DOCUMENT RESUME

ED 021 397 EF 000 928

PHYSICAL EDUCATION, SECONDARY SCHOOLS FACILITIES AND BASIC EQUIPMENT 1966.

Massachusetts School Building Assistance Commission, Boston.

Spons Agency-Massachusetts Association for Health, Physical Education and Recreation.

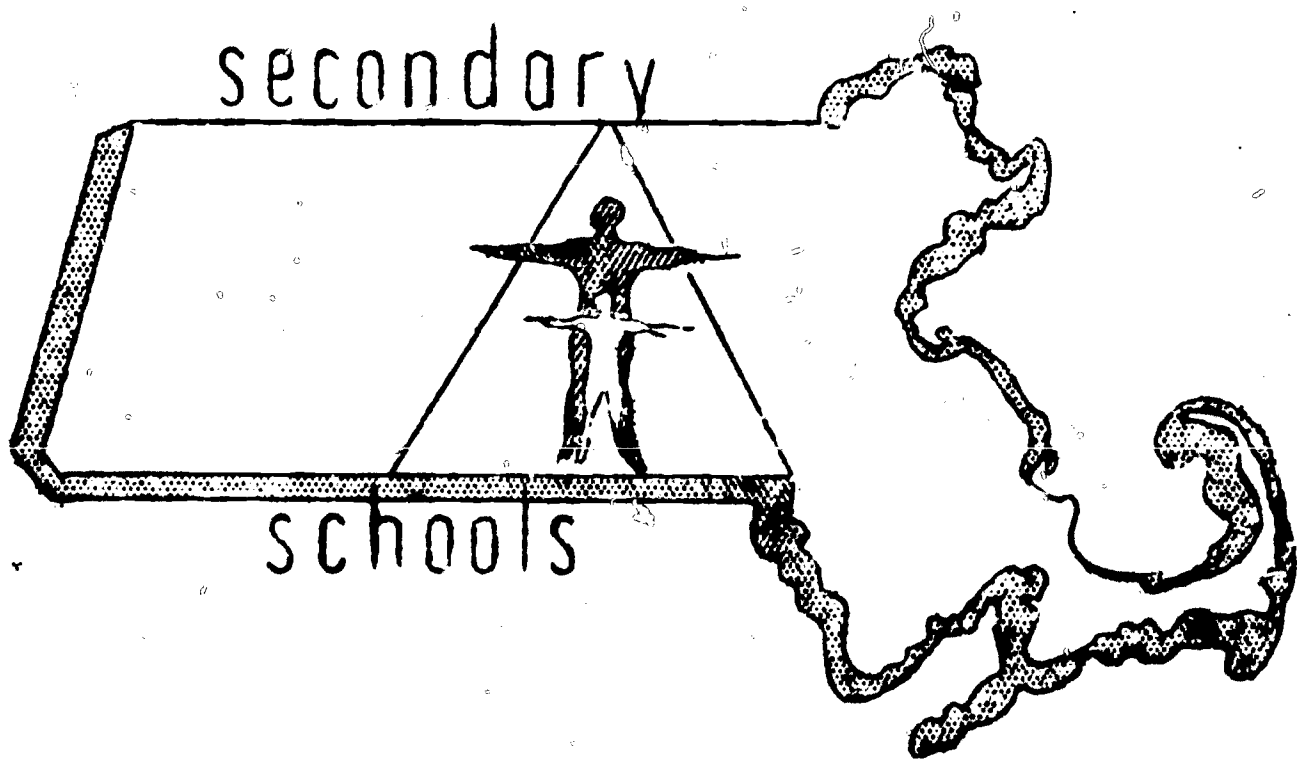
Note-19p.

EDRS Price MF-$0.25 HC-$0.84

Descriptors-ATHLETIC ACTIVITIES, ATHLETIC PROGRAMS, *EQUIPMENT, EQUIPMENT STORAGE, EXTRAMURAL ATHLETIC PROGRAMS, GYMNASIUMS, *HIGH SCHOOLS, INTRAMURAL ATHLETIC PROGRAMS, JUNIOR HIGH SCHOOLS, PHYSICAL EDUCATION, PHYSICAL EDUCATION FACILITIES, *RECREATIONAL FACILITIES, SCHOOL DESIGN, *SCHOOL PLANNING, *SECONDARY SCHOOLS, SENIOR HIGH SCHOOLS

