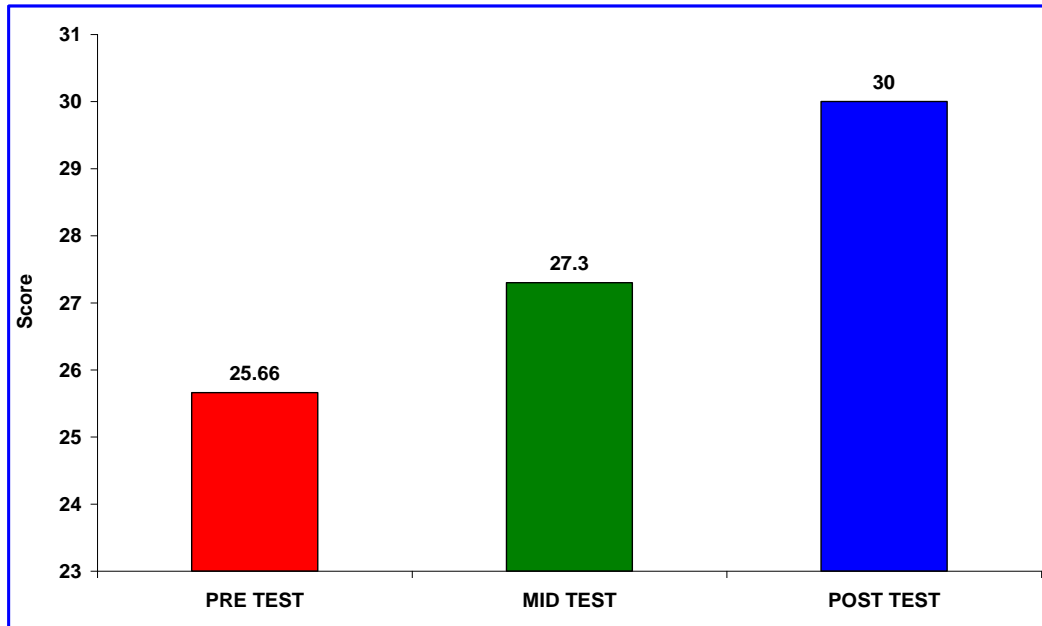
(F=63.067)

I.b. Data analysis of modified time Up and Go test of neurodevelopmental technique group

Table 6: Mean and standard deviation of pre-test, mid test and post test scores of modified TUG of neurodevelopmental technique group

Variable	Mean	Std. Deviation	N
MTUG-Pre	27.8333	.9374	12
MTUG-Mid	25.5833	1.6214	12
MTUG-Post	23.3333	1.2309	12

Table 7: Repeated measures ANOVA for modified TUG of neurodevelopmental technique group.

| Source	Sum of Squares	Df	Mean Square	F	Sg.
Between Periods	121.500	2	60.750	92.172	*
Error	14.500	22	.659		

*Significant difference: F-ratio value 92.172 is greater than the table value of 3.443 at 5% level of significance.

Table 8: Newman-Keul's test on difference between treatment means of modified TUG scores for neurodevelopmental technique.

Treatment		Pre	Mid	Post	R	RCV
Mean		27.833	25.583	23.333		
Pre	27.833		2.25	4.50	3	0.833
Mid	25.583			2.25	2	0.688
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			0.688	0.833		

Significant difference exists between pre-test and mid test, mid test and post-test and pre-test and post-test scores of Modified Timed up and go test for Neurodevelopmental Technique group at 0.05% level.

Figure 3: Graphical representation of pre-test, mid test and post-test mean scores of modified TUG of neurodevelopmental technique group.
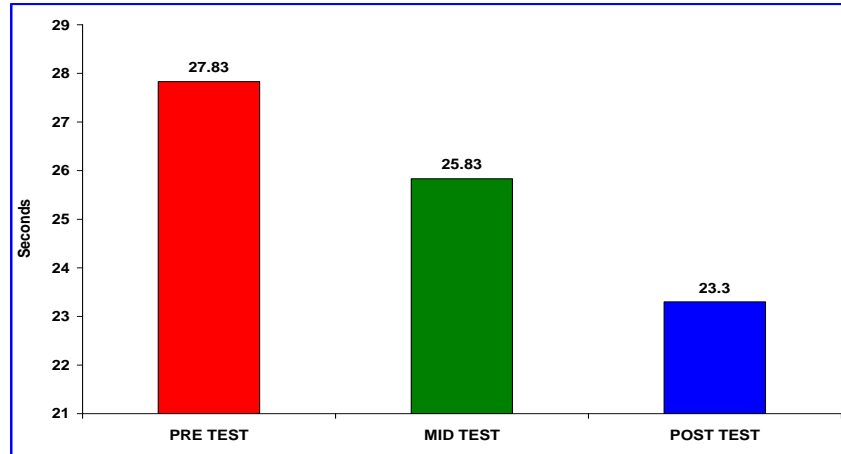
(F=92.172)

I.c.   Data analysis of gait right stride length of neurodevelopmental technique group

Table 9: Mean and standard deviation of pre-test, mid test and post test scores of gait right stride of neurodevelopmental technique group.

