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Desirable Athletic Competition for Children of Elementary School Age.

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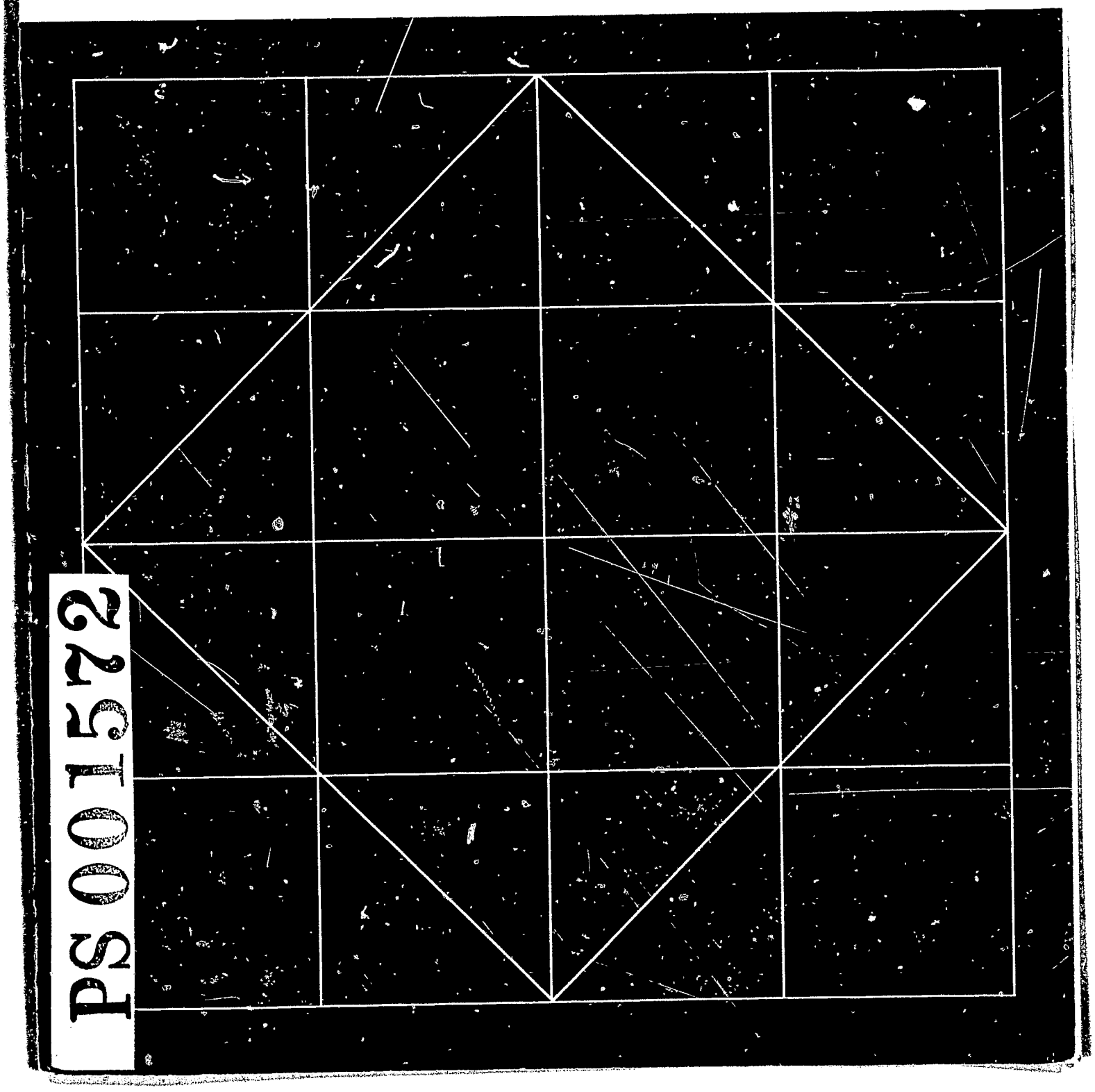
A committee was formed to examine the kinds of athletic programs provided for elementary children and the conditions under which they are conducted and to prepare recommendations. A questionnaire was prepared for a sample of 786 elementary school principals in order to determine the nature and extent of school sponsored and agency sponsored competitive athletic programs for boys. Schools in 528 districts filed usable returns. The returns supplied the following statistics: agency sponsored competition occurred in almost twice the number of communities (64 percent) as school sponsored interschool athletics (37 percent); 81 percent of the schools utilized a teacher trained or experienced in sports, while only 28 percent of the agencies employed adults with training; many schools and a vast majority of agencies did not provide adequate medical screening for boys joining teams; and less than half of the principals expressed approval of school sponsored athletics, and 13 percent reserved opinion. Research does not prove that sports adversely affect physical growth, and there are no data concerning long-range physiological effects of competitive athletics on youth. On the basis of these findings, the committee issued a policy statement containing guidelines for a sound physical education program. The statement and a bibliography are included in this document. (DO)

ATHLETIC COMPETITION

FOR CHILDREN OF

ELEMENTARY SCHOOL AGE



DESIRABLE ATHLETIC COMPETITION FOR CHILDREN OF ELEMENTARY SCHOOL AGE

AMERICAN ASSOCIATION FOR HEALTH, PHYSICAL EDUCATION, AND RECREATION

A department of the National Education Association

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FOREWORD

When should athletic competition for young people begin? At what point in the grade system should the public schools plan, organize, and sponsor athletic events?

This question faces school people throughout the country. It is related to the problems raised by our changing society and the changing needs of elementary school aged boys and girls; it is related to the specific demands and requirements of the local situation.

In making a decision, school people would like to turn to recommendations of an authoritative body. Statements have been made in the past, but interpretation of recent research and new approaches are important. Thus it is of great significance that a joint statement on this topic has now been approved by representatives of the American Academy of Pediatrics, the Committee on Medical Aspects of Sports of the American Medical Association, the American Association for Health, Physical Education, and Recreation, and the Society of State Directors of Health, Physical Education, and Recreation—four organizations vitally concerned with the health and well-being of young children.

In the preparation of this policy statement, the associations involved referred to the report prepared by a special joint committee of the AAHPER and Society of State Directors of HPER, which was solidly based on resent research. The joint committee was appointed several years ago to reexamine the problem of athletic competition for children of elementary school age and to prepare recommendations based on the best evidence available.

In this booklet, both the policy statement and the joint committee's report are presented. Figures describing the current situation, data revealed by recent research, the opinions of school people involved, and educational implications are here to be examined. It is the hope of the AAHPER in publishing these two documents that they will be a real help to those school people and community leaders who must make a decision about providing athletic competition for elementary school aged children.

CARL A. TROESTER, JR.
AAHPER Executive Secretary

A Policy Statement on Competitive Athletics for Children of Elementary School Age

approved by

American Academy of Pediatrics

American Association for Health, Physical Education, and Recreation

American Medical Association Committee on Medical Aspects of Sports

Society of State Directors of Health, Physical Education, and Recreation

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Competitive sports organized by school or other community agencies are now played so universally in all parts of the country by children 13 years of age and younger that positive and realistic guidelines to govern participation need to be suggested.

Children of this age are not miniature adults; they are boys and girls in the process of maturation into adults. They seek and can profit from suitable play opportunities, but the benefits are not automatic. High quality supervision and a broad range of physical education and sports activities adapted to the needs and capacities of growing children are required for full realization of benefits.

A variety of competitive sports within a sound physical education program has the advantage of directing funds, facilities, instruction, and leadership toward all children in

the school system or community. Such a program avoids providing a narrow sports experience for children or one directed only to the physically gifted, the well-developed, the skillful, or the precocious.