Junior and senior high school gymnasiums should be located away from classrooms and near outdoor play areas. Junior high school gymnasiums should be a minimum of 84' x 98' x 22'. Senior high gymnasiums should be at least 90' x 106' x 24'. Areas should be divisible. Provision should be made for basketball, volleyball, badminton, paddle tennis, seating, and teaching areas. Other indoor areas recommended are space for gymnastics, remedial work, health, and wrestling, and a simulated outdoor area. Special attention should be given to the floor, walls, ceiling, partitions, lighting, locker, shower, drying, towel, team, training and storage rooms, and offices. Outdoor facilities should provide 20 acres plus an additional acre per 100 pupils for junior high pupils and senior high pupils should have a site of 30 acres plus one acre per 100 pupils. Hardtop areas, tennis courts, and grassy areas should be included. Provisions should be made for interscholastic sports. Outdoor and indoor equipment lists as well as a bibliography are provided. (RH)

PHYSICAL EDUCATION



FACILITIES AND BASIC EQUIPMENT 1966

DEVELOPED JOINTLY BY PHYSICAL EDUCATION ADMINISTRATORS AND REPRESENTATIVES OF THE MASSACHUSETTS SCHOOL BUILDINGS ASSISTANCE COMMISSION. FINANCED BY THE MASSACHUSETTS ASSOCIATION FOR HEALTH, PHYSICAL EDUCATION AND RECREATION.

INTRODUCTION

MODERN SOCIETY EXERTS LITTLE OR NO CHALLENGE TO MAN'S PHYSICAL BEING. YET, THE BASIS FOR MAN'S SELF-REALIZATION AND HIS CONTRIBUTION TO SOCIETY REMAINS A SOUND MIND IN A SOUND BODY. PHYSICAL EDUCATION IS THE ONE SUBJECT AREA IN THE TOTAL EDUCATIONAL PROGRAM OF OUR SCHOOLS THAT CONCERNS ITSELF WITH THE PHYSICAL GROWTH AND DEVELOPMENT OF INDIVIDUAL STUDENTS. THEREFORE, LET NO EFFORT BE SPARED IN OUR DAY TO PROVIDE PROPER AND SUFFICIENT FACILITIES IN OUR SCHOOLS FOR THE ESTABLISHMENT AND MAINTENANCE OF GOOD PROGRAMS OF PHYSICAL EDUCATION.

THIS BROCHURE IS INTENDED TO PROVIDE SUGGESTIONS FOR THOSE WHO ARE INTERESTED AND HAVE RESPONSIBILITY FOR PLANNING THE FACILITIES FOR INSTRUCTIONAL PHYSICAL EDUCATION, AFTER-SCHOOL ACTIVITIES, AND COMMUNITY USE.

THE PHYSICAL EDUCATION DIRECTOR AND STAFF, ALONG WITH OTHER SCHOOL ADMINISTRATORS, MUST PLAN THE FACILITY BEFORE THE ARCHITECT DRAWS UP PRELIMINARY PLANS. AFTER THESE PRELIMINARY PLANS HAVE BEEN PREPARED, CONSULTATIONS SHOULD BE ARRANGED WITH THE ARCHITECT BEFORE FINAL PLANS ARE AUTHORIZED.

****

THIS WE BELIEVE

- The physically fit student shall receive an instructional program of not less than three periods per week.

- The low-fit, low-skilled student shall receive a daily program.

- The average regular class size should not exceed 30 students per instructor.

- Swimming Pool - Traditionally, swimming has not been taught in Massachusetts as a part of the physical education program of the school. It is the recommendation of the people who have prepared this facilities guide that communities give serious consideration to providing swimming opportunity for students when planning new school facilities.

  Swimming is a survival skill, an excellent physical fitness activity, and a most popular recreational activity. A swimming pool can very adequately meet the need for one of the teaching stations outlined in the computation described on the following page.

PLANNING CONSIDERATIONS

To meet the needs of all groups concerned, there should be careful planning in which both lay and professional personnel participate.

Modern thinking dictates that maximum usage must be considered in developing plans for physical education indoor and outdoor facilities.

The following functions must be served by the high school physical education facilities:

- The regular physical education class program during the school day.

- The adaptive physical education class program during the school day.

- Intramural and interscholastic athletic programs after the regular school day and on Saturdays.

- Evening community recreational activities.

- Remedial or adaptive class - size should not exceed 12 students.

- Teaching stations planned should consider the multiplicity of the complete physical education program and its varied activities.

COMPUTATION OF TEACHING STATIONS NEEDED

The number of teaching stations needed to house a desired physical education program may be arrived at by:

- Dividing the anticipated enrollment by the proposed average class size to determine the number of sections.
- Multiplying the number of sections by the number of periods a week the subject is offered.
- Multiplying the resulting number (from above two) by 1.25 to allow for scheduling (utilization factor).
- Dividing the resulting number (from above three) by the number of teaching periods available in the school week.
- Rounding off the resulting number (from above four) to the next largest whole number.

Example: The number of physical education teaching stations needed for a 1,000-pupil high school, offering physical education three times a week, with an average class size of 30 pupils, in a 30-period teaching week may be computed as follows:

$$\frac{1{,}000 \text{ pupils}}{30 \text{ pupils}} = 34 \text{ sections} \times 3 \text{ periods} = 102 \times 1.25 = \frac{128}{30} =$$

4.3 = 5 teaching stations.

