DOCUMENT RESUME

ED 124 536 SP 010 149

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TITLE Cardiovascular Endurance Activities for Children in Grades Four Through Six.
PUB DATE Mar 76
NOTE 17p.; Paper presented at the Southern District American Alliance for Health, Physical Education, and Recreation Convention (Mobile, Alabama, March 18-21, 1976)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Athletic Programs; *Cardiovascular System; *Elementary Grades; *Exercise (Physiology); Heart Rate; *Muscular Strength; Physical Education; *Physical Fitness; Running

ABSTRACT

A program of cardiovascular endurance activities for children in grades four through six was developed to emphasize success and improvement and establish lifelong patterns of concern for and enjoyment of activities that contribute to physical fitness and optimum health. The activities in the program require more teacher preparation than the traditional push-ups, jumping jack routines, and Six Hundred Yard Run Walk most commonly used in grades four through six. They emphasize development of strength and muscular endurance in neglected areas (primarily the abdominal, arm, and shoulder girdle regions) as well as in leg and running muscles. Most of the activities described (rope, jogging, parachute, position, abdominal, and leg activities) require a minimum of space and equipment, are adaptable to any group size, may be used inside or outside, and require varying amounts of class time. They can be presented in the form of questions or challenges for the children to answer in his or her own way thereby allowing for individual success. They also allow the teacher to obtain desired responses by continually refining and revising the challenges used. Challenges are in the form of "Can you. . .?" and progress to "How long can you. . .?" Successful completions and times can be recorded on individual program cards (examples given) that enable both child and teacher to view success, progress, and improvement. A full description of each activity and suggested challenges is included. (MM)

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CARDIOVASCULAR ENDURANCE ACTIVITIES FOR CHILDREN IN GRADES FOUR THROUGH SIX

For many physical educators, cardiovascular endurance is the single most indicative measure of a person's physical condition. (2, p. 135) Tests of cardiovascular function range from measurement of time required to cover a prescribed distance to measurement of pulse rate and blood pressure under conditions involving varying degrees of work and accompanying changes in body position. The most common test of cardiovascular function in children grades four through six is the Six Hundred Yard Run Walk. (2, p. 138; 7, p. 273) Recording times may be established using large gymnasium clocks or using teacher or partner-announced times upon individual completions of activities. Most of the activities presented here require a minimum of space and equipment, are adaptable to any group size, may be used inside or outside and require varying amounts of class time. Probably more important, these activities are fun and will allow children to motivate themselves to improve. Methods used to present these activities are based upon the writings of Muska Mosston.

Cardiovascular Endurance Activities

Rope activities:

The most common rope activities in elementary schools involve long rope jumping and individual rope jumping. The activities presented here will be for individual rope jumping, since individual rope jumping encourages maximum use of learning time for activity with everyone active. Each child should have a rope which, when the child is standing in the center of it, should extend from armpit to armpit. Ropes need not be commercially made; any cord three-eighths to one-half inch thick will suffice. Enough ropes of varying lengths should be provided so that each child may have one of correct length.

These activities will be presented in the form of questions or challenges for the children to answer. These questions allow each child to succeed by answering in his or her own way. Simultaneously, they allow the teacher to obtain correct responses by continually refining and revising the challenges used. The following challenges should begin with "Can you...?" and progress to "How long can you...?". Successful completions and times should be recorded on individual program cards for each child, enabling both child and teacher to view success, progress and improvement.

"Can you...

1) jump in your own space while turning the rope?
2) jump in a different way?
3) hop on one foot, then the other?

4) alternate feet on each jump?
5) run in place while turning the rope?
6) jump forward while turning the tope?
7) hop forward while turning the rope?
8) run forward while turning the rope?
9) jump backward?
10) hop backward?
11) run backward?
12) jump fast?
13) jump once to each turn of the rope (Peppers)?
14) hop on your left foot five times, then hop on your right foot five times? (Increase to seven, ten, thirteen, fifteen, et cetera as ability improves.)
15) jump with your arms crossed? Backwards?
16) jump, raising the rope higher on each jump?
17) jump and complete a quarter turn on each jump? (Increase to half turn, three-quarter turn, full turn. Caution concerning equilibrium if you include in "How long can you...? challenges.)
18) jump forty times in one minute? (Increase to forty-five, fifty, et cetera.)
19) alternately jump with feet together and with feet spread apart in a straddle position?
20) hop on one foot, tapping the ground in front of you with the toes of the other foot?
21) jump on both feet with one ankle crossed over the other?
22) think of another way to jump or hop with your rope?
23) jump any way desired without stopping?" (This is especially good for leading into the "How long can you...?" challenges.)

