

CHAPTER 6

RESULTS

6.0 RESULTS

The previous chapter discussed with we have discussed methods such as participants, design of the study, primary and secondary psychological variables administered, EPI parameters studied as an relative parameter, canons of expression (CE) in Indian Aesthetic Dance (IAD) and yoga intervention and their module, data extraction and analysis methods. In this chapter we discuss the results derived from those interventions given to caregivers (CGs) of children with neurodevelopment disorders (NDDs).

The CGs of children with NDDs are categorized and reported in Table 15. The adherence to interventions (dance and yoga) were 75% (18 out of 24 classes) for dance and 83% (20 out of 24 classes) yoga sessions.

6.1 Per protocol analysis

Repeated measures ANOVA was performed with two factors: Factor 1: Levels (pre, mid, and post), and Factor 2: Groups (yoga, dance, and control). Significant main effects of Levels and Groups and their interaction of assessments (ANOVA) are given in Table 16. The results of means and standard deviation (SD) of the outcome measures at pre (day 1), mid (after 4 weeks), and post (after 8 weeks) of psychological variables are given in Table 17. Graphical presentation of ZBS, DASS-21 and WHOQOL (BREF) are depicted by figures 7, 8 and 9 consecutively.

6.2 EPI parameters

Concerning the immediate effect of interventions measured by EPI parameters, the data analysis was done using repeated-measures ANOVA with two factors: Factor 1: Levels (pre and post), and Factor 2: Groups (dance, yoga, and control).

The repeated measure analysis of ANOVA for activation coefficient (AC) showed a significant difference ($p < 0.001$) in the post scores of dance and yoga with a reduction of 31% and 26%, respectively, compared to the control group, which showed increased AC of 7%. Please refer to Figure 9.

Further, post-assessment of dance group showed a difference in communication energy (C) level of the internal organ systems, namely, respiratory (23%) endocrine (20%), musculoskeletal (22%) and digest systems (26%) with significant level ($p < 0.001$); cardiovascular (16%), nervous (20%) and immune systems (18%) with $p < 0.01$ independently compared to control group. Further, post-assessment of yoga group showed a difference in the energy level of respiratory (20%), musculoskeletal (15%), nervous system (16%) with a significant level ($p < 0.001$); and cardiovascular (18%), endocrine (17%), and immune system (19%) ($p < 0.01$). Concerned with the entropy (E), both the intervention groups showed a significant decrease ($p < 0.001$) in post-intervention compared to the control group. Table 18 shows the percentage change of E after the intervention compared to the control group. Figure 10 displays the sub-sample image of the energy difference of all three groups at pre and post captured by the EPI instrument.

Table 15. Baseline characteristics of caregivers (n=96)

	IAD	Yoga	Control	Total
Age group (mean \pm SD)	41.71 (9.11)	41.03 (9.09)	41.56 (9.09)	41.43 (9.01)
Gender (%)				
Males	1 (3.13)	0 (0)	1 (3.13)	2 (2.08)
Females	31(96.87)	32 (100)	31(96.87)	94 (97.92)
Relation with child				
Mother	29 (90.63)	32 (100)	31 (96.88)	92 (95.83)
Other relative	3 (9.38)	0 (0)	1(3.13)	4 (4.17)
Employment status				
Homemakers	23 (71.88)	31 (96.88)	26 (81.25)	80 (83.33)
Employed	9 (28. 12)	1 (3.12)	6 (18.75)	16 (16.67)
Education (n, %)				
Illiterate	1(3.13)	1(3.13)	2(6.25)	4 (4.17)
Primary School	0 (0%)	0(0%)	1(3.13)	1 (1.04)
Middle & High school	7 (21.87)	15 (46.87)	18 (56.25)	40 (41.67)
Secondary school	15 (46.87)	7(21.87)	5 (15.62)	27 (28.12)
Graduation	9 (28.13)	9 (28.13)	6 (18.75)	24 (25.00)
Income (n, %)				
High income group	1(3.12)	0	0	1(3.12)
Mid income group	12 (37.5)	13 (40.63)	13 (40.63)	38 (39.58)
Low income group	19 (59.37)	19 (59.37)	19 (59.37)	57 (59.37)
Languages known (n, %)				
Single	10 (31.25)	12 (37.5)	22 (68.75)	44 (45.83)
Multiple	22 (68.75)	20 (62.5)	10 (31.25)	52 (54.17)
Child with neurodevelopmental disorders				
Single disorder	18 (56.25)	12 (37.5)	19 (59.37)	49 (51.04)
Multiple disorder	14 (43.75)	20 (62.5)	13 (40.63)	48 (48.96)

Table 16. Summary of analysis of variance (ANOVA) of psychological variables.

Variable	Groups			Levels			Group x Levels		
	F(df)	Sig	Partial Eta (η^2)	F(df)	Sig	Partial Eta (η^2)	F(df)	Sig	Partial Eta (η^2)
ZBS	9.97 (2, 62)	0.001	0.24	133.17 (2,62)	0.001	0.81	16.81(4,124)	0.001	0.35
DASS (21)									
Depression	27.87 (2,62)	0.001	0.47	138.93 (2,62)	0.001	0.82	76.88 (4,124)	0.001	0.71
Anxiety	25.08 (2,62)	0.001	0.45	191.88 (2,62)	0.001	.086	67.15 (4,124)	0.001	0.68
Stress	83.14 (2,62)	0.001	0.73	395.86 (2,62)	0.001	0.93	221.33 (4,124)	0.001	0.88
WHOQOL-BREF									
Physical	62.59 (2,62)	0.001	0.67	46.80 (2,62)	0.001	0.60	88.33 (4, 124)	0.001	0.74
Psychological	136.59 (2,62)	0.001	0.82	49.27 (2,62)	0.001	0.61	287.83 (4,124)	0.001	0.90
Social	7.26 (2, 62)	0.001	0.19	12.83 (2,62)	0.001	0.29	42.30 (4,124)	0.001	0.58
Environmental	3.29 (2,62)	0.44	0.96	26.15 (2, 62)	0.001	0.46	20.18 (4,124)	0.001	0.39
RCAS subscales									
CB	10.38 (2,62)	0.001	0.25	22.72 (2,62)	0.001	0.42	8.38 (4,124)	0.001	0.21
CS	25.49 (2,62)	0.001	0.45	161.45 (2,62)	0.001	0.84	27.83 ((4,124)	0.001	0.47
CM	14.39 (2,62)	0.001	0.32	183.72 (2,62)	0.001	0.86	29.82 (4,124)	0.001	0.49
CD	21.73 (2,24)	0.001	0.41	129.21 (2,62)	0.001	0.81	60.83 (4,124)	0.001	0.67
CI	224.77(2,24)	0.001	0.88	340.41 (2,62)	0.001	0.92	98.42 (4,124)	0.001	0.76

Note; ZBS-Zarit Burden Scale; DASS (21)-Depression Anxiety Stress Scale; RCAS-Revised Caregivers Appraisal Scale: CB=Caregiver Burden, CS= Caregiver Satisfaction, CM= Caregiver Mastery, CD= Caregiver Demand, CI= Caregiver Impact. WHOQOL: World Health Organization Quality of Life Scale.