Note: This computation provides stations for not only the required physical education program but also for the developmental program for low-fit, low-skilled students.

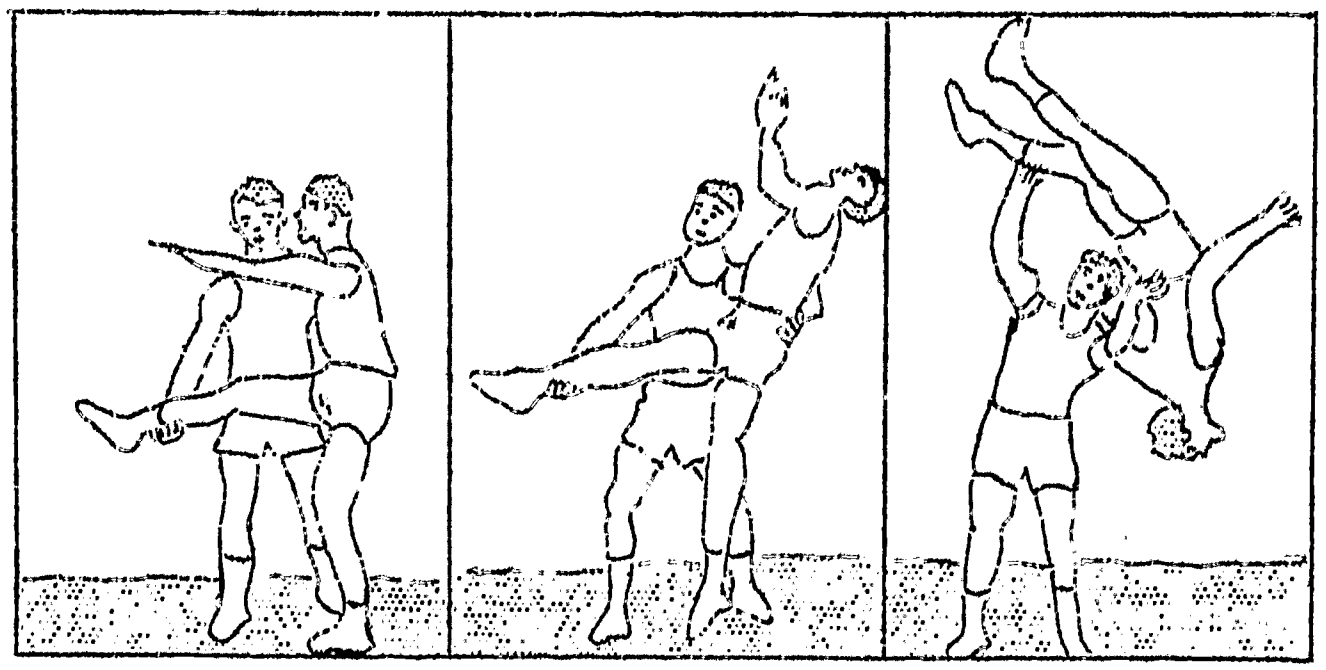


TABLE OF CONTENTS

****

I - INDOOR FACILITIES

Size

Junior high and senior high school gymnasiums vary in number and size with the enrollment of the school, breadth of the physical education program, and spectator seating capacity.

Location

- Away from classrooms and other quiet areas
- Apart from auditorium and other areas used for public functions. Simultaneous scheduling of public events causes many problems.
- Near outdoor play areas and parking areas
- Provision for supervision of afterschool and community activities

JUNIOR HIGH SCHOOL OR MEDIUM-SIZED HIGH SCHOOL

Unit for Main Gymnasium for junior high school or medium high school with divisible gymnasium and minimum floor area - 84'x98'x22'. This unit could provide:

- Two teaching stations, each 49'x78'4"
- One 50'x84' basketball court with out-of-bound space 5' to 6' on sides and 7' to 10' on ends
- Two 43'x70' court areas for instruction and intramural basketball
- Two 30'x60' court areas for volleyball
- Four 20'x44' court areas for badminton, paddle tennis, etc.
- Four 30' circle areas
- Seven rows of bleachers each side of gymnasium for approximately 800. Bottom row opened will seat 150 for intramurals and recreational activities

For additional teaching stations as needed see following section under Secondary Indoor Teaching Facilities.

SENIOR HIGH SCHOOL

Unit for Main Gymnasium for large high school with divisible gymnasium, minimum floor area 90'x106'x24'. This unit could provide:

- Two teaching stations, each 53'x83'
- One 50'x84' basketball court with out-of-bound space 5' to 6' on sides and 7' to 10' on ends
- Two 46'x70' court areas for instruction and intramural basketball
- Three 30'x60' court areas for volleyball
- Six 20'x44' court areas for badminton, paddle tennis, etc.
- Six 30' circle areas
- Nine rows of seats each side of gymnasium for approximately 1300. Bottom row opened will seat 150 for intramural and recreational activities.