The problems involved are sufficiently significant and variable to warrant each community's having a local committee representing educational, recreational, and medical specialists. Decisions about all school or community athletic programs may then be made in terms of local interest and needs, adequate supervision, and assurance of proper safeguards. Such decision about athletic programs for children of elementary school age should embody local consideration of the following:

1. Proper physical conditioning
2. Conduct of the sport
   - competent teaching and supervision with regard for the relative hazards of each particular sport
   - modification of rules, game equipment, and facilities to suit the maturity level of the participants
   - qualified officials
3. Careful grouping according to weight, size, sex, skill, and physical maturation when indicated
4. Good protective equipment, properly fitted
5. Well-maintained facilities suitable for the sport involved
6. Proper delineation of the spheres of authority and responsibility for school administrators, family, sponsor, physician, coach, and athlete
7. Adequate medical care
   - periodic health appraisal of children, including a careful health history
   - a physician present or readily available during games and practices

established policies, procedures, and responsibilities for

- first aid and referral of injured athletes
- definitive treatment and follow-up
- evaluation and certification for return following injury or illness

attention to matters of physical and emotional fatigue and stress especially of a cumulative nature or effect

use of the American Medical Association's "Standard Nomenclature of Athletic Injuries" to facilitate reporting and analysis of injuries and illnesses

8. Salient educational and recreational considerations

prerequisites before an interschool athletic program is started

- provision for daily physical education instruction for all children, under the supervision of certificated physical education teachers
- opportunities for every child in the upper elementary grades to participate in an organized and supervised intramural athletic program
- assurance that the athletic program would not curtail the time or budget of the normal school program (i.e., would not utilize school time, facilities, personnel, or funds in any way which would jeopardize the total educational experience of the participants or of other children)

program for interschool or community athletics

- qualified leadership for the planning and conduct of competitive athletic programs for children
- participation limited to children in the upper elementary grades

- parental permission for each child to participate
- a schedule of contests (frequency and hour) appropriate for children of this maturity level
- activities limited to a neighborhood or community basis without play-offs, bowl contests, or all-star contests
- avoidance of undesirable corollaries to organized competitive athletics, such as excessive publicity, pep squads, commercial promoting, victory celebrations, elaborate recognition ceremonies, paid admission, inappropriate spectator behavior, high pressure public contests, and exploitation of children in any form

The positive values of sports should be emphasized because of their important effects on stamina and physiologic functioning and because of their lifelong value as recreational activities. Examples of competitive sports appropriate for children of elementary school age are archery, boating, bowling, golf, skating, swimming, tennis, and track.

Boxing has no place in programs for children of this age because its goal is injury and the educational benefits attributed to it can be realized through other sports.

Sports with varying degrees of collision risk include baseball, basketball, football, hockey, soccer, softball, and wrestling. The hazards of such competition are debatable. The risks are usually associated with the conditions under which practice and play are conducted and the quality of supervision affecting the participants.

Unless a school or community can provide exemplary supervision — medical and educational — it should not undertake a program of competitive sports, especially collision sports, at the pre-adolescent level.

Members of the Joint Committee

John Jenny, supervisor of physical education, Wilmington Public Schools, Wilmington, Delaware

Edwina Jones, Board of Education, Shaker Heights, Ohio

Paul Landis, commissioner, Ohio High School Athletic Association, Columbus

Zollie Maynard, State Department of Education, Tallahassee, Florida

Thomas Shaffer, M.D., Department of Pediatrics, Ohio State University, Columbus

Frances Stuart, supervisor of physical education and recreation, State University of New York at Albany

G. Lawrence Rarick (chairman), professor of physical education, University of Wisconsin, Madison

Roswell D. Merrick, AAHPER staff liaison, Washington, D.C.

Report of the Joint Committee of the American Association for Health, Physical Education, and Recreation and the Society of State Directors of Health, Physical Education, and Recreation on Desirable Athletic Competition for Children of Elementary School Age

Few issues in recent years have precipitated as much controversy among educators, physicians, youth leaders, and parents as the question of the desirability of highly organized or varsity type* athletic competition for children of elementary school age. During the last twenty years, interschool athletic competition, interagency competition, and Little League type athletic programs for school age youth have increased dramatically. While strong opinions have been voiced both for and against varsity type athletic programs for children of this age level, research bearing directly on this problem has been limited. Parents, teachers, school administrators, and community leaders are caught in the cross-currents of conflicting points of view. Educators for the most part have maintained a conservative point of view, raising doubts about the wisdom of encouraging athletics of this type for children of elementary school age. On the other hand, many parents, teachers, and school administrators react favorably to such programs (24).

At the outset it should be emphasized that there is general agreement among educators that properly supervised athletics can play an important role in the education of children and youth and that athletics should be an integral part of the school physical education program. The Educational Policies Commission (10) states that participation in sound athletic programs contributes materially to the physical, emotional, social, and moral development of children and

*In this report, varsity type athletic competition means interschool or interagency competition of children selected for their special athletic skill on a within city and/or between city basis among teams or individuals in formally organized leagues and tournaments.

that the experience of participating in athletic activities should be a part of the education of all children and youth. The commission points out that school athletics are a potentially powerful educative force often not used effectively and all too frequently misused. *The issue in question is not whether athletics are good for school age children, but rather the kinds of athletic programs which are provided for children of elementary school age and the conditions under which the programs are conducted.*

In 1952 the American Association for Health, Physical Education, and Recreation published a report, *Desirable Athletic Competition for Children,* prepared by a joint committee of the AAHPER and the Society of State Directors of Health, Physical Education, and Recreation (1). Since that time, the recommendations in the report have served as official policies of the two organizations.

In brief, the recommendations of the joint committee at that time may be summarized as follows:

1. The best interests of all children are served when priority is given to a broad program of instruction in physical education.
2. A broad and varied program of informal recreation should be provided for children of all ages, including a varied program of intramurals for boys and girls in the upper elementary grades and above.
3. Interschool competition of a varsity pattern sponsored by either the schools or by nonschool agencies is *definitely disapproved* for children below the ninth grade.
4. To be avoided are high pressure practices such as highly organized competition in the form of interschool and/or intercity leagues, championship tournaments, "little" bowl games, commercial promotions, and "grooming" of the players for high school and college teams.
5. Play days and sports days and occasional invitational games involving children of two or more schools where social values are the primary purpose are to be encouraged. A few invitational contests between schools or neighborhood groups might be carried on, if conducted on an informal basis, but only as a supplement to a strong instructional and recreational program which serves the needs of all children.

The 1952 report also included a self-appraisal inventory to be used before permitting children to participate in play days, sports days, or invitational contests between schools. The joint committee emphasized the need for further research on the problems inherent in athletic competition for children.

The recommendations of the joint committee were based upon a study of the physiological, psychological, safety, and economic factors believed to bear upon the problem. Some idea of the nature and scope of the problem at that time was given by the results of a questionnaire sent to some fifteen state directors of health, physical education, and recreation. On the basis of the returns, it was evident that certain practices did exist which could perhaps be controlled or eliminated by sound operating policies.

Since the time the above report was released, policy statements on this problem have been issued by other professional groups, both educational and medical, including the American Academy of Pediatrics Committee on School Health (4), the Educational Policies Commission of the National Education Association and the American Association of School Administrators (10), and the White House Conference on Children and Youth (34). For the most part, these statements have been conservative and have supported the stand taken by the joint committee.

In spite of these pronouncements, the pressure in many communities for highly organized athletic contests for children of elementary school age has increased. In these communities harassed school authorities, civic leaders, and concerned parents are asking if the policies established in 1952 still prevail. Some who are more liberal raise questions regarding the validity of the policy statements.

In the light of the trend to involve younger and younger children in organized athletic competition, the present committee representing the AAHPER and the Society of State Directors was formed to reexamine the problem of athletic competition for children of elementary school age and to prepare recommendations based on the best evidence available. In working toward this end, the committee proceeded as follows.

1. *Identification of the magnitude of the problem*. Although magazine articles, press releases, and inquiries directed to the AAHPER

office and state education departments indicate that competitive athletics for children is increasing, there is little concrete data on the extent of these practices in the schools. Information has, however, been released periodically on the number of children participating in certain sports sponsored by nonschool organizations (6). The first step, therefore, was to determine if, in fact, there was a problem of sufficient magnitude to justify further investigation.

2. *Compilation and synthesis of research bearing on athletic competition for children of elementary school age.* Although only limited research relevant to this problem has been published since the 1952 report was released, the committee has attempted to summarize and interpret the evidence which bears on the following questions.

What effects do competitive athletic activities have on physical growth and development?

Are the physiological demands of competitive athletics as currently conducted well within children's tolerance limits and is there reasonable assurance that participation in such programs will not place undue physiological stress on participants?

Are competitive athletics emotionally and psychologically healthful?

What are the accident problems associated with programs of interschool and interagency athletics?

Do competitive athletic activities affect in any way intramural, extramural, and school sponsored recreational programs for children?

What are the purposes of interschool competitive athletic contests for children of this age level and are these purposes in the best interest of all children?

