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ABSTRACT

A description is given of a program that provides preventive measures to check obesity in children and young people. The 24-week program is divided into two parts--a nutrition component and an exercise component. At the start and end of the program, tests are given to assess the participants' height, weight, body composition, fitness level, and nutritional awareness. The total program consists of eight steps: (1) selecting participants; (2) inviting participants to the program; (3) informal meeting with parents and/or participants; (4) parental and medical permission slips; (5) pre-testing; (6) implementation; (7) post-testing; and (8) progress reports. This manual provides suggested activities for each of these steps of the program, including sections on testing students, nutrition and weight control guidelines, exercise guidelines, sample lesson plans, and sample exercise sessions. A bibliography is included. (JD)

Kids Weigh to Fitness

by Mary Jane Maione

Dedicated to all of the students at Cayuga Elementary School who took part in this program, particularly Lenny Saladino.

American Alliance for Health, Physical Education, Recreation, and Dance
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About the Alliance

The American Alliance is an educational organization, structured for the purposes of supporting, encouraging, and providing assistance to member groups and their personnel throughout the nation as they seek to initiate, develop, and conduct programs in health, leisure, and movement-related activities for the enrichment of human life.

Alliance objectives include:

1. Professional growth and development—to support, encourage, and provide guidance in the development and conduct of programs in health, leisure, and movement-related activities which are based on the needs, interests, and inherent capacities of the individual in today's society.

2. Communication—to facilitate public and professional understanding and appreciation of the importance and value of health, leisure, and movement-related activities as they contribute toward human well-being.

3. Research—to encourage and facilitate research which will enrich the depth and scope of health, leisure, and movement-related activities; and to disseminate the findings to the profession and other interested and concerned publics.

4. Standards and guidelines—to further the continuous development and evaluation of standards within the profession for personnel and programs in health, leisure, and movement-related activities.

5. Public affairs—to coordinate and administer a planned program of professional, public, and governmental relations that will improve education in areas of health, leisure, and movement-related activities.

6. To conduct such other activities as shall be approved by the Board of Governors and the Alliance Assembly, provided that the Alliance shall not engage in any activity which would be inconsistent with the status of an educational and charitable organization as defined in Section 501 (c) (3) of the Internal Revenue Code of 1954 or any successor provision thereto, and none of the said purposes shall at any time be deemed or construed to be purposes other than the public benefit purposes and objectives consistent with such educational and charitable status.

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About the Author

Mary Jane Maione is an exercise physiologist and a physical educator. She has been teaching physical education for the last 12 years, and has created and directed a weight control fitness program in her school. Her interest in the overweight child led her to pursue her graduate work in exercise physiology, and she is currently working in Pediatric Obesity at North Shore University Hospital, Manhasset, New York.

Kids Weigh to Fitness is Mary Jane's first book. It is designed to help the educator design a specific program geared to helping young people with weight problems. With proper nutrition, exercise, education, and guidance, students can maintain their weight, lose weight, improve in their fitness, and most importantly, feel good about themselves.

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chapter one
OVERVIEW
1

The kindergarteners enter their first year of school. My colleagues and I watch in awe of them. They are so young, innocent, and cute. One child stands out; she is bigger than the rest of the children her age. I hear, "Isn't she cute." I'm disturbed by the comment and add, "She's gonna have a weight problem." "Oh," they reply, "it's just baby fat, she'll grow out of it!"

I presently have a student who, at age 5, was just such a child, cute, adorable, and heavy. I heard teachers and parents remark how cute she was. Today, as hard as it is to believe, she is 5'5" and 205 pounds. I ask you, is she still cute and adorable? The answer is no. She never grew out of her weight, she gained, gained, and gained. Like this young lady, many children who are overweight in elementary school continue to be throughout their lives.

There are many factors that contribute to a child becoming overweight. Family conflict, ethnic background, socio-economic status, obesity among one parent or both, school, and peer pressure can all affect a child's tendency toward overweight. For each child the reason is different Yet each child with a continuing weight problem is at risk. Overweight and obesity are associated with hardening of the arteries, high blood pressure, heart attacks, strokes, back problems, diabetes, and many other health problems. The weight problem of the obese person begins at birth and continues through-

out childhood. It is usually during the adult life that medical problems arise. However, it is during childhood that the obese child begins to develop poor cardiovascular fitness and high blood pressure. Studies have indicated that both poor cardiovascular fitness and high blood pressure are high risk factors in coronary heart disease. Therefore, if a child is obese as a young person and continues to be through adolescence and adulthood, the chances for future coronary heart disease increase.

It is my belief that the public school system can provide important preventative measures to check obesity and its associated medical problems. As an elementary physical education teacher and an exercise physiologist, I have developed and directed a preventative program of this nature that includes weight control, nutritional awareness, and exercise. The program has been in existence for seven years at Cayuga Elementary School, Lake Ronkonkoma, New York. I have worked with many overweight children ages 6–18.

Over the years, I have compiled information for this program. This manual is the result of hard work and dedication to the belief that a program of this nature is necessary in a school setting. I can only be honest and tell you that it is not an easy task helping and encouraging children to lose weight. It would be dishonest to tell you that every child was successful in the program. Children may not lose weight in your program. However, if they do not gain weight, they have accomplished a goal. The growth process will allow some children to grow into their desired height-related weight. This is an important concept in a program of weight control for young children.

This manual is written to assist you in developing a weight reduction program in your school or school district. It can be applied to grades K–12. I have organized this manual so that you can follow a planned format. It is meant to serve as a guideline, and can be altered to suit your specifications. It is my hope that this manual will give you some insight into the special problems of overweight children, as well as some specific, practical suggestions for your future program. I wish you and your colleagues the best of luck in this important endeavor.

chapter two

DESCRIPTION OF PROGRAM

2

A weight control/fitness program can be organized and directed by any professional who wants to help young people with weight problems. The contents of this book are organized for the physical educator, the school nurse, the classroom teacher, and the school psychologist. However, this program can be directed and implemented by other professionals, for example, a guidance counselor, a home economics teacher, or a dietitian. It is important that the staff be qualified to teach and implement weight management, nutrition, and exercise.

The program outlined here meets two-to-three times a week. As a 24-week program, it is divided into 2 parts: a nutrition component and an exercise component. The exercise component is designed to meet 2 times a week before or after school. The nutrition component meets every other week during the school day. The duration of each session is approximately 60 minutes.

At the start of the program and at the end of the program, tests are given to assess the participant's height, weight, body compo-

sition, fitness level, and nutritional awareness. The total program can be broken down into eight steps:

1. Selecting Participants
2. Inviting Participants to the Program
3. Informal Meeting with Parents and/or Participants
4. Permission Slips: Parental/Medical
5. Pre-Testing
6. Implementation
7. Post-Testing
8. Progress Report

This manual provides suggested activities for the above-mentioned steps of the program, including sections on testing students, nutrition and weight control guidelines, exercise guidelines, sample lesson plans, and sample exercise sessions.

Ideally, three professionals should take part in the program, although one or two qualified professionals *can* implement the program. A weight control/fitness program can run 12 weeks or longer. I have suggested 24 weeks because it fits well in the school calendar, and the longer time period helps students in developing better daily living habits.

chapter
three

GETTING STARTED 3

Selecting Participants

Which Children Should Participate in the Program?

Obviously, they must be overweight. As a physical education teacher in a school setting, you have contact with hundreds of children of different ages, sizes, and weight. Looking at them, you can usually tell if they are overweight or not. However, it is wise to have some standards available so that your assessment is more accurate.

One way to be fair and accurate is to utilize "height-weight" charts for boys and girls. Weigh the child and determine how many pounds over the suggested height-weight he or she is. If the child exceeds the pre-determined cut-off point, they should be invited to join the program. This cut-off point can be 15 lbs. To be even more

accurate, you can also measure the percent body fat for each child. Use whichever method allows you to screen the children quickly so that you can move on to the next step.

Inviting Participants to Join

Children who are overweight are very sensitive about their bodies and are uncomfortable when you talk about their weight problem. You must approach your invitation to the program with great care.

First of all, you do *not* want the program to be labeled, "The Fat Club." It will be hard to prevent this in some school settings because other children can be insensitive. What has worked for me is calling my program "The Fitness Club." I put a great emphasis on fitness and getting into shape. Along with this idea, I convey the importance of weight loss.

The invitation to your program can be handled differently for different age groups. For example, in the junior high or high school setting, kids are more apt to volunteer to join the program. They know they have a weight problem and want to do something about it. On the other hand, the elementary student is aware of his or her weight problem but hasn't truly experienced the emotional pressures that are associated with being overweight. This age group is less likely to volunteer.

Whichever level you are working with, sensitivity is a must. Be aware that what works for one student may not work for another.

When inviting participants to join your program, consider the following.

1. Send a letter to parents addressing the problem of obesity and its implications for future health problems. Acknowledge their

child as being overweight and explain the service that the school system is offering. Set up a meeting time.

2. Approach the student independently and invite him or her to an informal group meeting.

3. Talk to the students individually about the program.

4. Advertise your program to other professionals in your building. They may have a special rapport with a student who has a weight problem and may be able to encourage the student to join the program.

Once you have invited the students, set up a meeting with parents, students, or both.

Informal Meeting

After you have screened students for your program, it is advisable to have a meeting with the parents, or in some cases, just the students. I highly recommend sending a letter home informing the parents of this meeting. A sample letter can be found at the end of this chapter.

At the meeting, staff members involved with your weight control program should be introduced. Staff can include the school nurse, the classroom teacher, the physical education teacher, and the school psychologist. General objectives for the program should be defined. Each staff member should briefly explain his or her role and contribution to the program.

Prior to the meeting, you should prepare an individual chart for each participant. This chart should include the child's present weight, height, and suggested body weight. You will be surprised to learn how many parents are unaware of their child's weight. Other information may include present blood pressure, resting

heart rate, and a weight profile from kindergarten through the present grade.

It may be helpful to offer to parents and students a sample diet, a calorie counter, and some helpful hints in weight reduction. When recommending a diet, be sure it is a nutritionally sound diet. There are many good, safe diets available. Please refer to the end of this text for a listing of acceptable diets. Keep in mind that there are many inappropriate diets on the market today. Diets of this nature often aid in weight reduction; however, the diet may not be safe and may often restrict important nutrients necessary for good health. Sample handouts to be given at this meeting are included at the end of this chapter.

As director of the weight control program, you must convey to both parent and child that losing weight is not easy. It will take time; but with proper diet and adequate exercise, they *will* lose weight.

It is hoped that the parents and children leave this meeting with the understanding that the school system cares about their problem. However, they must know that the primary responsibility lies with them. The support and encouragement from both the family and the school will have a tremendous impact on the child's chances for success in the program.

Permission Slips— Medical Clearance

Now that you have met the parents, it is important to have a permission slip signed by parent or legal guardian. Some parents may not be available for your meeting. If this is the case, a phone

call or a letter introducing the program may be sufficient. In any case, a permission slip should be signed before a child participates in your program.

Another prerequisite for participation is a medical clearance. Before the child participates in any aspect of the program, the child must have a physical examination. This examination is helpful in determining if limits need to be placed on a child's activities. Medical clearance also protects you in the event that the child develops any complications as a result of the program. A sample permission slip and a sample letter to the physician can be found at the end of this chapter. A letter to the physician can be helpful for the parents when explaining the program to their doctor.

Sample Letters:

school heading
telephone number
date

Dear Parents,

Your child has been selected to participate in the weight control/fitness program to be held at school this fall. The program is designed to help children who are developing a weight problem. It is a safe and sound approach to losing weight. The program is conducted and organized by professionals in the school setting who are experienced in the areas of nutrition, weight management, and exercise.

To fully explain our program, I would like to invite you to an informal meeting to be held on (day/date), at (time), in the nurse's office. At that time, we will discuss the overall objectives and procedures for the program.

In order for your child to participate, we will need a signed permission slip from you and a medical clearance from your family doctor. Enclosed is a permission slip that you may sign after the meeting or, in the event that you may not be able to attend, sign it and have your child return it to school. In addition to the permission slip, I have written a letter to your doctor that will briefly explain the weight control/fitness program. Please bring it with you when you and your child go for your physical examination. Please note, your child will not be allowed to start the program until we receive a medical clearance. Please forward this to us as soon as possible. Thank you.

If there are any questions regarding the program, please do not hesitate to call me at the above number. I look forward to working with your child and seeing you at the upcoming meeting.

Sincerely,

Director

school heading
date

PERMISSION SLIP: WEIGHT CONTROL FITNESS PROGRAM

My child, _____, has my permission to participate in the weight control/fitness program. I am aware that the program will meet before/after school on (day) and (day).

Please Check Appropriate Box

☐ My child has my permission to walk to/from school for this program.

☐ My child has permission to ride on the special extended buses in order to participate in the program.

☐ I will provide transportation for my child to participate in this program.

_____
(Parent/Guardian Signature)

_____
(date)

school heading
telephone number
date

Dear Doctor,

Your patient, _____, has been selected to attend our weight control/fitness program. The weight control/fitness program is designed to meet the needs of the overweight child. It is directed and organized by professionals in the school setting who are experienced in the areas of nutrition, weight management, and exercise.

Children participating in this program will meet 2–3 times a week before/after school. Sessions will involve nutrition education and exercise. Children will learn nutritionally sound methods of losing weight in combination with learning to change eating behaviors. In addition, children participating in the program will engage in a daily exercise routine that will promote a reduction of body fat and increase cardiovascular fitness, strength, and flexibility. The exercise component will be a slow but progressive aerobic activity and will include exercises for strength and flexibility.

In order for your patient to participate in the above-mentioned program, we are requesting a complete physical examination to assure your patient's safety. If there are any questions regarding the program, please do not hesitate to call me at the above number.

Thanking you in advance for your cooperation and support in this program.

Sincerely,

Director

Sample Hand-outs:

Weight Chart

Name _____ Height _____

Address _____ Weight _____

_____ Suggested Weight _____

_____ Blood Pressure _____

Phone _____ Resting Heart Rate _____

School Year _____ Physical Limitations _____

Class _____ _____

Comments: _____

_____

Weight Profile

Grade	K	1	2	3	4	5	6
Date							
Weight							

Weight Control

Some Helpful Hints

To Lose Weight:

1. Reduce daily calorie intake.
   a. 500 fewer calories a day = 1 pound in a week.
   b. 1000 fewer calories a day = 2 pounds in a week.
   c. Aim for a moderate weight loss of no more than two pounds a week.
2. The slower you take weight off (1–2 pounds a week), the longer it stays off.
3. Eat a properly balanced diet:
   Milk Group—4 servings
   Vegetables/Fruits—4 servings
   Meat/Eggs/Fish—2 servings
   Bread/Cereal—4 servings
4. Eat generous amounts of vegetables, cooked or raw.
   CAUTION: watch dressings and butter.
5. Never skip a meal.
6. Eat only at meal time. If snacking is a must, eat raw vegetables, a piece of fresh fruit, or fruit juice.
7. Fad diets and crash diets are *very unhealthy*.
8. Fast foods: foods from hamburger stands, fried chicken places, or fish and chip restaurants are usually high in calories because they contain large amounts of sugar and fat.
9. Cut down on the amount of high calorie foods.
   a. Sweets: cookies, candy, cakes, pies, and soda
   b. Fats: butter, margarine, mayonnaise, and salad dressings
10. Exercise regularly.
11. When dieting, it is nutritionally unsafe to reduce caloric intake lower than 1200 calories per day.

Recommended Dietary Allowances (RDA)

		Calories Required
Children	ages (4–6)	1,700
	ages (7–10)	2,400
Females	ages (11–14)	2,200
	ages (15–18)	2,100
Males	ages (11–14)	2,700
	ages (15–18)	2,800

3,500 calories = 1 lb. of fat

500 fewer calories = 1 pound loss in a week
1,000 fewer calories = 2 pound loss in a week

AN IMPORTANT NOTE: 500–1,000 calorie deficit per week is best achieved through the combination of diet and exercise.

