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A COMPARATIVE STUDY OF THE PHYSICAL FITNESS OF SECONDARY
SCHOOL STUDENTS IN KUWAIT AND AMERICA

presented by

Ahmad Abdulnour Jamal

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A COMPARATIVE STUDY OF THE PHYSICAL FITNESS OF SECONDARY
SCHOOL STUDENTS IN KUWAIT AND AMERICA

By

Ahmad Abdulnour Jamal

A DISSERTATION

Submitted to
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ABSTRACT

A COMPARATIVE STUDY OF THE PHYSICAL FITNESS OF SECONDARY SCHOOL STUDENTS IN KUWAIT AND AMERICA

By

Ahmad Abdulnour Jamal

The three main purposes of this study were to (a) establish national physical fitness norms in terms of every fifth percentile by gender/age and gender/grade by administering the AAHPER Youth Fitness Test to 6,502 or 8% of boys and girls, ages 14 through 17, attending public (government) secondary schools, grades 9 through 12, in the State of Kuwait; (b) compare the Kuwaiti data with those of high school boys and girls in the United States, as indicated by their performance on the AAHPER Youth Fitness Test survey of 1975; and (c) compare the mean differences in physical fitness among three groups of boys and three groups of girls attending public secondary schools in Kuwait. The fitness tests included (a) pull-up for boys and flexed arm hang for girls, (b) flexed leg sit-up, (c) shuttle run, (d) standing long jump, (e) 50-yard dash, and (f) 600-yard run. A two-stage cluster sample was used to select the subjects in Kuwait.

A t-test for independent samples was used for the comparisons of the Kuwaiti and American surveys. The level of significance was set at .05. For comparing the groups in Kuwait, the ANOVA method was

applied; whenever its F-test was found to be significant at the .05 level, the Scheffe procedure was followed to deduce where reliable differences existed.

The statistical analysis revealed that:

1. The physical fitness status of boys and girls attending public secondary schools in Kuwait was significantly lower than that of their counterparts in America.

2. The physical fitness levels of three groups of boys and girls in Kuwait public secondary schools differed significantly in certain comparisons. Generally, Kuwaiti male and female students in the credit unit system performed better than their Kuwaiti and non-Kuwaiti counterparts in the general system.

In brief, boys and girls in Kuwait demonstrated low levels of physical fitness. Different programs and research to improve the fitness of youngsters in Kuwait are recommended.

DEDICATION

**To my eternal love, Kuwait,
and her faithful people.**

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Praise and thanks, first and always, be to God, Lord of the heavens and the earth, who hath given me the physical and mental fitness, among other things, to successfully complete this dissertation with the help of many knowledgeable, supportive, inspiring, and thoughtful people. It would be impossible to list all of the thousands of individuals to whom I am deeply indebted. Yet I do want to express my appreciation to several outstanding contributors.

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CHAPTER I

INTRODUCTION

Physical fitness, as one aspect of total fitness and a significant objective of the overall physical education program in Kuwait, is a means to an end; the end is the good of the whole individual. Physical fitness refers primarily to the body's physical condition, both anatomically and physiologically. It implies the ability to resist fatigue, to perform with an acceptable degree of motor ability, and to be able to adapt to a certain measure of muscular stress.

For different reasons, religions such as Islam and Christianity admire and endorse physical strength. For example, the Prophet of Islam, Mohammad (God bless and peace be upon him) said, "The strong believer is better and dearer to Allah [God] than the weak, but each has a goodness." In the Christian religion, the King James version of the Bible states, "The glory of young men is their strength, and the beauty of old men is the grey head" (Proverbs 20:29).

Islamic traditions went further and encouraged participation in sports or athletics. Mohammad's successor, Omer, the second khalifa, or ruler, of Moslems, told the people, "Teach your children swimming, throwing, and horse riding." Mohammad himself competed even

with his wife, Khadijah, in running events. On one occasion she won the race, and on the other he did. This demonstrates not only the engagement of males and females of that time in physical activities, but also the high level of fitness that was acquired by women to allow them to challenge their men and sometimes win.

Many countries have recognized the importance of physical fitness for their people, and these countries are striving in one way or another to enhance fitness. Recently, the U.S. President's Council on Physical Fitness and Sports (1985) recommended more emphasis to improve the level of youth physical fitness because its 1985 survey indicated a low level of physical fitness among millions of youths in America.

Physical fitness levels of students, like intelligence levels, are important to everyone related to the educational process: administrators, teachers, students, and parents. Administrators, as responsible decision makers and leaders, must be aware of all that occurs in the school system. Teachers should discover the strengths and weaknesses, both mental and physical, of the students in their classrooms. As test interpreters, teachers must inform students and parents concerning the significance of the test results. Students want to learn about their physical fitness level and the meaning of their own achievement as compared to that of others in their age group. Parents also become immensely interested in the performance level and standing of their children in relation to other children of the same age.

Furthermore, Cooper (1970), in his The New Aerobic, indicated that there are many occasions when physical fitness testing is extremely useful (p. 27). He gave some examples showing that not only do testees and physical educators benefit from fitness results, but also physicians and coaches, who need to know their clients' levels of fitness before assigning them any physical activities.

The results of comparisons in physical fitness, whether between students of different nations or between different groups in the same country, may help bring into focus more attention of educators, parents, and others concerning the present physical status of their children, which may lead to more support for fitness programs. The results may also assist educators in planning and developing better physical education programs. Furthermore, such results may motivate and challenge the abilities of students to reach higher levels of physical fitness, which will be important to themselves, their families, their country, and the world community.

Statement of the Problem

The purpose of this study was to establish national physical fitness norms by gender/age and gender/grade on each test for male and female students in Kuwait public (government) secondary schools and to compare these data with the results of high school boys and girls in the United States, as indicated by their performance on the American Alliance for Health, Physical Education, and Recreation (AAHPER) Youth Fitness Test survey of 1975. The test items include: (a) pull-up for

boys and flexed-arm hang for girls, (b) flexed-leg sit-up, (c) shuttle run, (d) standing long jump, (e) 50-yard dash, and (f) 600-yard run.

This researcher also examined the differences in physical fitness among three groups of male and three groups of female students attending public secondary schools in the State of Kuwait. Each gender was categorized into the following three groups according to their nationalities and/or their school system: (a) Kuwaitis in the general system (KGS), (b) non-Kuwaitis in the general system (NKGS), and (c) Kuwaitis in the credit unit system (KOUS).

Kuwait has realized the importance of education in the physical, mental, moral, and social development of her children. Since the 1940s, Kuwait has placed the highest priority on the country's educational system. Qualified personnel have been recruited and hired, and adequate facilities and equipment have been provided in every school. A sound physical education program has been developed, but national physical fitness norms for every age and grade by gender in public secondary schools have not as yet been established, and no comparisons have been made between any groups. With the construction of these norms, students will be compared and classified, their fitness status will be determined, and progress measured. Barrow and McGee (1979) wrote,

If a test is accompanied by norms, its usefulness is enhanced. Its characteristics of average and range are known. A raw score of 16 is quite meaningless, but if that 16 falls at the 78th percentile or is equivalent to a T-score of 58, it becomes capable of comparisons and interpretations. (p. 45)

The norms established in this study, as well as the results of the comparisons, will provide excellent means for more accurate evaluation of students' fitness levels and schools' physical fitness programs. The usefulness of such norms and comparisons as part of the overall physical education curriculum is unquestionable.

Purposes of the Study

It was expected that the construction of national physical fitness norms for boys and girls ages 14-17 in the Kuwaiti public secondary schools, grades 9-12, comparing them with the United States survey standard from the same tests, and examining three groups of students in Kuwait would be of particular benefit to educators and students of Kuwait. Thus, the basic objectives of this study were to:

1. Establish national physical fitness percentile norms in Kuwait for all public secondary school students ages 14-17 by gender/age and gender/grade.
2. Compare the physical fitness of those students in Kuwait with the results of public high school boys and girls (ages 14-17) in America, as indicated by their performance on the AAHPER Youth Fitness Test survey of 1975.
3. Compare the mean differences in physical fitness among the following three groups of male and three groups of female students ages 14-17 attending public secondary schools, grades 9-12, in the State of Kuwait: (a) Kuwaitis in the general system, (b) non-Kuwaitis in the general system, and (c) Kuwaitis in the credit unit system.

Importance of the Study

The importance of this study was five-fold. First, no previous study of this kind has been conducted in Kuwait.¹ Second, this study will provide baseline data for future surveys in Kuwait. Third, such information will be important for school administrators, supervisors, teachers, students, and parents. Physical educators will be able to perform their functions more effectively once they have a better understanding of the physical fitness level of the students. Students will better understand their ability and, it is hoped, be motivated. Parents will become more aware of and interested in their children's performance and in physical education. Fourth, recommendations have been made in Kuwait by the Ministry of Social Affairs and Labor (1982) and by the Department of Physical Education and Scouting, Ministry of Education (1979), to conduct such a study by using the AAHPER Youth Fitness Test. The former encouraged comparisons between students in Kuwait and America and between Kuwaiti and non-Kuwaiti students (p. 104), whereas the latter supported the establishment of national norms for each grade level in Kuwait (p. 47). Finally, the results of this study will also contribute to the professional literature in the field of education in general and physical education in particular.

¹This was confirmed by (a) a thorough search of the literature conducted by this researcher to find any studies related to this area of concern. None was found; and (b) an interview, conducted by the researcher in January 1985, with the General Supervisor of Physical Education in Kuwait's Ministry of Education.

In summary, it is apparent that, based on the preceding reasons, such a study is needed and important to evaluate, plan, and improve physical fitness programs in Kuwait schools.

Research Questions

The writer was particularly interested in establishing fitness norms in Kuwait secondary schools and in answering the following questions:

1. How does the physical fitness of male and female public secondary school students ages 14-17 in Kuwait (1985) compare with that of their American (1975) counterparts?
2. Are there significant differences in physical fitness among the following three groups of male and three groups of female students ages 14-17 attending public secondary schools in the State of Kuwait: (a) Kuwaitis in the general system, (b) non-Kuwaitis in the general system, and (c) Kuwaitis in the credit unit system?

Research Hypotheses

Based on the information collected in the review of literature, and within the limitations of this study, the following hypotheses seemed warranted:

Hypothesis 1: The physical fitness level of secondary school boys and girls ages 14 through 17 in Kuwait (1985) will not differ significantly from that of their counterparts in the United States (1975), as measured by the AAHPER Youth Fitness Test--1975, in terms of the following items: (a) pull-up for boys and flexed-arm hang for girls--for judging arm and shoulder-girdle strength/endurance; (b) flexed-leg sit-up--for judging efficiency of abdominal and hip flexor muscles; (c) shuttle run--for judging speed and change of direction (agility); (d) standing long jump--for

judging explosive muscle power of leg extensors; (e) 50-yard dash--for judging speed; and (f) 600-yard run--for judging cardiovascular efficiency (endurance).

Hypothesis 2: The physical fitness level, as measured by the AAHPER Youth Fitness Test (1975), will not differ significantly among the following three groups of males and three groups of females ages 14 through 17 attending public secondary schools (grades 9-12) in Kuwait: (a) Kuwaitis in the general system, (b) non-Kuwaitis in the general system, and (c) Kuwaitis in the credit unit system.

Limitations

This study was limited as follows:

1. One of the chief limitations was the discrepancy in time between the administration of the test in the United States and in Kuwait. Whereas the American data were collected in 1975, the Kuwaiti data were collected in 1985.

2. The lack of the degree of psychological motivation that was exhibited by the students in Kuwait and America during the testing sessions.

Assumptions

It was assumed that the following two factors did not affect the study findings: (a) the discrepancy in testing dates (1975 in America and 1985 in Kuwait) and (b) the climate (temperature, humidity, and wind) in each country during the testing periods.

Definitions of Important Terms

For the purpose of the study, this section provides appropriate working definitions of the terms used.

AAHPER Youth Fitness Test: A group of several tests that were developed by the American Association for Health, Physical Education, and Recreation in 1957 and revised in 1965 and 1975, for the purpose of evaluating specific aspects of physical status which, taken together, give an overall picture of the young persons' general fitness. Its items comprise pull-ups for boys, flexed-arm hang for girls, sit-ups, shuttle run, standing long jump, 50-yard dash, and 600-yard run for both genders.

Agility: The ability to change the body or body parts rapidly (Bumgartner & Jackson, 1982, p. 215).

Credit unit system (CUS): A type of secondary education that offers both required and elective courses in each grade, 9-12. Physical education is among the required courses, with a half unit (three hours a week) designated for each of the eight semesters (two semesters a year). Any student who fails a required course must take it again.

Endurance: The result of a physiological capacity of the individual to sustain movement over a period of time. Endurance is of two kinds. One is associated with strength, whereas the other is associated with the circulatory-respiratory systems. The two types are related, however (Barrow & McGee, 1979, p. 113).

Flexibility: The range of movement in a joint or a sequence of joints (Safrit, 1973, p. 204).

General system (GS): A type of secondary education that offers only required courses in each grade. Most of these courses demand at

least minimum passing points for progression, whereas a few do not, such as physical education, which is presented in two 45-minute periods a week for grades 9 and 10 and one period a week for grades 11 and 12.

Kuwaiti students: Those youths who attend public schools in the State of Kuwait and are citizens (subjects) of Kuwait.

Muscular power: The ability to release maximum muscular force in the shortest possible time, as in executing a standing long jump (Bumgartner & Jackson, 1982, p. 243).

Non-Kuwaiti students: Those youths who attend public schools in the State of Kuwait but are citizens (subjects) of countries other than Kuwait or those who have not been formally declared by the Kuwaiti government as Kuwaiti citizens.

Norm: A scale that permits conversion from a raw score to a score capable of comparisons and interpretation (Barrow & McGee, 1979, p. 45).

Percentile: The point at which a certain percentage of subjects scored above and below, regardless of the distribution of scores (Mathews, 1978, p. 60).

Physical education: "Physical education, an integral part of the total education process, is a field of endeavor that has as its aim the development of physically, mentally, emotionally, and socially fit citizens through the medium of physical activities that have been selected with a view to realizing these outcomes" (Bucher, 1975, p. 22).

Physical fitness: Physical fitness has been defined in many ways, but the more general definition, which seems to be most commonly used, considers it as "the ability to carry out daily tasks with vigor and alertness, without undue fatigue, and with ample energy to enjoy leisure time pursuits and to meet unforeseen emergencies" (Clark, 1971, p. 1). For purposes of this study, the term "fitness" was used interchangeably with physical fitness.

Secondary education: A period of schooling planned especially for young boys and girls approximately 14 to 17 years of age, and involving grades 9 through 12.

Speed: The capacity of the individual to perform successive movements of the same pattern at a fast rate (Barrow & McGee, 1979, p. 112).

Strength: The capacity of the individual to exert muscular force (Barrow & McGee, 1979, p. 112).

Students in America: Those youths who, regardless of their nationalities, attend public schools in the United States.

Students in Kuwait: Those youths who, regardless of their nationalities, attend public schools in the State of Kuwait.

Youth: Individual or time of life between childhood and maturity (Thesaurus of ERIC Descriptors, 1987, p. 267).

Structure of the Text

This dissertation is arranged in six chapters, including this introductory one. Chapter II deals with the Kuwaiti educational system and its physical education program. Chapter III represents the

review of the literature for this study. The procedures employed to obtain the research data are described in Chapter IV. Chapter V consists of the findings of this survey. Chapter VI contains the summary, conclusions, and recommendations based on the results of this investigation.

CHAPTER II

THE EDUCATIONAL SYSTEM IN KUWAIT

Introduction

With her generous and peaceful people, her attractive and strategic location, and her economic wealth and manpower shortage, Kuwait has drawn many different people from the Arab region and around the world (see Table 2.1). In 1985, the non-Kuwaiti members in Kuwait reached 60% of the total population of 1.7 million. More details concerning Kuwait's inhabitants are shown in Table 2.2.

Table 2.1.--Population of Kuwait, by region of origin (1980).

Region of Origin	Number	Percent
Kuwait	565,613	41.7
Other Arab countries	574,495	42.3
Asia	204,104	15.0
Europe	9,984	0.8
America	1,997	0.1
Africa	1,601	0.1
Other	158	0.01
Total	1,357,952	100.0

Source: Central Statistical Office, Ministry of Planning, Kuwait, Annual Statistical Abstract, 19th ed. (Kuwait: Al-Watan Press, 1982).

Table 2.2.--Population of Kuwait, 1985.

Nationality	Male		Female		Total	
	Number	Percent	Number	Percent	Number	Percent
Kuwaiti	337,243	20	342,358	20	679,601	40
Non-Kuwaiti	627,333	37	388,194	23	1,015,527	60
Total	964,576	57	730,552	43	1,695,128	100

As part of the country's services to her dwellers, public secondary education in Kuwait presents a unique example of embracing a large number of expatriates. In the beginning of the 1984-85 school year, about 55% of the students in public secondary schools were non-Kuwaitis. In addition, the Kuwaiti government also subsidizes many private institutions.

Education in Kuwait, under the auspices of the Ministry of Education, is mandatory at the primary and intermediate levels. Public education is free for all Kuwaiti citizens and even for a large number of non-Kuwaitis. The state also provides school supplies, textbooks, and transportation, among other things, free of charge to all students.

Kuwait has made remarkable progress in education. This progress is pointed up by the rapid growth in the number of students, teachers, and schools in the last 40 years. The total number of students in public schools increased from 3,655 in 1945-46 to 354,803 in 1984-85. During the same period, the number of teachers increased

from 142 to 25,336, and the number of schools grew from 17 to 555. The cost per student per year rose from 293 Kuwaiti dinars (K.D.) (\$967) in 1973 to K.D. 730 (\$2,409) in 1985.¹ The expenditure of the Ministry of Education has been one of the highest among all ministries during the 1970s, including the Ministry of Defense and National Guards or even the combination of both the Ministry of Public Health and the Ministry of Social Affairs and Labor.

Kuwait has recognized that the "wealth" of the country does not lie just in her mineral, industrial, and commercial assets, but in educating her young people. As His Highness Sheik Jaber Al-Ahmed Al-Sabah, Head of the State of Kuwait, declared, "The best kind of investment is the preparation of our youth for the future." This serious interest is manifested in the following two clauses of the Constitution of the State of Kuwait (1962).

Article 13:

Education is a fundamental requisite for the progress of society, assured and promoted by the State. (p. 7)

Article 40:

Education is a right for Kuwaitis, guaranteed by the State in accordance with law and within the limits of public policy and morals. Education in its preliminary stages shall be compulsory and free in accordance with law.

Law shall lay down the necessary plan to eliminate illiteracy. The State shall devote particular care to the physical, moral and mental development of youth. (p. 11)

¹One Kuwaiti dinar equaled \$3.30 in January 1985.

Furthermore, the Ministry of Education's General Objectives of Education in the State of Kuwait (1976) summarized the comprehensive aims of education in Kuwait as follows:

Providing suitable opportunities to assist the individuals in having an integrated overall development spiritually, morally, intellectually, socially, and physically to the utmost of their capacities and potentials in regard to the nature of the Kuwaiti society, its philosophy and aspirations, and in consideration of the Islamic principles, Arab heritage, and modern culture, in such a way as to realize a balance between the individuals' self-realization and preparing them to participate constructively in the progress of the Kuwaiti community in particular, and the Arabic and international community in general. (p. 21)

In Kuwait, pre-university education consists of four years of primary school, four years of intermediate school, and four years of secondary school. All education (grades 1-12) in Kuwait is segregated, with parallel institutions for boys and girls. There were 249 private schools in Kuwait in 1984-85, with a total K-12 enrollment of 91,748.

The Department of Private Education in the Ministry of Education is growing rapidly due to the large number of expatriate students attending schools in Kuwait. All private Arab schools, foreign schools, embassy schools, cultural institutes, and cultural bureaus are under the supervision of the Department of Private Education. The Ministry of Education supports private education by paying one-half of tuition expenses; it maintains strict supervision and control over all financial affairs at these institutions (Schmida and Keenum, 1983, p. 45).

Primary Education

The primary cycle in Kuwait lasts four years and is intended for children ages six through nine. In 1984-85, 127,007 children were enrolled in a total of 181 public primary schools.

Intermediate Education

The intermediate or preparatory stage is a four-year cycle for children ages 10 through 13. Practical studies have been introduced at this level to complement more standard theoretical studies and include such subjects as decoration, electronics, electricity, engineering, industrial drawing, and commercial subjects. The Oxford Method of Teaching English has been introduced in almost all intermediate schools.

Total public intermediate enrollment in 1984-85 was 121,791 students at 163 institutions. Preparatory-level religious education is available at the Religious Institute, which accepts students from either the general or religious primary programs. In 1984-85, 890 students were enrolled at the four Religious Institutes (three for boys and one for girls).

