5-1983

A Proposed Study of the Value of an Exercise and Nutrition Program for Obese Children in a Public School Setting

Barbara McDougal

A PROPOSED STUDY OF THE VALUE OF AN EXERCISE AND NUTRITION PROGRAM FOR OBESE CHILDREN IN A PUBLIC SCHOOL SETTING

BY
BARBARA MCDOUGAL

Submitted in partial fulfillment of the requirements
for the Master of Science in Education degree
The Lindenwood Colleges
May, 1983

ABSTRACT

This proposed study addresses the question: Will a daily exercise and nutrition program help increase the level of fitness for children determined to be obese?

A plan of classifying students as being obese is included as well as a recommended program of exercise and nutrition. The program consists of student participation for 24 weeks for 30 minutes daily in addition to their regular physical education class.

Obese students would be divided into two groups. One group would continue their normal daily schedule and the second group would participate in the exercise and nutrition program.

Because this author is enrolled in the Model I Graduate Program in Education, it was not required that this study be run. She feels that if the study were run, the group of students participating in the recommended exercise and nutrition program would increase their level of physical fitness.

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

CHAPTER I

Introduction

Evidence of a Problem

The President's Council on Physical Fitness and Sports was set up by President Eisenhower in 1956 to give federal encouragement to programs aimed at increasing the over-all fitness of American youth. With continued support from succeeding presidents, schools are still emphasizing the importance of fitness. With these supportive efforts, it is surprising to note the findings of a survey conducted by the National Center for Health Statistics in 1960-62 and in 1971-74. This survey revealed that the average weight of certain height, age, and sex categories had risen over the eleven year period by as much as fourteen pounds (Svoboda, 1980). Also, in talking about the increasing prevalence of obesity among children and adolescents in our country, Humphrey (1979) gives the estimation that 30% of all children are fat (p. 25).

In a recent article Wilkinson (1982) related that one of television's stars, Marie Osmond, was 55 pounds overweight at the age of ten. Through

her own will power and family assistance she was able to lose the excess weight. "She was one of the lucky ones. About one out of six American children is obese, and millions of them remain so into adulthood" (p. 87).

Scope and Purpose

This research into one of the major health problems in the United States was stimulated by the author's interest and concern for obese children. As a Physical Education teacher of students aged nine to twelve years of age, the author has observed that obese children are usually lacking in a desired level of physical fitness for their particular age level.

The author has observed the behavior of obese students in Physical Education classes and at recess. She believes that too many times the obese child becomes an observer rather than a participant in activities. It seems as if they tend to stay out of any activity in which they fear they cannot equally compete or participate. This researcher felt the need to do some research on obesity in children so that she might better understand their social and psychological needs.

After talking with the school nurse, counselor, and other teachers, the author found that she shares

a mutual concern with these and other school personnel. It is hoped that, by sharing the findings of this proposed research, all school personnel will be able to benefit in working with obese children.

This paper points out characteristics common to obese children and adds some knowledge to the understanding of useful methods for working with obese children.

Research has found that heredity, environment, metabolic syndromes, and different types of brain lesions all are causes of obesity. However, obesity most frequently occurs when there has been an excessive consumption of calories through the intake of food and beverages, and this consumption is not expended through physical activity. This investigation will limit itself to the effects of nutrition and exercise in improving the general fitness of obese children.

Statement of the Problem and Hypothesis

The following question is the focus of this research: Will a daily exercise and nutrition program help increase the level of fitness for children determined to be obese?

This author is hypothesizing that: Obese students receiving a systematic program of exercise

and nutrition will increase their level of physical fitness more than obese students not participating in the exercise and nutrition program.

To test this hypothesis, this researcher has developed a program for obese students. This program includes participation in 24 weeks of daily thirty-minute periods of exercises as well as nutrition information with encouragement that parents assist children in following recommended nutritional guidelines.

It is hoped that this plan will provide physical educators, school nurses, and other school personnel with a strategy to help obese students cope with their problems and promote a desire to improve their physical condition.

CHAPTER II

Review of Literature

This review of literature reports on the physical, social and psychological effects of obesity. Since this study focused on the effects of exercise and nutrition on obesity, these areas are discussed. Lastly, a report is included on other school based programs dealing with obesity.

Physical Effects of Obesity

Childhood obesity has many effects on the child as a whole. Not only is the child less happy and less healthy, obesity can also make life shorter. About 2,400 years ago, Hippocrates, the father of modern medicine, observed that, "Persons who are naturally fat are apt to die earlier than those who are slender" (World Book Year Book, 1983, p. 146).

Most doctors agree that obese children are prone to increased risks of diabetes and kidney ailments; and as the obese child becomes an obese adult, he also has a greater chance of suffering from high blood pressure, heart trouble, stroke, gall bladder and liver diseases (Wilkinson, 1982).

Most experts seem to agree that genetics and environment do have some connecting factors in causing obesity. Mayer (1980) concluded:

> In addition to the likelihood that the fat child will become a fat adult, the fat child faces more physical dangers than the thin child--more respiratory disease, more orthopedic problems, and more accidents (p. 255).

Results of several investigations indicate that people who are moderately overfat have a 40 percent higher than normal risk of shortened life, and more severe obesity yields a 70 percent higher than normal death rate (Corbin, Dowell, Lindsey, and Tolson, 1981).

Another physical effect that needs to be mentioned is that having to do with physical fitness. Because of increased flabbiness and loss of muscle tone, the child is usually ineffective in motor and athletic activities. Obesity is consistently encountered as a cause of physical unfitness among boys and girls (Corbin et al., 1981).

Social and Psychological Effects of Obesity

Obesity, particularly in children, has many social and psychological effects. As related by Wilkinson (1982), "For a child, the worst thing about obesity is that it makes him or her different . . . and because children can be cruel, the fat

child is an easy target for teasing, jokes, and ugly names" (p. 88).

In discussing the social and psychological aspects of obesity, Mayer (1972) states:

> In our society there has been a tendency to describe obese persons as lethargic, lazy and weak-willed, so that obesity becomes an object of ridicule and humiliation. Obese persons not only feel excluded, but in a number of social situations and job competitions they are discriminated against (p. 362).

Obese children seem to have problems in dealing with their own self-image. In a study done by Mayer (1975) this is obvious. A picture showing one girl walking toward a group of girls was interpreted differently by obese and thin girls. All thin girls interpreted the picture as a girl walking toward a group of other girls; whereas, most obese girls saw the girl in the picture as being excluded from the other group of girls.

The psychological penalties of obese children are varied. According to Strauss (1981):

> They are often bashful and ashamed of their bodies. They have a distorted view of their body image and in many cases internalize this as a lack of intellectual ability. Many obese children are passive, fearful, and are rarely good fighters or assertive. They tend to overeat because food has become a substitute for meaningful communication between themselves and their parents. An obese child usually has a poor self-concept and low self-esteem because of their body size (p. 1).