Sample Menus

BREAKFAST

		Calories
½ cup O.J.		60
1 egg		80
1 slice of bread		70
1 tsp. margerine		30
1 cup milk		160
	total	400
½ cup O.J.		60
1 slice of bread		70
1 oz. slice cheese		100
1 cup cocoa (made from 1 cup milk; 1 tsp. cocoa; 1 tsp. sugar)		190
	total	420
½ cup grapefruit juice		50
1 med. banana		100
1 cup cornflakes		100
1 tsp. sugar		15
1 cup skim milk		90
	total	355
2 slices french toast		245
2 TBS. syrup		120
½ med. grapefruit		45
	total	410
¾ cup cooked oatmeal		100
2 TBS. raisins		60
1 cup milk		160
1 tsp. sugar		15
½ cantaloupe		60
	total	395

(Sample menus for Breakfast, Lunch, and Dinner, from the Suffolk County Department of Health Services, 225 Rabro Drive East, Hauppauge, New York, 11788.)

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Sample Menus

LUNCH

		Calories
2 slices bread		140
2 oz. boiled ham		135
lettuce (⅙ of a head)		10
1 tsp. mayonnaise		35
1 cup unsweetened applesause		100
1 cup of skim milk		90
	total	510
1 cup of vegetable soup		80
1 slice bread		70
1 TBS. peanut butter		100
2 small cookies		100
1 cup of milk		160
	total	510
2 oz. hamburger		160
1 hamburger bun		120
1 TBS. catsup		15
1 med. apple		70
1 cup milk		160
	total	525
2 slices of pizza		380
½ cup ice cream		130
	total	510
1 frankfurter		170
1 bun		120
½ cup peas		60
1 med. orange		65
1 cup skim milk		90
	total	505

Sample Menus

DINNER

		Calories
½ chicken breast, fried		160
½ cup mashed potatoes		90
½ cup peas		60
tossed salad greens		30
1 TBS. dressing		70
1 cup milk		160
	total	570
3 oz. lean hamburger patty		180
10 french fries		150
2 TBS. catsup		40
1 cup green beans		40
1 cup milk		160
	total	570
3 oz. lean roast beef		170
1 cup cooked carrots		40
1 TBS. margarine		35
1 med. potato		80
4 stalks celery		20
1 slice bread		65
½ cup fruit cocktail		100
1 cup milk		90
	total	600
5 breaded fishsticks		200
½ cup corn		80
1 cup spinach		40
1 cup milk		160
½ cup ice cream		130
	total	610
1 cup spaghetti, meatballs, tomato sauce (canned)		260
½ oz. parmesan cheese		60
1 cup tossed salad		50
1 TBS. french dressing		65
3 fresh plums		75
	total	510

Calorie Counter

MILK GROUP	AMOUNT	CALORIES
Milk:		
skim and buttermilk	8 ounces	90
2% milk	8 ounces	120
whole	8 ounces	160
evaporated, undiluted	8 ounces	345
chocolate milk "drink"	8 ounces	155
cocoa (all milk)	6 ounces	175
chocolate milk (whole milk)	8 ounces	205
eggnog, plain	8 ounces	290
milkshake, chocolate	8 ounces	340
milk, dry, nonfat solids	1 tablespoon	25
yogurt (partially skim milk)	1 cup	120
Cheese:		
American, processed	1 ounce	110
cottage, not creamed	½ cup	100
cottage, creamed	½ cup	120
Swiss	1 ounce	100
special varieties, average	1 ounce	100
cheddar	1 cunce	110
Milk desserts:		
ice milk		
"dietetic" vanilla	⅙ quart	135
regular vanilla	⅙ quart	135
ice cream		
"dietetic" vanilla	⅙ quart	175
regular vanilla	⅙ quart	190
soda, ice cream	fountain size	280
sundae, no whipped cream	1 medium	240
pudding		
cornstarch vanilla	½ cup	150
tapioca	½ cup	170
cornstarch, chocolate	½ cup	220

MEAT GROUP	AMOUNT	CALORIES
Beef:		
roast, average, lean only	3 ounces	150
roast, average, lean and fat	3 ounces	250
corned, hash, canned	3 ounces	155
corned, canned	3 ounces	185
pot roast, lean only	3 ounces	170
pot roast, lean and fat	3 ounces	255
pot roast, lean and fat with 2 tablespoons gravy	3 ounces	335
steak, broiled, lean only	3 ounces	180
steak, broiled, lean and fat	3 ounces	340
ground beef, lean	3 ounces	185
ground beef, regular	3 ounces	245
beef croquette	3 ounces	205
stew with vegetable and gravy	1 cup	210
meat loaf, beef and pork	3 ounces	320
chili con carne, with beans	1 cup	335
spaghetti, with meat sauce	1 serving	395

	AMOUNT	CALORIES
Lamb:		
chop, broiled, lean only	3 ounces	160
chop, broiled, lean and fat	3 ounces	300
roast, leg, lean only	3 ounces	160
roast, leg, lean and fat	3 ounces	260
Veal:		
cutlet, broiled	3 ounces	185
cutlet, breaded	3 ounces	395
roast, lean and fat	3 ounces	230
Pork, cured:		
ham, roasted, lean only	3 ounces	160
ham, roasted, lean and fat	3 ounces	245
ham, roasted, lean and fat with 2 T. raisin sauce	3 ounces	305
ham, boiled	3 ounces	205
bacon, broiled	2 slices	100
bacon, Canadian, broiled	2 slices	115
Pork, fresh:		
spareribs, roasted	3 medium ribs	125
roast, lean only	3 ounces	220
roast, lean and fat	3 ounces	310
chop, lean only	3 ounces	230
chop, lean and fat	3 ounces	335
Sausages and Luncheon Meats:		
souse	1 slice	110
meat loaf	2 ounces	115
Vienna sausage	3 links	130
frankfurter, cooked	1 medium	155
luncheon meats, canned	2 ounces	165
bologna	2 slices	170
liverwurst or salami	2 slices	185
pork sausage, cooked	1 patty or links	190
scrapple	1 slice ¼" thick	125-200
Variety Meats:		
tongue, average, braised	3 ounces	195
liver, average, fried	3 ounces	210
kidneys, beef, simmered	3 ounces	215
Poultry:		
drumstick, fried	1 drumstick	90
breast, fried	1 breast	155
roasted, flesh only	3 ounces	160
roasted, flesh and skin	3 ounces	240
stewed, flesh and skin	3 ounces	220
chicken and noodles	1 cup	360
chicken a la king	1 cup	450
Meat Pies and Frozen Dinners:		
meat pie, average, frozen	1 pie	455
"TV" dinner	1 dinner	250-540
Fish and Shellfish:		
clams, fried, with butter	3 ounces	265
crab cakes	1 serving	110
crab salad	3 tablespoons	140
crab imperial	1 cup	345
fish		
baked or broiled, average	3 ounces	150
breaded and fried, average	3 ounces	180
fried, average	3 ounces	225
fish sticks	4 sticks	160
whitefish, stuffed, baked	3 ounces	190
lobster salad	¾ cup	225
lobster Newberg	1 serving	290

lobster, boiled or broiled with 2 T. butter	¾ pound	310
oysters, raw	5-8 medium	85
oyster, stew, with milk	1 cup	200
oysters, fried	3 ounces	205
salmon, canned, pink	3 ounces	120
sardines, canned in oil	3 ounces	175
shrimp, canned, meat only	3 ounces	100
shrimp, French fried	3 ounces	165
shrimp creole	3 ounces	220
tuna, canned, drained	3 ounces	170
tuna noodle casserole	1 cup	280
tuna salad sandwich	1 sandwich	280
Eggs:		
boiled or poached	1 large	80
scrambled or fried	1 medium	110
omelet, plain	2 eggs	240
egg salad sandwich	1 sandwich	280
Meat Alternates:		
peanut butter	2 tablespoons	190
beans, kidney, canned	1 cup	230
beans, lima, dried, cooked	1 cup	260
beans, baked, with pork and molasses	1 cup	310
beans, white, canned, with tomato sauce and pork	1 cup	320
peas, split, cooked	1 cup	290
macaroni and cheese, baked	1 cup	485

FRUIT AND VEGETABLE GROUP

Vitamin C-Rich Foods:		
cabbage, raw, shredded	½ cup	10
cabbage, raw, coleslaw	⅓ cup	70
grapefruit, fresh	½ medium	60
grapefruit, sections, raw or water pack	½ cup	35
grapefruit, sections, syrup pack	½ cup	90
orange, fresh	1 medium	70
juice, grapefruit or orange		
fresh	½ cup	50
frozen concentrate diluted	½ cup	55
canned, unsweetened	½ cup	55
canned, sweetened	½ cup	65
strawberries, fresh	½ cup	30
strawberries, frozen, sweetened	½ cup	125
tomato juice, canned	½ cup	25
tomatoes, cooked or canned	½ cup	30
tomato, raw	1 medium	35
Dark Green and Deep Yellow Fruits and Vegetables:		
apricots, dried, uncooked	5 large halves	65
apricots, canned, syrup pack	4 halves	105
broccoli, spears, cooked	½ cup	20
cantaloupe, fresh	½ medium	30
carrot, raw, whole	1 medium	20
carrot, cooked, diced	½ cup	22
greens, cooked (e.g., collards, kale, mustard, spinach)	½ cup	20
greens, cooked, with 1 ounce salt pork	½ cup	240
greens, raw (e.g., endive, escarole, leaf lettuce)	2 leaves	10
greens, raw, with 1 T. French dressing	2 leaves	70
pumpkin, canned	½ cup	40
pumpkin pie	⅛ of 9" pie	315
squash, winter, cooked	½ cup	65
sweet potato, baked or boiled	1 medium	155

	AMOUNT	CALORIES
On fresh fruit: **2 teaspoons sugar, add 30 calories**		
Other Fruits:		
apple, fresh	1 medium	70
applesauce, sweetened	½ cup	115
banana, fresh	1 medium	85
berries, sweet cherries, raw	½ cup	40
berries, sweet cherries, frozen, sweetened	2½ ounces	70
cherries, sour, canned, syrup pack	½ cup	115
cranberry sauce, canned	½ cup	205
dates, dry, pitted	½ cup	245
fruit cocktail, canned, syrup pack	½ cup	100
grapes, average	½ cup	40
grape juice, bottled or canned	½ cup	85
peaches, fresh	1 medium	35
peaches, canned, water pack or artificially sweetened	½ cup	40
peaches, canned, syrup pack	2 halves	90
peaches, frozen, sweetened	4 ounces	100
pears, fresh	1 medium	100
pears, canned, syrup pack	2 halves	90
pineapple, raw, diced	½ cup	40
pineapple, canned, syrup pack	1 large slice	90
pineapple juice, canned	½ cup	70
plums, fresh	1 plum	25
plums, canned, syrup pack	3 plums	100
prunes, dried, uncooked	4 prunes	70
prune juice, canned	½ cup	100
raisins, dried	1 tablespoon	30
rhubarb, cooked with sugar	½ cup	195
watermelon, wedge	1 medium	115

	AMOUNT	CALORIES
On vegetables: **2 teaspoons butter or margarine, add 65 calories** **¼ cup cream sauce, add 105 calories**		
Other Vegetables:		
asparagus, cooked	½ cup	20
beans, lima, green, cooked	½ cup	90
beans, snap or wax, cooked	½ cup	15
beets, diced, cooked	½ cup	25
beets, Harvard	½ cup	145
Brussels sprouts, cooked cabbage, or sauerkraut	½ cup	20
sauerkraut with 2 oz. pork	1 serving	195
cauliflower, raw or cooked	½ cup	15
celery, raw, outer stalk	1 large	5
corn, canned or frozen	½ cup	85
cucumber, raw	½ medium	15
lettuce, iceberg	¼ head	15
mushrooms, canned or fresh	½ cup	20
mushrooms, sauteed	½ cup	85
onions, boiled	½ cup	30
peas, green, cooked	½ cup	55
peas, green, canned	½ cup	80
potato, white, baked or boiled	1 medium	90
potato, mashed	⅔ cup	120
potato, French fried	10 pieces	155
potato, hash brown	½ cup	240
radishes, red	4 small	5
squash, summer, cooked	½ cup	15

turnips or rutabagas, cooked	½ cup	20
vegetable juice	½ cup	20

BREAD AND CEREAL GROUP

Bread Products:

sliced bread		
diet bread, thin slice	1 slice	45
white, thin slice	1 slice	45
Italian, regular slice	1 slice	55
rye, light or whole wheat	1 slice	55
diet bread, regular slice	1 slice	60
white, regular slice	1 slice	60
raisin	1 slice	60
cracked wheat	1 slice	60
French, regular slice	1 slice	60
Boston brown	1 slice	100
French toast, without syrup	1 slice	185
biscuit, baking powder	1 average	140
bread stuffing, average	½ cup	270
cornbread	1 square	100
muffin, bran	1 medium	90
muffin, plain or fruited	1 medium	115
muffin, cornmeal	1 medium	140
pancake, 4" diameter	1	60
pancake with 1 T. butter and 2 T. syrup	1	280
roll, plain, average	1 medium	115
roll, hard	1 medium	160
roll, sweet, average	1 medium	180
waffle, plain	1 average	210
waffle, with 1 T. butter and 2 T. syrup	1	430

Cereals, cooked:

farina, granulated wheat	½ cup	50
rice, granulated, or cornmeal mush	½ cup	60
oatmeal or whole-wheat meal	½ cup	65

On Cereal:
2 teaspoons sugar, add 30 calories
½ cup skim milk, add 45 calories
½ cup whole milk, add 80 calories
½ cup half-and-half, a. 160 calories

Cereals, ready-to-serve:

bran, 40% flakes	¾ cup	85
bran, flakes, with raisins	¾ cup	90
bran, all	¾ cup	105
corn, flakes	¾ cup	75
corn, puffed, sugar coated	¾ cup	80
corn, flakes, sugar coated	¾ cup	110
oats, puffed	¾ cup	65
oats, puffed, sugar coated	¾ cup	85
rice, puffed	¾ cup	45
rice, puffed, cocoa flavored	¾ cup	85
rice, flakes	¾ cup	90
wheat, puffed	¾ cup	35
wheat, puffed, sugar coated	¾ cup	80
wheat, flakes	¾ cup	95
wheat, shredded	1 biscuit	100
wheat, shredded, malted and sugar coated	¾ cup	165

Cereal Products:

macaroni, cooked	1 cup	190
noodles, cooked	1 cup	200
rice, cooked	1 cup	165
spaghetti, cooked	1 cup	160

	AMOUNT	CALORIES
OTHER FOODS		
Contain Little Other Than Calories		
Beverages:		
alcoholic		
brandy or cordial	1 small glass	70
wine, table, average	3½ ounces	85
wine, dessert, average	3½ ounces	140
ale or beer, average	8 ounces	100
gin, rum, vodka, or whiskey	1½ ounces	100-125
cocktails, average	1	145
highballs, average	1	190
carbonated, "diet," average	6 ounces	1
carbonated, regular, average	6 ounces	80
cider, fermented	6 ounces	70
cider, sweet	6 ounces	95
coffee or tea, black	1 cup	0
coffee or tea with 1 tsp. sugar	1 cup	15
coffee or tea with 1 T. coffee cream	1 cup	30
cranberry juice cocktail	½ cup	80
lemonade, frozen, sweetened, diluted	1 cup	110
Desserts:		
apple brown betty, average	1 serving	225
apple betty, with lemon sauce	1 serving	390
bun, cinnamon, plain, average	1	160
Danish pastry, average	1 small	140
cake, angelfood or sponge	2" sector	115
fruitcake, average	2" x 2" x ½"	115
gingerbread	2" x 2" piece	200
cupcake, with icing	1 medium	185
cake, butter, plain	2" x 3" piece	200
cake, butter, with icing	2" x 3"	370
cookie, vanilla wafer	1	15
cookie, cream-filled, average	1	70
cookie, plain, assorted, 3" diameter	1	90
brownie	2" x 2"	140
custard, baked	½ cup	200
cream puff, custard filling	1	245
pudding, bread or rice	¾ cup	260
doughnut, cake-type, plain	1	135
doughnut, iced	1	150
doughnut, jelly filled	1	225
gelatin, flavored	½ cup	70
gelatin, with fruit	½ cup	80
gelatin, with fruit and 1 T. whipped cream	½ cup	135
pie, custard, 1 crust	⅛ of 9" pie	245
pie, lemon meringue	⅛ of 9" pie	265
pie, fruit, 2 crust	⅛ of 9" pie	305
pie, mince	⅛ of 9" pie	320
shortcake, strawberry, with whipped cream	1 serving (½ cup berries)	380
Fats and Oils:		
butter or margarine, 1 pat	½ tablespoon	50
butter or margarine	1 tablespoon	100
vegetable shortenings	1 tablespoon	110
lard or cooking oils	1 tablespoon	125
cream, light, sour	1 tablespoon	30
cream cheese	2 tablespoons	105
dressings, salad		
French	2 tablespoons	120

Thousand Island	2 tablespoons	150
Italian or blue cheese	2 tablespoons	150
mayonnaise	2 tablespoons	200
Sauces:		
mustard	1 tablespoon	10
tomato catsup or chili sauce	1 tablespoon	15
hollandaise sauce	¼ cup	180
tomato sauce	¼ cup	80
cheese sauce	¼ cup	130
tartar sauce	2 tablespoons	200
Snacks:		
green pepper strips	¼ pepper	5
crackers, cheese, tidbits	15 small	10
carrot sticks, raw	3 large sticks	15
olives, green or ripe	2 large	15
pickles, dill	1 large	15
pickles, sweet	1 medium	30
pretzels, small sticks	5	20
crackers, saltines	2-2" squares	30
crackers, soda	2-2" squares	60
crackers, graham, plain	4 small	55
pate de foi gras	1 tablespoon	65
popcorn, popped, without butter	1 cup	60
popcorn, popped, with butter	1 cup	165
potato chips	10 chips	115
potato chips with sour cream dip	5 chips	200
pizza, cheese	⅛ of 14" pie	185
walnuts, halves	½ cup	325
peanuts or almonds	½ cup	420
Soups:		
bouillon or broth, beef	1 cup	30
chicken rice	1 cup	45
noodle, beef or chicken	1 cup	70
vegetable, with beef broth	1 cup	80
clam chowder, Manhattan	1 cup	85
clam chowder, New England, with whole milk	1 cup	200
minestrone	1 cup	105
green pea	1 cup	130
split pea	1 cup	145
bean with pork	1 cup	170
tomato, with milk	1 cup	170
cream of chicken, with milk	1 cup	175
cream of potato, with milk	1 cup	180
cream of mushroom, with milk	1 cup	215
Sweets:		
jelly, artificially sweetened	1 tablespoon	10
jams, jellies, preserves	1 tablespoon	55
molasses, light	1 tablespoon	50
syrup, corn	1 tablespoon	60
honey	1 tablespoon	65
candy		
marshmallows	1 ounce	90
hard candy	1 ounce	110
caramels	1 ounce	115
fudge, plain	1 ounce	115
vanilla creams	1 small	130
chocolate, milk, plain or with nuts	1 ounce	170

chapter four

ASSESSMENT 4

Nutrition

Why Evaluate?