Parallel to this formal preparatory system is a relatively new program in Kuwait, which accepts intermediate-level students who are not performing satisfactorily in the general intermediate program. This parallel education program is intended to enable students to enter the labor force with certain vocational and technical skills after four years of study. In 1984-85, 227 male students were enrolled in the parallel program.

Secondary Education

Secondary education is a four-year cycle for children ages 14 through 17 and consists of two systems, or patterns: general and credit unit.

General system. All students in the general system follow a common curriculum for the first two years, including Islamic education, Arabic language, English language, mathematics, science, practical and technical studies, physical education, art, and home economics. At the beginning of the third secondary year, students are streamed into the literary and scientific tracks; literary-track students emphasize English, Arabic, French, and social studies in addition to the above subjects, while scientific-track students concentrate on English, math, and science. In 1977-78, the Council of Ministers implemented a decision to make military education during the third secondary year a requirement for graduation from the secondary stage. For boys, this includes 107 hours of Military Training, Technical Services, and Guidance and Information. Girls are required to take 100 hours of First Aid and Nursing.

In addition to public secondary schools, there were 24 government-approved Arabic private schools, as well as 19 non-Arabic private secondary schools during 1984-85 for the children of Anglo-American, Indian, Pakistani, and other professionals working in Kuwait.

The grading system in Kuwaiti general secondary schools is based on a numerical scale with a maximum and minimum number of

possible points for each subject. Examinations are given during the school year in all subjects. The closer the mark obtained to the maximum score, the higher the student's grade. A separate yearly record of each of the four secondary years is available for each student. The fourth year in this system is the most important one because a student has to pass a standardized final examination in each subject except physical education for both genders and home economics for girls. Marks from earlier years are not cumulative. Those who have failed up to three subjects must retake the exam three months later. Upon successful completion of the exam, the student is awarded the final secondary certificate.

Credit unit system. In the late 1970s, a new credit unit (credit hour/unit) system was introduced in technical institutes and higher education, as well as at the secondary level. The academic year in the secondary credit unit system, according to the Department of Tests and Student Affairs, Ministry of Education, Kuwait (1980-81), is divided into two 15-week sessions and a seven-week summer session. Classes which meet five hours a week (10 hours weekly in the summer) receive one unit of credit, and those meeting three hours a week (6 hours weekly in the summer) receive one-half unit of credit. Successful completion of at least 40 units is required for graduation from secondary school, with the various units distributed, according to the student's program, between common curriculum, track requirements, supplementary requirements, and electives.

Evaluation of student performance is done on a continuous basis throughout each term, in addition to midterm and final exams. The grading system is as follows.

Grading System

Score (%)	Grade	Points	Remark
90-100	A	4	Excellent
80- 89	B	3	Very Good
70- 79	C	2	Good
60- 69	D	1	Pass
0- 59	F	0	Fail

Anyone who fails a required course must take the entire course as well as the exam over again. If an elective is failed, a student may retake the same class or a different one of his choosing.

Grades are averaged by multiplying the number of units for each class times the points earned, adding these products, and dividing the sum by the total number of units. At the end of four years, a secondary certificate is awarded if the student has maintained an average of at least 1.5. The student's final grade point average and corresponding final grade and score are written on the certificate. Final scores and their equivalent grades and grade point averages are indicated on the following page.

Final Grade Point Averages

Score (%)	Grade	Grade Average
90-100	A	3.25-4.00
80- 89	B	2.50-3.24
70- 79	C	1.75-2.49
66.67- 69	D	1.50-1.74

The school year for each student is determined by the numbers of credit units that were successfully passed, as shown below.

<u>Credit Units</u>	<u>School Year (Grade)</u>	
Less than 10	1	(9)
10-19	2	(10)
20-29	3	(11)
30 or more	4	(12)

In 1984-85, a total of 81,620 students were enrolled in 100 public secondary schools, with 5,091 students (2,165 boys and 2,926 girls) in eight credit unit schools (three for males and five for females) and 76,529 students (41,213 boys and 35,316 girls) in 92 general schools (50 for males and 42 for females).

Physical Education in Kuwait

Physical education is an important part of the educational process in Kuwait. It is not a "frill" or an "ornament" tacked on to the school program as a means of keeping children busy. It is, instead, a vital part of education. The term "physical education" refers to the process of education that concerns activities that develop and maintain the human body. Through a well-directed physical education program, children develop skills for the worthy use of

leisure time, engage in activities conducive to healthful living, develop socially, and contribute to their physical and mental health. In brief, physical education plays an important part in achieving the educational objectives.

Whether living in America, Kuwait, or another country, children and adults are involved with movement--getting their bodies into action. Movement is the medium through which physical education achieves its objectives. Movement offers people an avenue for fun, recreation, physical fitness, sociability, emotional release, communication, exploration, and healthful growth. Movement is a medium for educating people with regard to their physical, mental, emotional, and social development.

Kuwait's serious commitment to take good care of her youngsters is obvious in two provisions of its constitution. Article 10 states: "The state cares for the young and protects them from exploitation and from moral, physical, and spiritual neglect." Article 40 emphasizes that the State shall devote particular care to the physical, moral, and mental development of youths.

Objectives of Physical Education

The physical education program in Kuwait is developed to guarantee maximum development of the child at each age level. This program, according to the 1975-76 Bulletin of the Kuwait Ministry of Education's Physical Education Department, has the following objectives:

1. Development of maximum physical fitness (strength, endurance, flexibility, speed, power, and agility).
2. Improvement of motor movement or sport skills.
3. Encouragement of creativity and awareness of body positions in relation to space with understanding of different body movements.
4. Development of the social and emotional aspects. (p. 4)

Contents of Physical Education

The recent physical education program in Kuwait contains some different physical activities at each school level. Each grade and gender has its own activities as follows:

1. Elementary level, grades 1-4

A. Boys' activities

- a. Movement education
- b. Team sports (mini-basketball and mini-soccer)
- c. Track and field events (running, throwing, long and high jump)
- d. Gymnastics
- e. Table tennis

B. Girls' activities

- a. Movement education
- b. Team sports (mini-basketball and mini-volleyball)
- c. Track and field events (running and long jump)
- d. Gymnastics
- e. Physical or aerobic exercises with music

2. Intermediate level, grades 5-8

A. Boys' activities

- a. Team sports (soccer, basketball, volleyball, and field handball)
- b. Track and field events (80- and 100-meter dash, relay races, shot put, and long and high jump)
- c. Gymnastics
- d. Racketball

B. Girls' activities

- a. Team sports (basketball, volleyball, and field handball)
- b. Track and field events (80- and 100-meter dash, relay races, shot put, and long and high jump)
- c. Gymnastics
- d. Physical or aerobic exercises with music

3. Secondary level, grades 9-12

A. Boys' activities

- a. Team sports (soccer, basketball, volleyball, and field handball)
- b. Track and field events (short- and long-distance running, relay races, hurdling, shot put, and long, high, and triple jump)
- c. Gymnastics

B. Girls' activities

- a. Team sports (basketball, volleyball, and field handball)
- b. Track and field events (short-distance running, relay races, hurdling, javelin and discus throw, shot put, and long and high jump)
- c. Gymnastics
- d. Physical or aerobic exercises with music

Although physical education is required in all grades, K-12, it does not demand minimum passing points in any one except in grades 9-12 of the secondary credit unit system. Furthermore, more time is devoted to physical education in each grade of those secondary credit unit schools compared to other schools, including the general secondary level.

Implementation of Physical Education

The Kuwaiti program of physical education in grades 1 through 12 is implemented basically through three means:

1. Class activities, which are considered the major part of the physical education program. Through the lessons, which are taught by certified physical education teachers, the main objectives can be fulfilled for all ability and age levels. At least one physical education period per week is offered in every grade, K-12 (see Table 2.3).

2. Intramurals, which are designed and supervised by physical education teachers to allow the pupils voluntarily to organize and participate in physical activities that satisfy their needs. These activities take place during the school day among pupils of the same grade level and other grades within the same school.

3. Interscholastics, which are organized by the physical education supervisors to let talented individuals at the same level compete after school in various individual and team sports. These meetings help youths improve their skills and fitness, enhance their understanding of and respect for rules and regulations, and get wider experience from their interaction with students from other schools.

Table 2.3.--Number of physical education periods per week in the Kuwaiti public schools.

School Level	Grade	Physical Education Periods/Week	Physical Education Minutes/Period
Kindergarten			40
	K-1	1	
	K-2	1	
Elementary			40
	1	3	
	2	3	
	3	3	
	4	2	
Intermediate			45
	5	2	
	6	2	
	7	1	
	8	1	
Secondary (General system)			45
	9	2	
	10	2	
	11	1	
	12	1	
(Credit unit system)			50
	9	3	
	10	3	
	11	3	
	12	3	

CHAPTER III

REVIEW OF RELATED LITERATURE

Introduction

Physical fitness is important to optimal health. Its contribution to positive physical and mental health is obvious. Physical fitness is considered the basis for dynamic and creative activity. Undoubtedly, every individual has a need for fitness for living.

According to Getchell (1983), people need physical fitness programs for two fundamental reasons. "First, vigorous exercise results in muscular and cardiorespiratory health. Second, and more generally, physical fitness enhances the capacity to enjoy life fully" (p. 12). He added that

The fit person adjusts to increased physical demands and returns to a normal state more quickly than the unfit person. A physically fit heart beats at a lower rate and pumps more blood per beat at rest. Keeping fit can help people to do a day's work with ease, meet most emergencies, and extend their recreational activities. Being physically fit provides the robust health and the available excess energy needed to fully appreciate the joys of life. Simply put, it means doing more with quality. (pp. 13-14)

Unfortunately, human beings have grown increasingly sedentary with the advancement of technology. Adoption of this new life style has resulted in a new category of disease, termed hypokinetic (diseases resulting from the lack of exercise), which is directly or

indirectly the result of physical inactivity and includes coronary heart disease, hypertension, obesity, anxiety and depression, and lower-back problems (Pollock et al., 1978, p. 26). Medical, military, and educational research data have substantiated the evidence of a decline in fitness due to sedentary living (Dean, 1964).

The five sections of this chapter deal with contributions of ancient nations to physical education, history of tests and measurements in America and Kuwait, components of physical and motor fitness, from the Kraus-Weber to the AAHPER Youth Fitness Test, and nationality comparisons.

Contributions of Ancient Nations to Physical Education

From the earliest times to the present, either directly or indirectly, physical activity has played a part in the lives of all people. Sometimes this activity has been motivated by the necessity for earning a livelihood, whereas in other instances it has resulted from a desire to live a fuller life. The objectives of physical education have changed over the course of history, so that at present they are directed at the better development of human beings, not only physically but also emotionally, socially, and intellectually.

Bucher (1979) wrote,

The civilizations of ancient Egypt, Assyria, Babylonia, Syria, Palestine, and Persia mark a turning point in the history of physical education. Whereas the objectives in China and India had stressed religious and intellectual matters, these countries were not restricted by a static society and religious ritual. On the contrary, they believed in living a full life. Therefore, all types of physical activity contributed to this objective. It is

in these countries that physical education also received an impetus from the military, who saw in it an opportunity to build stronger and more powerful armies. (p. 95)

Physical education experienced a "golden age" in ancient Greece. It was a vital part of the education of every boy in the country. Gymnastics and music were considered the two most important subjects. Music was for the spirit, and gymnastics was for the body. No country in history, Bucher (1979) stated, has held physical education in such high respect as did ancient Greece.

The national festivals were events that were most important in the lives of the Greeks and were also important in laying the foundation for the modern Olympic games, which are conducted every fourth year in various parts of the world. The latest Olympics were held in summer 1984 in Los Angeles, California, and the next, the Twenty-Fourth Olympiad, will be organized in Seoul, South Korea, in 1988. Such Olympic games were first introduced in 776 B.C. in Olympia, Greece, to honor the Greek god Zeus. The games continued every fourth year thereafter until abolished in 394 A.D. by Theodosius, an early Christian emperor of Rome. However, they were revived in 1896 by Baron Pierre de Coubertin and were held in Athens, Greece.

With respect to physical education in ancient Rome, many Romans believed that physical exercise was good only for health and military purposes. Their soldiers used to follow a rigid training schedule that consisted of such things as marching, running, jumping, swimming, and throwing the javelin and discus. The Roman Empire fell in 476 A.D., and historians list many causes for its breakdown. The

most outstanding cause, according to Bucher (1979), was the physical and moral decay of the Roman people. He noted that the lesson was borne out in Rome, as it has been in many civilizations that have fallen along the way, that for a nation to remain strong and endure, it must be physically as well as morally fit.

History of Tests and Measurements in America and Kuwait

A brief survey of the history of tests and measurements in the United States and Kuwait will aid in appreciating the efforts of the professional predecessors and afford a better understanding of this feature of the physical education profession.

The measurement of man dates back to ancient civilization and is the oldest form of measurement. In Egypt, for example, the length of the middle finger was considered a common measure of all body proportions--for instance, five finger lengths to the knee, ten to the pubic arch, and eight to the length of the arm reach (Barrow & McGee, 1979, p. 18).

The testing and measuring movements in physical education in America is a little over 100 years old, whereas it is less than ten years old in Kuwait. The testing movement in America began in 1860 with the work of Edward Hitchcock at Amherst in the science of anthropometrics. In the beginning, most of Hitchcock's measurements centered on such factors as height, weight, age, reach, girth, vital

capacity, and some strength items. These measurements were repeated on the students at Amherst so that progress and gain could be shown.

To the work of Hitchcock was added the efforts of Dudley Allen Sargent. Starting in 1880, Sargent devised more than 40 different measurements of the anthropometric type and used them with his students at Harvard. From these measurement results, he attempted to present a type of norm of the typical or the ideal man and woman. In addition, through the use of these measurements, he attempted to prescribe a program of exercise for each student. His efforts to promote wider interest included the publication of a manual on measurement and testing. He also wrote articles for publication in journals. His system was adopted for use in both the public schools and colleges. These measurements emphasized symmetry, and size and norms were established for each group with charts to show how each individual compared with the norm (Barrow & McGee, 1979, p. 19).

Measurements have shifted from the emphasis on anthropometric to fitness tests. Barrow and McGee (1979, p. 187) divided the history of measurements into the following nine periods, running from 1860 to the present:

1. Anthropometric measurements	1860-1890
2. Strength tests	1880-1910
3. Cardiovascular tests	1900-1925
4. Athletic ability tests	1900-1930
5. Social measurements and intangibles	1920-
6. Sport skill tests	1920-
7. Process evaluation	1930-
8. Knowledge tests	1940-
9. Fitness tests	1940-

In 1941, at the outbreak of World War II, a large number of physical fitness tests, which included pull-ups, push-ups, running, and sit-ups, were developed by every branch of the American armed forces (Mathews, 1979, p. 22). The Army, Air Force, Navy, Navy Aviation, Wacs, and Waves devised fitness tests with appropriate norms. A number of other such tests were developed for school and college groups (Barrow & McGee, 1979, p. 23). The AAHPER test, according to Mathews (1978), is one of the most recent developments in the area of measurement (p. 22).

The first national physical education measurement study in the Kuwaiti educational system was initiated in 1979 by the Department of Physical Education and Scouting, Ministry of Education. It was intended to determine the effect of the physical education curriculum on the physical fitness of male and female students, grades 10 and 11, in the Kuwaiti public secondary schools. The original AAHPER Youth Fitness Test (1958) was used.

Since then, only one other national physical fitness survey has been conducted in Kuwait. The survey was undertaken in 1982 by the Ministry of Social Affairs and Labor, which supervises and financially supports all Kuwaiti public sports organizations (youth centers and amateur clubs) as part of the Ministry's responsibility. The study dealt only with Kuwaiti students, ages 9, 11, 13, 15, and 17. The findings indicated that Kuwaiti boys possessed an acceptable level of physical fitness, but that level could not be determined exactly unless compared with the results of American surveys. The

strength, agility, and endurance of the Kuwaiti boys were considered low (p. 103).

Components of Physical and Motor Fitness

Physical fitness is only one component of total fitness of the individual, which includes mental fitness, spiritual fitness, emotional fitness, and social fitness. Total fitness is really a capacity for living.

The terms "physical fitness" and "motor fitness," according to Baumgartner and Jackson (1983), are often used interchangeably, but motor fitness is actually the broader concept, including both physical fitness and motor-ability factors (p. 242).

On the contrary, Barrow and McGee (1979) considered motor fitness a more limited phase of physical fitness. They stated that since motor fitness is limited in its scope, it becomes a less elusive quality and can be defined more easily than total fitness or physical fitness. They defined motor fitness as a readiness or preparedness for performance, with special regard for large-muscle activity without undue fatigue. Motor fitness concerns the capacity to move the body efficiently with force over a reasonable length of time (p. 119).

Safrit (1973) wrote,

In several physical education texts, physical fitness is differentiated from motor fitness in that motor fitness includes abilities that are not components of physical fitness (Johnson & Nelson, 1969; Mathews, 1969). According to these authors, physical fitness reflects cardiorespiratory fitness. (pp. 203-204)

In Chapter 9 of her Evaluation of Physical Education, Safrit (1973) intended not to differentiate between motor fitness and physical fitness. The same attempt was made by the present writer.

In a survey of physical education literature, little agreement was found on definitions of such terms as "motor fitness," "general motor ability," "motor educability," and "physical fitness." All of these terms represent constructs, and the meaning of each depends on the factors that are included within the construct. A construct is a theoretical idea that explains and organizes some aspect of existing knowledge. The term "physical fitness" is a construct in which the factors may include such items as cardiorespiratory efficiency, dynamic strength, balance, flexibility, and so forth. One basic problem is the inability to determine what factors of human performance are critical in each construct (Verducci, 1980, p. 279).

To aid the individual in developing a personal definition of physical fitness and to aid in developing a better understanding of the nature of physical fitness, Corbin et al. (1981) divided the components of physical fitness into two groups:

1. Health-Related Fitness Terms, which include:

- a. Body Composition--The relative make-up of the body in muscle, fat, bone, and other vital parts.
- b. Cardiovascular Fitness--The ability of the circulatory system to supply fuel (most importantly, oxygen) during sustained physical activity.
- c. Flexibility.
- d. Muscular Endurance.
- e. Strength.

2. Skill-Related Fitness Terms, which include:

- a. Agility.
- b. Balance--The maintenance of equilibrium while stationary or moving.
- c. Coordination--The ability of use the senses, such as sight or hearing, together with the body parts in performing motor tasks smoothly and accurately.
- d. Power
- e. Reaction Time--The time elapsed between stimulation and the beginning of the reaction to it.
- f. Speed. (p. 7)

It is possible, according to Corbin et al. (1981) to possess any one of the previous physical fitness elements in varying degrees because physical fitness is a combination of several aspects rather than a single characteristic (p. 8). Barrow and McGee (1979) stated that some of the physical fitness factors are more dominant than others.

Table 3.1 shows the components of both physical and motor fitness, as indicated by different writers.

Most scholarly discussions of physical fitness, according to Safrit (1973), have broken down each component of fitness into subcomponents, which are discussed in the following paragraphs.

Strength: Strength has been divided into at least three subcomponents: (a) static strength, which can be measured by the hand dynamometer; (b) dynamic strength, such as the military press in weight lifting; and (c) explosive strength, or power, as in the long or high jump.

Table 3.1.--Components of physical and motor fitness as reported by different authors.

Component	Physical Fitness									Motor Fitness				
	Heyward (1984)	Sharkey (1984)	Gatchell (1983)	Corbin et al. (1981)	Mathews (1978)	Safrit (1973)	Consolazio et al. (1963)	Larson & Yocom (1951)	Total	Baumgartner & Jackson (1983)	Barrow & McGee (1979)	Mathews (1978)	Clark (1971)	Total
Strength	x	x	x	x	x	x	x	x	8		x	x	x	3
Endurance	x	x	x	x	x	x	x	x	8	x	x	x	x	4
Flexibility	x	x	x	x	x	x	x	x	8	x	x	x	x	4
Power		x		x	x	x	x	x	6	x	x	x	x	4
Speed		x		x		x		x	4	x	x	x	x	4
Agility		x		x		x	x	x	5	x	x	x	x	4
Circulatory- respiratory	x		x	x	x	x		x	6				x	1
Neuromuscular coordination		x		x	x			x	4					0
Balance		x		x		x	x	x	5		x	x		2
Stamina								x	1		x			1
Body compo- sition			x	x					2					0
Reaction time	x			x					2					0
Neuromuscular relaxation	x								1					0
Accuracy								x	1					0
Throwing									0	x				1
Total	6	8	5	11	6	8	6	11		6	8	7	7	

Muscular Endurance: Two types of muscular endurance have been identified: (a) static endurance, as in holding a heavy object; and (b) dynamic endurance. Van Huss and Huesner (1970) subdivided dynamic muscular endurance into the following three subclassifications: (a) short (short duration, high intensity), as in the 25-yard sprint; (b) medium (medium duration, moderate intensity), as in the 440- or 880-yard dash; and (c) long (long duration, low intensity), as in distance running.

