

Chapter – 6

RESULTS

6.0 RESULTS:

The yoga intervention Group had a total of 412 (male, n=196 and female, n=216) subjects, at the baseline. However, those who contributed assessments at baseline varied between 291-387 across various parameters as shown above. There were 25 dropouts in yoga group with post data being available for a maximum 387 subjects for any one variable. The mean age of the group was 13.48 ± 0.67 years. The Physical Exercise Group had a total of 392 subjects (males, n=210 and females, n=182) at the baseline. Baseline assessments were available across variables ranging from 322 to 371 subjects. There were 21 dropouts in the group. The mean age of the subjects in the group was 13.38 ± 0.63 years.

On safety and any side effects of Yoga: Yoga appears to be as safe especially among healthy students. Students were clinically examined for any specific musculoskeletal disorders as per selection criteria and to be safety they were guided with all safety measures and yoga module for their practice under the supervision of a trained qualified yoga instructor. Children during practice were taught about the benefits of yoga, necessary precautions to be taken and with intervals of relaxation. Regular monitoring from Ayush physicians during the period of intervention was supervised as per the oral guidelines given from the Ayush department time to time. As such there were no any side effects of yoga seen. (Yoga practices module was based on references given in Makkaligagi Yoga and Shalaskshakarigagi Yoga Kaipidi Published from AYUSH was followed)

Table 1: Details of intervention groups.

sex, MALE=1, FEMALE=0						
			Frequency	Percent	Valid Percent	Cumulative Percent
Physical Activity Group	Valid	Female	160	45.5	45.8	45.8
		Male	189	53.7	54.2	100.0
		Total	349	99.1	100.0	
	Missing	9999	3	.9		
	Total		352	100.0		
Yoga group	Valid	Female	231	51.3	51.8	51.8
		Male	215	47.8	48.2	100.0
		Total	446	99.1	100.0	
	Missing	9999	4	.9		
	Total		450	100.0		

Table 2: Comparison of participant’s performance in SLCT and DLST score between Yoga and physical exercise group following intervention:

SLCT, and DLST mean and SD for YOGA and PA Group						
	SLCT			DLST		
Group	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post
PA (n=391)	22.15 ± 6.66	25.73 ± 7.30 ***	-3.58 ± 6.92	50.90 ± 11.50	56.12 ± 10.69 ***	-5.27 ± 9.43
YOGA (n=411)	23.90 ± 7.90	29.62 ± 8.44 ***	-5.72 ± 7.50 †††	52.72 ± 12.01	61.36 ± 11.76 ***	-8.65 ± 10.09 †††
Total (n=802)	23.05 ± 7.365	27.72 ± 8.14	-4.68 ± 7.30	51.81 ± 11.79	58.81 ± 11.55	-7.00 ± 9.91

Within Groups: *** p≤0.001, Δ pre-post difference, SD-standard deviation
 Between Groups: ††† p≤0.001, Yoga & PA-physical activity group, t=2.34, p=0.04, 95% CI 0.23 to 1.3
 SLCT-six letter cancellation test, DLST-digit letter substitution test

Table 3: Result for replaced samples in SLCT variable:

Result Variables						
YOGA=1, PA=0	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
			First	Last		
0	Slct postmn_1	23	1	352	352	SMEAN (slctpostmn)
1	Slct postmn_1	17	353	802	450	SMEAN (slctpostmn)

Table 4: Result for replaced samples in SLCT variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	SLCT CHN_1	23	1	352	352	SMEAN (SLCTCHN)
1	1	SLCT CHN_1	16	353	802	450	SMEAN (SLCTCHN)

Table 5: Result for replaced samples in DLST variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	Dlst post_1	42	1	352	352	SMEAN (dlstpost)
1	1	Dlst post_1	44	353	802	450	SMEAN (dlstpost)

Table 6: Result for replaced samples in DLST variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	DLST CHN_1	42	1	352	352	SMEAN (DLST CHN)
1	1	DLST CHN_1	44	353	802	450	SMEAN (DLST CHN)

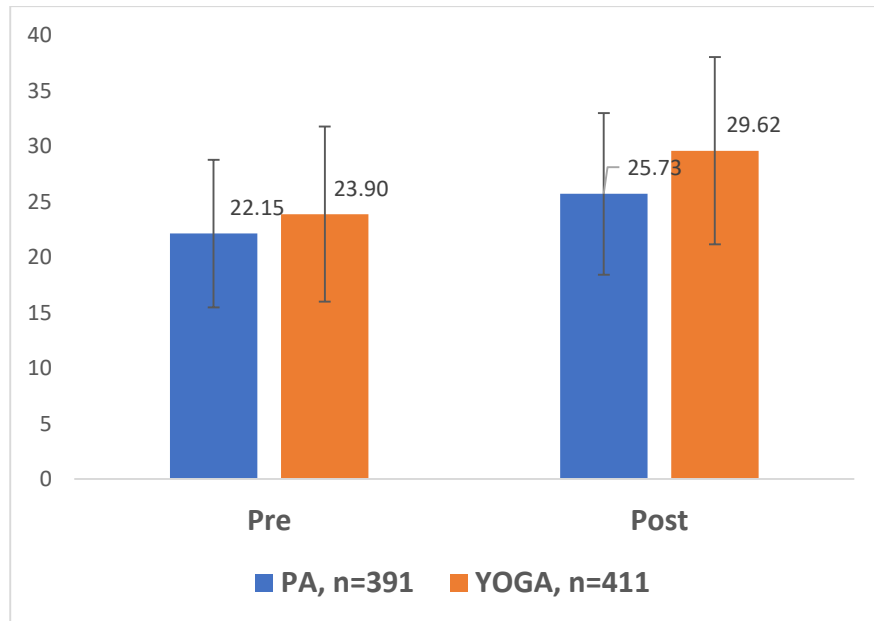
Table 7: Result for replaced samples in each variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	dsfchn_1	19	1	352	352	SMEAN (dsfchn)
1	1	dsfchn_1	63	353	802	450	SMEAN (dsfchn)

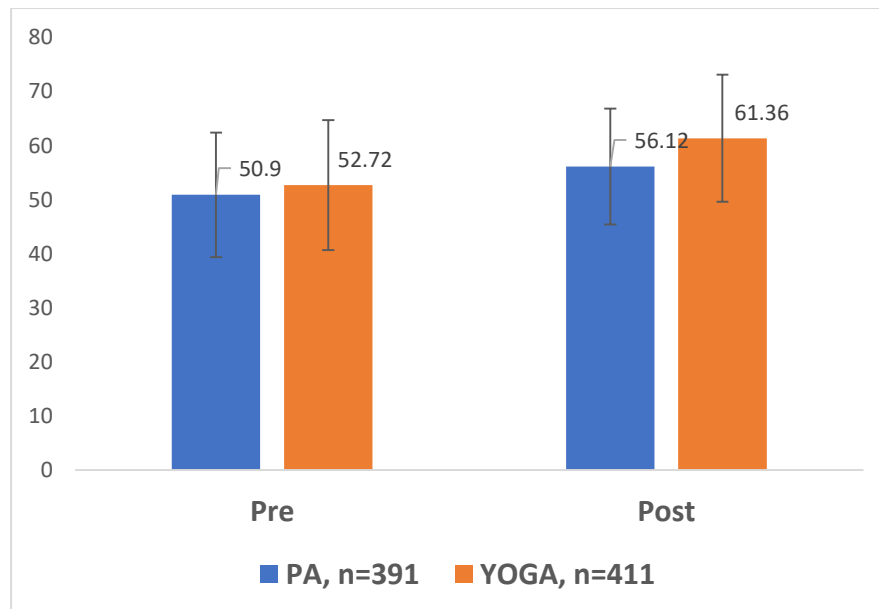
Table 8: Result for replaced samples in each variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	dsbchn_1	16	1	352	352	SMEAN (dsbchn)
1	1	dsbchn_1	26	353	802	450	SMEAN (dsbchn)

**Fig.No.3-Comparison of Scores on Six letter Cancellation Test (SLCT)
Before and after Physical activity and Yoga intervention**



**Fig.No.4-Comparison of Scores on Digit letter Substitution Test (DLST)
Before and after Physical activity and Yoga intervention**



6.1 TRAIL MAKING TEST (TMT):

6.1.1 Numerical Trail Making Test (TMT-N):

There was significant increase in **Numerical Trail Making Test (TMT-N)** values within yoga ($t=-2.17$; $p<0.03$) and physical exercise ($t=-3.37$; $p<0.001$) group following intervention period. However, there was no significant change in TMTN between yoga and physical exercise group ($t=0.44$; $p=0.66$). $t=2.34$, $p=0.04$, 95% CI 0.23 to 1.3.

