APPENDIX
Tables & Figures

Appendix Table 1: Showing the predominant sports participation of the subjects in Study 1

Sports	Cricket	FB	Tennis	B'ton	Sq	Athl	Hocky	Rugby	Gym	Swim	NB	Dance	Eqn	Judo	Wt lift	Multi
Frequency	22	22	7	3	1	5	3	6	6	7	2	3	1	1	1	7

FB= Football, B'ton= Badminton, Sq= Squash, Athl=Athlete, Hocky=Hockey, NB= Netball, Gym= Gymnastics, Swim=Swimming, NB= Netball, Eqn=Equestrian, Wt Lift= Weight lifting, Multi= Multiple sports

Appendix Table 2: Results of SPECT imaging

		SPECT		Total
		not performed	positive uptake	
site	unilateral	11	32	43
	bilateral	25	52	77
	2,1	0	3	3
Total		36	87	123

Appendix Table 3: Results of CT Scan

		CT		Total
		not performed	positive	
site	unilateral	21	22	43
	bilateral	38	39	77
	2,1	3	0	3
Total		62	61	123

Appendix Table 4: Results of MRI scan

		MRI		Total
		not performed	lysis+ive	
site	unilateral	28	15	43
	bilateral	46	31	77
	2,1	3	0	3
Total		77	46	123

Appendix Table 5: Showing the number of identified pars defects on SPECT and MRI scans

Lumbar level	**SPECT**		**MRI**	
	Incomplete	**Complete**	**Grade 1**	**Grade 2-4**
L5	12	47	7	17
L4	7	6	2	4
L3	2	8	2	2
L2	1	2	2	0
Total	22	63	13	23

Appendix Table 6: Showing the number of positive pars lesions identified on MRI scan & return to sports

Return to sport	Laterality	MRI +ive	Grades (no)
No	Unilateral	4	2(1), 3(3)
	Bilateral	7	2(1), 3(4), 4(2)
	Total	11	2(2), 3(7), 4(2)
Yes	unilateral	11	1(4), 2(5), 4(2)
	bilateral	24	1(9), 2(12), 4(3)
	2,1	0	0
	Total	35	1(13), 2(17), 4(5)

Appendix Table 7: Detailed data of levels of pars defects

		Lumbar levels										Total
		L5	L4	L3	L2	L4&5	L3&L5	L2&L5	L3L4	Multilevel	L4l5r	
site	unilateral	14	10	5	2	3	2	4	1	1	1	43
	bilateral	60	4	7	1	3	0	0	1	1	0	77
	2,1	0	0	0	0	2	0	0	0	1	0	3
Total		74	14	12	3	8	2	4	2	3	1	123

Appendix Table 8: Showing the mean scores in each component of SF 36 in Study 1

	PF	RP	BP	GH	Vt	SF	RE	MH
Pre Rx (all)	39.1	34.9	34.5	39.9	43.5	35.1	34.0	41.4
Post Rx (all)	51.1	50.0	50.7	51.1	56.6	51.2	49.4	51.9
Pre Rx (F)	39.7	36.5	34.6	39.3	43.5	35.4	34.9	33.4
Post Rx (F)	51	50.4	50.2	50.8	54.6	51.2	49.6	50.0
Pre Rx (M)	38.7	34.0	34.5	40.3	43.6	34.9	33.4	40.9
Post Rx (M)	51.2	49.7	51.1	51.4	58	51.2	49.2	51.6

STUDY 1 - PAIRED SAMPLE T-TEST

Appendix Table 9: Showing paired samples statistics for Study 1

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	35.57	122	7.85	.71
	postodi	6.95	122	7.6	.69
Pair 2	prevas	4.53	123	.88	.08
	postvas	.65	123	.81	.07
Pair 3	presf36pcs	34.99	120	5.70	.52
	pstsf36pcs	49.34	120	6.64	.60
Pair 4	presf36mcs	40.19	120	5.16	.47
	postsf36mcs	52.07	120	6.06	.55
Pair 5	prerxPF	39.07	120	6.38	.58
	pstrxPF	51.10	120	5.77	.52
Pair 6	prerxRP	34.91	120	7.48	.68
	pstrxRP	50.04	120	7.23	.66
Pair 7	prerxBP	34.57	120	4.47	.40
	pstrxBP	50.74	120	7.61	.69
Pair 8	prerxGH	39.91	120	6.52	.59
	pstrxGH	51.17	120	7.93	.72
Pair 9	prerxVt	43.53	120	6.25	.57
	pstrxVt	56.61	120	7.27	.66
Pair 10	prerxSF	35.05	120	5.40	.49
	pstrxSF	51.20	120	6.15	.56
Pair 11	prerxRE	33.82	120	9.50	.86
	pstrxRE	49.43	120	8.70	.79
Pair 12	prerxMH	41.46	120	5.58	.50
	pstrxMH	50.95	120	7.05	.64