Flexibility: Fleishman (1964) referred to two types of flexibility: (a) extent flexibility refers to the ability to extend or stretch some part of the body as far as possible in various directions, and (b) dynamic flexibility involves the ability to make repeated flexing or stretching movements. This type of flexibility consists of three subdivisions: (a) speed of limb movement, (b) speed of change of directions, and (c) running speed.

Sigerseth (1970) recommended determining flexibility by measuring the movement of body segments in degrees. The flexometer is an instrument that can be used in a school situation.

Balance: Fleishman (1964) isolated three types of balance in his schema: (a) static balance, the ability to maintain body equilibrium in some fixed position; (b) dynamic balance, the ability of an individual to maintain balance while performing some task; and (c) balancing objects, balancing an object for a given period of time.

Safrit (1973) also stated that due to the large number of subcomponents of physical fitness, the measurement of total fitness is extremely difficult. Evaluation of fitness, she added, should be made with these subcomponents in mind (p. 208).

The primary difficulty in constructing a test of physical fitness is that many components of fitness cannot be adequately measured by any single test. For example, Harris's (1969) study indicated that flexibility is not a single general characteristic of the entire human body, but rather is specific to single body segments (Safrit, 1973, p. 231).

Numerous tests have been designed to measure fitness. Most of them are similar in design and measure similar factors. The AAHPER Fitness Test, according to Safrit (1973), has been the most widely used (p. 120).

From the Kraus-Weber to the AAHPER Youth Fitness Test

The Kraus-Weber Test

In the last 45 years or so, considerable attention has been given to physical fitness testing. As mentioned earlier, a number of tests were developed for the U.S. armed forces and college and school groups, accompanied with norms. Comparisons between children of different nationalities in overall physical fitness have been of growing concern, particularly since 1953 when Kraus and Hirschland (1954) compared the minimum muscular fitness of 4,264 American public

school children between the ages of 6 and 16 years with their counterparts of the combined 678 Austrians, 1,036 Italians, and 1,156 Swiss. Six items composed of special movements were used to appraise the strength of trunk muscles and flexibility of trunk and hamstring muscles. The results were that 57.9% of the Americans failed the test, whereas only 8.7% of the Europeans failed. The researchers concluded that insufficient exercise may have caused this decrease in muscular fitness levels below the minimum necessary for daily living.

Two years later, Noguchi (1956), who could not understand why American children should be inferior to European children, decided to find out what results Japanese children would show on the Kraus-Weber tests. He found that the percentage of failures on the flexibility test in Japan was only 3.3%. This meant that the Japanese children were more flexible than American and even European children. The author believed that the six tests were greatly affected positively or negatively by the index of leg length/height. "Therefore," he stated, "it is very difficult to compare the test results of the different races with their different body constitutions" (p. 20).

In 1958, Kelliher (1960) conducted Kraus-Weber tests in East Pakistan with a total of 2,325 Pakistani male and female school children ranging in age from 5.5 to 16 years. The results were compared with reports of the original tests in the United States and Europe. The findings revealed that Pakistani children were less able than European children to pass the six test items but were somewhat better than American children.

The validity and adequacy of the Kraus-Weber test was questioned. This led the American Association of Health, Physical Education, and Recreation to develop a test of their own, known as the AAHPER Fitness Test (Dean, 1965).

The AAHPER Youth Fitness Test

As a result of the Kraus-Weber studies of the physical fitness status of American and European children, a national conference was called in 1956 by United States President Dwight Eisenhower to consider the fitness of American youths. Following this meeting, the AAHPER held a conference to determine specific steps for physical fitness improvement of American youths. In 1957, a special committee of the AAHPER Research Council developed the original test battery of seven tests, including pull-ups, sit-ups, 40-yard shuttle run, 50-yard dash, standing long jump, 600-yard run-walk, and a softball throw for distance.¹

The following criteria were considered by the committee in selecting the seven (now six) items of the AAHPER Youth Fitness Test: tests that were reasonably familiar and required little or no equipment; could be administered to boys and girls (except for pull-ups); could be given to the entire age range of grades 5-12, measured different components of fitness, and would allow self-testing by the students.

¹The softball throw was eliminated in the 1975 revision.

Baumgartner and Jackson (1982) stated, "The original seven-item battery, selected logically, was assumed to be a valid measure of strength, endurance, agility, and proficiency in running, jumping, and throwing. The test items proved on many occasions to be reliable" (pp. 243-44).

The correlation among the six test items was low. If it were high, there would be no point in giving six tests--one or two would suffice. This test was the first ever developed by the physical education profession for which national norms were determined. The result of the first national survey conducted in 1957-58 with 8,500 boys and girls in grades 5-12 showed that the young people in the United States were not as physically fit or vigorous as they should be.

Two sets of percentile-rank norms were developed and published in 1958 in the AAHPER Youth Fitness Test Manual. One set of norms was based on age/gender and the second set on the Neilson-Cozen Classification Index, a means of grouping individuals according to age, gender, height, and weight. This classification was omitted from the revised 1976 manual as research indicated that age is a more valid criterion (AAHPER, 1976, p. 10). Writing on the establishment of norms, Barrow and McGee (1979) stated, "Age and sex [gender] are usually the two essential classifications" (p. 45).

Comparisons between scores of youngsters in other countries and those of the United States children showed that the latter were not as physically fit as children of some other lands in the qualities

measured. These test results became an incentive to improve physical education programs throughout the United States.

In 1965, a second fitness survey was conducted. The flexed arm hang was substituted for the modified pull-up for girls because of the greater reliability in test administration, and new norms were developed. The data of this survey showed, in almost all instances, better results than the 1958 scores, but the level of physical performance was not encouragingly high.

In 1975, a third survey was conducted. In this survey, the softball throw was eliminated on the grounds that it involved skill to a large extent while the prime purpose of the battery of tests is to determine fitness. Bent-knee sit-up for one minute, which is a more accurate measure of the abdominal muscle, replaced the unlimited straight-leg sit-up, and two optional runs were added--a one-mile or nine-minute run for children ages 10-12 years and a 1.5-mile or 12-minute run for those over 12 years of age. Thus, the latest test battery consists of the following six test items:

1. Pull-ups for boys; flexed arm hang for girls
2. Bent-knee sit-up for one minute
3. Shuttle run of 40 yards (10-yard distance)
4. Standing long jump
5. 50-yard dash
6. 600-yard run or the alternative run:
 - 1-mile or 9-minute run for ages 10-12 or
 - 1.5-mile or 12-minute run for children ages 13 or older

The 1975 norms for girls indicated a significant improvement in average scores in comparison with the 1965 data on the following tests: 13-year-olds--long jump and 600-yard run; 14-year-olds--flexed arm hang, long jump, and 600-yard run; 15-year-olds--600-yard run; 17-year-olds--600-yard run. The 600-yard run average time for 10-year-old girls was not as fast as the 1965 average. None of the other comparisons yielded a statistically significant difference (5% level).

The comparison of the boys' scores for 1975 did not yield a statistically significant improvement at any age level on any test. In one instance, the long jump for 14-year-olds, there was actually a decrease in performance.

No statistical comparisons between the 1958 data and the 1975 test results were made because in almost all instances the 1965 data were better than the 1958 scores.

Recently, the 1985 President's Council on Physical Fitness and Sport School Population Fitness Survey was compared with the results of the 1958, 1965, and 1975 AAHPER studies. Only four test items that remained identical in all four surveys were compared. These tests were the shuttle run, 50-yard dash, and long jump for both genders, plus pull-ups for boys and flexed arm hang for girls. The 1985 findings disclosed that no dramatic differences seemed to have occurred in any of these years--1965, 1975, or 1985--with the exception of significantly poorer scores in 1958. It was concluded that there is still a low level of performance on important components of physical fitness by millions of American youths.

The AAHPER Fitness Test is used as the basis for the Presidential Fitness Award Program. Children who score above the 85th percentile on all six items of the AAHPER Fitness Test, according to the most recent national norms, qualify for the award. Winners receive a certificate suitable for framing, a decal, and an emblem.

The program was established in 1966 to honor boys and girls who demonstrate exceptional physical achievement. It was designed to (a) motivate boys and girls to develop and maintain a high level of physical fitness, (b) encourage good testing programs in schools and communities, (c) stimulate improvement of health and physical education programs, and (d) provide additional information on the physical condition of American youths (Encyclopedia of Physical Education, Fitness, and Sports, 1980, p. 432).

It has been estimated that the AAHPER Fitness Test has been administered to millions of youngsters by physical education teachers and youth agencies (AAHPER, 1976, p. 10). The test has also been used in many foreign countries and the results sometimes compared with those of the American surveys.

Nationality Comparisons

Some comparisons have been made between the physical fitness scores of American children and youngsters of other countries by using the AAHPER Youth Fitness Test or some of its items as an evaluative instrument. Many comparative test results have confirmed that Americans indeed were lacking in physical fitness. In one of these studies, Campbell and Pohndorf (1961) compared the physical fitness of

American and British children. They administered the AAHPER test to over 10,000 British boys and girls. The researchers found British youngsters to be far superior to American boys on all fitness items except the softball throw for distance. British girls also outdid their American counterparts. Furthermore, the British girls showed superiority in performance over American boys at ages 10 through 13 years on their mean scores on five of the test items. It was also reported that American girls tended to retrogress with age.

Knuttgen (1961) tested 319 male and 134 female Danish school children using the original AAHPER test and compared their results with the American students. He found that more than 50% of Danish girls' and boys' scores exceeded the American averages in all events except the softball throw for boys. When the results were totaled within the percentile groups, irrespective of events, the total results showed that 86% of the 792 girls' scores and approximately 70% of the 21,162 scores of boys were in the upper 50%. Knuttgen assumed the difficulty of identifying the causes for the differences, but he reasoned the following three general differences between the life of the Dane and that of American children:

1. There is, by necessity, more activity in the daily life of the Danish child.
2. There is a distinct difference in school physical education programs.
3. There appears to be a much higher interest in sports participation in Denmark than in the United States.

Ikeda (1961) compared the physical fitness of children ages 9 to 12 years in Iowa and in Tokyo, Japan, by using the Iowa Test of Motor Fitness. The test battery included sit-ups, standing broad jump, shuttle run, forward bend, dash, and grasshopper for both genders, as well as the bent arm hang for girls and pull-ups for boys. This study showed that the Japanese groups surpassed the Iowa groups on all but one item, sit-ups. On the bent arm hang and sit-ups for girls, the forward bend for boys, and the grasshopper for both boys and girls, age seemed to have no effect on motor performance.

In his review of literature, Ikeda (1961) wrote that Noguchi and Yoshida discovered in their 1959 study that the Japanese children surpassed American children in the original AAHPER test except in sit-ups, but the two groups were equal in the 50-yard dash and the softball throw.

Bowers (1961) compared Burmese males and females (aged 15 to 17) with the American norms. The study showed that, on the average, American girls in each age group were superior to Burmese girls in the flexed-arm hang, sit-ups, softball throw, 50-yard dash, and shuttle-run events. In the standing broad (long) jump event, Burmese girls of each age group were superior. In only the 600-yard run were 16-year-old American girls significantly better. In the comparisons between boys, the test revealed a significant answer in favor of American boys in the sit-up and softball-throw events. In the pull-up event, the Burmese boys' data revealed significant results for each age group. This was also true in the standing broad jump for ages 15

and 17. The 16-year-old American boys showed a significant figure in the shuttle-run event. In the 50-yard dash, the American 17-year-old boys revealed a significant figure. The test for the 600-yard run/walk indicated that the American 16- and 17-year-old boys were ahead in this event.

Carter's (1975) study indicated that Bidwell Junior High School boys (grades 7, 8, and 9) in California were superior to their counterparts at the Warragul Technical School in Australia in the following areas: (a) muscular endurance in the arms' shoulder girdles (measured by pull-ups), (b) muscular power of the leg extensors (tested by the standing long jump), (c) speed (judged by the 50-yard dash), and (d) cardiovascular endurance (determined by the 600-yard run).

In 1977, Anyanwu compared the performance of American and Nigerian youths on a few of the activities used in the AHPER test battery. The following selected test items were set out: shuttle run and 45-meter (50-yard) dash for both genders, plus pull-ups for boys and flexed arm hang for girls. It was found that on the shuttle run the Nigerian boys, ages 11 and 12, and girls, ages 11-14, did better than their U.S. counterparts, whereas the U.S. boys, ages 14-17, and girls, ages 15-17, scored better than their Nigerian counterparts. In the 45-meter dash, the Nigerian boys and girls scored lower than their American counterparts at all age levels, 11-17. The Nigerian boys on the pull-up and girls on the flexed arm hang outscored their American counterparts at every age level, 11-17. The differences of

the youths in both countries on pull-ups and the flexed arm hang, according to Anyanwu, could be attributed to the different hand grip on the bar. Americans used an overhand grasp, as described in the AAHPER Test Manual, whereas the Nigerians used an underhand grasp (palm facing the subject's face).

Whelan (1977) compared the physical fitness of 16-year-old schoolboys in Dublin, Ireland, with that of their counterparts in the United States by using the AAHPER Youth Fitness Test Battery. The author concluded that:

1. The 16-year-old schoolboys in Dublin were significantly less physically fit than Americans of a similar age.
2. The physical fitness level of 16-year-old schoolboys in Dublin was approximately the same as that reported for 16-year-old boys in the first American fitness survey conducted in 1958.

Testing the performance of the Morobe boys in Papua, New Guinea, while using the original seven items of the AAHPER Youth Fitness Test, Brandt (1981) found that the mean scores of the Morobe boys in the shuttle run, pull-ups, softball throw, and sit-ups at all three grade levels, four, five, and six, and also in the 50-yard dash at grade six, were significantly lower than the mean scores of American boys of the same age. However, the mean scores of the Morobe boys in the standing long jump at the grade five and six levels and in the 600-yard run/walk at the grade four and five levels were significantly higher than the mean scores of American boys of the same ages. In the standing long jump at the grade four level, the 50-yard dash at the

grade four and five levels, and the 60-yard run/walk at the grade six level, there was not a significant difference between the mean scores of the Morobe boys and the mean scores of the American boys.

Another comparison was also made in this study by using the Morobe 50th percentile scores. The 50th percentile scores for the Morobe boys in the sit-up, shuttle run, and softball throw for all three grades, the 50-yard dash for the grade four and six boys, and the pull-ups for the grade four boys compared with a range of percentiles from the 15th to the 40th for the American boys on the same test items. However, the 50th percentile scores for the Morobe boys in the standing long jump and the 600-yard run/walk at all three grade levels, the pull-ups at grade five and six levels, and the 50-yard dash at grade five level compared with a range of percentiles from the 50th to the 60th for the American boys on the same test items.

Shrida (1981) compared the level of physical fitness among school children in Basrah, Iraq, and norms on the AAHPER Youth Fitness Test, 1975. He found that the Iraqi children in Basrah had performance means that in an absolute sense exceeded the American norms 15 times. The increment was statistically significant six times: boys' sit-ups (age 10), girls' sit-ups (age 10), girls' shuttle run (ages 10 and 11), boys' 50-yard dash (age 10), and girls' 600-yard run/walk (age 10).

In general, the American children performed better than the Iraqi children in most of the physical fitness exercises. In general,

boys outperformed girls and older children outperformed younger children. However, these relationships were not all monotonic, nor did they apply in every instance.

Lately, Barbanti (1982) established norms for Brazilian school children, ages 6 to 14 years, from scores achieved on selected physical fitness tests and compared them with the American norms released in 1980 for the AAHPERD Health Related Physical Fitness Test. He found that American boys and girls, in general, had higher scores on the sit-and-reach test, modified sit-up test, 50-meter dash test, and standing long jump test. Brazilian children had higher scores on the nine-minute run test than did American children.

In Hashem's (1982) study, comparisons of mean performance scores in physical fitness were made between the 15- and 16-year-olds of the same gender and nationality, and between American and Kuwaiti citizens from Santa Clara, California, and Kuwait City, Kuwait, schools, respectively. Twenty-five subjects were used in each cell, and only three fitness items were selected for each gender. These items were pull-up for boys and flexed arm hang for girls, and bent-knee sit-ups and standing long jump for both genders. No significant difference ($p > .05$) was found between the age groups of the same gender in each country. On the standing long jump, no significant difference was found between the Kuwaiti and American boys, but a significant difference was detected on the pull-ups and sit-ups. The girls of the two countries, Kuwait and U.S., were significantly different on all three test items. It was concluded that the physical

performance level of 15- and 16-year-old Kuwaiti males and females was below the American levels except on the long jump for males, where the difference was not significant.

Ten of the preceding studies included ages 14 through 17. To summarize the number of comparisons between the Americans on one hand and youths from other countries on the other, the four ages, 14 through 17, were combined as one group according to gender and test item.

From the total of 220 comparisons, 113 (51%) times were in favor of the other countries combined, whereas 90 (41%) times were in favor of the American youths, and 17 (8%) times were equal. Other countries' youths exceeded in pull-ups for boys, flexed arm hang and 600-yard run for girls, and long jump and sit-ups for both genders. Americans of both genders outperformed on the 50-yard dash, and American boys did better on the shuttle run. The two youth groups, American and other countries, were even on the shuttle run for girls and the 600-yard run for boys. In other words, youths of other countries, ages 14 through 17 combined, generally possessed stronger arm muscles, abdominal muscles, and leg power. American children excelled in speed.

The strength and weakness of each group can be inferred better when the results of the comparisons are summarized, as in Table 3.2.

Table 3.2.--Summary of number of comparisons in fitness between American youths and those from a combination of other countries (combined ages 14-17).

Test Item	Gender	Total	Sig. Difference		
			For Other Countries	For American	No Sig. Diff.
Pull-ups	Boys	22	15	7	0
Flexed arm hang	Girls	21	12	7	2
Sit-ups	Boys	15	8	6	1
	Girls	16	8	7	1
Shuttle run	Boys	19	8	9	2
	Girls	19	9	9	1
Standing long jump	Boys	17	10	5	2
	Girls	18	11	6	1
50-yard dash	Boys	21	8	11	2
	Girls	20	8	11	1
600-yard run	Boys	17	8	8	1
	Girls	15	8	4	3
Total	Boys	111 (100%)	57 (51%)	46 (41%)	8 (7%)
	Girls	109 (100%)	56 (51%)	44 (40%)	9 (8%)
Grand total	Both	220 (100%)	113 (51%)	90 (41%)	17 (8%)

CHAPTER IV

PROCEDURES

The basic objectives of this study were to (a) establish national physical fitness norms for public secondary school students ages 14 through 17 in Kuwait, (b) compare these data with the results of a similar American survey reported by the AAHPER in 1975, and (c) compare the physical fitness of three groups of male and female students ages 14 through 17 attending Kuwaiti public secondary schools. The research methods and procedures employed in the study are explained in this chapter. They are presented in seven sections: travel, population description, procedure, pilot study, test administration, review of the collected data, and statistical analysis.

Travel

The researcher made one trip to Kuwait to organize and direct the test procedures for this study.

Population Description

The sample size for this study was 6,502 or 8% of the total public secondary school students in Kuwait. The subjects included 3,374 males (1,959 Kuwaitis and 1,415 non-Kuwaitis) and 3,128 females (2,085 Kuwaitis and 1,043 non-Kuwaitis) in both general and credit unit systems (see Table 4.1). The general rule, according to Borg and

Table 4.1.--Student population and sample of the two Kuwaiti public secondary school systems (1984-85).

		General System	Credit Unit System	Total
Male	Population	41,213 (95%) (42%K/58%NK)	2,165 (5%) (99%K/1%NK)	43,378 (100%) (44%K/56%NK)
	Sample	2,593 (77%) (45%K/55%NK)	781 (23%) (100%K/0%NK)	3,374 (100%) (58%K/42%NK)
	Sample %	6	36	8

Female	Population	35,316 (92%) (42%K/58%NK)	2,926 (8%) (98%/2%NK)	38,242 (100%) (47%K/53%NK)
	Sample	1,974 (63%) (48%K/52%NK)	1,154 (37%) (99%K/1%NK)	3,128 (100%) (67%K/33%NK)
	Sample %	6	39	8

Total	Population	76,529 (94%) (42%K/58%NK)	5,091 (6%) (98%K/2%NK)	81,620 (100%) (45%K/55%NK)
	Sample	4,567 (70%) (46%K/54%NK)	1,935 (30%) (100%K/0%NK)	6,502 (100%) (62%K/38%NK)
	Sample %	6	38	8

Key: K = Kuwaitis, NK = Non-Kuwaitis.

Gall (1979), is to use the largest sample possible (p. 194). This principle was taken into consideration in this study. The larger the sample, the more likely are its mean and standard deviation to be representative of the population mean and standard deviation.