6.1.2 Alphabetical Trail Making Test (TMT-A):

There was significant increase in **Alphabetical Trail Making Test (TMTA)** values within yoga ($t=6.21$; $p<0.001$) and physical exercise group ($t=1.19$; $p<0.234$) following intervention period. However, there was a significant change in TMTA between yoga and physical exercise group ($t=3.46$; $p=0.001$). $t=2.34$, $p=0.04$, 95% CI 0.23 to 1.3. (Test formats see appendix page 157-160)

Table 9: Comparison of participant’s performance in the TMTN and TMTA between Yoga and Physical exercise group:

TMT-N and TMT-A mean and SD for YOGA and PA Group						
	TMT-N			TMT-A		
Group	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post
PA (n=391)	34.29 ± 16.62	36.42 ± 13.83 ***	-2.16 ± 12.63	50.50 ± 18.46	49.33 ± 15.31	1.17 ± 19.31
YOGA (n=411)	35.05 ± 18.11	36.76 ± 15.51 *	-1.71 ± 15.97	53.79 ± 19.07	47.91 ± 12.90 ***	5.87 ± 19.16 †††
Total (n=802)	34.67 ± 17.40	36.60 ± 14.71	-1.93 ± 14.43	52.18 ± 18.83	48.61 ± 14.14	3.58 ± 19.37
Within Groups: * = $p\leq 0.05$; *** = $p\leq 0.001$, Δ pre-post difference, Between Groups: ††† $p\leq 0.001$, Yoga & PA-physical activity group, $t=2.34$, $p=0.04$, 95% CI 0.23 to 1.3 TMT-N-trail making test numerical, TMT-A-trail making test analytical.						

Table 10: Result of all variables posttest and chance score with replaced mean values (original mean values on variables in both groups):

Descriptive Statistics								
		N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
YOGA=1, PA=0		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Physical Activity group	Slct post mn	329	.00	45.67	24.8794	7.72490	.153	.134
	SLCTCH N	329	-35.00	19.67	-2.9726	7.17788	-.675	.134
	Dlst post	310	25	93	54.96	11.354	.396	.138
	DLSTCH N	310	-39	36	-4.59	9.681	.357	.138
	Dsf chn	333	-10	8	-.86	2.146	-.162	.134
	Dsb chn	336	-10	7	-.41	1.957	-.045	.133
	TMTN pos	279	11	90	38.22	15.324	1.085	.146
	TMTNCH N	190	-60	30	-4.42	11.350	-.987	.176
	TMTA post	243	20	109	50.21	19.051	.817	.156
	TMTACH N	208	-72	70	-2.86	21.072	-.213	.169
	SBJCHNPO	293	2.10	18.10	4.5710	1.29295	3.952	.142
	SBJCHN	292	-14.13	135.30	.4812	8.05881	16.208	.143
	SRMNPOS	282	12.33	42.00	27.3296	5.23991	-.088	.145
	SRCHN	279	-25.67	13.33	-.9617	3.93543	-1.039	.146
	HGMNPOS	282	6.33	41.67	19.8193	5.88901	.836	.145
	HGCHN	281	-28.67	6.00	-.6393	2.91450	-3.626	.145
	BLDMNPOS	275	10.00	101.67	44.6097	15.65474	.547	.147
	BLDCHN	275	-73.33	18.33	-4.5867	10.10846	-1.556	.147
	FBT pos	264	0	31	9.75	6.951	.703	.150
	Fbt chn	261	-17	25	1.82	6.507	.125	.151
	Valid N (list wise)	102						
Yoga group	Slct post mn	433	.00	53.67	29.4365	8.94566	-.270	.117

SLCTCH N	434	-35.67	31.33	-6.0292	8.08929	.100	.117
Dlst post	406	29	96	61.72	12.089	.255	.121
DLSTCH N	406	-43	32	-8.64	10.520	-.233	.121
Dsf chn	387	-8	9	-.43	2.138	.237	.124
Dsb chn	424	-10	9	-1.08	2.258	-.639	.119
TMTN pos	315	15	99	35.17	18.425	1.427	.137
TMTNCH N	232	-60	71	-1.20	14.924	-.253	.160
TMTA post	279	17	117	47.20	15.986	.994	.146
TMTACH N	223	-77	95	6.16	22.363	.345	.163
SBJCHNP O	372	2.11	7.80	4.7907	.98891	.019	.126
SBJCHN	361	-5.07	8.44	-.3767	.87154	1.932	.128
SRMNPO S	385	9.33	44.67	28.2572	5.38441	-.132	.124
SRCHN	372	-25.67	8.33	-2.0709	4.08793	-.726	.126
HGMNPO S	350	6.33	43.33	21.8272	5.54855	.301	.130
HGCHN	340	-25.33	23.00	-1.2334	4.14271	-.486	.132
BLDMNP OS	355	10.00	245.00	47.9146	18.91690	3.552	.129
BLDCHN	354	-198.33	48.33	-6.0000	15.06342	-6.343	.130
FBT pos	245	0	35	7.68	5.803	1.101	.156
Fbt chn	241	-29	19	2.95	6.360	-.623	.157
Valid N (listwise)	47						

Table 11: Descriptive report of after replaced mean values in each variable:

Group Statistics					
	YOGA=1, PA=0	N	Mean	Std. Deviation	Std. Error Mean
SMEAN (slct postmn)	Physical Activity Group	352	24.8794	7.46752	.39802
	Yoga group	450	29.4365	8.77468	.41364
SMEAN (SLCTCHN)	Physical Activity Group	352	-2.9726	6.93872	.36984
	Yoga group	450	-6.0292	7.94386	.37448

SMEAN (dlst post)	Physical Activity Group	352	54.96	10.653	.568
	Yoga group	450	61.72	11.481	.541
SMEAN (DLSTCHN)	Physical Activity Group	352	-4.59	9.083	.484
	Yoga group	450	-8.64	9.991	.471
SMEAN (dsf chn)	Physical Activity Group	352	-.86	2.088	.111
	Yoga group	450	-.43	1.983	.093
SMEAN (dsb chn)	Physical Activity Group	352	-.41	1.912	.102
	Yoga group	450	-1.08	2.192	.103
SMEAN(TM TNpos)	Physical Activity Group	352	38.22	13.637	.727
	Yoga group	450	35.17	15.408	.726
SMEAN (TMTN CHN)	Physical Activity Group	352	-4.42	8.328	.444
	Yoga group	450	-1.20	10.705	.505
SMEAN (TMTA post)	Physical Activity Group	352	50.21	15.819	.843
	Yoga group	450	47.20	12.579	.593
SMEAN (TMTA CHN)	Physical Activity Group	352	-2.86	16.183	.863
	Yoga group	450	6.16	15.725	.741
SMEAN (SBJ CHNPO)	Physical Activity Group	352	4.5710	1.17929	.06286
	Yoga group	450	4.7907	.89892	.04238
SMEAN (SBJ CHN)	Physical Activity Group	352	.4812	7.33777	.39110
	Yoga group	450	-.3767	.78040	.03679
SMEAN (HG MNPOS)	Physical Activity Group	352	19.8193	5.26916	.28085
	Yoga group	450	21.8272	4.89181	.23060
SMEAN (HG CHN)	Physical Activity Group	352	-.6393	2.60310	.13875
	Yoga group	450	-1.2334	3.59965	.16969
SMEAN (BLD MNPOS)	Physical Activity Group	352	44.6097	13.83145	.73722
	Yoga group	450	47.9146	16.79688	.79181
SMEAN (BLD CHN)	Physical Activity Group	352	-4.5867	8.93113	.47603
	Yoga group	450	-6.0000	13.35635	.62962
SMEAN (FBTpos)	Physical Activity Group	352	9.75	6.017	.321

	Yoga group	450	7.68	4.278	.202
SMEAN (fbtchn)	Physical Activity Group	352	1.82	5.600	.298
	Yoga group	450	2.95	4.650	.219

Table-12 Result variables for independent sample test:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2- tailed)	Mean Differ- ence	Std. Error Differenc e	95% Confidence Interval of the Difference	
									Lower	Upper
SMEAN (slct postmn)	Equal variances assumed	7.777	.005	-7.785	800	.000	- 4.55706	.58538	- 5.70612	- 3.40799
	Equal variances not assumed			-7.939	794.307	.000	- 4.55706	.57404	- 5.68387	- 3.43025
SMEAN (SLCT CHN)	Equal variances assumed	4.480	.035	5.713	800	.000	3.05654	.53505	2.00628 †	4.10681 †
	Equal variances not assumed			5.807	790.287	.000	3.05654	.52632	2.02339	4.08969
SMEAN (dlst post)	Equal variances assumed	1.942	.164	-8.543	800	.000	-6.763	.792	-8.317	-5.209
	Equal variances not assumed			-8.622	777.096	.000	-6.763	.784	-8.303	-5.223
SMEAN (DLST CHN)	Equal variances assumed	2.595	.108	5.923	800	.000	4.047	.683	2.706 †	5.389 †
	Equal variances not assumed			5.992	782.130	.000	4.047	.675	2.721	5.373

