

CONTENTS

CHAPTER NO.	CONTENTS	PAGE NO.
1.0	INTRODUCTION	1
1.1	DEFINITION OF VISUAL IMPAIRMENT	1
1.2	CHILDHOOD VISUAL IMPAIRMENT	2
1.3	PREVALENCE AND BURDEN – GLOBAL	2
1.4	PREVALENCE AND BURDEN – INDIA	3
1.5	IMPACT OF VISUAL IMPAIRMENT IN CHILDREN	3
1.6	YOGA AS A SOLUTION	5
1.7	NEED FOR THE PRESENT STUDY	6
2.0	LITERARY SEARCH FROM ANCIENT SCRIPTURES– The Concept of Childhood Blindness According to Ancient Sciences	7
2.1	INTRODUCTION	7
2.2	AIM	8
2.3	OBJECTIVES	8
2.4	MATERIALS AND METHODS	9
2.5	LITERARY SEARCH OUTCOMES	9
2.5.1	Concept of eyes	9
2.5.2	Importance of eyes	12
2.5.3	Causes of childhood blindness	14
2.5.4	Prevention and management of childhood blindness	24
2.6	CONCLUSION	33
3.0	REVIEW OF SCIENTIFIC RESEARCH	35
3.1	PHYSICAL ACTIVITIES IN CHILDREN WITH VI	35
3.2	PHYSICAL FITNESS IN CHILDREN WITH VI	37
3.2.1	Muscles Strength	37
3.2.1.1	Upper Extremity strength	38
3.2.1.2	Lower Extremity Strength	38
3.2.2	Muscle Endurance	38
3.2.3	Coordination	39
3.2.4	Motor Fitness	39
3.2.5	Balance	39
3.2.6	Respiratory Function	40
3.3	PSYCHOLOGICAL HEALTH ON CHILDREN WITH VI	40
3.3.1	Depression and Anxiety	40
3.3.2	Self Esteem	41
3.3.3	Working Memory	41
3.4	INTERVENTIONAL STUDIES ON CHILDREN WITH VI	41
3.5	YOGA FOR CHILDREN	47
3.5.1	Yoga for Physical Fitness In Normal Sighted Children	47
3.5.2	Yoga for Psychological Health in Normal Sighted Children	53
3.6	YOGA FOR CHILDREN WITH SPECIFIC DISEASES	56

3.7	YOGA FOR DIFFERENTLY ABLED CHILDREN	59
3.8	YOGA FOR CHILDREN WITH VISUAL IMPAIRMENT	61
3.9	SCOPE OF THE STUDY	63
4.0	AIM AND OBJECTIVES	64
4.1	AIM	64
4.2	OBJECTIVES	64
4.3	RESEARCH QUESTIONS	65
4.4	RESEARCH HYPOTHESES	65
4.5	NULL HYPOTHESIS	65
4.6	RATIONALE OF THE STUDY	66
5.0	MATERIALS & METHODS	67
5.1	PARTICIPANTS	67
5.1.1	Sample size	67
5.1.2	Inclusion Criteria	67
5.1.3	Exclusion criteria	68
5.1.4	Source	68
5.1.5	Ethical clearance and informed consent	68
5.2	DESIGN	68
5.2.1	Blinding And Masking	69
5.3	INTERVENTION	69
5.3.1	Mode of Teaching Yoga	69
5.3.1.1	Children's Preferred Mode of Learning	71
5.4	Development, validation and Feasibility of the Yoga module	72
5.4.1	Developing a yoga module	72
5.4.2	Validation of the yoga module	72
5.4.3	Feasibility of the study	73
5.5	ASSESSMENTS	81
5.5.1	Physical parameters	81
5.5.1.1	Muscles Strength	82
5.5.1.1.1	Upper Extremity strength	82
5.5.1.1.2	Lower Extremity Strength	83
5.5.1.1.3	Minimum Muscular Fitness	84
5.5.1.2	Muscle Endurance	85
5.5.1.3	Flexibility	85
5.5.1.4	Hand Coordination	86
5.5.1.5	Motor Fitness	86
5.5.1.6	Balance	87
5.5.1.7	Lung Capacity	87
5.5.2	Psychological parameters	88
5.5.2.1	Depression and Anxiety	88
5.5.2.2	Self Esteem	90
5.5.2.3	Working Memory	90
5.5.2.4	Mental Wellbeing	91
6.0	DATA EXTRACTION	94
6.1	DATA COLLECTION	94
6.1.1	Details of the Data Extraction Organisational Procedure	95
6.2	DATA SCORING	97
6.3	DATA ANALYSIS	97