What do children know about foods they eat? Most students understand some things about nutrition. They have heard certain words mentioned at home, in the classroom, and in the cafeteria. Yet many children can not apply what they have learned to their daily life and eating habits.

Certain concepts in nutrition need to be taught in your weight control program. Areas that need to be discussed range from a balanced diet for optimum health to misconceptions about foods and fad diets. To assist you in establishing educational guidelines, a pre-test is recommended.

Pre-tests can be written by qualified professionals in the area of nutrition education. For example, the National Dairy Council has a Nutritional Achievement Test that is available for purchase. Validated tests of this nature are also available through other agencies.

Another method of pre-testing is to develop a nutrition questionnaire of topics that you believe need to be understood and that will be taught in your program. A test of this nature should not be made casually. Keep in mind that a test is given to evaluate knowledge of each participant and to establish guidelines for your nutritional component. When writing a test, consideration should be made of the grade level you will be teaching. A very helpful resource in making a test is the Nutritional Education Curriculum used by your school district. This curriculum should include guidelines and objectives for particular age groups.

Important topics to cover in your pre-test include:

- vitamins
- minerals
- fats
- carbohydrates
- protein
- water
- the basic four food groups
- food choices
- junk food
- empty calories
- energy expenditure
- energy balance
- lifestyles
- eating habits

Score the test and evaluate particular questions that your students have missed. Based on your findings and on nutritional and dietary guidelines, establish educational objectives for the nutritional component of the program. At the end of your program, retest the students with the same test given at the beginning of the program to evaluate what has been learned.

National Dairy Council*
Nutrition Pre-Test

Which food has the most protein?
a. egg
b. bread
c. spinach
d. orange

Which food has the most calcium?
a. celery
b. roast beef
c. peas
d. milk

Susan, age 9, ate the following meals. Use this list of menus to answer the questions below.

Breakfast: orange juice, cereal with milk
Morning Snack: apple
Lunch: bologna sandwich, pretzels, lemon pie, milk
After School Snack: graham crackers, milk

A plain bologna sandwich belongs to which food groups?
a. milk, grain
b. meat, grain
c. milk, grain, meat
d. meat, fruit-vegetable

What food could be changed in Susan's lunch to make it contain one food from each of the food groups?
a. soda pop instead of milk
b. roast beef instead of bologna
c. bread and butter instead of bologna sandwich
d. carrot sticks instead of pretzels

Use this label to answer the following three questions:

Fruit Cocktail
in light syrup

ingredients: diced peaches, water, diced pears, grapes, corn sweetener, pineapple sectors, sugar and halved cherries artificially colored red.

NUTRITIONAL INFORMATION PER SERVING

Serving Size:	1 cup	Serving Per Container:	3½
Calories	150	Carbohydrates	39 grams
Protein	1 gram	Fat	0 grams

Percentage of U.S. Recommended Daily Allowances

Protein	*	Thiamine	2	Calcium	*
Vitamin A	10	Riboflavin	2	Iron	2
		Vitamin C	6	Niacin	4

* contains less than 2% of the U.S. RDA

The number of servings in the can is
a. 1½
b. 2½
c. 3½
d. 3½

Which ingredient is in the greatest amount in the can?
a. peaches
b. pineapple
c. pears
d. grapes

How many calories are in one serving of fruit cocktail?
a. 75
b. 100
c. 125
d. 150

* National Dairy Council, Nutritional Education Material 1985–1986.

Physical Fitness

Why Evaluate?

It is important to evaluate participants in your program prior to the start of the program and at the end of the program because:

1. Evaluation assesses the status of the child entering the program.
2. Evaluation aids in suggesting particular exercises to meet the individual needs of each student and alert the teacher to any limits of activity for that child.
3. Evaluation serves as an excellent means to track a child's progress in the program and helps in motivation.
4. The results of a fitness evaluation help you to evaluate the effectiveness of your total program.

Definition of Fitness Terms

When evaluating physical fitness, we evaluate body composition, cardiovascular fitness, strength, and flexibility. This chapter includes tests that will evaluate each area of physical fitness. (Standards and norms for each test can be found in Chapter VII). To fully understand the evaluation procedure, I have included some exercise physiology concepts that relate to these components of physical fitness.

The first step in the evaluation procedure is estimating the actual body size of your students. Utilizing a height-weight chart is a good starting point; however, it is possible for an individual to be overweight and not over fat. A football player is an example of this type of individual. Many football players weigh a great deal but are not over fat; rather, they have great muscle mass. With any weight control program we are concerned with reducing fat weight not muscle weight. Therefore, it is recommended that you evaluate the body composition of each child enrolled in your program.

Body Composition

Body composition refers to lean body weight and fat body weight. Lean body weight directly relates to the muscle, bone, and connective tissue. Fat body weight is composed of essential and storage fat. The essential fat is the fat stored in the marrow of the bones and the visceral organs including the heart, lungs, kidney, liver, spleen, and the spinal cord. The storage fat is predominately a subcutaneous layer of fat just beneath the skin. It is the storage fat that a weight control/fitness program hopes to reduce.

When determining the body composition, we are interested in the percentage of storage fat in an individual. The standard level for good health in young adults has been established as approximately 10–15% total body fat in males, and 20–25% total body fat in females. Overfatness is usually determined as plus 5% over the percent body fat for that particular age and sex. The standards for overfatness in men is above 20% body fat and for women, above 30% body fat.

Hydrostatic weighing is one of the most accurate methods of assessing the body's total fat content. Because hydrostatic weighing requires sophisticated equipment not usually available to a school system, skinfold measurements are often used to predict percent body fat. These measurements indicate the amount of subcutaneous fat in particular areas of the body. These areas are highly correlated with total body fat and help to predict total body fat based on hydrostatic weighing.

The second step in this program is evaluating the physical fitness level of your students. Physical fitness includes cardiovascular fitness, flexibility, and strength.

Cardiovascular Fitness

Individuals who are overweight or obese typically are in poor cardiovascular condition. Good cardiorespiratory function is dependent upon efficiency of the total respiratory and cardiovascular systems (lungs, heart, and blood vessels), the heart being the key to these systems.

The exercise component of your program should include aerobic exercises. Aerobic exercises are endurance activities that require oxygen for prolonged periods. These activities help enhance the body's ability to move air in and out of the lungs. As a result, beneficial changes occur in the lungs, heart, and vascular system. These activities help to improve one's cardiorespiratory function, as well as aid in the reduction of body fat.

As an instructor, knowing the initial level of fitness in each of your students will help you plan your program and evaluate its success. Therefore, it is suggested that you measure each student's cardiovascular fitness.

The most commonly accepted measurement for cardiovascular fitness is Maximum Oxygen Uptake (max VO_2). Maximum oxygen uptake generally summarizes what is going on in the oxygen transport system. In other words, it measures the amount of oxygen the body is able to deliver to its muscles during an exhaustive workout. The greater the ability to transport oxygen, the greater the cardiovascular fitness level.

The testing procedures that predict maximal oxygen uptake are usually conducted on a treadmill or a bicycle ergometer. When tested, the subject will exercise at various workloads, light to heavy. The heart rate is taken at each workload. The prediction of maximum oxygen uptake is based on the linear relationship between the heart rate and the oxygen consumption during the various workloads. The prediction is made by plotting the heart rate per workload; a straight line is extended through the plotted heart rates to the assumed maximum heart rate (220-age). The individual's aerobic fitness is reflected by the angle of this line. An example of predicting max VO_2 can be found on page 41: refer to bicycle ergometer.

If a treadmill or a bicycle ergometer are not available in your school, the step test (post-exercise recovery test) or a performance test such as the 9-minute walk/run test can be used. These are indirect methods that will produce a reasonably accurate measure of cardiovascular fitness.

The final part of the physical evaluation includes a test for flexibility and muscular strength and endurance.

Flexibility

Flexibility refers to the ability of an individual to move the body and its parts through as wide a range of motion as possible without undue stress to the muscle attachment.

Muscular Strength

Muscular strength refers to the maximum force that one can generate in an isolated movement of a single muscle or a group of muscles. The stronger the individual, the greater the force that he or she can generate. Muscular endurance refers to the ability to perform repeated contractions of a muscle in a given time.

Your exercise program should include flexibility and strength exercises. The purpose of these exercises is to improve the performance of particular muscle groups so that one can participate in all kinds of daily activities and sports. Both flexibility and strength help reduce the susceptibility to injury when participating in an activity. It should be noted that exercises of this nature help firm up the body during and after weight reduction. Please keep in mind that these exercises MUST be done in combination with—*not* in place of—the aerobic activity.

For further information regarding the physiology of exercise, an excellent source is, *Exercise Physiology: Energy, Nutrition, and Human Performance* by William D. McArdle, Frank I. Katch, and Victor L. Katch. Lea and Febiger Publishers, Philadelphia, 1981.

Evaluation Worksheet

The evaluation worksheet is designed to keep data on each student in your program. The pre/post evaluation form is divided into two parts: pre-testing and post-testing.

Please note: circumference of hips, waist, right upper arm, and right thigh has not been described in the previous section, "Definition of Fitness Terms." However, these measurements are important for comparative reasons when summarizing the total program and its impact on fitness and weight loss.

Evaluation Worksheet

Name: Class:

PRE-TESTING Date:	POST-TESTING Date:
1. Weight: Height:	1. Weight: Height:
2. Body Composition Test: % Body Fat: % Lean Weight:	2. Body Composition Test: % Body Fat: % Lean Weight:
3. Circumference Hips: Waist: Right Upper Arm: Right Thigh:	3. Circumference Hips: Waist: Right Upper Arm: Right Thigh:
4. Physical Fitness A. Cardiovascular Test: Results: Fitness Category:	4. Physical Fitness A. Cardiovascular Test: Results: Fitness Category:
B. Flexibility Test: Results: Fitness Category:	B. Flexibility Test: Results: Fitness Category:
C. Strength Test: Results: Fitness Category:	C. Strength Test: Results: Fitness Category:

Administration of Fitness Testing

Body Composition: Skinfold Measurements

Description

Measurements of skinfold involve measuring the subcutaneous fat in particular areas of the body. The areas, highly correlated with total body fat, are the triceps and subscapular sites. Scores for the triceps skinfold can be used independently or the sum of the two measurements can be used to predict percent body fat. All measurements are taken on the right side of the body.

Equipment

1. Skinfold calibrated calipers.

Procedures

1. Triceps skinfold is measured over the triceps muscle of the right arm halfway between the elbow and the acromion process of the scapula with the skinfold parallel to the longitudinal axis of the upper arm.

2. Subscapular skinfold is 1 cm (½ in.) below the inferior angle of the scapula in line with the natural cleavage lines of the skin.

3. Proper methods for measuring:

   a. Firmly grasp the skinfold between the thumb and forefinger and lift up.

   b. Place the contact surfaces of the calipers 1 cm (½ in.) below the thumb and fingers.

   c. Slowly release the grip on the calipers enabling them to exert their full tension on the skinfold.

d. Read skinfold to nearest 0.5 mm.

e. Remember, the skinfold measurement measures subcutaneous fat. Care must be taken to not include muscle tissue when taking this measurement.

Advantages

Practical and inexpensive.

Disadvantages

Technique of administering the test must be perfected to accurately measure the particular site. Children must be measured by the same individual to avoid differences in measuring technique.

Body Composition: Girths and Body Width

Girth and body width are regional measurements taken at particular body sites. Some girth measurements are used in combination with skinfold measurements to predict body composition. However, norms are not available for the young population. Nevertheless, girth measurements are important. Using a tape measure, measure the right arm, waist, hips, and right upper thigh. This information is helpful if you are unable to measure the body composition of your students, because it allows you to evaluate a child's progress.

Advantages

Practical and inexpensive.

Disadvantages

This is not a true measurement of percent body fat. A true assessment of body fat can only be taken by hydrostatic weighing or skinfold measurement.

Cardiovascular Fitness: Bicycle Ergometer Test*

Description

The student rides a stationary bicycle ergometer and pedals to the beat set by a metronome. There are 3 workloads, each 3 minutes per workload. The heart rate is taken and recorded during the last minute of each workload. The recovery heart rate is recorded each minute after exercise for three minutes.

Equipment

1. A Calibrated Bicycle Ergometer
2. Metronome: Set to 50 bpm
3. Stop watch (measuring heart rate)
4. Clock (timing device for each work load)
5. A stethoscope (to count heart rate)

Procedure

1. Explain test to student.

2. Adjust seat. The student sits on the bicycle. There should be a slight bend in the knee joint with ball of the foot on the pedal at its lowest point when leg is extended.

3. Set the metronome to 50 bpm; have the student practice for 1 minute without any workload.

4. Set the first workload to 150 kgm/min (.5 KP).

5. Count the heart rate in both the second and third minutes. They should not vary by more than 5 beats. If they do, extend the ride for an extra minute or until a stable value is obtained.

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*From *The Y's Way to Physical Fitness*, with permission of the YMCA of the USA, 101 N. Wacker Drive, Chicago, Il. 60606

6. If heart rate is > or = 103 bpm, set the second workload to 300 kgm/min (1.0 KP).

7. If heart rate is < 103 bpm, set the second workload to 450 kgm/min (1.5 KP).

8. Repeat procedure for taking heart rate.

9. Refer to guidelines for setting the third and final workload (p. 40).

10. Once test is completed, plot 2nd and 3rd workload pulse on prepared graph paper used specifically for predicting max VO_2 from a bicycle ergometer.

11. Calculate the subject's predicted max heart rate (220-age).

12. Draw a line through the plotted working heart rates and extend the line to the individual's maximum heart rate. Drop a perpendicular line down to the base line of the graph. The predicted maximal oxygen uptake can be read in liters/min.

13. Once oxygen uptake has been computed, it should be expressed in terms of body weight (ml/kg/min). Maximal oxygen uptake-(liters/min × 1,000) ÷ (body weight in kg).

Advantages

This test is a very good estimate of one's cardiovascular fitness.