SMEAN (dsf chn)	Equal variances assumed	2.279	.132	-2.980	800	.003	-.430	.144	-.714 †	-.147 †
	Equal variances not assumed			-2.961	735.000	.003	-.430	.145	-.716	-.145
SMEAN (dsb chn)	Equal variances assumed	1.613	.204	4.549	800	.000	.671	.148	.382 †	.961 †
	Equal variances not assumed			4.625	790.487	.000	.671	.145	.386	.956
SMEAN (TMT-N pos)	Equal variances assumed	.227	.634	2.924	800	.004	3.050	1.043	1.003	5.097
	Equal variances not assumed			2.968	787.853	.003	3.050	1.028	1.033	5.067
SMEAN (TMT-N CHN)	Equal variances assumed	3.383	.066	-4.639	800	.000	-3.213	.693	-4.573 †	-1.854 †
	Equal variances not assumed			-4.781	799.980	.000	-3.213	.672	-4.532	-1.894
SMEAN (TMT-A post)	Equal variances assumed	10.31 2	.001	3.001	800	.003	3.010	1.003	1.041	4.978
	Equal variances not assumed			2.920	658.210	.004	3.010	1.031	.986	5.034
SMEAN (TMT-A CHN)	Equal variances assumed	2.095	.148	-7.956	800	.000	-9.017	1.133	-11.242 †	-6.793 †
	Equal variances not assumed			-7.929	743.787	.000	-9.017	1.137	-11.250	-6.784

SMEAN (SBJ CHNPO)	Equal variances assumed	.551	.458	-2.994	800	.003	-.21973	.07339	-.36379 †	-.07568 †
	Equal variances not assumed			-2.899	639.324	.004	-.21973	.07581	-.36859	-.07087
SMEAN (SBJ CHN)	Equal variances assumed	2.363	.125	2.463	800	.014	.85784	.34834	.17407 †	1.54160 †
	Equal variances not assumed			2.184	357.217	.030	.85784	.39283	.08529	1.63039
SMEAN (HG MNPOS)	Equal variances assumed	.444	.506	-5.576	800	.000	- 2.00793	.36011	- 2.71479	- 1.30106
	Equal variances not assumed			-5.526	725.895	.000	- 2.00793	.36339	- 2.72135	- 1.29450
SMEAN (HG CHN)	Equal variances assumed	10.42 8	.001	2.609	800	.009	.59411	.22776	.14704 †	1.04119 †
	Equal variances not assumed			2.710	795.318	.007	.59411	.21919	.16385	1.02438
SMEAN (BLD MNPOS)	Equal variances assumed	.387	.534	-2.984	800	.003	- 3.30486	1.10757	- 5.47895 †	- 1.13076 †
	Equal variances not assumed			-3.055	797.878	.002	- 3.30486	1.08188	- 5.42852	- 1.18120
SMEAN (BLD CHN)	Equal variances assumed	.886	.347	1.709	800	.088	1.41333	.82712	-.21025 †	3.03692 †
	Equal variances not assumed			1.791	782.117	.074	1.41333	.78932	-.13611	2.96278

SMEAN (FBTpos)	Equal variances assumed	42.609	.000	5.694	800	.000	2.072	.364	1.358	2.786
	Equal variances not assumed			5.470	609.031	.000	2.072	.379	1.328	2.816
SMEAN (fbt chn)	Equal variances assumed	11.013	.001	-3.110	800	.002	-1.126	.362	-1.837†	-.415†
	Equal variances not assumed			-3.041	677.597	.002	-1.126	.370	-1.853	-.399
† Confidence intervals (CI) for Between Group difference: t=2.34, p=0.04, 95% CI 0.23 to 1.3										

Table-13 Results for replaced missing values in TMT-N variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	TMT-N pos_1	73	1	352	352	SMEAN (TMTN pos)
1	1	TMT-N pos_1	135	353	802	450	SMEAN (TMTN pos)

Table-14 Results for replaced missing values in TMT-N variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	TMTN CHN_1	162	1	352	352	SMEAN (TMTN CHN)
1	1	TMTN CHN_1	218	353	802	450	SMEAN (TMTN CHN)

Table-15 Results for replaced missing values in TMT-A variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	TMT-A pos_1	109	1	352	352	SMEAN (TMTA pos)
1	1	TMT-A pos_1	171	353	802	450	SMEAN (TMTA pos)

Table-16 Results for replaced missing values in TMT-A variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	TMT-A CHN_1	144	1	352	352	SMEAN (TMTA CHN)
1	1	TMT-A CHN_1	227	353	802	450	SMEAN (TMTA CHN)

Fig.No.5-Comparison of Scores on Numerical Trail making Test (TMT-N) Before and after Physical activity and Yoga intervention

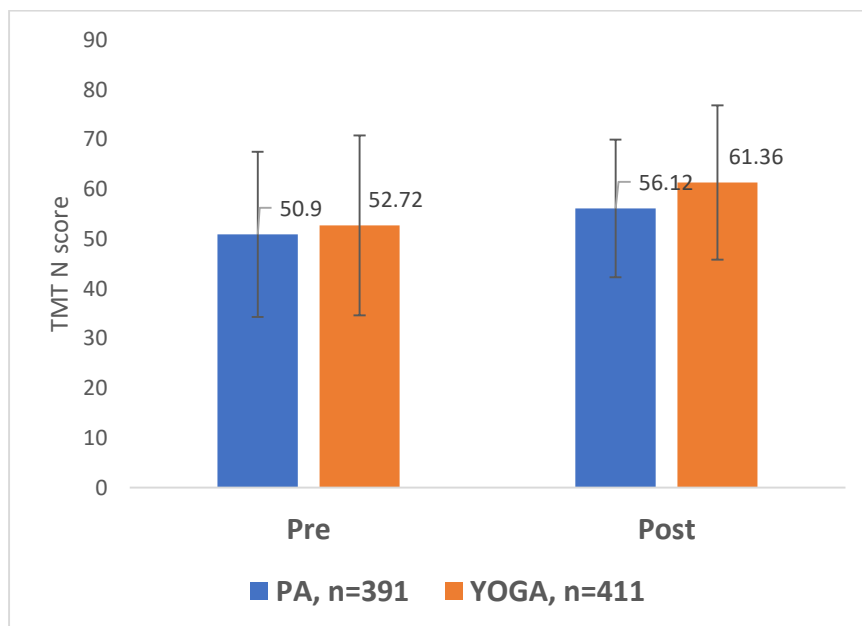
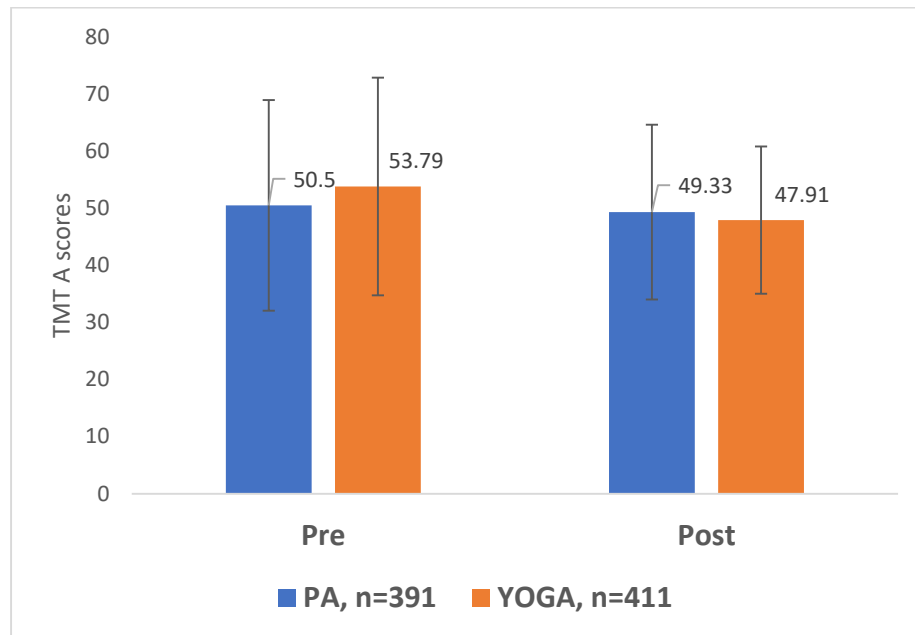