Appendix Table 10: Showing paired sample statistics for Study 1 (Age group < 14yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	34.36	11	5.85	1.76
	postodi	2.91	11	2.58	.78
Pair 2	prevas	4.08	12	.51	.14
	postvas	.25	12	.45	.13
Pair 3	presf36pcs	35.51	9	4.25	1.41
	pstsf36pcs	49.93	9	4.17	1.39
Pair 4	presf36mcs	43.27	9	3.68	1.22
	postsf36mcs	53.68	9	7.06	2.35
Pair 5	prerxPF	41.10	9	4.57	1.52
	pstrxPF	53.40	9	2.88	.96
Pair 6	prerxRP	35.81	9	5.51	1.83
	pstrxRP	50.73	9	5.87	1.95
Pair 7	prerxBP	36.63	9	2.75	.91
	pstrxBP	52.23	9	7.15	2.38
Pair 8	prerxGH	39.64	9	3.40	1.13
	pstrxGH	50.31	9	5.55	1.85
Pair 9	prerxVt	46.96	9	2.75	.91
	pstrxVt	57.48	9	7.21	2.40
Pair 10	prerxSF	34.82	9	4.25	1.41
	pstrxSF	51.70	9	6.03	2.01
Pair 11	prerxRE	38.95	9	9.28	3.09
	pstrxRE	52.96	9	4.63	1.54
Pair 12	prerxMH	43.62	9	4.08	1.36
	pstrxMH	51.92	9	10.73	3.57

Appendix Table 11: Showing paired t test for Study 1 (Age group < 14yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi – postodi	31.45	5.29	1.5	27.89	35.01	.000
Pair 2	prevas – postvas	3.83	.71	.20	3.37	4.28	.000
Pair 3	presf36pcs – pstsf36pcs	-14.42	4.10	1.36	-17.57	-11.26	.000
Pair 4	presf36mcs – postsf36mcs	-10.41	5.53	1.84	-14.66	-6.15	.000
Pair 5	prerxPF – pstrxPF	-12.30	4.35	1.45	-15.64	-8.95	.000
Pair 6	prerxRP – pstrxRP	-14.92	5.51	1.83	-19.15	-10.68	.000
Pair 7	prerxBP – pstrxBP	-15.60	7.86	2.62	-21.64	-9.55	.000
Pair 8	prerxGH – pstrxGH	-10.66	5.70	1.90	-15.05	-6.27	.001
Pair 9	prerxVt – pstrxVt	-10.52	8.20	2.73	-16.83	-4.21	.005
Pair 10	prerxSF – pstrxSF	-16.87	7.86	2.62	-22.92	-10.83	.000
Pair 11	prerxRE – pstrxRE	-14.01	7.43	2.47	-19.72	-8.29	.000
Pair 12	prerxMH – pstrxMH	-8.30	9.61	3.20	-15.69	-.90	.032

Appendix Table 12: Showing paired sample statistics for Study 1 (Age group 15-19yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	33.95	43	5.31	.81
	postodi	4.60	43	4.9	.75
Pair 2	prevas	4.48	43	.63	.09
	postvas	.46	43	.59	.09
Pair 3	presf36pcs	36.13	43	4.31	.65
	pstsf36pcs	50.51	43	5.15	.78
Pair 4	presf36mcs	39.93	43	6.00	.91
	postsf36mcs	53.76	43	4.73	.72
Pair 5	prerxPF	40.00	43	4.61	.70
	pstrxPF	52.74	43	3.41	.52
Pair 6	prerxRP	35.03	43	7.37	1.12
	pstrxRP	51.62	43	5.93	.90
Pair 7	prerxBP	35.08	43	3.53	.53
	pstrxBP	51.78	43	6.75	1.03
Pair 8	prerxGH	41.17	43	6.64	1.01
	pstrxGH	52.10	43	7.32	1.11
Pair 9	prerxVt	44.01	43	5.74	.87
	pstrxVt	58.68	43	5.78	.88
Pair 10	prerxSF	35.93	43	5.90	.90
	pstrxSF	52.45	43	4.94	.75
Pair 11	prerxRE	34.26	43	9.75	1.48
	pstrxRE	51.39	43	6.07	.92
Pair 12	prerxMH	40.51	43	5.26	.80
	pstrxMH	52.77	43	5.84	.89

Appendix Table13: Showing paired t test for Study 1 (Age group 15-19yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi - postodi	29.3	6.8	1.05	27.2	31.4	.000
Pair 2	prevas - postvas	4.02	.59	.09	3.83	4.20	.000
Pair 3	presf36pcs - pstsf36pcs	-14.38	5.93	.90	-16.21	-12.55	.000
Pair 4	presf36mcs - postsf36mcs	-13.82	5.59	.85	-15.55	-12.10	.000
Pair 5	prerxPF - pstrxPF	-12.73	5.39	.82	-14.39	-11.07	.000
Pair 6	prerxRP - pstrxRP	-16.58	7.35	1.12	-18.85	-14.32	.000
Pair 7	prerxBP - pstrxBP	-16.69	6.95	1.06	-18.83	-14.55	.000
Pair 8	prerxGH - pstrxGH	-10.92	7.46	1.13	-13.21	-8.62	.000
Pair 9	prerxVt - pstrxVt	-14.67	5.62	.85	-16.40	-12.94	.000
Pair 10	prerxSF - pstrxSF	-16.52	6.79	1.03	-18.61	-14.43	.000
Pair 11	prerxRE - pstrxRE	-17.12	10.78	1.64	-20.44	-13.80	.000
Pair 12	prerxMH - pstrxMH	-12.26	4.93	.75	-13.77	-10.74	.000