As a typical sequence, and also for time and financial savings, two-stage cluster sampling was used to select the subjects in Kuwait. The clusters or sampling units were the schools and then the classrooms (homerooms), whereas the elements were the students. Since the numbers, ages, and nationalities of students per classroom varied, the actual sample size and subgroups depended on the classrooms that happened to be selected.

According to Kish (1965), cluster samples are generally selected with stratification because stratification has more advantages for cluster than for element sampling (p. 164). With this in mind, all of the 92 general public secondary schools in Kuwait were classified according to location (governorate)/gender, whereas the eight credit unit schools were grouped by gender only because of their limited numbers and locations. (One male and three female credit unit schools were located in the capital, whereas the two remaining such schools for each gender were located in the Hawali governorate.)

Next, depending on the number of students and classrooms, at least one school was drawn randomly with replacement from each category, then classrooms were selected, and then all the students within those selected classrooms were tested except those with medical or other reasonable excuses.

Four-stage cluster probability sampling was used in America for the AAHPER Youth Fitness survey of 1975 (Journal of Physical Education, Recreation, and Dance, 1977, p. 31).

In Kuwait the sampling goal was two-fold: (a) to draw randomly about 7% of the classrooms (containing about 4,500 students) by grade from the male and female secondary schools of each governorate (educational area) to represent the general system, and (b) to draw randomly about 50% of the classrooms (including about 2,000 students) by grade from the male and female credit unit schools. The final grand sample from both systems yielded 11% of the classrooms and 8% of the student population in the Kuwaiti public secondary schools (see Table 4.2).

In addition to grouping the selected students by grade and gender (Table 4.3), they were also categorized by age and nationality according to their school system and gender (Table 4.4) for the purposes of this study. The age categorization was based on each subject's chronological age at his/her last birthday. The few 13-year-old students were included with age 14, and those over 17 years old were combined with age 17.

All statistics concerning the student population in Kuwait that were mentioned in this section were obtained from the Department of Planning, Ministry of Education, Kuwait, 1984-85.

Table 4.2.--Population and sample of Kuwait public secondary schools, classrooms, and students by system, location, and gender (1984-85).

School System	Governorate	Gender	Schools			Classrooms			Students		
			No.	Sample	%	No.	Sample	%	No.	Sample	%
GENERAL	Capital	Male	7	1	14	152	12	8	4,674	324	7
		Female	7	2	29	145	9	6	4,521	249	6
		Total	14	3	21	297	21	7	9,195	573	6
	Hawalli	Male	24	5	21	694	55	8	22,462	1,500	7
		Female	20	3	15	597	41	7	20,064	1,074	5
		Total	44	8	18	1,291	96	7	42,526	2,574	6
	Ahmad i	Male	11	1	9	229	15	7	7,260	429	6
		Female	9	1	11	192	13	7	6,098	357	6
		Total	20	2	10	421	28	7	13,358	786	6
	Jahra	Male	8	1	13	211	14	7	6,817	340	5
		Female	6	1	17	153	10	7	4,633	294	6
		Total	14	2	14	364	24	7	11,450	634	6
CREDIT UNIT ^a	Total	Male	50	8	16	1,286	96	7	41,213	2,593	6
		Female	42	7	17	1,087	73	7	35,316	1,974	6
		Total	92	15	16	2,373	169	7	76,529	4,567	6
	Total	Male	3	3	100	94	49	52	2,165	781	36
		Female	5	3	60	152	71	47	2,926	1,154	39
		Total	8	6	75	246	120	49	5,091	1,935	38
	Grand Total	Male	53	11	21	1,380	145	11	43,378	3,374	8
		Female	47	10	21	1,239	144	12	38,242	3,128	8
		Total	100	21	21	2,619	289	11	81,620	6,502	8

^aThe number of classrooms in this system was obtained from the schools.

Table 4.3.--Population and sample of classrooms and students of Kuwait in public secondary schools by grade and gender (1984-85).

Grade	Gender	Classrooms			Students		
		Popu- lation	Sample	Sample %	Popu- lation	Sample	Sample %
9	Male	498	47	9	16,727	1,185	7
	Female	429	41	10	14,836	1,022	7
	Total	927	88	9	31,563	2,207	7
10	Male	357	36	10	11,360	866	8
	Female	305	30	10	9,569	689	7
	Total	662	66	10	20,929	1,555	7
11	Male	285	36	13	8,490	799	9
	Female	276	40	14	8,032	841	10
	Total	561	76	14	16,522	1,540	9
12	Male	240	26	11	6,801	524	8
	Female	229	33	14	5,805	576	10
	Total	469	59	13	12,606	1,000	8
Grand Total	Male	1,380	145	11	43,378	3,374	8
	Female	1,239	144	12	38,242	3,128	8
	Total	2,619	289	11	81,620	6,502	8

Table 4.4.--Student sample by age, gender, school system, and nationality (1985).

	Age (in Years)				Total
	14	15	16	17	
<u>Male</u>					
General system					
Kuwaiti	120	195	258	605	1,178
Non-Kuwaiti	215	327	348	525	1,415
Subtotal	335	522	606	1,130	2,593
Credit unit system					
Kuwaiti	138	184	187	272	781
Non-Kuwaiti	--	--	--	--	--
Subtotal	138	184	187	272	781
TOTAL	473	706	793	1,402	3,374
 <u>Female</u>					
General system					
Kuwaiti	126	208	201	405	940
Non-Kuwaiti	129	239	283	383	1,034
Subtotal	255	447	484	788	1,974
Credit unit system					
Kuwaiti	144	217	306	478	1,145
Non-Kuwaiti	1	5	2	1	9
Subtotal	145	222	308	479	1,154
TOTAL	400	669	792	1,267	3,128
GRAND TOTAL	873	1,375	1,585	2,669	6,502

Procedure

To test the students and to get the assistance of educational personnel in Kuwait, it was necessary to request and to obtain the Ministry of Education's approval and support (see Appendix A) since all of the public schools are state managed and controlled. Upon receiving approval, the following steps were taken:

1. Obtaining appropriate information from the selected schools concerning the number of classrooms in each grade, the number of physical education teachers, equipment and supplies, facilities, and so forth.

2. Selecting and assigning 17 physical education supervisors, nine males for boys' schools and eight females for girls' schools, almost one supervisor for each school, to supervise the test administration.

3. Assigning the female head supervisor of the girls' secondary level, acting general physical education supervisor for girls, to assist the investigator in following up and meeting the female physical education supervisors and teachers, while the researcher assumed that responsibility with the male supervisors and teachers. Even though this senior supervisor was experienced in the administration of such types of physical fitness tests, the researcher met her and explained in detail the test items with the required procedures and then supplied her samples of the recording forms and a copy of the instructions for administering the AAHPER Youth Fitness Test (1975) in Arabic (see Appendix C), translated by the researcher and verified by two college

educators with English, physical education, and test experience to be an excellent and accurate version (see Appendix D). The English copy of the AAHPER test instructions is presented in Appendix E.

4. Meeting with the male and female physical education supervisors and head teachers, and then with teachers from the selected schools (see Appendix B), to be informed by the investigator and his assistant of the project's aim, nature, and procedures for administering the different test items. The proper execution of each of the six test items was demonstrated, and a copy of the test administration, in Arabic, was supplied to everyone. In addition, all head teachers of the selected schools were handed envelopes that contained students' personal forms, class composite records (see Appendix C), and the selected classrooms to be tested in their schools. The figures of each of the six fitness tests, as shown in the test manual, were printed on 10" x 14" orange or yellow cards. These cards were also given to the head teachers to demonstrate them near the testing areas to serve as visual aids.

5. Notifying the designated departments to assure that at least four physical education teachers were available in every selected school. (All but a few of the selected schools had an appropriate number of teachers. Those few were found to have three teachers each; therefore, one extra physical education teacher from a neighboring school was assigned to each of those schools.) Tests were administered and results recorded by 155 physical education teachers (86 males and 69 females) as part of their duties.

6. Ensuring that each selected school had at least the following equipment (if not, it was ordered from the Ministry of Education's stores and workshops): (a) chinning bar; (b) four stop watches; (c) a measuring tape with inches, feet, and yards; and (d) four wooden blocks measuring four inches in length by two inches in depth and two inches in width. The test administration procedures indicated the use of these apparatus.

7. Deciding on testing the students by the physical education teachers during the hours from 7:30 a.m. to 1:30 p.m. in regularly scheduled physical education class sessions between March 16 and March 31, 1985.

8. Administering the pilot study.

Pilot Study

According to Borg and Gall (1979), the pilot study not only serves all purposes of the usual tryout, but provides additional knowledge that leads to improved research (p. 70). In this study, the pilot study was carried out during the third week of February 1985 in one male and one female public secondary school that were not selected for the study. This choice left the selected schools to have equal testing opportunities. About 30 students, the average class size, from each school served as the subjects. Physical education teachers implemented the tests with the directions of a female supervisor for the girl's school and the investigator for the boy's school. The objectives of the pilot study were to:

1. Investigate the most suitable and efficient areas, and also the most efficient means of marking and setting up the test apparatus.
2. Get feedback from the subjects, teachers, and supervisors.
3. Obtain ideas, approaches, and clues not foreseen before the pilot study.
4. Determine the time needed for conducting the tests.
5. Determine the appropriate number of personnel needed for this study.
6. Check the adequacy of test apparatus.

Test Administration

At the beginning of each test period, the classroom physical education teachers described and then demonstrated each item, explained the rules, and answered any relevant questions. All of the participating students were given a suitable warm-up before the testing. As mentioned earlier, the tests were not given to those students with medical and other reasonable excuses. At least four physical education teachers were assigned to each test period to administer the tests and record the results.

Teachers used printed personal fitness record cards to record the students' personal and test data. After the tests were completed, the students' data were transferred to class composite record sheets to facilitate subsequent shipment and data entry into the computer. Both records contained the student's school, grade, name, gender, birthday, age, nationality, and the raw scores on the six fitness test

items. Sample forms, which include Arabic and English versions for ease of use in Kuwait and America, are presented in Appendix C.

The following four tests for each gender were performed in the gymnasium: (a) pull-up for boys and flexed arm hang for girls, (b) sit-up, (c) shuttle run, and (d) standing long jump. The other two tests, 50-yard dash and 600-yard run, were given out of doors, on the school athletic fields. The test instructions as described in the AAHPER Youth Fitness Test Manual (1975) and as translated into Arabic were followed.

Review of the Collected Data

All collected personal data cards and class composite record sheets were reexamined, one by one, by the researcher. Upon finding any missing or inaccurate information, the researcher contacted the appropriate schools for completion of the data. Although the test-preparation and data-gathering procedures were exhausting, the experience was rewarding, and the educational personnel, administrators, and physical education teachers (see Appendix G) were entirely supportive and cooperative.

Statistical Analysis

The data were taken to the Computer Center at Michigan State University, where they were entered into the computer. The researcher then rechecked all of the computer printouts with the originals, and all necessary corrections were made. Employing the Statistical Package for the Social Sciences (SPSS Manual, 1975), means, standard

deviations, and cumulative frequencies, among other statistics, were generated. From the cumulative frequencies, norms in terms of every fifth percentile for male and female students ages 14 through 17 attending Kuwaiti public secondary schools (grades 9 through 12) were established for each fitness test item.

Using the means and standard deviations, the physical fitness scores of the youngsters in Kuwait and America were compared. Differences between the means of the two countries were calculated by using a t -test for independent (or unrelated) samples. Forty-eight comparisons were applied. Each of the six tests for each age and gender was compared separately.

The level of significance was set at .05, and the significance of each t -value was determined by referring to the table for critical values of t (Glass & Hopkins, 1984, Table C, p. 530).

One-way analysis of variance (ANOVA) was used to test the equality of means in physical fitness among the following three groups of male and female students ages 14 through 17 attending public secondary schools in Kuwait: (a) Kuwaitis in the general system, (b) non-Kuwaitis in the general system, and (c) Kuwaitis in the credit unit system. With these three groups in each category, 48 ANOVA tests were requested for the six fitness tests in four age groups and two genders. The .05 significance level was used for each hypothesis test, assuming that all three comparable populations of scores were normally distributed and had the same variance. Whenever the F -test of the ANOVA was found to be significant, which means that at least

two group means were not equal, Scheffe as a post-hoc, or a posteriori, multiple-comparison procedure was used to detect where significant differences existed. The Scheffe method was used because it has advantages of simplicity, applicability to groups of equal or unequal size, and suitability for any comparison, whether making all possible pairwise or several compound comparisons. It is also the most conservative test. That is, it is less likely than other tests to show differences as significant (Glass & Hopkins, 1984, p. 382; Hays, 1981, p. 433; Pedhazur, 1982, p. 296). From all of these analyses, the basic questions implied by the research hypotheses could be answered. The findings are presented and discussed in detail in Chapter V.

CHAPTER V

RESEARCH FINDINGS

The findings of the data analyses are reported in this chapter, while the Kuwaiti national physical fitness norms in terms of every fifth percentile by gender/age and gender/grade on each test are presented in Appendix F. The findings are related to the research hypotheses proposed in Chapter I. In addition to the establishment of national norms, the writer's next concern was to compare the physical fitness levels of male and female public secondary school students ages 14 through 17 in Kuwait with the results of high school boys and girls in America, as indicated by their performance on the AAHPER Youth Fitness survey of 1975. The American scores, which included means and standard deviations by age and gender on each test item, were obtained from Dr. Guy Reiff, who worked with the late Paul Hunsicker, both of the University of Michigan, in conducting the 1975 American national fitness survey. The Kuwaiti data for this study were collected in 1985.

Finally, comparisons in physical fitness were made between three groups of male and three groups of female students ages 14 through 17 attending public secondary schools in Kuwait.

The American Alliance of Health, Physical Education and Recreation (AAHPER) Youth Fitness Test was used to measure the physical fitness of male and female students in both countries, Kuwait (1985) and America (1975). The test included six items: (a) pull-ups for boys and flexed arm hang for girls, (b) sit-ups, (c) shuttle run, (d) standing long jump, (e) 50-yard dash, and (f) 600-yard run.

Comparison of Kuwaiti and American Data

Hypothesis 1: The physical fitness level of secondary school boys and girls ages 14 through 17 in Kuwait (1985) will not differ significantly from that of their counterparts in the United States (1975), as measured by the AAHPER Youth Fitness Test--1975, in terms of the following items: (a) pull-up for boys and flexed-arm hang for girls--for judging arm and shoulder-girdle strength/endurance; (b) flexed-leg sit-up--for judging efficiency of abdominal and hip flexor muscles; (c) shuttle run--for judging speed and change of direction (agility); (d) standing long jump--for judging explosive muscle power of leg extensors; (e) 50-yard dash--for judging speed; and (f) 600-yard run--for judging cardiovascular efficiency (endurance).

Generally, to test the difference between the means of two independent samples by using the t-test requires that the populations have a normal distribution and that the variances in the population are equal. Fortunately, much research has revealed, according to Glass and Hopkins (1984), that the violation of the assumption of normality has almost no practical consequences in using the t-test (p. 237). Therefore, for this study, it was assumed that the population dealt with had a normal distribution. Whether the variances of the population were equal or not can either be assumed equal, especially when the two sample sizes are equal or approximately so, or calculated by means of an F-test. Although it was customary in the past, it is

no longer such a common practice, according to Weinberg and Goldberg (1979, p. 321) and Glass and Hopkins (1984, p. 364) to run a test on the equality of population variances before using a t-test on two populations. These authors agreed that the t-test is essentially unaffected by minor violations of its assumptions, especially when $n_1 = n_2$. But Glass and Hopkins (1984) advised testing the equality of population variances before a t-test when there is good evidence that the populations are normally distributed and n_1 and n_2 are quite unequal. Furthermore, in case of doubt, according to Snedecor and Cochran (1967), it is better to avoid the assumption that $\sigma_1 = \sigma_2$ (p. 116).

As the number of subjects in each pairwise comparison of this study differed and as certainty preferred, the equality of population variances for every two comparable means, in this part, was examined by F-test ($F = S_1^2/S_2^2$, where S_1^2 is the hypothesized larger variance), using a significance level of $\alpha = .05$. The F-values are shown later in this section with other descriptive data.

Then, depending on the homogeneity or heterogeneity of each designated pair of sample variances, either a pooled or an alternative t-test was applied. A pooled t-test (sometimes called a simple or true t-test) was used to compare those couples of sample means with equal variances, while an alternative t-test was employed for those with different variances. The formulas for those t-tests were:

a. pooled t-test:

$$t = \bar{X}_1 - \bar{X}_2 / \sqrt{\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1 + n_2 - 2}} \left(\frac{1}{n_1} + \frac{1}{n_2} \right)$$

b. alternative t-test:

$$t' = \bar{X}_1 - \bar{X}_2 / \sqrt{S_1^2/n_1 + S_2^2/n_2}$$

in which t or t' = ratio of differences between means

$\bar{X}$ = mean of sample

S^2 = variance or squared standard deviation of sample

n = number of subjects in sample

The computed values of t or t' were compared with the criterion t-values in the statistical tables, in order to test the null hypothesis that the means of the samples were equal.

All of the 48 comparisons, for two genders, four ages (14 through 17), and six tests, indicated that the public secondary school students of Kuwait scored significantly ($p < .05$) lower than their counterparts in America. The results of both pooled and alternative t-tests, plus F-values, are tabulated and presented in Table 5.1 for boys and Table 5.2 for girls. These differences, as illustrated in Figures 5.1 through 5.7, were not only statistically significant, but also practically meaningful, in general, as they appeared to the researcher.

Accordingly, the null hypothesis (H_0) of this part was rejected in favor of the alternative hypothesis (H_1) at the alpha = .05 level of significance for all four age/gender cells in each test. The researcher concluded that there was a statistically significant difference between the mean scores of male and female public secondary

Table 5.1.--Computed F- and t-values for comparisons of samples in the United States (1975) and Kuwait (1985) (boys).

Test Item	Age	U.S. (1975)			Kuwait (1985)			Rejection Region: $F \geq$	Observed Values		
		Mean	S^2	N	Mean	S^2	N		F	t	t'
Pull-ups (no.)	14	5.0	16.8	543	1.73	4.47	473	1.27	3.76		16.278
	15	6.5	19.4	533	2.67	7.48	705	1.19	2.59		17.664
	16	7.1	16.8	422	3.53	8.69	719	1.25	1.93		15.671
	17	7.2	19.4	524	4.29	11.77	1,399	1.16	1.65		13.666
Sit-ups (no. in 1 min.)	14	40.1	96.0	545	31.24	100.06	469	1.25	1.04*	14.227	
	15	42.1	81.0	538	31.20	91.87	703	1.19	1.13*	20.392	
	16	41.4	84.6	426	32.66	86.20	783	1.27	1.02*	15.698	
	17	40.6	77.4	535	32.43	100.97	1,389	1.17	1.30		17.524
Shuttle run (sec.)	14	10.2	1.0	542	10.68	1.26	469	1.25	1.26		-7.119
	15	10.0	0.9	533	10.69	1.15	702	1.19	1.27		-11.991
	16	10.0	1.0	415	10.50	1.01	790	1.27	1.01*	-8.294	
	17	9.9	1.0	523	10.43	1.24	1,395	1.17	1.24		-10.057

Table 5.1.--Continued.

Test Item	Age	U.S. (1975)		Kuwait (1985)		Rejection Region: $F \geq$	Observed Values		
		Mean	S^2	Mean	S^2		F	t	t'
Standing long jump (inches)	14	73.2	108.2	69.55	129.78	1.25	1.20*	5.320	
	15	79.0	112.4	72.53	122.19	1.19	1.09*	10.364	
	16	83.0	104.0	76.11	110.21	1.27	1.06*	11.040	
	17	84.9	127.0	78.81	150.26	1.17	1.18		10.336
50-yard dash (sec.)	14	7.3	0.7	7.79	1.09	1.25	1.56		-8.169
	15	6.9	0.4	7.56	1.24	1.19	3.10		-13.105
	16	6.8	0.3	7.17	0.91	1.27	3.03		-8.623
	17	6.7	0.5	7.13	1.03	1.17	2.06		-10.315
600-yard run (sec.)	14	127.6	605.2	135.56	936.96	1.25	1.55		-4.492
	15	118.8	376.4	133.53	1074.53	1.19	2.86		-9.750
	16	115.3	338.6	126.92	809.08	1.27	2.39		-8.487
	17	116.3	506.2	127.23	870.93	1.17	1.72		-8.554

*Not significant at the .05 level.

Rejection Region: t or $t' \leq -1.96$ or t or $t' \geq 1.96$.

Table 5.2.--Computed F- and t-values for comparisons of samples in the United States (1975) and Kuwait (1985) (girls).