Variable	Mean	Std. Deviation	N
Gait Right Stride – Pre	62.2083	3.5768	12
Gait Right Stride – Mid	63.3750	3.4715	12
Gait Right Stride – Post	64.7500	2.7178	12

Table 10: Repeated Measures ANOVA for Gait Right stride of Neurodevelopmental Technique Group

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Periods	38.847	2	19.424	38.315	*
Error	11.153	22	.507		

* Significant difference: F-ratio value 38.315 is greater than the table value of 3.443 at 0.05% level of significance.

Table 11: Newman-Keul's test on difference between treatment means gait right stride scores for neurodevelopmental technique.

Treatment		Pre	Mid	Post	R	RCV
Mean		62.208	63.375	64.750		
Pre	62.208		1.17	2.54	3	0.731
Mid	63.375			1.38	2	0.603
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			0.603	0.731		

Significant difference exists between pre-test and mid test, mid test and post-test and pre-test and post-test scores of Gait Right stride for Neurodevelopmental Technique group at 0.05% level.

Figure 4: Graphical representation of pre-test, mid test and post-test mean scores of gait right stride of neurodevelopmental technique group.
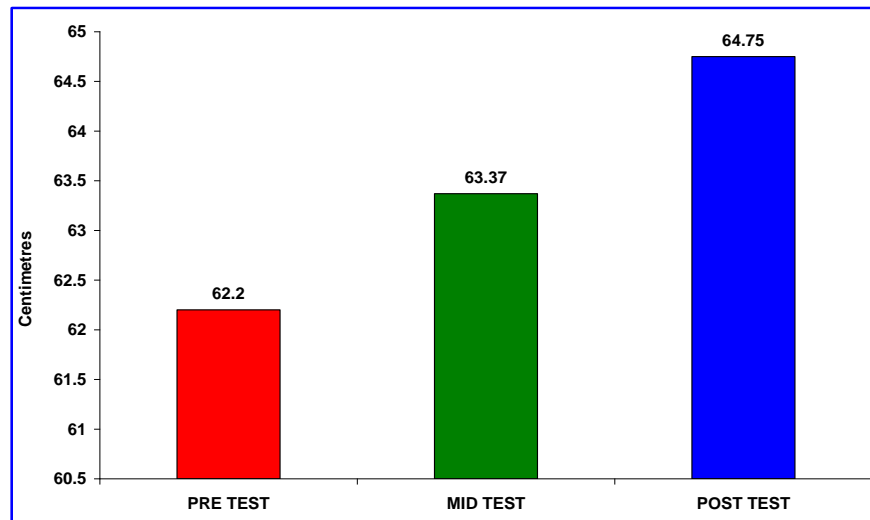
(F=38.315)

I.d. Data analysis of Gait Left stride of Neurodevelopmental Technique Group

Table 12: Mean and standard deviation of pre-test, mid test and post test scores of gait left stride of neurodevelopmental technique group.

Variable	Mean	Std. Deviation	N
Gait Stride Left –Pre	61.8333	3.6139	12
Gait Stride Right –Mid	63.2083	3.4605	12
Gait Stride Right –Post	64.8750	2.9628	12

Table 13: Repeated measures ANOVA for gait left stride of neurodevelopmental technique group.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Periods	55.681	2	27.840	43.792	*
Error	13.986	22	.636		

* Significant difference: F-ratio value 43.792 is greater than the table value of 3.443 at 0.05% level of significance.

Table 14: Newman-Keul's test on difference between treatment means of gait left sride for neurodevelopmental technique.

Treatment		Pre	Mid	Post	R	RCV
Mean		61.833	63.208	64.875		
Pre	61.833		1.38	3.04	3	0.818
Mid	63.208			1.67	2	0.676
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			0.676	0.818		

Significant difference exists between pre-test and mid test, mid test and post-test and pre-test and post-test scores of Gait Left stride for Neurodevelopmental Technique group at 0.05% level.

Table 14.1: ANCOVA results of pre-test, post-test and adjusted post-test means and Standard Deviation of Pre-test and post-test of gait left stride of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (TASK).

Techniques	Gait Lt stride- Pre Test			Gait Lt stride- Post Test			Adjusted Post Test
	Mean	S.D	No.	Mean	S.D	No.	Mean
Conventional Group I	61.83	3.61	12	64.88	2.96	12	65.26
Experimental Group II	62.83	3.51	12	66.63	3.02	12	66.23

Table 14.2: ANCOVA results for gait left stride length.