Note: Community use may indicate a demand for greater seating capacity than listed in the above specifications. If so, this should be adjusted by the planning committee. It is desirable to have folding bleachers. Built-in permanent seating is to be avoided.

Other Indoor Teaching Stations Necessary For Comprehensive Physical Education Program, Including Regular Daily Classes, Afterschool Intramurals and Interscholastic Activities. The number of teaching stations for boys and girls is to be determined by the type of program a community wishes to provide.

Boys

- Gymnastics Room - 100'x50'x24' - physical education class work, intramurals, interscholastic athletics
- Remedial or Adaptive Room - 50'x50'x12'
- Health Classroom - 24'x36'x12'
- Wrestling Room - 50'x50'x12' - physical education class work, intramurals, interscholastic athletics
- Simulated Outdoor Area (Field House) - 200'x130'
  Planning committee may wish to consider this type construction which provides greater space at a lower construction cost and in addition permits activities to be carried on in the programs that are usually carried on in an outdoor environment.

  This type facility will provide for teaching stations for physical education and inclement-weather teaching and/or practice area for: track; football; baseball; tennis (boys and girls); field hockey (boys and girls); softball (boys and girls); intramural activities for all students.

  Do not use dirt surfacing for flooring.

Girls

- Gymnastic Room - 100'x50'x24'

- Remedial or Adaptive Room - 50'x50'x12'

- Health Classroom - 24'x36'x12'

- Dance - 50'x50'x12'

Boys and Girls

- Swimming Pool - 42'x75'. Minimum ceiling height above the low board should be 13'. Provide deck space for warm-up, land drills, and seating spectators. Separate locker and shower rooms for evening and weekend use. See selected bibliography: reference #3, pages 16, 17; reference #4, pages 49,50,51; reference #5, chapter 7.

Recommendations in Planning Indoor Physical Education Facilities

Gymnasium Floor

- Above the ground level to insure dryness and preservation of wood

- Sub-floor well ventilated and pressure treated

- Hardwood, preferably maple, laid parallel to the long dimensions of the gymnasium (other types of surface create problems of safety and maintenance)

- Sanded to a smooth surface and sealed with non-slip material

- Markings applied after first or second sealer coat (plastic or synthetic tapes may be used)

- Plates for volleyball, badminton, tennis, apparatus, etc. installed before the first sealer coat

- Base cement floor of gymnasium waterproofed (prevents sub-floor and finished floor from deterioration)

Walls and Ceilings

- Walls constructed of durable materials with smooth surface to a minimum height of ten feet (this will help to prevent injuries)

- Clear wall space which can be used for practicing ball skills such as tennis, volleyball, handball, squash

- Open ceiling for easy installation of suspended apparatus, basketball backboards, etc.

- Non-glare type of lighting to eliminate shadows

- Light fixtures which can be serviced from the floor

- Electrical outlets on all four walls for record player, projectors, special lighting, microphones, etc.

- Special attention to the acoustical treatment

- Eliminat all hazardous wall projections

Movable Partitions

- Motor-driven, sound-proofed partitions constructed of a smooth, durable material which may be used for ball skills

- Retract into wall when closed

- Switch at a safe distance from the partition to avoid possible injury to the operator (key switches are recommended)

- Access to each section of gymnasium by a door in the partition near the walls and out of the area where activity may be taking place. Door should have a recessed locking device with key. This is a vital safety precaution.

- Closed in truss area to prevent sound transmission

Lighting

- If windows are provided, locate high off floor to prevent glare

- Windows together, if possible, on long sides of gymnasium

- Window glass that will provide for safety, eliminate sunlight glare, and prevent excessive heat

- Provide electrical lighting as listed in specifications stated in "Planning Facilities for Health, Physical Education and Recreation", page 123.

Drinking Fountains and Cuspidors

- Drinking fountains and cuspidors of the recessed type in a safe location in the gymnasium (away from fixed equipment such as ladders, basketball backboards, etc.)

Foyer

- Serves as entrance to gymnasium

- Toilet facilities for spectators

- Ticket sales located to avoid cross traffic

- Public telephone

- Built-in trophy case display

Locker Room

- An acceptable standard is 20 square feet of dressing and locker space per student for peak load

- Gym equipment storage lockers for each student in school plus 10% more than total enrollment to allow for expansion

- Dressing lockers for each student during peak load, including after-school activities

- Boys - group dressing room
  Girls - individual dressing areas

- Provide heating and ventilation to eliminate dampness in dressing and shower areas

- Stationary 2' wide benches, mounted on a solid enclosed base

- Recessed drinking fountains

- Adequate bulletin board space

- No exposed radiators or heating pipes

- Mirrors: Boys - one mirror per 10 boys, largest class size

  Girls - full length - one mirror per 5 - 7 girls, largest class size. Dressing mirrors with shelves. Do not locate mirrors near sink.

