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The Effectiveness Of Two Fitness Training Methods On Trainable Mentally Handicapped Students

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THE EFFECTIVENESS OF TWO FITNESS TRAINING METHODS ON TRAINABLE MENTALLY HANDICAPPED STUDENTS

by

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A Practicum Report
submitted to the Faculty of the Center for the Advancement of Education of Nova University in partial fulfillment of the requirements for the degree of Master of Science.

The abstract of this report may be placed in the School Practices Information Files for reference.

August 1987

Running Head: FITNESS METHODS

AUTHORSHIP STATEMENT

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other workers in the field and in hope that my own work presented here, will earn similar respect.

Signature: Ann M. Goodman

ABSTRACT

The Effectiveness Of Two Fitness Training Methods On Trainable Mentally Handicapped Students.
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This practicum exposes middle school age trainable mentally handicapped students to an exercise program designed to improve their overall level of physical fitness. Fifteen students participated in the study conducted by a physical education teacher, a paraprofessional assigned to the teacher, and University of Florida student volunteers.

The Motor Fitness Test For The Moderately Mentally Retarded (1976) was used as a pretest and posttest to ascertain progress or lack of progress of students participating in the ten week fitness training program.

Conclusions of the practicum were as follows:

1. Middle school age trainable mentally handicapped students exposed to a systematic program of exercise showed marked improvement in their overall level of physical fitness.

2. Middle school age trainable mentally handicapped students exposed to a circuit method of training made greater gains in overall fitness than those exposed to an interval method of training.

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Chapter 1

Purpose

Background

The setting for this study was a trainable ~~center for~~ mentally handicapped students. This center provided services to approximately one hundred and fifty students with a wide range of mental and physical disabilities. Of the hundred and fifty students who attended this center all of the students participated in the physical education program except two. Students participating in the physical education program had mentally handicapping conditions that ranged from severe to educable (EMH), with the majority being diagnosed as trainable mentally handicapped (TMH). Since TMH students constituted two-thirds of the population of students who attended the trainable center mentioned above, this group was the one targeted in the study.

The TMH students referred to in this paper came from a full range of socioeconomic backgrounds, and ranged in age from three years old to twenty-two years old. Of the ninety-eight TMH students served, seventy-one were males and twenty-seven were females. Thirty-eight of these students were black and sixty were white.

The majority of TMH students attending this center came to a physical education class twice a week for forty-five minutes, while a small group of students participated three times a week for forty-five minutes.

Of the six physical education classes conducted, three classes were composed entirely of TMH students, and two classes were composed of EMH and TMH students. The remaining class was made up of severely and profoundly mentally handicapped students, and some TMH students with severe physical disabilities.

Each class had approximately fifteen students. These students were instructed by the physical education teacher and one paraprofessional. In addition to this paraprofessional, other assistance was provided by University of Florida practicum students, and volunteers.

For the majority of students attending this trainable center, their physical education class constituted the only opportunity to participate in a fitness program that was planned and conducted by a qualified instructor. Although there were several facilities accessible to TMH students in the community, qualified personnel were not employed to address the specific physical fitness needs of TMH students. Therefore, these students were currently not afforded the same opportunities as students their age who did not have

any mentally handicapping conditions. In the past the physical education program for the TMH students at this site focused almost primarily on body awareness, the mechanics of movement (i.e. how to run, jump, hop, gallop, etc.), and the development of social skills. This was largely due to the fact that this population of students lacked the basic movement and social skills needed to successfully participate in a fitness program. At the time this study began, a systematic program of exercise with the intention of improving the overall level of fitness of each student was appropriate and needed.

Problem Statement

The target group for this study was the middle school age TMH students attending this trainable center. The problem, stated briefly, was that approximately half of these students scored on or below the fiftieth percentile on each of the six physical fitness subtests established for their age group on the Motor Fitness Test For The Moderately Mentally Retarded (1976).

Of the eighteen middle school age students comprising the target group, thirteen (seventy-two percent) scored on or below the fiftieth percentile on the Softball Throw For Distance Subtest, eleven (sixty-one percent) scored on or

below the fiftieth percentile on the Standing Long Jump Subtest, ten (fifty-five percent) scored on or below the fiftieth percentile on the Sit-ups In Thirty Seconds Subtest and the Fifty Yard Dash Subtest, and nine (fifty percent) scored on or below the fiftieth percentile on the Flex Arm Hang Subtest and the Three Hundred Yard Walk-Run Subtest.

These data indicated that these students achieved lower scores on generally accepted measures of overall fitness than did other TMH students their age.

Due to their lack of endurance and overall fitness these students were frequently unable to participate for the normal forty-five minute physical education class period without becoming fatigued. Many were overweight and some suffered from health problems which could be alleviated if an overall acceptable level of physical fitness were attained.

In the past, the physical education program for these students had focused primarily on the development of body awareness, the mechanics of movement, and the development of social skills. This practicum focused on the establishment of a systematic program of exercise carried out with the intention of improving the overall level of fitness of this population of students. Data collected regarding this population of students indicated a strong need for a

systematic program of exercise to be incorporated into the physical education program being carried out at the trainable center.

Outcome Objectives

Of the eighteen middle school age TMH students who were tested on the Motor Fitness Test for The Moderately Mentally Retarded (1976) it was expected that after ten weeks:

1. Ten of the students (fifty-six percent) would perform at or above the fiftieth percentile established for TMH students age eleven to fifteen.

2. Two of the students (eleven percent) would not be able to attain the fiftieth percentile established for TMH students age eleven to fifteen due to severe congenital heart disease.

3. Six of the students (thirty-three percent) would need to participate in a fitness program for longer than ten weeks in order to achieve scores on or above the fiftieth percentile for TMH students age eleven to fifteen due to the length of the program.

Some residual effects expected from an overall improvement in these students' fitness levels were:

1. Increased competition during extramural activities with other schools and during Special Olympic Meets.

2. Increased ability to participate for longer periods of time during regular physical education class activities.

Chapter 2

Research And Solution Strategy

Research

Fitness training programs help provide the mentally handicapped with pleasurable, successful learning experiences that, at the same time, build the strength, flexibility and endurance necessary to carry out normal, everyday, living activities (Crowe, Auxter, and Pyfer, 1981).