Test Item	Age	U.S. (1975)		Kuwait (1985)		Rejection Region: $F \geq$	Observed Values		
		Mean	S^2	Mean	S^2		F	t	t'
Flexed arm hang (sec.)	14	13.0	141.6	5.25	36.88	400	1.27	3.84	12.673
	15	12.6	153.8	4.77	33.06	668	1.19	4.65	13.161
	16	10.4	121.0	4.58	35.97	792	1.25	3.36	9.929
	17	11.6	136.9	4.74	40.88	1,267	1.23	3.35	11.320
Sit-ups (no. in 1 min.)	14	30.5	84.6	17.20	70.05	400	1.27	1.21*	22.549
	15	30.7	84.6	14.89	57.32	668	1.19	1.48	31.812
	16	29.4	84.6	14.95	55.73	792	1.25	1.52	27.649
	17	30.0	92.2	14.33	54.36	1,265	1.23	1.70	30.252
Shuttle run (sec.)	14	11.2	1.7	12.49	2.27	397	1.25	1.33	-13.545
	15	11.2	1.4	12.74	2.42	667	1.19	1.73	-19.286
	16	11.5	2.0	12.73	2.24	791	1.27	1.12*	-13.701
	17	11.3	2.0	12.82	2.69	1,267	1.25	1.35	-18.037

Table 5.2.--Continued.

Test Item	Age	U.S. (1975)				Kuwait (1985)				Rejection Region: $F \geq$	Observed Values		
		Mean	S^2	N		Mean	S^2	N			F	t	t'
Standing long jump (inches)	14	64.3	92.2	512		59.43	89.68	394		1.27	1.03*	7.620	
	15	64.4	79.2	521		59.03	98.36	666		1.19	1.24		9.815
	16	63.1	84.6	413		59.07	107.79	786		1.27	1.27		6.891
	17	65.4	90.2	414		58.97	125.61	1,266		1.25	1.39		11.426
50-yard dash (sec.)	14	7.9	0.7	499		9.93	3.72	364		1.25	5.31		-18.864
	15	7.9	0.9	513		10.42	4.09	602		1.19	4.54		-27.256
	16	8.0	0.7	382		10.34	4.61	726		1.27	6.59		-25.896
	17	7.9	0.8	390		10.50	4.59	1,131		1.25	5.74		-33.271
600-yard run (sec.)	14	164.5	1142.4	492		177.61	1277.88	360		1.32	1.12*	-5.459	
	15	162.7	986.0	490		187.65	1428.93	568		1.27	1.45		-11.727
	16	167.4	942.5	368		187.63	1262.12	707		1.27	1.34		-9.702
	17	166.0	1190.2	373		196.64	1872.69	1,126		1.25	1.57		-13.906

*Not significant at the .05 level.

Rejection region: t or $t' \leq -1.96$ or t or $t' \geq 1.96$.

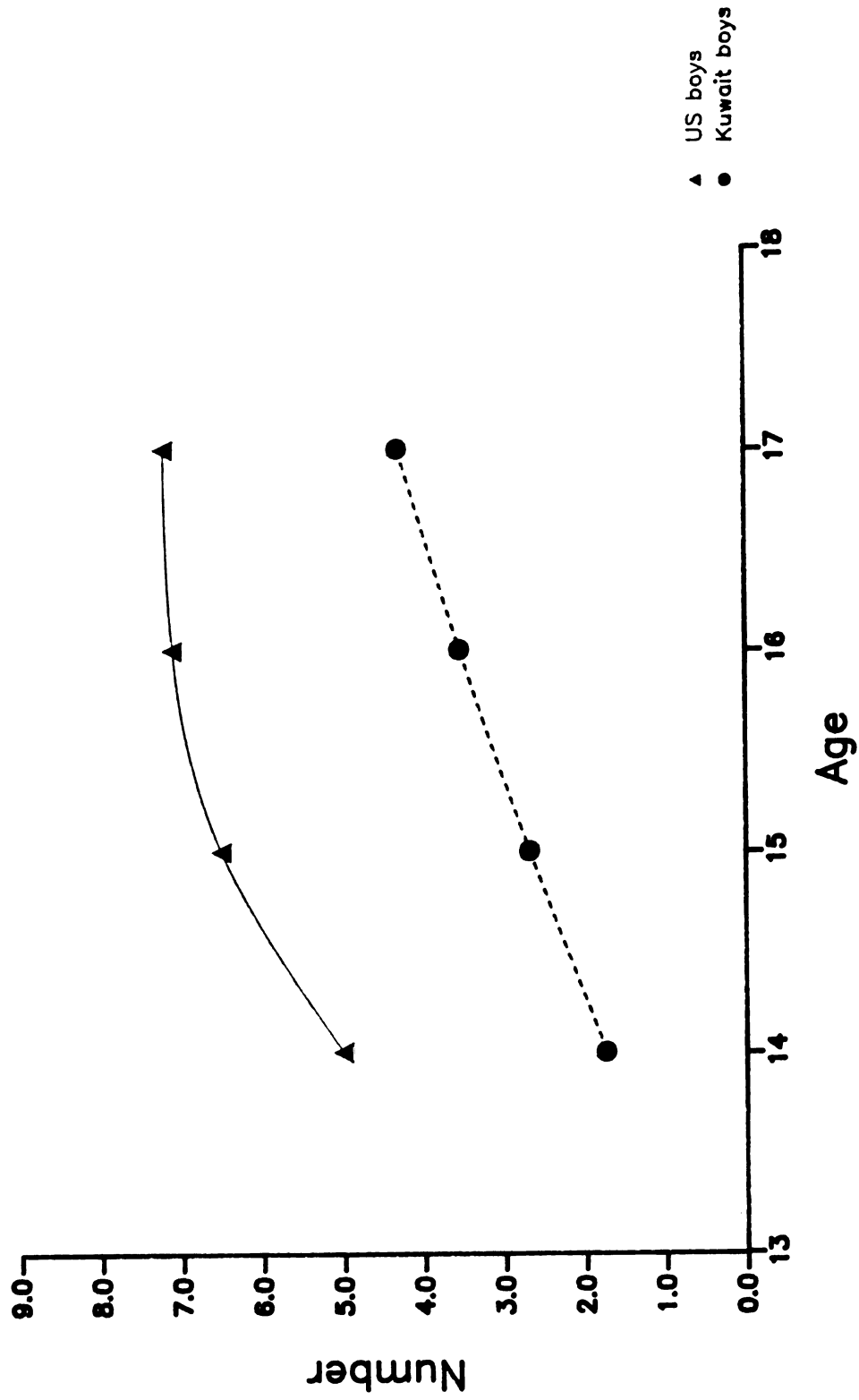


Figure 5.1.—Comparison of mean pull-up scores
for boys in the U.S. and Kuwait.

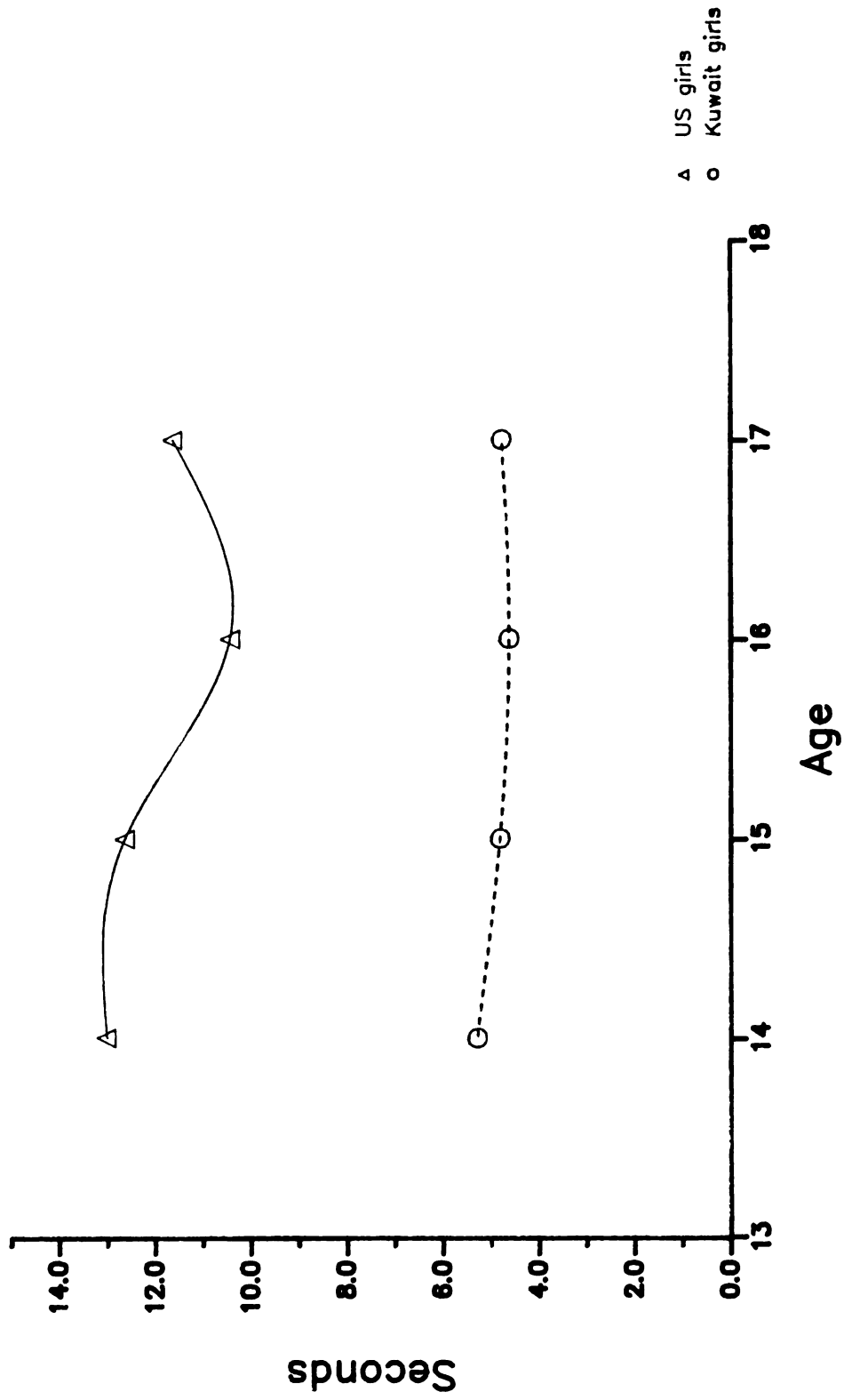
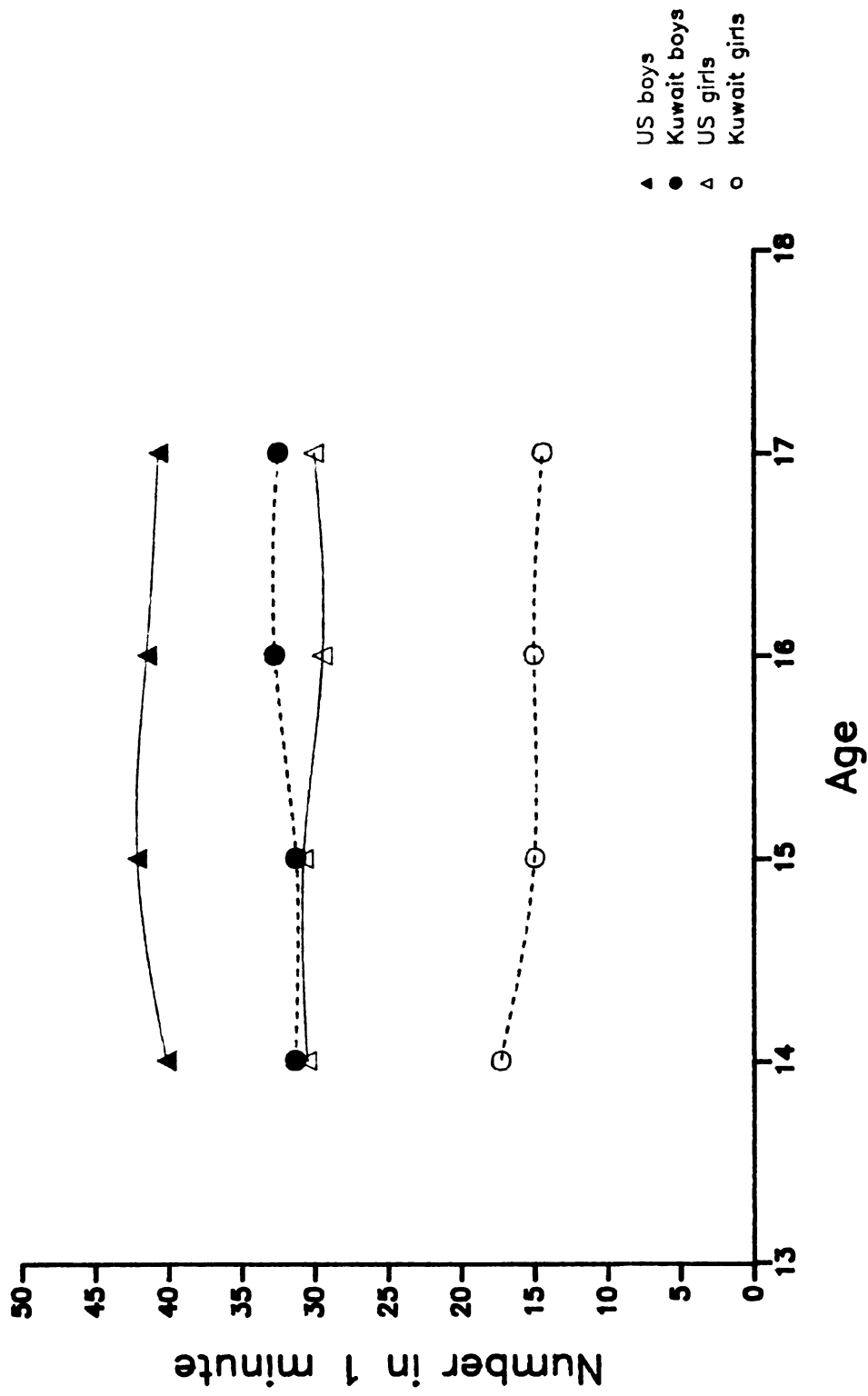


Figure 5.2. ---Comparison of mean flexed arm hang scores for girls in the U.S. and Kuwait.



**Figure 5.3.—Comparison of mean sit-up scores
for boys and girls in the U.S. and Kuwait.**

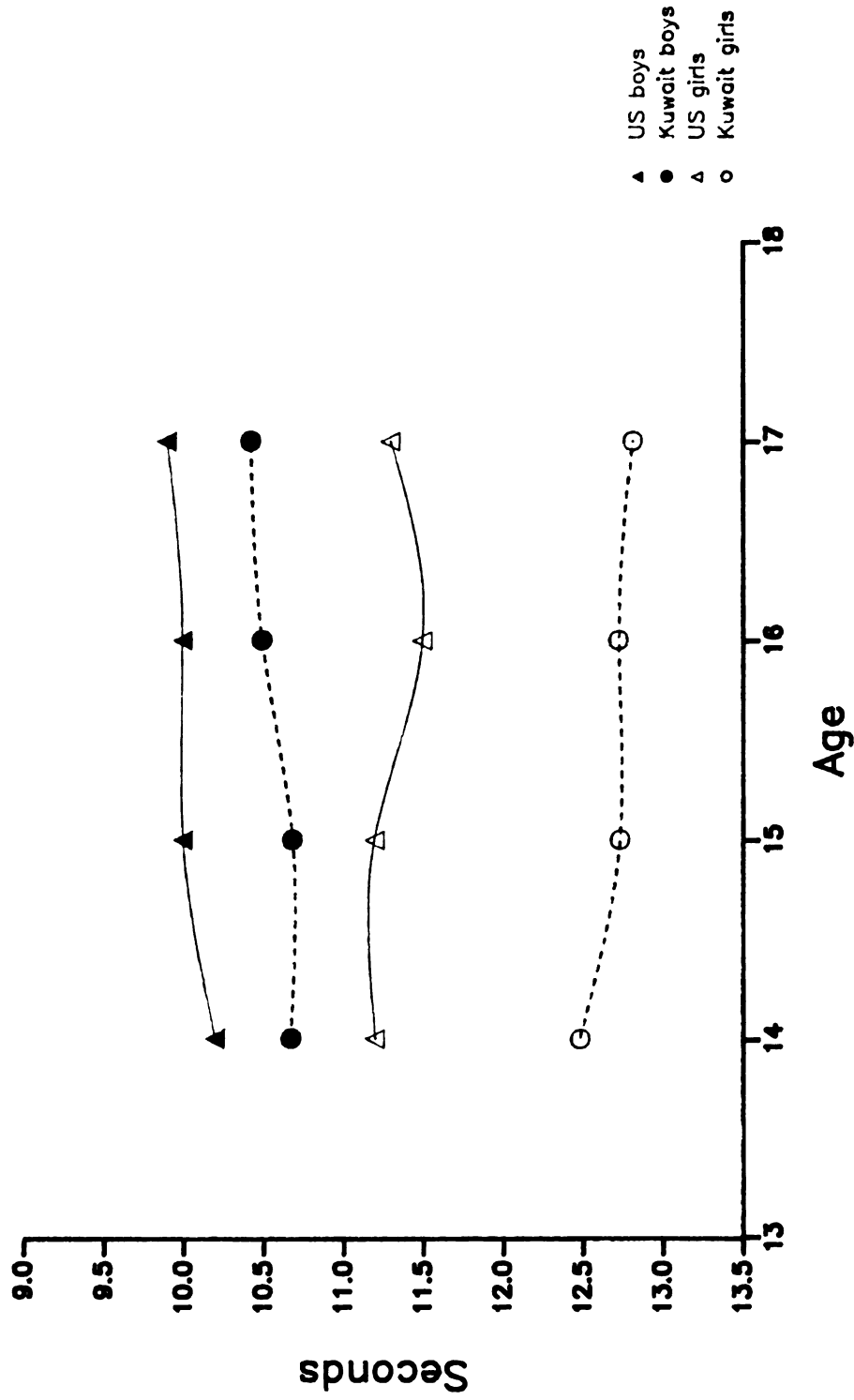


Figure 5.4.—Comparison of mean shuttle run scores for boys and girls in the U.S. and Kuwait.

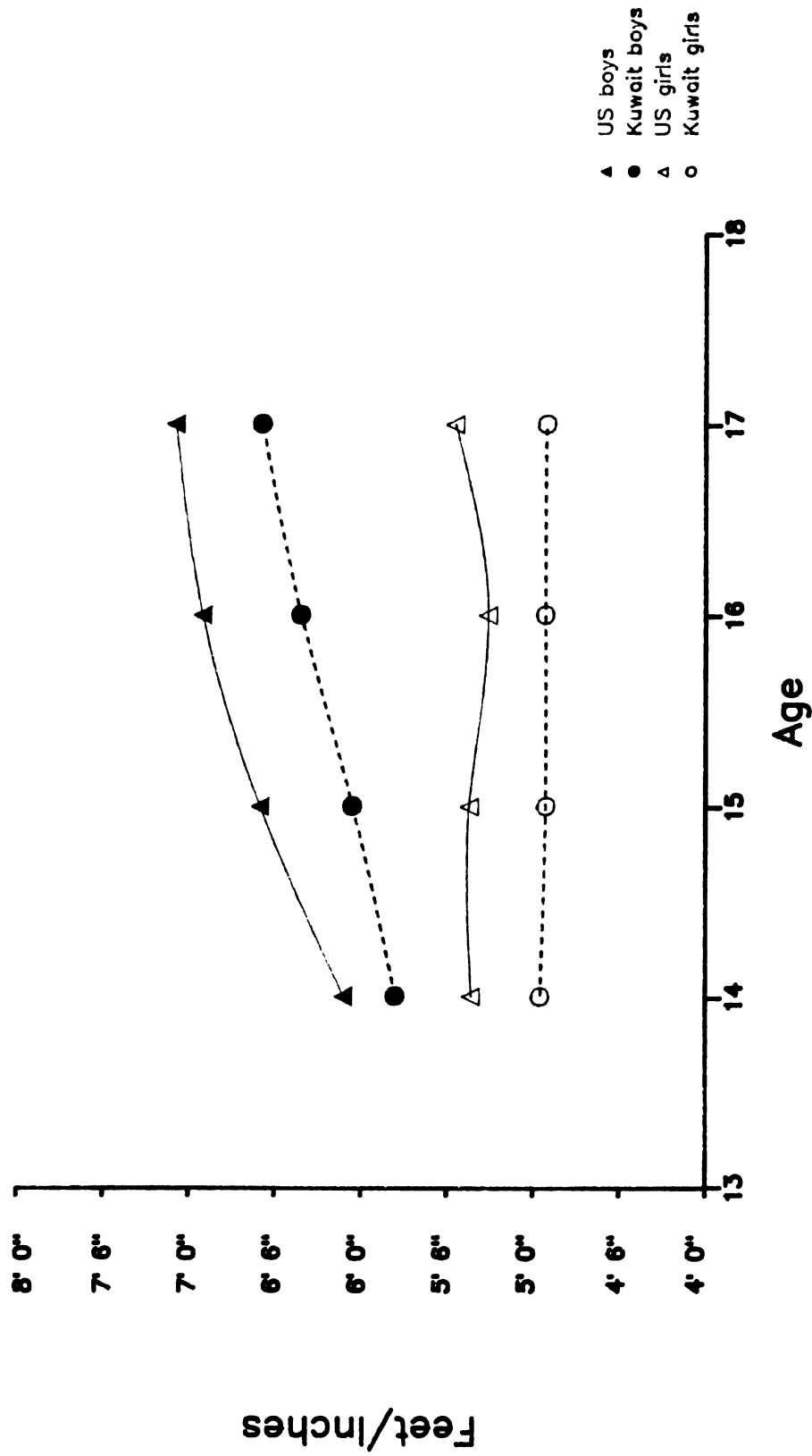


Figure 5.5A.—Comparison of mean standing long jump scores for boys and girls in the U.S. and Kuwait.