Table 17. Results of outcome measures at pre, mid and post of dance, yoga and control groups. Values are given in mean and standard deviation.

Variables	CE			Yoga			Control		
	Pre	Mid	Post	Pre	Mid	Post	Pre	Mid	Post
		<i>n</i> =32			<i>n</i> =32			<i>n</i> =32	
ZBS	28.81(6.20)	17.97 (5.39) ***\$\$\$	10.25(4.02)*** \$\$\$	28.88(5.97)	20.72(6.09)***\$\$	11.31(3.72)*** \$\$\$	27.06(5.59)	25.66(6.31)	26.47 (6.51)
DASS -21									
Depression	9.31 (1.62)	6.16(1.92)***\$ \$\$	3.38(1.50)*** \$\$\$	9.56(2.56)	6.88 (2.08)***\$\$	4.03 (1.69)***\$\$\$	9.34 (3.85)	9.13 (3.70)	10.16 (3.58)*
Anxiety	9.91 (2.70)	6.78 (2.21)***\$\$\$	3.81 (1.69)***\$\$\$	10.09 (2.45)	7.03 (1.80)***\$\$\$	4.19 (1.20)***\$\$\$	9.94 (2.82)	10.59 (2.27)*	12.25 (2.89)***
Stress	15.69 (2.44)	11.59(1.59)*** \$\$\$	7.94 (1.59)***\$\$\$	15.19 (3.02)	12.34 (2.54)***\$\$\$	8.63 (2.08)***\$\$\$	15.19 (3.02)	15.88 (2.39)	16.72 (2.20)***
WHOQOL(BREF)									
Physical	22.56(3.45)	31.50(2.31)*** \$\$\$	32.88(1.67)** *\$\$\$	20.44(3.03)	26.69 (2.92)***\$\$\$	32.88 (0.17)***\$\$\$	22.72(3.19)	23.69(3.66)	21.56(4.0)
Psychological	20.13(2.95)	23.59(2.41)** * \$\$\$	27.16(1.99)** *\$\$\$	20.22(3.06)	24.06(2.87)*** \$\$\$	26.66(2.09)** *\$\$\$	20.28(3.27)	20.34 (3.49)	20.00(3.23)
Social	9.50(1.19)	11.75(1.16)** *	14.03(0.82)** *\$\$\$	9.94(1.78)	11.72 (1.69)***	13.50(1.24)** *\$\$\$	10.56(1.98)	11.03(2.07)	11.22(2.65)
Environmental	23.91(2.23)) \$\$	28.09 (2.51)***\$\$\$	30.91 (2.61)***\$\$\$	23.19 (3.01)	26.88(3.97)***\$\$ \$	30.94 (3.34) *** \$\$\$	22.05 (3.08) *	21.78(3.69)	22.69(4.27)

RCAS Subscales									
CGB	20.00(5.32)	15.06(3.92)** *\$\$\$	12.00(2.95)*** \$\$\$	23.78 (5.59)	17.72 (4.25)***\$	13.75 (3.37)***\$	19.25 (5.19)	20.63 (5.69)	20.34 (5.0)
CGS	18.44 (3.93)	24.00(2.98)** *\$\$	27.63 (1.83)***\$\$\$	20.84 (1.55)	24.91 (2.36)***\$\$\$	28.59 (1.5)***\$\$\$	21.25 (3.13)	21.03 (3.33)	21.31 (3.82)
CGM	16.88 (2.21)	20.69 (2.40) ***\$	24.66 (1.91)***\$\$\$	17.31 (1.67)	21.47 (1.59)***\$\$\$	25.00 (1.30)***\$\$\$	17.66 (2.48)	19.31 (2.13)***	18.94 (2.53) *
CGD	10.59 (1.24)	8.28 (1.17) ***\$	5.84(1.73)***\$ \$\$	10.75 (1.30)	8.31 (1.45)***\$	6.81 (1.89)***\$\$\$	10.22 (1.48)	9.41 (1.85)* *	10.63 (0.98)
CGI	11.91 (1.25)	5.22 (1.54) ***\$\$\$	4.25(1.27) ***\$\$\$	11.94 (1.22)	5.34 (2.50)***\$\$\$	4.91 (2.53) ***\$\$\$	11.97 (1.12)	11.25 (1.34)	13.09 (1.03)*

Note: IAD-Indian Aesthetic Dance; ZBS-Zarit Burden Scale; DASS (21)-Depression Anxiety Stress Scale; RCAS-Revised Caregivers Appraisal Scale: CB=Caregiver Burden, CS= Caregiver Satisfaction, CM= Caregiver Mastery, CD= Caregiver Demand, CI= Caregiver Impact. WHOQOL: World Health Organization Quality of Life Scale.

Note: *: represents mean change within groups when compared to Week 0 (baseline) i.e. *=p<0.05; **= p<0.01; ***=p<0.001. \$=significant difference in Dance group and Yoga over control group (\$ <0.05; \$\$ < 0.01; \$\$\$<0.001, £ = indicate significant difference between Yoga group and dance group (£ <0.05; (££ <0.01; (£££ <0.001).