Until recently, however, teaching mentally handicapped students skills that build and maintain physical fitness has been overlooked by educators and community recreation specialists. As a result, little evidence exists indicating the activities and instructional methods best suited for mentally handicapped students.

Physical fitness is especially important for mentally handicapped individuals because, as a group, they are less fit than the general population (Campbell, 1978). This appears to be true whether the comparison is made on motor proficiency or general fitness (Campbell, 1973; Halle, Silverman, and Regan, 1983).

Contrary to popular belief, inherent characteristics of

mental retardation do not necessarily lower fitness levels. According to Halle, Silverman, and Regan (1983), mentally handicapped individuals lack equal opportunity of planned and incidental physical activity and, thus, do not develop an equal level of fitness. This conclusion is strongly supported by studies that demonstrate improvement in physical fitness when systematic programs of exercise are carried out with mentally handicapped students (Campbell, 1974; Campbell, 1978; Halle, et al., 1983).

It appears that interest in physical fitness characteristics and methods of improving the fitness of mentally handicapped persons has emerged primarily because of the positive relationship which has been observed between fitness and such variables as intelligence, social maturity and academic achievement (Values of Physical Education, 1976). There is evidence that participation by students who are mentally handicapped in activities that promote physical fitness positively influences cognitive and affective variables such as IQ, academic performance, self-concept and the ability to interact with peers (Campbell, 1973; Moon and Renzaglia, 1982; President's Committee on Mental Retardation, 1966).

Several training programs have been advocated for use with mentally handicapped individuals (Arnheim, Auxter, and

Crowe, 1973; Sherill, 1976), but no specific one has been shown to be effective in data-based research reports. Among the methods advocated by Arnheim, et al. (1973) and Sherill (1976) are the interval training method and the circuit training method.

Interval training usually involves repetitions of the same exercise or sets of exercises with rest periods between sets. A gradual increase in the number of exercises or in the speed of doing them traditionally accompanies a decrease in the length of the rest intervals incorporated into this method.

Circuit training, on the other hand, involves moving from station to station, within a single session, with a different fitness task at each station. Unlike the rest periods in the interval method, the rest periods between stations are less active than the station activities, but still call for some sort of movement.

It is clearly demonstrated in the literature (Campbell, 1973; Moon and Renzaglia, 1982; President's Committee on Mental Retardation, 1966) that one of the most important, but least researched areas is that area that pertains to the identification of activities and instructional methods best suited for teaching physical skills and increasing the fitness level of mentally handicapped students. This study

proposed to lay the groundwork in this area by exploring which of two training methods was more effective in producing gains in the fitness level of TMH students.

One of the most successful curricula for improving physical fitness with mentally handicapped students that was cited in the literature was the curricula developed by the American Alliance for Health, Physical Education, Recreation, and Dance, and the Joseph P. Kennedy, Jr. Foundation. This curricula can be found in the Special Olympics Instructional Manual (1977) under the heading of "Fitness and Conditioning." The fitness components that are incorporated into this curricula include bending/stretching, muscular endurance, abdominal endurance, balance, power/speed, agility, and coordination.

Solution Strategy

Studies demonstrating improvement in physical fitness levels of mentally handicapped students using systematic programs of exercise indicated that the best strategy for meeting the needs of the population targeted was one that included:

1. Curriculum components like those found in the "Fitness and Conditioning" section of the Special Olympics

Instructional Manual (1977), and discussed by Auxter (1982), and Kalakian and Eichstaedt (1982).

2. Instructional methods like those advocated by Arnheim, et al. (1973) and Sherill (1976).

A systematic program of exercise was preferred for the target group being studied because it:

1. Had received the support of several key researchers in the area of adapted physical education (Arnheim et al., 1973; Sherill, 1976).

2. Had a built-in reward system appropriate for middle school age TMH students.

3. Was suitable for the type of facilities found at the trainable center these TMH students attended.

4. Could be implemented with the funds made available to the physical education teacher.

Chapter 3

Method

The middle school age TMH students who participated in this study were drawn from two existing physical education classes at the targeted trainable center.

The students who participated in this study were randomly assigned to either an interval training group or a circuit training group at the beginning of the study. All students, regardless of the training group to which they were assigned, were pretested using the Motor Fitness Test For The Moderately Mentally Retarded (1976).

During the ten weeks following the pretest, students participating in the study spent the first fifteen minutes of their class perird, twice a week, going through a series of exercises prescribed in the "Fitness and Conditioning" section of the Special Olympics Instructional Manual (1977). Only the method of training varied. The exercises chosen were the same for each of the training groups.

At the end of the ten week treatment period, students participating in the study were posttested utilizing the same test as was used for the pretests, the Motor Fitness Test For The Moderately Mentally Retarded (1976).

All of the activities were conducted by the physical education teacher with assistance from the paraprofessional assigned to the physical education program. University of Florida practicum students and volunteers who assisted during this study were asked to take on the role of encouraging individual students to do their best. All activities took place on the physical education field.

The following mid-course corrections were made:

1. Activities were performed in the same manner in the event of rain. The fitness program, however, was conducted in the multipurpose room.

2. Students absent during the pretesting or posttesting were tested on the day they returned to class.

3. Students who missed more than five days were excluded from the study.

The timeline established for this study can be found below:

February 2, 1987	Randomly assigned students to either an interval training group or a circuit training group. Pretested using the Motor Fitness Test For The Moderately Mentally Retarded (1976).

February 2, 1987 thru April 24, 1987	Implemented strategy.
April 27, 1987 thru May 1, 1987	Administered posttest using the Motor Fitness Test For The Moderately Mentally Retarded (1976).
May 4, 1987 thru May 15, 1987	Conducted data analysis.
May 18, 1987	Began writing final report.

Chapter 4

Results

Of the eighteen middle school age TMH students targeted to participate in the study, fifteen completed the pretesting, posttesting, and fitness training portions of the study. Of the three students not included in the final study, one withdrew from school during the study, and the remaining two were excluded due to injuries received outside of the physical education class.

