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The Improvement of Perceptual Ability for Educable Mentally Retarded Children Through the Use of Gymnastics

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THE IMPROVEMENT OF PERCEPTUAL ABILITY FOR EDUCABLE MENTALLY RETARDED CHILDREN THROUGH THE USE OF GYMNASTICS

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TABLE OF CONTENTS

CHAPTER		PAGE
I.	THE PROBLEM	1
	Statement of the problem	1
	Definition of Terms	2
	Limitations	3
II.	REVIEW OF THE LITERATURE	4
	Perception	4
	Gymnastics	7
III.	PROCEDURES	14
	Testing	14
	Procedures for Classroom Program	15
	Definition of Terms used	18
	Results of the Tests	21
	Conclusions	27
	Recommendations	30
	Summary	30
BIBLIOGRAPHY		32

LIST OF TABLES

TABLE		PAGE
I.	SRA MENTAL ABILITIES.	22
II.	CALIFORNIA ACHIEVEMENT TESTS, UPPER PRIMARY . .	23
III.	WASHINGTON PHYSICAL FITNESS TEST.	25
IV.	GYMNASICS.	28

CHAPTER I

I. THE PROBLEM

Statement of the problem. According to Frostig, Gettman, Jersild and others (4:14-16) perception is the key to learning. This paper was an attempt to show the relationship between gymnastics and perceptual behavior, with mentally retarded children. It was decided to experiment in gymnastics because according to Nisson and others (11:1-3) gymnastics had a positive effect on perceptual development with mentally retarded boys and girls. Delacto (2:140-141) also felt there was a positive effect on the mentally retarded in the area of perception when he used gymnastics. After much extensive research of the literature it was decided to experiment in the area of gymnastics to see if there was any relationship between gymnastics and perceptual behavior.

The researcher reviewed the literature to explore the areas of perception and gymnastics. Then he took a course at Central Washington State College in gymnastics in order to learn techniques in gymnastics. The researcher also explored the literature to find out what perception was and

how perceptive techniques could be used with the mentally retarded. He then selected techniques based on his study that could be used with mentally retarded youngsters in Selah, Washington. Sixteen youngsters were studied. A battery of tests were administered, prior to the experiment and then again at the conclusion of the experiment. These tests were used to measure perceptive achievement.

The rest of this chapter deals with definition of terms, limitations of the study and a short statement on what will follow.

II. DEFINITIONS OF TERMS

Perception. Perception is a sensory experience which has gained meaning or significance. (2:10-12)

Gymnastics. Gymnastics is body exercises designed to develop dexterity, strength and body control. (3:3)

Mentally retarded. Mentally retarded is an individual who is unable to achieve in an acceptable manner, socially, vocationally or academically. There is no agreement on mental retardation but it has been defined as above. (9:158-60)

III. LIMITATIONS

This study was limited to a class of mentally retarded youngsters ages eight to sixteen in Selah, Washington. Within the class itself no control group was allowed to operate. This was done because the administration and researcher felt that if any youngsters were left out negative feelings might be aroused. It was also felt that there would be difficulty in relations with parents if a control group had been established within the group being studied.

Many of the activities in the gymnastic program were deleted, because they were not consistent with psychological behavior of mentally retarded youngsters. For instance, many of the activities were deleted because these youngsters had great fear of the activity. This was true of activities involved with height and extreme danger. The trampoline and the still ring were deleted because they were unavailable.

Chapter two dealt with an analysis of the related literature. Chapter three dealt with the procedures used with the children. Chapter four dealt with the results and conclusions.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter was written to review the literature on perception and gymnastics. This was also done to show the importance of the two concepts--perception and gymnastics. This was done so that the researcher could plan a program, if possible, around these two ideas--perception and gymnastics.

I. PERCEPTION

Without perception the survival of man would be impossible. Perception is one of the major functions of man. Without perception, all but the simplest body functions, such as breathing and elimination would cease, and man would cease to exist.