ORGANIZED ATHLETIC COMPETITION AMONG PUPILS OF ELEMENTARY SCHOOL AGE

The first step in the preparation of the current report was to determine the magnitude of the problem. Perhaps the most extensive report published to date is the 1959 survey by Schneider (23), which showed that during the school year 44 percent of the 523 urban areas surveyed had interschool, interplayground, or interagency athletic competition for boys (11 percent for girls) beginning in grades 3, 4, 5, or 6. In some 22 percent of the districts, organized athletic competition was under the jurisdiction of the school. While this report showed rather clearly that organized athletic competition for boys of elementary school age was not uncommon in urban areas, there were no data on cities of under 10,000.

Data on the extent of participation of elementary school age youth in agency sponsored athletics are difficult to secure. The general impression is that the last twenty years has witnessed a substantial increase. Data from the Athletic Institute (6) show that the numbers of leagues in Little League baseball (Bronco Division, under 13 years) increased from 4,800 in 1958 to 6,648 in 1965. With the number of teams increasing from 24,000 in 1958 to 39,042 in 1965, it would seem logical to believe that other organizations sponsoring athletic programs for children would show similar gains.

It became apparent that only limited information was available on the extent to which schools throughout the country are confronted with this problem. Therefore, the committee undertook a nationwide study of elementary schools in both urban and rural areas to determine the nature and extent of competitive athletic programs for boys of elementary school age. The survey was restricted to securing information on programs for boys only, since Schneider's earlier report had indicated limited participation by girls and there was little reason to believe that the situation had changed materially from that time. A questionnaire was developed to provide information on (a) the extent and kind of organized athletic competition for boys aged 6-13, both school sponsored and agency sponsored; (b) the safeguards used and the conditions under which the contests are conducted; and (c) the reaction of the principals to organized competition for boys of these age levels.

In the late spring of 1962 the questionnaire was mailed to a stratified random sample of 786 elementary school principals. Replies were received from 618, representing a 78.6 percent response. The sample was stratified according to pupil enrollments per school district, providing for ten strata, the largest being districts with enrollments of 100,000 and over and the smallest with enrollments of less than 50. The response per strata ranged from 67.2 to 97 percent with the majority being in the 80's. (See Table 1.) Strata 10 had so many schools which did not have enough students to provide for athletic teams that as a result the returns from this strata were not processed. Hence, the results are based on 528 replies.

Extent of School Sponsored Athletic Competition. Of the 528 school districts filing usable returns, 193, or 37 percent, indicated that some form of organized interschool athletic competition was sponsored by their school. These figures include those school districts with an assortment of structural organizations from K-4 to K-8. A breakdown of the percent of school districts with interschool competitive athletics

TABLE 1. NUMBER OF SCHOOLS IN THE SAMPLE BY SCHOOL POPULATION STRATA AND THE NUMBER AND PERCENTAGE OF RESPONSE *

Strata	Number of pupils enrolled per district	Number in sample	Responses	Percent of response
1	100,000 and over	36	26	72.2
2	50,000 – 99,999	44	37	84.1
3	25,000 – 49,999	67	65	97.0
4	12,000 – 24,999	67	57	85.1
5	6,000 – 11,999	90	76	84.4
6	3,000 – 5,999	87	72	82.8
7	1,200 – 2,999	180	127	70.6
8	300 – 1,199	39	33	84.6
9	50 – 299	42	35	83.3
10	1 – 49	134	90	67.2
Total		786	618	78.6

* The sample consists of elementary principals randomly selected from school districts stratified according to column 2. The size of the schools appearing in the sample is not directly related to the size of the district.

based upon their respective organizational structure shows that two of three of those with an eight year plan sponsored such programs, whereas this was true of only one in four of the schools with a K-6 plan. (See Figure 1.)

The percentage of schools (K-4 to K-8) sponsoring interschool athletic programs varied considerably by district, being highest in the Central and Northwest Districts and lowest in the Eastern District. (See Figure 2.) School size would seem to be a factor of some consequence in determining school policy on this matter; in school districts with small pupil populations (50-299) 72 percent sponsored programs of interschool athletics whereas in the larger school districts the figure was substantially lower. (See Figure 3.) One might expect that the limited enrollments in these smaller schools would restrict the scope of intramural programs; thus, these schools seek to schedule contests with other schools to give boys some experience in organized team activities. The other possibility is the likelihood that many of the schools in the small districts are organized as an eight year plan with the previously mentioned tendency to sponsor such programs frequently. However, half of the schools in school districts of 6,000 to 11,999 pupils supported programs in interschool athletics. Thus, it is

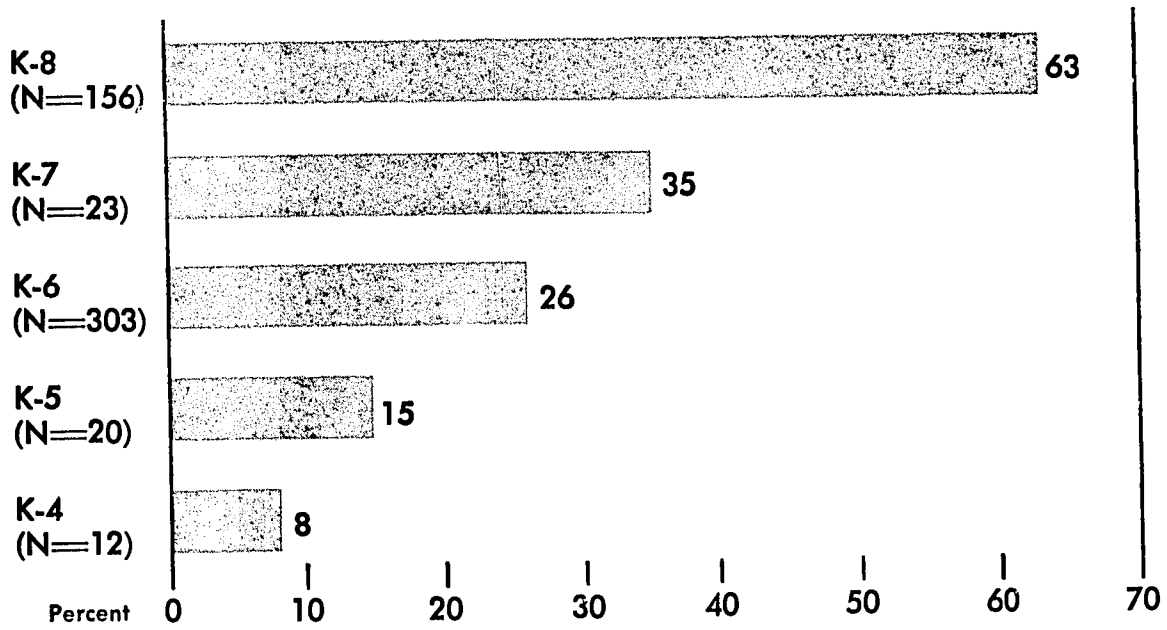

Figure 1. Percent of elementary schools with interschool athletic competition categorized according to school organizational patterns. The N's represent the usable returns upon which the percentage is based.

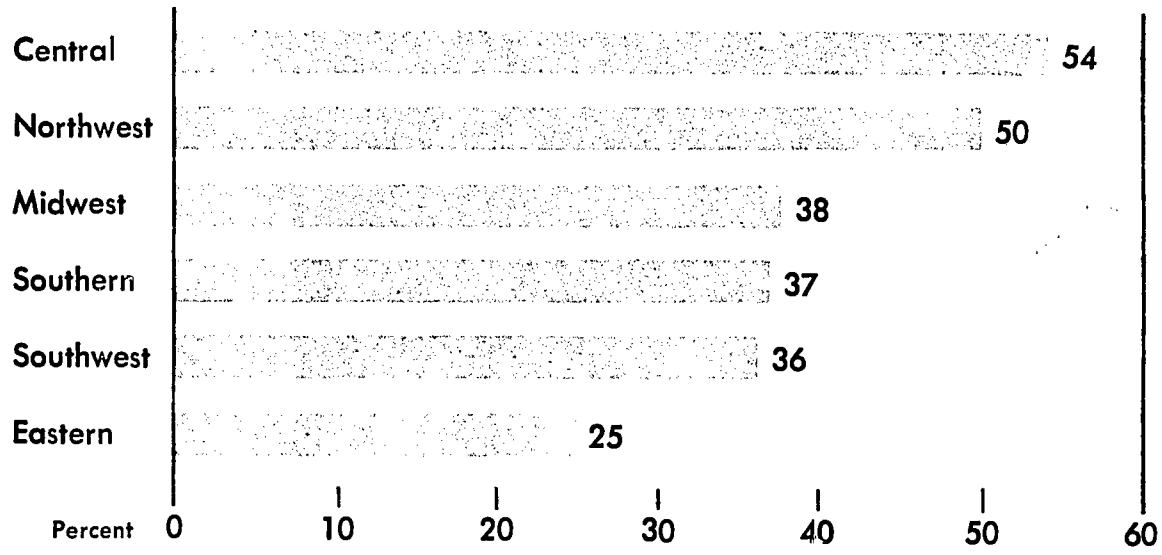

Figure 2. Percent of elementary schools with interschool athletic competition categorized according to regions.