A comparison of pretest and posttest data compiled on the fifteen students completing the study indicated that:

1. Twelve of the fifteen students improved their overall level of physical fitness as measured by gains made on the six subtests found on the Motor Fitness Test For The Moderately Mentally Retarded (1976).

2. An average gain of 5.18 percent above the pretest score was obtained for the students who completed the ten week study.

3. Nine of the fifteen students who completed the study (sixty percent) were able to perform at or above the fiftieth percentile established for TMH students age eleven to fifteen on the Motor Fitness Test For The Moderately Mentally Retarded (1976). This is slightly higher (four percent higher) than was originally expected.

4. The two students with severe congenital heart disease, as predicted, scored below the fiftieth percentile. Both, however, attained substantial gains in their overall level of fitness (+5.9 and +10.0 percent respectively).

5. Of the six students initially identified as needing more than ten weeks of fitness training in order to achieve scores on or above the fiftieth percentile, one left the school and was, therefore, eliminated from the study, one achieved a fiftieth percentile score, and four scored on or below the fiftieth percentile as expected.

6. A careful review of the six subtests found on the Motor Fitness Test For The Moderately Mentally Retarded (1976) indicates that gains were made on each of the subtests.

7. Average gains for the fifteen students included in the study were as follows: Sit-ups In Thirty Seconds Subtest (+21.0 percent); Standing Long Jump Subtest (+5.66 percent); Fifty Yard Dash Subtest (+3.33 percent); Softball Throw For Distance Subtest (+2.66 percent); Flex Arm Hang Subtest (+1.66 percent); Three Hundred Yard Walk-Run Subtest (+1.66 percent).

8. The number of students scoring on or above the fiftieth percentile on each of the subtests found on the Motor Fitness Test For The Moderately Mentally Retarded (1976) were as follows: Sit-ups In Thirty Seconds Subtest

of fifteen students--93.3 percent); Fifty Yard Dash Subtest (ten out of fifteen students--66.6 percent); Standing Long Jump Subtest (ten out of fifteen students--66.6 percent); Flex Arm Hang Subtest (nine out of fifteen students--60.0 percent); Three Hundred Yard Walk-Run Subtest (eight out of fifteen students--53.3 percent); Softball Throw For Distance (seven out of fifteen students--46.6 percent).

9. Students exposed to the circuit training method achieved substantially greater gains in overall fitness than students exposed to the interval training method. An average gain of +7.84 percent was attained by students comprising the circuit training group, while an average gain of +2.66 percent was attained by students included in the interval training group.

In short, it appears based on the data cited above that:

1. Middle school age TMH students exposed to a systematic program of fitness and conditioning for a period of ten weeks will show substantial improvement in their overall level of physical fitness.

2. Middle school age TMH students exposed to a circuit method of training will achieve greater gains in overall fitness than middle school age TMH students exposed to an interval method of training.

For a more detailed review of each student's pretest and posttest results see the Motor Fitness Test For The Moderately Mentally Retarded Scorecard found in Appendix B.

A chart containing pretest, posttest, and gain scores for each of the training methods used can be found in Appendix C. These results are reported in terms of the average percentile score achieved by each student on all six subtests of the Motor Fitness Test For The Moderately Mentally Retarded (1976) taken as a whole.

Chapter 5

Recommendations

In order to ensure further progress for the TMH students included in the practicum, and for other TMH and EMH students attending the trainable center mentioned in this study the following recommendations are being proposed:

1. The fitness program discussed in this practicum will become part of the daily physical education curriculum provided to elementary, middle school, and high school age TMH and EMH students. This can be accomplished by incorporating an exercise program into the first fifteen minutes of each class period.

2. Replication of the study with elementary and high school age TMH and EMH students will be conducted in order to ensure that the fitness training program discussed in this practicum is appropriate for these two student populations.

3. Severely and profoundly mentally handicapped students will continue to be excluded from the kind of fitness training program discussed in this paper due to developmental delay, medical problems, and physical impairments encountered by these populations of students.

4. Results of this study will be made available to other physical education teachers through the county supervisor for physical education.

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APPENDIX A

CONDITIONING AND FITNESS CYCLES

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CONDITIONING AND FITNESS CYCLES

	ROOKIE	WINNER	STAR	CHAMP	SUPER CHAMP
Bending/ Stretching	Wing Stretcher	Body Bender	Trunk Twister	Wood Chopper	Standing Elbow Knee Touch
Flexibility	Touchdown	Windmill	Sitting Windmill	Sitting Cross-over	Inverted Bridge/ Arch
Muscular-Endurance (Arms-Shoulders)	Support/ Walk Activi-ties	Modified Push-Ups	Push-Ups	Special Push-Ups	In-Orbit Push-Ups
Abdominal Endurance	See-Saw	Sit-Ups	Bent/Leg Sit-Ups	Curl	V-Up
Balance	Basic Body Balances	Balance In Motion	Stork Stand Progress-ion	And Away We Go	Boards And Beams
Power/ Speed	Vertical Jumps	Piston	Partner Push	Inverted Bicycle	Mountain Climber

	ROOKIE	WINNER	STAR	CHAMP	SUPER CHAMP
Agility	Side Step	Shuttle Run	Dodging Run	Zig-Zag Run	Boom-erang
Coordination	Jump And Turn	Jumping Jack	Sensational Seven	Squat Thrust Series	Astro-naut Drills
Cardio-respiratory Endurance	Bench Step	The Runner	Crazy Legs	Run/ Walk	Road-work