Perception training for the special education students or the mentally retarded is of the utmost importance, because it is in this field that they are the most deficient. (5:3)

Visual-motor coordination is of the utmost importance because without this ability the child would find it impossible to achieve even the simplest of tasks. Visual perception is involved in nearly action we do. We use it when we dress,

eat, walk, or recognize an object by looking at it. (4:16)

Visual-motor coordination is not the only ability involved in everyday activities. Space perception and planning motor sequences are also involved, but the tasks involved would be almost impossible without the needed motor-visual coordination. (4:16)

The child with a visual-motor handicap will find it very difficult when trying to adjust to the everyday demands of his environment. He may be unable to feed himself, or to do the simplest household chores without awkwardness or complete inability to accomplish these tasks; he will be unable to match the rest of the children in sports and games; he will be unable to keep up with his fellows in school work, he will have an exceedingly difficult time with cutting, pasting, drawing and writing. (4:17)

The child with visual-motor handicaps is not only at a loss in practical tasks, he is also likely to become disturbed because he cannot meet the expectations of his peers, parents, and teachers. His relationship with adults will be less than congenial. (5:5)

Training in motor coordination should be started in nursery school and continued into the grade schools. The

child should become familiar with exercises involving the whole body. He should also become acquainted with exercises that develop eye-hand coordination. (5:5)

Motor training should involve, in the nursery and lower grades, exercises that involve (1) skills involving the vision and arms and hands, (2) develop skills in the use of the lower limbs, (3) strength building exercises that develop strength and flexability of the trunk. (4:17-22)

The above provides the training needed for every muscle group and involves the coordination of the vision and muscle structure. Eye movement training is also needed to develop perception skills. The ability to move the eyes without moving the head or losing focus is essential in reading skills. (5:6)

The child should be able to focus his eyes while his head is moving, as in sports. He should develop skills in focusing the eyes with the head held stationary, this will enable him to be a better reader. He should also be able to follow an irregular movement with his eyes. (4:18-21)

The child should develop skills in gross motor coordination, (1) practice in regaining an upright position, (2) locomotor exercises, (3) imaginative games. This type of activity will offer variation in total muscular system. (4:21-22)

Fine motor skills should be developed. Cutting and pasting, cutting a fringe off a piece of paper, cutting figures from a paper; sometimes it is necessary to develop strength in the hands and wrists before these skills can be developed. (4:26-28)

Training of eye movement, gross motor skills, fine motor coordination, and visual-motor development are necessary before academic exercises can become meaningful for the special education student.

The above showed some of the philosophy and need for training in visual perception.

II. GYMNASTICS

Most children according to Kephart are able to do the forward roll by the time they reach kindergarten age. (8:60-61) It was noticed by the researcher that three out of sixteen, in his special education class of mentally retarded students, could do the forward roll. According to Johnson (7:263-264) and Ingram most mentally retarded students have problems with coordination. (6:68-71) In order to find out whether mentally retarded youngsters would respond to instructions in gymnastics, the author reviewed the literature on the components of gymnastics program. He found the following:

Tumbling

Forward roll. The student got down on hands and knees. Placed head between knees. Kicked forward with feet and rolled over. The students who were unable to perform were assisted by student helpers. (3:1-81)

Backward roll. Student assumed a sitting position, clasped arms around knees and rolled backwards.

Reverse push-up. Student lay on the floor on his back. Placed hands under shoulders and arched body upwards. Each student was encouraged to try to walk in this position.

Cartwheel. Student stood with hands extended over his head. Threw body forward until hands were on the floor and kick upwards with legs and lower body. Completed turn and landed on feet.

Forward flip. Student stood with hands over head. Threw hands and head forward until hands were on floor. Kicked up with feet and turned over, landing on feet in a crouching position. This exercise was performed with a training belt until student was capable of performing the exercise unaided. The student was not allowed to perform this exercise without a spotter.

Headstand on rolled mat. Student ran forward, bent over, placing head on mat, supported by hands on each side of head. Stood on head and kicked over with feet, landing on feet in an upright position. This movement was performed with a spotter on each side of the student.

Tumbling by pairs. One student lay flat on the floor with hands extended behind his head. The other student, stood on the lower students hands, leaned forward and grasped up-raised ankles of lower student. Threw body backwards, pulling on lower students legs. Continued in rolling motion, length of tumbling mat.

Forward roll. Forward flip and concluding movement in a reverse push-up. Same movements as indicated above.

Vaulting: Swedish vaulting box. (1) Students run forward, place both hands on box and vault over outside of hands: right and left side. (2) Students run forward, place hands on box and double up body and vault through hands. Students do head stand on box, kick over with feet and land standing. These exercises were conducted with spotters on each side of the box.

Side horse. As this was standard equipment, most of the children were unable to perform on this as it was too

high. Those that could, were only able to grasp handles and vault up with feet on outside of hands and then dismount. I would not let them try any of the more difficult movements.