- A ratio of one dressing locker to 6 or 8 storage lockers is to be determined based upon the number of periods in the school day.

  Dressing lockers 12"x12"x54" (1 - 6 ratio)
  Dressing lockers 12"x12"x72" (1 - 8 ratio)
  Storage lockers 12"x12"x18"

- Mount lockers on 6" cement bases for sanitary purposes

- Built-in air ducts to ventilate lockers

Shower Rooms

- Size and number depends upon program and largest number to be served at one time

  Boys - one shower head for 4 to 5 boys (height 6')

  Girls - one shower head for two girls (height 5') for maximum number of girls in class

  (Current trend is to provide gang area showers plus a sufficient number of private cubicles for those desiring privacy. Community preference will determine the solution)

- Adequate ventilation

- Located adjacent to locker rooms
- Separated from locker room and drying room
- Non-slip floor
- Tile walls to 6' height
- Proper drainage - pitched to drain in center area away from shower entrance
- Thermostatically-controlled water temperature operated by central mixing valve for gang shower
- Provide some individually operated showers in a ratio to demand
- No exposed piping with flush-mounted shower heads permanently installed in fixed position
- Liquid soap dispensers

Drying Room

- Size: one-half total shower area
- Located between locker room and shower area
- Bars for towels at sufficient height so as not to become a safety hazard
- Less than full height partition acceptable
- Drainage pitch same as for shower room

Towel Issue and Storage Room

- Size sufficient to store needed towels
- Dutch type door or check-out window
- Located in locker room near shower and drying area

Team Rooms

- Number and size of rooms to be determined by program
- Home Team Room must accommodate largest number of team members for all sports during heaviest attended season
- Adequate space for Visiting Team Room
- Separated from physical education locker room
- Equipped with showers, toilets, lavatories, dressing lockers, benches, mirrors, and blackboard
- Exits directly accessible to play areas

Storage Rooms

- Gymnasium equipment storage rooms readily accessible to each gymnasium floor level; minimal size 20'x20'x10'; door size 10' in height, 10' in width; overhead door, no threshold as apparatus is rolled in.

- Dead storage areas for athletic uniforms, etc. which are not in current use.

- "Live" storage areas adequate to handle the demands of the athletic program daily

- It will be necessary to store outside field equipment (football dummies, charging machines, hurdles, batting cages, etc.). Space must be planned for this purpose.

- Equipment drying area adequate to dry out player equipment. Fan on outside wall.

Training Room (360 square feet)

- Located adjacent to locker room and instructor's office

- Provide a curbed area of at least 6'x6' with floor drain for whirlpool baths

- Built-in cabinets with counter tops plus storage cabinets with lockable doors for supplies

- Provide both 110 volt and 220 volt outlets

Toilet Facilities

- Provide for peak load

- Enclosed unit separate from locker rooms

- Adequately ventilated

- Sufficient mirrors and hand lavatories

Offices

- Located for ease of supervision during arrival and exit of students

- For men and women instructors

- For Director of Athletics and/or Faculty Manager

- 120 square feet in size for one instructor; 80 square feet for each additional staff member

- Staff shower dressing unit not less than 100 square feet

  To include shower, toilet, hand lavatory and clothing locker space
  This unit to be made larger for greater number in staff