Figure 6: Graphical presentation of Zarit Burden Scales scores

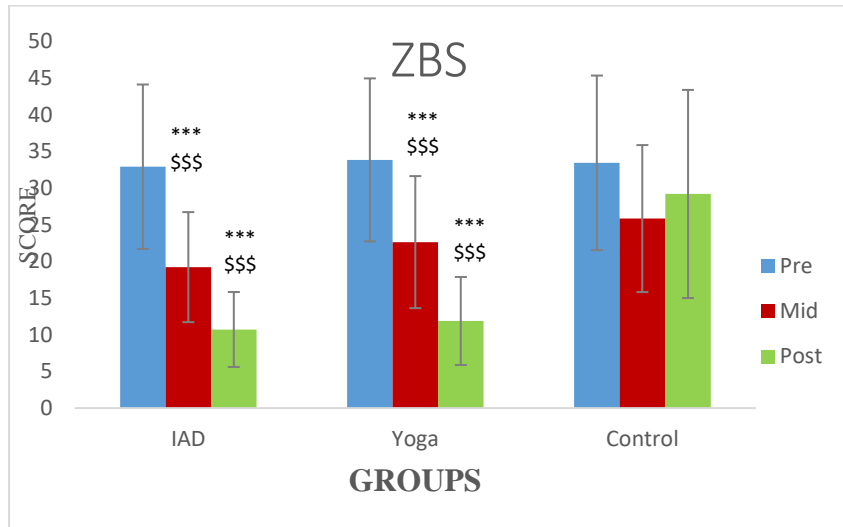
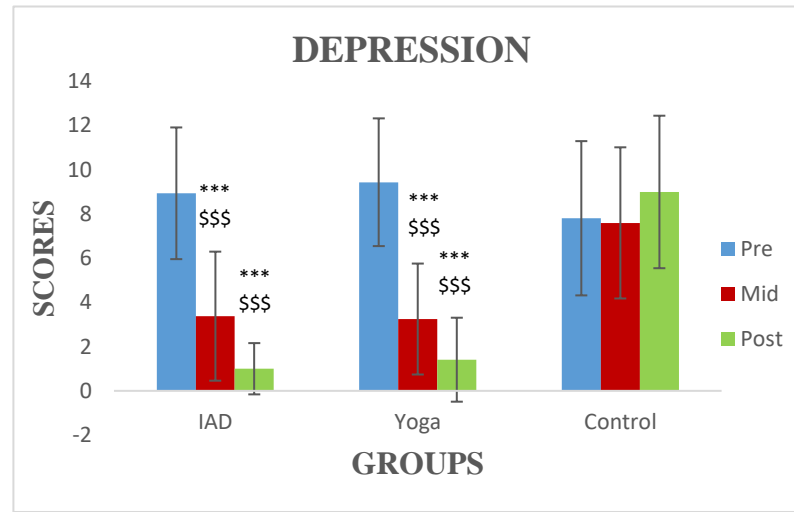


Figure 7: Depression Anxiety and Stress Scales -21 score



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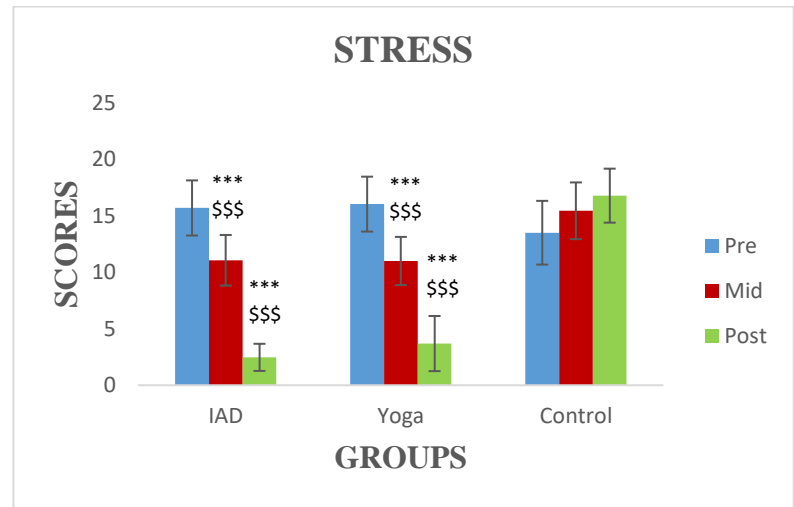
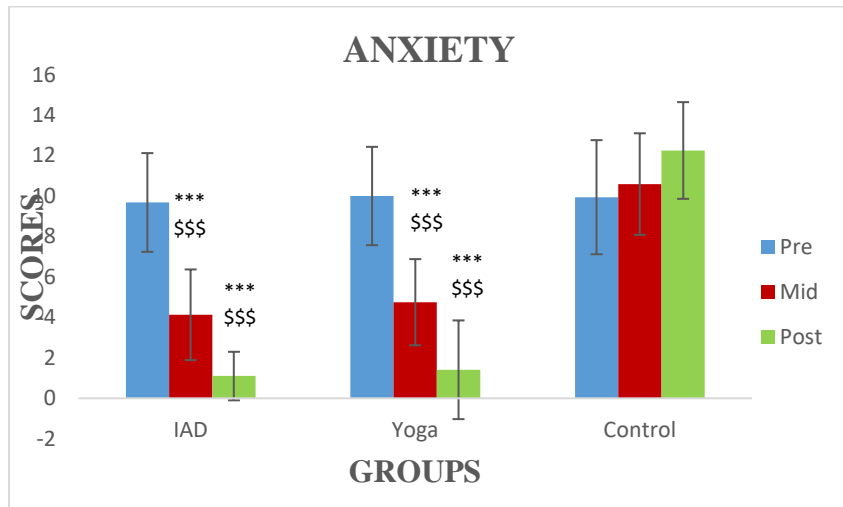


Figure 8: Graphical presentation of subscales of WHOQOL(BREF)