The benefits of these rope skipping activities presented as challenges or questions are many. Each child is active, answering challenges at his/her own rate of speed. Activity is continual, progression rate is individual, motivation is practically guaranteed through the success of completing one challenge and moving on to the next. Highly skilled children may go as rapidly through the "Can you...?" challenges on to the "How long can you...?" challenges, allowing lesser skilled and physically unfit to remain as long as necessary on each challenge. As long as rope skipping activity is occurring, cardiovascular endurance is increasing. Children in grades four through six are entering periods of accelerated growth, with fatigue remaining an important consideration for each teacher. Presenting activities such as these will allow each child to rest when tired. Recording individual progress guarantees some success for each child. Presenting these challenges on individual program cards frees the teacher to move about, helping some, encouraging others, observing all. Try all these challenges some time to observe how greatly they can contribute to cardiovascular endurance.

Jogging activities:

Jogging is probably the best known activity designed to improve cardiovascular endurance. Jogging is generally defined as easy, relaxed running at a pace which the individual feels s/he can keep up for long distances without undue fatigue. (1, p. 114) Jogging requires no special equipment, can be done practically anywhere, is an individual activity and consumes relatively little time. Most jogging programs for children encourage the child to jog until s/he feels the need to walk, then to walk until s/he feels like jogging again. Improvement comes as the child works to increase the jogging distance, in turn decreasing the distance walked. The teacher may select the distance to be covered, or the child may be offered choices. Again, jogging will be presented as a series of challenges for individual solution and discovery.

"Can you...

1) jog comfortably anywhere in the gymnasium (on the field, about the room)?
2) jog with short steps?
3) jog with long steps?
4) jog alternating long and short steps?
5) jog lifting your knees high on each step?
6) jog backwards?
7) jog and change speed or tempo?
8) jog around or between these obstacles? (Objects such as tires, cones, bleach bottles or milk cartons may be used.)
9) jog in place?
10) jog lightly, then heavily?
11) jog, making a geometric pattern of your choice?
12) jog, making any pattern of your choice?
13) jog side by side with a partner?
14) jog while tossing a ball to yourself and catching it?
15) jog in a small group following a zigzag pattern set by the leader? (Alternate so everyone in a three to five member group is leader.)
16) jog in a column of three or four; the last person runs around the group to become the head, then adjusts to the group's speed; the new last person then does the same? (Interval jogging)
17) jog anywhere in the gymnasium (on the field, about the room), recording the amount of time you are able to continue jogging?"

These challenges lead into the "How long can you...?" challenges requiring that each item be timed and recorded, thus allowing each child to view his/her own increased cardiovascular endurance. Again, success and continued motivation!

Rope and jogging activities may be accompanied by music when performed inside, adding a rather pleasant element to these cardiovascular endurance activities.

STRENGTH AND MUSCULAR ENDURANCE ACTIVITIES FOR CHILDREN IN GRADES FOUR THROUGH SIX

Any activity involving repetitions of a movement (such as a maximum number of sit-ups) combines strength with muscular endurance. Strength is generally defined as the force a muscle group can exert against a resistance in one maximal effort. (4, p. 68) Muscular endurance is usually defined as the ability of a muscle group to perform repeated contractions against a light load for an extended period of time. (4, p. 68) Test items for upper elementary boys and girls combine measures of strength and muscular endurance of particular muscle groups. The activities selected here will combine strength and muscular endurance for various muscle groups in the body.

Strength and Muscular Endurance Activities

Arm and shoulder girdle activities for strength and muscular endurance:

Since most upper elementary children engage in more running and leg strength activities than other types, teachers of this age group must be aware of the need for development of strength and muscular endurance in neglected areas, primarily abdominal and arm and shoulder girdle. In a continuing effort to provide for individual rates of progress and maximum use of time available for activity, individual program cards and progressive challenges are advocated. Success is motivation!