Source	Sum of Squares	df	Mean Square	F	Sig.
Covariate- GAIT Lt Stride -Pre-test	185.723	1	185.723	163.648	*
Between Groups	5.445	1	5.445	4.798	*
Within groups	23.833	21	1.135		
Total	215.000	23			

*Significant difference: F ratio values between groups 4.798. The Critical value is 4.325.

Figure 5: Graphical representation of pre-test, mid test and post-test mean scores of gait left stride of neurodevelopmental technique group.
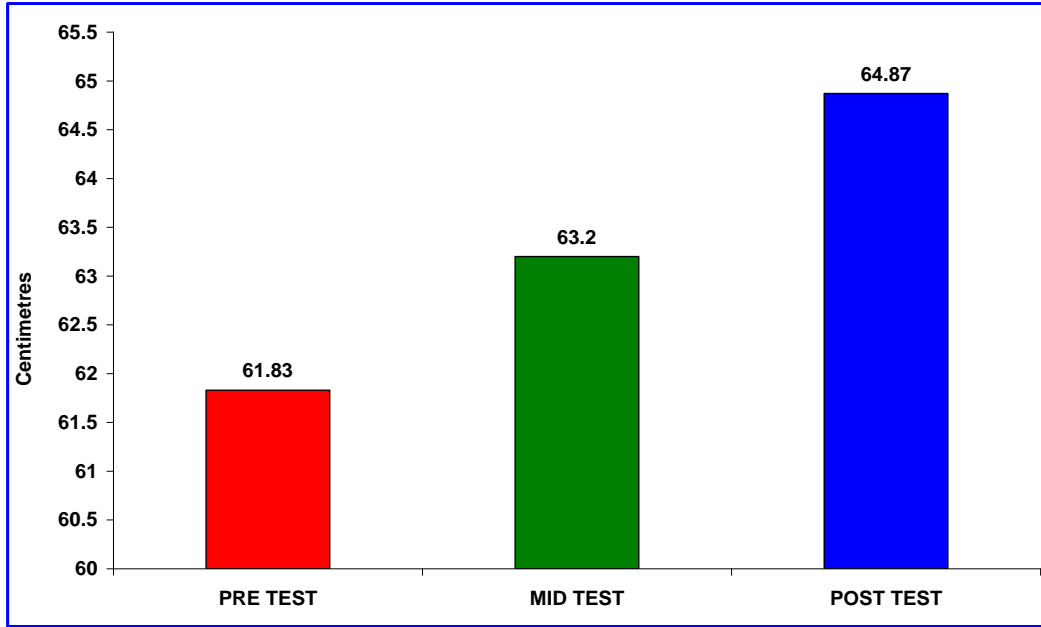
(F=43.792)

II. a. Data analysis of gross motor function measure walking scores of task specific training with strengthening exercise group (TASK).

Table 15: Mean and standard deviation of pre-test, mid test and post-test scores of GMFM walking of task specific training with strengthening exercise group.

Variable	Mean	Std. Deviation	N
GMFM Walking-PRE	23.3333	2.0151	12
GMFM Walking –MID	28.0833	.9003	12
GMFM Walking –POST	31.1667	.9374	12

Table 16: Repeated measures ANOVA for GMFM walking of task specific training with strengthening exercise group.

Source	Sum of Squares	df	Mean Square	F	Sig.

| Between Periods	373.722	2	186.861	102.065	*
Error	40.278	22	1.831		

Significant difference: F-ratio value 102.065 is greater than the table value of 3.443 at 0.05% level of significance.

Table 17: Newman-Keul's test on difference between treatment means of GMFM walking scores for task specific training with strengthening exercise group.

Treatment		Pre	Mid	Post	r	RCV
Mean		23.333	28.083	31.167		
Pre	23.333		4.75	7.83	3	1.388
Mid	28.083			3.08	2	1.146
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			1.146	1.388		

Significant difference between pre-test and mid test, mid test and post-test and pre-test and post-test scores of GMFM walking for Task specific training with strengthening exercise group at 0.05% level.