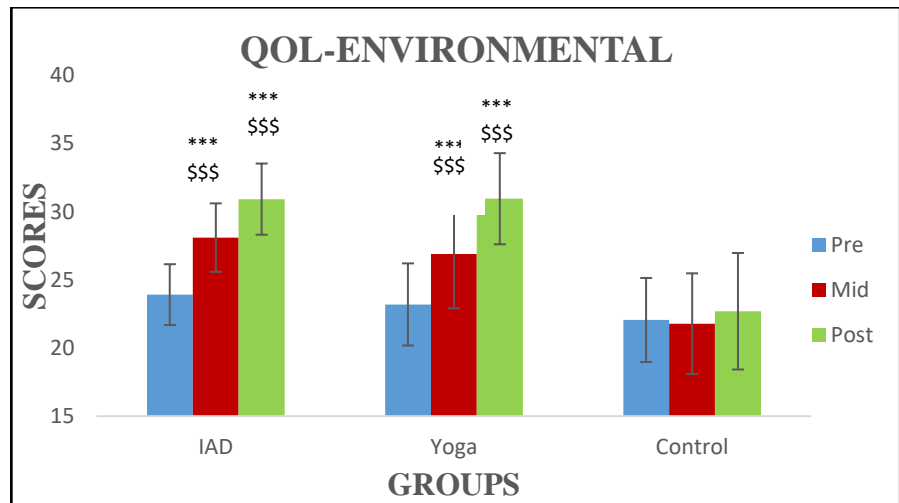
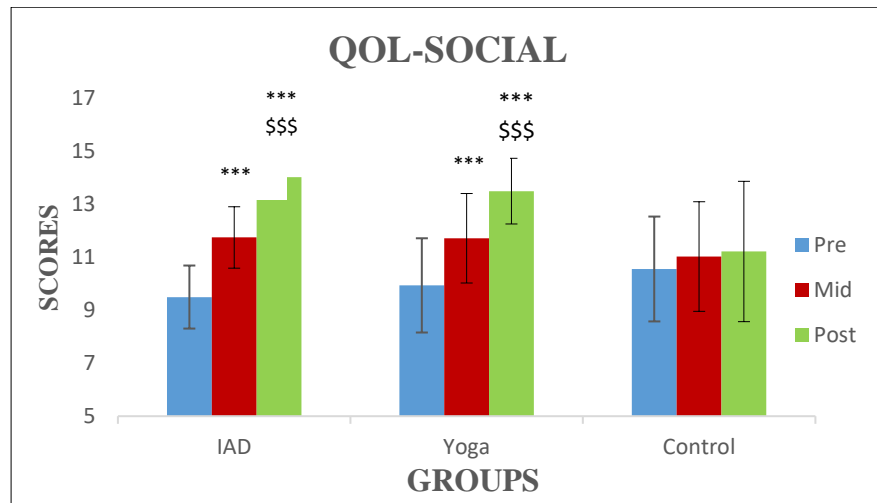
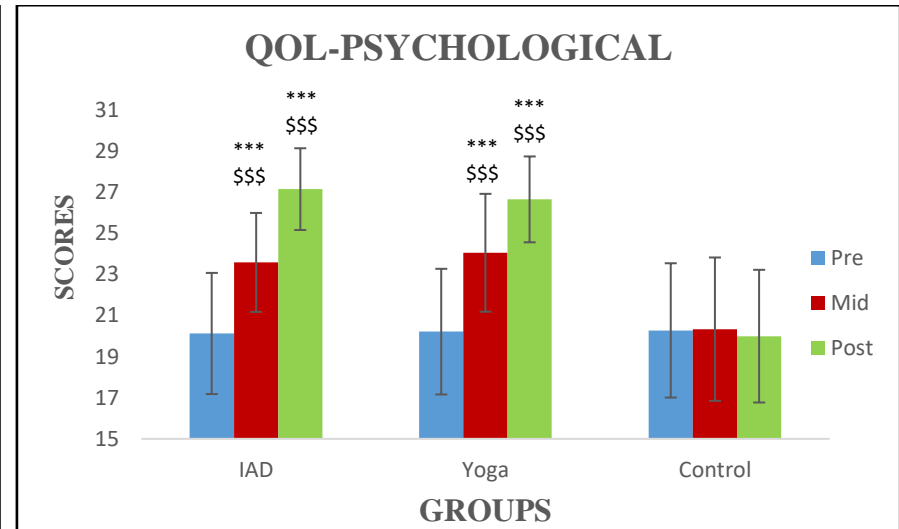
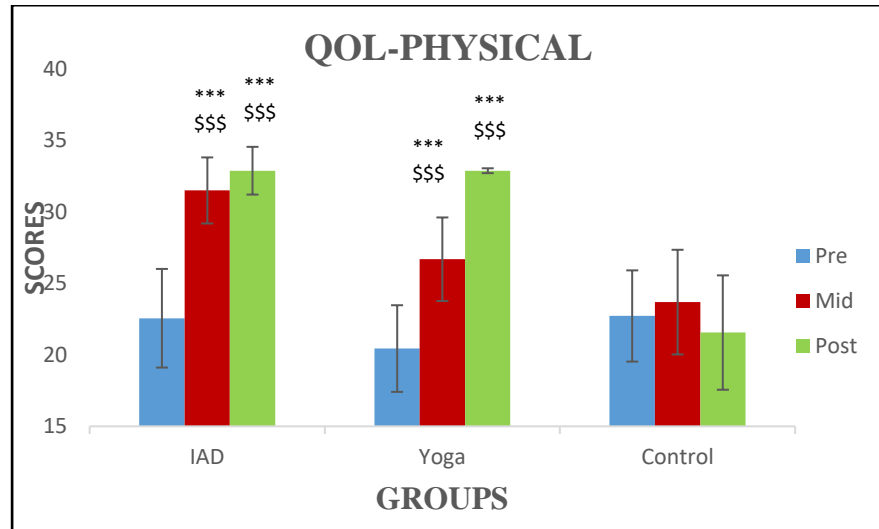


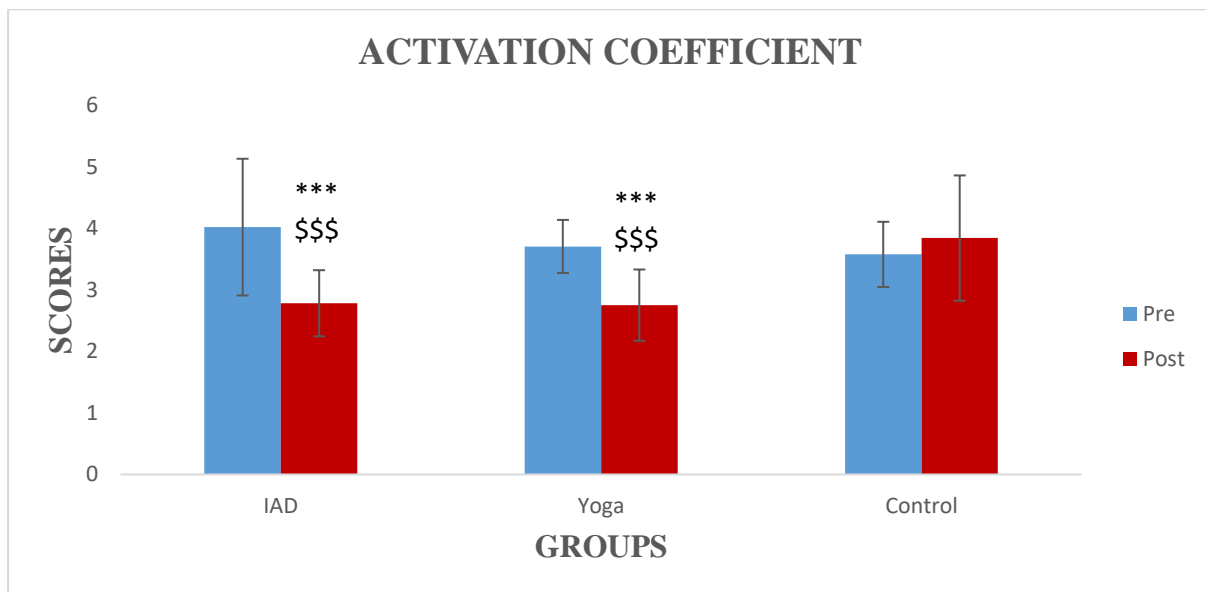
Table 18: Pre and Post values of parameters measured by Electro photonic image