Balance beam: Low. The balance beam was constructed from a 2 x 8 board turned edgeways. The upper edge was about twelve inches from the floor. The beam was in two parts, each eight feet long. The student was required to walk forward and backward on the beam, barefooted, eyes fixed on an object on a spot on the wall. Spotters walked on each side of the student at all times.

Parallel bars. Students were required to be able to transverse length of the bars, stiff armed and feet off the floor. The students were required to hop the length of the bar without moving one hand ahead of the other. Students were required to suspend themselves stiff armed, dip down and then up. Various activities were performed, side dismounts, forward rolls, and backward rolls. Stand on shoulders. Four students, due to body build, could not perform on the bars. Their bodies were too large for arm strength to support, suspended.

Uneven bars. Students were required to perform various activities on the unevens. (Uneven bars are parallel bars

with one side raised higher than the other side). Thirteen of the sixteen students were unable to work on this equipment, due to fear of height and hanging head down.

High bar. The students were required to jump up, catch the bar, pull up to a stiff arm position with bar across the pelvic region, push backward and dismount. Skin the cat: Students jumped up, caught bar, and pulled legs through arms, and then back again.

Pinwheel. Students jumped up, pulled themselves to a sitting position, astraddle of the bar, clasped feet together, grasped bar with both hands in front of body and threw sideways. Made a complete turn and ending in a sitting position. Most of the students became very good at this and would revolve around the bar several times and then reverse the movement.

Struggle up. Student jumped up, caught bar, and then pulled themselves up. This is a very difficult exercise. Three students could achieve this exercise.

Forward turn. The students jump up and catch bar, assume stiff arm position with bar across pelvic region. Throw head and upper body forward kicking upward with legs, make a complete turn, coming back in original position.

Still rings. Not available.

Trampoline. A substitution was made for this instrument. A piece of plywood, five-eighths by four by eight, was suspended on a framework about fourteen inches from the floor. Students were required to turn their bodies one-fourth turn and land in circle. Students were required to fix eyes on a spot on the wall and come down in the circle as they bounced. Sentences and individual words were placed on a chalkboard and students were required to read as they bounced. (11:1-4)

Students were required to crawl on their stomachs on lines on the gym floor. (2:8-40) Crawl around objects, crawl forward and backward. These movements were also performed on their hands and knees.

Balance on lines. Swaying body in time to slow music.

Walk on lines. Heel to toe, forward and back.

Miniature trampoline. Most students could run and jump from this device. They were required to hit a spot with one foot, right and left, and spring into air, landing upright. Two of the students, with aid of the tumbling belt were able to somersault.

Team tumbling. Four students would do head rolls, roll to standing position, do forward flip and turn into reverse push up, come to standing position and forward roll to end of mat. Position would be maintained at all times.

Pyramids. Three students would stand on floor, two students would climb up and stand on thighs of lower students, one student would climb up and stand on thighs of second pair of students.

Diving. One student would lay on the floor, rest of the students would line up and dive over him. The first student over, would then lay down beside him and process was repeated until at least five students lay on the floor. Students were required to dive over, do a forward roll and come to a standing position.

CHAPTER III

PROCEDURES

This chapter showed how a testing program was developed and how a program of gymnastics was developed in a class of mentally retarded and educable retarded students in Selah, Washington. This study commenced in October, 1966, and ended in May, 1967.

TESTING

Sixteen of the youngsters in the above mentioned class were given the Washington State Physical Fitness Test for Junior and Senior High School Boys and Girls. Next the SRA Primary Mental Abilities Test was administered. This test was chosen because it included a section on visual perception. The California Achievement Test, Upper Primary, was also given. This test was given on the recommendation of the administration. This test was administered orally because most of the youngsters could not read the test. Post tests were also used in each of the above mentioned areas.

PROCEDURES FOR CLASSROOM PROGRAM

Assistants. In order to carry out a program in gymnastics for a class of mentally retarded and educable retarded children, it was strongly recommended by Oliver and others (12:27) that several persons should be used to conduct a program of gymnastics. For this reason, assistance was sought. A girls' physical education teacher became interested in the program and selected five girls to help with the project in gymnastics. This was done to help the girls and the mentally retarded and educable retarded children. Two of them were social problems, but all the girls were excellent, according to the physical education teacher, in gymnastic skills.