APPENDIX B

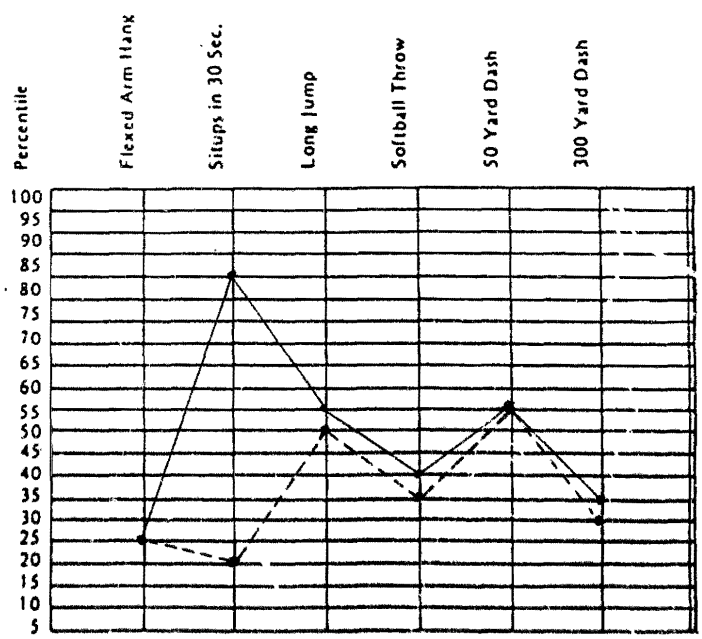
MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name	T.T.		Circuit Training	
Age/Sex	15/Male			
	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	25	0	25
Sit-Ups In Thirty Seconds	8	20	18	85
Standing Long Jump	3'9"	50	4'2"	55
Softball Throw	53'1"	35	56'4"	40
50 Yard Dash	9.6	55	9.6	55
300 Yard Walk-Run	1:57	30	1:45	35

Profile Record
Pretest ===
Posttest ---



APPENDIX B

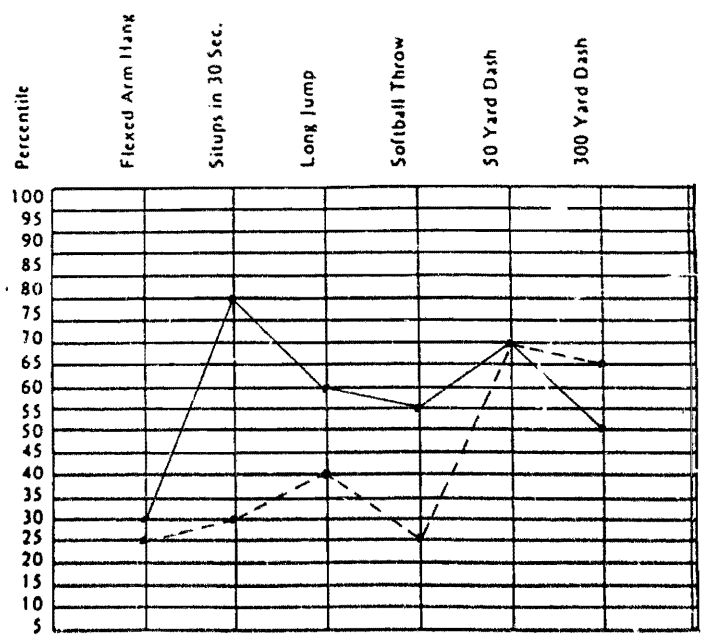
MOTOR FITNESS TEST FOR THE MODERATELY

MENTALLY RETARDED SCORECARD

Student Name H.R. Circuit Training
Age/Sex 15/Male

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	25	1.0	30
Sit-Ups In Thirty Seconds	9	30	17	80
Standing Long Jump	3'2"	40	4'5"	60
Softball Throw	38'0"	25	71'7"	55
50 Yard Dash	8.4	70	8.5	70
300 Yard Walk-Run	1:21	65	1:29	50

Profile Record
Pretest
Posttest



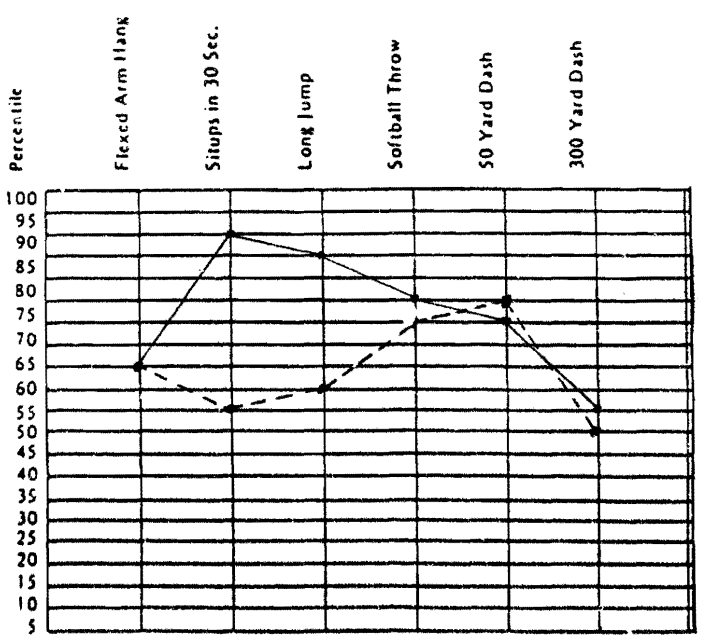
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name D.C. Circuit Training
Age/Sex 11/Male

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	65	0	65
Sit-Ups In Thirty Seconds	8	55	15	95
Standing Long Jump	2'6"	60	3'10"	90
Softball Throw	46'4"	75	42'3"	80
50 Yard Dash	10.5	80	11.3	75
300 Yard Walk-Run	1:51	55	1:49	55