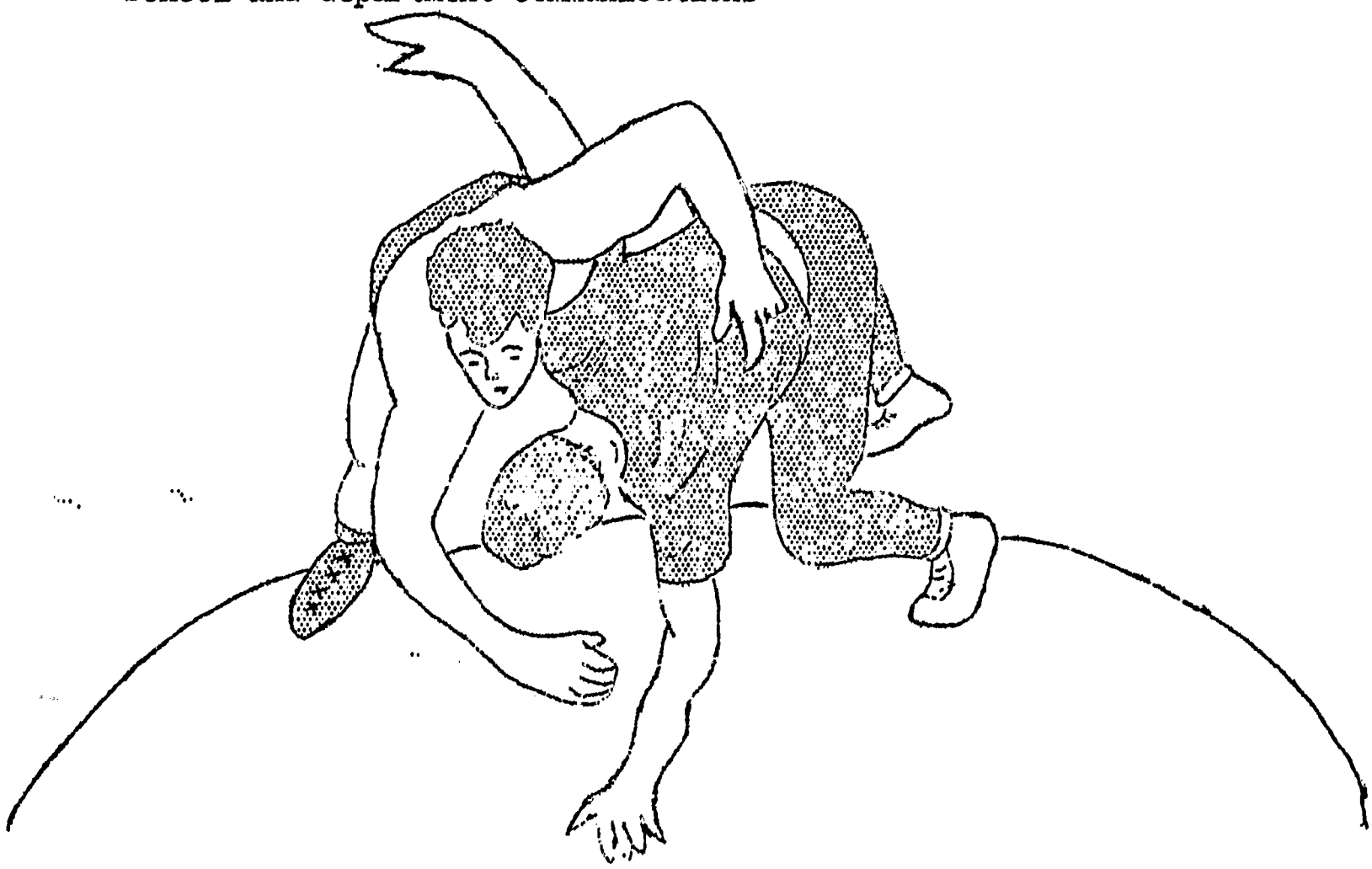
- Storage closet with shelving
- Men's area to include accommodations for athletic officials

Service Rooms for Custodians

- Utility sink
- Adequate storage area

Other Important Items to be Checked

- Provide security for all areas
- Proper drains and floor contours
- Adequate number of electrical outlets
- Hot water facilities
- Bull-nosed corners
- Heat thermostatically controlled
- Proper lighting
- Humidity controls
- Ventilation
- Protective grills for light switches, thermostats, etc.
- Provision for emergency lighting
- School and department communications



II - OUTDOOR FACILITIES

Size

- For junior high schools[1], provide a minimum site of 20 acres plus an additional acre for each 100 pupils of projected ultimate maximum enrollment. Thus a site of minimum size for a junior high school of 500 pupils would be 25 acres.

- For senior high schools[1], provide a minimum site of 30 acres plus an additional acre for each 100 pupils of projected ultimate maximum enrollment. Thus, the site of minimum size for a senior high school of 1,000 pupils would be 40 acres.

- Additional land is related to the extent of the program

Location

- Direct access to locker and shower areas

- Avoid locating driveways between indoor and outdoor facilities

Hard-Topped Area (may double for community use parking)

- Lined for the following activities:

  Volleyball
  Shuffleboard
  Paddle tennis
  Deck tennis
  Handball
  Basketball
  Dancing
  Roller skating

Tennis Courts

- Number of courts to be determined by school program and community use. No less than four courts

- Adjacent and enclosed from the other hard-topped areas

- May also be used for: dancing; roller skating; ice skating

- Equipped with practice rebound board

---

1 The source is the NCSC GUIDE FOR PLANNING SCHOOL PLANTS, published by the National Council on Schoolhouse Construction.