Appendix Table14: Showing paired sample statistics for Study 1 (Age group 20-24yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	36.13	32	9.66	1.70
	postodi	6.69	32	5.85	1.03
Pair 2	prevas	4.46	32	1.01	.17
	postvas	.71	32	.81	.14
Pair 3	presf36pcs	34.35	32	5.89	1.04
	pstsf36pcs	49.79	32	7.64	1.35
Pair 4	presf36mcs	40.19	32	4.75	.83
	postsf36mcs	51.91	32	6.38	1.12
Pair 5	prerxPF	38.95	32	6.67	1.17
	pstrxPF	51.09	32	5.95	1.05
Pair 6	prerxRP	35.03	32	7.16	1.26
	pstrxRP	50.92	32	7.80	1.37
Pair 7	prerxBP	34.51	32	5.74	1.01
	pstrxBP	51.57	32	8.73	1.54
Pair 8	prerxGH	38.28	32	5.92	1.04
	pstrxGH	50.96	32	8.26	1.46
Pair 9	prerxVt	43.22	32	6.28	1.11
	pstrxVt	55.72	32	8.34	1.47
Pair 10	prerxSF	34.40	32	4.45	.78
	pstrxSF	51.69	32	6.44	1.14
Pair 11	prerxRE	32.95	32	8.78	1.55
	pstrxRE	49.38	32	9.97	1.76
Pair 12	prerxMH	42.48	32	5.22	.92
	pstrxMH	51.29	32	6.57	1.16

Appendix Table 15: Showing paired t test for Study 1 (Age group 20-24yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi - postodi	29.43	8.00	1.41	26.55	32.32	.000
Pair 2	prevas - postvas	3.75	.76	.13	3.47	4.02	.000
Pair 3	presf36pcs - pstsf36pcs	-15.44	4.45	.78	-17.04	-13.83	.000
Pair 4	presf36mcs - postsf36mcs	-11.72	5.92	1.04	-13.85	-9.58	.000
Pair 5	prerxPF - pstrxPF	-12.14	3.85	.68	-13.53	-10.74	.000
Pair 6	prerxRP - pstrxRP	-15.88	6.94	1.22	-18.39	-13.38	.000
Pair 7	prerxBP - pstrxBP	-17.05	7.46	1.31	-19.74	-14.36	.000
Pair 8	prerxGH - pstrxGH	-12.68	7.06	1.24	-15.22	-10.13	.000
Pair 9	prerxVt - pstrxVt	-12.49	8.00	1.41	-15.38	-9.61	.000
Pair 10	prerxSF - pstrxSF	-17.29	6.38	1.12	-19.59	-14.99	.000
Pair 11	prerxRE - pstrxRE	-16.43	9.61	1.69	-19.89	-12.96	.000
Pair 12	prerxMH - pstrxMH	-8.80	6.56	1.16	-11.17	-6.43	.000

Appendix Table 16: Showing paired sample statistics for Study 1 (Age group 25-29 yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	37.05	19	8.85	2.03
	postodi	8.84	19	9.34	2.14
Pair 2	prevas	4.57	19	.96	.22
	postvas	.89	19	1.19	.27
Pair 3	presf36pcs	34.88	19	6.35	1.45
	pstsf36pcs	49.16	19	6.51	1.49
Pair 4	presf36mcs	38.08	19	3.87	.88
	postsf36mcs	49.21	19	6.19	1.42
Pair 5	prerxPF	37.41	19	7.21	1.65
	pstrxPF	50.40	19	6.35	1.45
Pair 6	prerxRP	33.55	19	7.64	1.75
	pstrxRP	48.04	19	7.54	1.73
Pair 7	prerxBP	33.86	19	4.46	1.02
	pstrxBP	50.10	19	7.60	1.74
Pair 8	prerxGH	41.51	19	6.05	1.39
	pstrxGH	50.90	19	7.59	1.74
Pair 9	prerxVt	43.21	19	7.02	1.61
	pstrxVt	55.67	19	6.38	1.46
Pair 10	prerxSF	32.84	19	4.56	1.04
	pstrxSF	48.85	19	7.08	1.62
Pair 11	prerxRE	30.37	19	8.03	1.84
	pstrxRE	47.00	19	10.26	2.35
Pair 12	prerxMH	40.28	19	6.79	1.55
	pstrxMH	47.69	19	5.94	1.36

Appendix Table 17: Showing paired t test for Study 1 (Age group 25-29 yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi - postodi	29.43	8.00	1.41	26.55	32.32	.000
Pair 2	prevas - postvas	3.75	.76	.13	3.47	4.02	.000
Pair 3	presf36pcs - pstsf36pcs	-15.44	4.45	.78	-17.04	-13.83	.000
Pair 4	presf36mcs - postsf36mcs	-11.72	5.92	1.04	-13.85	-9.58	.000
Pair 5	prerxPF - pstrxPF	-12.14	3.85	.68	-13.53	-10.74	.000
Pair 6	prerxRP - pstrxRP	-15.88	6.94	1.22	-18.39	-13.38	.000
Pair 7	prerxBP - pstrxBP	-17.05	7.46	1.31	-19.74	-14.36	.000
Pair 8	prerxGH - pstrxGH	-12.68	7.06	1.24	-15.22	-10.13	.000
Pair 9	prerxVt - pstrxVt	-12.49	8.00	1.41	-15.38	-9.61	.000
Pair 10	prerxSF - pstrxSF	-17.29	6.38	1.12	-19.59	-14.99	.000
Pair 11	prerxRE - pstrxRE	-16.43	9.61	1.69	-19.89	-12.96	.000
Pair 12	prerxMH - pstrxMH	-8.80	6.56	1.16	-11.17	-6.43	.000