Figure 6: Graphical representation of pre-test, mid test and post-test mean scores of GMFM walking of task specific training with strengthening exercise group.
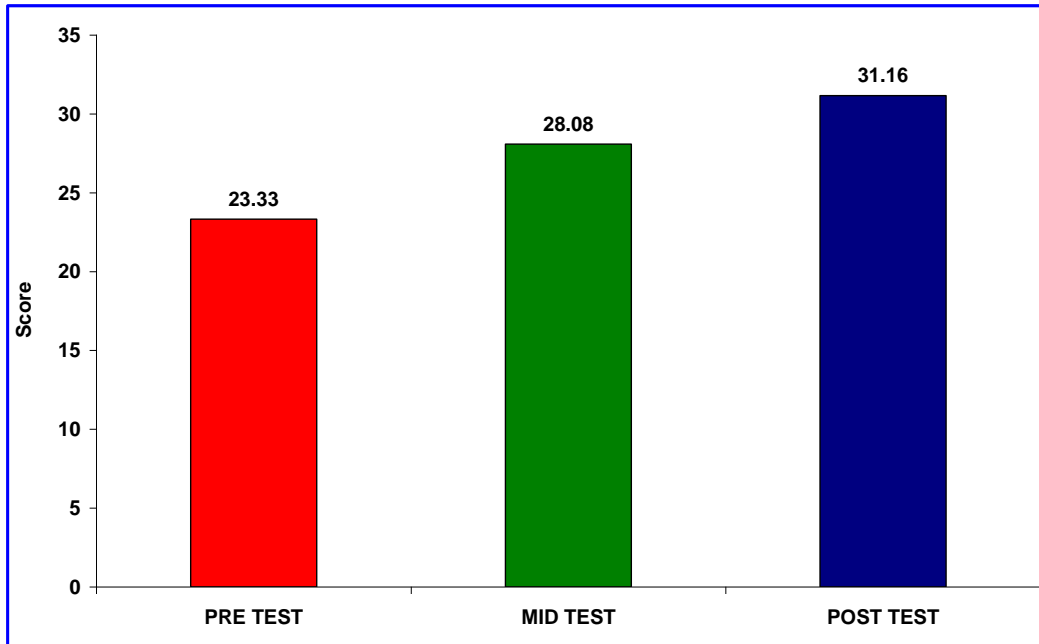
II. b.Data analysis of Modified Timed Up and Go test of Task specific Training with strengthening exercise group (TASK)

Table 18: Mean and standard deviation of pre-test, mid test and post-test scores of modified TUG of task specific training with strengthening exercise group.

	Mean	Std. Deviation	N
MTUG-Pre	27.0000	.8528	12
MTUG-Mid	24.5833	2.1088	12
MTUG-Post	21.8333	1.1146	12

Table 19: Repeated measures ANOVA for MTUG of task specific training with strengthening exercise group.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Periods	160.389	2	80.194	100.180	*
Error	17.611	22	.801		

* Significant difference: F-ratio value 100.180 is greater than the table value of 3.443 at 0.05% level of significance.

Table 20: Newman-Keul's Test on difference between treatment means of MTUG scores for task specific training with strengthening exercise group.

Treatment		Pre	Mid	Post	r	RCV
Mean		27.000	24.583	21.833		
Pre	27.000		2.42	5.17	3	0.918
Mid	24.583			2.75	2	0.758
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			0.758	0.918		

Significant difference between pre-test and mid test, mid test and post-test and pre-test and post-test scores of Modified Timed Up and Go test for Task specific training with strengthening exercise group at 0.05% level.

Figure 7: Graphical representation of pre-test, mid test and post-test mean scores of modified TUG of task specific training with strengthening exercise group.
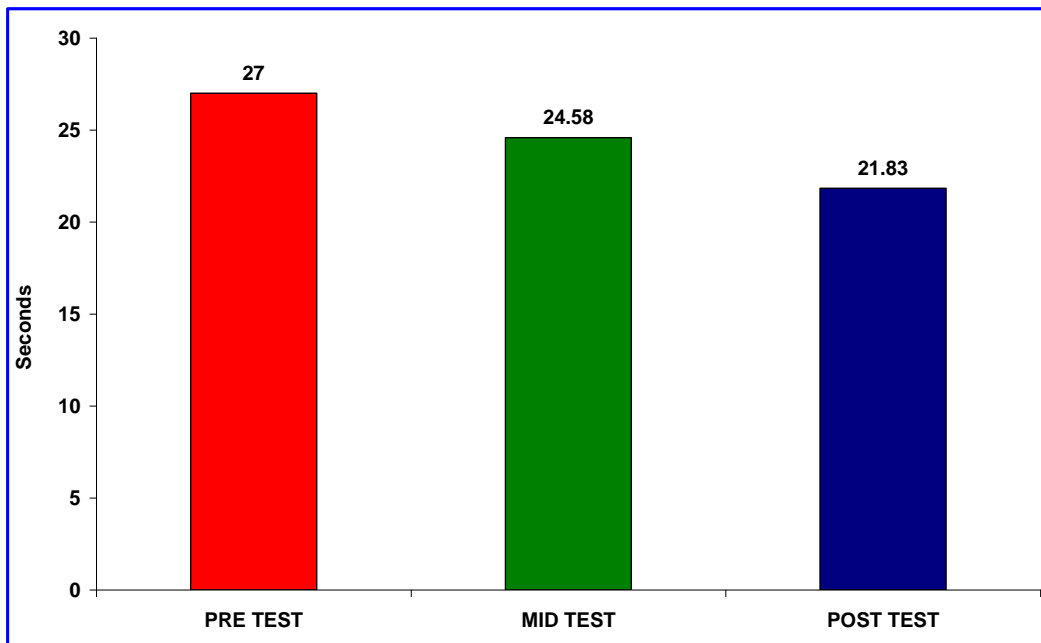
II.c. Data analysis of gait right stride length of task specific training with strengthening exercise group (TASK).