Division of class. The class was divided into groups of four, on a chance basis. Shepherd and Cunningham (13:40-72) recommend groups in physical education of no more than eight. Eight is considered by these people as the maximum number desired for group work. Many physical education people feel this is too large, hence the group size of four was used.

Activities. Each group of four was in charge of one of the five assistants. The fifth assistant was a floater.

Each group of children rotated from station to station. A station was a point at which some physical apparatus or physical activity was located.

The researcher supervised where needed, evaluated the children's progress and the performance of the assistants. He also oversaw movement of the youngsters from station to station and activity to activity.

Activities. The activities selected were in accordance with the literature in chapter two. Classes were held for fifty-five minutes.

A typical class started with push-ups for two minutes, splits for two minutes, floor-touch for two minutes, jumping-jacks for two minutes and Burpee's for two minutes. These activities just mentioned were warm-up activities suggested as essential to the gymnastics which followed. (3:1-8)

One station had vaulting, second station tumbling, third station parrallel bars, the fourth station had weight lifting. Instruction was given at each station by the assistants. Each student went to each station, each class period. This was done to keep interest up and was in accordance with attention levels of mentally retarded and educable retarded children. (1:192-197)

Another typical class would consist of warm-ups, ten minutes on balance beam, ten minutes on high bars, ten minutes on pyramid building, and ten minutes on the sidehorse.

These two typical class periods alternated to keep up interest, and yet many of the activities were related. Vaulting and sidehorse, tumbling and pyramid building, parallel bars and high bars, and weight lifting and body building.

Evaluative techniques. Because these students had so many problems, attitudinal, physical, mental and emotional, it was difficult to arrive at some simple system of evaluation. Improvement on a specific task or skill was considered to be one of the best criteria for evaluation according to Frostig. (4:17-22) Attitudes, positive and negative, were also considered another essential characteristic of evaluation for disturbed youngsters. (10:109-172) Hence, a simpler scale of 1-5 D was achieved list to evaluate the youngsters on improvement of a skill and the same was used on improved attitudes.

DEFINITIONS OF TERMS USED

Chin-ups. On a chinning bar the subject jumps and grasps the bar, bends his elbows and pulls himself up until his chin is above the bar. He then lowers himself to a hanging position with the arms completely straight at the elbows. This is repeated as many times as possible.

Dips. The subject jumps or is assisted to an arm support position on the dip or parallel bars. He then lowers himself between the bars until the angle of the arm at the elbow joint is equal to or less than a right angle, then he pushes up to extended arm support position. This is repeated as many times as possible.

Jump-reach. The subject stands facing the wall and as close to it as possible keeping the feet together and flat on the floor. He then reaches upward with both hands as far as possible. A chalk mark is made at the maximum reach at the tip of the fingers for each hand and a line is drawn between these two points. The subject then stands with either side to the wall. Chalk dust is placed on middle finger of hand nearest wall. The subject then bends the knees and ankles, assuming a semi-crouch position with the arms swung backward.

Then, swinging the arms forward and upward and extending the legs and ankles, he jumps as high as possible touching the board at the maximum height of jump.

Squat-thrust. The subject stands erect with feet close together and hands at sides, then the subject moves to a squat position with hands on the floor just outside feet, and arms straight, he then moves to a front-leaning rest position, next he returns to the squat position and then returns to an erect standing position.

Floor-touch. The subject stands erect with his feet together and his knees locked, keeping both legs straight. He then bends forward from the hips and places his finger tips on the floor. He must hold this position for three full seconds.

Fingers-behind-the-back-touch-right-hand. The subject stands erect and places his right hand over his right shoulder and down his back, palm of hand toward his body, the left hand he places in the small of his back and moves it upward until the fingers of right and left hands are touching. This position he must hold for three full seconds.

Fingers-behind-the-back-touch-left-hand. This movement is the same as for the right hand except the position of the hands is reversed.

Curl-ups. The subject lies on his back with head and shoulders touching the floor, arms crossed in front of body, hands over shoulders, knees bent so that the feet are flat on the floor with the heels close to the seat. With the feet held flat, he comes to a sitting position touching elbows to knees. Then returns to starting position. This movement is repeated as many times as possible up to fifty.

Pull-ups. The subject lies flat on floor and grasps the bar or wand with hands using either grip, palms forward, or palms back, keeping a straight line from heels to head, the subject pulls upward until his chest touches the bar, then returns to a reclining position. This is repeated as many times as possible.