Parachute activities:

Children enjoy using a parachute for physical education or recreation activities. While most of the benefits derived from parachute play are associated with arm and shoulder girdle strength development, there are many others. Parachute play is a large group activity with everyone following the same directions to accomplish a common goal. In many ways this is a team activity, ideal for encouraging social development and emotional growth. Parachutes may be obtained commercially or from an army surplus store. Parachute play is limited only by the creativity of the teacher, who may occasionally rely on the nearly limitless creativity of the children.

When first using a parachute, children should be encouraged to look for possible safety hazards. They will generally discover that walking on the parachute might cause a fall, getting under it (unless requested to) may be dangerous and talking when one should be listening may cause accidents.

"Can you...

1) hold the parachute with both hands and make it wave up and down like waves on the ocean?
2) hold the parachute another way with both hands and wave it up and down?

3) hold the parachute still another way with both hands and wave it up and down? Which way of holding the parachute seems to work best?
4) hold the parachute with just one hand and wave it up and down?
5) change hands and continue to wave it up and down?
6) stand with your back to the parachute and, holding it with both hands, wave it up and down? Can you wave it as easily this way as when you face the parachute?
7) face the parachute and, holding it with both hands, lift the parachute as high as possible?
8) lift the parachute high, then pull it quickly down to the floor, trapping air in the parachute?
9) lift the parachute high, turn around and pull the parachute down to the floor so you are inside the parachute with everyone else?
10) lift the parachute high and change places with someone else when your number is called? (Colors, seasons, months, days of the week, arithmetic problems or series of virtually any kind may be used in place of numbers.)
11) wave the parachute up and down, trying to force the ball off the parachute? (Dividing the group in half and adding scoring may produce a game situation.)
12) wave the parachute up and down with your right hand while skipping (hopping, jumping, walking, et cetera) around?
13) change hands and hold the parachute high as you walk?
14) hold the parachute with both hands at a high level and wave it up and down?
15) hold the parachute with both hands and wave it hard as you move to the side?"

These activities are designed primarily for arm and shoulder girdle strength and muscular endurance development. Many other activities may be used to concentrate on leg strength and endurance.

Position activities:

"In a push-up position, can you...

1) hold this position and count slowly to five? Ten, fifteen, et cetera?
2) lift one foot high, then the other foot?
3) bounce both feet up and down?
4) inch your feet out sideways away from each other into a straddle position? Then can you return to the starting position?
5) walk your feet up to your hands and go back again?
6) inch your feet up to your hands, then move your hands out to the starting position?
7) lift one hand and touch your opposite shoulder? Can you go behind your back and touch your opposite shoulder?

8) turn over so your back is toward the floor, keeping your body straight?
9) turn back over to the starting position?
10) slowly lower your body to the floor, taking as long as you can and counting slowly to yourself? (Push down)
11) lift both hands from the floor, clap them and return to the starting position?"

"In a crab walk position (hands and feet on the floor, face and stomach up, back straight), can you...

1) move forward?
2) move backward?
3) move to your right?
4) move to your left?
5) keep your arms in place and move in a large circle?
6) keep your feet in place and move in a circle?
7) move in a geometric shape of your choice?
8) follow a zigzag pattern of your choice?
9) lift up your right leg?
10) lift your left arm up?
11) lift up your left leg and right arm at the same time?
12) draw a triangle in the air with one of your legs?
13) write your name in the air with one of your legs?
14) use one hand in the air to solve a math problem you make up?
15) think of something different to do in this position?"

How much more desirable are these activities than instructing an entire class to do ten push-ups and having even one child experience nothing but failure!!!

Abdominal activities for strength and muscular endurance:

Perhaps the best known activity designed to develop abdominal strength is the sit-up, with its numerous variations. Sit-ups and variations should be done with knees bent to encourage maximum abdominal muscle involvement. Sit-ups should be done on mats or grassy areas to protect growing spines, primarily in the sacral area.

"From a supine position with your knees bent and your feet flat on the floor, can you...