7.0	RESULTS	98
7.1	SOCIO-DEMOGRAPHIC CHARACTERISTICS	99
7.2	PREFERRED MODE OF LEARNING	100
7.3	VALIDATION OF THE YOGA MODULE	101
7.3.1	Feasibility of the Yoga Module	102
7.3.1.1	Participants	102
7.3.1.2	Outcome measures	102
7.3.1.3	Exit survey results	103
7.4	OUTCOME MEASURES	103
7.4.1	Physical Fitness	103
7.4.1.1	Muscles Strength	103
7.4.1.1.1	Upper extremity muscle strength	103
7.4.1.1.2	Lower extremity muscle strength	107
7.4.1.1.3	Minimum Muscular Fitness Test	109
7.4.1.2	Muscle Endurance	111
7.4.1.3	Flexibility	112
7.4.1.4	Hand Coordination	113
7.4.1.5	Motor Fitness	114
7.4.1.6	Balance	115
7.4.1.6.1	Static Balance	115
7.4.1.6.2	Dynamic Balance	117
7.4.2	PSYCHOLOGICAL MEASURES	120
7.4.2.1	Depression	120
7.4.2.2	Anxiety	123
7.4.2.3	Self Esteem	124
7.4.2.4	Working Memory	125
7.4.2.5	Mental Wellbeing	127
8.0	DISCUSSION	130
8.1	PREFERRED MODE OF LEARNING YOGA AMONG FIVE STEPS	130
8.2	VALIDATION AND FEASIBILITY OF THE YOGA MODULE	132
8.3	PHYSICAL FITNESS OUTCOMES	133
8.3.1	Muscle Strength	133
8.3.2	Muscle Endurance	138
8.3.3	Flexibility	139
8.3.4	Motor Speed	141
8.3.5	Coordination	142
8.3.6	Balance	143
8.3.7	Respiratory Function	146
8.4	PSYCHOLOGICAL TESTS	146
8.4.1	Depression and Anxiety	146
8.4.2	Self Esteem	147
8.4.3	Verbal Memory	147
8.4.4	Mental Wellbeing	148
9.0	APPASIAL	150
9.1	SUMMARY OF THE FINDINGS	150
9.2	CONCLUSION	150
9.3	OBSERVATIONS	151

9.4	STRENGTH OF THE STUDY	152
9.5	DELIMITATIONS	153
9.6	LIMITATION OF THE STUDY	153
9.7	SUGGESTIONS FOR FUTURE RESEARCH	154
9.8	IMPLICATIONS OF THE STUDY	155
	REFERENCES	156-170
	APPENDECES	171
1	INFORMED CONSENT	171
2	SCORING SHEET	173
3	DEMOGRAPHIC SHEET	175
4	QUESTIONNAIRES	176-190
5	LIST OF PRACTICES	191-196
6	RAW DATA	197-230
7	IMAGES OF PAPER CUT OUT MODELS, DATA COLLECTION, INTERVENTION	231
8	PUBLICATIONS FROM THIS DOCTORAL WORK	232