Profile Record
Pretest ---
Posttest ===



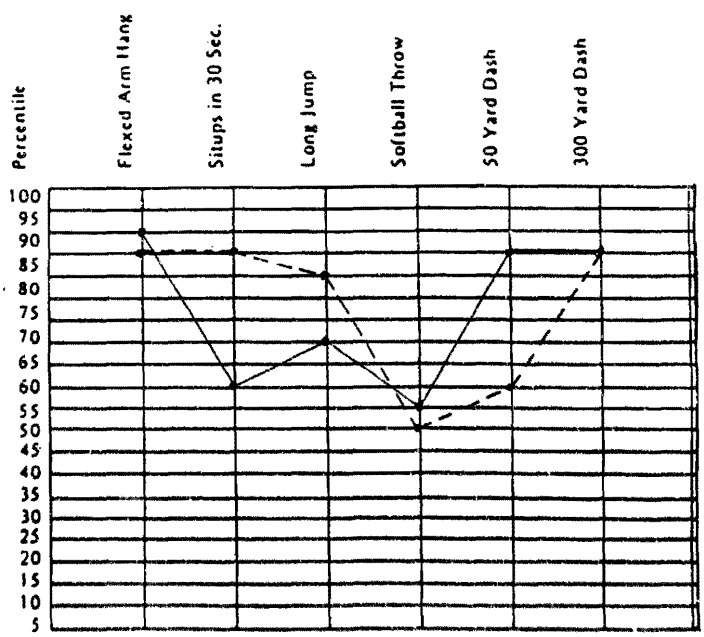
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name	S.W.	Circuit Training
Age/Sex	12/Male	
	PRETEST	POSTTEST
Date	February 1987	May 1987

	Score	Percentile	Score	Percentile
Flex Arm Hang	6.6	90	7.8	95
Sit-Ups In Thirty Seconds	14	90	10	60
Standing Long Jump	4'4"	85	3'6"	70
Softball Throw	42'8"	50	45'6"	55
50 Yard Dash	10.3	60	9.1	90
300 Yard Walk-Run	1:12	90	1:14	90

Profile Record
Pretest ---
Posttest ===



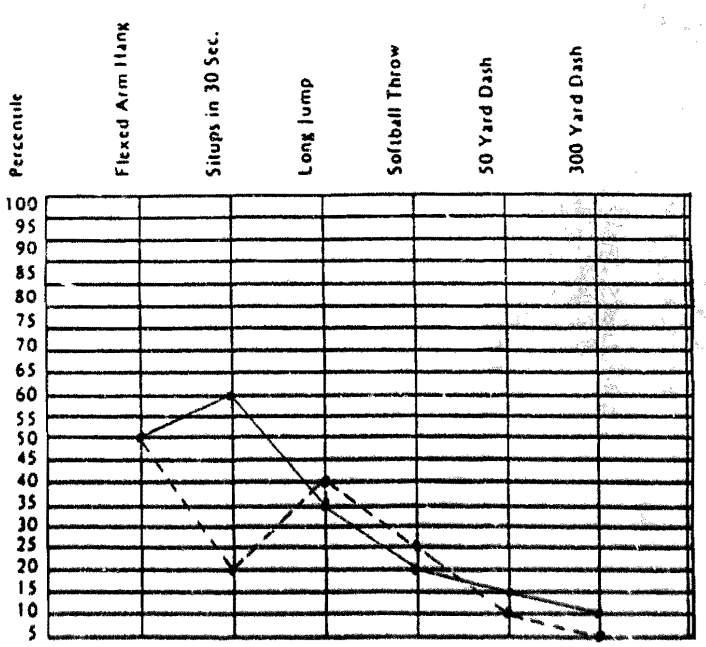
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name A.R. Circuit Training
Age/Sex 12/Male

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	50	0	50
Sit-ups In Thirty Seconds	4	20	10	60
Standing Long Jump	2'4"	40	2'2"	35
Softball Throw	23'3"	25	22'2"	20
50 Yard Dash	17.1	10	16.4	15
300 Yard Walk-Run	2:51	5	2:34	10

Profile Record
Pretest ---
Posttest ===



APPENDIX B

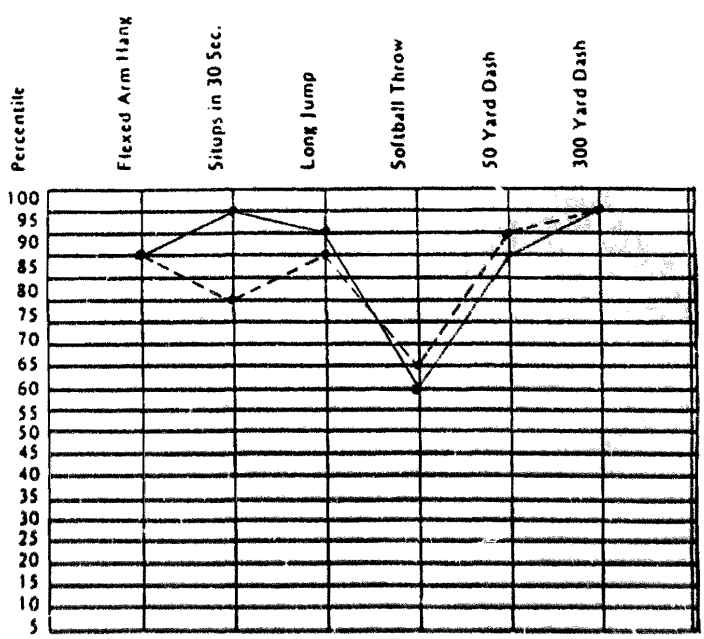
MOTOR FITNESS TEST FOR THE MODERATEL/

MENTALLY RETARDED SCORECARD

Student Name K.T. Circuit Training
Age/Sex 13/Male

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	15.0	90	16.1	90
Sit-Ups In Thirty Seconds	14	80	22	100
Standing Long Jump	4'6"	90	5'0"	95
Softball Throw	54'4"	65	50'4"	60
50 Yard Dash	8.4	95	8.9	90
300 Yard Walk-Run	57.5	100	56.2	100