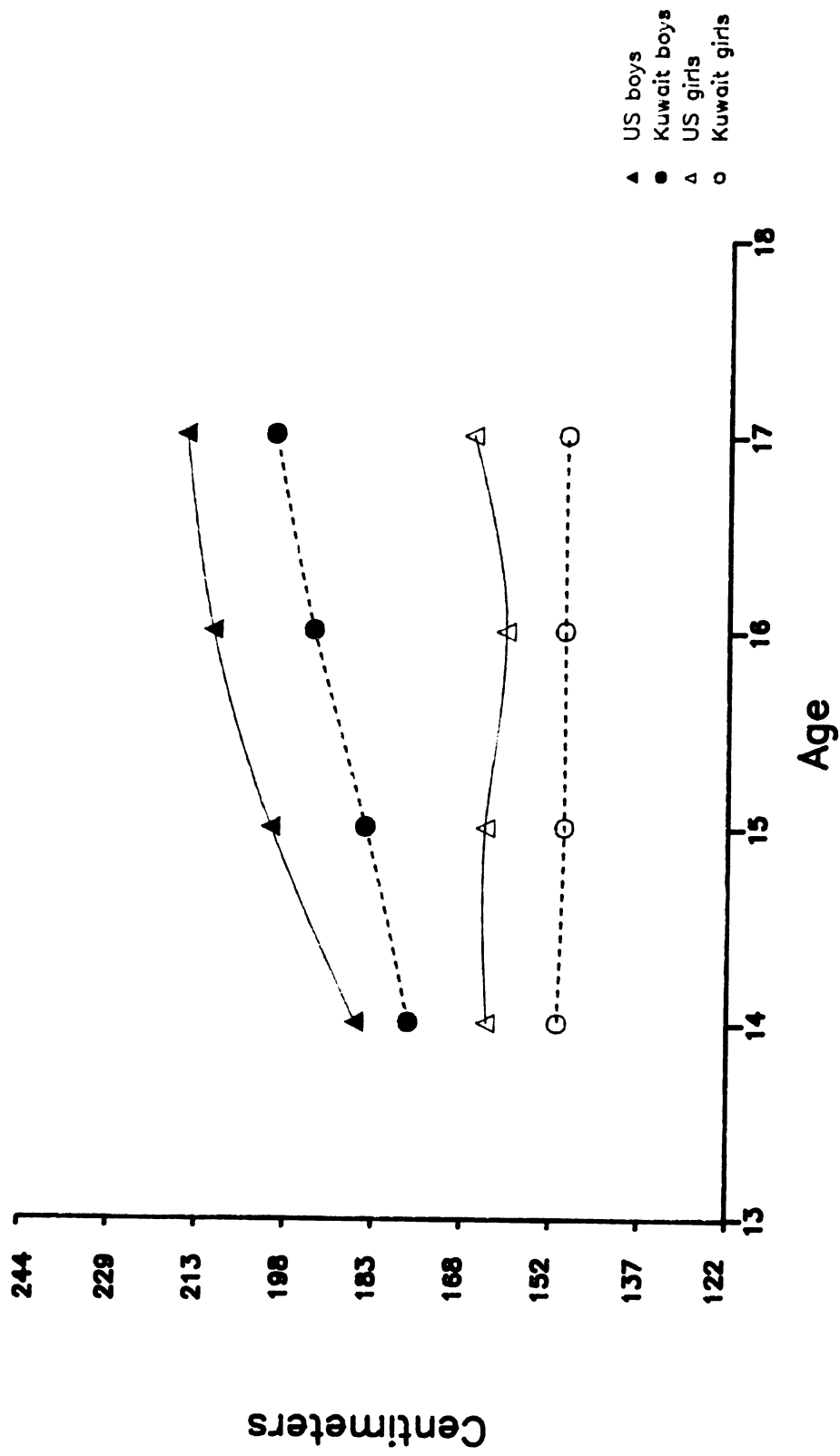


Figure 5.5B.—Comparison of mean standing long jump scores for boys and girls in the U.S. and Kuwait.

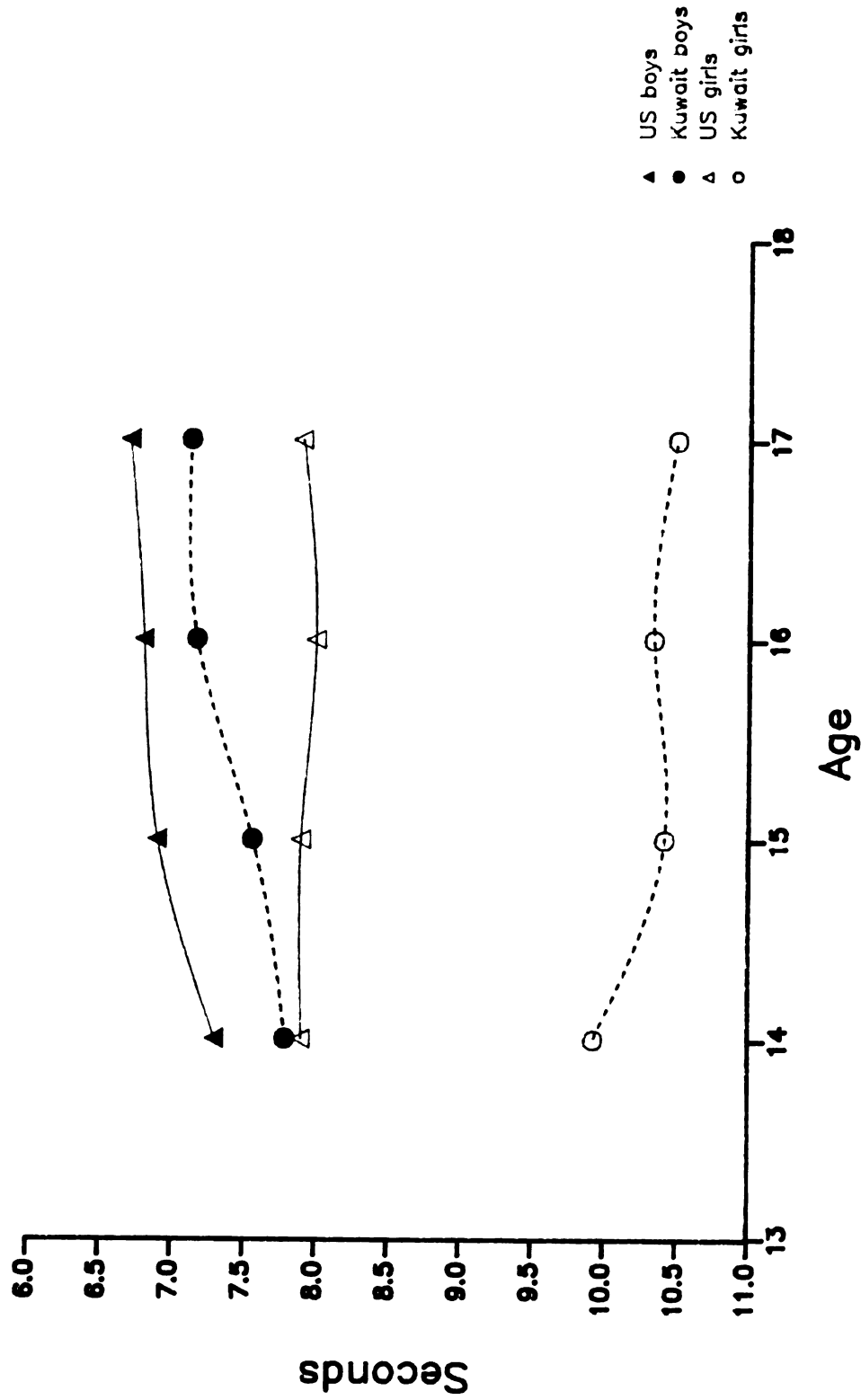


Figure 5.6.—Comparison of mean 50—yard dash scores for boys and girls in the U.S. and Kuwait.

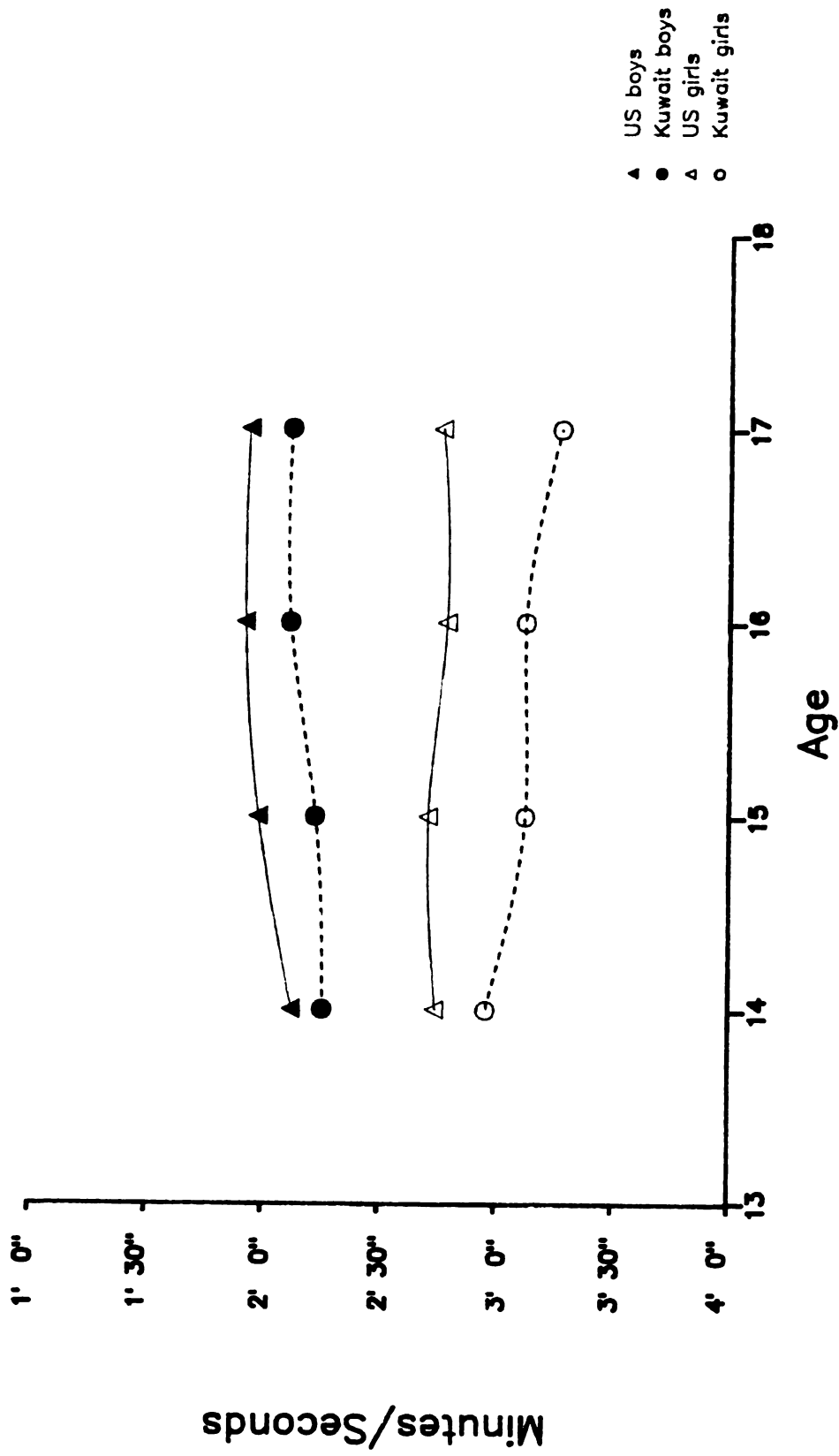


Figure 5.7.—Comparison of mean 600-yard run scores for boys and girls in the U.S. and Kuwait.

school students, ages 14 through 17, in Kuwait and America on all of the 1975 AAHPER Youth Fitness Test items.

Comparison Among Groups in Kuwait

Hypothesis 2: The physical fitness level, as measured by the AAHPER Youth Fitness Test (1975), will not differ significantly among the following three groups of males and three groups of females ages 14 through 17 attending public secondary schools (grades 9-12) in Kuwait: (a) Kuwaitis in the general system, (b) non-Kuwaitis in the general system, and (c) Kuwaitis in the credit unit system.

To test this hypothesis, one-way ANOVA was used for each of the three comparable groups. Then whenever the null hypothesis was rejected, that is, not all of the three population means were equal, the Scheffe post-hoc (after the fact) multiple comparison method was followed to investigate which groups had different population means from which other groups.

A total of 48 ANOVA tests (two genders x four ages x six fitness tests), with three different groups in each ANOVA procedure, included 144 comparisons (72 for each gender). Of those 48 analyses, 41 (85%) rejected the null hypothesis of equal population means. To complete the analysis, the Scheffe test was performed on each of those significant ANOVA results. This post-hoc test yielded 76 statistically significant differences (30 for boys and 46 for girls) out of 123 pairwise comparisons (54 for males and 69 for females).

For each physical fitness item, the data were analyzed. Then, upon examining all boys' and girls' results, their ANOVA and Scheffe tests were tabulated. Finally, comparisons of the averages among the

three groups in each gender and age were displayed pictorially according to fitness test. An overall summary precedes specific findings for each test item.

Summary

Boys. In general, Kuwaiti boys in the credit unit system performed better than the other two groups. Of 30 statistically significant differences, 16 were in favor of Kuwaitis in the credit unit system. Of the remaining 14 differences, 8 were gained by Kuwaitis in the general system and 6 by non-Kuwaitis.

In most age groups, Kuwaiti boys in the general system outperformed Kuwaitis in the credit unit system in pull-ups and the 600-yard run. The non-Kuwaitis in the general system also outran the Kuwaitis in the other system in the 600-yard run, and the Kuwaitis in the credit unit system outdid the other two groups in the general system in sit-ups.

These differences mean that the arm strength and endurance of Kuwaitis in the general system and the endurance of non-Kuwaitis in the same general system were better than those of students in the other system. The Kuwaitis in the credit unit system had stronger abdominal muscles than the other two groups.

Girls. Kuwaiti girls in the credit unit system not only surpassed the other two female groups in the general system in most (32 or 70%) of the 46 comparisons, but also no other group significantly outperformed them. The non-Kuwaitis surpassed only the Kuwaiti girls within the same general system in the remaining 14 comparisons,

whereas the Kuwaiti girls in the general system never evidenced superiority over any other group.

Most of the statistically significant differences among groups in Kuwait did not seem practically important, especially among males. For example, the difference of one or two pull-ups between two groups was not factually meaningful, but the statistical analysis revealed that difference to be valuable.

The overall test results with the specific findings for the three groups of males and females in each age, 14 through 17, and each fitness test item are presented next.

Test-Specific Findings

Pull-ups (boys). In the pull-ups test for boys, the global ANOVA was significant three times (that is, for age groups 14, 16, and 17, but not 15); therefore, three Scheffe procedures followed up and showed five significant differences. Frequently, Kuwaiti boys in the general system dominated the pull-ups test. They outperformed the Kuwaitis in the credit unit system at ages 14, 16, and 17; they outdid the non-Kuwaitis in the general system at ages 16 and 17.

Flexed arm hang (girls). In the flexed arm hang for girls, the ANOVA was significant for ages 14, 15, and 17, but not for 16. The Scheffe test determined the following reliable differences:

1. Age 14--Kuwaiti girls in the credit unit system exceeded the other two groups.

2. Ages 15 and 17--Non-Kuwaiti girls scored higher than Kuwaiti girls of the same general system.

Sit-ups.

1. Boys: An overall ANOVA specified three significant differences for boys ages 15, 16, and 17, but not 14. The Scheffe test identified six differences. In each of these three age categories, Kuwaitis in the credit unit system accomplished more sit-ups than did the other two groups of boys in the general system. No differences were found between the Kuwaiti and non-Kuwaiti boys in the general system.

2. Girls: For each of the four age groups, the ANOVA showed significant differences. The Scheffe follow-up showed eight significant results, two in each age classification. This test revealed that Kuwaiti girls in the credit unit system were superior in sit-ups to both Kuwaitis and non-Kuwaitis in the general system at all ages, 14 through 17. No differences were found between the two groups in the general system at any age level.

Shuttle run.

1. Boys: Significant differences in the shuttle run for boys were found by the ANOVA test at each age level except 16. The post-hoc procedure indicated five reliable differences. At age 14, non-Kuwaiti boys in the general system scored better than Kuwaitis in both systems. The 15-year-old non-Kuwaitis were also faster than the Kuwaitis in the same general system. At age 17, Kuwaiti students in the credit unit system outran the other two groups in the general

system. The worst boys' scores in the shuttle-run test were demonstrated by Kuwaitis in the general system.

2. Girls: The ANOVA was significant four times, one for each age, 14 through 17. Four Scheffe tests highlighted ten differences. Eight of the ten significant results, two in each age group, were in favor of the Kuwaitis in the credit unit system as compared to the Kuwaitis and non-Kuwaitis in the general system. In addition, the non-Kuwaitis at ages 15 and 17 ran faster than the Kuwaitis in the same general system.

Standing long jump.

1. Boys: In the standing long jump for boys, the ANOVA results indicated two differences, one for age 16 and the other for age 17. Three significant differences were found by the Scheffe method. Kuwaiti boys in the credit unit system outjumped both the non-Kuwaitis at ages 16 and 17 and the Kuwaitis in the general system at age 17. In the standing long jump, as in the sit-ups, the Kuwaiti and non-Kuwaiti boys in the general system did not differ, as the statistical tests indicated.

2. Girls: Each of the four ANOVA procedures, one for each age, revealed significant differences among the girls' groups in the standing long jump. The follow-up tests indicated seven statistically significant differences. The non-Kuwaiti girls at each age, 14 through 17, jumped farther than their Kuwaiti counterparts in the same general system. At ages 15, 16, and 17, the Kuwaiti girls in the credit unit system performed better than the Kuwaitis in the general

system. The Kuwaiti girls in the general system were behind the other groups at most age levels.

50-yard dash.

1. Boys. The group mean scores of males at all ages, except 17, were not equal in the 50-yard dash as tested by ANOVA. Applying the Scheffe after-the-fact procedure, four significant differences were noted. Kuwaitis in the credit unit system outran their Kuwaiti counterparts at ages 14, 15, and 17, as well as the non-Kuwaitis at age 14 in the general system.

2. Girls. All four ANOVAs were significant in the 50-yard dash for girls. Also, all pairwise comparisons were significant for each age group, as specified by the Scheffe test. In all instances, Kuwaiti females in the credit unit system ran faster than the other two groups at every age, 14 through 17. Furthermore, the non-Kuwaitis of all ages performed better than the Kuwaiti girls in the same general system. The Kuwaitis in the general system had the lowest performance.

600-yard run.

1. Boys. The ANOVA was significant four times in the 600-yard run for boys. Within the age groups, seven comparisons were statistically significant, as revealed by the Scheffe procedure. At each age, 14 through 17, the non-Kuwaiti boys outran the Kuwaitis in the credit unit system. The Kuwaitis ages 14, 15, and 16 in the general system exceeded the Kuwaitis in the other system. Stated

differently, the Kuwaitis in the credit unit system were the slowest among the boys in the 600-yard run.

2. Girls. The three group means within each age were not equal at ages 14, 15, and 16 according to the ANOVA tests in the 600-yard run for girls. More specific comparisons among the means were demonstrated by the Scheffe procedure. Five comparisons were significant, as the post-hoc test revealed. Kuwaiti females ages 14 and 15 in the credit unit system outran their Kuwaiti counterparts in the general system. They also ran faster than the non-Kuwaitis in the other system at age 14. The non-Kuwaitis at ages 15 and 16 performed better than the Kuwaitis in the same general system. Finally, the Kuwaiti girls in the general system were behind the other two groups in the 600-yard event. One unusual case appeared for girls age 17 in the 600-yard run. That is, even though the ANOVA test showed a significant difference between at least two groups, the Scheffe, as a conservative post-hoc method, could not discover where the differences occurred.