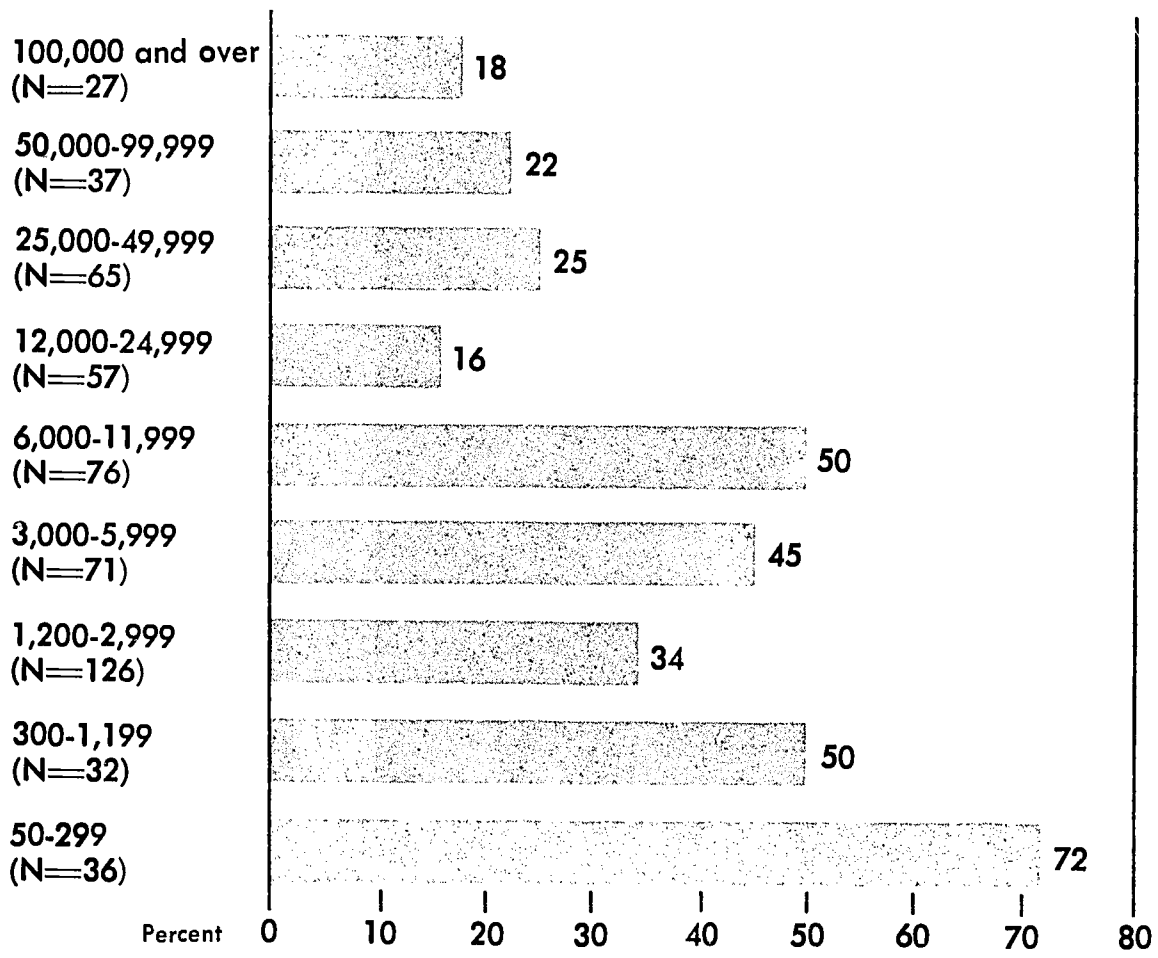

Figure 3. Percent of elementary schools with interschool athletic competition categorized according to school district enrollment. The N's represent the usable returns upon which the percentage is based.

evident that the extent of interschool athletic competition varied by school size and geographic region. The two are probably not independent since the Central and Northwest Districts are sparsely populated in comparison to the dense population of the Eastern and Southwest Districts.

Participation by Sport. Baseketball easily led the list in both six and eight year graded schools. (See Figure 4.) Of the eighty six-year graded elementary schools having interschool athletic programs, half sponsored interschool competition in track and approximately two-fifths had softball and touch football teams. A relatively low percentage of the schools with interschool sports programs sponsored interschool contests in tackle football. In view of the fact that the percentages for K-6 are based on the 26 percent with interschool

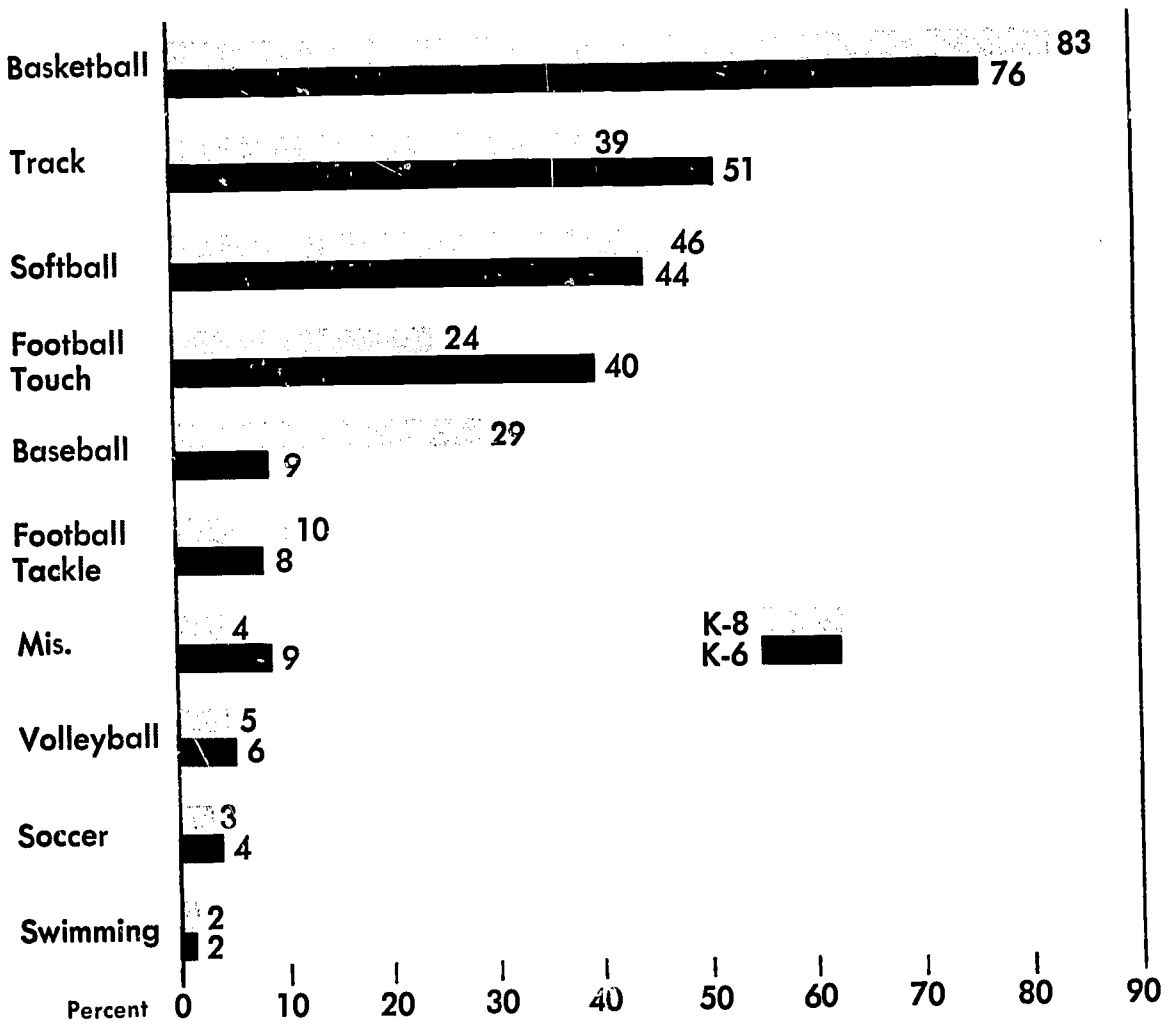

Figure 4. Percent of elementary schools engaged in interschool athletic competition according to sports.

athletic programs, it is apparent that the vast majority of school systems were not promoting interschool athletic programs. Viewed in terms of the total sample, less than 2 percent of the K-6 schools sampled engaged in interschool tackle football, 20 percent in basketball, and approximately 1-12 percent in track, softball, and touch football.