Fig.No.6-Comparison of Scores on Analytical Trail making Test (TMT-A)

Before and after Physical activity and Yoga intervention



6.2 STRENGTH AND BALANCE BETWEEN YOGA AND PHYSICAL EXERCISE GROUP:

6.2.1 Beep Test:

There was a significant increase in **level** within yoga ($t=-9.2$; $p<0.001$) and physical exercise group ($t=-6.4$; $p<0.001$) following intervention period. However, there was no significant change in **level** between yoga and physical exercise group ($t=-1.53$; $p=0.13$). There was a significant increase in **round** within yoga ($t=-0.58$; $p=0.557$) and physical exercise group ($t=-2.11$; $p=0.36$) following intervention period. There was no significant difference in number of **rounds** between yoga and physical exercise group ($t=-1.95$; $p=0.05$). Though, there was a significant increase in **VO2 max** within yoga ($t=-9.44$; $p<0.001$) and physical exercise group ($t=-6.65$; $p<0.001$) following intervention between group effects were not significant ($t=-1.63$; $p=0.10$) $t=2.34$, $p=0.04$, 95% CI 0.23 to 1.3 (See table19).

Table-17 Results describing VO2, METs group statistics:

Group Statistics					
	YOGA=1, PA=0	N	Mean	Std. Deviation	Std. Error Mean
vo2chn	Physical Activity Group	325	-.9358	4.84969	.26901
	Yoga group	408	-1.5644	4.94191	.24466
mets chn	Physical Activity Group	287	-.2400	1.48794	.08783
	Yoga group	374	-.3374	1.43731	.07432

Table-18 Results describing VO2, MHR, METs between group statistics:

Group Statistics					
		N	Mean	Std. Deviation	Std. Error Mean
VO2 post	Physical Activity Group	324	31.6386	6.11635	.33980
	Yoga group	409	33.5358	6.15341	.30427
MHR POST	Physical Activity Group	324	57.2487	3.91446	.21747
	Yoga group	409	58.4629	3.93819	.19473
METs post	Physical Activity Group	323	9.0581	1.73714	.09666
	Yoga group	409	9.6085	1.78097	.08806

Table 19: Comparison of participant's performance in LEVEL, ROUND and VO2 max between yoga group and physical exercise group:

LEVEL, ROUND, and VO2 mean and SD for YOGA and PA group									
	Level (no)			Round (no.)			Vo2Max(ml/kg/min)		
Group	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post
PA (n=391)	4.89 ± 1.78	5.28 ± 1.76 ***	0.39 ± 1.22	4.77 ± 2.54	4.42 ± 2.34 *	-0.35 ± 3.28	30.93 ± 6.11	32.25 ± 6.02 ***	1.32 ± 3.93
YOGA (n=411)	5.04 ± 1.67	5.56 ± 1.68 ***	0.52 ± 1.15	4.58 ± 2.37	4.67 ± 2.35	0.09 ± 3.07	31.35 ± 5.70	33.12 ± 5.83 ***	1.77 ± 3.80
Total (n=802)	4.96 ± 1.73	5.42 ± 1.72	0.46 ± 1.19	4.67 ± 2.45	4.54 ± 2.35	-0.13 ± 3.18	31.15 ± 5.90	32.7 ± 5.93	1.55 ± 3.87

Within Groups: * p≤0.05; *** p≤0.001, Δ: Pre-Post difference
 Between Groups: - Yoga & PA-physical activity group - t=2.34, p=0.04, 95% CI 0.23 to 1.3
 SD-standard deviation, PA-physical activity group, Vo2 max-Max, volume of oxygen consumed

Table-20 Results describing VO2, METs in independent samples test:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
vo2chn	Equal variances assumed	.638	.425	1.725	731	.085	.62858	.36441	-.08683	1.34399
	Equal variances not assumed			1.729	700.266	.084	.62858	.36363	-.08535	1.34252

mets chn	Equal variances assumed	.091	.763	.851	659	.395	.09745	.11453	.1274 4 †	.32234 †
	Equal variances not assumed			.847	604.548	.397	.09745	.11506	.1285 1	.32341
† Confidence intervals (CI) for Between Group difference: t=2.34, p=0.04, 95% CI 0.23 to 1.3										

Table-21 Results describing VO2, MHR.METs in independent samples test:

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2- tailed)	Mean Differ ence	Std. Error Differ ence	95% Confidence Interval of the Difference	
									Lower	Upper
VO2post	Equal variances assumed	.510	.475	-4.157	731	.000	1.89720	.45643	2.79328	-1.00113
	Equal variances not assumed			-4.159	694.931	.000	1.89720	.45611	2.79273	-1.00168
MHR POST	Equal variances assumed	.510	.475	-4.157	731	.000	1.21421	.29212	1.78770	-.64072
	Equal variances not assumed			-4.159	694.931	.000	1.21421	.29191	1.78735	-.64107

Mets post	Equal varianc es assum ed	1.866	.172	-4.197	730	.000	-.55034	.13114	-.80780	-.29288
	Equal varianc es not assum ed			-4.209	698.564	.000	-.55034	.13076	-.80707	-.29361

Fig.No.7-Comparison of Level number on Beep Test Scores before and after Physical activity and Yoga intervention:

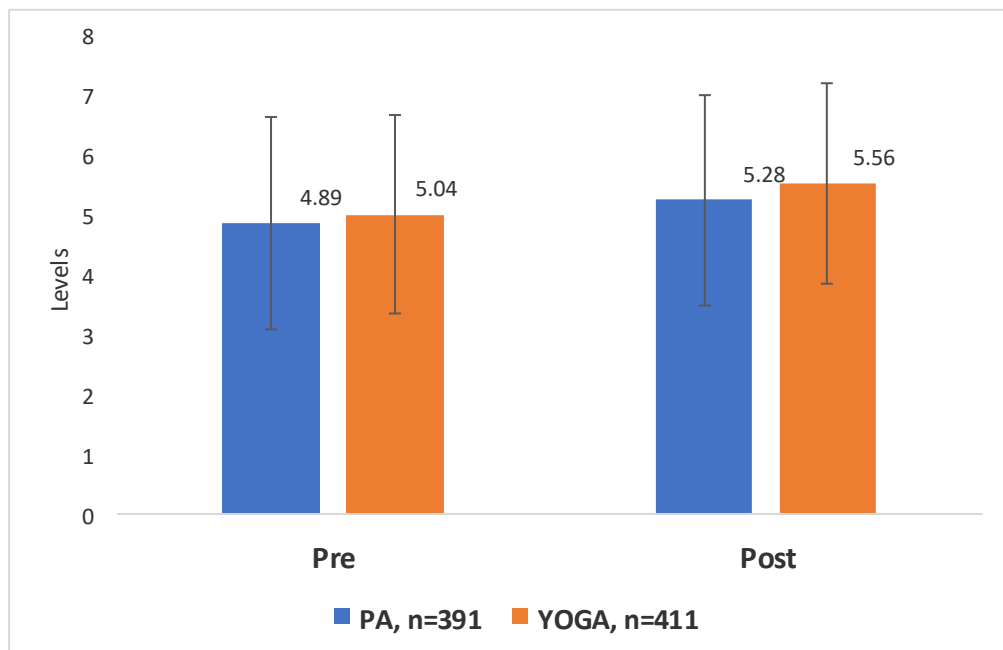
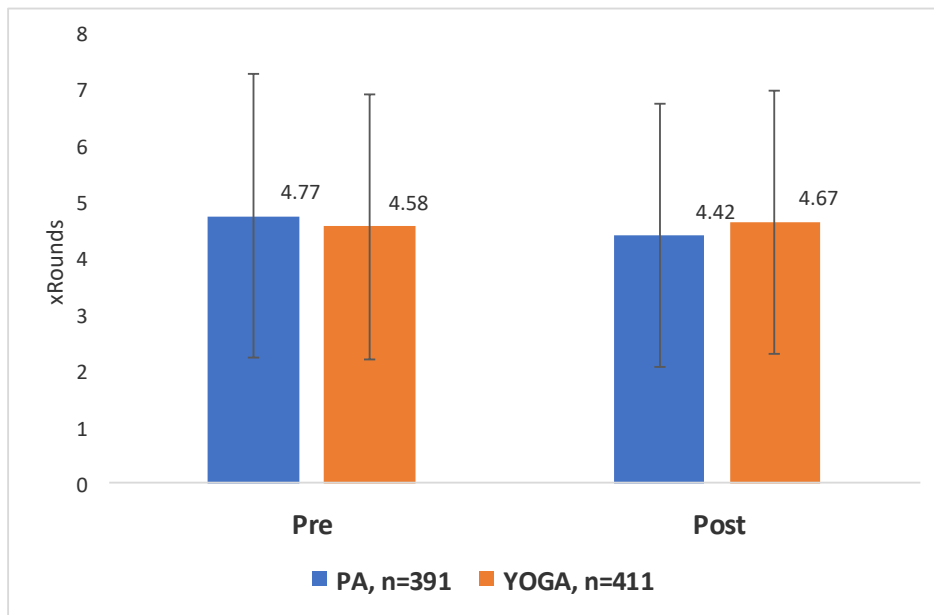


Fig.No.8-Comparison of number of rounds on Beep Test before and after Physical activity and Yoga intervention



When median cut-off of VO₂max at baseline was considered, there was a significant difference between the groups with improved change in VO₂max in Yoga group compared to Physical exercise in those with median cut-off 31 at baseline (t= p=0.03). Whereas in those with median cut-off (<31) both groups showed improvements in post measure following intervention. (See table22).