All the observed F-values of the one-way ANOVA and other statistical outcomes for the Kuwait groups are shown in Table 5.3 for boys and in Table 5.4 for girls. The results of the Scheffe procedures for pairwise comparisons of each gender, ages 14 through 17, that followed the ANOVA tests are tabulated and shown in Table 5.5. Then, comparisons of the means are illustrated graphically in Figures 5.8 through 5.14.

Table 5.3.--Observed F-values and significance levels of one-way ANOVA for comparisons of Kuwait groups in physical fitness tests (boys).

Test Item	Age	Group ^a	Mean	S.D.	N	Observed F-Value	df	Observed Signif. Level
Pull-Ups (no.)	14	1	2.09	2.11	120	5.233	2,472	.0057
		2	1.82	2.10	215			
		3	1.28	2.07	138			
	15	1	2.85	2.63	194	1.972	2,702	.1400*
		2	2.76	2.77	327			
		3	2.33	2.77	184			
	16	1	4.00	2.93	256	4.971	2,788	.0072
		2	3.35	2.74	348			
		3	3.22	3.28	187			
	17	1	4.82	3.35	604	13.516	2,1396	.0000
		2	3.82	3.35	523			
		3	3.99	3.61	272			
Sit-Ups (no. in 1 min.)	14	1	29.89	10.27	120	1.645	2,466	.1941*
		2	31.43	10.25	211			
		3	32.10	9.31	138			
	15	1	30.16	9.09	194	4.952	2,700	.0073
		2	30.76	9.42	325			
		3	33.05	10.16	184			
	16	1	31.15	8.57	253	20.340	2,780	.0000
		2	31.77	8.68	343			
		3	36.31	10.32	187			
	17	1	31.39	9.72	598	22.062	2,1386	.0000
		2	31.76	10.32	519			
		3	35.99	9.45	272			

Table 5.3.--Continued.

Test Item	Age	Group ^a	Mean	S.D.	N	Observed F-Value	df	Observed Signif. Level
Shuttle Run (sec.)	14	1	10.93	1.01	120	9.130	2,466	.0001
		2	10.44	1.17	211			
		3	10.82	1.06	138			
	15	1	10.87	1.07	193	3.833	2,699	.0221
		2	10.60	1.07	325			
		3	10.66	1.06	184			
	16	1	10.57	0.98	257	1.622	2,787	.1982*
		2	10.52	0.96	347			
		3	10.40	1.11	186			
	17	1	10.49	1.15	601	9.059	2,1392	.0001
		2	10.49	1.06	522			
		3	10.18	1.08	272			
Standing Long Jump (in.)	14	1	69.39	11.73	120	.048	2,464	.9530*
		2	69.65	10.87	209			
		3	69.54	11.85	138			
	15	1	72.02	11.07	194	1.044	2,700	.3525*
		2	72.27	10.72	325			
		3	73.53	11.60	184			
	16	1	76.53	10.73	257	4.295	2,787	.0140
		2	74.98	9.40	347			
		3	77.66	11.85	186			
	17	1	78.66	12.73	601	21.122	2,1392	.0000
		2	76.96	11.61	523			
		3	82.82	11.46	271			

Table 5.3.--Continued.

Test Item	Age	Group ^a	Mean	S.D.	N	Observed F-Value	df	Observed Signif. Level
50-Yard Dash (sec.)	14	1	7.89	1.15	120	4.470	2,467	.0119
		2	7.88	0.99	213			
		3	7.57	1.00	137			
	15	1	7.79	1.30	192	8.021	2,693	.0004
		2	7.55	1.04	3.22			
		3	7.34	0.97				
	16	1	7.28	0.86	254	2.521	2,782	.0810*
		2	7.14	0.95	347			
		3	7.09	1.06	184			
	17	1	7.20	1.05	590	5.187	2,1378	.0057
		2	7.12	1.03	522			
		3	6.96	0.88	269			
600-Yard Run (sec.)	14	1	133.54	27.96	120	5.946	2,462	.0028
		2	132.13	28.00	208			
		3	143.26	35.71	137			
	15	1	133.51	30.74	187	16.575	2,683	.0000
		2	127.50	29.31	317			
		3	144.79	38.27	182			
	16	1	126.36	24.24	252	9.796	2,774	.0001
		2	123.47	25.50	341			
		3	134.85	37.08	184			
	17	1	126.76	29.87	580	4.206	2,1351	.0151
		2	125.47	29.64	507			
		3	131.83	28.83	267			

*Not significant at the .05 level.

^aGroup 1 = Kuwaitis in the general system.

Group 2 = Non-Kuwaitis in the general system.

Group 3 = Kuwaitis in the credit unit system.

Table 5.4.--Observed F-values and significance levels of one-way ANOVA for comparisons of Kuwait groups in physical fitness tests (girls).

Test Item	Age	Group ^a	Mean	S.D.	N	Observed F-Value	df	Observed Signif. Level
Flexed Arm Hang (sec.)	14	1	4.21	5.79	126	5.911	2,396	.0030
		2	4.74	5.52	129			
		3	6.58	6.57	144			
	15	1	3.98	4.75	208	3.821	2,660	.0224
		2	5.48	6.92	238			
		3	4.75	5.17	217			
	16	1	3.98	4.31	201	2.556	2,787	.0782*
		2	5.19	7.68	283			
		3	4.44	5.09	306			
	17	1	4.21	6.72	405	3.174	2,1263	.0422
		2	5.35	6.69	383			
		3	4.68	5.82	478			
Sit-Ups (no. in 1 min.)	14	1	14.34	7.49	126	29.647	2,396	.0000
		2	15.60	8.14	129			
		3	21.17	7.84	144			
	15	1	12.67	6.28	207	54.959	2,660	.0000
		2	13.04	7.15	239			
		3	18.95	7.54	217			
	16	1	11.98	6.53	201	61.225	2,787	.0000
		2	13.39	7.36	283			
		3	18.32	6.85	306			
	17	1	11.54	6.25	403	117.746	2,1261	.0000
		2	12.62	6.55	383			
		3	18.03	7.35	478			

Table 5.4.--Continued.

Test Item	Age	Group ^a	Mean	S.D.	N	Observed F-Value	df	Observed Signif. Level
Shuttle Run (sec.)	14	1	12.90	1.74	124	9.677	2,393	.0001
		2	13.06	3.69	128			
		3	11.88	1.14	144			
	15	1	13.30	1.91	207	40.771	2,659	.0000
		2	12.91	1.30	238			
		3	12.05	1.11	217			
	16	1	13.07	1.56	200	17.931	2,786	.0000
		2	12.91	1.57	283			
		3	12.35	1.30	306			
	17	1	13.35	1.66	405	49.632	2,1263	.0000
		2	12.99	1.72	383			
		3	12.27	1.59	478			
Standing Long Jump (in.)	14	1	56.89	10.48	121	7.604	2,390	.0006
		2	61.47	8.42	128			
		3	59.68	9.03	144			
	15	1	55.64	10.16	207	18.127	2,658	.0000
		2	60.78	9.24	237			
		3	60.20	9.67	217			
	16	1	54.94	10.73	199	22.221	2,781	.0000
		2	60.25	9.99	283			
		3	60.69	9.90	302			
	17	1	53.66	11.29	405	77.221	2,1262	.0000
		2	60.55	10.34	382			
		3	62.18	10.16	478			

Table 5.4.--Continued.

Test Item	Age	Group ^a	Mean	S.D.	N	Observed F-Value	df	Observed Signif. Level
50-Yard Dash (sec.)	14	1	11.11	2.29	112	65.782	2,360	.0000
		2	10.27	1.49	107			
		3	8.77	1.09	144			
	15	1	11.63	2.07	189	144.194	2,594	.0000
		2	10.94	1.77	191			
		3	8.95	1.06	217			
	16	1	11.73	2.22	181	154.419	2,721	.0000
		2	11.01	2.02	237			
		3	8.98	1.31	306			
	17	1	11.82	2.27	366	252.902	2,1127	.0000
		2	11.21	2.20	287			
		3	9.08	1.16	477			
600-Yard Run (sec.)	14	1	187.04	43.50	111	11.945	2,356	.0000
		2	182.86	26.78	105			
		3	166.78	33.25	143			
	15	1	203.03	43.97	187	25.640	2,578	.0000
		2	184.52	33.46	178			
		3	177.66	30.74	216			
	16	1	194.01	41.50	175	3.857	2,703	.0216
		2	184.79	34.26	225			
		3	186.08	32.33	306			
	17	1	201.31	45.03	363	3.150	2,1122	.0432
		2	194.54	38.67	284			
		3	194.40	44.27	478			

*Not significant at the .05 level.

^aGroup 1 = Kuwaitis in the general system.

Group 2 = Non-Kuwaitis in the general system.

Group 3 = Kuwaitis in the credit unit system.

Table 5.5.--Scheffe results for pairwise comparisons of Kuwait groups on physical fitness tests (boys and girls).

Test Item and Age	Boys					Girls				
	Mean		Group			Mean		Group		
Pull-Up (no.)--boys										
Flexed Arm Hang (sec.)--										
girls										
14	1.28	KCUS	KCUS	NKGS	KGS	4.21	KGS	KGS	NKGS	KCUS
	1.82	NKGS				4.74	NKGS			
	2.09	KGS	*			6.58	KCUS	*	*	
15			KCUS	NKGS	KGS			KGS	KCUS	NKGS
	2.33	KCUS				3.98	KGS			
	2.76	NKGS				4.75	KCUS			
16						5.48	NKGS	*		
	3.23	KCUS	KCUS	NKGS	KGS	3.98	KGS	KGS	KCUS	NKGS
	3.35	NKGS				4.44	KCUS			
17	4.00	KGS	*	*		5.19	NKGS			
			NKGS	KCUS	KGS			KGS	KCUS	NKGS
	3.82	NKGS				4.21	KGS			
	3.99	KCUS				4.68	KCUS			
	4.82	KGS	*	*		5.35	NKGS	*		

Sit-Up (no. in 1 min.)										
14	29.89	KGS	KGS	NKGS	KCUS	14.34	KGS	KGS	NKGS	KCUS
	31.43	NKGS				15.60	NKGS			
	32.10	KCUS				21.17	KCUS	*	*	
15			KGS	NKGS	KCUS			KGS	NKGS	KCUS
	30.16	KGS				12.67	KGS			
	30.76	NKGS				13.04	NKGS			
16						18.95	KCUS	*	*	
	31.15	KGS	KGS	NKGS	KCUS	11.98	KGS	KGS	NKGS	KCUS
	31.77	NKGS				13.39	NKGS			
17	36.31	KCUS	*	*		18.32	KCUS	*	*	
			KGS	NKGS	KCUS			KGS	NKGS	KCUS
	31.39	KGS				11.54	KGS			
	31.76	NKGS				12.62	NKGS			
	35.99	KCUS	*	*		18.03	KCUS	*	*	

Table 5.5.--Continued.

Test Item and Age	Boys					Girls				
	Mean		Group			Mean		Group		
Shuttle Run (sec.)										
14	10.93	KGS	KGS	KCUS	NKGS	13.06	NKGS	NKGS	KGS	KCUS
	10.82	KCUS	*	*		12.90	KGS	*	*	
	10.44	NKGS				11.88	KCUS			
15	10.87	KGS	KGS	KCUS	NKGS	13.30	KGS	KGS	NKGS	KCUS
	10.66	KCUS				12.91	NKGS	*	*	
	10.60	NKGS				12.05	KCUS	*	*	
16	10.57	KGS	KGS	NKGS	KCUS	13.07	KGS	KGS	NKGS	KCUS
	10.52	NKGS				12.91	NKGS	*	*	
	10.40	KCUS	*			12.35	KCUS	*	*	
17	10.49	KGS	KGS	NKGS	KCUS	13.35	KGS	KGS	NKGS	KCUS
	10.49	NKGS	*	*		12.99	NKGS	*	*	
	10.18	KCUS				12.27	KCUS	*	*	

Standing Long Jump (in.)										
14	69.39	KGS	KGS	KCUS	NKGS	56.89	KGS	KGS	KCUS	NKGS
	69.54	KCUS				59.68	KCUS	*		
	69.65	NKGS				61.47	NKGS			
15	72.02	KGS	KGS	KCUS	NKGS	55.64	KGS	KGS	KCUS	NKGS
	72.27	KCUS				60.20	KCUS	*		
	73.53	NKGS				60.78	NKGS	*		
16	74.98	NKGS	NKGS	KGS	KCUS	54.94	KGS	KGS	NKGS	KCUS
	76.53	KGS				60.25	NKGS	*		
	77.66	KCUS	*			60.69	KCUS	*		
17	76.96	NKGS	NKGS	KGS	KCUS	53.66	KGS	KGS	NKGS	KCUS
	78.66	KGS	*	*		60.55	NKGS	*		
	82.82	KCUS				62.18	KCUS	*		

Table 5.5.--Continued.

Test Item and Age	Boys					Girls				
	Mean		Group			Mean		Group		
50-Yard Dash (sec.)			KGS	NKGS	KCUS			KGS	NKGS	KCUS
14	7.89	KGS				11.11	KGS			
	7.88	NKGS	*	*		10.27	NKGS	*	*	
	7.57	KCUS				8.77	KCUS			
15	7.79	KGS				11.63	KGS			
	7.55	NKGS	*			10.94	NKGS	*	*	
	7.34	KCUS				11.63	KCUS			
16	7.28	KGS				11.73	KGS			
	7.14	NKGS				11.01	NKGS	*	*	
	7.09	KCUS				11.73	KCUS			
17	7.20	KGS				11.82	KGS			
	7.12	NKGS	*			11.21	NKGS	*	*	
	6.96	KCUS				9.08	KCUS			
600-Yard Run (min./sec.)			KCUS	KGS	NKGS			KGS	NKGS	KCUS
14	2:23	KCUS				3:07	KGS			
	2:14	KGS	*			3:03	NKGS	*	*	
	2:12	NKGS				2:47	KCUS			
15	2:25	KCUS				3:23	KGS			
	2:14	KGS	*			3:05	NKGS	*	*	
	2:08	NKGS				2:58	KCUS			
16	2:15	KCUS				3:14	KGS			
	2:06	KGS	*			3:06	KCHS	*	*	
	2:03	NKGS				3:05	NKGS			
17	2:12	KCUS				3:21	KGS			
	2:06	KGS	*			3:15	NKGS			
	2:05	NKGS				3:14	KCUS			

Key: KGS = Kuwaitis in the general system.
 NKGS = Non-Kuwaitis in the general system.
 KCUS = Kuwaitis in the credit unit system.

*Significant at the .05 level.

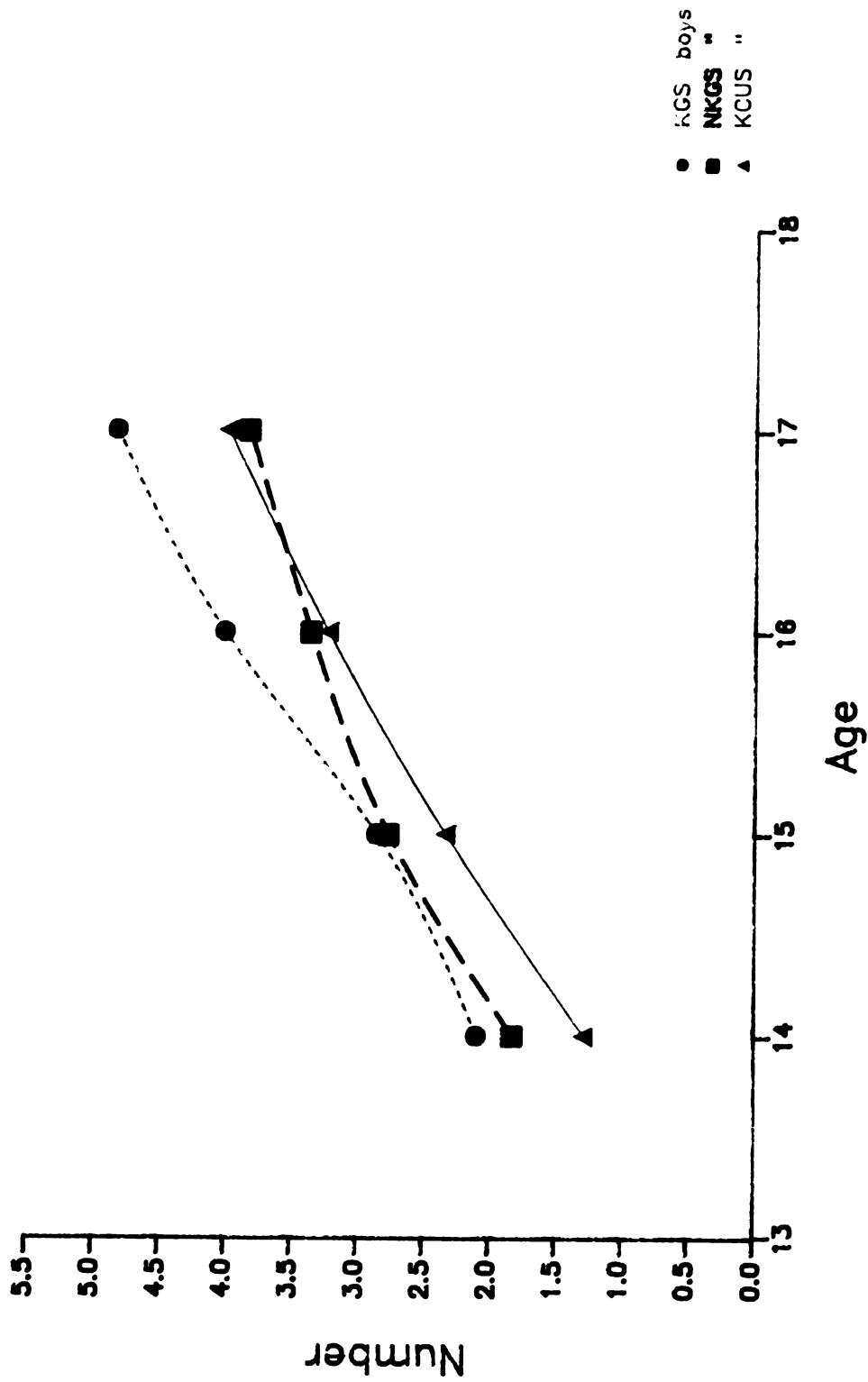


Figure 5.8.—Comparison of mean pull-up scores
for boys in Kuwait groups.

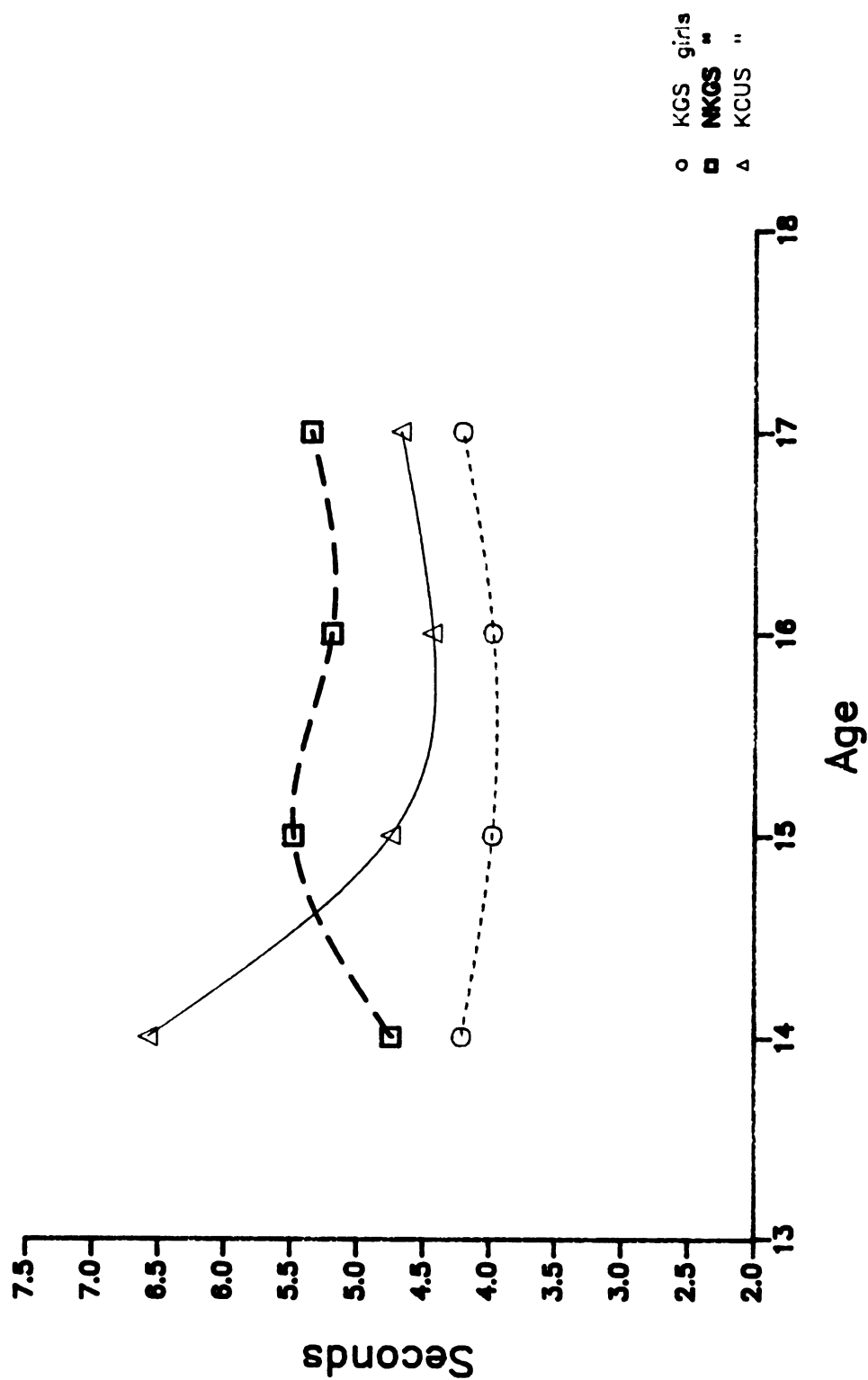


Figure 5.9.—Comparison of mean flexed arm hang scores for girls in Kuwait groups.