LIST OF TABLES

SL. NO.	TITLE	Chapter/ Page No.
1	Table 2.5.4.A: The monthly dietary regimen described by scriptures	2/27
2	Table 2.5.4.B: Foods that a Gravida should avoid	2/28
3	Table 2.5.4C: Substances harmful for the Foetus	2/30
4	Table 3.4: Interventional studies on Physical and Psychological variables in Children with VI	3/44
5	Table 3.5.1: Yoga studies on Physical variables in normal sighted children	3/50
6	Table 3.5.2: Yoga For Psychological Health In Normal Sighted Children	3/55
7	Table 3.6: Yoga for Physical & Psychological Health of Specific Diseased Children	3/57
8	Table 3.7: Yoga for differently abled children	3/60
9	Table 3.8: Yoga for children with visually impaired	3/62
10	Table 5.4.1: Specific needs of visually impaired children and their remedies through yoga	5/75
11	Table 5.4.1.1: References to yoga practices in classical and modern yoga texts	5/78
12	Table 5.4.2: List of yoga practices	5/80
13	Table 5.5: List of variables are used in this study	5/93
14	Table 7.1 Socio-Demographic Data	7/99
15	Table 7.2 Students' preferred instructional strategies	7/100
16	Table 7.4.1.1.1: Result of upper extremity muscle strength	7/105
17	Table 7.4.1.1.2: Results of Knee strength	7/108
18	Table 7.4.1.1.3 Results of Kraus-Weber test	7/110
19	Table 7.4.1.2: Results of Muscle endurance test	7/111
20	Table 7.4.1.3: Results of Flexibility test	7/112
21	Table 7.4.1.4: Results of Hand coordination	7/113
22	Table 7.4.1.5: Results of Finger Tapping test	7/114
23	Table 7.4.1.6.1: Result of static balance	7/116
24	Table: 7.4.1.6.2: Result of dynamic balance	7/118
25	Table 7.4.2.1: Result of total, sub-scale and each domain of CDI	7/121
26	Table 7.4.2.2: Results of State Trait Anxiety Inventory	7/123
27	Table 7.4.2.3: Result of Self Esteem	7/124
28	Table 7.4.2.4: Result of N Back Test	7/126
29	Table 7.4.2.5: Result of General Health Questionnaire in both groups	7/128

LIST OF FIGURES		
SL. NO.	TITLE	Chapter/ Page No.
1	Figure 2.6: conceptual Model of childhood blindness	2/34
2	Figure 3.1: Impact of physical activities on various aspects of life	3/36
3	Figure 3.2: Impact of low physical activities on children with visual impairment	3/46
4	Figure 5.4.2: The process of validation of the yoga module	5/79
	Figure 6.1.1: Detail of data taking procedure	6/96
5	Figure 7.0 Trial profile of the study	7/98
	Figure 7.2: Percentage of Student's preferred instructional strategies	7/101
6	Figure 7.4.1.1.1A: Pre-Post Changes in Hand Grip Strength scores	7/106
7	Figure 7.4.1.1.1B: Pre-Post Changes in Pinch Strength scores	7/106
8	Figure 7.4.1.1.1C: Pre-Post Changes in Elbow Extension scores	7/107
9	Figure 7.4.1.1.1D: Pre-Post Changes in Elbow Flexion scores	7/107
10	Figure 7.4.1.1.2A Pre-Post Changes in Knee Extension scores	7/109
11	Figure 7.4.1.1.2B Pre-Post Changes in Knee Flexion scores	7/109
12	Figure 7.4.1.1.3 Pre-Post Changes in Kraus Weber test	7/110
13	Figure 7.4.1.2: Pre-Post Changes in Sit-Up test	7/111
14	Figure 7.4.1.3: Pre-Post Changes in flexibility	7/112
15	Figure 7.4.1.4: Pre-Post Changes in hand coordination	7/113
16	Figure 7.4.1.5: Pre-Post Changes in the scores of Finger Tapping Test	7/115
17	Figure 7.4.1.6.1: Pre-Post Changes in static balance	7/116
18	Figure 7.4.1.6.2A: Pre-Post Changes in lateral movements	7/119
19	Figure 7.4.1.6.2B: Pre-Post Changes in Lateral Regions	7/119
20	Figure 7.4.2.1A: Pre-Post Changes in total CDI score	7/122
21	Figure 7.4.2.1B: Pre-Post Changes in CDI sub group scores	7/122
22	Figure 7.4.2.2: Pre-Post Changes in STAI scores	7/124
23	Figure 7.4.2.3: Pre-Post Changes in Self Esteem score	7/125
24	Figure 7.4.2.4A: Pre-Post Changes in N Back-Hit score	7/127
25	Figure 7.4.2.4B: Pre-Post Changes in N Back-Missed score	7/127
26	Figure 7.4.2.5A: Pre-Post Changes in General Health Questionnaire score	7/129
27	Figure 7.4.2.5B: Pre-Post Changes in sub scale of GHQ score	7/129
28	Figure 8.1.1: Mechanism by which yoga may improve musculoskeletal system problems	8/141
29	Figure 8.1.6: Mechanism of yoga in improving balance	8/145
30	Figure 8.4: Mechanism of yoga in improving psychological health	8/149