Disadvantages

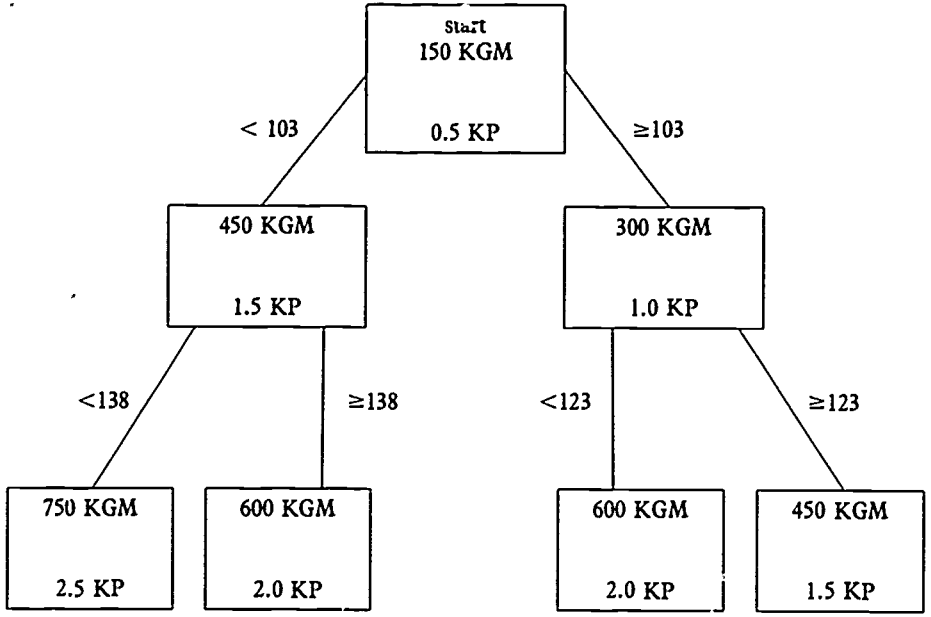
1. A Bicycle Ergometer is relatively expensive.

2. This test is a non-weight bearing activity and therefore favors heavy weight individuals. As a result, the prediction of max VO_2 may be inflated when compared to tests that require running or walking to estimate max VO_2.

3. The technique to administer this test must be learned.

4. The test may be time consuming.

Bicycle Ergometer Test



Directions for Bicycle Ergometer Test:

1. Set the work load at 150 KGM (0.5 KP).
2. If steady state is < 103 set 2nd workload at 450 KGM (1.5 KP).
   If steady state is > or = 103 set 2nd workload at 300 KGM (1.0 KP).
3. Follow this pattern for setting the third and final load.

NAME Richard AGE 10 PREDICTED MAX H.R. 210

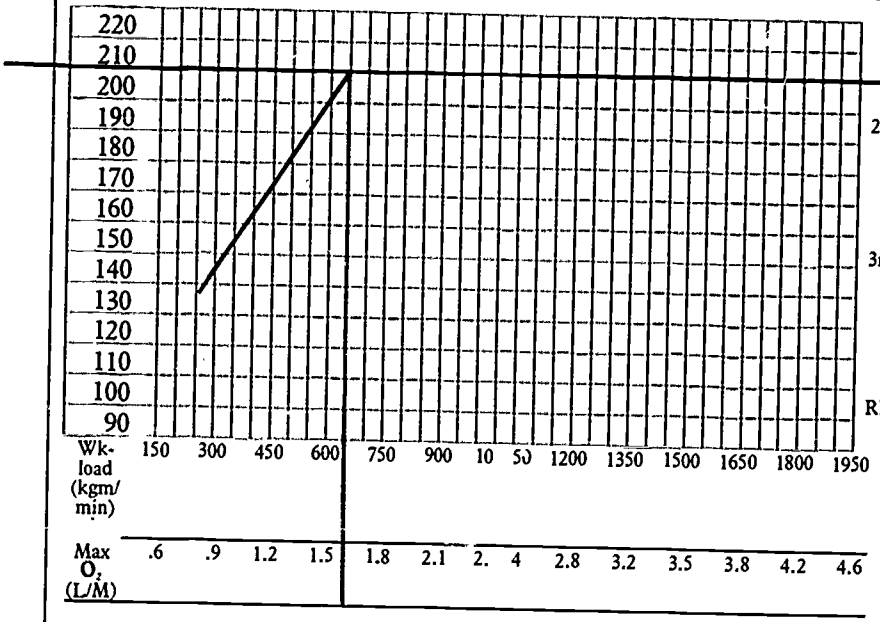
WEIGHT 152 (lbs.) _____ (kg.)

TEST Bicycle Ergometer Sub max DATE 10/85

RESTING HEART RATE 72 RESTING BLOOD PRESSURE 120/70

ESTIMATED MAX VO_2 1.6 L/min

(max. VO_2 for 10 yr. old is 2.0 L/min - below average)



1st Wkload Kgm 150

H.R. 108

B.P. 120/70

2nd Wkload Kgm 300

H.R. 144

B.P. 130/70

3rd Wkload Kgm 450

H.R. 164

B.P. 135/75

RECOVERY

1 Min. H.R. 150

B.P. 130/80

2 Min. H.R. 120

B.P. 130/70

3 Min. H.R. 120

B.P. 130/70

ASSESSMENT 41

Cardiovascular Fitness: Three-Minute Step Test Kasch Recovery Test*

Step tests are useful in measuring the heart rate and its response to exercise. A valuable criterion of physical fitness is the heart recovery rate after exercise. If a bicycle ergometer is not available and you can not estimate the maximum oxygen uptake, the Kasch Recovery Test is recommended.

The most significant drop in heart rate occurs in the first minute after exercise. Typically, the heart rate drops sharply the first minute after exercise and then levels off, gradually dropping to the resting heart rate.

Description

The Kasch Recovery Test is designed to measure a subject's recovery rate after three minutes of exercise. The subject is asked to step up and down a 12" bench at a rate of 24 steps a minute. At the end of exercise, the pulse rate is taken for one minute.

Equipment

1. A sturdy 12-inch bench.
2. A stopwatch to measure heart rate and duration of exercise.
3. A metronome to maintain the stepping rate of 24 steps per minute.
4. A stethoscope to count recovery heart rate.

Procedure

1. Explain the test briefly to student.
2. Demonstrate the correct stepping procedure (up, up, down, down . . . lead with the same foot). The student should practice for a short time.

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3. Set metronome at 96/bpm for a 4-count step to keep the student on pace (up, up, down, down).

4. Immediately after the three minutes, have the student sit down without talking.

5. Take a 60-second heart rate count starting 5 seconds after the completion of stepping.

6. Compare the results with the Step Test rating chart.

Advantages

This is a good alternative for the bicycle ergometer test. It is inexpensive, practical, and easy to administer. Teaching your students to count the heart rate after exercise allows for mass testing.

Disadvantages

This is an indirect assessment of one's cardiovascular fitness, based on recovery heart rate. This test may be too strenuous for overweight children or for short children. Adaptations can be made based on the height and age of your students.

Cardiovascular Fitness: Distance Runs*

The purpose of the distance run is to measure maximal functional capacity and endurance of the cardiorespiratory system.

1-Mile Run

Description

Students are instructed to run 1 mile in the fastest possible time. The students begin on the signal "go." As they cross the finish line, elapsed time should be called to the participant. Walking is

*AAHPERD Health Related Physical Fitness Test, AAHPERD Publications, 1984.

permitted, but the objective is to cover the distance in the shortest possible time.

Procedure

1. Warm-up.
2. Start at a designated point.
3. Record time it took to cover 1 mile.

9-Minute Run

Description

Students are instructed to run as far as possible in nine minutes. The students begin on the signal "go." Participants continue to run until a whistle is blown at nine minutes. Walking is permitted, but the objective is to cover as much distance as possible in the nine minutes.

Procedure

1. Warm-up.
2. Start at a designated point.
3. Record the distance covered in nine minutes. Score to the nearest 10 yards or 10 meters.

Advantages

1. The test gives you a reliable estimate of the aerobic capacity and is related to maximum oxygen intake.
2. Equipment is readily available and inexpensive.

Disadvantages

Distance runs are considered to be "weight-bearing" activities. Overweight students will have great difficulty completing this type of test. Most overweight students do not run and are inactive, therefore a test of this nature is not practical for estimating the aerobic capacity and measuring fitness levels.

Flexibility: The Sit and Reach Test*

The Sit and Reach Test evaluates the flexibility of the lower back and the posterior thighs.

Description

Students sit with their legs extended directly in front of them. The hands are placed together and reached forward slowly as far as possible. The distance reached is recorded.

Equipment

A specially constructed Sit and Reach Box with a top piece extended to a greater distance than the box. A measuring scale (9–50 cm) is on the top piece in 1 centimeter gradations. The 23-centimeter line is in line with the vertical panel of the box.

Procedure

1. The student sits with legs extended in front of him/her. The back of the knees are resting against the floor.

2. Place the feet under the extended top of the measuring box. Place soles of feet flat against the vertical panel of the box. Feet should be shoulder width apart.

3. The student places one hand on top of the other and reaches forward as far as possible. Hold for 1 second.

4. The distance reached is recorded.

5. Repeat 2–3 times, take the best score.

Advantages

Practical and inexpensive.

Disadvantages

The test may be influenced by the length of the arms and legs of the individual in addition to his/her flexibility.

Strength:
Modified Sit-Up Test*

Description

The purpose of the modified sit-up test is to evaluate abdominal muscular strength and endurance.

Equipment

1. A mat for comfort.
2. Stopwatch.

Procedure

1. Student lies on back with both knees flexed. Heels should be 12–18 inches from buttocks. The arms are crossed on the chest with the hands on the opposite shoulders. Feet are held by partners.

2. Arms must maintain contact with chest. The chin should remain tucked into chest. A sit-up is completed when the elbows touch the knees.

3. The student will perform as many correct sit-ups as possible in 60 seconds. The partner counts the amount of sit-ups performed.

Advantages

This test is easy to administer.

Disadvantages

Many children with weight problems will have difficulty in performing the correct sit-up. Most do not have the strength, others just cannot perform due to their personal waist girth. Some adaptations or modifications can be made. The modifications should be denoted in the child's record for pre/post-testing evaluation.

*AAHPERD Health Physical Fitness Test, AAHPERD Publications, 1984.

chapter
five

RUNNING THE PROGRAM: NUTRITION AND EXERCISE

5

Nutritional Component: The Format

The nutritional component is the educational part of the program, and should be presented in an environment that is comfortable and conducive to learning. These meetings are designed to be held bimonthly, for 45 to 60 minutes each. During this time, weigh-ins are taken, followed by a lecture and discussion. Careful planning and organization will be needed to ensure that students learn the

nutritional concepts, dietary guidelines, and weight management techniques that are so important for their success in your program.

Nutritional Concepts

1. Food is a necessary substance which, once ingested, is transformed into nutrients that are used by the body to provide energy and to maintain life, growth, and the normal functioning of organs.

2. Nutrition is the interaction between people, their food, and their environment.

3. The responsibility for nutritional health rests with the individual, the family, and the community. Individuals and families have a responsibility to choose food wisely for their personal nutritional well-being.

4. RDA: Recommended Dietary Allowances are the amounts of specific nutrients that people need at given ages and sex groups in the United States.

5. The "Basic Four Food Groups" is a guide, based on RDA, of foods to be eaten that provide an adequate diet.

6. The Basic Four Food Groups should be considered only as a tool for improving nutritional practices.

7. Knowledge of the relationship between nutrients and health gives one the basis on which to select foods that will provide the nutrients needed.

8. The source of energy for the body is food.

9. RECOMMENDED DIETARY ALLOWANCES (RDA) OF CALORIES

Children	ages (4–6) 1,700 calories
	ages (7–10) 2,400 calories
Females	ages (11–14) 2,200 calories
	ages (15–18) 2,100 calories

Males ages (11–14) 2,700 calories

ages (15–18) 2,800 calories

(RDA is an approximate estimation of calories per day and does not take into account the amount of exercise.)

Achieving and Maintaining the Best Weight

1. The energy from food is measured in kilocalories and that energy is used for daily activities. This source of energy is usually referred to as calories.

2. Kilocalories ingested in foods must equal kilocalories expended in activities in order to maintain weight or energy balance.

3. 3,500 calories = 1 lb. of fat.

4. To establish and maintain desirable weight, the total number of calories consumed should approximate the body's use of calories in all its physical and mental activities.

5. "Maintenance" can be measured as Basal Metabolism (BMR) and varies widely between individuals.

6. Body weight can be affected by the intake of food and by exercise.

7. To lose weight, one must use up more energy than that which is taken in through food. This can be accomplished by reducing the amount one takes in or by increasing the amount of exercise. A combination of both is recommended.

8. The term "Body Weight" refers to the sum total of fat weight, muscle weight, and bone weight.

9. "Desirable Weight" refers to a range of weights for a given height.

10. "Overweight" refers to a condition of 10% above idea' weight (Desirable Weight). Obesity is 20% above ideal weight.

11. When we measure our weight, we measure total body weight rather than "fat" weight.

Losing Weight

1. In order to lose weight, children need to change their eating habits.

2. Each time children eat, they must decide what to eat. A wise selection of foods at meals and in between can add up to a total diet.

3. Eat a properly balanced diet.

4. Eat generous amounts of vegetables.

5. Never skip a meal.

6. Eat only at meal time.

7. Fast foods: foods from hamburger stands, fried chicken places, or fish and chip restaurants are usually high in calories because they contain a large amount of sugar and fat.

8. Cut down on high calorie foods: sweets and fats.

9. Reduce Caloric intake:
   a. 500 fewer calories a day = 1 lb. per week.
   b. 1,000 fewer calories a day = 2 lb. per week.
   c. Aim for a moderate weight loss of 2 pounds a week. This can be best achieved by the combination of reducing caloric intake and increasing the caloric expenditure (exercising).

10. It takes a good deal of effort and time to lose weight. After all, it took time to accumulate the excessive weight.

11. The slower you take weight off (1–2 pounds a week), the longer it stays off.

12. If snacking is a must then choose a snack with more nutrients than sugar. Eat raw vegetables or a piece of fresh fruit or fresh juice.

13. There is no easy or magical way to lose weight.

14. Fad diets and reducing gimmicks are generally an unsuccessful means to losing weight.

15. Fad diets and crash diets are not nutritionally sound.

16. Exercise regularly.

Nutrition Education: The Program

Part 1: Weigh-ins

Participants should be weighed on a weekly basis. This can be done during the nutrition class, prior to exercise sessions or the combination of both. The same scale should be used and weight should be recorded on an individualized weight chart.

A *weight chart* is made up for each participant in the program. At the initial meeting with parents and/or student, give each participant his or her personalized weight chart. This chart is used during the program and is helpful for your record keeping. The chart can include:

1. Name, Address, Phone
2. Height, Weight, Suggested Weight
3. Blood Pressure, Physical Limitations, Comments
4. Weight Profile, Grade K–6
5. Present Date/Present Weight

When students are weighed, their weight is recorded on their individualized chart. Additional suggestions for weigh-ins might include a personalized weight graph that is filled out by the student, and/or a pre-written slip to be sent home that includes the day's weight and other comments.

The *personalized weight graph* is designed to demonstrate the weight

gain or loss of a student throughout the program. When preparing a graph, the starting weight is recorded. Weight above and below the starting weight is written on the graph in increments of 1 pound. Included on the top of the graph is the weigh-in date.

In understanding the concept of gaining or losing weight, students are encouraged to fill out their own graph on weigh-in days. This approach is helpful because it allows the student to see his or her progress in the program.

Children may find it uncomfortable or embarrassing to reveal their weight to other individuals in the program. Recording weight should be confidential unless children themselves volunteer their weight gain or loss. At the elementary level, you will find that children may not know how to use a graph. This may need to be taught.

Part 2: Lessons/Group Session

This part of the program can be conducted by the school nurse, the physical educator, or even the school psychologist. However, knowledge of nutrition must be accurate. If you do not have a professional who is knowledgeable about specific nutritional concepts, seek the help of your school dietitian. The dietitian may want to take part in the program or may suggest community services available to you. These services can include nutritional programs available through the local health services, a nearby college program, or other registered dietitians. Outside individuals with knowledge of nutrition and weight management can be an important resource.

Education is a key aspect of the program. The environment should be set up so that learning can take place, along with group discussions and the exchange of feelings and ideas.