Upon discussing the subject of this research with a colleague, she shared with this author a note which her son had written to her from summer camp. The note read: "Mom, everybody calls me fat boy and I hate it. I wish I was at home." She had kept this note for six years. Since this time they have consulted a doctor and her son has lost weight, is enjoying success in school athletic programs, and she feels that his attitude about himself has drastically improved. This boy was fortunate that his mother cared enough to keep his note as a reminder of his own feelings. Also, his changes had taken place because of parental encouragement and his desire to improve himself.

Effects of Exercise on Obesity

In the automated society in which we live today, it is obvious that children have a much lower level of energy expenditure. In attempting to respond to the effects of exercise on body fat, Zuti (1979) stated:

> Increased exercise and/or physical activity of all types will help to increase the caloric expenditure. The more physical activity a person does, the more calories they burn. When physical activity is increased, a person will draw the extra energy needed from fat stores (p. 103).

Winick (1975) did a study in a Massachusetts community comparing twenty-eight obese girls to twenty-eight thin girls. The obese girls were found to eat 300 to 400 calories less than the nonobese but the time spent on activity was one-third as much as the time spent by the nonobese girls. Also, in looking at height and weight statistics provided by the school, most of the extra weight gain seemed to occur in the fall and winter. The children did not have considerable weight increases during the summer. This was another factor in his conclusion that activity was a definite factor relating to obesity.

Bauer (1965), representing The American Medical Association, also recommended exercise for the obese as it "furthers physical, mental, psychological, and social fitness" (p. 144). There are many tables indicating the amount of calories that would be used up in one minute according to the activity in which a person is participating. For example, Bauer (1965) for The American Medical Association indicated the following:

	cal/min.
Running	15.0
Tennis	7.1
Golfing	5.0
Walking	3.6 (p. 144).

An interesting study has been done by Mayer (1980) of teenage girls in two different summer camps; one was an ordinary camp and the other a special camp for overweight girls. In these camps, a series of short motion pictures was taken of the girls in a variety of physical activities. The results of this study as reported by Mayer were:

> In volleyball, normal-weight girls were, on the average, in motion 50 percent of the time, obese girls only 15 percent. Even when they were swimming in cold water, the overweight girls floated and paddled around instead of swimming very hard or racing one another . . . Inactivity, rather than excess food intake, was apparently the dominant reason for their excess weight (p. 45).

Effects of Nutrition on Obesity

Foman and Ziegler (1976) have mentioned that "in North America, too much food is a more common problem than too little" (p. 28). Just as grocery stores are stocking their shelves with snack and convenience foods, we are putting these foods with less nutritional value on our tables more and more. Through advertisement, children in America are being convinced that "junk foods" should be included in their daily diets. Breeling (1973) gives a nutritional definition of a "junk food" as "one that offers little if any essential nutrient except calories, and is used to replace nutritionally more important foods" (p. 22).

A good knowledge of nutrition reminds a person of daily consumptions of food in the four basic food groups. Foman et al. (1976) suggest that children should consume daily three servings from the milk group, a vegetable or fruit containing vitamin C and one having vitamin A from that group, two servings from the meat or protein group, and three or four servings from the bread or cereal group (p. 29).

Mayer (1980) in her study of teenage girls in summer camp, noted that the obese girls were obsessively concerned with food. "When asked to list their bad habits, they wrote down 'eating'. Not overeating, just eating--as if all food intake were bad. The slim girls . . . thought of eating as a normal and pleasurable experience" (p. 45).

The effects of nutrition on obesity might be concluded in these words:

> Eating patterns of obese subjects differ from those of nonobese in a number of ways. A greater percentage of obese subjects skip breakfast, lunch or dinner than do non-obese; they eat sweet desserts less often, clear their plates more often, and tend to eat more snacks in the absence of hunger sensations but report that they eat fewer large meals . . . It is at the end of meals that obese subjects differ most from nonobese. Obese subjects report they require more willpower to stop eating, even though they report more frequent sensations of discomfort (distention and nausea) at the end of meals. The obese are often

> preoccupied with thoughts of food half an hour after a meal, a phenomenon of exceptional occurrence in subjects who are nonobese (Mayer, 1972, p. 305-6).

School Based Programs Dealing With Obesity

More and more school administrators, counselors, nurses and physical educators are finding it necessary to include programs for obese students in the schools. Since most schools have gym facilities and capable personnel, and children attend school daily, schools should launch this public health campaign (Gibbs and Ruppenthal, 1979).

Ruth Wisdom (1981), a school nurse in Imperial, Missouri, implemented a voluntary weight program. The children met once a week before school with the school nurse, the physical education instructor, and the counselor. The children kept a weekly food list which was reviewed by one of the advisors at the weekly meeting. The advisor made suggestions on how the student might improve on eating habits. The children were weighed each week and had a file to record their weekly progress. They also did some exercises and talked about nutrition and developing better eating habits.

This weight loss program, according to Wisdom, has been very successful. After the first six weeks

of the program in 1981, 40 children ranging in age from 6 to 12 had lost a total of 65 pounds (p. 19).

Henrietta Wexler (1979) reported on a program called "Know Your Body." Twelve hundred 10 to 14 year olds from all socioeconomic levels were involved. The children, from six school districts in the New York metropolitan area, were first screened for high risk factors like obesity, high blood pressure, high levels of cholesterol in the blood, physical inactivity, unfavorable family histories, and insufficient health knowledge. A third of them were found to have at least one of these factors and ten percent had two factors.

The children in three of the six school districts were used as control groups, receiving only the physical exams at intervals. Children in the remaining three districts became the experimental group, receiving special health instruction. Some of the students in this group were given educational programs in their regular classrooms and the remainder of this group received the same educational program plus intervention programs.

One intervention group of children who were twenty percent or more over normal body weight met once or twice a week in the gym for strenuous team games followed by discussions. They did not promote

any specific diets and did not involve the children's parents. They simply discussed caloric intake and advised on better foods to eat. Six months after the program began, 51 percent of the children had lost weight; of the comparison group of overweight children who had no intervention activities, only 16 percent had lost weight.

At the end of the experiment, those without classroom training or intervention activities showed almost no changes from one physical exam to another. Those who were exposed only to the education program in the classroom showed very few significant changes. Those who took the classroom training and the intervention activities showed marked changes for the better (p. 37).

A test program for treating childhood obesity was done at LaTercera School in Petaluma, California and reported by Gibbs and Ruppenthal (1978). All children in the school were exposed to the five concepts of nutrition education outlined in the Framework for Health Instruction in California Schools. All students in the primary grades were weighed and measured. Out of a total of 399 children, 41 were found to be 10 percent or more over their appropriate weight-for-height according to the AMA-NEA height-weight grid standards.

A newsletter was sent home announcing the formation of an after school exercise program specifically geared to overweight students. Fourteen children were signed up for the program. The program consisted of children meeting 45 minutes daily to participate in active games, calisthenics and beginning gymnastics. The program continued for five months.