Profile Record
Pretest
Posttest

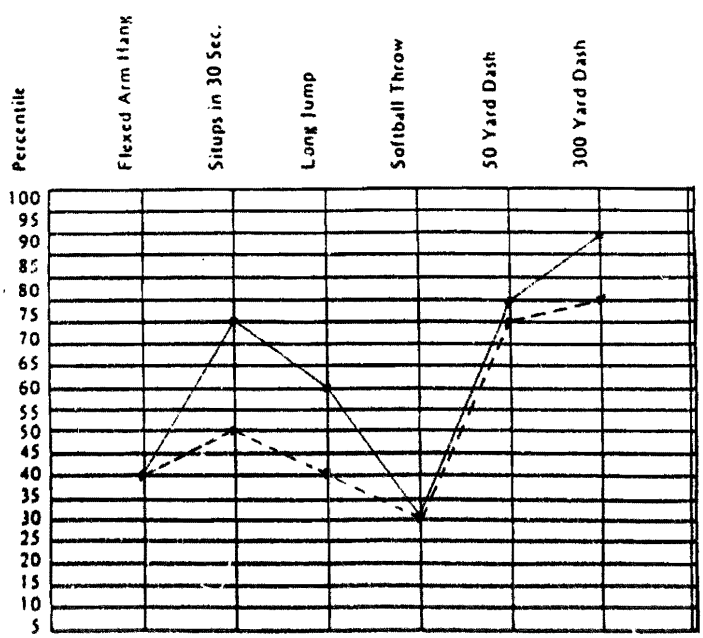


APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name	C.B.		Circuit Training	
Age/Sex	14/Male			
	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	40	0	40
Sit-Ups In Thirty Seconds	10	50	13	75
Standing Long Jump	3'0"	40	3'9"	60
Softball Throw	36'2"	30	38'1"	30
50 Yard Dash	9.5	75	9.2	80
300 Yard Dash	1:17	80	1:07	95

Profile Record
Pretest ===
Posttest ===



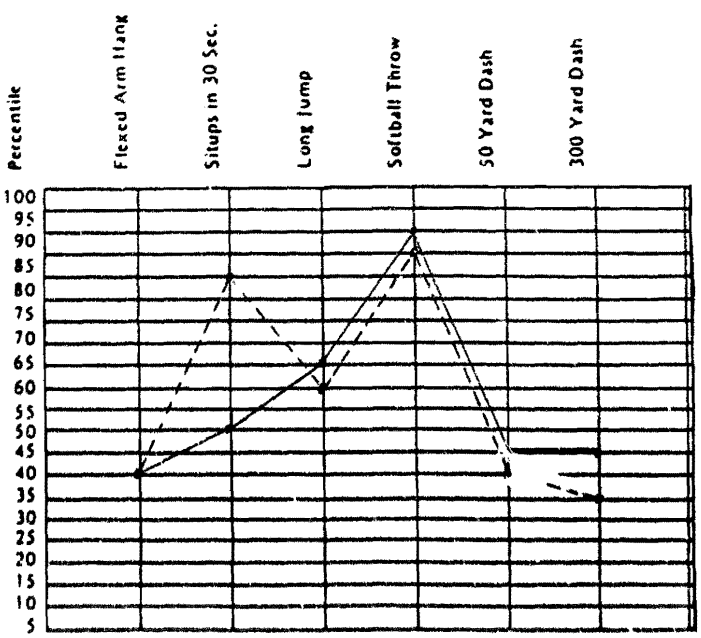
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name: A.L. — Circuit Training
Age/Sex: 14/Male

	PRETEST February 1987		POSTTEST May 1987	
Date	Score	Percentile	Score	Percentile
Flex Arm Hang	0	40	0	40
Sit-Ups In Thirty Seconds	15	85	10	50
Standing Long Jump	3'6"	60	3'1"	65
Softball Throw	96'8"	90	98'1"	95
50 Yard Dash	11.2	40	10.9	45
300 Yard Walk-Run	1:55	35	1:45	45

Profile Record
Pretest ---
Posttest ===

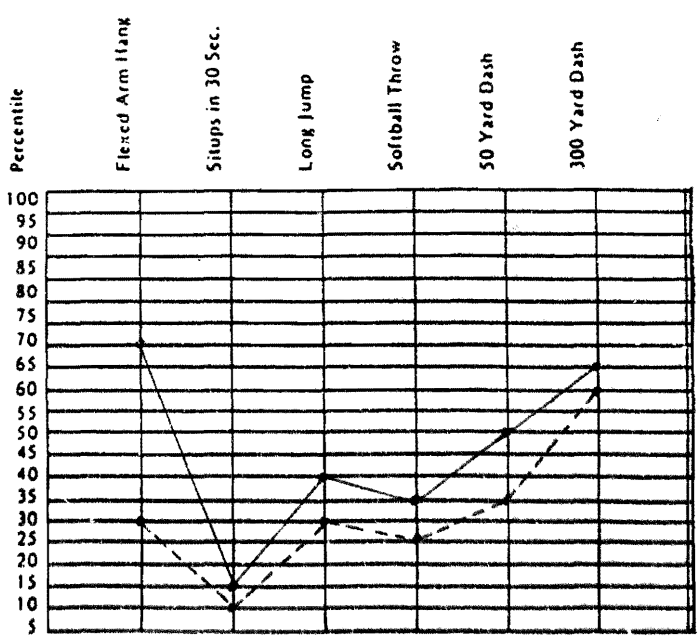


APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name	R.T.		Circuit Training	
Age/Sex	15/Male			
	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	1.0	30	6.8	70
Sit-Ups In Thirty Seconds	4	10	6	15
Standing Long Jump	2'10"	30	3'2"	40
Softball Throw	42'8"	25	54'3"	35
50 Yard Dash	10.7	35	10.0	50
300 Yard Walk-Run	1:27	60	1:21	65