Appendix Table 18: Showing paired samples statistics for Study 1 (Age group >30 yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	37.7	17	9.27	2.24
	postodi	13.8	17	11.28	2.73
Pair 2	prevas	5.05	17	1.14	.27
	postvas	1.05	17	.82	.20
Pair 3	presf36pcs	33.16	17	7.98	1.93
	pstsf36pcs	45.38	17	8.23	1.99
Pair 4	presf36mcs	41.55	17	4.83	1.17
	postsf36mcs	50.43	17	6.79	1.64
Pair 5	prerxPF	37.72	17	9.05	2.19
	pstrxPF	46.54	17	8.14	1.97
Pair 6	prerxRP	35.45	17	9.48	2.29
	pstrxRP	46.24	17	8.30	2.01
Pair 7	prerxBP	33.06	17	4.43	1.07
	pstrxBP	46.51	17	6.94	1.68
Pair 8	prerxGH	38.13	17	8.33	2.02
	pstrxGH	50.00	17	10.49	2.54
Pair 9	prerxVt	41.40	17	7.46	1.81
	pstrxVt	53.66	17	8.67	2.10
Pair 10	prerxSF	36.70	17	6.52	1.58
	pstrxSF	49.47	17	6.91	1.67
Pair 11	prerxRE	35.50	17	11.09	2.69
	pstrxRE	45.41	17	10.15	2.46
Pair 12	prerxMH	42.15	17	6.06	1.47
	pstrxMH	48.84	17	8.52	2.06

Appendix Table 19: Showing paired t test for study1 (Age group >30 yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi - postodi	23.8	6.9	1.6	20.3	27.4	.000
Pair 2	prevas - postvas	4.00	.61	.14	3.6	4.3	.000
Pair 3	presf36pcs - pstsf36pcs	-12.22	7.02	1.70	-15.83	-8.6	.000
Pair 4	presf36mcs - postsf36mcs	-8.87	6.88	1.66	-12.41	-5.33	.000
Pair 5	prerxPF - pstrxPF	-8.81	6.97	1.69	-12.39	-5.22	.000
Pair 6	prerxRP - pstrxRP	-10.78	8.32	2.01	-15.06	-6.50	.000
Pair 7	prerxBP - pstrxBP	-13.44	8.40	2.03	-17.77	-9.12	.000
Pair 8	prerxGH - pstrxGH	-11.86	9.35	2.26	-16.67	-7.05	.000
Pair 9	prerxVt - pstrxVt	-12.25	8.61	2.09	-16.69	-7.82	.000
Pair 10	prerxSF - pstrxSF	-12.77	9.18	2.22	-17.49	-8.04	.000
Pair 11	prerxRE - pstrxRE	-9.90	15.10	3.66	-17.67	-2.14	.016
Pair 12	prerxMH - pstrxMH	-6.68	7.38	1.79	-10.48	-2.8	.002

Appendix Table 20a: Group Statistics showing the mean pre treatment scores in unilateral versus bilateral lumbar spondylolysis

	site	N	Mean	Std. Deviation	Std. Error Mean	
prevas	unilateral	43	4.25	.75	.11	
	bilateral	77	4.70	.93	.10	
preodi	unilateral	42	33.5	4.96	.76	
	bilateral	77	37.0	8.84	1.00	
presf36pcs	unilateral	42	34.72	5.68	.87	
	bilateral	75	35.09	5.75	.66	
presf36mcs	unilateral	42	39.99	4.14	.63	
	bilateral	75	40.26	5.75	.66	
sportscres	unilateral	42	55.14	25.8	3.9	
	bilateral	75	50.20	29.12	3.36	
prerxPF	unilateral	42	38.42	6.12	.94	
	bilateral	75	39.50	6.49	.74	
prerxRP	unilateral	42	34.36	6.56	1.01	
	bilateral	75	35.13	7.98	.92	
prerxBP	unilateral	42	34.39	3.94	.60	
	bilateral	75	34.65	4.78	.55	
prerxGH	unilateral	42	40.55	6.78	1.04	
	bilateral	75	39.34	6.29	.727	
prerxVt	unilateral	42	43.26	5.63	.86	
	bilateral	75	43.70	6.62	.76	
prerxSF	unilateral	42	35.03	5.41	.83	
	bilateral	75	35.05	5.46	.63	
prerxRE	unilateral	42	32.51	8.04	1.24	
	bilateral	75	34.68	10.31	1.19	
prerxMH	unilateral	42	41.68	3.90	.60	
	bilateral	75	41.14	6.33	.73	

Appendix Table 20b: Independent Samples t-Test showing significant difference in only two of the measurement variables i.e. Pre treatment VAS and ODI between the two groups

	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
				Lower	Upper
prevas	.009	-.44	.16	-.77	-.11
preodi	.019	-3.51	1.47	-6.44	-.58

Appendix Table 21a: Showing the mean post treatment scores in unilateral versus bilateral lumbar spondylolysis

	site	N	Mean	Std. Deviation	Std. Error Mean
postvas	unilateral	43	.34	.52	.08
	bilateral	77	.83	.90	.10
postodi	unilateral	42	5.48	6.40	.98
	bilateral	77	7.87	8.25	.94
pstsf36pcs	unilateral	42	49.70	7.03	1.08
	bilateral	75	49.11	6.58	.75
postsf36mcs	unilateral	42	52.89	4.91	.75
	bilateral	75	51.44	6.63	.76
pstrxPF	unilateral	42	51.48	5.98	.92
	bilateral	75	50.81	5.78	.66
pstrxRP	unilateral	42	50.50	7.82	1.20
	bilateral	75	49.53	6.95	.80
pstrxBP	unilateral	42	51.02	7.72	1.19
	bilateral	75	50.63	7.70	.88
pstrxGH	unilateral	42	51.99	7.52	1.16
	bilateral	75	50.72	8.31	.96
pstrxVt	unilateral	42	57.46	6.38	.98
	bilateral	75	56.16	7.84	.90
pstrxSF	unilateral	42	51.31	5.65	.87
	bilateral	75	51.04	6.53	.75
pstrxRE	unilateral	42	51.30	7.31	1.12
	bilateral	75	48.15	9.33	1.07
pstrxMH	unilateral	42	50.87	7.32	1.13
	bilateral	75	50.80	6.97	.80