Variables	IAD (n=31)			P-value	Yoga (n=30)			P-value	Control (n=30)		
	Mean±SD)				Mean ±SD				Mean ±SD		
	Pre	Post	% change		Pre	Post	% change		Pre	Post	% change
AC	4.023±0.827	2.785±0.538	-31%	0.001*** \$\$\$	3.709±0.432	2.754±0.580	-26%	0.001*** \$\$	3.580±0.530	3.845±1.020	7%
Communication Energy Of											
CARDV	4.901±1.112	5.688±0.921	16%	0.01** \$	4.820±0.837	5.700±0.986	18%	0.01** \$\$\$	4.723±0.870	4.536±0.980	-4%
RESP	6.663±1.171	5.127±0.584	-23%	0.001*** \$\$\$	6.449±1.053	5.159±0.626	-20%	0.001*** \$\$	6.504±1.564	6.352±1.320	-2%
ENDO	4.927±0.740	5.903±0.963	20%	0.001*** \$\$\$	4.869±0.831	5.719±0.869	17%	0.01** \$\$\$	4.762±1.030	4.767±1.032	0.1%
MUSK	6.585±0.931	5.139±0.870	-22%	0.001*** \$\$\$	6.252±0.678	5.326±0.583	-15%	0.001*** \$\$	6.252±1.104	6.270±0.997	-0.28%
DIGST	4.719±0.669	5.938±0.750	26%	0.001*** \$\$\$	6.834±0.990	5.130±0.697	-24%	0.09	4.716±1.364	4.692±0.883	-0.5%
NRVS	4.107±0.954	4.941±0.937	20%	0.002** \$\$	4.283±0.985	4.968±1.003	16%	0.001*** \$\$	4.245±0.999	3.990±1.136	-6%
IMN	4.031±0.976	4.737±1.093	18%	0.005** \$\$	4.020±1.053	4.799±0.975	19%	0.003** \$	4.047±1.078	3.841±1.185	5%
E	2.494±0.610	1.833±0.468	-27%	0.001*** \$\$\$	2.520±0.560	1.868±0.508	-26%	0.001*** \$\$	2.319±0.417	2.339±0.312	-0.86%

Note: IAD-Indian Aesthetic Dance; SD-standard deviation; AC-Activation Coefficient; CARDV-Cardiovascular system; RESP-Respiratory system; ENDO-Endocrine system; MUSK-Musculoskeletal system; DIGST-Digestive system; NRVS-Nervous system; IMN-Immune system; E-Entropy

Note: * significant difference in Dance group and Yoga over control group *=p<0.05; **= p<0.01; ***=p<0.001. Significance levels are after Bonferroni correction.

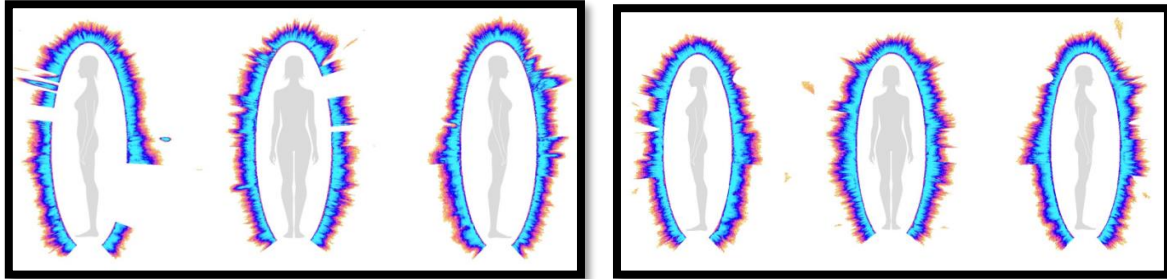
Figure 9: Activation Coefficient of IAD and yoga groups before and after the intervention compared to the control group



Note: IAD-Indian Aesthetic Dance

Figure 10: Sub-sample images of energy difference of Indian aesthetic dance, yoga and control group captured by EPI instrument pre-measurement and post-intervention

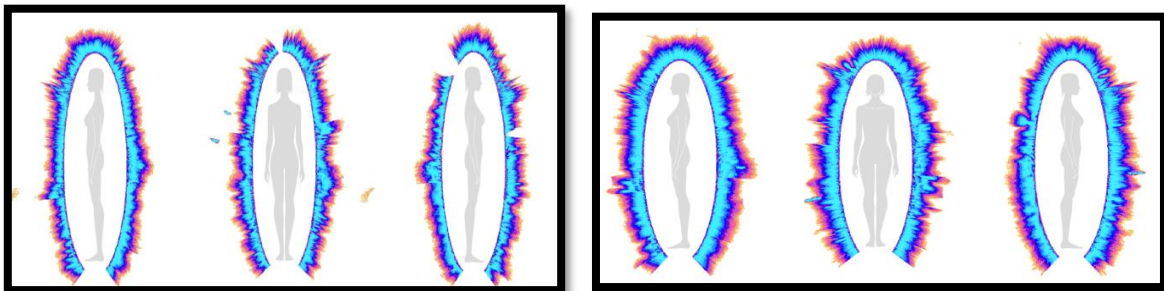
A) A sub-sample energy field of a subject of CE group



pre
Energy 52 Joules ($\times 10^{-2}$)

post
Energy 70 Joules ($\times 10^{-2}$)

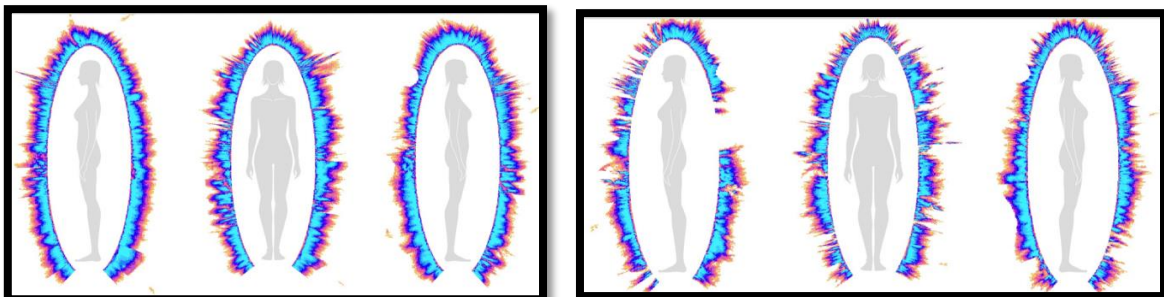
B) A sub-sample energy field of a subject of yoga group



pre
Energy 59 Joules ($\times 10^{-2}$)

post
Energy 79 Joules ($\times 10^{-2}$)

C) A sub-sample energy field of a subject of control group



pre
Energy 48 Joules ($\times 10^{-2}$)

post
Energy 37 Joules ($\times 10^{-2}$)

Table 19: Pre- Post scores and percentage change in value and symmetry of cakras.