Table 21: Mean and standard deviation of pre-test, mid test and post-test scores of gait right stride of task specific training with strengthening exercise group.

Variable	Mean	Std. Deviation	N
Gait Stride Right-Pre	63.3333	3.3394	12
Gait Stride Right –Mid	65.0000	3.4112	12
Gait Stride Right –Post	66.5833	3.0289	12

Table 22: Repeated measures ANOVA for gait right stride of task specific training with strengthening exercise group.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Periods	63.389	2	31.694	70.117	*
Error	9.944	22	.452		

*Significant difference: F-ratio value 70.117 is greater than the table value of 3.443 at 0.05% level of significance.

Table 23: Newman-Keul's test on difference between treatment means of gait right stride scores for task specific training with strengthening exercise group.

Treatment		Pre	Mid	Post	R	RCV
Mean		63.333	65.000	66.583		
Pre	63.333		1.67	3.25	3	0.690
Mid	65.000			1.58	2	0.570
R			2	3		
Value at 0.05 level			2.935	3.554		

RCV		0.570	0.690		

Significant difference between pre-test and mid test, mid test and post-test and pre-test and post-test scores of Gait Right stride for Task specific training with strengthening exercise group at 0.05% level.

Figure 8: Graphical representation of pre-test, mid test and post-test mean scores of gait right stride of task specific training with strengthening exercise group.
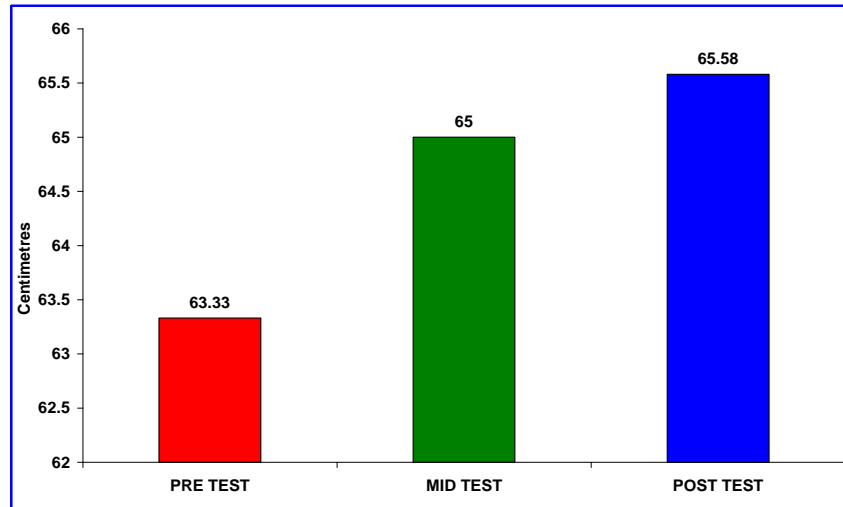
4.10.b Data analysis of gait left stride length of task specific training with strengthening exercise group (TASK).

Table 24: Mean and standard deviation of pre-test, mid test and post-test scores of gait left stride of task specific training with strengthening exercise group.

Variable	Mean	Std. Deviation	N
Gait Left Stride – Pre	62.8333	3.5054	12
Gait Left Stride – Mid	65.0000	3.4112	12
Gait Left Stride – Post	66.6250	3.0161	12

Table 25: Repeated measures ANOVA for gait left stride of task specific training with strengthening exercise group.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Periods	86.847	2	43.424	102.508	*
Error	9.319	22	.424		

* Significant difference: F-ratio value 102.508 is greater than the table value of 3.443 at 0.05% level of significance.

Table 26: Newman-Keul's test on difference between treatment means gait left stride scores for task specific training with strengthening exercise group

Treatment		Pre	Mid	Post	R	RCV
Mean		62.833	65.000	66.625		
Pre	62.833		2.17	3.79	3	0.668
Mid	65.000			1.63	2	0.552
R			2	3		
Value at 0.05 level			2.935	3.554		
RCV			0.552	0.668		

Significant difference between pre-test and mid test, mid test and post-test and pre-test and post-test scores of Gait Left stride for Task specific training with strengthening exercise group at 0.05% level.