Results showed that out of the fourteen participating in the program, only five were still 10 percent or more overweight. These five were the heaviest of the fourteen and they had shown good progress toward reaching their appropriate height-for-weight.

For comparison, height and weight measurements of overweight children not in the exercise program were made at the same time. Children in this group received the same nutrition education but chose not to join the exercise class. Out of the 23 children in this group, 12 gained weight relative to height during the five-month test period.

According to Gibbs and Ruppenthal (1978), "The successful operations of the LaTercera School exercise class for treating childhood obesity demonstrates that such a program is feasible in an elementary school setting" (p. 570).

Another comparison showing favorable results for a school based program for obese children has been done by David Lansky and Kelly D. Brownell (1982). Seventy-one students from three junior high schools participated in the program. Each school provided a behavior modification program and a combination exercise and nutrition program. The behavior modification class encouraged students to monitor their out-of-class weight-related activities and to evaluate their progress. The exercise/ nutrition class emphasized in-class activities. Concrete rewards contingent on weight loss and attendance were provided in the behavior modification class but not in the exercise/nutrition class.

Lansky and Brownell (1982) found that in this study 64 percent in the behavioral program and 63 percent in the exercise/nutrition education program decreased their percentage over ideal weight. "The comparable effectiveness of the two approaches indicates that school based programs . . . can be implemented by school health professionals and can reliably produce weight loss among children" (p. 384).

CHAPTER III

Method

Purpose

Many nutritionists and physical educators have concurred that childhood obesity has a definite effect on the total fitness of the child. Data is needed to determine the effectiveness of a good school sponsored program to benefit these children.

In this study the author would attempt to answer the following question: Would a daily program concentrating on exercise and nutrition improve the level of fitness of obese children? Specifically, the study investigates whether obese students receiving an exercise and nutrition program will show mean performance scores on the American Alliance for Health, Physical Education, Recreation, and Dance Youth Physical Fitness pre-test and post-test with greater gains than the mean performance of obese students not participating in the program.

Identification of Subjects

Even though obesity is recognized as one of our nation's greatest health hazards, many experts

differ on their opinions of the best means of identifying obese persons. Rasmussen (1976) states that the best method of identifying obese children is through specific gravity determinations. The procedure involves underwater weighing and is based on the principle that an object will float or weigh very little in water. This method requires some computation in order to calculate the percentage of body fat. While this procedure may have a great degree of accuracy, it is not practical for use in a school situation because of the equipment and time involvement required in its procedures.

Many experts in the field of obesity tend to rely on measurements of skinfold thickness as the identifying factor of obesity. An expert in this area (Mayer, 1972) recognizes the measurement of the triceps skinfold with the use of tables as a means of identifying obesity. This method is recommended for Americans under thirty.

Probably the most practical solution to the identification of obesity is that concluded by Svoboda (1980); "Perhaps the simplest approach is to use the mirror test: if you look fat when you look at yourself naked in a mirror, you probably are fat" (p. 49).

Another method, and perhaps the most common method of identifying obesity, is the use of height-weight growth tables. There are numerous publications of such tables. One recommended table (Rasmussen, 1976) is the Wetzel Grid. The grid plots height and weight and identifies body physique. By watching the movement of the growth line, obesity can be determined.

Another good chart is one which works similar to the Wetzel Grid and is issued by the Missouri Division of Health. This chart is adapted from the National Center for Health Statistics Growth Charts. This chart is the one this researcher has chosen as a means of identifying obese students. (A copy of the charts can be found in Appendix A.) Students whose markings are at or about the 95th percentile on the chart will be considered obese.

Using this measurement, the researcher will screen all students in grades four through six at the beginning of the academic year. The students determined to be obese (markings at or above the 95th percentile) will be assigned to one of two groups by using the table of random numbers. The two groups will be:

Group A--Students screened according to height-weight to be obese will participate in a

daily thirty-minute exercise program and will follow recommended nutritional guidelines.

Group B--Students screened according to height-weight determined to be obese continue their usual exercise and nutritional habits.

Parents of students in Group A will be informed of the goals and procedures of the program. Also, parental consent will be obtained. (See Appendix B for letter to parents.)

Procedure

Students in both groups will be given the AAHPERD Youth Fitness Test taken from the Youth Fitness Test Manual by Hunsicker and Reiff (1976). This test consists of the following items:

Flexed-Arm Hang for Girls

Pull-Up for Boys

Sit-Up for Boys and Girls

Standing Broad Jump for Boys and Girls

50-Yard Dash for Boys and Girls

600-Yard Run-Walk for Boys and Girls.

Scores on the last five tests listed will be converted into z scores. The flexed-arm hang for girls and pull-up for boys will not be used in the measurement of this research. This researcher feels that these tests are difficult for students of

average weight and it would not be fair to measure this for obese students. It has been decided to include this section in the testing in order that the complete test may be given and so that these scores might be available if desired for future research.

Group B will go through a normal schedule of physical education activities as all other students in the school for the remainder of the school year.

Group A will meet with the physical education teacher for thirty minutes each school day in addition to their regular physical education classes starting October 15 and continuing through April 5.

In this thirty-minute session, the physical education teacher will take the group through a variety of exercises including calisthenics, aerobics, jogging and rope jumping. (See Appendix C for outline of activities.) They will practice skill development for activities being taught in regular physical education classes. They also will be encouraged to become more involved in recess and after school activities.

Students in Group A will also be given a folder including pamphlets on nutrition and practice in establishing good nutritional habits. (See Appendix D for examples.) They will be assisted in keeping a weekly food list. (See Appendix E for food listing

form.) Students will be advised on the weaknesses and strengths of their weeks' consumption. They will be weighed each Friday and the teacher will keep a file of their weekly progress.

After completion of the program, the AAHPERD Youth Fitness Test will again be administered. Scores will be recorded again as a means of comparison.

This author realizes there are some limitations to this procedure. Unless the student enters into the program with a strong desire to help himself, the results will show little change. The child probably has many bad habits which need to be controlled or he would not be in his existing condition. Once the child has decided that he really wants to improve his physical condition, he will enter into a program with a positive attitude and desire for success.

Parental help will be very important to the child's success. Unless the parents cooperate in providing foods that are high in nutritional value instead of "junk food," it will be difficult for the child to eat correctly. Since parents are the ones who purchase the groceries, this would be an easy way for them to help. The school menu will need to be checked so that on days that the school is offering a lunch "loaded with calories," the lunch could be packed at home. Parents also could help

with positive encouragement. From the experience of this researcher, children tend to react better to encouraging remarks than to nagging comments about their wrongdoings.

Measurement

A pre-test will be given both groups at the beginning of the school year. The test will be the AAHPERD Youth Fitness Test. In April the test will be given to both groups again. Scores on five of the six tests (excluding flexed-arm hang for girls and pull-up for boys) will be converted into z scores. An average z score on the five tests will be found for each student.