Topics that merit consideration for nutrition and weight management:

1. Basic nutrition
2. Basic four food groups

WEIGHT CHART

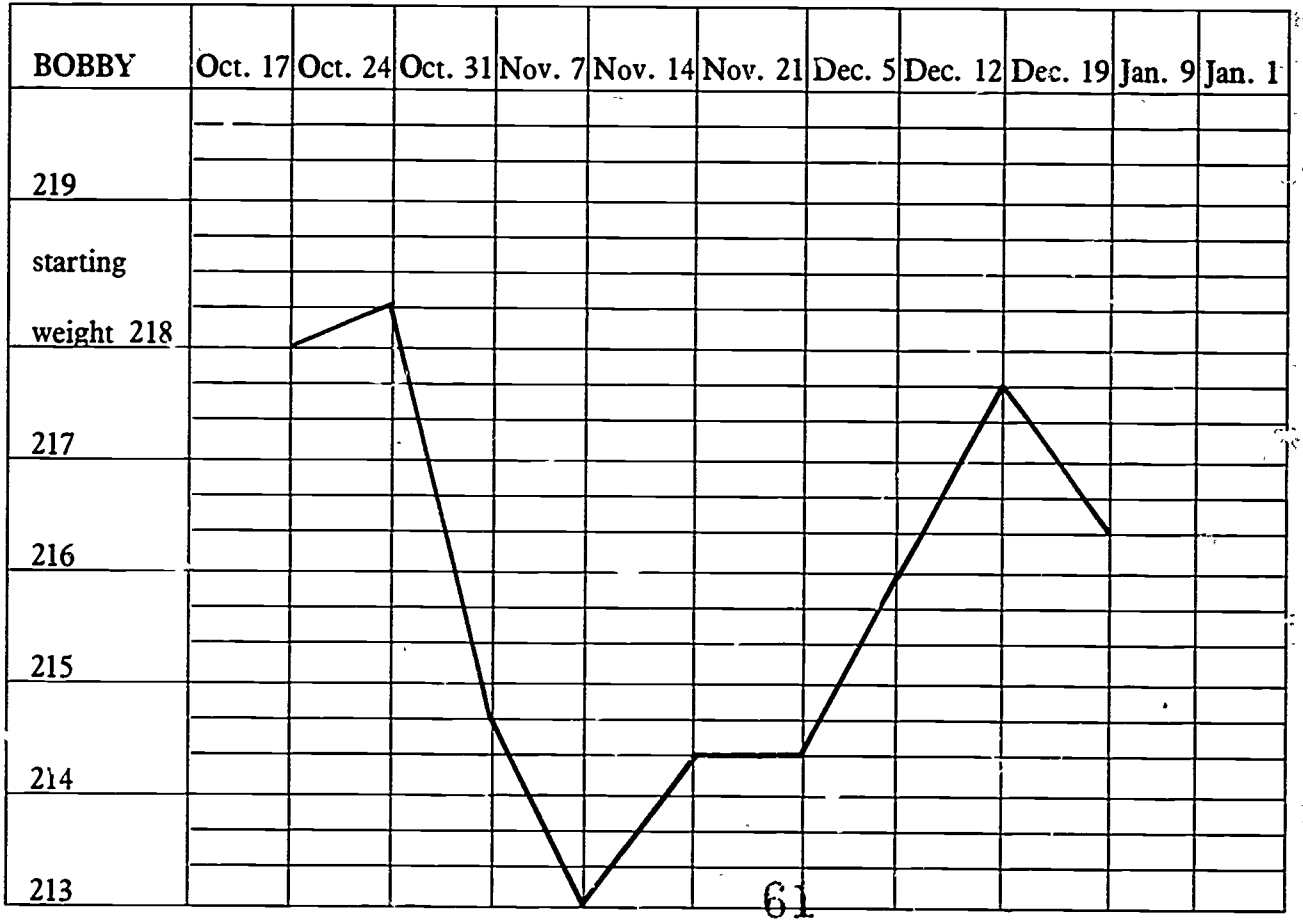
NAME Bobby
ADDRESS
PHONE NUMBER
HEIGHT 5'9"
WEIGHT 218
SUGGESTED WEIGHT 140-145

SCHOOL YEAR 1986
CLASS 5-4
BLOOD PRESSURE 136/87
PHYSICAL LIMITATIONS None
COMMENTS Has complained of knee pain-(Right knee) Put on a progressive walking Program)
GRADES

WEIGHT PROFILE

K	1	2	3	4	5	6
85¼	104	133	161	204	218	

DATE	WEIGHT	DATE	WEIGHT	DATE	WEIGHT
10/24	218 1/4				
10/31	214 3/4				
11/7	213				
11/14	214 1/4				
11/21	214 1/4				
12/12	217 1/2				
12/19	216 1/2				


BOBBY
Oct. 17
Oct. 24
Oct. 31
Nov. 7
Nov. 14
Nov. 21
Dec. 5
Dec. 12
Dec. 19
Jan. 9
Jan. 1
219
starting
weight 218
217
216
215
214
213

3. Fats, carbohydrates, proteins
4. Saturated fats and cholesterol
5. Vitamins, minerals, and water
6. Sugar, salts
7. Balanced diet, menu plan
8. Portions, servings
9. Calories
10. Intake, expenditure of calories
11. Lowering calories/strategies
12. Fastings, fad diets, crash diets
13. Reading labels
14. Snacking
15. Cooking tips
16. Health complications of obesity

Topics for behavioral changes:

1. Contracts
2. Set realistic goals
3. Keep a food diary
4. Eat in one place
5. Follow an eating schedule
6. Eat slow, chew more
7. Put your fork down after every bite
8. Eat off a smaller plate
9. Do nothing else when eating
10. Remove serving plates from table

11. Leave the table after eating
12. Identify patterns in your eating
13. Identify what triggers eating
14. Keep an exercise chart/calendar
15. Change lifestyle activities
16. Plan ahead when eating out, travel and parties
17. Be positive about slips
18. Reward yourself

Refer to "The Directory" at the end of this text for additional references that can be helpful in teaching the above concepts.

Nutrition Education: Sample Lesson Plans

Following are 12 lesson plans that provide ideas for topics that should be covered in the nutritional sessions of your program. The sessions are designed to meet for 45 to 60 minutes every other week. These lesson plans are examples only; they can be modified to meet the specific needs of your students.

Resources

Important resource materials to be used throughout the 12 nutrition sessions include:

"Nutrition Awareness Test," "Your Food: Chance or Choice?," "YOU," "Calorie Counter: Your Calorie Catalog," from the National Dairy Council, 6300 North River Road, Rosemont, IL 60018.

"Personal Contract," "Portion Size: Tips for Managing Portions,"

"Activity Chart," "Long-Term Action Plan," from *Y's Way to Weight Management* by Sandra K. Cotterman, YMCA of the USA, Human Kinetics Publisher, 1985.

"Healthy Food Choices," from the American Dietetic Association, 430 North Michigan Avenue, Chicago, IL 60611.

"Health Education: Physical Dimensions of Health," from the State Education Department, Bureau of School Health Education and Service, Albany, NY 12234.

"Fast Food Chart: Nutritive Value of Commonly Used Foods," from *Exercise Physiology: Energy, Nutrition, and Human Performance* by W.D. McArdle, F.I. Katch, and V.L. Katch, Lea and Febiger Publishers, 1981.

"The Energy Balance Equation," "Specialty and Fast Food Items," "Some Popular Weight Loss Methods," from *Nutrition, Weight Control, and Exercise* by F.I. Katch and W.D. McArdle, Lea and Febiger Publishers, 1983.

Change Your Habits to Change Your Shape by Joanne Ikeda, Bull Publishers, 1978.

The Learn Program for Weight Control by Kelly D. Brownell, University of Pennsylvania (Philadelphia), 1987.

Session 1

Description

A nutrition awareness pre-test should be given at the first session. The same test will be used again at the end of the program to measure the effectiveness of the lessons. Individualized weigh-in charts should be handed out, followed by instructions for their use. An introduction to the total program is given, along with a discussion of student responsibilities and expectations.

Topics for Presentation and Discussion

1. Nutritional awareness test

2. Weigh-in chart

3. Personal contracts

Activity

Nutritional Awareness Test

Session 2

Description

This session will provide students with an understanding of a basic meal plan that will allow for a weight loss of 1 to 2 pounds per week. Portion size and measurements will be discussed.

Topics for Presentation and Discussion

1. The meal plan: nutritional guidelines

2. Food choices; the basis for food selection; why food choices are important

3. Portion size; tips for managing portions

Activity

How much is an ounce, a cup, a teaspoon? Provide the class with measuring cups, spoons, a scale, and food. Have students estimate amounts of food without the measuring devices, and then measure with the devices. How do they compare to each other? Objective of activity is realizing that without proper portion size, additional food is likely to be consumed, resulting in additional calories. Students can then accurately measure out a meal from the menu plan.

Session 3

Description

The concepts of a balanced diet and the four food groups will be

discussed. Nutrients—fats, carbohydrates, and protein—are defined.

Topics for Presentation and Discussion

1. The four basic food groups
2. Carbohydrates, fats, proteins, vitamins, minerals, water
3. Nutrients: tools for energy and growth

Activity

Hand out an example of a typical day's menu. Evaluate each meal and add up the totals for each of the four food groups. Evaluate the day's intake and compare it to the suggested diet plan for weight loss. Discuss alternatives.

Session 4

Description

At this session, the word "calorie" will be defined. Menu planning with regard to caloric intake will be evaluated.

Topics for Presentation and Discussion

1. Empty calories
2. Snacks
3. Condiments
4. Fast foods: nutritional value and calories
5. Using a calorie counter

Activity

Students are asked to record everything they put in their mouths for a 24-hour period, and bring this list to the session. They should then check the calories for each item and add up the day's intake.

How do they measure up? Discuss problems, suggest alternatives for particular foods.

Session 5

Description

This session will focus on the "Energy Balance Equation." The equation shows that body weight will change or stay the same depending on energy input (food) and energy output (exercise, activity).

Topics for Presentation and Discussion

1. "Unbalancing" the equation for weight loss: reducing caloric intake below daily energy expenditure; increasing physical activity
2. 3,500 kcal = one pound of fat
3. Healthy rates of weight loss: 1 to 2 pounds per week

Activity

Provide students with a diagram of the "Energy Balance Equation." Utilizing a calorie chart and an activity (calorie expenditure) chart, have students determine how to reduce caloric intake to achieve a calorie deficit of 3,500 to 7,000 per week. Discuss goals for the week with regard to calories.

Session 6

Description

Particular behaviors are associated with eating. This session is designed to help students define circumstances related to existing eating patterns.

Topics for Presentation and Discussion

1. Description of a behavior related to eating

2. Alternative behavior to eating
3. Controlling desire to eat
4. Awareness of activity level
5. Increasing energy expenditure
6. Negative versus positive thinking
7. Rewards

Session 7

Description

At this session, students are asked to evaluate the program. This includes areas of the program they are having trouble with, as well as particular strengths of the program.

Topics for Presentation and Discussion

1. Weight gain
2. Weight loss
3. Menu plan
4. Exercise
5. Personal efforts
6. Personal obstacles
7. Pressures
8. Motivation
9. Long-term action plan

Session 8

Description

Temptation for a snack or dessert will always exist. This session is designed to make students aware of the times of day that the

need to snack is strong, and to make them consider alternatives to eating a high calorie snack.

Topics for Presentation and Discussion

1. Favorite foods: where do they stand?
2. Alternatives to eating
3. Snack and dessert alternatives
4. Incompatible activities to eating

Activity

Have students make up their favorite food list. Identify the foods that are high in calories. Ask students to come up with an alternative snack that is lower in calories. Discuss the times of day in which the urge to snack is the hardest to control.

Session 9

Description

Holidays, parties, eating out, and other special occasions can often be a problem time when trying to lose weight. At this session, discussion will focus on methods to have fun without overeating.

Topics for Presentation and Discussion

1. Managing special occasions and situations: how to avoid overeating
2. Specialty, restaurant, and fast food choices

Session 10

Description

There is no easy or magical way to lose weight. At this session, attention is directed to the dangers of popular fad diets and gim-

micks. Students will learn that fad diets are not nutritionally adequate.

Topics for Presentation and Discussion

1. What is a fad diet?
2. Identification of some popular fad diets
3. Dangers of particular diets
4. Understanding why a fad diet is attractive to dieters
5. Fasting

Session 11

Description

Obesity carries many implications. While health problems are the most immediate concern, serious social and emotional handicaps can also result. This session will discuss obesity and health: physical, social, and emotional.

Topics for Presentation and Discussion

1. Definition of overweight and obesity
2. Physical health factors: high blood pressure, cardiovascular disease, diabetes, gall bladder, back problems, orthopedic complications
3. Fat cells
4. Overcoming social and emotional handicaps associated with obesity

Session 12

Description

In the final session, participants are given the nutrition awareness test from Session 1. They will also have an opportunity to evaluate

their progress, and discuss the strengths and weaknesses of the program.

Topics for Presentation and Discussion

1. Nutritional awareness test
2. Evaluation of nutrition education program
3. Evaluation of total program
4. Goals for the future

Activity

Compare the results of the nutritional awareness pre-test from Session 1 with this session's test. Teacher should meet with students individually for a one-on-one progress report.

Exercise Component: The Format

The exercise component is comprised of three sections: an aerobic activity, lasting 12 to 20 minutes; stretching and exercise, lasting 10 to 15 minutes; and recreation/games, lasting 15 to 20 minutes. You should plan to meet with your students for the exercise component before or after school, two or three days per week, for 45 to 60 minutes per session.

The meetings alone, however, will not provide students with adequate exercise for improvements in fitness. You must impress upon them the importance of working out *on their own* on the days that the class does not meet.

Ideally, an exercise workout should be aerobic in nature and should last for a minimum of 30 minutes. When exercising for weight reduction, children must expend more energy (exercise) than they consume (food). Assign aerobic exercise as homework, for students

to complete on their own. A sample exercise program, including a sample homework calendar, can be found at the end of this chapter.

Included in the exercise component is a recreational period. All kids love to play, particularly the elementary school student. When working at the junior high or high school level, recreation activities may not work. You know your students—include what you feel will work for them. In planning your total exercise program, try to keep the workout interesting by varying activities. Aerobic dancing, circuit training, and game activity can add variety and fun.

This chapter describes a progressive walking/jogging program as a sample exercise program. However, there are many different types of aerobic programs. In Chapter VIII, "The Directory," you can find additional sources that may be helpful to you when planning your exercise program.

Special attention must be directed to grossly overweight children. A jogging program may be dangerous for this type of child; orthopedic injuries to the knees or ankles may result. An individualized program may need to be written for these children.

Exercise Concepts

1. Overweight or obese children typically are in poor shape (low fitness levels). Therefore, the exercise component of your program should be slow but progressive.

2. Ideally, each child participating in the program should increase his or her overall fitness level, including cardiovascular fitness, flexibility, and strength. The program should be designed to address each of these areas.

3. Improvements in physical fitness result from overload and progression. When concerned with strength, muscular endurance, or cardiovascular fitness, improvement occurs when the workload is greater than that to which an individual is accustomed. The workload should be increased gradually, with a systematic plan for progression.

4. To gain maximum benefit from aerobic activity, children should be encouraged to exercise and work within their "target zone." Refer to the instructions for monitoring heart rate in the following section of this chapter.

5. Children should understand that exercise should be only an aid to weight reduction, not the exclusive technique.

6. Although physical conditioning is work, children should have fun. High levels of intensity and duration can be brought about through play activities.

7. To improve fitness levels, a workout should last for a minimum of 30 minutes, five to six times a week.

Exercise Component: The Program

Part 1: Aerobic Activity

Aerobic or endurance activities demand large quantities of oxygen for prolonged periods. There are many beneficial physical changes that occur as a result of exercising aerobically. Specifically, improvements in the cardiovascular system, promotion of strong and healthy bones, strengthening muscles, and weight loss can all result from aerobic exercise.

To lose weight and keep it off, one needs to exercise aerobically for a duration of 30 minutes or more. Participants should not feel pain when working out. However, you can expect your students to fatigue early. Keep in mind that these children are inactive and in poor cardiovascular shape. Your approach should be slow but progressive. Depending on the age level, monitoring heart rate can be included as part of your aerobic program.