Figure 9: Graphical representation of pre-test, mid test and post-test mean scores of gait left stride of task specific training with strengthening exercise group.
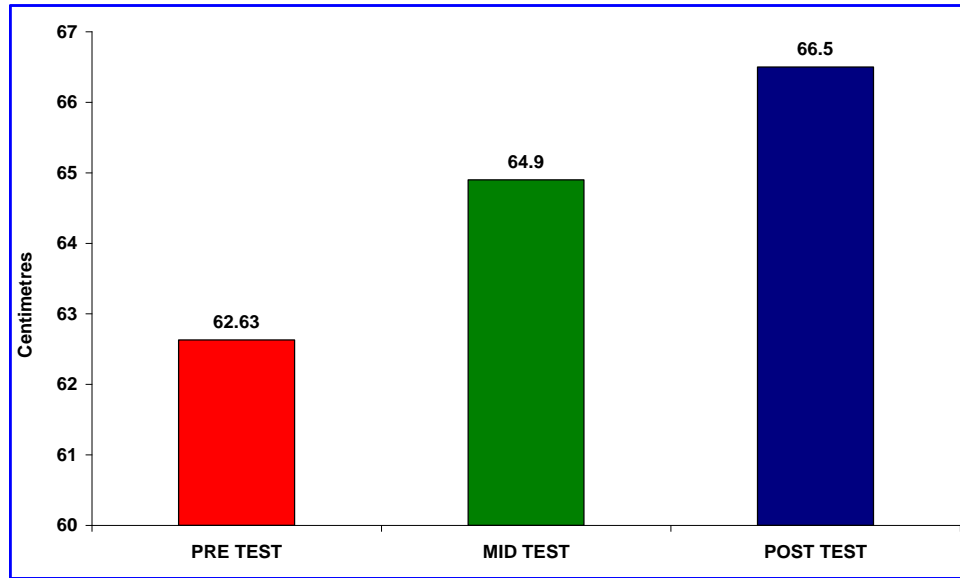
(F=102.508)

III.a. Comparison of pre-test, post-test and adjusted post-test means of gross motor function measure walking between neurodevelopmental technique group (ndt) and task specific training with strengthening exercise (task).

Table 27: ANCOVA results on pre-test, post-test and adjusted post-test means and standard deviation of pre-test and post-test of gmfm walking of neurodevelopmental technique (ndt) and task specific training with strengthening exercise (task).

Techniques	GMFM Walking-Pre Test			GMFM Walking-Post Test			Adjusted Post test
	Mean	S.D	No.	Mean	S.D	No.	Mean
Conventional Group I	25.67	2.02	12	30.00	1.95	12	29.52
Experimental Group II	23.33	2.02	12	31.17	.94	12	31.64

Table 28: ANCOVA results of GMFM walking.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Covariate- GMFM Walking -Pre-test	3.279	1	3.279	1.866	Ns
Between Groups	19.665	1	19.665	11.195	*
Within groups	36.889	21	1.757		
Total	59.833	23			

*Significant difference: F ratio values between groups is 11.195. The Critical value is 4.325.

Figure 10: Graphical representation of pre-test, post-test and adjusted post-test means of GMFM walking of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (task).
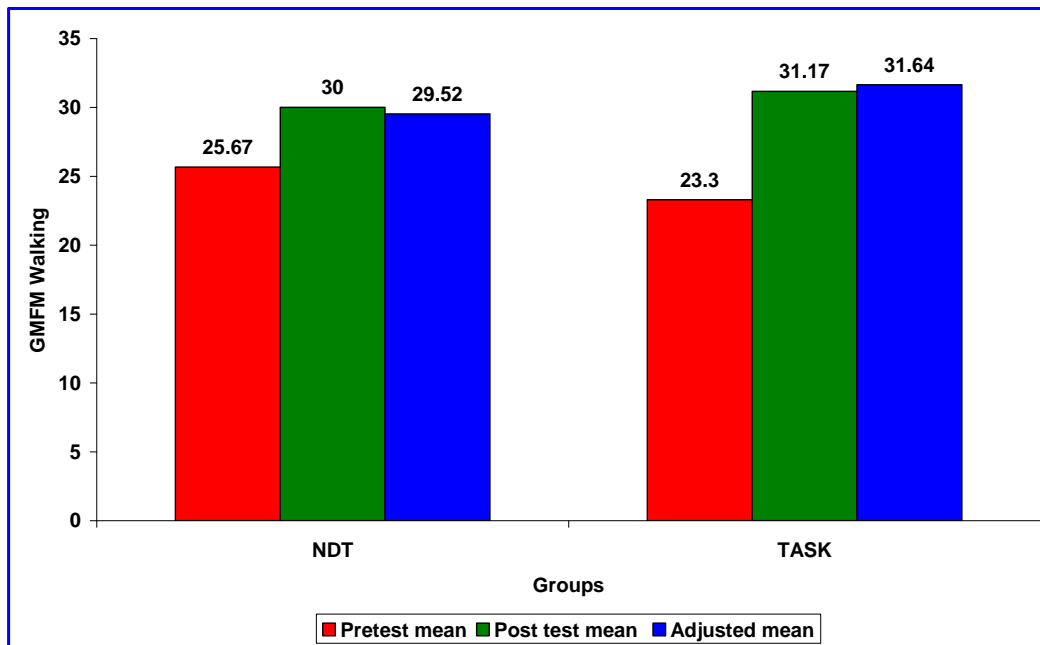
NDT- Neurodevelopmental technique, TASK- Task specific training with strengthening exercise

(F =11.195)

III.b. Comparison of pre-test, post-test and adjusted post-test means of modified timed up and go test between neurodevelopmental technique group (NDT) and task specific

training with strengthening exercise (TASK).