A z score states how many standard deviations the score lies above or below the mean on the five tests. The difference between pre-test and post-test scores will be used to assess the effectiveness (change) of the exercise and nutrition program.

Tables that follow would be devised in order to calculate the measurements.

Table 1

Individual Test z Scores

Student	Test	Pre-Test z score	Post-Test z score	Difference
	Sit-up			
	Shuttle Run			
	Standing Br. Jump			
	50-Yard Dash			
	600-Yard Run-Walk			
	Total			

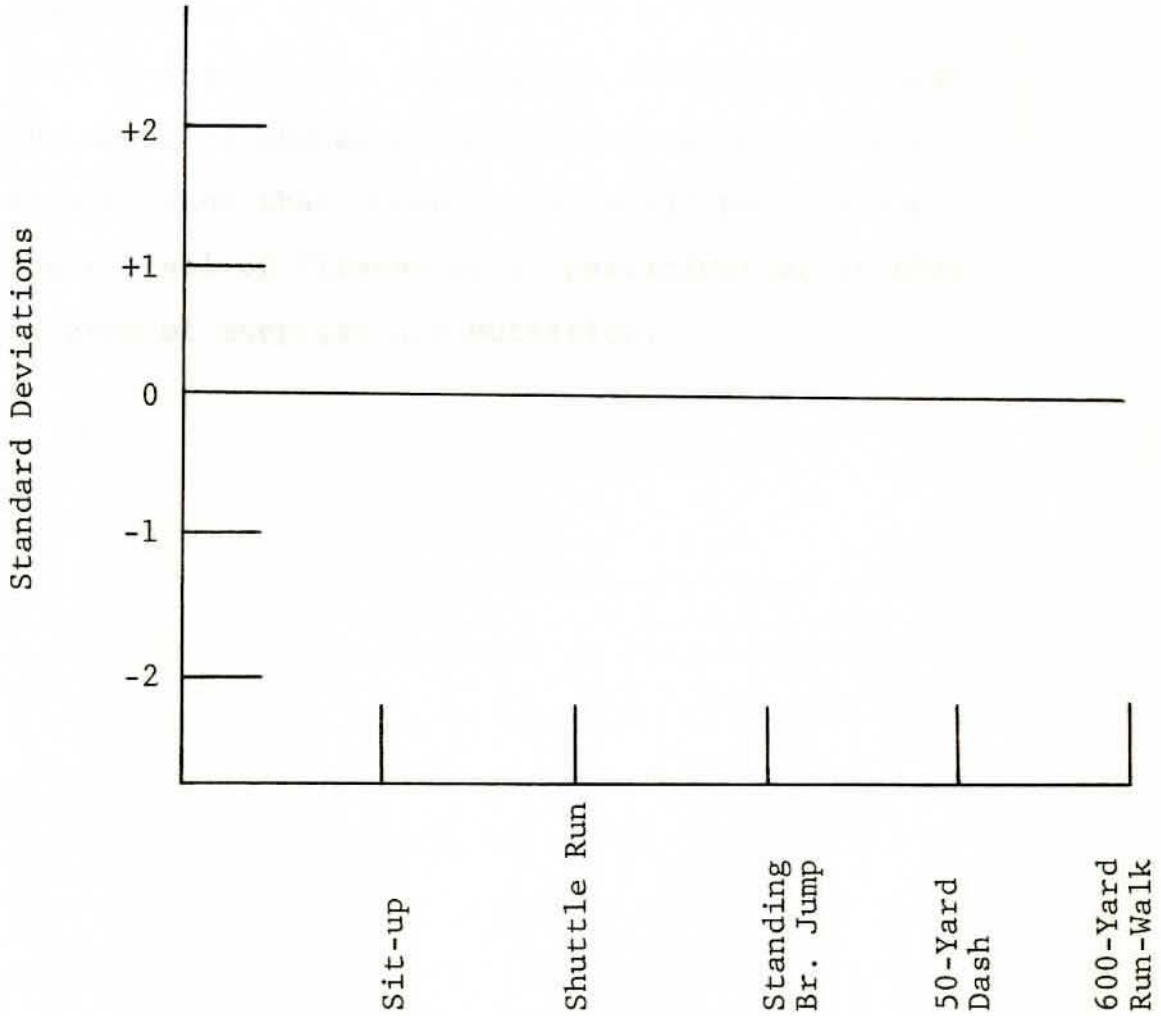
Table 2

Total Student z Scores

	Student	Pre-Test z score	Post-Test z score	Difference
Group A				
Group B				

To further substantiate the study, the mean z scores for each group would be calculated and plotted on a graph. It is predicted that the mean performance of Group A will lie above the mean performance of Group B.

Graph of Group
Mean z Scores



Blue line = Group A
Red line = Group B

If the comparison shows that the experimental group (Group A) mean lies significantly above the mean performance of the control group (Group B), it can be concluded that the program of exercise and nutrition would be beneficial to obese students.

A *t*-test of independent means would be run to see if the difference between the means was significant.

If there is no significant difference between the means of the experimental and control groups, it will show that obese students did not improve their level of fitness after participating in this program of exercise and nutrition.

CHAPTER IV

Summary

The study which has been outlined was intended to be a very practical approach for dealing with obese students. The recommended program of exercise and nutrition consists of materials which are available free of charge or at minimal cost to the teacher or school district. The AAHPERD Youth Fitness Test is recommended by the President's Council on Physical Fitness and Sports to be given to all children in grades four through six. The test is probably given by most elementary physical education teachers and would be familiar to the teacher and students.

For future studies, the author would like to see if there would be a difference in comparing boys to girls in similar programs. She wonders if the difference in maturation of obese boys and girls might make a difference in fitness levels. Also, she would like to see if girls might be more committed to staying on a diet and if boys have more success with the exercise portion of the program because they are generally more involved in athletic activities.