Grassy Areas (Sufficient size for both boys and girls)

For planning, selection, layout and construction of outdoor areas see below[1]

- Fields should be marked with non-caustic non-harmful material for activities such as:

  Football
  Soccer
  Speedball
  Softball
  Field Hockey
  Practice Football Field
  Track Events
  Lacrosse - boys and girls

- Provision for watering, drainage and lining of fields

- Safety

  a. Care should be taken in assigning areas for sports such as archery, golf, track and field events

Provisions For Interscholastic Sports Program

- Varsity, Junior Varsity, Sophomore and/or Freshman

- Football

- Track and Field Events

- Soccer

- Baseball

- Field Hockey - girls

- Softball

- Lacrosse - girls and boys

- Practice areas (football, soccer, baseball)

- Tennis - girls and boys

- Provide for: fencing of field areas, spectator seating, parking areas and sanitary facilities

Storage Areas (For maintenance and specialized equipment such as football dummies, sleds, baseball pitching machines, movable backstop)

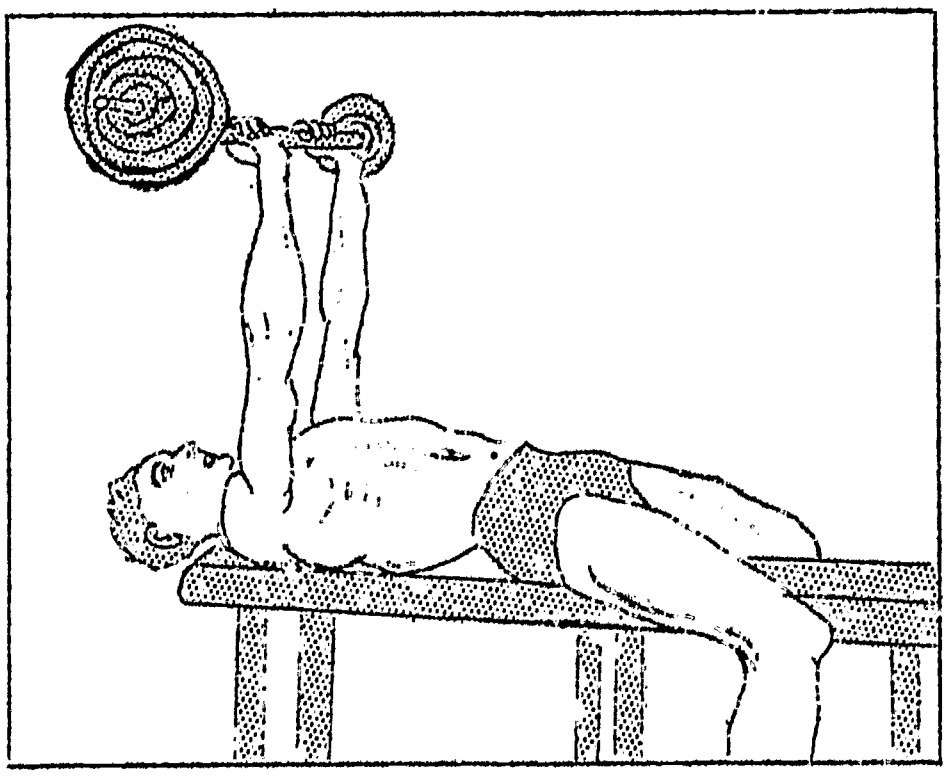
---

1 Gabrielson & Miles "SPORTS AND RECREATION FACILITIES: FOR SCHOOL AND COMMUNITY", Chapter 9.

III - BASIC EQUIPMENT

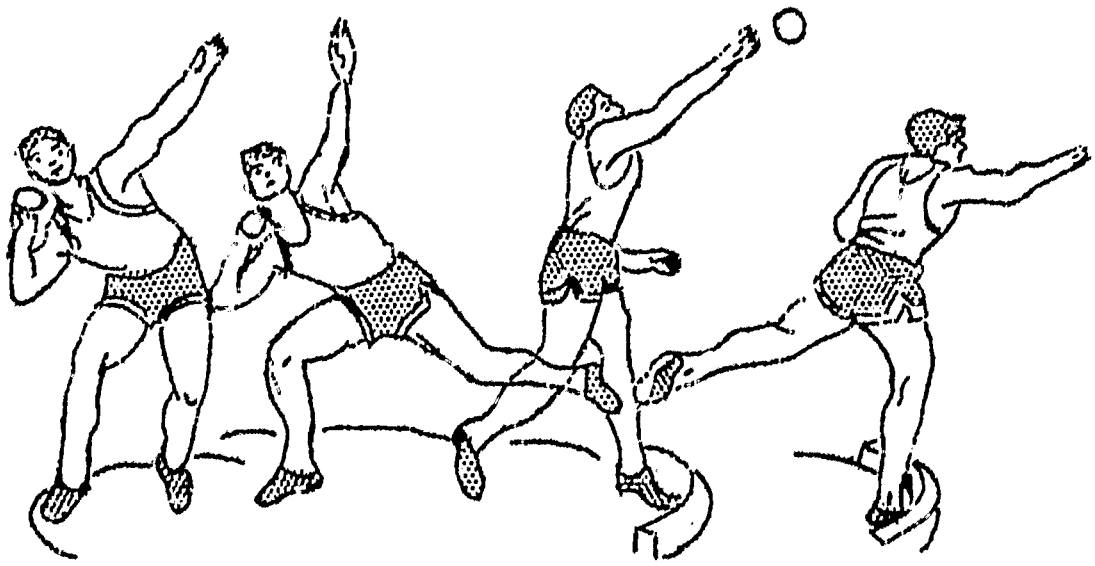
A. INDOOR EQUIPMENT

ITEM	QUANTITY	DESCRIPTION
1	8 each	Climbing Ropes
2		Traveling Rings
3	2 sets	Exhibition Rings, with metal cables
4	2 each	Standard Horse
5	1 each	Standard Buck
6	1 each	Vaulting Box
7	1 each	Spring Board
8	1 each	Spring Board (Reuther)
9	2 sets	Standard Parallel Bars
10	1 set	Uneven Parallel Bars with Conversion Kit
11	2 each	Adjustable Horizontal Bars
12	1 each	Exhibition Bar - 8' in height, 96" width
13	2 each	Trampolines
14	1 each	Mini Trampoline
15	3 sets	Combination Standards, Volleyball, Tennis, and Badminton
16	12 each	Mats 5'x12' Resilite (or equal)
17		Cut-out Mats for all apparatus
18	5 each	Mats 5'x36' Resilite (or equal)
19	1 each	Low Parallel Bar
20	3 sets	Basketball backboards
21	1 each	Balance Beam
22	1 each	Wall Chinning Bar
23	1 each	Wall Parallel Bar
24		Adaptive Room Equipment
25		Weight Training Equipment



B. OUTDOOR EQUIPMENT*

ITEM	DESCRIPTION
1. Track and Field	Jumping Pits and Take-Off Aprons Runways Take-Off Boards (Broad Jump, Pole Vault) Circles (Permanent Surface)
2. Backstops	Baseball Softball Batting Cages (Portable) Tennis Golf Field Events (Track)