Agency Sponsored Athletic Programs. Team athletic competition for boys 6-13 years of age is often sponsored in many communities by established agencies, service clubs, municipal recreation departments, parent groups, and by national organizations. One aspect of the study was to determine the extent to which schoolboy athletic competition is conducted under the auspices of such groups. The number and percentage of school districts sponsoring interschool athletic competition and the number and percentage of districts in which there is agency sponsored competitive athletics (within and between cities) according to strata and region were determined. (See Table 2.) Agency sponsored schoolboy athletic competition based on the na-

TABLE 2. SCHOOL SPONSORED AND AGENCY SPONSORED ATHLETIC COMPETITION FOR BOYS, AGES 6-13 YEARS, CATEGORIZED BY SCHOOL DISTRICT POPULATION AND GEOGRAPHICAL REGION

Categories	Schools Sponsoring Interschool Team		Schools with Students on Agency Sponsored Teams	
	Number	Percent	Number	Percent
Total	193	37	336	64
Strata				
100,000 and over	5	18	14	52
50,000 – 99,999	8	22	26	70
25,000 – 49,999	16	25	48	74
12,000 – 24,999	9	16	40	70
6,000 – 11,999	38	50	59	78
3,000 – 5,999	32	45	43	60
1,200 – 2,999	43	34	67	53
300 – 1,199	16	50	22	69
50 – 299	26	72	17	47
District				
Northwest	7	50	12	86
Central	31	54	41	72
Midwest	33	38	63	73
Eastern	28	25	68	60
Southwest	22	36	37	61
Southern	72	37	115	59

tionwide sample occurs in almost twice the number of communities (64 percent) as school sponsored interschool athletics (37 percent). The impact of community size on the extent of agency sponsored competition is of some consequence, ranging from a frequency of 47 percent in the smallest districts to 78 percent in districts having school populations of 6,000 to 11,999 pupils. By geographical regions the differences are not great, although agency sponsored athletic competition was found in 86 percent of the sampled communities in the Northwest District with a low of 59 percent in the Southern District. Of the 336 schools having boys on agency sponsored teams, 85 percent competed in baseball, 36 percent in basketball, 32 percent in softball, 21 percent in tackle football, 16 percent in swimming, 15 percent in touch football, and 8 percent in track.

Agency sponsored contests in 60 percent of the communities are scheduled only with teams in the same city; 34 percent schedule contests in other cities. The chronological age when agency sponsored athletic competition most often begins is in the age range 8-10 years, whereas in school sponsored competition it commences most frequently at 9-10 years.

Provisions for Safeguarding Health and Safety. One of the critical issues confronting those who make decisions on the desirability of competitive athletics for young boys is the possible dangers to the health and safety of the participant. What safeguards are provided and what is the competence of the persons supervising the activities or coaching the teams? It is universally held that all, regardless of age, should have a physical examination (by a physician) prior to joining an athletic team. The present study throws some light on the extent to which this recommendation is followed. (See Table 3.)

TABLE 3. THE PRACTICE OF REQUIRING A MEDICAL EXAMINATION PRIOR TO JOINING SCHOOL SPONSORED AND AGENCY SPONSORED ATHLETIC TEAMS INVOLVING BOYS, AGES 6-13 YEARS

Category	Requirement of a Medical Examination					
	Yes	Per-cent	No	Per-cent	Don't Know	Per-cent
School Sponsored Athletics	79	41	112	58	2	1
Agency Sponsored Athletics	58	17	143	43	132	40

It is clearly evident that adequate protection to the general health of the boy is not provided when well over half (58 percent) of the surveyed schools do not require a medical examination before the boy is permitted to join a team. Only 17 percent of the communities with agency sponsored teams have this requirement. While 40 percent of the replies of the latter indicated lack of information, it is unlikely that many have such a requirement. In no population stratum or geographical region for either school or agency sponsored athletics was there evidence that this matter was adequately handled.

The competence of the coach or supervisor, as evidenced by his experience as a teacher and his background of training in physical education and sports, is a factor believed to be of considerable consequence in safeguarding the physical and emotional well-being of participants. Some 81 percent of the elementary schools sponsoring athletic teams utilize a regular member of their teaching staff with training or experience in the sport; 9 percent use a member of the teaching staff without training or experience in the sport. Less frequently used (2-3 percent) is an adult not on the teaching staff. In agency sponsored athletics the situation is considerably different, for in only 28 percent of the instances is the coach a trained adult either volunteer or hired.

It is clear that the professional competence as evaluated here is much superior in the school sponsored athletic programs. It is also equally clear that many of the school sponsored and the vast majority of the agency sponsored athletic programs do not provide adequately for the medical screening of boys prior to permitting them to join athletic teams. No data were sought regarding the protective equipment supplied in either school or agency sponsored contests, the quality of officiating, or the medical supervision during the athletic season.

PRINCIPALS' JUDGMENTS OF EFFECTS OF ATHLETIC COMPETITION

Each principal was asked if he had observed any detrimental effects of either school sponsored or agency sponsored athletic competition among the boys attending his school. Table 4 shows the number and percentage of positive and negative responses by school principals to questions pertaining to serious injuries, physical strain, and interference with normal school progress. For the most part, the principals in the sample surveyed noted very few detrimental effects in their own schools of school sponsored interschool sports. The number of principals observing undesirable effects of agency sponsored sports among boys in their schools is, however, substantially greater. While the percentage is not high, ranging from 8 to 16 percent, this percentage is up to four times as great as for school sponsored athletics. The fact that from 20 to 30 percent of the principals were uncertain of the effects indicates, as one might expect, that many principals are not associated closely enough with agency sponsored sports to be able to make valid judgments.

In view of the observations of the principals, the previously mentioned qualifications of coaches and supervisors, and the lack of other safeguards previously cited, it would seem that school sponsored athletic programs are safer and better supervised than agency sponsored programs.

The principals were also asked if they personally approved of interscholastic athletics for boys aged 6 to 13 years sponsored by the schools or by nonschool agencies. The overall response based on the

TABLE 4. OBSERVABLE EFFECTS OF SCHOOL AND AGENCY SPONSORED COMPETITION AS JUDGED BY ELEMENTARY SCHOOL PRINCIPALS

	School Sponsored Sports						Agency Sponsored Sports					
Detrimental Effects	Yes	Percent	No	Percent	Uncertain	Percent	Yes	Percent	No	Percent	Uncertain	Percent
Serious Injury	4	2	189	97.5	1	.5	25	8	200	61	101	31
Physical Strain	8	4	177	91	9	5	52	16	180	55	94	29
Interference with School Progress	7	4	178	91	9	5	33	10	229	70	4	20

nationwide sample and the response by regions are shown in Table 5. Almost half of all the principals sampled approved of school sponsored athletics for boys in this age range, with 41 percent disapproving and 13 percent undecided. The response pattern for agency sponsored athletics was similar, with 40 percent of the principals approving, 32 percent disapproving, and 28 percent undecided.

The reactions of the principals to school sponsored athletics do not appear to differ greatly by region. The Northwest, with the lowest proportion of principals voicing approval, is the region with the second highest percentage of school sponsored athletic teams, however.