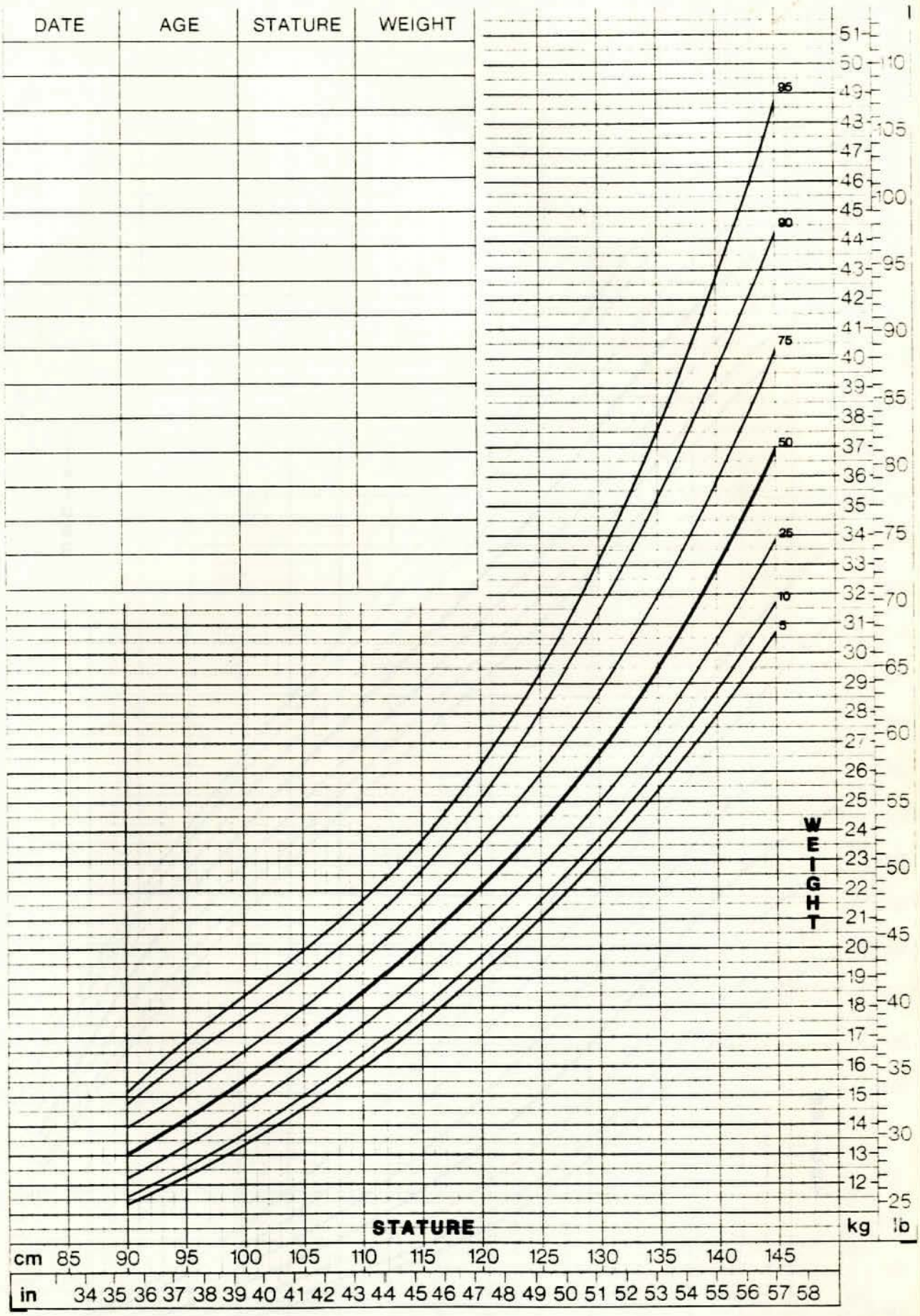
Future studies might also see if there would be any long-term effects of the program. Such a study might investigate the continuation of improved exercise and nutrition behavior.