1) raise only your head so that your chin comes close to your chest?
2) raise your head and shoulders slightly off the floor?
3) raise your head and shoulders so your hands slide forward and touch your knees?
4) raise your head and shoulders all the way off the floor so your chin touches your knees?
5) start with your arms on the floor overhead and sit up so your chest touches your knees?

6) cross your arms on your chest and sit up?
7) clasp your hands behind your head and sit up so your chest touches your knees?
8) clasp your hands behind your head and sit up to touch your left elbow to your right knee? (Curl-up)
9) try this again, touching your right elbow to your left knee?
10) think of another way to sit up?
11) pick one variation of the sit-up and count how many times you can sit up?"

Children will enjoy discovering how many sit-ups they can do. The changes in degrees of difficulty may bring up some interesting kinesiological discussions.

"From a supine position with your legs straight and your arms at your sides, can you...

1) raise one leg a few inches off the floor, hold it there for three counts (five, seven, ten, twelve, et cetera) and lower it slowly?
2) try this with your other leg?
3) raise one leg a few inches off the floor, bend your knee up to your chest, straighten your leg and lower it slowly?
4) try this with your other leg?
5) raise one leg a few inches off the floor, bend your knee, clasp your hands around your knee and bring it up to touch your chin? Can you straighten your leg and lower it slowly?
6) try this with your other leg?
7) raise your leg, bend your knee and touch your chin to your knees without using your hands? Can you straighten your leg and lower it slowly?
8) try this with your other leg?
9) raise both legs a few inches off the floor and hold them there? How long can you keep them there?
10) raise both legs a few inches off the floor and move them apart in a straddle? Can you move them back together and lower them slowly?"

All of these challenges may be used with "How many times can you...?" challenges. Records of seconds and repetitions should be kept to provide visible progress records.

Leg activities for strength and muscular endurance:

Most physical education activities require the use of various leg muscles. Children normally have more leg strength and endurance than abdominal or arm and shoulder girdle strength and endurance. Activities designed to improve leg strength and endurance should be included in a physical education program to increase a child's chances of success and to enhance self-image.

"Can you...

1) squat halfway down and jump up, extending your arms over your head?
2) squat down to the floor, thrust your legs out to a push-up position, return to a squat and then stand up straight?
3) start in a push-up position, bring one leg under your chest, then change legs rapidly? Can you change legs five times without stopping? Ten, fifteen, twenty?

All of these may be made increasingly difficult by using challenges like .How many times can you...?" and "In thirty (forty-five, sixty) seconds, how many times can you...?" With individual program cards, each individual child's progress is a visible record of success, for the child, the parents and you.

The cardiovascular endurance and strength and muscular endurance activities presented here require only a little more teacher preparation time than the traditional push-up and jumping jack routines of old, yet they reap so much more! Success and improvement do much to establish a lifelong pattern of concern for and enjoyment of activities which contribute to physical fitness and optimum health.

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Individual Program Name_____

CARDIOVASCULAR ENDURANCE

Rope activities

Date	Comp.	Inc.	Rep.	Time

1) Can you jump in your own space while turning the rope?

2) Can you jump in a different way?

3) Can you hop on one foot, then the other?

4) Can you alternate feet on each jump?

5) Can you run in place while turning the rope?

6) Can you jump forward while turning the rope?

7) Can you hop forward while turning the rope?

8) Can you run forward while turning the rope?

9) Can you jump backward?

10) Can you hop backward?

11) Can you run backward?

12) Can you jump fast?

13) Can you jump once to each turn of the rope (Peppers)?

14) Can you hop on your left foot five times, then hop on your right foot five times? (Increase to seven, ten, thirteen, fifteen, et cetera as ability improves.)

15) Can you jump with your arms crossed? Backwards?

16) Can you jump, raising the rope higher on each jump?

17) Can you jump and complete a quarter turn on each jump? (Increase to half turn, three-quarter turn, full turn. Caution concerning equilibrium if you include in "How long can you...? challenges.)

18) Can you jump forty times in one minute? (Increase to forty-five, fifty, et cetera.)

19) Can you alternately jump with feet together and with feet spread apart in a straddle position?

20) Can you hop on one foot, tapping the ground in front of you with the toes of the other foot?