Differences in reaction by pupil population strata are more clearly defined. Principals from schools in the more populous districts generally disapproved of school sponsored interschool athletics, whereas the majority of those in smaller schools approved. This is perhaps a reflection of the practices followed. As was pointed out, relatively few

TABLE 5. PERSONAL REACTION OF ELEMENTARY SCHOOL PRINCIPALS TO SCHOOL SPONSORED AND AGENCY SPONSORED ATHLETICS FOR BOYS 6-13 YEARS OF AGE

Categories	School Sponsored			Agency Sponsored		
	Approve (percent)	Disapprove (percent)	Undecided (percent)	Approve (percent)	Disapprove (percent)	Undecided (percent)
Strata						
100,000 and over	29	63	8	33	33	34
50,000 – 99,999	24	76	0	32	45	23
25,000 – 49,999	34	55	11	27	37	36
12,000 – 24,999	22	64	14	36	33	31
6,000 – 11,999	49	38	13	43	36	21
3,000 – 5,999	53	33	14	34	41	25
1,200 – 2,999	56	28	16	44	21	35
300 – 1,199	57	25	18	60	28	12
50 – 299	74	14	12	58	12	30
District						
Northwest	36	50	14	38	24	38
Central	48	41	11	43	35	22
Midwest	51	36	13	39	31	30
Eastern	40	47	13	30	31	39
Southwest	46	44	10	34	39	27
Southern	47	39	14	46	31	23
Total	46	41	13	40	32	28

of the bigger schools sponsor such programs, whereas a relatively large proportion of schools in the smaller communities have interschool athletics.

Viewing the situation in general, it is clear that the opinion of principals is divided regarding the desirability of school sponsored and agency sponsored athletics. While few detrimental effects were noted by the elementary school principals, the general attitude appeared to be one of conservatism. Some light may be thrown on this by citing the free answer responses given by the principals for their approval or disapproval of organized interschool athletics. The reason for approval most frequently cited by principals was that this type of activity teaches teamwork and important physical skills. It is also worthy of note that a sizeable proportion of the approvals (approximately 20 percent) were given with qualifications. The most frequently cited reason for disapproval was that boys of this age are too young and that there is therefore danger of physical and emotional injury. Another reason for disapproval (15 percent) was that it interferes with schoolwork and a similar proportion that it limits participation to a selected number.

In summary, the survey disclosed the following:

1. The proportion of schools on the six-year plan providing programs of interschool athletics for boys was limited, namely 26 percent of the sample surveyed; the proportion for schools on the eight-year plan was 37 percent.

2. Agency sponsored programs involved boys in some 64 percent of the schools sampled.

3. Less than half of the school sponsored programs and fewer than one-fifth of the agency sponsored programs required a medical examination prior to joining a team.

4. While the principals cited few incidents of injury, physical strain, or interference with schoolwork, the general reaction of the principals was one of caution — less than one-half of them expressed approval of school sponsored interschool athletics and 13 percent were not yet ready to express an opinion.

RESEARCH RELATING TO ATHLETIC COMPETITION FOR CHILDREN

Results of research bearing on the problem of competitive athletics for children are summarized in this section. Most of the research evidence cited constitutes fragmentary approaches to a problem that is highly complex. The recommendations coming from this report, however, must of necessity be based upon the evidence as the committee sees it and upon the common sense and judgment of people who have been close to the problem for many years.

Physical Growth. What is known about the effects of organized athletic competition upon the physical growth of children? It is clear that a straightforward answer to this question cannot be given, since one would need to assess the growth of children over many years, giving due attention to such factors as type of athletic activity, training regimen followed, frequency of contests, age at which participation is begun, and number of years of participation, to mention only a few factors involved. Some attempts have been made, however, to examine the effects of one or more seasons of athletics upon human growth. The early study by Rowe (22) and the later report by Fait (11) indicated that growth in the early pubertal years is adversely affected by six months of interscholastic sports. More recently, Shuck (29) reported that among 366 seventh, eighth, and ninth graders under observation the growth trends of those involved in interscholastic sports were not different from those who did not participate. He reported an apparent retardation in growth of seventh and eighth grade boys participating in a 17 game season as compared to those involved in a more limited schedule of 12 games per season. Studies of this kind, particularly those involving subjects in the pube al years, must be viewed with caution, since athletes for the most part tend to be drawn from the larger, early maturing, fast growing boys and any positive or negative effects of athletic activity on growth are likely to be masked by the time of onset of the growth spurt.

Perhaps the most comprehensive study yet conducted on the effects of rigorous training and highly competitive athletics upon growth is the study by Astrand and others (5) on some 30 girl swimmers. Longitudinal growth data which were available on the entire sample from

7 to 16 years of age showed clearly that the growth curves of these girls were normal throughout this period, being somewhat accelerated above normal during the training years. The majority had begun heavy training before 13 years of age, some as early as 10 years. The investigators reported that two years after the completion of the investigation (when the girls were 18 years old) medical examinations disclosed no harmful effects of the training regimen. A second part of this study entailed a questionnaire given to the 84 women finalists in the Swedish swimming championships in the period 1946-55. The swimmers, some 6 to 15 years after the competitive years, were healthy and socially and psychologically well adjusted. More than three out of four were married and two-thirds had children. They had a positive attitude toward swimming, although many questioned the advisability of present strenuous training programs and some considered them to be detrimental.

Evidence points to the fact that young boys who become participants in varsity type athletics are physiologically and skeletally more mature than nonathletically inclined boys of the same chronological age. Hale (13) and Krogman (17) found that boys participating in the Little League World Series in 1955 and 1957 were anatomically and physiologically advanced. These findings were supported by the studies of Clark and his co-workers (7,8) who found that athletes in the age range 10 to 15 years are stronger and structurally more mature than nonathletes of the same chronological age. Apparently, there is a selective factor at work which draws the bigger, stronger, and more mature boy into varsity type athletics. Physically, he would seem to be more nearly ready for this type of activity than his less mature counterpart.

On the basis of current research, there is little evidence to support the belief that the demands imposed by competitive sports adversely affect physical growth. If the judgment is confined solely to the effect of a lifetime of strenuous physical activity upon physical growth, evidence from animal studies (9) and reports of the effects of rigorous regimens of physical activity on the growth of humans (20) indicate that the body as a whole benefits from such regimens. The question is, how much physical activity is optimal and how much is excessive in supporting physical growth? The safe answer is that it varies with

the maturity level of the child, with the child's constitutional make-up, and with his state of health. There is some evidence that excessive weight bearing during the growing years, while stimulating growth in bone diameter, may result in somewhat retarded long bone growth (33). Perhaps the critical question insofar as physical growth is concerned is not so much whether the athletic activity is intra- or inter-school but rather the conditions under which such programs are conducted.

Psychological, Social, and Emotional Considerations. Concern has been voiced that children in the age range 6 to 13 years are not sufficiently mature to withstand the psychological stresses arising from interschool athletic competition or agency sponsored league and tournament contests. Some study has been made of the psychosociological correlates of this type of activity upon young boys, but the evidence is still fragmentary. Research on this problem is difficult, because as yet there is no completely adequate way to assess the psychological stress which occurs before, during, and after such contests. It is equally difficult to determine if there are lasting traumatic effects or if, on the other hand, involvement in such activities has beneficial effects on the social and personality development of the child.

On the basis of investigations conducted up to this time, there would seem to be little objective evidence that the tensions arising from interschool and agency sponsored league and tournament play are greater than those occurring in interschool contests. For example, Skubic (32) reported that the immediate and delayed (1-1/2 hours after the contest) alterations in the affective state (as measured by the galvanic skin response) were no greater for contestants aged 9 to 15 years in Little League play than for boys of the same age in physical education contests. There was some evidence of greater excitability following winning than after the loss of a game. Similarly, a survey (21) of 1,300 physicians, all fathers of Little League participants, showed that 64 percent of the fathers felt that participation favorably affected the emotional adjustment of their sons, 33 percent indicated no noticeable effect, and only 3 percent specified an unfavorable effect. Some 97 percent of the fathers indicated that the Little League games did not excite their sons to the point that they adversely affected their health. Such activities, however, may unfavorably

affect normal sleep, as indicated by Giddings (12), who reported disturbed and restless sleep among young players following highly competitive contests. According to Skubic's survey (31) approximately one-third of the parents of boys participating in Little League play indicated that their sons were too excited following a contest to eat normally. In some instances the excitement lasted long enough to interfere with the normal onset of sleep. While participation in competitive athletics may have undesirable psycho-emotional effects, the evidence cited above does not point to this. A question may well be raised regarding psychological tensions arising from other aspects of our competitive school situation.

Concern has been expressed in some quarters that interschool and intercity competitive athletics may have undesirable effects on the social behavior of young boys. Here again we have only fragmentary evidence. In a comparative study of participants and nonparticipants in Little League baseball in the age range 10 to 12 years, Seymour (26) found that participants' scores in standardized inventories of social behavior and attitudes and scales of social acceptance did not differ significantly from those of nonparticipants on the former, but on the scales of social acceptance, participants were more favorably accepted by their peers.