3. Goals	Football Basketball Soccer Lacrosse Field Hockey
4. Standards Movable and/or Stationary	Tennis Volleyball Badminton High Jump Pole Vault Archery



---

* Above is listed some of the basic equipment. Additional equipment is dependent upon the scope of the program to be offered. Refer to Bibliography.

IV - SELECTED BIBLIOGRAPHY

1. Gabrielson and Miles, Prentice Hall, 1958, Englewood Cliffs, New Jersey
Sports and Recreation Facilities: For School and Community

2. Miller and Whitcomb, Prentice Hall, Englewood Cliffs, New Jersey, 2nd Edition, 1963
Physical Education in the Elementary School Curriculum

3. State of New Jersey, Department of Education - Trenton
A Guide For Planning Physical Education and Athletic Facilities

4. National Industrial Recreation Association, 203 North Wabash, Chicago, Illinois
Standard Sports Areas For Industrial, School, Private and Public Recreation Leaders

5. The Athletic Institute, Chicago, Illinois
Planning Facilities For Health, Physical Education & Recreation

6. National Council on Schoolhouse Construction
Guide For Planning School Plants

7. Scott & Westkemper
From Program to Facilities in Physical Education

PHYSICAL EDUCATION

FACILITIES AND BASIC EQUIPMENT

SECONDARY SCHOOLS

1966

Developed by Physical Education Administrators from the following schools:

Chairman:	J. Robert Eddy	-	Brookline Public Schools
	Edward E. Abell	-	Lexington Public Schools
	Ralph E. Bevins	-	Arlington Public Schools
	Philip H. Claxton	-	Needham Public Schools
	Earle W. Crompton	-	Medford Public Schools
	Donald D. Dunn	-	Andover Public Schools
	Warren L. Huston	-	Newton Public Schools
	Frederick A. Janes	-	Framingham Public Schools
	Henry T. Knowlton	-	Winchester Public Schools
	Munroe D. MacLean	-	Quincy Public Schools
	Joseph McKenney	-	Boston Public Schools
	Elmer E. Raymond, Jr.	-	Braintree Public Schools
	Robert E. Raymond	-	Milton Public Schools
	*Howard T. Sandrock	-	Brockton Public Schools
	*Frank M. Simmons	-	Newton Public Schools
	Frederick E. Steeves	-	Wellesley Public Schools
	Meldon T. Wenner	-	Belmont Public Schools
Consultants:			
	William B. Black	-	Mass. School Building Assistance Commission
	Arthur G. Miller	-	Boston University
	Dorothy V. Briant	-	B. U. Sargent College
	Helene D. Breivogel	-	Newton Public Schools

* Deceased