A walk/jog fitness program can be introduced with the concept of "work/relief" intervals: jogging is the work, walking is the relief. In time, jogging time increases, walking time is reduced.

The exercise program described here has an aerobic section of less than 30 minutes. At the beginning of the program, many children will not be able to complete an aerobic activity for the recommended duration. You want your students to feel successful, so start slow, and in time increase the aerobic element. Be sure to include a recreation period. Play can be fun *and* aerobic. The combination of both aerobic activity and an aerobic game meets the time requirement for weight loss and fitness.

Children will work with you and your program two times a week. To gain the benefits of exercise, they must work out independently for two to three additional days. Children need guidelines for exercise; they will not just go out and jog. Give your students a workout schedule with specific directions. With this, they should be required to fill out a workout log, which can be handed in to you each week.

Some Aerobic Activities

1. walking
2. walk/jog
3. jogging
4. running
5. stationary jogging
6. cycling
7. swimming
8. rope skipping
9. stair climbing
10. aerobic dancing
11. rebounding
12. cross-country skiing
13. hiking

14. rowing
15. roller skating
16. stationary cycling

Facilities

1. gym
2. track
3. school grounds
4. The halls: kids love to jog in the halls

Monitoring Heart Rate

To improve one's cardiovascular function and to gain maximum benefit from an aerobic activity, it is necessary to maintain a sufficiently high heart rate during exercise. The increase in heart rate need not be strenuous to obtain a positive result. Ideally, exercise should be continued for a long time with little or no discomfort.

How much work is required to achieve the beneficial changes that will occur from aerobic exercise? McArdle, Katch, and Katch (1981) state that "As a general rule, aerobic capacity will improve if exercise is of sufficient intensity to increase heart rate to about 70% of the maximum." 70–80% is considered to be the minimal level needed to be obtained for training effects.

The following formula is one way to determine the working heart rate for each of your students. The term "maximum heart rate" is age-related.

1. 220 − age = Predicted Maximum Heart Rate.
2. Take 70%–80% of Predicted Maximum Heart Rate.
3. This is the working "target heart rate" that your students should work at during aerobic activity.

EXAMPLE: student age 15

1. 220 − 15 = 205 Max. H.R.

McArdle, William D., Katch, Frank I., Katch, Victor L. (1981). *Exercise Physiology. Energy, Nutrition and Human Performance.* Philadelphia: Lea and Febiger Publishers.

2. $.70 \times 205 = 144$
   $.80 \times 205 = 164$

3. Working zone = 144–164 beat/min.

4. If the student's heart rate is much lower than the working zone, they are not working hard enough. If their heart rate is far above the working zone, then they are working too hard.

Another alternative for establishing a working zone is to exercise at a heart rate that is about 60% of the distance between resting and maximal heart rate (Karvonen method).

EXAMPLE: student age 15, resting heart rate, 75 beat/min.

1. $220 - 15 = 205$ Max. H.R.

2. Working Zone = H.R.(rest) + .60 (H.R.(max) − H.R.(rest))
   Working Zone = $75 + .60 \times (205 - 75)$
   Working Zone = 153

Finding Heart Rate and Determining Beats per Minute

It is difficult for children to accurately monitor their own heart rate. However, with practice they can succeed. Grade level and age should be considered when determining whether or not you will incorporate this in your program.

Immediately after exercise, have the students find heart rate at the wrist (radial artery) or the neck (carotid artery). Count the beats for 15 seconds. Multiply that number by 4 and beats per minute are determined.

Part 2: Strength/Flexibility

Ideally, an exercise and stretching program should involve all of the muscle groups in the body. Due to time constraints, however, you will probably need to concentrate on the major problem areas for overweight and obese children. For this reason, the program described here will emphasize strength and flexibility of the arms,

waist, and stomach. The time element for the exercise/stretching component is usually 10–15 minutes.

Exercise and stretching can be done in combination with each other, or separately. You may want to have your students get into the habit of stretching before aerobic activity, with the exercise section perhaps following.

As with aerobic activity, children should be required to do strength and flexibility exercises as part of their home workouts.

Part 3: Recreation

Recreation is an important part of your program. It should be conducted after the completion of Part 1 and Part 2. The time element for organized play can range between 15–20 minutes.

The recreation element is important because:

1. Children look forward to it.

2. Children love to play.

3. Due to the great level of enjoyment, children are not aware that they are working. They are very aware of work during parts 1 and 2.

4. The recreational activity is designed to be aerobic in nature.

5. Overweight children feel comfortable playing with overweight peers. In organized games, they feel adequate rather than inadequate. Insecurities about their size and fitness levels do not affect their play and enthusiasm.

6. The recreational component is a reward for completing parts 1 and 2 of the program.

7. Recreation gives children a reason to look forward to the meetings.

Some recreational games children love to play:

1. Floor Hockey

2. Soccer
3. Pillo Pollo
4. Basketball
5. Scooter Activities
6. Jumping Rope
7. Relay Racing
8. Tag Games
9. Modified Lacrosse
10. 'aquetball
11. 'and Ball
12. Badminton

Some other suggestions:

1. Aerobic Dancing
2. Circuit Training utilizing a variety of stations that may include:
   a. stationary bicycles
   b. mats
   c. rowing machines
   d. free weights
   e. rebounder
   f. jump ropes

Sample Aerobic Activity

This is a 12-week walking/jogging program.

WEEK	DAY 1 (tues.)	DAY 2 (wed.)	DAY 3 (thurs.)	DAY 4 (wk. end)
1	walk 12 min.	*	walk 12 min.	*
2	walk 12 min.	*	walk 12 min.	*
3	5/2/5/2 walk/jog/walk/jog	*	5/2/5/2 walk/jog/walk/jog	*
4	4/4/4/4 walk/jog/walk/jog	*	4/4/4/4 walk/jog/walk/jog	*
5	4/4/4/4 walk/jog/walk/jog	*	2/6/2/6 walk/jog/walk/jog	*
6	2/6/1/7 walk/jog/walk/jog	*	1/7/1/7 walk/jog/walk/jog	*
7	8/2/8 jog/walk/jog	*	8/2/8 jog/walk/jog	*
8	10/2/6 jog/walk/jog	*	10/2/6 jog/walk/jog	*
9	12/3 jog/walk	*	12/3 jog/walk	*
10	12/3 jog/walk	*	12/3 jog/walk	*
11	15 jog	*	15 jog	*
12	15 jog	*	15 jog	*

Children are required to perform aerobic activity on their own. This activity can be the same workout done in class that week, or another at your suggestion.

Sample Exercises

exercises	Week											
	1	2	3	4	5	6	7	8	9	10	11	12
Hold stretch: (in seconds)	15	15	15	15	15	15	15	15	15	15	15	15
Hamstring: (in seconds)	15	15	15	15	15	15	15	15	15	15	15	15
Lower back: (in seconds)	15	15	15	15	15	15	15	15	15	15	15	15
Groin stretch: (in sections)	15	15	15	15	15	15	15	15	15	15	15	15
Arm circles: (repetitions)	8	8	8	10	10	15	15	15	15	20	20	25
Push-ups: (repetitions)	8	8	8	10	10	10	12	12	12	14	14	15
Side bends: (repetitions)	8	8	8	10	10	15	15	15	15	20	20	25
Sliding bends: (repetitions)	8	8	8	10	10	15	15	15	15	20	20	25
Crunches: (repetitions)	8	8	8	10	10	15	15	15	20	20	20	25
Sit-ups: (repetitions)	8	8	8	10	10	15	15	15	20	20	20	25

Sample Exercises

These exercises described here are designed to develop flexibility and strength in particular body parts.

A note about stretching: students should be encouraged to hold a stretch in position for approximately 15 seconds. The stretch should not be painful; it should be held at the position where some resistance begins. When stretching, students should never bounce.

Stretching

Holding Stretch

Purpose: to stretch the muscles in the waist and stomach.

Position: standing, feet apart.

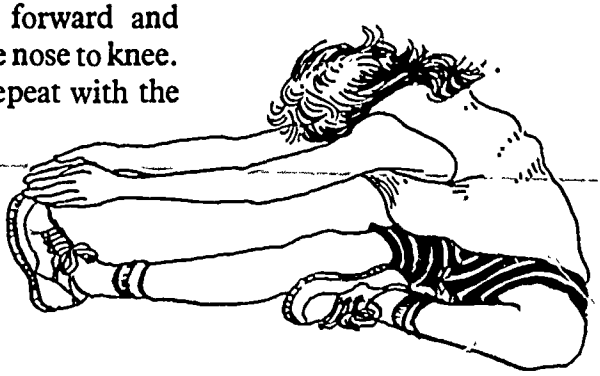
Description: grab the top of the wrist with other hand. Pull on wrist and stretch to left, right, and then back. Hold stretch for 15 sec.

Hamstring Stretch

Purpose: to stretch muscles in the posterior leg and thigh.

Position: sit on ground with one leg extended straight forward, place the other leg forward with knee bent and the sole touching the inner thigh of extended leg.

Description: bend forward and attempt to touch the nose to knee. Hold for 15 sec. Repeat with the other leg.



Groin Stretch

Purpose: to stretch the inner thigh and groin muscles.

Position: sit with knees bent outward and the bottom of feet together.

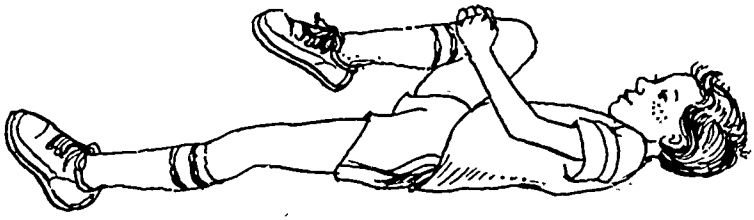
Description: grasp ankles and pull the upper body as close as possible to the feet. Hold for 15 sec.

Lower Back Stretch

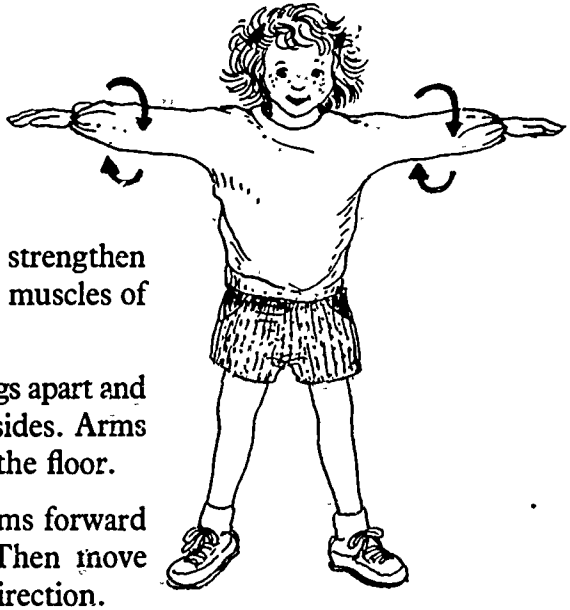
Purpose: to stretch muscles in the lower back, buttocks, and back of thighs.

Position: lie on back with legs extended.

Description: lift and bend one leg. Grasp the knee and keep the opposite leg flat, pull knee to chest. Hold 15 sec. Repeat with other leg.



Exercising for Strength



Arm Circles

Purpose: to firm and strengthen the biceps and triceps muscles of the arm.

Position: stand with legs apart and arms held out to the sides. Arms should be parallel to the floor.

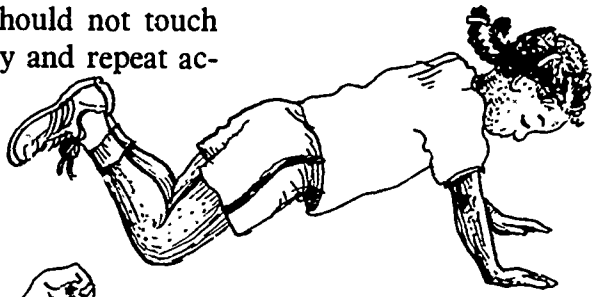
Description: move arms forward in circular motion. Then move arms in the reverse direction.

Modified Push-Ups

Purpose: to firm and strengthen arms, shoulders, and chest.

Position: kneel on knees. Stretch body forward and place hands on floor shoulder width apart.

Description: bend arms and lower the body to the ground. Stomach and chest should not touch floor. Raise body and repeat action.



Side Bends

Purpose: to firm and strengthen the waist.

Position: stand with legs slightly apart. One hand on the waist, the other over the head.

Description: the hand that is stretched over the head leans toward hand on waist. Raise the body into straight position and repeat for required amount per side. Repeat for opposite side.

Alternating Side Slides

Purpose: to firm and strengthen the waist.

Position: stand with arms on side of body. Legs are together.

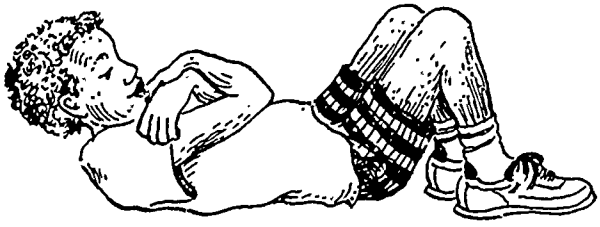
Description: with the right hand, reach to the lateral right side of knee. Then lift body up and with the left hand, reach the lateral side of left knee.

Crunches

Purpose: to firm and strengthen the abdominal muscles.

Position: lie on the floor with knees bent, feet on the floor, hands on shoulders.

Description: raise the shoulders off the floor. Come up ¼ of the way to knees.



Sit-Ups

Purpose: to firm and strengthen the abdominal muscles.

Position: lie on the floor with the knees bent. Feet are on the floor. Cross the arms in front of chest and put hands on opposite shoulders.

Description: have someone hold feet. Sit up and touch the elbows to the thighs. Return to starting position.

Exercise Calendar November

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 Walk 20 Minutes
2	3 Walk 20 Minutes	4 Fitness Club	5	6 Fitness Club	7	8 Walk 5 Jog 3 Walk 5 Jog 3 Walk 5
9	10 Walk 4 Jog 4 Walk 4 Jog 4 Walk 4	11 Fitness Club	12	13 Fitness Club	14	15 Walk 4 Jog 4 Walk 4 Jog 4 Walk 4 Jog 4
16	17 Walk 2 Jog 5 Walk 2 Jog 5 Walk 2 Jog 5	18 Fitness Club	19	20 Fitness Club	21	22 Walk 2 Jog 5 Walk 2 Jog 5 Walk 2 Jog 5
23	24 Walk 1 Jog 7 Walk 2 Jog 7 Walk 5	25 Fitness Club	26	27 Fitness Club	28	29 Walk 1 Jog 7 Walk 2 Jog 7 Walk 5

This is your workout calendar for the month of November. It is your responsibility to exercise on days we do not meet. If you miss a fitness club meeting, you still *must* exercise on that day. Do the activity listed on the Monday schedule for that week. Keep smiling and keep active!

Home Workout Log

1.	DAY OF THE WEEK:	DATE:
	AEROBIC ACTIVITY:	
	DURATION:	
	EXERCISES: sit-ups	crunches
	side bends	push-ups
2.	DAY OF THE WEEK:	DATE:
	AEROBIC ACTIVITY:	
	DURATION:	
	EXERCISES: sit-ups	crunches
	side bends	push-ups
3.	DAY OF THE WEEK:	DATE:
	AEROBIC ACTIVITY:	
	DURATION:	
	EXERCISES: sit-ups	crunches
	side bends	push-ups
4.	DAY OF THE WEEK:	DATE:
	AEROBIC ACTIVITY:	
	DURATION:	
	EXERCISES: sit-ups	crunches
	side bends	push-ups
5.	DAY OF THE WEEK:	DATE:
	AEROBIC ACTIVITY:	
	DURATION:	
	EXERCISES: sit-ups	crunches
	side bends	push-ups

chapter
six

PROGRESS REPORTS

6

During the course of your program, it is important to communicate with both students and parents about individual progress toward weight loss and fitness goals. One way to accomplish this is to write an evaluation letter for each child, to be sent home in the middle of the program and again at the end. The purpose of the letter is to report attitudes, behaviors, improvements, and problems that occur. By recording and sharing this information, you can develop a positive relationship that will allow you to candidly discuss a child's effort—or lack of effort—with the parents. This kind of communication can increase a parent's awareness and support of the program.