Profile Record
Pretest ===
Posttest ===

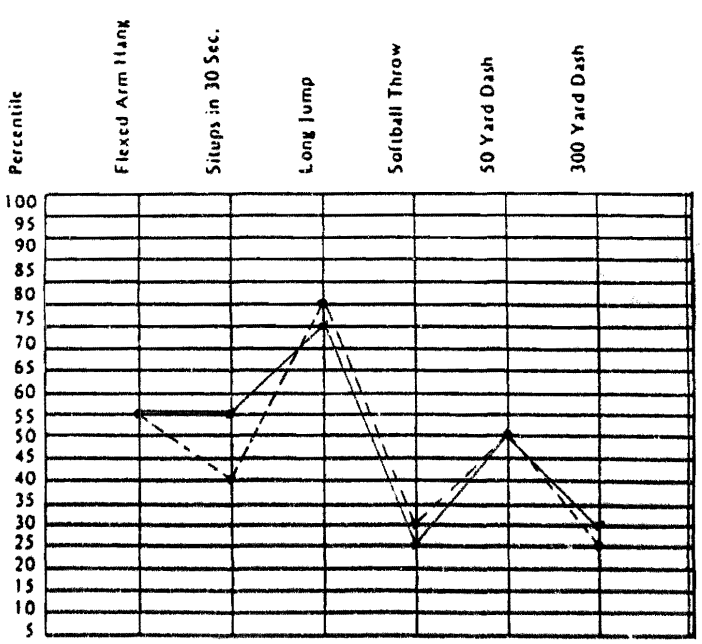


APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name	M.C.		Interval Training	
Age/Sex	12/Female			
	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	55	0	55
Sit-Ups In Thirty Seconds	5	40	8	55
Standing Long Jump	3'1"	80	3'0"	75
Softball Throw	21'9"	30	16'4"	25
50 Yard Dash	13.9	50	13.1	50
300 Yard Walk-Run	2:39	25	2:27	30

Profile Record
Pretest ===
Posttest ===

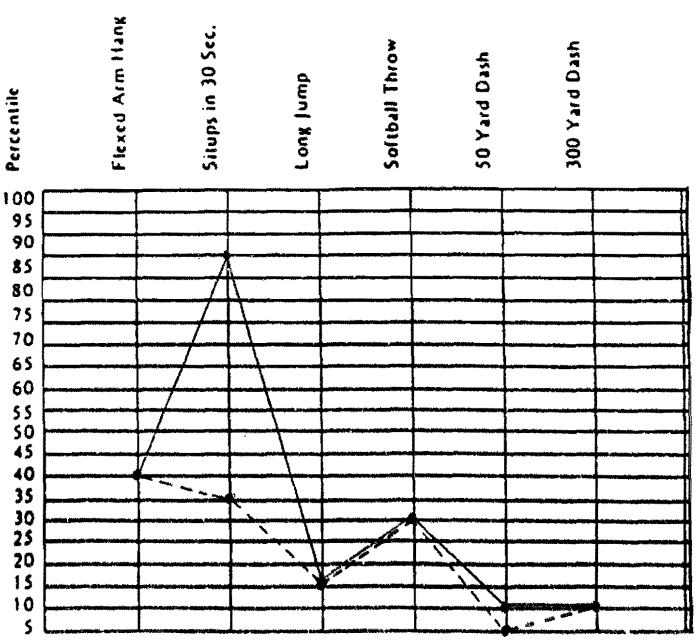


APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name	S.P.		Interval Training	
Age/Sex	14/Male			
	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	40	0	40
Sit-Ups In Thirty Seconds	9	35	16	90
Standing Long Jump	10"	15	10"	15
Softball Throw	37'3"	30	33'8"	30
50 Yard Dash	19.4	5	17.3	10
300 Yard Walk-Run	2:48	10	2:50	10

Profile Record
Pretest ---
Posttest ===



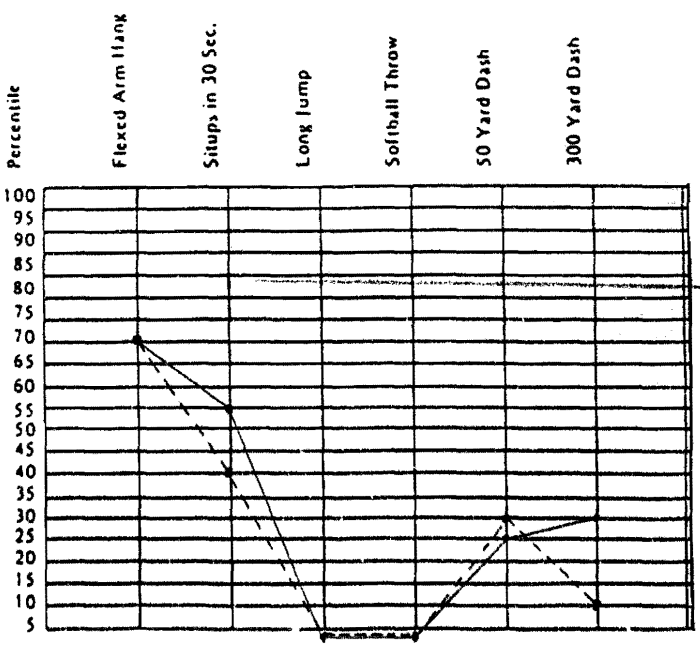
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name: A.H. — Interval Training
Age/Sex: 13/Female

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	70	0	70
Sit-Ups In Thirty Seconds	5	40	8	55
Standing Long Jump	0	0	0	0
Softball Throw	6'1"	0	7'8"	0
50 Yard Dash	14.5	30	15.4	25
300 Walk-Run	2:51	10	2:11	30

Profile Record
Pretest ===
Posttest ===



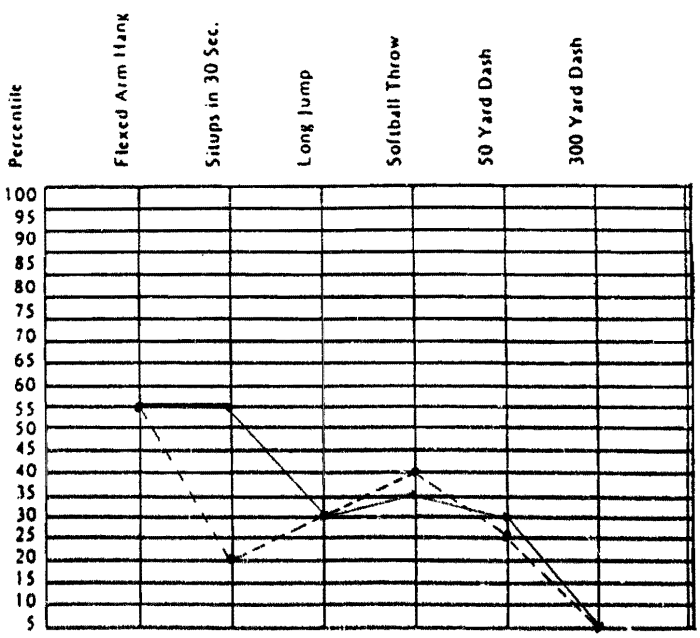
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name D.H. Interval Training
Age/Sex 12/Female