Table 22: Comparison of Yoga vs. Physical exercise in a subgroup population of VO₂max (ml/kg/min) cut-off of ≤31:

VO₂Max (Median cut off ≤31)			
Group	Pre (ml/kg/min)	Post (ml/kg/min)	Δ (ml/kg/min)
Yoga (n= 186)	26.27±2.63	29.07±4.36	2.81±3.99
Physical exercise (n= 201)	26.03±2.79	28.47±4.19	2.45±3.87
p-value		0.163	0.367
VO₂ Max (Median cut-off >31)			
Group	Pre	Post	Δ
Yoga (n=225)	35.55±3.83	36.46±4.66	0.911±3.39

Physical exercise (n=190)	36.11±4.03	36.25±4.98	0.137±3.65
p-value		0.650	0.026*
Δ: Post-Pre-difference, * p≤0.05;			

Fig.No.9-Comparison of VO2 max ml/kg/min following Beep Test before and after Physical activity and Yoga intervention

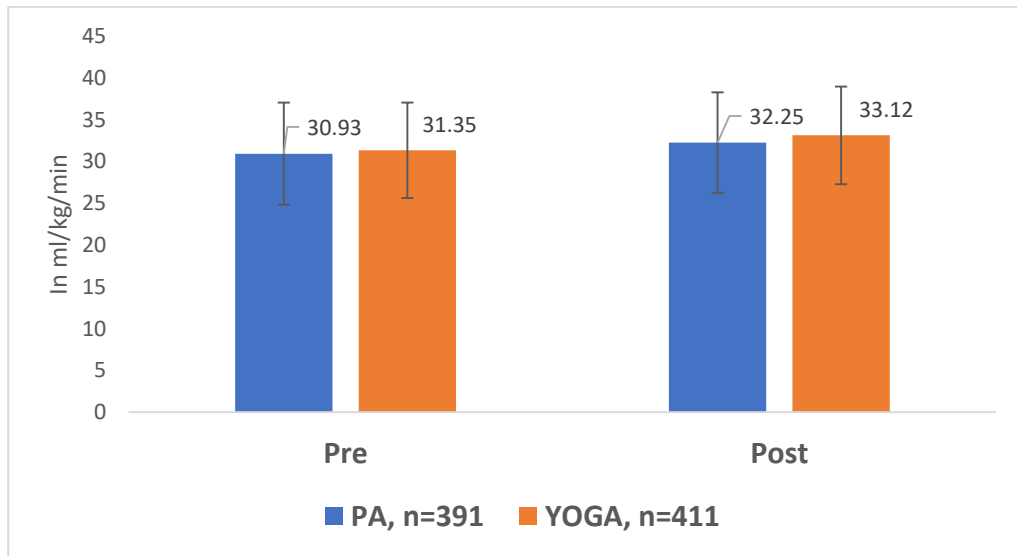
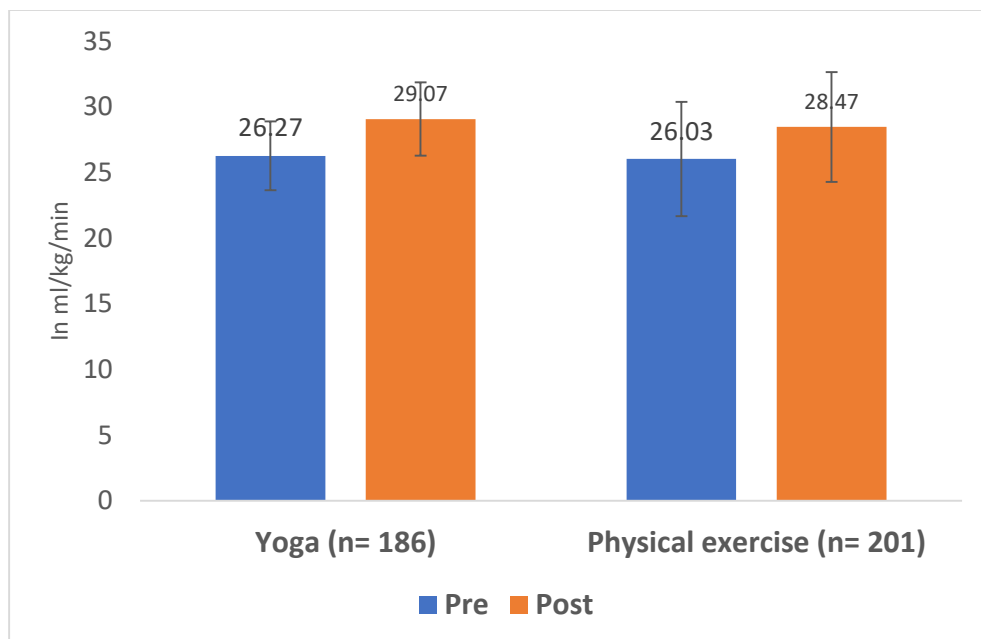
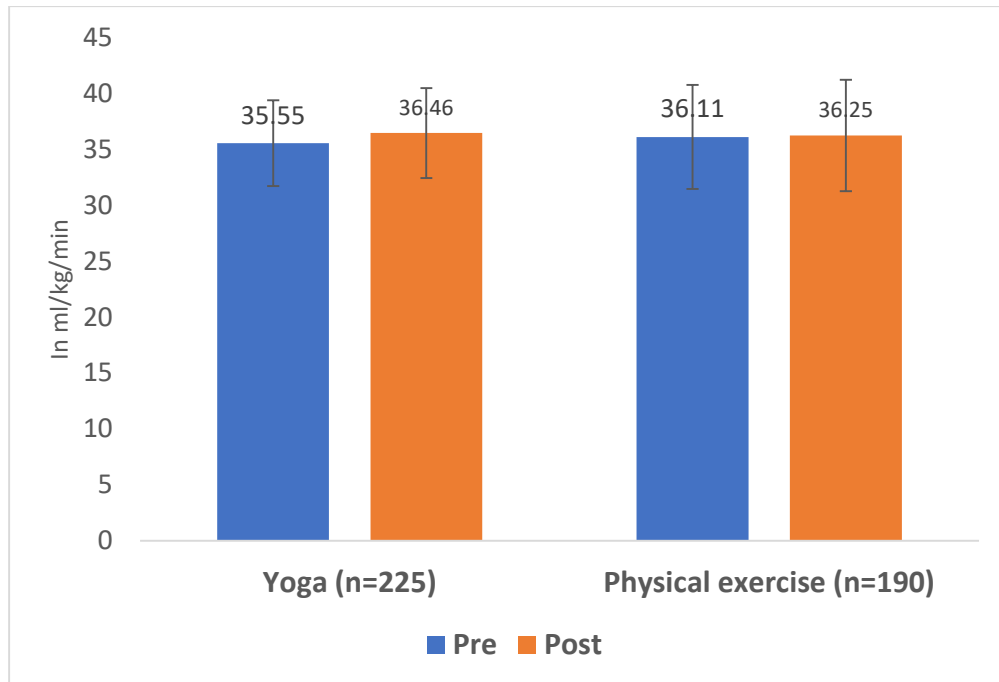


Fig.No.10-Comparison of VO2 max between Physical activity And Yoga intervention in subgroup with median cutoff <31ml/kg/min



**Fig.No.11-Comparison of VO2 max between Physical activity
And Yoga intervention in subgroup with median cutoff>31ml/kg/min**



There was a significant increase in **Mean Heart Rate** within yoga ($t=-8.79$; $p<0.001$) and physical exercise group ($t=-6.66$; $p<0.001$) on beep test with a near significant change between groups ($t=-1.80$; $p=0.07$) (See table 23). There was a significant increase in **Metabolic equivalent** within yoga ($t=-8.85$; $p<0.001$) and physical exercise group ($t=-6.14$; $p<0.001$) without any significant between group difference ($t=-1.61$; $p=0.11$) (See table 23). Both groups were able to cover a longer distance on beep test following intervention yoga ($t=-9.63$; $p<0.001$) and physical exercise group ($t=-6.36$; $p<0.001$) with no significant change between groups $t=2.34$, $p=0.04$, 95% CI 0.23 to 1.3. (See table23).