The research evidence regarding the psychological and emotional effects of competitive athletic competition for school age children is at this point indecisive. Experience and the observation of teachers, coaches, and parents suggests that the effects vary widely from individual to individual and as a function of the situation. The basis for these individual differences we do not yet understand.

Physiological Effects. Few would question the belief that daily periods of vigorous physical activity are essential to the physiological well-being and normal growth of children and youth. However, it is held by some that the stresses of varsity type sports may result in overexertion with resulting damage to the vital organs. Only a limited number of studies have been conducted on children in which the physiological responses have been observed under conditions of extremely heavy physical exertion. The early work of Seham and Egerer-Seham (25), in which children in the age range 6 to 15 years rode to near exhaustion on the bicycle ergometer, indicated that although nausea follow-

ing the exercise was characteristic of the group, acute dilatation of the heart was not noted in any of the children and all had recovered completely within a few hours. Demands of this magnitude are seldom placed on children in competitive contests as they are conducted today. The later work of Morse and Schultz (19) in which boys 10 to 17 years ran to exhaustion on the treadmill indicated that the lowest level of oxygen consumption per unit of body weight was among the 13 year olds. Boys at the older age levels had a greater ability to sustain exhausting exercise than did the younger ones. Similarly, work of Adams and others (2) has shown that in the age range 6 to 12 years the working capacity of boys increases almost linearly with age and changes in body size. Much remains to be learned about the exercise tolerance of children and the long-range physiological effects of schoolboy athletics.

There is virtually no evidence that strenuous physical activity in either the competitive or noncompetitive situation has detrimental effects on the physiological mechanisms of healthy boys 6 to 13 years of age. In summary, while there is considerable evidence that vigorous physical activity for young boys is beneficial, there are no data concerning the long-range physiological effects of competitive athletics for youth.

The Injury Problem. Any time children engage in vigorous physical activity there is the possibility of injury; this is particularly so under highly competitive conditions. It is generally held that the frequency and extent of injury in sports can be kept to a minimum when care is taken to provide adequate facilities, protective equipment, and competent supervision.

Data on injuries of elementary school children provide little comparative information on the injury rate in interschool athletics as compared to the rate in physical education classes and intramural sports. As mentioned earlier in this report, only 2 percent of the elementary school principals surveyed had observed serious injury in school sponsored interschool sports, although the incidence was 8 percent for agency sponsored athletics. In a five year study of injuries in junior and senior high school physical education classes, intramural sports, and interschool athletics, Knutson (15) found that the number of injuries per student hour of participation (all sports com-

bined) was highest among senior high school participants in interschool athletics and was substantially lower at the junior high school level, even though the sports programs were almost identical. When the injury ratios for seventh and eighth grade boys in interschool sports, intramural athletics, and physical education classes were compared, the differences were negligible. While the above suggests that the injury problem in interschool sports is not a factor of major importance, we do not yet have sufficient evidence to draw valid conclusions, particularly at grade levels below grade 7.

Some reliable data are available on the incidence and nature of athletic injuries in competitive athletics under the jurisdiction of organizations other than schools—namely Little League baseball. Perhaps the most comprehensive source is the report by Hale (14) of injuries over a five-year period among 771,810 Little League baseball players. During this period there were 15,444 injuries that required medical attention. This figure constituted an incidence of 2 percent, which the investigator felt was remarkably low in view of the number of exposures (148,000,000 pitched balls, alone). The chief cause of medically reported injury (approximately 65 percent) was the ball—pitched, thrown, or batted. The most common injuries were abrasions and contusions (52 percent), followed by fractures (19 percent)—chiefly of the fingers, sprains (13 percent), lacerations (10 percent), concussions (3 percent), and dental damage (3 percent). Sliding was the major cause of injury to the lower extremities (39 percent). It is worthy of note that injuries were fewer in number and severity among the 8-12 year old Little League group than among 13-15 year old players.

Hale's study (21) of physician-fathers of Little League participants found that among the 1,300 responding physicians 15 percent had seen fractures in the epiphyseal region of the long bones, resulting from Little League baseball. Of the orthopedists, the proportion was much higher, 58 percent; of the pediatricians, some 21 percent; of the general practitioners, 17 percent; and of the surgeons, 15 percent. Dislocations from Little League baseball had been observed by a much smaller proportion of the physicians in each specialty, ranging from 1 to 10 percent. While the above does not give information on the frequency with which these injuries occurred, it is evident that the figures

cannot be ignored in evaluating the safety factor in this type of activity. The work of Skubic (31) on incidence of injury among 100 Little League and Middle League participants in California showed that in league games during the season of play there were 69 sprains and 5 broken bones in addition to 146 bruises and cuts (classified as minor injuries). Among the 60 Little Leaguers queried, there was a total of 123 injuries reported, with 19 indicating no injuries.

Any consideration of athletic injuries during the growing years must give some thought to the possibility that permanent bodily damage may result. Perhaps the type of athletic injury most frequently mentioned is damage to the epiphyses of the long bones. Krogman (16), for example, warns of the danger of permanent damage to the long bones during the preadolescent years. His point of view is supported by some 69 percent of the orthopedic surgeons questioned in a 1952 survey (1), who indicated that the prepubertal years constitute a period when the joints are unusually vulnerable to injury. That injuries can occur when repeated stress is placed on the joint structure in the growing years is indicated by the investigation of Adams (3), who found in observing the roentgenograms of the elbows of the throwing arms of 162 Little League players 9 to 14 years of age some degree of epiphysitis, osteochondritis, or accelerated growth in the medial humeral epiphysis in all 80 of the pitchers, but in only a small percentage of the nonpitchers. Adams recommends that Little League pitchers be restricted to two innings each game and that curve ball throwing be eliminated for those under 14 years of age.

A somewhat more liberal point of view is expressed by Shaffer (27), who states that although the epiphysis is potentially vulnerable to injury epiphyseal injuries occur infrequently. He points out that damage to the growing bones in the circum-pubertal years comes from a variety of causes other than sports injuries or even trauma. Furthermore, Shaffer (28) holds that orthopedists are not currently in agreement that epiphyseal injuries occur more frequently in athletics than in informal play. The infrequency of epiphyseal injury is indicated by Larson and McMahan (18), who found in a study involving 371 athletic injuries in boys 15 years of age and younger that only 1.7 percent were epiphyseal. They point out that, while growth disturbances may occur, the majority are epiphyseal displacements

which can be reduced with little likelihood of permanent damage. The essential consideration, according to Sigmond (30), is to be on the alert for any symptoms of bone or joint disease so that further damage can be prevented.

From the limited data available, it is evident that the injury problem in competitive athletics for youth in the 6 to 13 year age range is of sufficient magnitude that it cannot be ignored. It is also clear that energetic youth of this age level will engage in unsupervised sports (frequently contact sports) unless challenging supervised activities (school or agency sponsored) are provided. In the upper elementary school years the desire for team competition becomes great. In the well-conducted school physical education program this need can for the most part be met through the instructional and intramural programs. In the summer months well-organized recreation programs can provide organized team activities on an informal basis under competent leadership.

Many agencies, however, including churches and civic groups, hold league and tournament competition for youth in this age level, often without provision for trained leadership. As indicated earlier, the leadership in these programs is for the most part made up of inadequately trained personnel. Medical examinations for participants are the exception rather than the rule. Thus, on the basis of what is known about the accident frequency in agency sponsored athletic competition and the current status of the supervision provided, there is reason to doubt that adequate safeguards are provided here to protect the welfare of the participants.

Effect of Interschool Athletics upon Intramural, Extramural, and Recreational Programs. Little if any published data are available on the influence which interschool athletics may have upon intramural, extramural, and recreational programs. Theoretically, one of the dangers inherent in embarking on an extensive interschool program is the possibility that the needs of the vast majority of the children will be sacrificed for the benefit of the highly skilled minority. This is borne out in part by experience at the high school level, where personnel, facilities, and space are tied up for long periods of time by the talented few. The demand for a winning team may detract from the teaching effectiveness of the staff, thus jeopardizing instruction for

those who need it most. The issue at stake essentially becomes one of providing the greatest service to the greatest number and to those in greatest need. Can elementary schools provide this kind of service and still have the facilities and staff time for interschool athletic programs?