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	0	55	0	55
Sit-ups In Thirty Seconds	0	20	7	55
Standing Long Jump	1'3"	30	1'4"	30
Softball Throw	24'2"	40	23'2"	35
50 Yard Dash	16.7	25	16.2	30
300 Yard Walk-Run	3:54	5	3:49	5

Profile Record
Pretest ===
Posttest ---



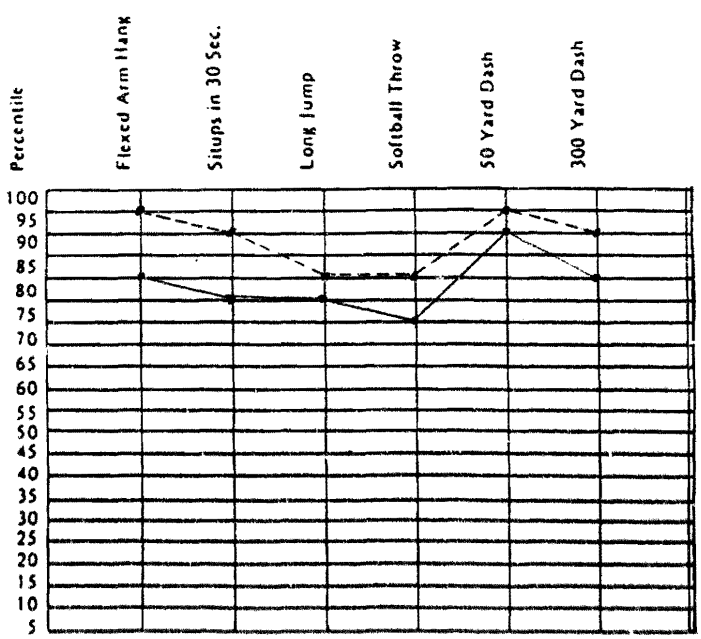
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name D.S. Interval Training
Age/Sex 13/Male

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	31.8	100	8.4	85
Sit-Ups In Thirty Seconds	16	95	14	80
Standing Long Jump	4'1"	80	3'11"	80
Softball Throw	69'4"	80	67'1"	75
50 Yard Dash	8.0	100	8.5	95
300 Yard Walk-Run	1:08	95	1:19	85

Perofile Record
Pretest ---
Prettest ===



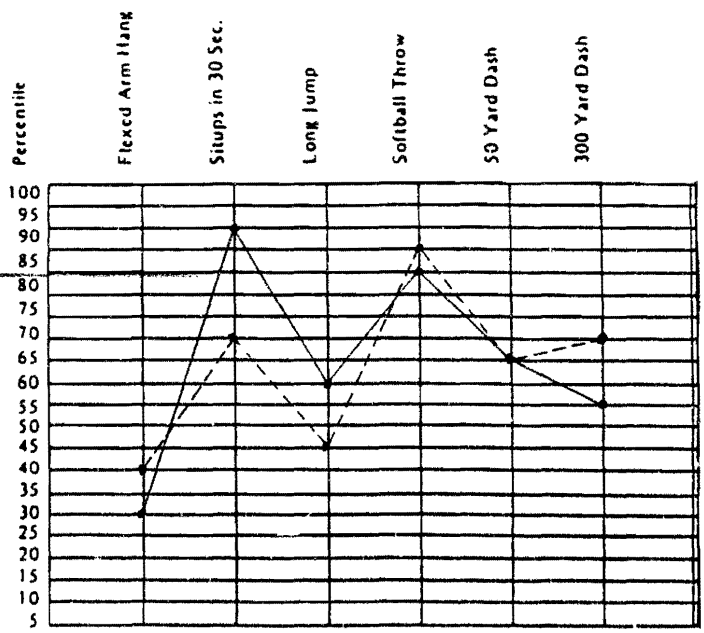
APPENDIX B

MOTOR FITNESS TEST FOR THE MODERATELY MENTALLY RETARDED SCORECARD

Student Name: T.P. — Interval Training
Age/Sex: 15/Male

	PRETEST		POSTTEST	
Date	February 1987		May 1987	
	Score	Percentile	Score	Percentile
Flex Arm Hang	2.7	40	2.3	30
Sit-Ups In Thirty Seconds	14	70	20	95
Standing Long Jump	3'7"	45	4'3"	60
Softball Throw	112'1"	90	103'6"	65
50 Yard Dash	8.9	65	9.2	55
300 Yard Walk-Run	1:20	70	1:29	55

Profile Record
Pretest ———
Posttest — — —



APPENDIX C

PRE-TEST, POSTTEST, GAIN SCORE RESULTS

APPENDIX C

PRETEST, POSTTEST, GAIN SCORE RESULTS

Circuit Training:

Name	PRETEST (by percent)	POSTTEST (by percent)	GAIN SCORES (by percent)
A.L.	58.3	56.6	-1.7
C.B.	52.5	63.3	+10.8
K.T.	86.6	89.1	+2.5
A.R.	25.0	31.6	+6.6
S.W.	77.5	76.6	-.9
D.C.	65.8	76.6	+10.8
H.R.	42.5	57.5	+15.0
T.T.	35.8	49.1	+13.3
R.T.	31.6	45.8	+14.2

Average Gain=+7.84

Interval Training:

Name	PRETEST (by percent)	POSTTEST (by percent)	GAIN SCORES (by percent)
T.P.	63.3	65.0	+1.7
D.S.	91.6	83.3	-8.3
D.H.	29.1	35.0	+5.9
A.H.	25.0	30.0	+5.0
S.P.	22.5	32.5	+10.0
M.C.	46.6	48.3	+1.7

Average Gain=+2.66