Table 23: Comparison of participant’s performance in MHR, Distance and METs between yoga group and physical exercise group:

MHR, DISTANCE, and METs means and SD for YOGA and PA group									
	MHR			Distance in (m)			METs		
Group	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post
PA (n=391)	56.79 ± 3.91	57.64 ± 3.85 ***	-0.85 ± 2.52	729.86 ± 331.41	797.17 ± 324.15 ***	-67.31 ± 209.12	8.87 ± 1.8	9.23 ± 1.71 ***	-0.36 ± 1.2
YOGA (n=411)	57.01 ± 3.8	58.20 ± 3.73 ***	-1.18 ± 2.73	751.16 ± 309.6	847.85 ± 320.7 ***	-96.69 ± 203.5 †	9.00 ± 1.7	9.49 ± 1.7 ***	-0.49 ± 1.12
Total (n=802)	56.90 ± 3.84	57.93 ± 3.80	-1.02 ± 2.63	740.78 ± 320.4	823.14 ± 323.16	-82.37 ± 206.64	8.94 ± 1.71	9.37 ± 1.70	-0.42 ± 1.14

Within Groups: *** p≤0.001, Δ: pre-post difference, SD: standard deviation
 Between Groups: † p≤0.05; Yoga & PA-physical activity group, t=2.34, p=0.04, 95% CI 0.23 to 1.3 ; MHR-mean heart rate, METs-metabolic equivalents

Fig.No.12-Comparison of Mean heart rate in Beep Test Before and after Physical activity and Yoga intervention

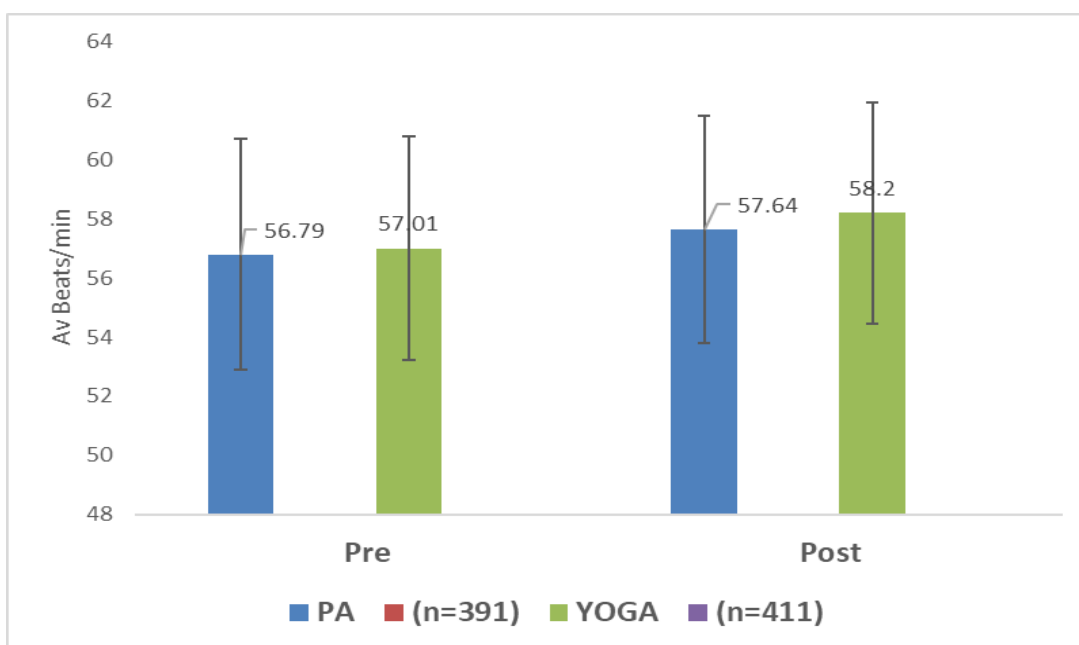


Fig.No.13-Comparison of Distance covered in Beep Test before and after Physical activity and Yoga intervention

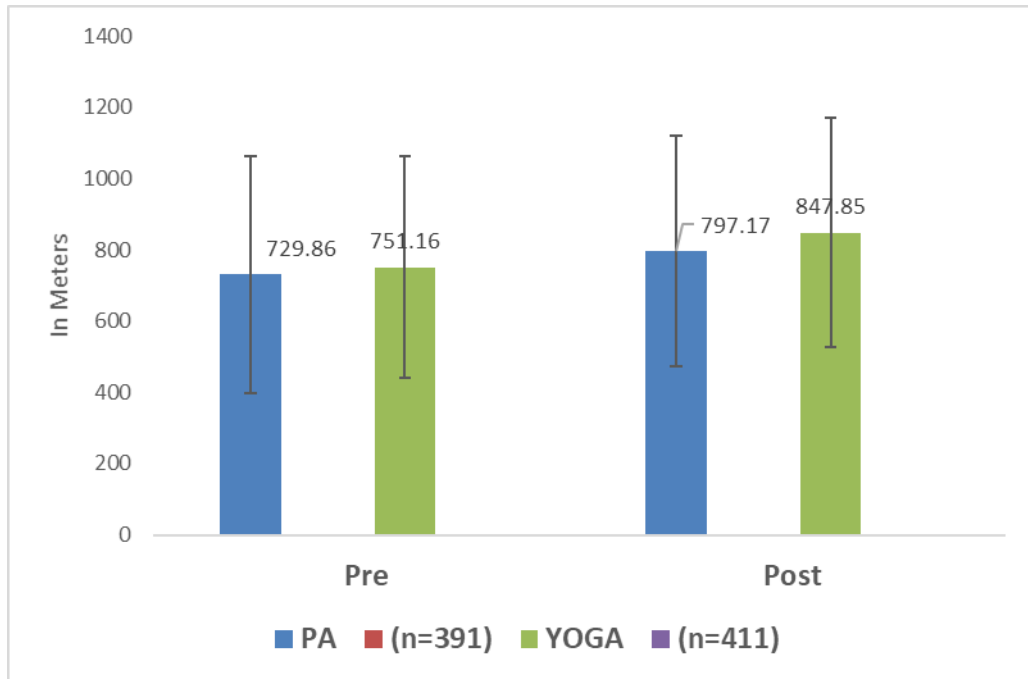
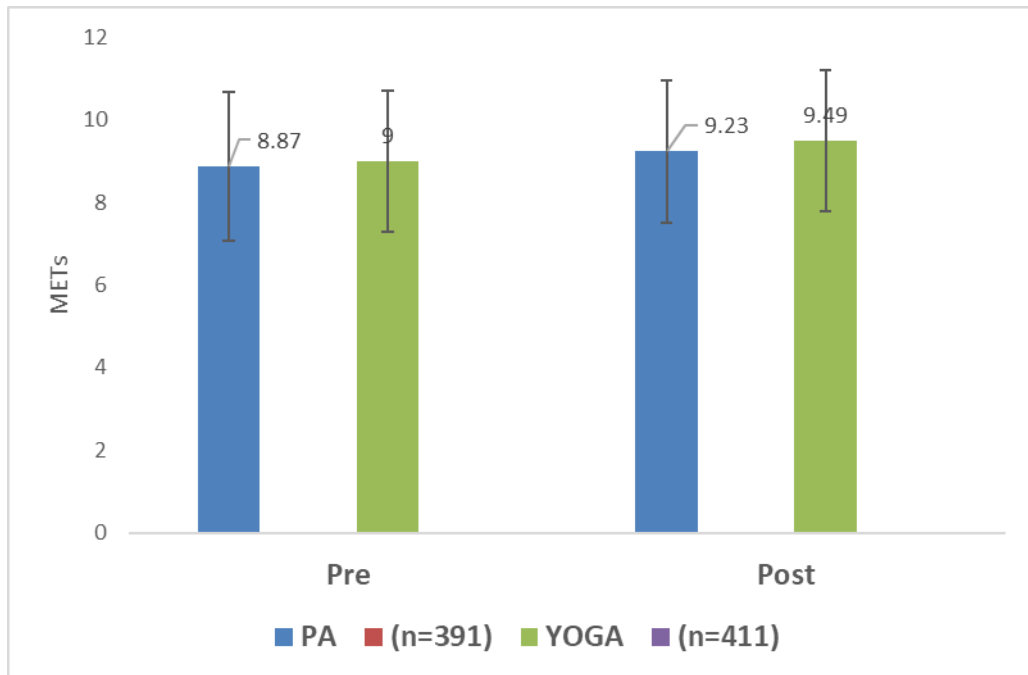


Fig.No.14-Comparison of Metabolic equivalents following Beep Test before and after Physical activity and Yoga intervention



6.3 STANDING BROAD JUMP (SBJ):

There was a significant increase in Standing broad jump (SBJ) within yoga ($t = -5.8, p < 0.00$) and physical exercise group ($t = 0.91, p < 0.36$) following intervention period. However, there was no change in SBJ between yoga and physical group ($t = -1.52, p < 0.13$) $t = 2.34, p = 0.04, 95\% \text{ CI } 0.23$ to 1.3.