Appendix Table 21b: Showing Independent Samples t-Test showing significant difference in only one of the measurement variables i.e. Post treatment VAS between the two groups

	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
				Lower	Upper
postRxvas	.002	-.48	.15	-.78	-.18

Table 22a: Showing the mean difference in age & outcome between the sporting and non sporting group

Outcome scores	Sport Vs Non sports	N	Mean	Std. Deviation	Std. Error Mean	t-test P value
Age	non sporting group	25	25.4	7.01	1.41	0.001
	sporting group	98	20.7	6.05	0.61	
preRxvas	non sporting group	25	5.08	1.22	.24	0.012
	sporting group	98	4.39	.72	.07	
postRxvas	non sporting group	25	1.28	1.13	.22	0.003
	sporting group	98	.50	.63	.06	
preRxodi	non sporting group	24	41.08	13.08	2.67	0.01
	sporting group	98	34.22	5.20	.52	
postRxodi	non sporting group	24	13.25	11.58	2.36	0.003
	sporting group	98	5.41	5.36	.54	
preRxsf36pcs	non sporting group	24	32.16	7.16	1.46	0.03
	sporting group	97	35.69	5.05	.51	
preRxsf36mcs	non sporting group	24	38.99	4.70	.96	0.18
	sporting group	97	40.59	5.31	.53	
postRxsf36pcs	non sporting group	24	43.16	6.69	1.36	0.001
	sporting group	97	50.88	5.65	.57	
postRxsf36mcs	non sporting group	24	46.98	5.83	1.19	0.001
	sporting group	97	53.33	5.42	.55	

Appendix Table 22b: Showing the mean difference in the each component of SF 36 pre-treatment scores between the sporting and non sporting group

Outcome scores	Sport Vs Non sports	N	Mean	Std. Deviation	Std. Error Mean	t-test p value
preRxPF	non sporting group	24	35.23	8.90	1.81	0.016
	sporting group	97	40.10	5.22	.53	
preRxRP	non sporting group	24	32.39	6.83	1.39	0.058
	sporting group	97	35.61	7.52	.76	
preRxBP	non sporting group	24	32.79	5.51	1.12	0.034
	sporting group	97	34.95	4.10	.41	
preRxGH	non sporting group	24	38.17	8.20	1.67	0.23
	sporting group	97	40.33	5.97	.60	
preRxVt	non sporting group	24	41.07	7.54	1.53	0.07
	sporting group	97	44.17	5.74	.58	
preRxSF	non sporting group	24	34.51	5.48	1.11	0.55
	sporting group	97	35.25	5.40	.54	
preRxRE	non sporting group	24	30.30	9.23	1.88	0.03
	sporting group	97	34.92	9.59	.97	
preRxrxMH	non sporting group	24	40.59	5.55	1.13	0.38
	sporting group	97	41.70	5.57	.56	

Appendix Table 22c: Showing the difference in the each component of SF 36 post-treatment scores between the sporting and non sporting group

Outcome scores	Sport Vs Non sports	N	Mean	Std. Deviation	Std. Error Mean	t-test p value
pstrxPF	non sporting group	24	45.36	7.37	1.50	< 0.001
	sporting group	97	52.56	4.25	.43	
pstrxRP	non sporting group	24	42.68	5.88	1.20	< 0.001
	sporting group	97	51.85	6.30	.64	
pstrxBP	non sporting group	24	45.20	6.35	1.29	< 0.001
	sporting group	97	52.12	7.25	.73	
pstrxGH	non sporting group	24	45.45	8.39	1.71	< 0.001
	sporting group	97	52.58	7.13	.72	
pstrxVt	non sporting group	24	51.33	5.64	1.15	< 0.001
	sporting group	97	57.97	7.02	.71	
pstrxSF	non sporting group	24	45.83	5.96	1.21	< 0.001
	sporting group	97	52.53	5.42	.55	
pstrxRE	non sporting group	24	40.41	9.76	1.99	< 0.001
	sporting group	97	51.61	6.79	.68	
pstrxMH	non sporting group	24	47.32	5.38	1.09	< 0.001
	sporting group	97	51.89	7.12	.72	

Appendix Table 23a: Correlation statistics detecting a relationship between Pre treatment VAS scores and other variables in the Study group 1 (only significant variables are displayed)

	Pre Rx VAS	Post Rx VAS	Pre Rx ODI	Post Rx ODI	Pre Rx SF36pcs	Post Rx SF36pcs	BPSQ scores	Return to sport	Age	Type of Sports	Side of lysis	Severity of back pain
Spearman's ρ	Correlation Coefficient	-0.626	0.39	-0.634	0.23	0.31	0.19	0.31	0.186	0.185	0.21	0.51
	P Value	<0.01	<0.01	<0.01	0.012	<0.01	0.04	<0.01	0.03	0.04	0.02	<0.01

Appendix Table 23b: Correlation statistics detecting a relationship between the Pre treatment VAS scores and individual components of SF 36 scores (only significant components are displayed)

	Pre Rx VAS	Pre Rx PF	Pre Rx RP	Pre Rx GH	Pre Rx Vt	Post Rx PF	Post Rx RP	Post Rx BP	Post Rx Vt	Post Rx SF	Post RX RE	Post Rx MH
Spearman's ρ	Correlation Coefficient	0.21	0.24	0.21	0.30	0.37	0.35	0.27	0.20	0.30	0.33	0.20
	P Value	<0.05	<0.01	<0.05	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.05