Table 29: ANCOVA results on pre-test, post-test and adjusted post-test means and standard deviation of pre-test and post-test of modified TUG of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (TASK).

TECHNIQUES	MTUG-Pre Test			MTUG-Post Test			Adjusted Post test
	Mean	S.D	No.	Mean	S.D	No.	Mean
Conventional Group I	27.83	.94	12	23.33	1.23	12	22.98
Experimental Group II	27.00	.85	12	21.83	1.11	12	22.17

Table 30: ANCOVA results of MTUG.

Source	Sum of Squares	Df	Mean Square	F	Sig.
Covariate- MTUG -Pre-test	22.505	1	22.505	26.029	*
Between Groups	3.171	1	3.171	3.667	Ns
Within groups	18.157	21	.865		
Total	43.833	23			

*Significant difference: F ratio values between groups is 3.667. The Critical value is 4.325.

Figure 11: Graphical representation of pre-test, post-test and adjusted post-test means of modified timed Up and Go test of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (TASK).
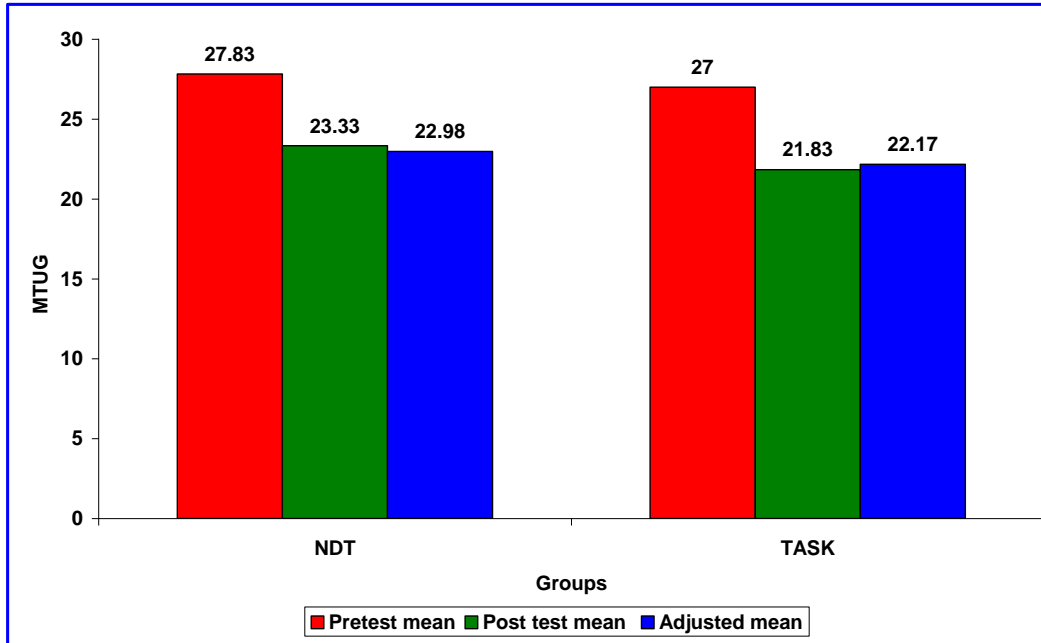
(F= 3.667)

NDT- Neurodevelopmental technique

TASK- Task specific training with strengthening exercise

III.c. Comparison of pre-test, post-test and adjusted post-test means of gait right stride between neurodevelopmental technique group (NDT) and task specific training with strengthening exercise (TASK)

Table 31: ANCOVA results on pre-test, post-test and adjusted post-test means and standard deviation of pre-test and post-test of gait right stride of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (TASK).

Techniques	Gait Rt Stride- Pre Test			Gait Rt Stride- Post Test			Adjusted Post Test
	Mean	S.D	No.	Mean	S.D	No.	Mean
Conventional Group I	62.21	3.58	12	64.75	2.72	12	65.19
Experimental Group II	63.33	3.34	12	66.58	3.03	12	66.13

Table 32: ANCOVA results for gait right stride length.

Source	Sum of Squares	df	Mean Square	F	Sig.
Covariate- Gait Rt Stride -Pre-test	180.504	1	180.504	227.536	**
Between Groups	5.170	1	5.170	6.517	*
Within groups	16.659	21	.793		
Total	202.333	23			

* Significant difference: F ratio values between groups is 6.517. The Critical value is 4.325.