6.4 FLAMINGO BALANCE TEST (FBT):

There was a significant improvement in Flamingo Balance Test in both yoga ($t = 6.92, p < 0.00$) and physical exercise group ($t = 5.2, p = 0.001$)

However, there was no significant change Flamingo Balance Test between yoga and physical exercise groups ($t = 1.1, p = 0.281$) $t = 2.34, p = 0.04, 95\% \text{ CI } 0.23$ to 1.3. (See table 24)

**Table 24: Comparison of participant’s performance in SBJ and FBT
in Yoga and Physical Exercise Groups:**

SBJ and FBT mean and SD for YOGA and PA Group						
	SBJ			FBT		
Group	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post
PA (n=391)	4.95 ± 6.95	4.64 ± 1.15	0.32 ± 7	11.03 ± 6.2	9.43 ± 5.73 ***	1.60 ± 6.11
YOGA (n=411)	4.53 ± 0.971	4.75 ± 0.91 ***	-0.21 ± 0.8	10.18 ± 6	8.12 ± 4.51 ***	2.07 ± 6.1
Total (n=802)	4.74 ± 4.90	4.69 ± 1.03	0.04 ± 4.90	10.60 ± 6.1	8.76 ± 5.2	1.84 ± 1
Within Groups: *** $p \leq 0.001$						
Between Groups: SBJ-standing broad jump, FBT-flamingo balance test $t = 2.34, p = 0.04, 95\% \text{ CI } 0.23$ to 1.3						

Table-25 Results for replaced samples in SBJ variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	SBJ CHNPO_1	59	1	352	352	SMEAN (SBJCHNPO)
1	1	SBJ CHNPO_1	78	353	802	450	SMEAN (SBJCHNPO)

Table-26 Results for replaced samples in SBJ variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	SBJ CHN_1	60	1	352	352	SMEAN (SBJCHN)
1	1	SBJ CHN_1	89	353	802	450	SMEAN (SBJCHN)

Table-27 Results for replaced samples in FBT variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	FBTpos_1	88	1	352	352	SMEAN (FBTpos)
1	1	FBTpos_1	205	353	802	450	SMEAN (FBTpos)

Table-28 Results for replaced samples in FBT variable:

Result Variables							
YOGA=1, PA=0	Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function	
			First	Last			
0	1	fbtchn_1	91	1	352	352	SMEAN (fbt chn)
1	1	fbtchn_1	209	353	802	450	SMEAN (fbt chn)

Fig.No.15-Comparison of Standing Broad Jump Before and after Physical activity and Yoga intervention

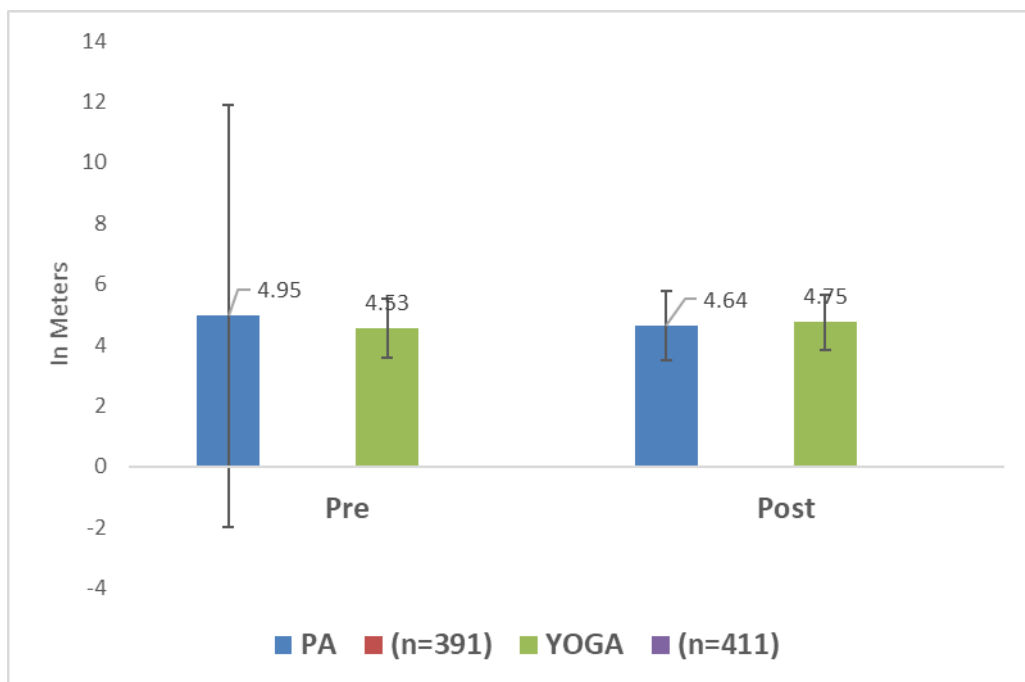
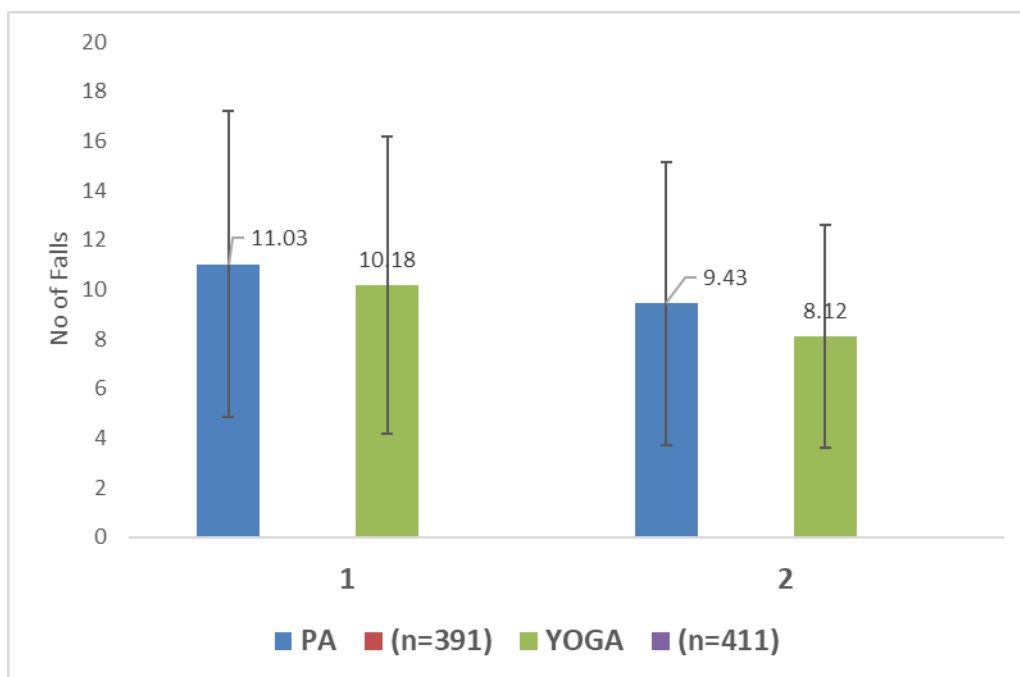


Fig.No.16-Comparison of number of falls on Flamingo balance Test before and after Physical activity and Yoga intervention



6.5 STRENGTH AND FLEXIBILITY BETWEEN YOGA AND PHYSICAL EXERCISE GROUP:

6.5.1 Sit and Reach Test (SR):

There was a significant increase in Sit and reach in both yoga ($t = -9.4, p < 0.00$) and physical exercise group ($t = -4.01, p < 0.00$)

There was no significant change in Sit and reach between yoga and physical exercise groups. ($t = -3.4, p < 0.001$) $t = 2.34, p = 0.04$, 95% CI 0.23 to 1.3.