APPENDICES

BOYS: PREPUBESCENT
PHYSICAL GROWTH
NCHS PERCENTILES*

NAME _____

DATE	AGE	STATURE	WEIGHT

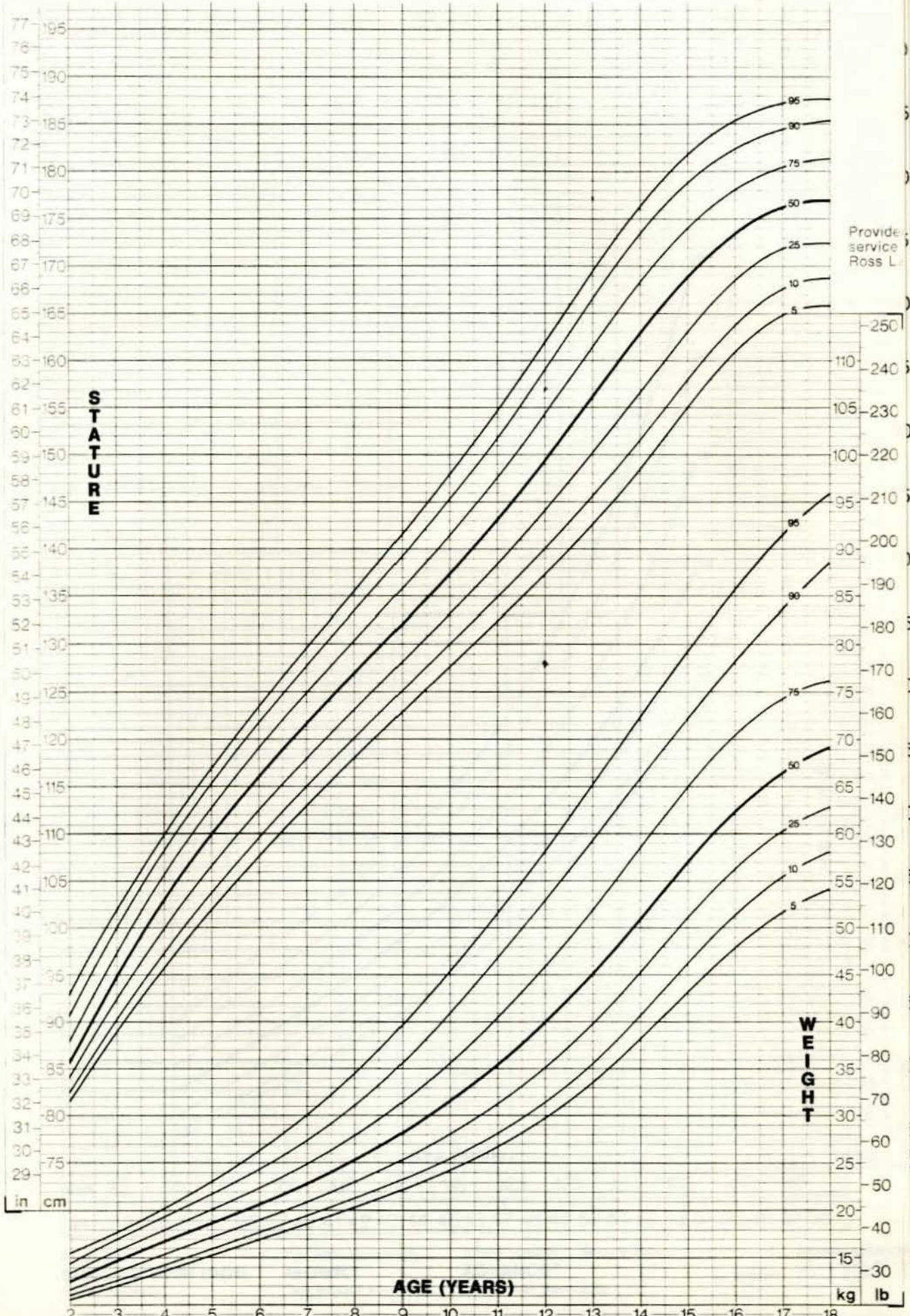


BOYS: 2 TO 18 YEARS

PHYSICAL GROWTH

NCHS PERCENTILES*

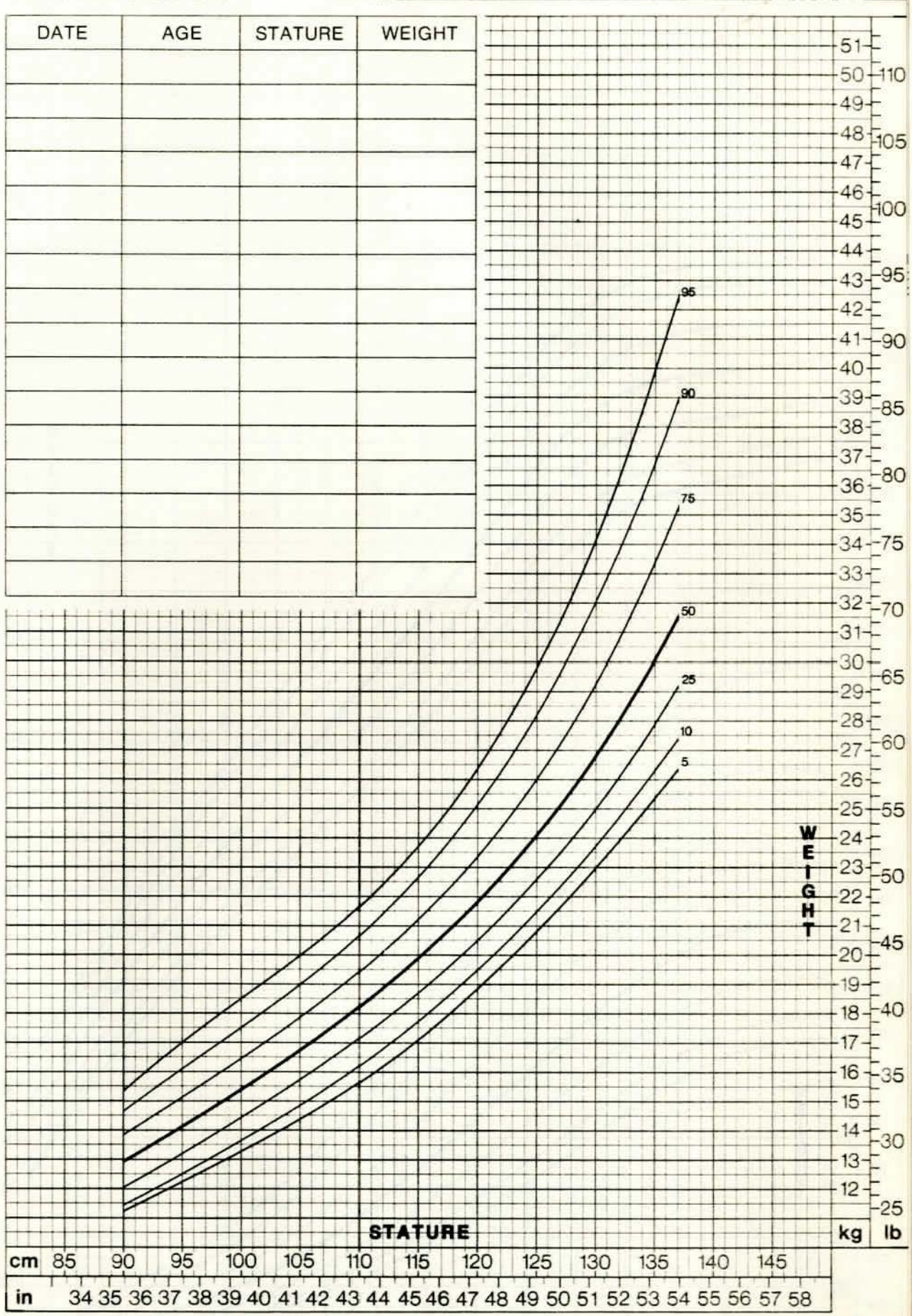
NAME _____ RECORD # _____



GIRLS: PREPUBESCENT
PHYSICAL GROWTH
NCHS PERCENTILES*

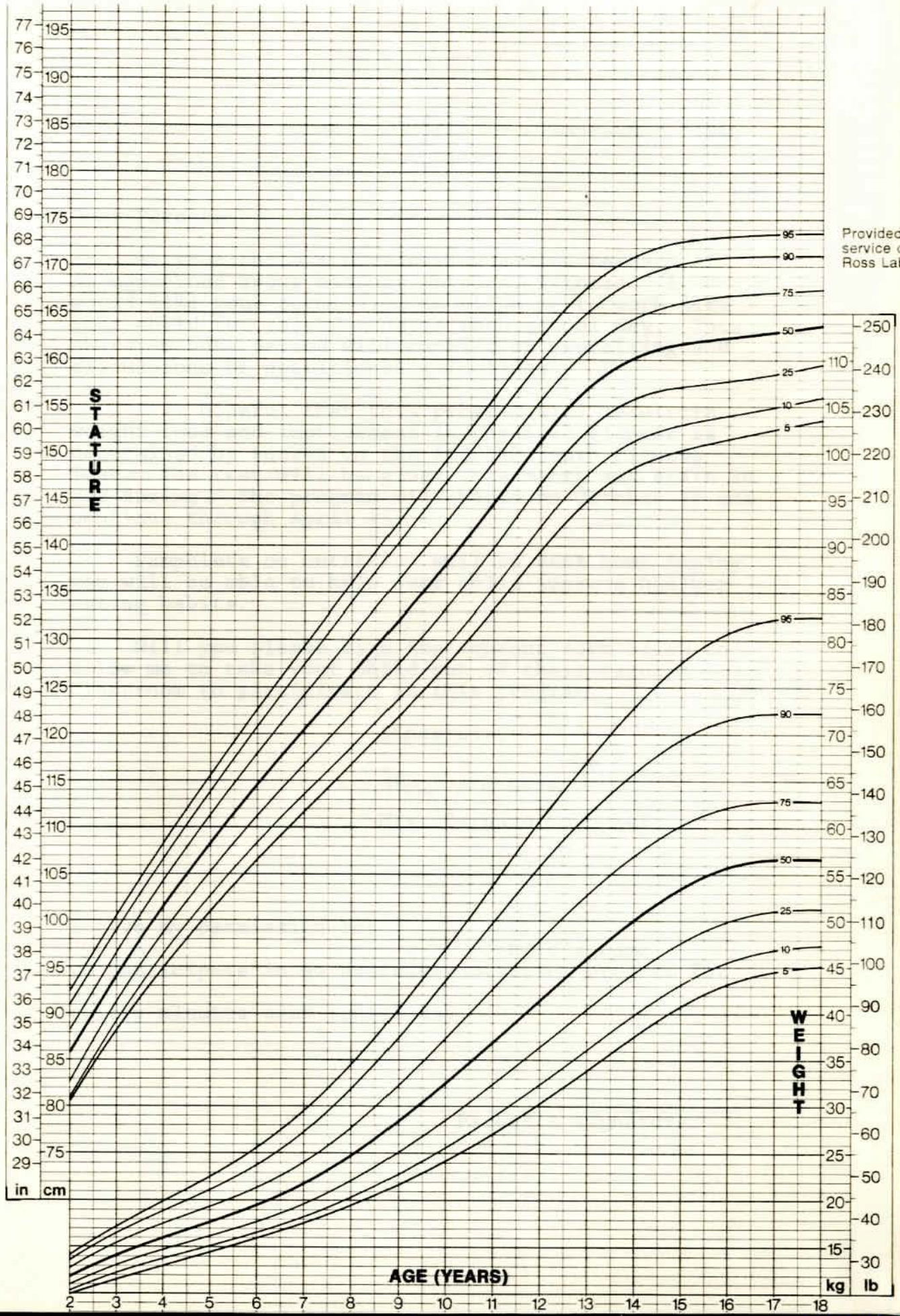
NAME _____ RECORD # _____

DATE	AGE	STATURE	WEIGHT



GIRLS: 2 TO 18 YEARS
PHYSICAL GROWTH
NCHS PERCENTILES*

NAME _____ RECORD # _____



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service c
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Appendix B

September, 1983

Dear Parents,

As your child's physical education teacher, I am concerned about his/her physical fitness. I would like your permission to allow me to work with your child for thirty minutes each school day. This thirty-minute period will consist of exercising and discussions of nutritional guidelines.

I am hopeful that this program will result in weight loss and improvement in physical fitness as determined by scores on the AAHPERD Youth Fitness Test. The test will be given this month and again in the spring. The program will begin on October 15 and continue through April 15.

Pamphlets on nutrition will be sent home hoping you will be able to help your child improve his/her eating habits.

Will you please sign the consent form below to allow me to take your child out of their regular classroom to participate in this program.

Sincerely,

Mrs. Barbara McDougal

Mrs. Barbara McDougal

I give my permission for _____
child's name
to participate in an exercise/nutrition program for thirty minutes each school day.

_____
Parent's signature

Appendix C

The exercise period will consist of three parts: (1) Warm-up (bending and stretching activities), (2) Cardiovascular conditioning, and (3) Cool-down (repeat of bending and stretching activities). The following exercises are recommended for the Warm-up and Cool-down sections. These exercises would allow for a choice to provide a variety and not for all to be done each day.

Suggested Warm-up and Cool-down Activities

1. Deep Breathing--Inhale fully as you raise arms from front to over-head position. Lower arms to your sides while exhaling. Repeat.

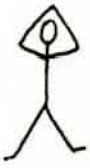
2. Trunk Twist--With arms fully extended laterally, feet apart, rotate torso fully left, return, rotate fully right.

3. Bent Knee Sit-up--Lie on back with hands clasped behind head, arms placed at sides or arms across the chest. Sit up by raising head, then shoulders, then chest. Return to starting position and repeat.

4. Knee Lift--Stand erect. Raise knee and grip with hands, pull to chest, recover, and repeat with alternating legs.

5. Alternate Toe Touch--Stand erect with feet apart, keep legs straight, bend forward. Touch left toe with right hand, recover, bend forward touching right toe with left hand. Recover and repeat.

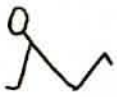
6. Side Stretch--Stand straight, hands on hips. Step to one side and return to upright position and repeat.



7. Jumping Jacks--Stand with feet together, hands at sides. Jump up, spreading legs wide while clapping hands overhead. Jump again returning to original position. Repeat.

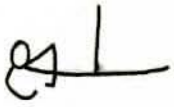