This chapter showed the testing procedures and the methods of conducting research with a group of emotionally disturbed and mentally retarded youngsters. The testing procedures and tests used were discussed and the activities used in the gymnastics program were also described. Personnel and selection procedures were also described. The last chapter will deal with the results, summary, and conclusions of this study.

RESULTS OF THE TESTS

The results of the pre-tests and post-tests on the SRA Test of Mental Abilities showed a mean increase of 25.2 on the word and picture section, a 2.5 mean increase on the space section, in picture grouping there was a 8.0 increase on the mean scores, on the test in perception 16.8 increase in the mean score. On the number test there was 7.6 increase in the mean scores. (See Table I) No losses were shown in the word and picture section. There were three youngsters who failed to make increases on the spatial test section. In the picture grouping test again three youngsters failed to make gains, but these losses were not made by the same students who encountered losses on the in space relationships. In the perception section all youngsters made gains, and on the section on numbers only one student lost ground.

On the California Achievement Tests which were administered in the Fall and then again in the Spring, all but one youngster made gains. That one student showed no growth, but he also showed no losses. The language areas showed the greatest gains in mean scores; the next greatest gains were in the reading area and the last in arithmetic. (See Table II) The

TABLE I: SRA MENTAL ABILITIES

Number	Words & Pictures			Space			Picture Grouping & Word Grouping			Perception			Numbers		
	pre	post	gain	pre	post	gain	pre	post	gain	pre	post	gain	pre	post	gain
1	20	53	33	9	14	5	13	27	14	0	3	3	0	12	12
2	24	50	26	10	11	1	25	24	-1	3	24	21	0	15	15
3	12	34	22	13	18	5	28	29	1	14	25	11	28	31	3
4	22	35	13	9	15	6	19	24	5	8	27	19	1	0	-1
5	17	39	22	9	13	4	21	26	5	6	22	14	0	19	19
6	23	39	16	7	12	5	20	24	4	7	15	8	22	22	0
7	28	56	28	19	23	4	26	39	13	25	48	23	33	33	0
8	31	52	21	15	19	4	37	36	-1	20	43	23	26	31	5
9															
10	21	46	25	15	20	5	25	36	11	16	40	24	30	38	8
11	3	26	23	10	9	-1	11	27	16	1	16	15	0	0	0
12	30	54	24	17	16	-1	27	32	5	16	35	19	24	30	6
13	8	49	41	12	17	5	10	34	24	1	14	13	11	25	14
14	25	38	13	19	20	1	24	33	9	14	38	24	24	32	8
15	23	52	29	20	18	-2	30	39	9	10	35	25	33	44	11
16	5	47	42	29	33	4	16	19	3	13	24	11	20	31	11
Total Gains			378			45			120			253			111
Mean Gains			25.2			2.8			8.0			16.8			7.6

TABLE II:CALIFORNIA ACHIEVEMENT TESTS, UPPER PRIMARY

Number	Reading			Arithmetic			Language			Battery		
	pre test	post test	gain	pre test	post test	gain	pre test	post test	gain	pre test	post test	gain
1	1.5	2.8	1.3	1.0	3.6	2.6	1.6	1.0	0.4	1.2	3.2	2.0
2	2.8	4.1	1.3	1.9	3.2	1.3	1.0	3.7	2.7	1.9	3.5	1.6
3	2.2	2.3	0.1	3.0	3/4	0.4	0.0	0.0	0.0	2.5	2.7	0.2
4	1.8	3.4	1.6	2.1	2.7	0.6	1.9	1.0	0.1	1.9	2.7	0.8
5	3.0	3.8	0.8	2.0	4.2	2.2	1.3	2.9	1.6	2.1	3.5	1.4
6	3.5	3.9	0.4	4.6	4.7	0.1	2.5	3.3	-.2	5.0	5.0	0.0
7	2.8	4.0	1.2	4.0	4.2	0.2	1.5	4.0	2.5	3.3	4.1	0.8
8	2.3	3.6	1.3	3.7	4.6	0.9	1.8	3.7	1.9	3.0	4.1	1.1
9												
10	2.5	4.1	1.6	3.0	3.6	0.6	1.4	2.5	1.1	2.7	3.5	0.8
11	3.4	4.4	1.0	1.8	2.1	0.3	2.7	3.7	1.3	2.5	3.1	0.6
12	3.4	3.9	0.5	3.6	3.9	0.3	3.0	4.3	0.6	3.8	4.0	0.2
13	3.4	4.1	0.7	3.2	3.2	0.0	3.2	3.6	0.4	3.2	3.5	0.3
14	2.7	4.1	1.4	2.9	4.5	1.6	2.2	4.0	1.8	2.8	4.3	1.5
15	3.9	3.9	0.0	4.3	4.7	0.4	2.6	4.3	0.3	3.8	4.4	0.1
16	3.2	3.7	0.5	3.7	4.1	0.4	3.2	2.9	-.3	3.4	3.5	0.1
Total Gain			13.7			11.9			14.2			11.5
Mean Gain			.85			.79			.98			.76