STUDY 2

Appendix Table 24: Showing the results of Imaging (SPECT,CT & MRI scans)

Laterality		IMAGING		
		SPECT +ive	CT +ive	MRI +ive
site	unilateral	1	9	7
	bilateral	21	43	29
Total		22	52	36

Appendix Table 25: Showing the outcome of all patients treated surgically

		prevas	postvas	preodi	postodi	presf36pcs	presf36mcs	pstsf36pcs	postsf36mcs	BPSQscores
N	**Valid**	55	55	54	54	50	50	50	50	43
	Missing	0	0	1	1	5	5	5	5	12
Mean		6.6	.8	37.5	9.22	32.77	42.83	50.07	54.43	49.63
Std. Deviation		.97	1.12	10.57	13.46	7.13	8.43	8.86	8.22	14.59
Minimum		5.0	.0	20	0	15.75	23.80	22.65	24.10	15
Maximum		10.0	6.0	72	64	44.50	68.70	60.50	62.60	73

Appendix Table 26: Showing mean scores in each component of SF 36

	PF	RP	BP	GH	Vt	SF	RE	MH
Pre Rx (all)	35.8	35.7	33.9	41.7	42.7	36.8	36.3	43.4
Post Rx (all)	50.7	50.5	53.8	53.2	57.9	63.8	50.3	54.1
Pre Rx (Female)	35.2	41.1	33.8	40.6	42.6	32.7	38.4	43.6
Post Rx (Female)	45.5	48.2	47.7	49.4	52.8	49.2	48	49.7
Pre Rx (Male)	38.7	38.9	34.0	42.2	42.7	38.3	35.4	43.5
Post Rx (Male)	53.0	52.6	56.0	54.9	60.1	70.1	51.5	56.1

STUDY 2- PAIRED SAMPLE TESTS

Table 27a: Showing the frequency distribution of outcome scores in Study 2

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	37.59	54	10.5	1.4
	postodi	9.22	54	13.4	1.8
Pair 2	prevas	6.61	55	.97	.13
	postvas	.80	55	1.12	.15
Pair 3	presf36pcs	32.77	50	7.13	1.00
	pstsf36pcs	50.07	50	8.86	1.25
Pair 4	presf36mcs	42.83	50	8.43	1.19
	postsf36mcs	54.43	50	8.22	1.16

Appendix Table 27b: Showing the frequency distribution of outcome scores in surgically treated group

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 5	prerxPF	37.81	50	6.97	.98
	pstrxPF	50.78	50	9.07	1.28
Pair 6	prerxRP	35.77	50	8.38	1.18
	pstrxRP	50.56	50	9.45	1.33
Pair 7	prerxBP	33.96	50	5.51	.77
	pstrxBP	53.58	50	8.89	1.25
Pair 8	prerxGH	41.72	50	6.93	.98
	pstrxGH	53.28	50	9.02	1.27
Pair 9	prerxVt	42.72	50	8.54	1.20
	pstrxVt	57.96	50	8.81	1.24
Pair 10	prerxSF	36.68	50	6.99	.98
	pstrxSF	53.47	50	6.73	.95
Pair 11	prerxRE	36.37	50	10.64	1.50
	pstrxRE	50.37	50	9.99	1.41
Pair 12	prerxMH	43.41	50	8.82	1.24
	pstrxMH	54.19	50	8.62	1.21

Appendix Table 28a: Showing the frequency distribution of outcome scores (Age group < 14yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	prevas	6.00	10	.66	.21
	postvas	.50	10	1.08	.34
Pair 2	preodi	33.2	10	7.19	2.27
	postodi	6.8	10	11.08	3.50
Pair 3	presf36pcs	36.31	10	6.05	1.91
	pstsf36pcs	54.56	10	5.09	1.61
Pair 4	presf36mcs	43.89	10	6.86	2.16
	postsf36mcs	56.45	10	6.98	2.20

Appendix Table 28b: Showing the mean difference between the pre and post treatment scores (Age group < 14yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	prevas - postvas	5.50	1.17	.37	4.65	6.34	.000
Pair 2	preodi - postodi	26.40	7.29	2.30	21.18	31.61	.000
Pair 3	presf36pcs - pstsf36pcs	-18.24	4.99	1.58	-21.82	-14.66	.000
Pair 4	presf36mcs - postsf36mcs	-12.56	6.68	2.11	-17.34	-7.78	.000
Pair 5	prerxPF - pstrxPF	-15.24	6.76	2.14	-20.08	-10.39	.000
Pair 6	prerxRP - pstrxRP	-14.81	5.19	1.64	-18.52	-11.09	.000
Pair 7	prerxBP - pstrxBP	-20.92	5.61	1.77	-24.93	-16.90	.000
Pair 8	prerxGH - pstrxGH	-10.88	3.38	1.06	-13.29	-8.46	.000
Pair 9	prerxVt - pstrxVt	-14.44	7.76	2.45	-19.99	-8.88	.000
Pair 10	prerxSF - pstrxSF	-18.48	4.26	1.34	-21.53	-15.42	.000
Pair 11	prerxRE - pstrxRE	-13.46	9.83	3.11	-20.49	-6.42	.002
Pair 12	prerxMH - pstrxMH	-11.75	6.04	1.91	-16.07	-7.42	.000