8. Lateral Bending--Stand erect, feet 12 inches apart, right arm extended over head, bent at elbow. Bend sidewards from waist to left. Slide left hand down leg as far as possible, and at the same time press to left with right arm. Return to starting position and change arm positions. Repeat to right and continue alternating to left, then right.

9. Arm Circling--Stand erect, feet 12 inches apart, arms raised at sides. Make large circles with arms in windmill action with both arms moving at same time.



10. Modified Push-up--Lie face down, hands directly under shoulders, knees on floor. Raise body from floor by straightening it from head to knees. Lower to starting position and repeat.

11. Leg Lifts--Lie on back with legs straight. Raise legs to 18 inches off floor. Lower to floor slowly and repeat.



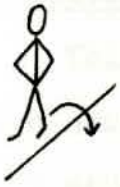
12. Side Leg Raise--Lie on side with legs straight along floor, top arm used for balance. Raise upper leg until it is perpendicular to floor. Lower to starting position and repeat.

13. Half Knee Bend--Stand erect, hands on hips. Bend knees halfway with palms down. Return to starting position and repeat.

14. Body Bender--Stand with feet shoulder width apart, hands behind neck, fingers interlaced. Bend trunk sideward to left as far as possible, keeping hands behind neck. Return to starting position and repeat to the right.

15. Ball Throw to Wall--Stand 4 to 6 feet from wall, hold ball in front of chest. Throw ball to wall in chest pass manner and catch rebound. Continue to throw and catch.

16. Line Jump, Side to Side--Stand beside a line and jump from side to side. Jump with both feet together.



17. Line Jump, Front to Back--Stand facing a line and jump over it from front to back. Jump with both feet together.

18. Hop Kick--Stand erect, spring off left leg while kicking right leg out and extending right hand to touch right foot. Recover and repeat, alternating sides.

19. Hurdlers Leg Stretch--Take place on floor in hurdlers position. Alternate feet forward to back with pausing and stretching back leg. Continue alternating.

20. Trunk Curl--Lie on back with knees bent. Pull the head and neck forward, then the shoulders. Roll as far forward without lifting the lower back off the floor. Hold position and return to start and repeat.

Suggested Activities for Cardiovascular Conditioning

This section should begin slowly and progress with amount of time spent depending on progress of each student.

A good test for progression is to time student in using a jump rope and doing a jog-type jump. Have student jump for one minute counting the number of times the right foot touches the floor. This should be repeated once a week and record progression.

Students stay interested in jump rope activities if they are taught tricks to add a variety to their time spent jumping rope. A good source demonstrating tricks is Skip It For Fun by Richard Cendali.

Another area of this type of conditioning is aerobic dancing. Music adds more enjoyment to continuous movement. A good record for students in grades 4-6 is Jacki Sorensen's Elementary Aerobic Dancing. Also, students enjoy creating their own movements to popular tunes such as "Rocky" and "Celebration."

Jogging is another good phase of cardiovascular conditioning. Children enjoy jogging because it is such a popular form of exercising with adults. Jogging should be started with intervals of walking in the beginning. With continued practice one can add longer periods of time of actually jogging. Any jogging session should end with a period of walking as a cool-down phase.