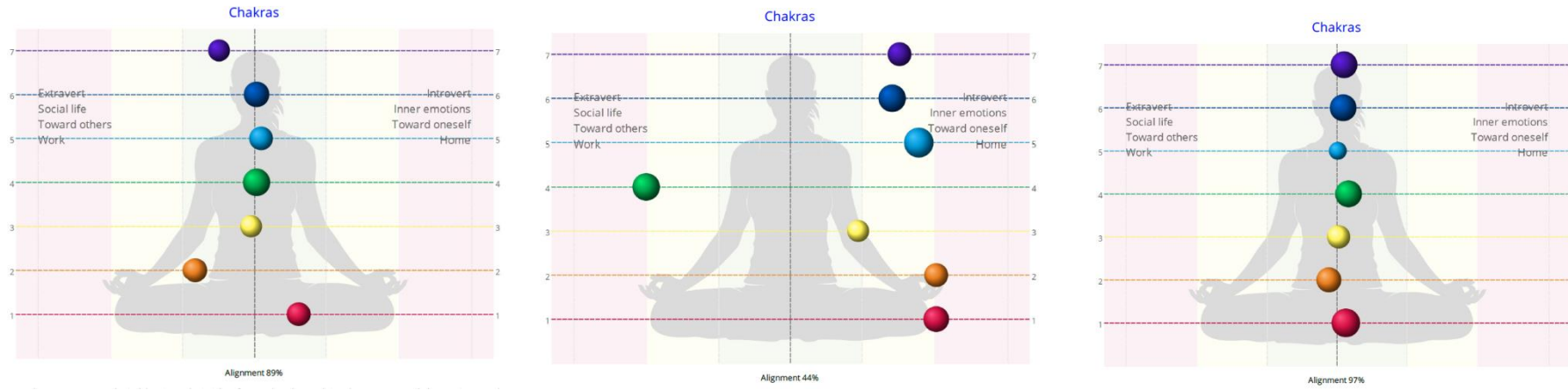
Variable	CE (n=31) (Mean ± SD)			Yoga (n=31) (Mean ± SD)			Control (n=31) (Mean ± SD)		
	Pre	Post	% change	Pre	Post	% change	Pre	Post	% change
Value of <i>Cakra</i>									
Mldr	5.583±1.110	6.973±1.143	25%	5.339±1.143	6.738±0.992	26%	5.681±1.334	5.158±1.264	-9%
Svdstn	5.485±1.116	7.044±0.964	28%	5.414±0.859	6.839±0.958	26%	4.373±1.193	4.753±0.795	9%
Mnpr	5.293±1.053	7.084±0.703	24%	5.416±0.914	7.067±0.886	30%	4.737±0.925	4.992±0.887	5%
Anht	5.820±1.127	7.206±1.044	24%	5.745±0.966	7.308±1.266	27%	5.369±0.844	5.337±1.490	-0.05%
Vsdhi	5.371±1.454	6.505±1.021	21%	4.373±1.193	6.439±1.145	47%	4.991±1.163	5.265±0.994	5%
Ajn	4.964±1.083	6.240±1.007	26%	4.695±0.777	5.657±0.970	20%	4.946±0.948	4.604±0.947	-7%
Shsr	4.848±0.893	6.064±0.963	25%	4.941±0.805	6.070±0.977	23%	4.995±0.853	4.420±0.897	-11%
Symmetry of <i>Cakras</i>									
Mldr	0.616±0.769	0.087±0.62	85%	-0.137±0.369	-0.016±0.253	88%	0.197±0.886	0.200±0.599	1.5%
Svdstn	0.185±0.766	0.012±0.223	93%	0.045±0.813	0.034±0.725	24%	0.316±0.287	-0.300±0.981	5%
Mnpr	-0.229±0.791	-0.021±0.774	91%	-0.273±0.779	0.049±0.183	82%	-0.241±0.424	-0.252±0.806	5%
Anht	0.222±0.882	0.035±0.314	84%	0.110±1.030	0.032±0.305	79%	0.242±1.014	0.262±1.141	8%
Vsdhi	-0.321±0.631	-0.121±0.525	62%	-0.071±0.329	-0.023±0.615	68%	0.342±1.014	-0.345±0.899	0.9%
Ajn	-0.304±0.518	-0.060±0.179	80%	-0.108±0.564	-0.048±0.531	56%	-0.125±0.272	0.172±0.578	7%
Shsr	-0.115±0.770	0.017±0.206	85%	-0.252±0.806	0.062±0.714	75%	0.210±0.655	0.249±0.599	19%

Note: Values of all the *cakras* in the intervention groups have shown significant difference compared to control group.

Cakras: Mldr-*Mūlādhāra*, Svdstn-*Svādhiṣṭhāna*, Mnpr-*Maṇipūra*, Anht-*Anāhata*, -Vsdhi-*Viśuddha*, Ajn-*Ājñā*, and Shsr-*Sahasrāra*

Figure 11: Sub-sample image of value difference in *Cakra* pre-measurement and post-intervention captured by EPI instrument