Appendix Table 29a: Showing the frequency distribution of outcome scores (Age group 15-19yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	prevas	6.70	24	.90	.18
	postvas	.70	24	.85	.17
Pair 2	preodi	38.92	24	12.17	2.48
	postodi	9.08	24	14.20	2.89
Pair 3	presf36pcs	32.40	24	7.59	1.55
	pstsf36pcs	48.92	24	8.55	1.74
Pair 4	presf36mcs	42.31	24	9.18	1.87
	postsf36mcs	53.13	24	9.71	1.98

Appendix Table 29b: Showing the mean difference between the pre and post treatment scores (Age group 15-19yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	prevas - postvas	6.00	.88	.18	5.62	6.37	.000
Pair 2	preodi - postodi	29.83	10.74	2.19	25.29	34.37	.000
Pair 3	presf36pcs - pstsf36pcs	-16.51	8.52	1.73	-20.11	-12.91	.000
Pair 4	presf36mcs - postsf36mcs	-10.82	8.69	1.77	-14.49	-7.15	.000
Pair 5	prerxPF - pstrxPF	-11.61	6.36	1.29	-14.29	-8.92	.000
Pair 6	prerxRP - pstrxRP	-13.24	10.86	2.21	-17.83	-8.65	.000
Pair 7	prerxBP - pstrxBP	-18.09	7.92	1.61	-21.43	-14.74	.000
Pair 8	prerxGH - pstrxGH	-11.34	8.62	1.76	-14.98	-7.70	.000
Pair 9	prerxVt - pstrxVt	-15.09	9.32	1.90	-19.02	-11.15	.000
Pair 10	prerxSF - pstrxSF	-16.22	6.21	1.26	-18.85	-13.59	.000
Pair 11	prerxRE - pstrxRE	-13.13	12.12	2.47	-18.25	-8.01	.000
Pair 12	prerxMH - pstrxMH	-10.61	6.92	1.41	-13.53	-7.68	.000

Appendix Table 30a: Showing the frequency distribution of outcome scores (Age group 20-24yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	prevas	6.36	11	.67	.20
	postvas	.45	11	.68	.20
Pair 2	preodi	36.55	11	11.35	3.42
	postodi	7.82	11	15.00	4.52
Pair 3	presf36pcs	33.81	9	6.97	2.32
	pstsf36pcs	51.71	9	9.88	3.29
Pair 4	presf36mcs	46.07	9	8.90	2.96
	postsf36mcs	57.17	9	1.57	.52

Appendix Table 30b: Showing the mean difference between the pre and post treatment scores (Age group 20-24yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	prevas - postvas	5.90	.83	.25	5.35	6.46	.000
Pair 2	preodi - postodi	28.72	4.92	1.48	25.42	32.03	.000
Pair 3	presf36pcs - pstsf36pcs	-17.90	7.61	2.53	-23.75	-12.04	.000
Pair 4	presf36mcs - postsf36mcs	-11.09	8.38	2.79	-17.54	-4.64	.004
Pair 5	prerxPF - pstrxPF	-12.97	6.17	2.05	-17.72	-8.23	.000
Pair 6	prerxRP - pstrxRP	-17.06	14.29	4.76	-28.05	-6.07	.007
Pair 7	prerxBP - pstrxBP	-19.72	6.62	2.20	-24.81	-14.62	.000
Pair 8	prerxGH - pstrxGH	-13.11	6.36	2.12	-18.00	-8.22	.000
Pair 9	prerxVt - pstrxVt	-18.41	8.69	2.89	-25.09	-11.72	.000
Pair 10	prerxSF - pstrxSF	-16.13	6.57	2.19	-21.18	-11.08	.000
Pair 11	prerxRE - pstrxRE	-15.17	14.05	4.68	-25.97	-4.37	.012
Pair 12	prerxMH - pstrxMH	-8.35	6.61	2.20	-13.44	-3.26	.005

Appendix Table 31a: Showing the frequency distribution of outcome scores (Age group 25-29yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	38.57	7	6.39	2.41
	postodi	12.86	7	12.21	4.61
Pair 2	prevas	6.71	7	.75	.28
	postvas	1.57	7	1.98	.75
Pair 3	presf36pcs	27.55	5	5.63	2.52
	pstsf36pcs	44.48	5	11.51	5.14
Pair 4	presf36mcs	41.07	5	6.64	2.97
	postsf36mcs	54.20	5	7.54	3.37

Table 31b: Showing the mean difference between the pre and post treatment scores (Age group 25-29yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi - postodi	25.71	8.11	3.06	18.20	33.22	.000
Pair 2	prevas - postvas	5.14	1.46	.55	3.78	6.49	.000
Pair 3	presf36pcs - pstsf36pcs	-16.92	7.45	3.33	-26.18	-7.66	.007
Pair 4	presf36mcs - postsf36mcs	-13.13	9.19	4.11	-24.55	-1.72	.033
Pair 5	prerxPF - pstrxPF	-12.56	4.17	1.86	-17.74	-7.37	.003
Pair 6	prerxRP - pstrxRP	-16.94	12.80	5.72	-32.83	-1.04	.042
Pair 7	prerxBP - pstrxBP	-21.66	9.72	4.34	-33.72	-9.59	.008
Pair 8	prerxGH - pstrxGH	-10.94	8.73	3.90	-21.78	-.09	.049
Pair 9	prerxVt - pstrxVt	-9.92	3.08	1.37	-13.74	-6.09	.002
Pair 10	prerxSF - pstrxSF	-16.46	4.18	1.86	-21.65	-11.26	.001
Pair 11	prerxRE - pstrxRE	-18.54	13.29	5.94	-35.05	-2.02	.036
Pair 12	prerxMH - pstrxMH	-10.20	11.19	5.00	-24.09	3.69	.111