Following are samples of a 12-week (mid-program) evaluation letter and a final evaluation letter, along with sample progress report forms on which you can indicate changes in weight and fitness levels.

school heading
telephone number
date

Dear Parent,

This is a 12-week summary of your child's progress in our weight control fitness program. Included with this letter you will find your child's present weight and height in comparison to our initial evaluation taken at the beginning of the school year.

A reminder: the exercise portion of our program meets 2 times a week before/after school. Ideally, your child should be working out 4–5 times a week. This activity will promote weight loss and help in increasing fitness levels. It is the responsibility of your child to complete an aerobic activity for the duration of 30 minutes on days that we do not meet. (I have assigned particular activities for your child to do.) Please encourage him or her to do the required workout.

Keep in mind that exercise is not enough; your child must also reduce his or her caloric intake. It is nutritionally sound to lose 1–2 pounds a week. This can be best achieved by the combination of reducing the caloric intake (eating less) and increasing the caloric expenditure (exercising).

If you have any questions regarding your child or the program, please do not hesitate to call me at the above phone number. Thank you in advance for your cooperation and support in our program.

Sincerely,

Director

Progress Report

NAME: _____

	initial	12 weeks
WEIGHT:		
HEIGHT:		

ATTENDANCE:

ATTITUDE:

RECOMMENDATIONS:

school heading
telephone number
date

Dear Parents,

This is a final evaluation of your child's progress in the weight control fitness program. Enclosed you will find test results and measurements given at the beginning of the school year compared to those at the end of the 24-week period. In addition, I have made some recommendations and comments that I hope you will find helpful.

I would like to take this opportunity to thank you for your cooperation and support throughout the year. It was greatly appreciated. I hope this has been a positive experience for your child. Again, thank you and best of luck to you and your child for continued success.

Sincerely,

Director

Final Evaluation Worksheet

NAME: _____ CLASS: _____

	Pre	Post	Comments
DATE:			
1. WEIGHT:			
2. HEIGHT:			
3. A. BODY COMPOSITION % BODY FAT:			
B. CIRCUMFERENCE OF: HIPS:			
WAIST:			
RIGHT UPPER ARM:			
RIGHT THIGH:			
4. PHYSICAL FITNESS A. CARDIOVASCULAR TEST/RESULTS:			
FITNESS CATEGORY:			
B. FLEXIBILITY TEST/RESULTS:			
FITNESS CATEGORY:			
C. STRENGTH TEST/ RESULTS:			
FITNESS CATEGORY:			
5. SUMMARY AND RECOMMENDATIONS:			

chapter 7

STANDARDS AND NORMS

7

94

Height and Weight

Average Weight (lbs.) of GIRLS from 5 to 18

HEIGHT	AGE (yrs)													
(in.)	5	6	7	8	9	10	11	12	13	14	15	16	17	18
38	33	33												
39	34	34												
40	36	36	36											
41	37	37	37											
42	39	39	39											
43	41	41	41	41										
44	42	42	42	42										
45	45	45	45	45	45									
46	47	47	47	48	48									
47	49	50	50	50	50	50								
48		52	52	52	52	53	53							
49		54	54	55	55	56	56							
50		56	56	57	58	59	61	62						
51			59	60	61	61	63	65						
52			63	64	64	64	65	67						
53			66	67	67	68	68	69	71					
54				69	70	70	71	71	73					
55				72	74	74	74	75	77	78				
56					76	78	78	79	81	83				
57					80	82	82	82	84	88	92			
58						84	86	86	88	93	96	101		
59						87	90	90	92	96	100	103	104	
60						91	95	95	97	101	105	108	109	111
61							99	100	101	105	108	112	113	116
62							104	105	106	109	113	115	117	118
63								110	110	112	116	117	119	120
64								114	115	117	119	120	122	123
65								118	120	121	122	123	125	126
66									124	124	125	128	129	130
67									128	130	131	133	133	135
68									131	133	135	136	138	138
69										135	137	138	140	142
70										136	138	140	142	144
71										138	140	142	144	145

Adaptation of Baldwin-Wood Chart in inches and pounds.
True source in centimeters and kilograms: D.G. Jelliffe, *The Assessment of the Nutritional Status of the Community.* Geneva: World Health Organization, 1966.

Height and Weight

Average Weight (lbs.) of BOYS from 5 to 18

HEIGHT (in.)	AGE (yrs) 5	6	7	8	9	10	11	12	13	14	15	16	17	18
38	34	34												
39	35	35												
40	36	36												
41	38	38	38											
42	39	39	39	39										
43	41	41	41	41										
44	44	44	44	44										
45	46	46	46	46	46									
46	47	48	48	48	48									
47	49	50	50	50	50	50								
48		52	53	53	53	53								
49		55	55	55	55	55	55							
50		57	58	58	58	58	58	58						
51			61	61	61	61	61	61						
52			63	64	64	64	64	64	64					
53			66	67	67	67	67	68	68					
54				70	70	70	70	71	72	72				
55				72	72	73	73	74	74	74				
56				75	76	77	77	77	78	78	80			
57					79	80	81	81	82	83	83			
58					83	84	84	85	85	86	87			
59						87	88	89	89	90	90	90		
60						91	92	92	93	94	95	96		
61							95	96	97	99	100	103	106	
62							100	101	102	103	104	107	111	116
63							105	106	107	108	110	113	118	123
64								109	111	113	115	117	121	126
65								114	117	118	120	122	127	131
66									119	122	125	128	132	136
67									124	128	130	134	136	139
68										134	134	137	141	143
69										137	139	143	146	149
70										143	144	145	148	151
71										148	150	151	152	154
72											153	155	156	158
73											157	160	162	164
74											160	164	168	170

Adaptation of Baldwin-Wood Chart in inches and pounds.
True source in centimeters and kilograms: D.G. Jelliffe, *The Assessment of the Nutritional Status of the Community*. Geneva: World Health Organization, 1966.

Body Composition

Percentile Norms: Triceps Skinfold

Ages 6-18, BOYS

AGE	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE												
95	5	4	4	5	5	5	5	4	4	4	4	4
90	5	5	5	6	6	6	6	5	5	5	5	5
75	6	6	6	7	7	7	7	7	6	6	6	6
50	8	8	8	8	9	10	9	9	8	8	8	8
25	9	10	11	12	12	14	13	13	12	11	11	11
10	12	12	14	16	16	19	20	19	17	16	16	16
5	13	14	17	20	20	22	23	23	21	21	20	20

Percentile Norms: Triceps Skinfold

Ages 6-18, GIRLS

AGE	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE												
95	6	6	6	6	6	6	6	6	7	7	8	8
90	6	6	6	7	7	7	7	7	8	9	9	10
75	7	8	8	9	9	9	9	9	11	12	12	12
50	9	10	10	11	12	12	12	12	14	15	16	16
25	11	12	14	14	15	15	16	17	18	20	21	20
10	14	16	18	19	20	20	22	23	23	25	26	25
5	16	17	20	22	23	23	25	26	27	29	30	29

Based on data from Johnston, F.E., D.V. Hamill, and S. Lemeshow. (1) *Skinfold Thickness of Children 6-11 Years* (Series 11, No. 120, 1972), and (2) *Skinfold Thickness of Youth 12-17 Years* (Series 11, No. 132, 1972). U.S. National Center for Health Statistics, U.S. Dept. of HEW, Washington, D.C.

Body Composition

Percentile Norms: Sum of Triceps plus Subscapular Skinfolds

Ages 6-18, GIRLS

AGE	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE												
99	8	8	8	9	9	8	9	10	10	11	11	12
95	9	10	10	10	10	11	11	12	13	14	14	15
90	10	11	11	12	12	12	12	13	15	16	16	16
85	11	12	12	12	13	13	13	14	16	17	18	18
80	12	12	12	13	13	14	14	15	17	18	19	19
75	12	12	13	14	14	15	15	16	18	20	20	20
70	12	13	14	15	15	16	16	17	19	21	21	22
65	13	13	14	15	16	16	17	18	20	22	22	23
60	13	12	15	16	17	17	17	19	21	23	23	24
55	14	15	16	16	18	18	19	20	22	24	24	26
50	14	15	16	17	18	19	19	20	24	25	25	27
45	15	16	17	18	20	20	21	22	25	26	27	28
40	15	16	18	19	20	21	22	23	26	28	29	30
35	16	17	19	20	22	22	24	25	27	29	30	32
30	16	18	20	22	24	23	25	27	30	32	32	34
25	17	19	21	24	25	25	27	30	32	34	34	36
20	18	20	23	26	28	28	31	33	35	37	37	40
15	19	22	25	29	31	31	35	39	39	42	42	42
10	22	25	30	34	35	36	40	43	42	48	46	46
5	26	28	36	40	41	42	48	51	52	56	57	58

The norms for age 17 may be used for age 18.

Based on data from Johnston, F.E., D.V. Hamill, and S. Lemeshow. (1) *Skinfold Thickness of Children 6-11* (Series 11, No. 120, 1972) and (2) *Skinfold Thickness of Youths 12-17 Years* (Series 11, No. 132, 1974). U.S. National Center for Health Statistics, U.S. Dept. HEW, Washington D.C.

Body Composition

Percentile Norms: Sum of Triceps plus Subscapular Skinfolds

Ages 6-18, BOYS

AGE	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE												
99	7	7	7	7	7	8	8	7	7	8	8	8
95	8	9	9	9	9	9	9	9	9	9	9	9
90	9	9	9	10	10	10	10	10	9	10	10	10
85	10	10	10	10	11	11	10	10	10	11	11	11
80	10	10	10	11	11	12	11	11	11	11	11	12
75	11	11	11	11	12	12	11	12	11	12	12	12
70	11	11	11	12	12	12	12	12	12	12	12	13
65	11	11	12	12	13	13	13	12	12	13	13	13
60	12	12	12	13	13	14	13	13	13	13	13	14
55	12	12	13	14	15	14	14	14	13	14	14	14
50	12	12	13	14	14	16	15	15	14	14	14	15
45	13	13	14	14	15	16	15	16	14	15	15	16
40	13	13	14	15	16	17	16	17	15	16	16	16
35	13	14	15	16	17	19	17	18	16	18	17	17
30	14	14	16	17	18	20	19	19	18	18	18	19
25	14	15	17	18	19	22	21	22	20	20	20	21
20	15	16	18	20	21	24	24	25	23	22	22	24
15	16	17	19	23	23	28	27	29	27	25	24	26
10	18	18	21	26	28	33	33	36	31	30	29	30
5	20	24	28	34	33	38	44	46	37	40	37	38

The norms for age 17 may be used for age 18.

Based on data from Johnston, F.E., D.V. Hamill, and S. Lemeshow. (1) *Skinfold Thickness of Children 6-11* (Series 11, No. 120, 1972) and (2) *Skinfold Thickness of Youths 12-17 Years* (Series 11, No. 132, 1974). U.S. National Center for Health Statistics, U.S. Dept. HEW, Washington D.C.

Cardiovascular Fitness

Bicycle Ergometer: Max VO_2

A word about max VO_2: Minimal research has been done in the area of testing the max VO_2 in children. However, the relationship of max VO_2 to age and sex has been studied and mean values for boys and girls can be estimated. Research indicates that there is no significant difference in maximal aerobic power (max VO_2) in boys and girls until the onset of puberty. Differences become evident at the ages of 12-13. Peak values for both sexes are at the age of 18-20 followed by a gradual decline.* The mean values shown here are taken from a graph supporting this statement.

AGE	Max VO_2 (liters/min) BOYS	GIRLS
5	1.0 L/min.	1.0 L/min.
6	1.5 L/min.	1.3 L/min.
7	1.5 L/min.	1.5 L/min.
8	1.8 L/min.	1.6 L/min.
9	1.9 L/min.	1.6 L/min.
10	2.0 L/min.	1.8 L/min.
11	2.2 L/min.	1.8 L/min.
12	2.4 L/min.	2.0 L/min.
13	2.8 L/min.	2.2 L/min.
14	3.1 L/min.	2.2 L/min.
15	3.5 L/min.	2.5 L/min.
16	3.6 L/min.	2.6 L/min.
17	3.7 L/min.	2.6 L/min.
18	3.7 L/min.	2.7 L/min.

* Astrand, P.O. and Rodahl, K., *Textbook of Work Physiology*, McGraw-Hill Inc., N.Y., N.Y., pages 318-321, 1977.

Cardiovascular Fitness Physical Fitness Test Norms

Cardiorespiratory Fitness Estimate Max. O_2 Uptake (ml/kg/min), for boys and girls, ages 13–19.

Rating	*Boys*	*Girls*
Very Poor	<35.0	<25.0
Poor	35.0-38.3	25.0-30.9
Fair	38.4-45.1	31.0-34.9
Good	45.2-50.9	35.0-38.9
Excellent	51.0-55.9	39.0-41.9
Superior	>56.0	>42.0

The above figures are adapted from K. Cooper, *The Aerobics Way*, New York: Bantam, 1977.

Step Recovery Test

The Step Recovery Test is useful in measuring the heart rate and its response to exercise. The heart recovery rate is a valuable measure of physical fitness.

Although norms are not available for children taking the step test, you can develop fitness goals and standards for your students based on other performance tests such as the 600-yard walk/run, the 1-mile run, or the 9-minute run.

The recovery rate formula* can also be applied. To use this method, take the pulse for 6 seconds immediately following exercise. Wait exactly one minute, and take the pulse for another 6 seconds. Subtract the second number from the first and divide by 10. The formula, therefore, is:

$$\frac{\text{exercise pulse} - \text{one minute pulse}}{10} = \text{Recovery Rate}$$

Using the recovery rate formula,* check your students' fitness levels according to the following:

less than 2	poor
between 2 and 3	fair
between 3 and 4	good
between 4 and 6	excellent
more than 6	superior

* Recovery rate formula from *Fit or Fat?* (1977) by Covert Bailey. Reprinted with permission from Houghton Mifflin.

Cardiovascular Fitness

Percentile Norms: 1-Mile Run

Ages 5-16, GIRLS

AGE	5	6	7	8	9	10	11	12	13	14	15	16
PERCENTILE												
99	9:03	8:06	7:58	7:45	7:21	7:09	7:07	6:57	6:20	6:44	6:36	6:33
95	9:45	9:18	8:48	8:45	8:24	7:59	7:46	7:26	7:10	7:18	7:39	7:07
90	11:23	9:52	9:35	9:30	8:44	8:30	8:10	7:44	7:45	7:39	8:01	7:47
85	12:08	10:40	9:55	9:45	9:08	8:50	8:36	8:05	8:01	7:54	8:10	8:13
80	12:48	11:06	10:27	10:17	9:31	9:10	8:57	8:18	8:12	8:03	8:24	8:33
75	13:09	11:24	10:55	10:35	9:58	9:30	9:12	8:36	8:18	8:13	8:42	9:00
70	13:26	11:46	10:65	10:50	10:07	9:47	9:29	8:55	8:27	8:23	8:59	9:26
65	13:52	12:26	11:24	11:05	10:17	10:02	9:44	9:08	8:41	8:37	9:10	9:52
60	14:14	12:46	11:43	11:30	10:32	10:23	10:00	9:21	8:56	8:55	9:38	10:06
55	14:42	13:10	12:03	11:43	10:56	10:49	10:16	9:33	9:14	9:04	9:47	10:21
50	15:08	13:48	12:30	12:00	11:12	11:06	10:27	9:47	9:27	9:35	10:05	10:45
45	15:39	14:08	12:55	12:15	11:29	11:24	10:56	10:05	9:37	10:00	10:35	11:12
40	16:20	14:19	13:42	12:45	12:00	11:41	11:12	10:22	9:57	10:20	10:51	11:35
35	17:07	14:51	14:05	13:15	12:20	11:51	11:29	10:39	10:12	10:40	11:43	12:00
30	17:32	15:06	14:08	13:47	12:42	12:09	11:51	11:00	10:31	11:11	12:05	12:32
25	17:59	15:27	14:30	14:16	13:18	12:54	12:10	11:35	10:56	11:43	12:21	13:00
20	18:19	15:55	15:10	14:56	13:52	13:31	12:36	11:57	11:23	12:21	13:04	14:05
15	18:28	16:58	15:27	15:24	14:22	14:00	13:16	12:35	12:20	13:56	14:07	14:49
10	18:38	18:11	16:03	16:30	15:25	15:12	14:41	13:34	13:09	15:20	15:25	15:02
5	19:00	18:50	17:44	16:58	16:42	17:00	16:56	14:46	14:55	16:59	16:22	15:30