Key
Comp. - Complete
Inc. - Incomplete
Rep. - Repetitions

Activity	Date	Comp.	Inc.	Rep.	Time
21) Can you jump on both feet with one ankle crossed over the other?					
22) Can you think of another way to jump or hop with your rope?					
23) Can you jump any way desired with stopping? (This is especially good for leading into the "How long can you..?" challenges.)					
Jogging activities					
1) Can you jog comfortably anywhere in the gymnasium (on the field, about the room)?					
2) Can you jog with short steps?					
3) Can you jog with long steps?					
4) Can you jog alternating long and short steps?					
5) Can you jog lifting your knees high on each step?					
6) Can you jog backwards?					
7) Can you jog and change speed or tempo?					
8) Can you jog around or between these obstacles? (Objects such as tires, cones, bleach bottles or milk cartons may be used.)					
9) Can you jog in place?					
10) Can you jog lightly, then heavily?					
11) Can you jog, making a geometric pattern of your choice?					
12) Can you jog, making any pattern of your choice?					
13) Can you jog side by side with a partner?					
14) Can you jog while tossing a ball to yourself and catching it?					
15) Can you jog in a small group following a zigzag pattern set by the leader? (Alternate so everyone in a three to five member group is leader.)					
16) Can you jog in a column of three or four; the last person runs around the group to become the head, then adjusts to the group's speed; the new last person then does the same? (Interval jogging)					
17) Can you jog anywhere in the gymnasium (on the field, about the room), recording the amount of time you are able to continue jogging?					

STRENGTH AND MUSCULAR ENDURANCE

Parachute activities for arm and shoulder girdle strength and endurance

Date	Comp.	Inc.	Rep.	Tim

1) Can you hold the parachute with both hands and make it wave up and down like waves on the ocean?

2) Can you hold the parachute another way with both hands and wave it up and down?

3) Can you hold the parachute still another way with both hands and wave it up and down? Which way of holding the parachute seems to work best?

4) Can you hold the parachute with just one hand and wave it up and down?

5) Can you change hands and continue to wave it up and down?

6) Can you stand with your back to the parachute and, holding it with both hands, wave it up and down? Can you wave it as easily this way as when you face the parachute?

7) Can you face the parachute and, holding it with both hands, lift the parachute as high as possible?

8) Can you lift the parachute high, then pull it quickly down to the floor, trapping air in the parachute?

9) Can you lift the parachute high, turn around and pull the parachute down to the floor so you are inside the parachute with everyone else?

10) Can you lift the parachute high and change places with someone else when your number is called? (Colors, seasons, months, days of the week, arithmetic problems or series of virtually any kind may be used in place of numbers.)

11) Can you wave the parachute up and down, trying to force the ball off the parachute? (Dividing the group in half and adding scoring may produce a game situation.)

12) Can you wave the parachute up and down with your right hand while skipping (hopping, jumping, walking, et cetera) around?

13) Can you change hands and hold the parachute high as you walk?

14) Can you hold the parachute with both hands at a high level and wave it up and down?

15) Can you hold the parachute with both hands and wave it hard as you move to the side?

Position activities for arm and shoulder girdle strength and endurance

Push-up position:

1) In a push-up position, can you hold this position and count slowly to five? Ten, fifteen, et cetera?

2) In a push-up position, can you lift one foot high, then the other foot?

3) In a push-up position, can you bounce both feet up and down?

4) In a push-up position, can you inch your feet out sideways away from each other into a straddle position? Then can you return to the starting position?

5) In a push-up position, can you walk your feet up to your hands and go back again?

6) In a push-up position, can you inch your feet up to your hands, then move your hands out to the starting position?

7) In a push-up position, can you lift one hand and touch your opposite shoulder? Can you go behind your back and touch your opposite shoulder?

8) In a push-up position, can you turn over so your back is toward the floor, keeping your body straight?

9) In a push-up position, can you turn back over to the starting position?

10) In a push-up position, can you slowly lower your body to the floor, taking as long as you can and counting slowly to yourself? (Push-down)

11) In a push-up position, can you lift both hands from the floor, clap them and return to the starting position?

Crab walk position:

1) In a crab walk position (hands and feet on the floor, face and stomach up, back straight), can you move forward?

2) In a crab walk position, can you move backward?

3) In a crab walk position, can you move to your right?