Appendix D

Students will be given two pamphlets: "Personalized Weight Control" and "What to Know About a Weight-Control Diet Before You Eat One." Both pamphlets are available through the National Dairy Council. The National Dairy Council also offers to teachers a learning packet, "Food . . . Your Choice." The Level 3 packet will be used. Students will periodically be given learning activity sheets from this source. Two examples of these activities are on the following two pages.

National Dairy Council
6300 North River Road, Rosemont, Illinois 60018 Telephone (312) 696-1020

May 11, 1983

Mrs. Barbara McDougal
7 Olde Orchard Ct.
St. Charles, MO 63301

Dear Mrs. McDougal:

Thanks for writing to me in addition to speaking to Mrs. Garo.

National Dairy Council is pleased to hear that FOOD...Your Choice, Level 3, Unit 1, Activities 1 and 4B will be valuable in your master's paper. You have our permission to include copies of the activities in their entirety, without deletions or additions of graphics or copy in your master's paper, with the customary credit line Courtesy, National Dairy Council.

Sincerely,

Joyce R. Wincovitch

Joyce R. Wincovitch
Writer/Editor
Nutrition Education

JRW:em
cc: Mrs. Young, St. Louis District Dairy Council

NAME _____

HOW DO YOU FEEL ABOUT FOOD?

The feelings we have about food help us make food choices. Below are questions relating to your feelings about food. Next to the questions are columns marked "yes," "no," and "not sure." Put an "X" in the column which best shows your feelings.

	YES	NO	NOT SURE
1 Do you feel it's a good idea to hurry through lunch to have more time to play with your friends?			
2 Do you feel snacks are good for you?			
3 Do you feel it's important to use nutrition information on food labels?			
4 Do you feel that you choose foods wisely?			
5 Do you feel that eating breakfast helps you feel better?			

Now take a closer look at those and other feelings about food. Finish the sentences below to tell how you feel.

Breakfast is _____

School lunches are _____

Snacks are _____

Food advertising can _____

I believe people should eat _____

Nutritious food is _____

A balanced diet can _____

The best part of mealtime is _____

The most important thing about food is _____

_____

In these sentences you have two choices. Circle the part that applies to you and finish the sentence.

I (sometimes/never) miss meals because _____

_____

I (try/never try) new foods because _____

_____

UNIT ONE ACTIVITY 4B
THE RACE IS ON!

NAME _____

Carbohydrate-containing foods are those with sugar, starch, or fiber. Some foods that contain sugar taste sweet. Syrup, jelly, and jam all contain sugar. Starch is a long chain of sugars which the body breaks down. Foods with starch come from plants. Examples are potatoes, dried beans, corn, and foods made from grain, such as cereal and bread. Fruit, vegetables, and whole grains supply a complex carbohydrate called fiber. It is useful for regular elimination, which is the disposing of solid waste by the human exhaust system.

Fats supply a large amount of energy in a small amount of food. They also form part of every body cell and carry some vitamins. Rich sources of fat are shortening, oil, butter, margarine, salad dressing, and sausages.

Energy Counts

The joule is the metric unit that tells the amount of energy in food. The number of joules in food varies widely. The number of joules depends on the serving size and on the amount of protein, carbohydrate, and fat in the food. The amount of energy you need depends upon your weight, your rate of growth, and your physical activity. If your food supplies less energy than you need, your body uses stored carbohydrate and then fat for fuel. You may lose weight.

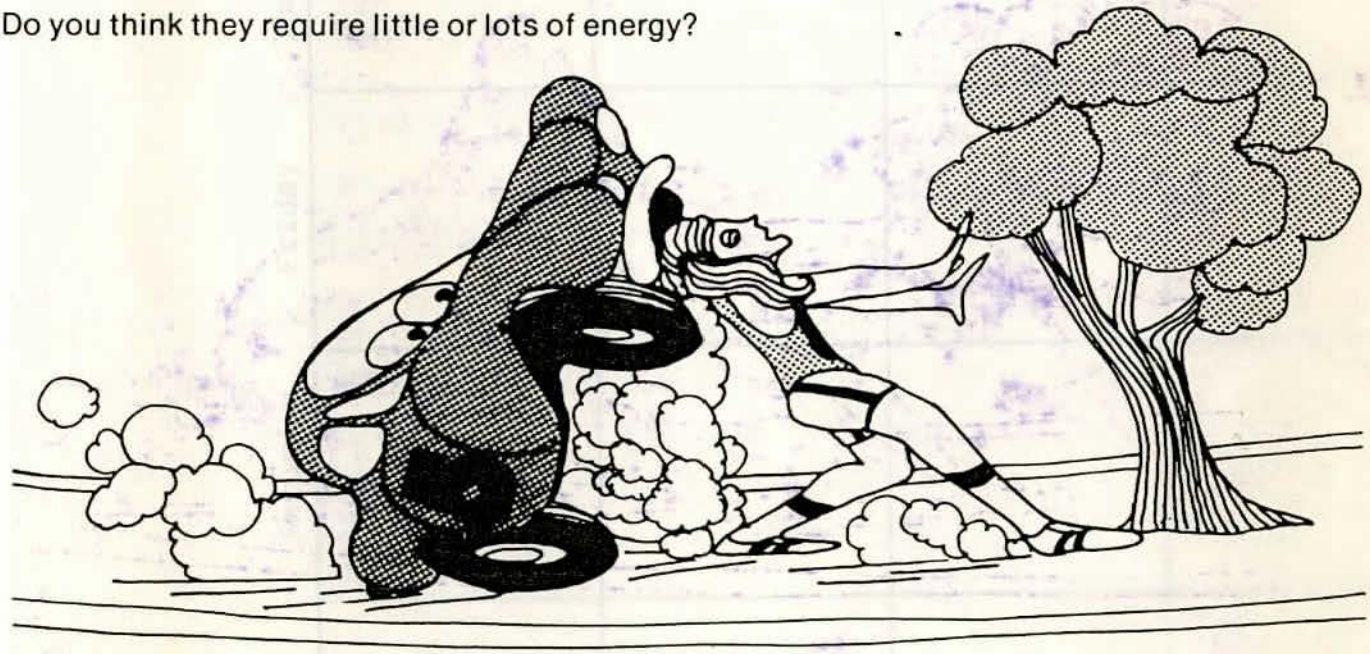
A car does not get fat when the gas tank is filled. Your body, though, can store extra fuel as fat. If you keep your body in peak condition you will gain weight as you grow. The best way to stop gaining excess weight is by eating less and exercising more. It is important to balance your energy intake with your energy needs. A doctor should help you if you change your energy intake.

STOP!

THINGS TO THINK ABOUT
PUT YOUR ANSWERS ON THE BACK.

What are your favorite activities?

Do you think they require little or lots of energy?



Appendix E

Date_____

	Breakfast	Lunch	Supper	Snacks
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

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