PURPOSES OF ATHLETIC COMPETITION

Perhaps the critical question for consideration is, what are the unique purposes which competitive athletic contests fulfill and are these purposes in the best interests of children? The competitive urge becomes strong in children in the upper elementary years. Team competition provides a normal and healthy outlet for this drive under conditions where the individual's personal interests must be subordinate to the good of the team. Few would question the desirability of such an experience. The urge for excellence, the need to test oneself individually or as a member of a group against a worthy opponent cannot be ignored. The question is whether the elementary school child should give expression to this need under conditions similar to those available to youth of high school and college age.

The desire on the part of youth to do what the adult segment of our culture does is strong. The tendency for children in the upper elementary grades to idolize outstanding athletes is clearly evident. Spontaneously organized athletic contests by young boys bear witness to the extent to which youth mimics the athletic patterns of established athletes and teams. The urge to be a part of the glamorous adult athletic scene is strong. Under the encouragement of segments of our adult society it is not surprising that youth clamors for competitive sports. The purpose of such programs in their eyes is real and vital—the competitive urge plus the drive for status with their peers. With a well-organized intramural program and limited interschool contests, this need can be reasonably effectively handled. There is good reason to believe that the demand for the varsity type program is less apparent in schools with well-organized intramurals than in those where such programs are weak.

Perhaps one of the strongest arguments against the varsity type program for young boys is the tendency to start sports specialization too early. The elementary school years should be the time when the basic skills are learned, when children have the opportunity to engage in a broad range of skills. They are not yet ready for specialization. The fundamental movement patterns need to be well established before specialization begins. Concentration upon one or two sports skills early in life takes valuable time from laying the foundation for a

variety of other skills. The broader the repertoire of motor skills established early in life, the greater the potential for developing a range of skills in the adolescent years. In other words, early specialization may leave the individual with one or two skills which he may tire of and discard with nothing to fall back on.

Lastly, one cannot ignore the possibility that varsity type athletics for school age children may give youth a distorted sense of values. Youth's interpretation of the significance of the event may be out of proportion to its true value. Children are not yet mature enough to make this judgment. As a result, the importance which they attach to these activities may, in fact, detract from their effectiveness in the classroom and may tempt them to slight important academic and social responsibilities.

The benefits of well-organized and well-supervised athletic programs for children and youth are many. The schools constitute the most effective structure for the management and control which such programs require. Important educational objectives can be realized through properly administered athletic programs for children and youth, and as our society now is structured, the schools offer the best medium for achieving these ends. Parents, civic leaders, and educators must work together to provide children and youth with opportunities to meet this need in ways which are healthy and educationally sound. This responsibility rests perhaps more heavily on the schools than upon community agencies.

Many questions regarding athletic competition and varsity type athletics for children still remain unanswered and are likely to remain unanswered for some time to come. It is becoming increasingly clear that what may be in the best interests of some children may not be good for all—that at a given chronological age children vary substantially in physical maturity, physique, motor development, and psychological and sociological maturity.

REFERENCES

1. AAHPER Committee on Athletic Competition for Children of Elementary and Junior High School Age. *Desirable athletic competition for children.* Washington, D. C.: American Association for Health, Physical Education, and Recreation, 1952.
2. Adams, Forrest H., Linde, L. M. and Miyake, H. The working capacity of normal school children: I. California. *Pediatrics* 28:55, 1961.
3. Adams, J. E. Injury to the throwing arm: A study of traumatic changes in the elbow joints of boy baseball players. *California Medicine* 102:127-32, 1965.
4. American Academy of Pediatrics Committee on School Health. Statement of policy on competitive athletics. *Pediatrics* 18:672-76, 1956. American Academy of Pediatrics, *Report of Committee on School Health.* Evanston, Illinois: the Academy, 1966. Pp. 71-75.
5. Åstrand, P. O., et al. Girl swimmers, with special reference to respiratory and circulatory adaptation and gynaecological and psychiatric aspects. *Acta Paediatrics Supplementum,* 147, 1963.
6. Athletic Institute. Youth baseball survey for 1965. *Sportscope,* 10, October 29, 1965.
7. Clarke, H. Harrison and Petersen, Kay H. Contrast of maturational, structural, and strength characteristics of athletes and nonathletes 10 to 15 years of age. *Research Quarterly* 32:163-76, 1961.
8. Clarke, H. Harrison and Shelley, Morgan E. Maturity, structure, strength, motor ability, and intelligence test profiles of outstanding elementary school and junior high school athletes. *The Physical Educator* 18: 132-37, 1961.
9. Donaldson, H. H. and Messer, Ruth E. On the effects of exercise carried through seven generations on the weight, musculature, and composition and weight of several organs of the albino rat. *American Journal of Anatomy* 50:359-96, 1932.
10. Educational Policies Commission. *School athletics problems and policies.* Washington, D. C.: National Education Association and American Association of School Administrators, 1954.
11. Fait, Hollis. *An analytical study of the effects of competitive athletics upon junior high school boys.* University of Iowa, Ph.D. Dissertation, 1951.
12. Giddings, G. A. Cited in *Sleep and children,* A report of the Joint Committee on Health Problems in Education of the NEA and AMA, 1956.
13. Hale, Creighton J. Physiological maturity of Little League baseball players. *Research Quarterly* 27:276-82, 1956.
14. Hale, Creighton J. Injuries among 771,810 Little League baseball players. *Journal of Sports Medicine and Physical Fitness* 1:3-7, 1961.
15. Knutson, John A. *Accident rates of elementary and secondary school boys occurring in physical education and interscholastic sports in the Elgin, Illinois schools.* University of Wisconsin, Master's Thesis, 1960.
16. Krogman, Wilton M. Child growth and football. *Journal of Health, Physical Education, Recreation* 26:12, 1955.

17. Krogman, Wilton M. Maturation age of 55 boys in the Little League World Series, 1957. *Research Quarterly* 30:54-56, 1959.
18. Larson, Robert L. and McMahan, R. O. The epiphysis and the childhood athlete. *Journal of the American Medical Association* 196:607-12, 1966.
19. Morse, M., Schultz, F. and Cassels, D. Relation of age to physiologic responses of the older boy (10-17 years) to exercise. *Journal of Applied Physiology* 1:683-92, 1949.
20. Rarick, G. Lawrence. Exercise and growth. In Johnson, Warren (ed.) *Science and medicine of exercise and sports.* New York: Harper & Bros., 1960.
21. Research Division, Little League Baseball. 1,300 doctors evaluate Little League baseball. Williamsport, Pa.: Little League Baseball, Inc., 1962-63.
22. Rowe, Floyd A. Growth comparisons of athletes and nonathletes. *Research Quarterly* 4:108-16, 1933.
23. Schneider, Elsa. *Physical education in urban elementary schools.* Washington, D.C.: U. S. Department of Health, Education, and Welfare, 1959.
24. Scott, Phebe M. Attitudes toward athletic competition in elementary schools. *Research Quarterly* 24:352-61, 1953.
25. Seham, M. and Egerer-Seham, G. Physiology of exercise in childhood. I. A study of normal children of school age. *American Journal of Diseases of Children* 25:1, 1923. II. A study of collapse in normal children. *American Journal of Diseases of Children* 26:254, 1923.
26. Seymour, Emery W. Comparative study of certain behavior characteristics of participant and nonparticipant boys in Little League baseball. *Research Quarterly* 27:338-46, 1956.
27. Shaffer, Thomas E. Athletics for elementary school youth. *Theory Into Practice* 3:95-97, 1964.
28. Shaffer, Thomas E. Are Little Leagues good for children? *Pennsylvania Medical Journal* 59:447-50, 1956.
29. Shuck, Gilbert R. Effects of athletic competition on the growth and development of junior high school boys. *Research Quarterly* 33:288-98, 1962.
30. Sigmond, Harvy. The adolescent and athletics, orthopedic aspects. *Pediatric Clinics of North America* 7:165-72, 1960.
31. Skubic, Elvera. Studies of Little League and Middle League baseball. *Research Quarterly* 27:97-110, 1956.
32. Skubic, Elvera. Emotional responses of boys to Little League and Middle League competitive baseball. *Research Quarterly* 26:342-52, 1955.
33. Steinhaus, A. H. Chronic effects of exercise. *Physiological Reviews* 13:103-47, 1933.
34. White House Conference on Children and Youth. *Children and youth in the 1960's.* Committee on Studies for the Golden Anniversary White House Conference on Children and Youth, Inc., 1960.