Appendix Table 32a: Showing the frequency distribution of outcome scores (Age group >30yrs)

Paired Outcome scores		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	preodi	46.00	2	11.31	8.00
	postodi	18.00	2	19.79	14.00
Pair 2	prevas	8.66	3	1.15	.66
	postvas	2.00	3	1.00	.57
Pair 3	presf36pcs	27.90	2	.00	.00
	pstsf36pcs	48.10	2	14.14	10.00
Pair 4	presf36mcs	33.55	2	3.74	2.65
	postsf36mcs	48.20	2	15.13	10.70

Appendix Table 32b: Showing the mean difference between the pre and post treatment scores (Age group >30yrs)

Paired Outcome scores		Paired Differences					Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	preodi - postodi	28.00	8.48	6.00	-48.23	104.23	0.13
Pair 2	prevas - postvas	6.66	.57	.33	5.23	8.10	0.002
Pair 3	presf36pcs - pstsf36pcs	-20.20	14.14	10.00	-147.26	106.86	0.29
Pair 4	presf36mcs - postsf36mcs	-14.65	18.87	13.35	-184.27	154.97	0.47
Pair 5	prerxPF - pstrxPF	-18.85	14.77	10.45	-151.62	113.92	0.32
Pair 6	prerxRP - pstrxRP	-17.60	14.99	10.60	-152.28	117.08	0.34
Pair 7	prerxBP - pstrxBP	-25.95	16.47	11.65	-173.97	122.07	0.26
Pair 8	prerxGH - pstrxGH	-12.20	15.98	11.30	-155.78	131.38	0.47
Pair 9	prerxVt - pstrxVt	-20.10	28.42	20.10	-275.49	235.29	0.50
Pair 10	prerxSF - pstrxSF	-19.00	3.81	2.70	-53.30	15.30	0.09
Pair 11	prerxRE - pstrxRE	-10.50	14.84	10.50	-143.91	122.91	0.50
Pair 12	prerxMH - pstrxMH	-20.43	25.69	18.16	-251.25	210.38	0.46

Appendix Table 33a: Showing the frequency distribution of the mean pre treatment scores in unilateral versus bilateral lumbar spondylolysis

	site	N	Mean	Std. Deviation	Std. Error Mean
prevas	unilateral	8	6.87	.83	.29
	bilateral	47	6.57	.99	.14
preodi	unilateral	8	33.25	8.61	3.04
	bilateral	46	38.35	10.78	1.59
presf36pcs	unilateral	8	35.19	4.50	1.59
	bilateral	42	32.31	7.48	1.15
presf36mcs	unilateral	8	45.12	10.91	3.85
	bilateral	42	42.39	7.97	1.23
BPSQ scores	unilateral	8	51.38	17.10	6.04
	bilateral	35	49.23	14.21	2.40

Appendix Table 33b: Frequency distribution of the mean post treatment scores in unilateral versus bilateral lumbar spondylolysis

	site	N	Mean	Std. Deviation	Std. Error Mean
postvas	unilateral	8	.87	1.12	.39
	bilateral	47	.78	1.14	.16
postodi	unilateral	8	3.50	4.37	1.54
	bilateral	46	10.22	14.27	2.10
pstsf36pcs	unilateral	8	54.00	7.57	2.67
	bilateral	42	49.32	8.97	1.38
postsf36mcs	unilateral	8	53.99	9.31	3.29
	bilateral	42	54.52	8.12	1.25

Appendix Table 34a: Correlation statistics detecting a relationship between Pre treatment VAS scores and other variables
(only significant variables are displayed)

Spearman's ρ	Pre Rx VAS	Post Rx VAS	Pre Rx ODI	Post Rx ODI	Pre Rx SF36pcs	Pre Rx SF36mcs	Return to sport	Age	Age @ Surgery	BMI
	Correlation Coefficient	-0.532	0.515	-0.330	0.357	0.348	0.29	0.337	0.32	0.343
	P Value	<0.01	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.05	<0.05

Appendix Table 34b: Correlation statistics detecting a relationship between the Pre treatment VAS scores and individual components of SF 36 scores
(only significant components are displayed)

Spearman's ρ	Pre Rx VAS	Pre Rx BP	Pre Rx GH	Pre Rx RE	Pre Rx MH	Post Rx PF	Post Rx RE	Post Rx MH
	Correlation Coefficient	0.306	0.549	0.365	0.384	0.338	0.301	0.291
	P Value	<0.05	<0.01	<0.01	<0.01	<0.05	<0.05	<0.05

Table 35 a & b: Regression model using types of sports along with other predictor variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.921[a]	.848	.805	6.333

a. Predictors: (Constant), mixed, presf36pcs, MultipleOp, throwing sports, Buck, kicking sports, sportscres, preodi, trunk twisting sports

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	32.811	11.042		2.972	.006
	preodi	.371	.129	.297	2.871	.007
	presf36pcs	-.388	.187	-.203	-2.071	.047
	Buck	-7.228	3.441	-.190	-2.100	.044
	MultipleOp	22.949	7.606	.247	3.017	.005
	sportscres	-.288	.093	-.294	-3.088	.004
	throwing sports	-4.300	6.141	-.078	-.700	.489
	trunk twisting sports	-3.394	5.311	-.111	-.639	.527
	kicking sports	-7.144	5.031	-.238	-1.420	.165
	mixed	-5.103	5.328	-.153	-.958	.345

a. Dependent Variable: postodi