a) Before intervention



b) After intervention

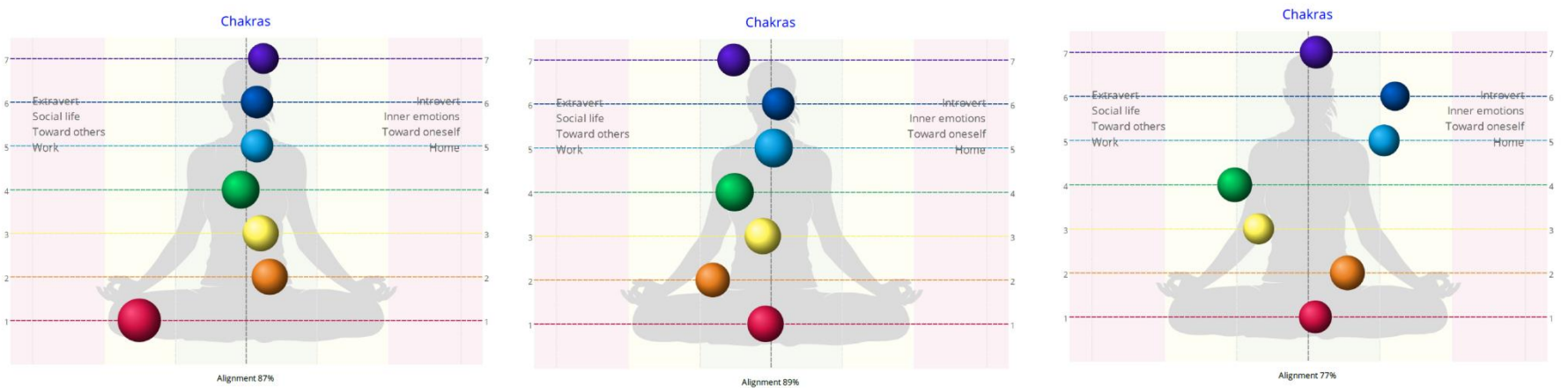
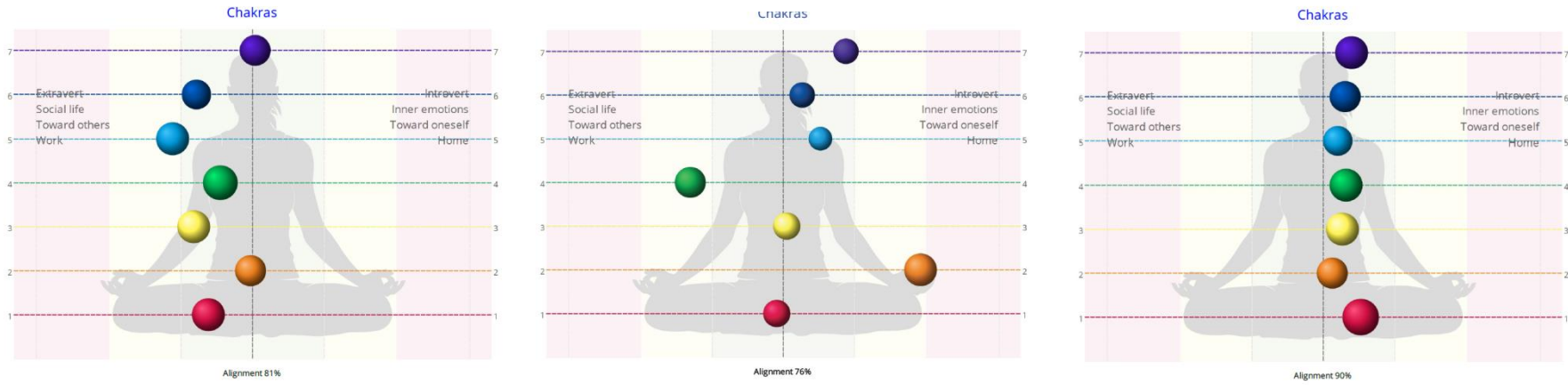


Figure 12: Sub-sample image of symmetry difference in *Chakra* pre-measurement and post-intervention captured by EPI instrument.

a) Before intervention



a) After intervention

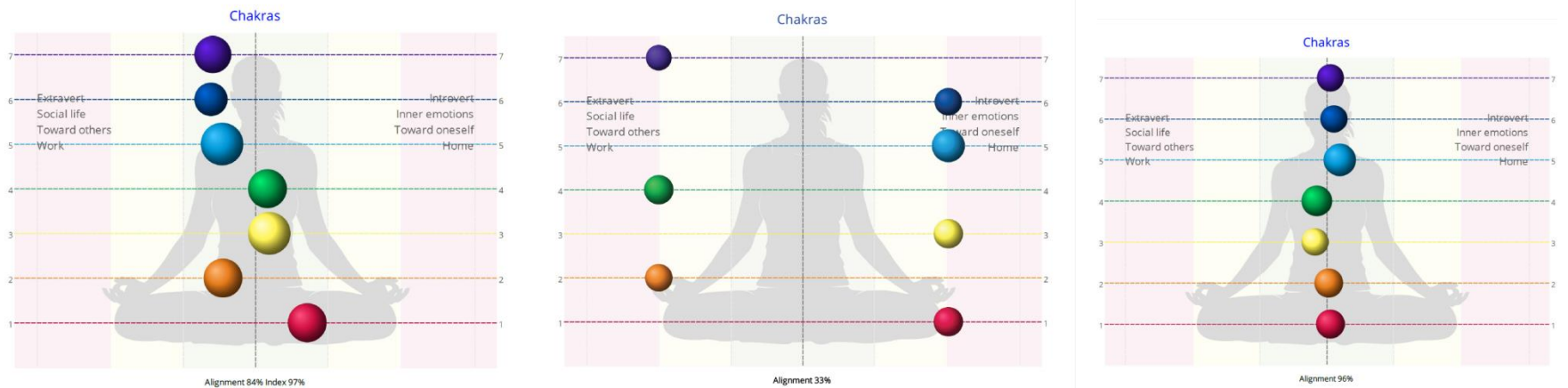
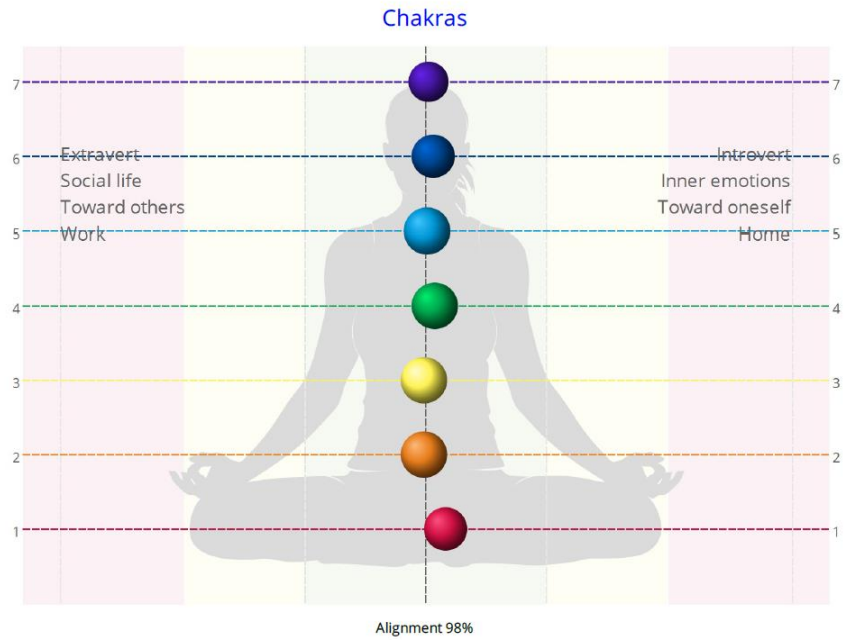
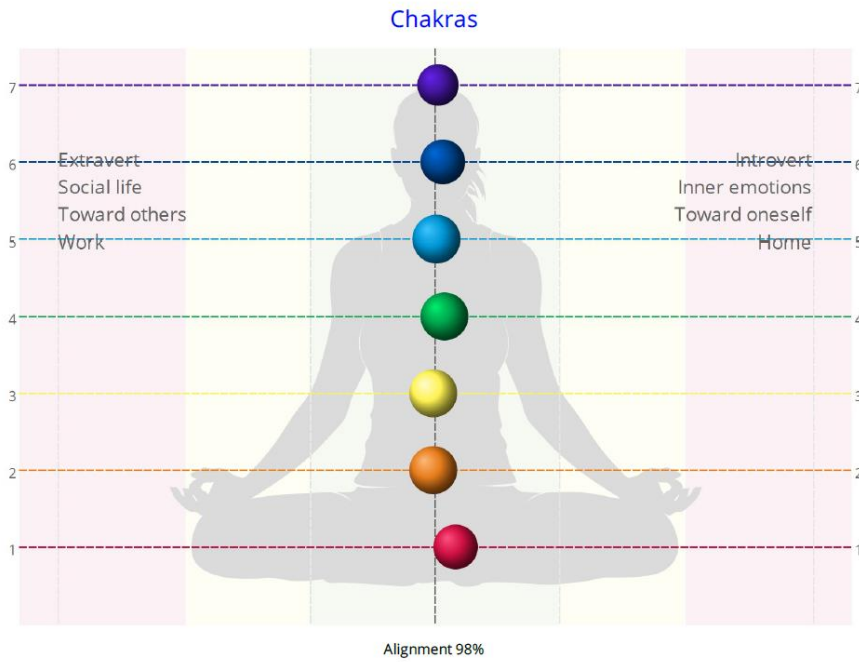
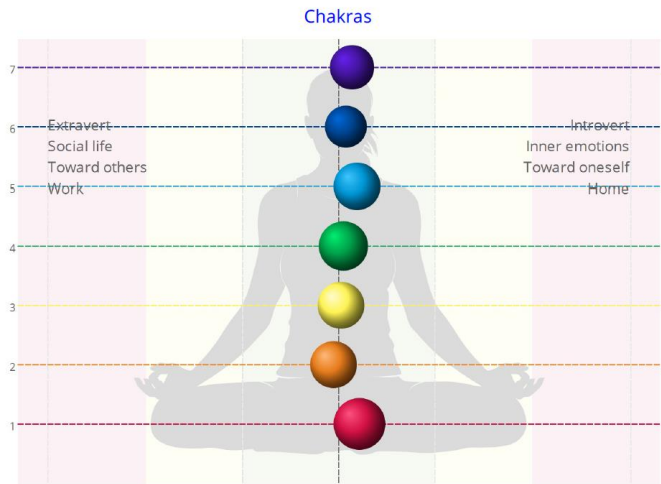