6.5.2 Hand Grip Test (HGT):

There was a significant increase in Hand grip strength in both yoga ($t = -4.2, p < 0.00$) and physical exercise group ($t = -3.23, p < 0.001$)

There was significant change Hand grip strength between yoga and physical exercise groups. ($t = -1.12, p < 0.001$) $t = 2.34, p = 0.04$, 95% CI 0.23 to 1.3.

6.5.3 Back Leg Dynamometer (BLD):

There was a significant increase in Back Leg Dynamometer scores in both yoga ($t = -7.5, p < 0.001$) and physical exercise group ($t = -7.7, p < 0.001$)

There was no significant change in Back Leg Dynamometer between yoga and physical exercise groups. ($t = -1.3, p = 0.207$) $t = 2.34, p = 0.04, 95\% \text{ CI } 0.23 \text{ to } 1.3$. (See table 29).

Table-29: Comparison of participant's performance in Sit and Reach Test, Hand grip and back leg dynamometer:

SR, HG and BLD mean and SD for YOGA and PA Group									
	SR			HGT			BLD		
Group	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post	Pre	Post	Δ pre-post
PA (n=391)	26.62 \pm 4.90	27.47 \pm 4.63	-0.85 \pm 4.20 ***	19.80 \pm 5.4	20.32 \pm 5.15 ***	-0.52 \pm 3.2	41.41 \pm 14	45.33 \pm 13.5 ***	-3.93 \pm 10.13
Yoga (n=411)	26.42 \pm 5.3	28.25 \pm 5.1	-1.83 \pm 3.95 ***	20.74 \pm 5.34 †††	21.54 \pm 4.9 ***	-0.80 \pm 3.9	42.57 \pm 15.04	47.56 \pm 17.4 ***	-4.99 \pm 13.5
Total (n=802)	26.51 \pm 5.10	27.87 \pm 4.9	-1.35 \pm 4.10	20.28 \pm 5.4	20.94 \pm 5.05	-0.66 \pm 3.6	42.00 \pm 14.53	46.47 \pm 15.62	-4.47 \pm 12
Within Groups: *** $p \leq 0.001$, Δ pre-post difference, Between Groups: ††† $p \leq 0.001$, Yoga and PA-physical activity Group SR-sit & reach test, BLD-back & leg dynamometer scores, HGT-hand grip dynamometer test $t = 2.34, p = 0.04, 95\% \text{ CI } 0.23 \text{ to } 1.3$.									

Table-30 Results for replaced samples in HGT variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	HG MNPOS_1	70	1	352	352	SMEAN (HGMNPOS)
1	1	HG MNPOS_1	100	353	802	450	SMEAN (HGMNPOS)

Table-31 Results for replaced samples in HGT variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	HG CHN_1	71	1	352	352	SMEAN (HGCHN)
1	1	HG CHN_1	110	353	802	450	SMEAN (HGCHN)

Table-32 Results for replaced samples in HGT variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	HG MNPOS_1	70	1	352	352	SMEAN (HG MNPOS)
1	1	HG MNPOS_1	100	353	802	450	SMEAN (HG MNPOS)

Table-33 Results for replaced samples in BLD variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	BLD MNPOS_1	77	1	352	352	SMEAN (BLD MNPOS)
1	1	BLD MNPOS_1	95	353	802	450	SMEAN (BLD MNPOS)

Table-34 Results for replaced samples in BLD variable:

Result Variables							
YOGA=1, PA=0		Result Variable	N of Replaced Missing Values	Case Number of Non-Missing Values		N of Valid Cases	Creating Function
				First	Last		
0	1	BLD CHN_1	77	1	352	352	SMEAN (BLD CHN)
1	1	BLD CHN_1	96	353	802	450	SMEAN (BLD CHN)

Fig.No.17-Comparison of Spinal Flexibility with forward flexion on Sit and Reach

Test before and after Physical activity and Yoga intervention

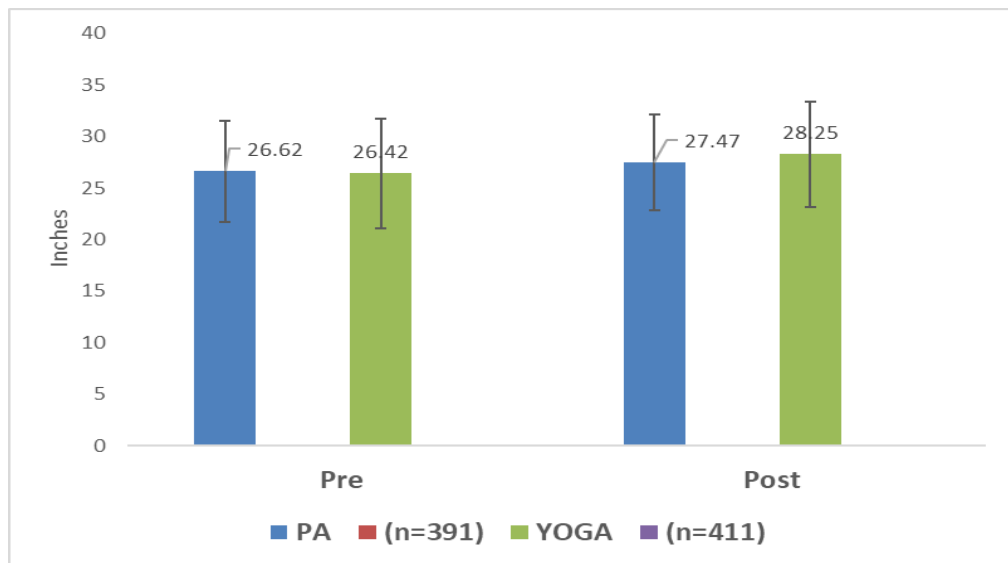


Fig.No.18-Comparison of Hand Grip strength before and after Physical activity and Yoga intervention

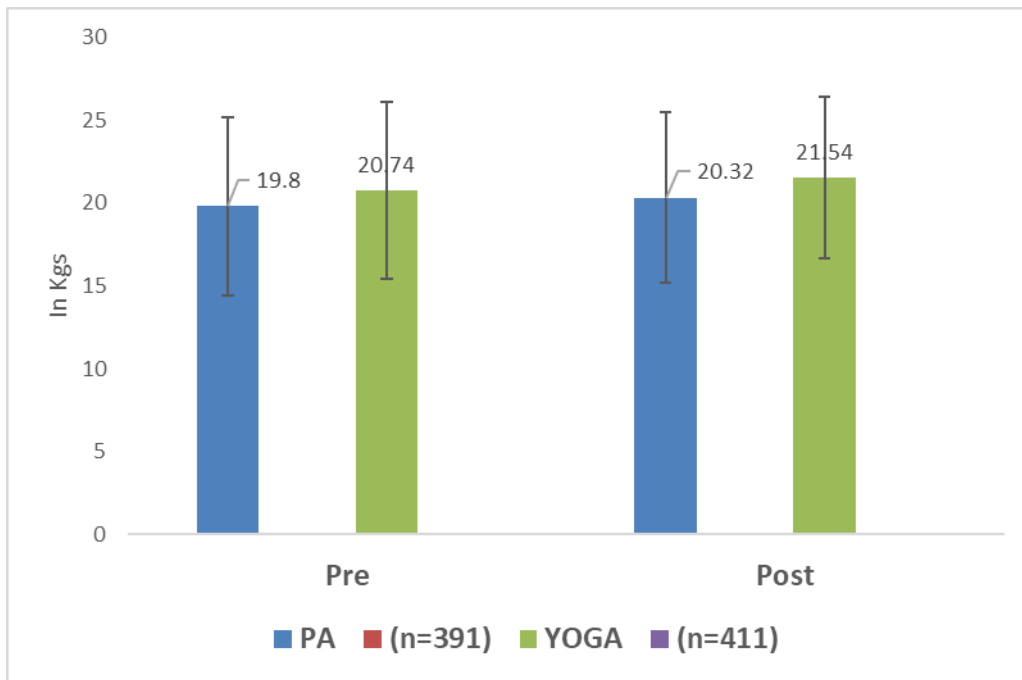


Fig.No.19-Comparison of strength on Back Leg Dynamometer before and after Physical activity and Yoga intervention