Cardiovascular Fitness

Percentile Norms: 1-Mile Run

Ages 5-16, BOYS

AGE	5	6	7	8	9	10	11	12	13	14	15	16
PERCENTILE												
99	7:45	8:15	7:17	6:14	6:43	6:25	6:04	5:40	5:44	5:36	5:44	5:40
95	9:02	9:06	8:06	7:58	7:17	6:56	6:50	6:27	6:11	5:51	6:01	5:48
90	9:41	9:30	8:35	8:12	7:29	7:26	7:19	6:44	6:22	6:05	6:08	6:02
85	10:40	10:00	8:59	8:22	8:00	7:40	7:30	6:57	6:33	6:13	6:18	6:12
80	11:13	10:23	9:18	8:45	8:22	7:57	7:48	7:12	6:42	6:21	6:29	6:22
75	11:32	10:55	9:37	9:04	8:36	8:10	8:00	7:24	6:52	6:36	6:35	6:28
70	11:50	11:20	9:45	9:24	8:50	8:23	8:08	7:37	7:00	6:41	6:42	6:41
65	12:34	11:33	10:04	9:43	9:02	8:34	8:21	7:48	7:06	6:48	6:56	6:47
60	12:48	11:47	10:46	10:20	9:14	8:49	8:39	7:59	7:14	6:54	7:02	6:53
55	13:17	12:03	11:10	10:41	9:30	9:03	8:56	8:08	7:20	7:01	7:07	7:03
50	13:46	12:29	11:25	11:00	9:56	9:19	9:06	8:20	7:27	7:10	7:14	7:11
45	14:09	12:50	11:44	11:24	10:24	9:34	9:25	8:34	7:40	7:15	7:23	7:19
40	14:17	13:20	12:04	11:49	11:01	9:45	9:46	8:51	7:51	7:24	7:30	7:27
35	14:52	13:55	12:44	12:12	11:25	10:10	10:10	9:10	8:02	7:34	7:41	7:40
30	15:18	14:13	13:30	12:30	11:44	10:38	10:40	9:30	8:24	7:54	7:52	7:51
25	16:05	15:10	14:02	13:29	12:00	11:05	11:31	10:00	8:35	8:02	8:04	8:07
20	16:37	15:18	14:37	13:56	12:25	11:31	12:02	10:42	8:50	8:15	8:26	8:41
15	17:08	15:51	15:06	14:25	13:21	12:11	14:40	11:20	9:09	8:43	8:48	9:10
10	17:21	16:56	15:50	15:16	14:19	13:00	13:37	12:07	9:39	9:30	9:25	9:52
5	18:25	17:38	17:17	16:19	15:44	14:28	15:25	13:41	10:23	10:32	10:37	10:40

Cardiovascular Fitness

Percentile Norms: 9-Minute Run

Ages 5-18, GIRLS

AGE	5	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE													
99	1584	1980	2340	2260	2300	2240	2170	2370	2197	2235	2273	2311	2349
95	1540	1700	1900	1860	2050	2067	2000	2175	2085	2123	2161	2199	2237
90	1410	1620	1710	1750	1870	1900	1930	2170	2005	2043	2081	2119	2157
85	1358	1584	1650	1695	1770	1780	1833	1940	1899	1937	1975	2013	2051
80	1320	1520	1570	1600	1700	1750	1780	1840	1837	1875	1913	1951	1989
75	1300	1440	1540	1540	1650	1650	1723	1760	1785	1823	1861	1899	1937
70	1243	1390	1490	1520	1590	1596	1650	1733	1738	1776	1814	1852	1890
65	1225	1310	1460	1475	1540	1567	1620	1700	1698	1736	1774	1812	1850
60	1220	1253	1402	1440	1515	1525	1570	1690	1655	1693	1731	1769	1807
55	1180	1230	1356	1403	1475	1490	1539	1650	1617	1655	1693	1731	1769
50	1140	1208	1344	1358	1425	1460	1480	1590	1577	1615	1653	1691	1729
45	1100	1180	1310	1330	1390	1425	1460	1542	1537	1575	1613	1651	1689
40	1080	1140	1280	1315	1350	1375	1405	1500	1499	1537	1575	1613	1651
35	1010	1100	1225	1280	1320	1345	1380	1475	1456	1494	1532	1570	1608
30	1000	1060	1190	1250	1290	1290	1356	1420	1416	1454	1492	1530	1568
25	950	1017	1150	1225	1243	1250	1345	1356	1369	1407	1445	1483	1521
20	866	990	1110	1180	1225	1230	1300	1220	1317	1355	1393	1431	1469
15	830	915	1050	1110	1130	1180	1200	1200	1255	1293	1331	1369	1407
10	750	850	997	1056	1080	1100	1125	1130	1149	1187	1225	1263	1301
5	700	750	860	970	960	940	904	1000	1069	1107	1145	1183	1221

* expressed in yards.

Cardiovascular Fitness

Percentile Norms: 9-Minute Run

Ages 5-18, BOYS

AGE	5	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE													
99	1975	2000	2400	2520	2450	2520	2520	2880	2615	2686	2757	2828	2899
95	1760	1750	2020	2200	2175	2250	2250	2400	2402	2473	2544	2615	2615
90	1530	1650	1900	2100	2040	2120	2109	2175	2320	2391	2462	2533	2604
85	1425	1584	1790	1940	1940	2013	2025	2042	2213	2284	2384	2455	2526
80	1370	1525	1733	1870	1875	1950	1970	2000	2150	2221	2292	2363	2434
75	1320	1469	1693	1810	1835	1910	1925	1975	2096	2167	2238	2309	2380
70	1310	1440	1640	1770	1800	1859	1890	1900	2049	2120	2191	2262	2333
65	1275	1400	1590	1725	1760	1810	1860	1860	2008	2079	2150	2221	2292
60	1220	1350	1540	1695	1740	1780	1808	1810	1964	2035	2106	2177	2248
55	1200	1320	1490	1650	1695	1725	1770	1790	1926	1997	2068	2139	2210
50	1170	1280	1440	1595	1660	1690	1725	1760	1885	1956	2027	2098	2169
45	1120	1232	1400	1540	1625	1633	1690	1740	1844	1915	1986	2057	2128
40	1100	1200	1370	1500	1600	1600	1640	1680	1806	1877	1948	2019	2090
35	1075	1170	1340	1470	1537	1584	1600	1620	1762	1833	1904	1975	2046
30	1010	1130	1310	1420	1490	1536	1575	1590	1721	1792	1863	1934	2005
25	990	1090	1243	1380	1440	1487	1540	1500	1674	1745	1816	1887	1958
20	940	1050	1195	1340	1370	1420	1440	1450	1620	1691	1762	1833	1904
15	880	990	1140	1263	1310	1356	1390	1356	1557	1628	1699	1770	1841
10	830	940	1070	1180	1243	1250	1275	1300	1450	1521	1592	1663	1734
5	600	816	990	1053	1104	1110	1170	1000	1368	1439	1510	1581	1652

* expressed in yards.

Flexibility

Percentile Norms: Sit and Reach

Ages 5-18, GIRLS

AGE	5	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE													
99	37	38	37	39	39	41	41	46	49	49	49	48	47
95	34	34	34	36	35	35	37	40	43	44	46	46	44
90	32	33	33	34	34	34	36	38	40	42	44	43	43
85	31	32	32	33	33	33	34	36	38	40	43	42	42
80	31	31	31	32	32	32	33	35	37	39	42	41	41
75	30	30	31	31	31	31	32	34	36	38	41	39	40
70	29	29	30	30	30	30	31	33	35	36	40	38	40
65	28	29	29	30	30	29	30	32	33	36	39	37	39
60	28	28	29	29	29	29	30	32	32	35	37	36	37
55	27	27	28	28	28	28	29	31	31	34	37	35	36
50	27	27	27	28	28	28	29	30	31	33	36	34	35
45	26	26	27	27	27	27	28	29	30	32	34	33	34
40	25	25	26	26	26	27	27	28	29	31	33	33	33
35	25	25	26	25	25	26	26	27	27	30	32	32	33
30	24	24	25	24	24	25	25	26	26	29	32	31	32
25	23	23	24	23	23	24	24	25	24	28	31	30	31
20	23	22	23	22	22	22	23	23	23	26	30	28	29
15	22	22	22	21	21	21	22	22	22	24	28	26	28
10	20	20	20	19	20	19	20	20	20	23	25	23	26
5	18	18	16	17	17	16	16	15	17	18	19	14	22

Flexibility

Percentile Norms: Sit and Reach

Ages 5-18, BOYS

AGE	5	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE													
99	36	37	38	38	37	37	38	52	41	43	47	45	48
95	32	34	33	34	34	33	34	35	36	39	41	42	45
90	31	32	31	32	32	31	32	32	34	37	39	40	43
85	30	31	30	31	31	30	31	31	33	36	37	38	41
80	29	30	29	30	30	29	30	30	32	34	36	37	40
75	29	29	28	29	29	28	29	29	30	33	34	36	40
70	28	28	27	28	28	28	28	28	29	31	33	35	38
65	27	28	27	27	28	27	27	28	28	30	32	34	37
60	26	27	26	27	27	26	26	27	27	30	32	32	36
55	26	26	25	26	26	26	26	27	27	29	31	31	35
50	25	26	25	25	25	25	25	26	26	28	30	30	34
45	25	25	24	25	25	24	24	25	25	27	29	29	33
40	24	24	24	24	24	23	23	24	24	26	28	28	32
35	23	24	23	23	23	22	23	23	23	25	27	27	31
30	23	23	22	23	22	21	22	22	22	24	26	26	30
25	22	22	22	22	22	20	21	21	20	23	24	25	28
20	22	22	20	21	21	19	20	20	19	22	23	23	26
15	21	20	19	20	20	18	18	18	18	21	22	21	25
10	19	18	18	18	18	17	16	16	15	18	19	18	23
5	17	16	16	16	16	12	12	13	12	15	13	11	15

Strength

Percentile Norms: Sit-Up Test

Ages 5-18, GIRLS

AGE	5	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE													
99	35	42	51	55	54	54	55	61	60	57	64	63	65
95	28	35	40	44	44	47	50	52	51	51	56	54	54
90	27	32	37	41	41	44	46	48	48	48	50	50	50
85	25	30	34	38	39	41	44	45	46	45	47	49	47
80	24	29	32	36	37	40	42	43	43	43	45	45	45
75	24	28	31	35	35	39	40	41	41	42	43	42	44
70	23	26	30	34	34	37	39	40	40	40	41	39	43
65	22	25	29	32	33	35	37	40	39	39	41	37	42
60	20	24	28	31	31	34	36	39	37	38	40	35	40
55	20	23	27	30	30	33	35	37	36	37	38	34	39
50	19	22	25	29	29	32	34	36	35	35	37	33	37
45	18	20	24	28	28	30	33	35	34	34	35	32	36
40	16	19	23	27	27	29	32	33	33	33	33	31	35
35	15	18	22	25	26	28	30	32	32	32	32	30	30
30	13	16	21	23	25	26	29	31	30	31	31	30	32
25	12	14	20	22	23	25	28	30	29	30	30	29	31
20	10	13	19	20	21	23	26	29	27	28	28	26	29
15	9	11	16	19	19	21	24	27	25	26	27	25	27
10	6	9	13	17	17	19	21	23	23	24	25	23	25
5	2	6	10	12	14	15	19	19	18	20	20	20	19

Strength

Percentile Norms: Sit-Up Test

Ages 5-18, BOYS

AGE	5	6	7	8	9	10	11	12	13	14	15	16	17+
PERCENTILE													
99	47	47	53	55	52	59	61	68	70	70	69	70	65
95	30	36	42	48	47	50	51	56	58	59	59	61	62
90	27	33	39	42	43	47	48	52	54	54	55	59	59
85	25	30	37	40	41	44	46	50	52	52	52	55	56
80	24	28	34	38	39	42	44	48	50	51	50	53	54
75	23	26	33	37	38	40	42	46	48	49	49	51	52
70	22	25	31	35	36	39	41	45	46	48	48	50	51
65	21	23	30	34	35	37	40	43	45	46	47	49	50
60	20	22	29	32	34	36	39	42	44	45	46	47	49
55	19	21	28	31	33	35	38	40	42	44	45	46	48
50	18	20	26	30	32	34	37	39	41	42	44	45	46
45	17	19	25	29	31	33	35	38	40	41	42	44	45
40	15	18	24	29	30	31	34	36	39	40	41	42	44
35	14	17	22	28	29	30	33	35	38	39	40	40	43
30	13	16	21	26	27	29	31	33	36	38	39	39	40
25	11	15	19	25	25	27	30	31	35	36	38	38	38
20	9	13	17	23	24	25	28	30	33	35	36	35	37
15	7	12	15	21	22	23	26	28	31	33	34	33	34
10	5	9	14	19	20	19	23	25	29	31	31	30	31
5	2	6	10	15	15	15	17	19	25	27	28	28	25

chapter eight

DIRECTORY

8

Nutrition Education

American College of Nutrition
100 Manhattan Ave. #1606
Union City, NJ 07087

American Heart Association
7320 Greenville Ave.
Dallas, TX 75231

U.S. Dept. of Agriculture
Office of Information
Washington, DC 20250

Dept. of Health and Human Services
Food and Drug Administration
Office of Consumer Affairs
Consumer Inquiry Branch
5600 Fishers Lane
Rockville, MD 20852

National Dairy Council
6300 North River Rd.
Rosemont, IL 60018-4233

American Health Foundation
320 East 43rd Street
N.Y., NY 10017

American National Red Cross
Food and Nutrition
Consultant
National Headquarters
Washington, DC 20006

Consumer Information
Catalog
P.O. Box 100
Pueblo, CO 81002

Cornell University
State University of N.Y.
U.S. Dept. of Agriculture
Cooperative Extension
Programs
Ithaca, NY 14853

The Univ. of the State of
N.Y.
The State Education
Department
Bureau of School Health Ed.
Albany, NY 12234

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Physical Education,
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1900 Association Drive
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Weight Management

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Healthy Food Choices
American Dietetic Association
430 North Michigan Avenue
Chicago, IL 60611
Tel: 312-280-5000

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1230 Avenue of The Americas
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Cottonwood Hospital
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U.S. Department of Agriculture and
U.S. Department of Health
Consumer Information Center
P.O. Box 100
Pueblo, CO 81003

American Heart Association
Diet
7230 Greenville Avenue
Dallas, TX 75231

Guide to Good Eating:
A Recommended Daily Pattern
Developed by the National
Dairy Council
6300 North River Road
Rosemont, IL 60018-4233

Recommended Dietary
Allowances
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1985
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No-Nonsense Nutrition for
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Exercise

Institute for Aerobic Research
12330 Preston Road
Dallas, TX 752350
RE: FITNESSGRAM

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Health/Fitness Instructor's Handbook
Howley, Franks
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Champaign, IL 1986

Athletic/Health Suppliers

Computer Instrument Corp.
100 Madison Ave.
Hempstead, NY 11550

U.S. Games Inc.
1511 N. Harbor City Blvd.
Melbourne, FL 32935

Educational Activities
1937 Grand Ave.
Baldwin, NY 11510

GOPHER Athletic
220 24th Ave. N.W.
Owatonna, MN 55060

School Health Supply Co.
300 Lombard Road
P.O. Box 409
Addison, IL 60101-0409

Micro Bio-Medics, Inc.
717 South Third Ave.
Mt. Vernon, NY 10550

Universal Fitness Products
50 Commercial Street
Plainview, NY 11803

Passon's Sports
1017 Arch Street
Phila., PA 19107

Flaghouse Inc.
18 West 18th Street
N.Y., NY 10011

Bench Mark
AMF American
200 American Ave.
Jefferson, IA 50129

National Health Supply Corp.
Tri-Med Surgical Co., Inc.
P.O. Box 737
2 South Street
Garden City, NY 11530

Suggested Equipment for Fitness/Weight Control Program

1. Scale
2. Desk Mercury Sphygmonometer
3. Stethoscopes
4. Digital Blood Pressure Unit
5. Tape Measure
6. Pulse Meter
7. Skinfold Caliper
8. Cal-o-meter
9. Pedometer
10. Mats
11. Bicycle Ergometer/Stationary Bicycle
12. Sit and Reach Box
13. Free Weights

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Kids Weigh to Fitness

by Mary Jane Maione

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