mean total gain was .76 grade levels. In all of the above, test results were shown on 15 subjects only. One subject broke her arm just after the program was initiated.

On The Washington State Physical Fitness test all of the students participating in the tests made gains. There were gains in chin-dips, jump-reach, squat-thrust, floor touch, finger behind back right and left, agility run, curl-ups and pull-ups. No distinction was made in the Washington State Physical Fitness Tests between boys and girls. The tests used were the boys' tests. The mean gain in the chins was 8.6. The mean gain on the dips was 6.2. The mean gain on the jump-reach was 4 inches. The mean gain on squat-thrust was 7.6. The mean gain on the curl-ups was 29.4 and there was a mean gain of 6.5 on the pull-ups. All youngsters showed gains in the floor touch. On the fingers behind the back left side all subjects but one showed improvement. On the same test using the right fingers all youngsters but two passed the past test. One of these youngsters had a deformed right arm. All but two youngsters passed the agility test on the post test. Five failed the pre-test. (See Table III)

On the forward roll 12 failed the pre-test and there were no failures on the post-test. On the backward roll 13

TABLE III: WASHINGTON PHYSICAL FITNESS TEST

Mean Gain	Strengths									Agility			Flexibility									Agility								
	Chins			Dips			Jump Reach (inches)			Squat Thrust			Floor Touch			Fingers Behind Back Left			Fingers Behind Back Right			Run			Curl Ups			Pull Ups		
	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga	Pr	Po	Ga
1	5	12	7	3	11	8	10	12	2	26	36	10	P	P	P	P	P	P	P	P	P	P	P	P	20	50	30	3	9	6
2	5	8	3	1	6	5	8½	14	6	16	28	12	P	P	P	P	P	P	F	P	P	F	P	P	10	50	40	3	12	9
3	0	5	5	1	7	6	8½	12½	4	23	31	8	P	P	P	P	P	P	P	P	P	P	P	P	12	28	16	7	13	6
4	0	4	4	0	6	6	5½	8½	3	26	31	5	P	P	P	F	P	P	F	F	F	refused 0	0	0	10	50	40	0	4	4
5	0	1	1	0	0	0	4½	6½	2	5	22	7	P	P	P	F	F	F	F	F	F	F	F	F	7	37	30	2	4	2
6	2	5	3	0	2	2	9	14	5	8	23	5	F	P	P	F	P	P	F	P	P	P	P	P	0	15	15	0	4	4
7	15	30	15	16	31	15	14	16½	2½	30	31	1	P	P	P	P	P	P	P	P	P	P	P	P	20	51	31	8	20	12
8	0	15	15	0	12	12	12½	16	4½	23	31	8	F	P	P	F	P	P	F	P	P	F	P	P	10	50	41	1	7	6
9	B	R	O	K	E	N	—	A	R	M																				
10	9	15	6	4	12	8	12½	17½	5	20	28	8	P	P	P	P	P	P	P	P	P	P	P	P	8	20	12	4	7	3
11	4	7	3	0	3	3	4½	8	3½	22	31	9	R	P	P	F	P	P	F	P	P	F	F	F	8	20	12	2	6	4
12	9	13	4	3	8	5	11½	14	3½	26	34	8	P	P	P	P	P	P	F	P	P	P	P	P	10	50	40	2	7	5
13	9	45	36	4	9	5	12½	15	3½	19	30	11	P	P	P	P	P	P	P	P	P	P	P	P	15	50	35	3	12	9
14	0	12	12	0	10	10	55	10	4½	16	30	14	F	P	P	F	P	P	F	P	P	F	P	P	12	50	38	5	20	15
15	15	25	10	15	20	5	9½	16	7½	27	31	4	P	P	P	P	P	P	P	P	P	P	P	P	15	50	35	8	14	6
16	2	8	6	3	7	4	9	12	3	19	25	6	P	P	P	P	P	P	P	P	P	P	P	P	10	40	30	3	10	7