Figure 12: Graphical representation of pre-test, post-test and adjusted post-test means of gait right stride length of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (TASK).
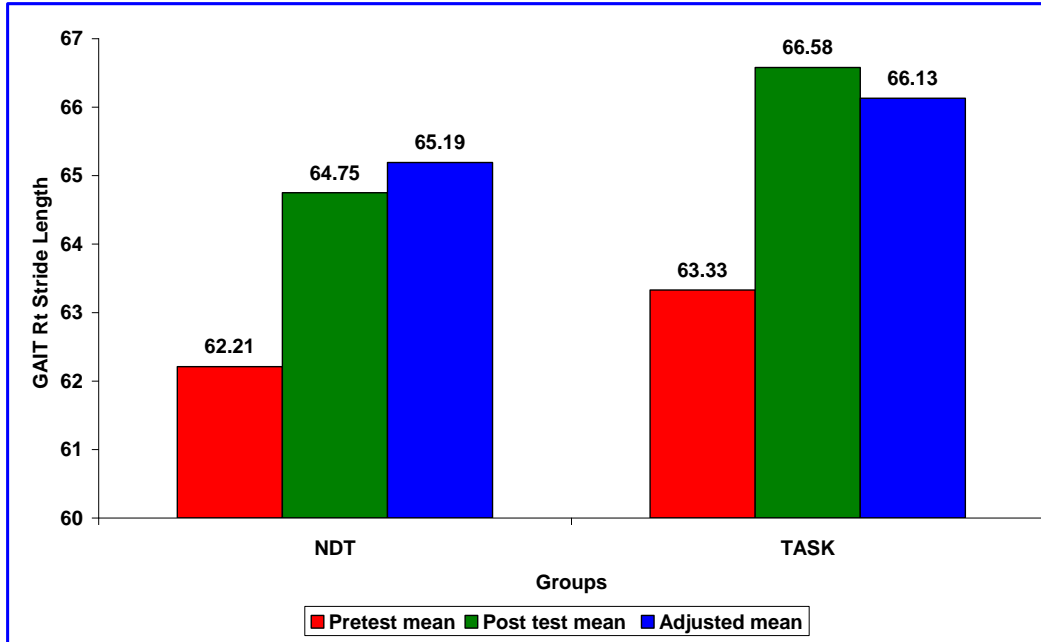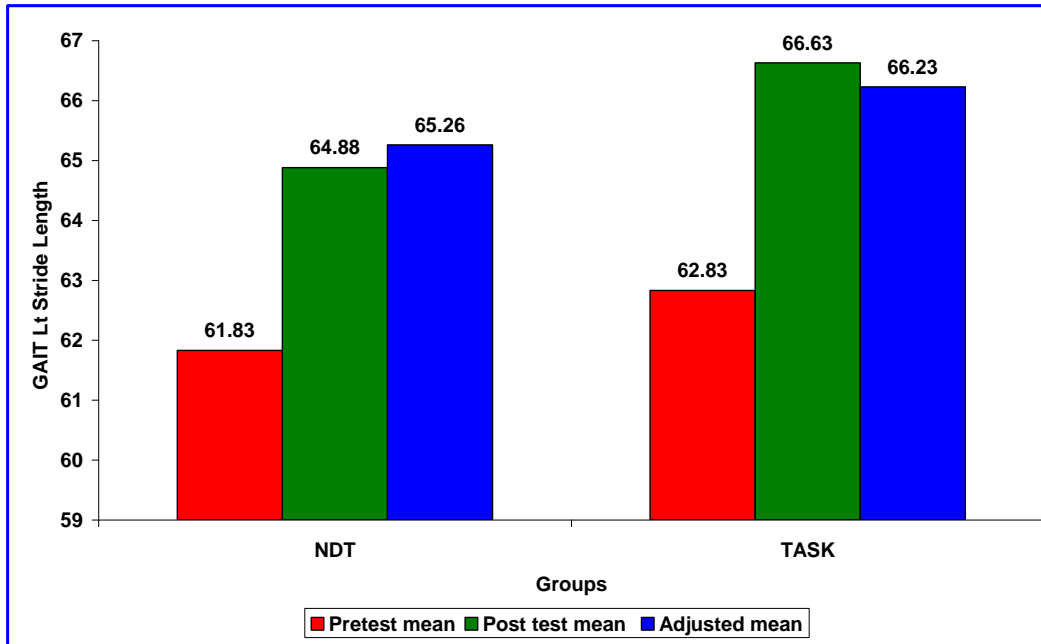
(F=6.517)

NDT- Neurodevelopmental technique

TASK- Task specific training with strengthening exercise

III.d. Comparison of pre-test, post-test and adjusted post-test means of gait left stride between neurodevelopmental technique group (NDT) and task specific training with strengthening exercise (TASK).

Figure 13: Graphical representation of pre-test, post-test and adjusted post-test means of gait left stride length of neurodevelopmental technique (NDT) and task specific training with strengthening exercise (TASK).

(F=4.798)

NDT- Neurodevelopmental technique

TASK- Task specific training with strengthening exercise