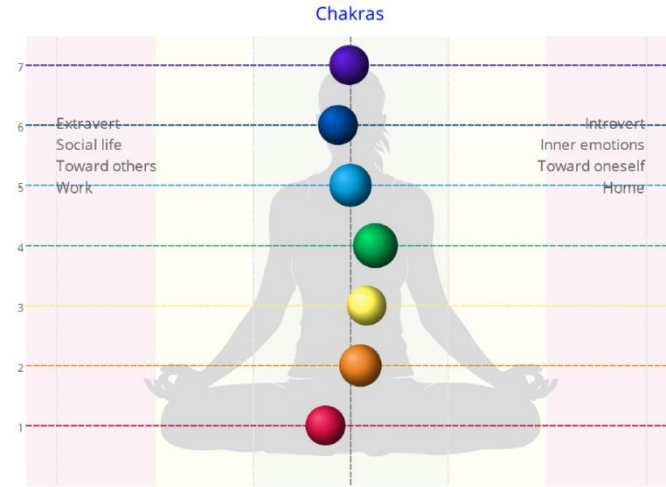
Figure 13: Sub-sample image of alignment of *Chakra* post-intervention captured by EPI instrument.



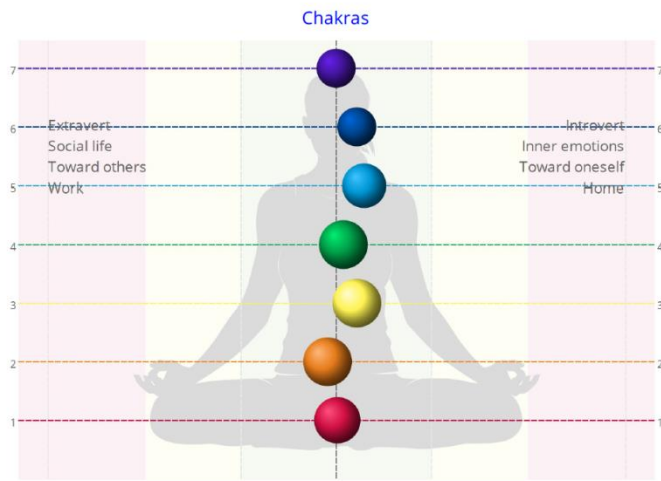
Sub-sample image of alignment in *Chakra* post-intervention captured by EPI instrument (contd...)



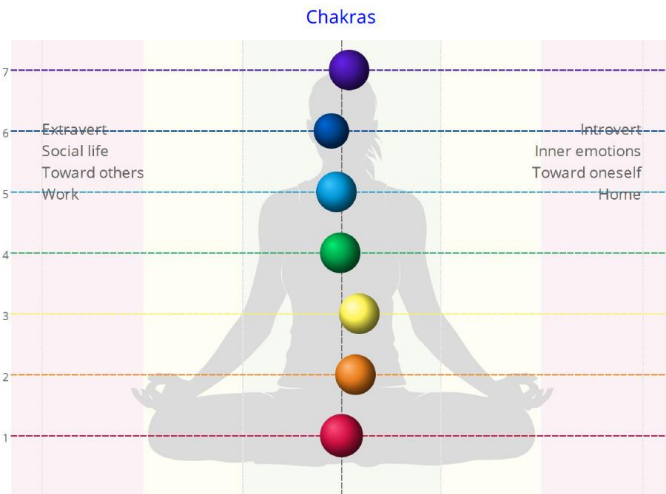
Alignment 96%



Alignment 95%



Alignment 95%



Alignment 97%