P = Pass
*Pr= Pre-test
Po = Post test
Ga = Gain
F = Fail

failed the pre-test and there were no failures on the post-test. On the cartwheel ten failed the pre-test and ten failed the post-test. On the forward flip 12 failed the pre-test and ten failed the post-test. On the headstand and Pike on roll mat there were 11 failures on the pre-test and no failures on the post-test. In tumbling by pairs, 15 failed the pre-test and three failed the post-test. On vaulting the Swedish Box there were 11 failures on the pre-test and two failures on the post-test. On side horse, vaulting only, 12 failed the pre-test and 13 failed the post-test. On the low balance beam there were 15 failures on the pre-test and no failures on the post-test. On the high balance beam there were 15 failures on the pre-test and two failures on the post-tests. On parallel bars there were 11 failureson the pre-test and four failures on the post-test. On uneven bars there were 12 failures on the pre-test and 11 failureson the post-tests.

On the high bars there were 15 failures on the pre-test and four failures on the post-test. On the pinwheel on the highbars 15 failures were recorded on the pre-test and only four on the post-test. On the struggle up on the high bar there were 15 failures on the pre-test and four failures on the post-tests. On the forward turn there were 15 failures

on the pre-test and four failures on the post-test. On team tumbling there were 15 failures on the pre-test and six failures on the post-test. On the pyramids there were 15 failures on the pre-test and no failures on the post-test. On the diving tests there were 15 failures on the pre-test and ten failures on the post-test.

The greatest number of failures on the post-test was on the side horse. There were 13 failures on this activity. There were 12 failures in the pre-test in this area. The greatest gains appeared on the low balance beam and in building pyramids. The next greatest gain was in the forward roll. The area showing the least gain was in the activities involving the cartwheel. The uneven bars also showed little gain. (See Table IV)

CONCLUSIONS

It would appear that this group did improve in the areas of mental abilities as tested by SRA. The greatest gains were made in Words and Pictures and in the areas of general perception. Whether these gains were made as a result of the experiment or as a result of the atmosphere in the special education classroom or as a result of this study

TABLE IV: GYMNASTICS

	PRE-TEST	POST TEST
	FAIL	FAIL
Forward Roll	12	0
Backward Roll	13	0
Reverse Push Up	13	0
Cartwheel	10	10
Forward Flip	12	10
Head Stand and Pike On Rolled Mat	11	0
Tumbling By Pairs	15	4
Vaulting Swedish Box	11	2
Side Horse - Vaulting Only	12	13
Low Balance Beam	15	0
High Balance Beam	15	2
Parallel Bars	11	4
Uneven Bars	12	11
High Bar	15	4
Pinwheel On High Bar	15	4
Struggle Up On High Bar	15	4
Forward Turn	15	4
Team Tumbling	15	6
Pyramids	15	0
Diving	15	10

is hard to say. The greatest gains in achievement were in language arts and in reading and again it would be difficult to conclude if the classroom atmosphere or the experiment helped produce these results. However, the results of these achievement tests were positive and showed that something happened to enhance general learning. The results of the post-test in the general physical fitness test showed that work in this area in a special education situation under these conditions was beneficial. The pull-ups and the dips were the hardest for the children.

One can conclude from the testing in gymnastics that many of the skills assayed were beneficial. The work in the forward roll and the backward roll certainly showed that the work was worthwhile and that youngsters in a special education class can be benefited by it. This was also true of the work with the balance beam. It might also be concluded that the work on the side horse proved to be too difficult for these youngsters. This was also true of the work on the uneven bars.

RECOMMENDATIONS

It is recommended by the researcher that further studies be conducted in gymnastics in special education classes. Perhaps experimentation in gymnastics at an earlier age level would be beneficial. This might help youngsters who are having problems with general learning, and help them to progress at a faster pace.

It is further recommended that further work on the side horse and uneven bars be deleted with youngsters having severe emotional problems. This would be especially true if experimentation were carried out at an earlier level.

It is also recommended that high school girls can assist and be of great value.

SUMMARY

As a result of this study the experimenter has produced a film entitled "GYMNASTICS FOR SPECIAL EDUCATION". This film shows the activities explained in this paper and shows the difficulties and triumphs of these youngsters and of the teachers and experimenters in this program.

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