4) In a crab walk position, can you move to your left?

5) In a crab walk position, can you keep your arms in place and move in a large circle?

Date	Comp.	Inc.	Rep.	Time

Item	Date	Comp.	Inc.	Rep.	Time
6) In a crab walk position, can you keep your feet in place and move in a circle?					
7) In a crab walk position, can you move in a geometric shape of your choice?					
8) In a crab walk position, can you follow a zigzag pattern of your choice?					
9) In a crab walk position, can you lift up your right leg?					
10) In a crab walk position, can you lift up your left arm?					
11) In a crab walk position, can you lift up your left leg and right arm at the same time?					
12) In a crab walk position, can you draw a triangle in the air with one of your legs?					
13) In a crab walk position, can you write your name in the air with one of your legs?					
14) In a crab walk position, can you use one hand in the air to solve a math problem you make up?					
15) In a crab walk position, can you think of something different to do in this position?					
<u>Abdominal activities for strength and muscular endurance</u>					
Sit-up activities:					
1) From a supine position with your knees bent and your feet flat on the floor, can you raise only your head so that your chin comes close to your chest?					
2) From a supine position with your knees bent and your feet flat on the floor, can you raise your head and shoulders slightly off the floor?					
3) From a supine position with your knees bent and your feet flat on the floor, can you raise your head and shoulders so your hands slide forward and touch your knees?					
4) From a supine position with your knees bent and your feet flat on the floor, can you raise your head and shoulders all the way off the floor so your chin touches you knees?					
5) From a supine position with your knees bent and your feet flat on the floor, can you start with your arms on the floor overhead and sit up so your chest touches your knees?					
6) From a supine position with your knees bent and your feet flat on the floor, can you cross your arms on your chest and sit up?					

Date	Comp.	Inc.	Rep.	Time

7) From a supine position with your knees bent and your feet flat on the floor, can you clasp your hands behind your head and sit up so your chest touches your knees?

8) From a supine position with your knees bent and your feet flat on the floor, can you clasp your hands behind your head and sit up to touch your left elbow to your right knee?

9) From a supine position with your knees bent and your feet flat on the floor, can you try this again, touching your right elbow to your left knee?

10) From a supine position with your knees bent and your feet flat on the floor, can you think of another way to sit up?

11) From a supine position with your knees bent and your feet flat on the floor, can you pick one variation of the sit-up and count how many times you can sit up?

Leg-raising activities:

1) From a supine position with your legs straight and your arms at your sides, can you raise one leg a few inches off the floor, hold it there for three counts (five, seven, ten, twelve, et cetera) and lower it slowly?

2) From a supine position with your legs straight and your arms at your sides, can you try this with your other leg?

3) From a supine position with your legs straight and your arms at your sides, can you raise one leg a few inches off the floor, bend your knee up to your chest, straighten your leg and lower it slowly?

4) From a supine position with your legs straight and your arms at your sides, can you try this with your other leg?

5) From a supine position with your legs straight and your arms at your sides, can you raise one leg a few inches off the floor, bend your knee, clasp your hands around your knee and bring it up to touch your chin? Can you straighten your leg and lower it slowly?

6) From a supine position with your legs straight and your arms at your sides, can you try this with your other leg?

7) From a supine position with your legs straight and your arms at your sides, can you raise your leg, bend your knee and touch your chin to your knees without using your hands? Can you straighten your leg and lower it slowly?

8) From a supine position with your legs straight and your arms at your sides, can you try this with your other leg?

Date	Comp.	Inc.	Rep.	Tim

9) From a supine position with your legs straight and your arms at your sides, can you raise both legs a few inches off the floor and hold them there? How long can you keep them there?

10) From a supine position with your legs straight and your arms at your sides, can you raise both legs a few inches off the floor and move them apart in a straddle? Can you move them back together and lower them slowly?

Leg Activities for Strength and Muscular Endurance

1) Can you squat halfway down and jump up, extending your arms over your head?

2) Can you squat down to the floor, thrust your legs out to a push-up position, return to a squat and then stand up straight?

3) Can you start in a push-up position, bring one leg under your chest, then change legs rapidly? Can you change legs five times without stopping? Ten, fifteen, twenty?

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