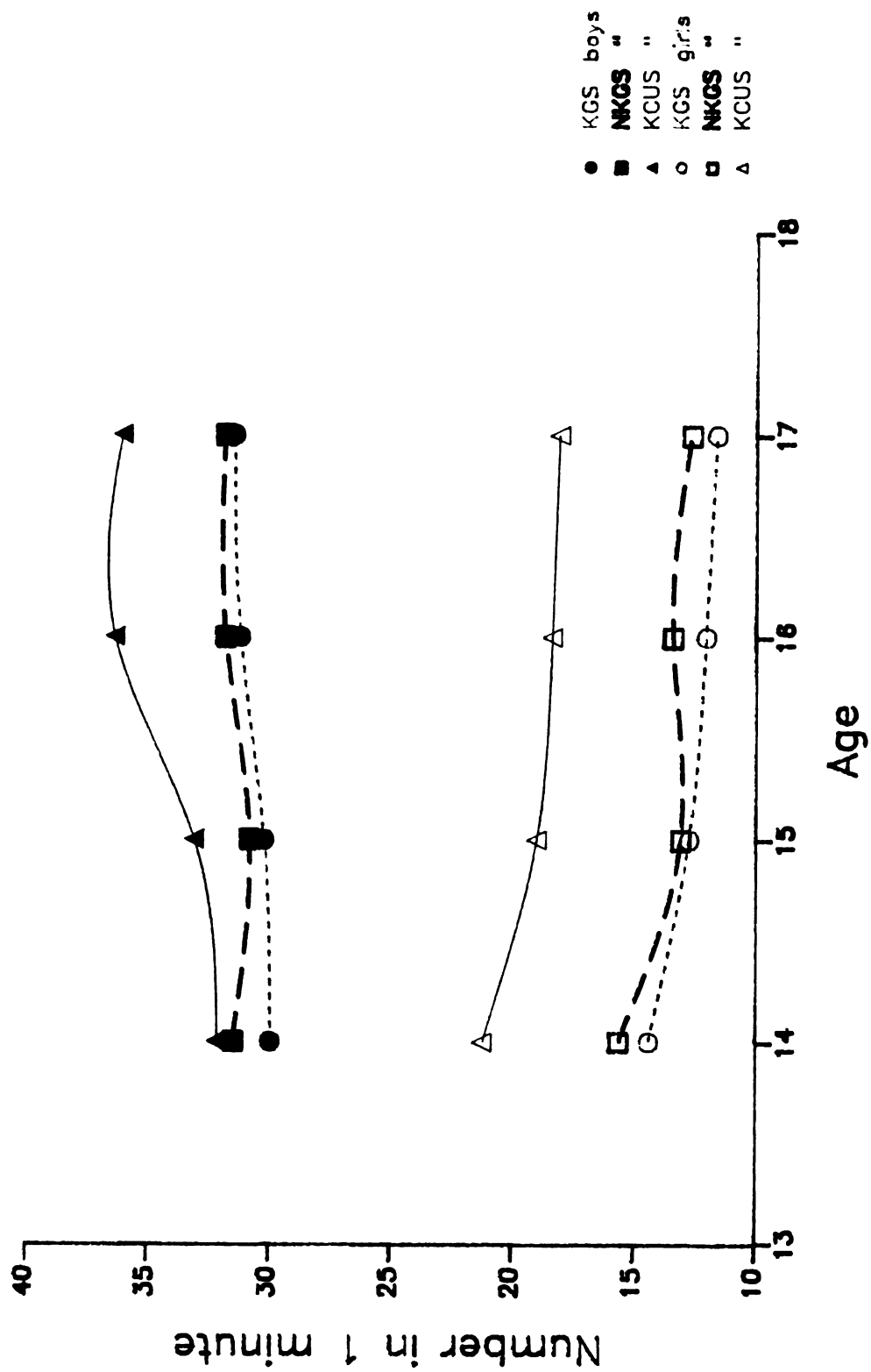


Figure 5.10.—Comparison of mean sit-up scores for Kuwait groups.

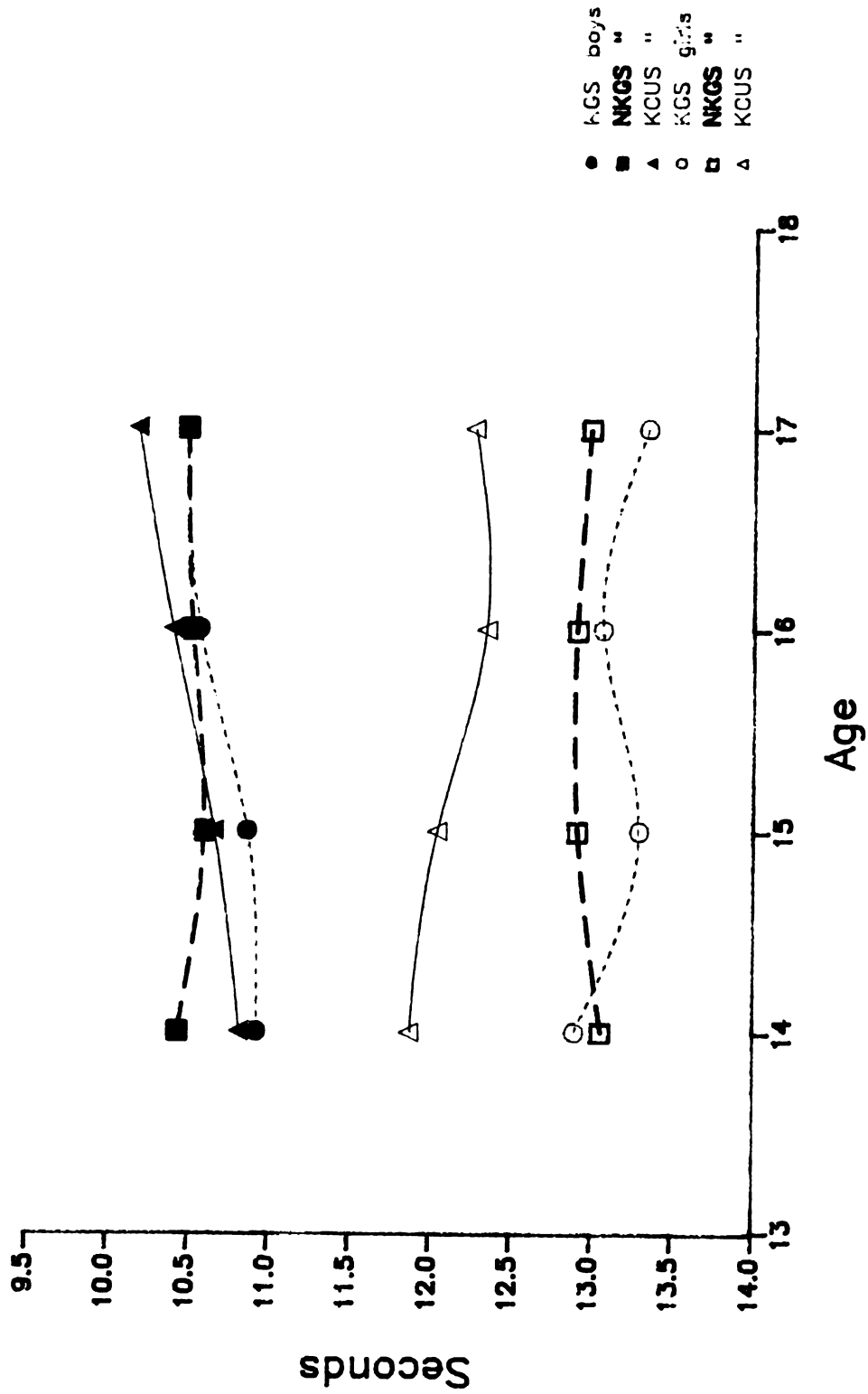


Figure 5.11.—Comparison of mean shuttle run scores for Kuwait groups.

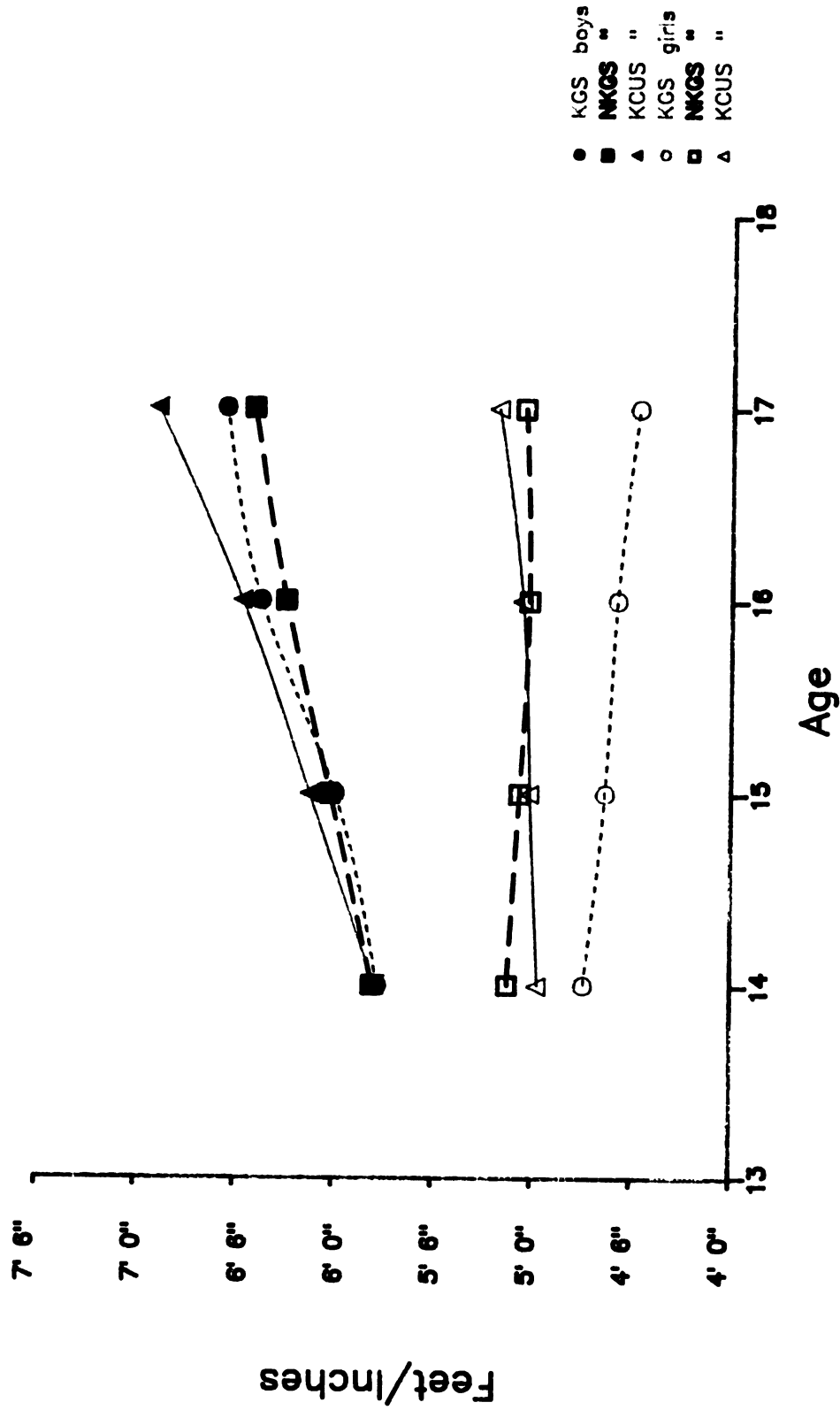


Figure 5.12A.—Comparison of mean standing long jump scores for Kuwait groups.

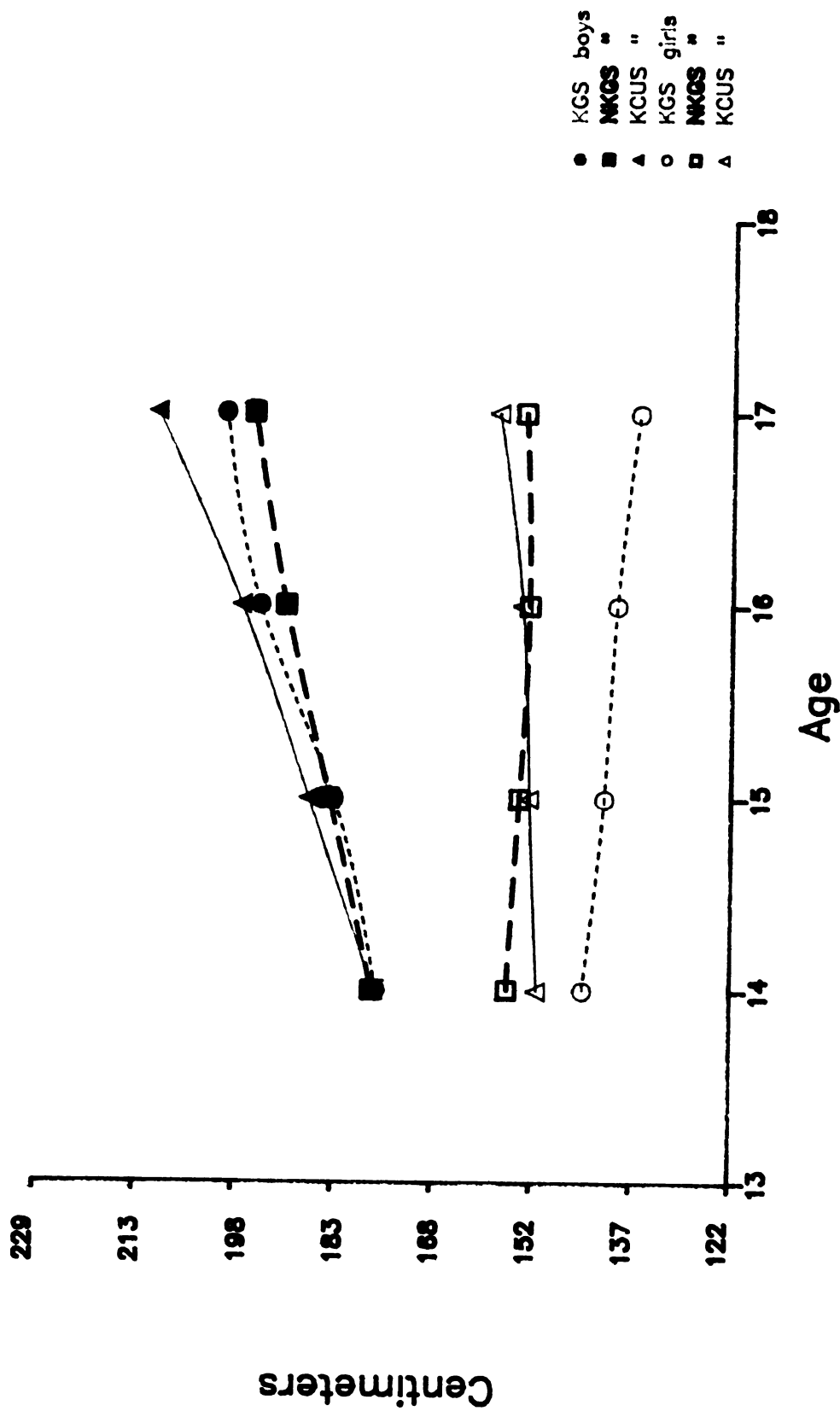


Figure 5.12B.—Comparison of mean standing long jump scores for Kuwait groups.

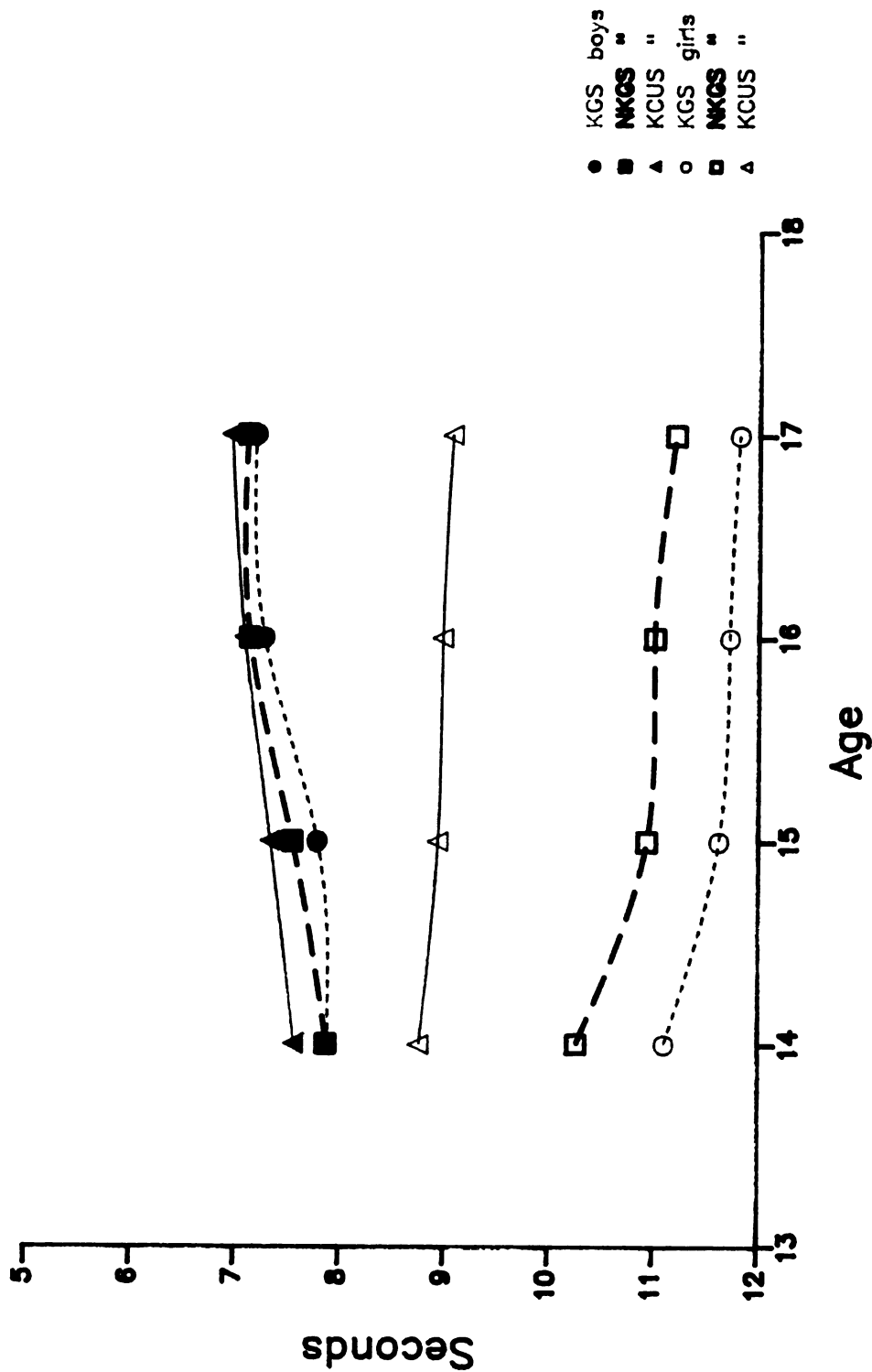


Figure 5.13.—Comparison of mean 50—yard dash scores for Kuwait groups.

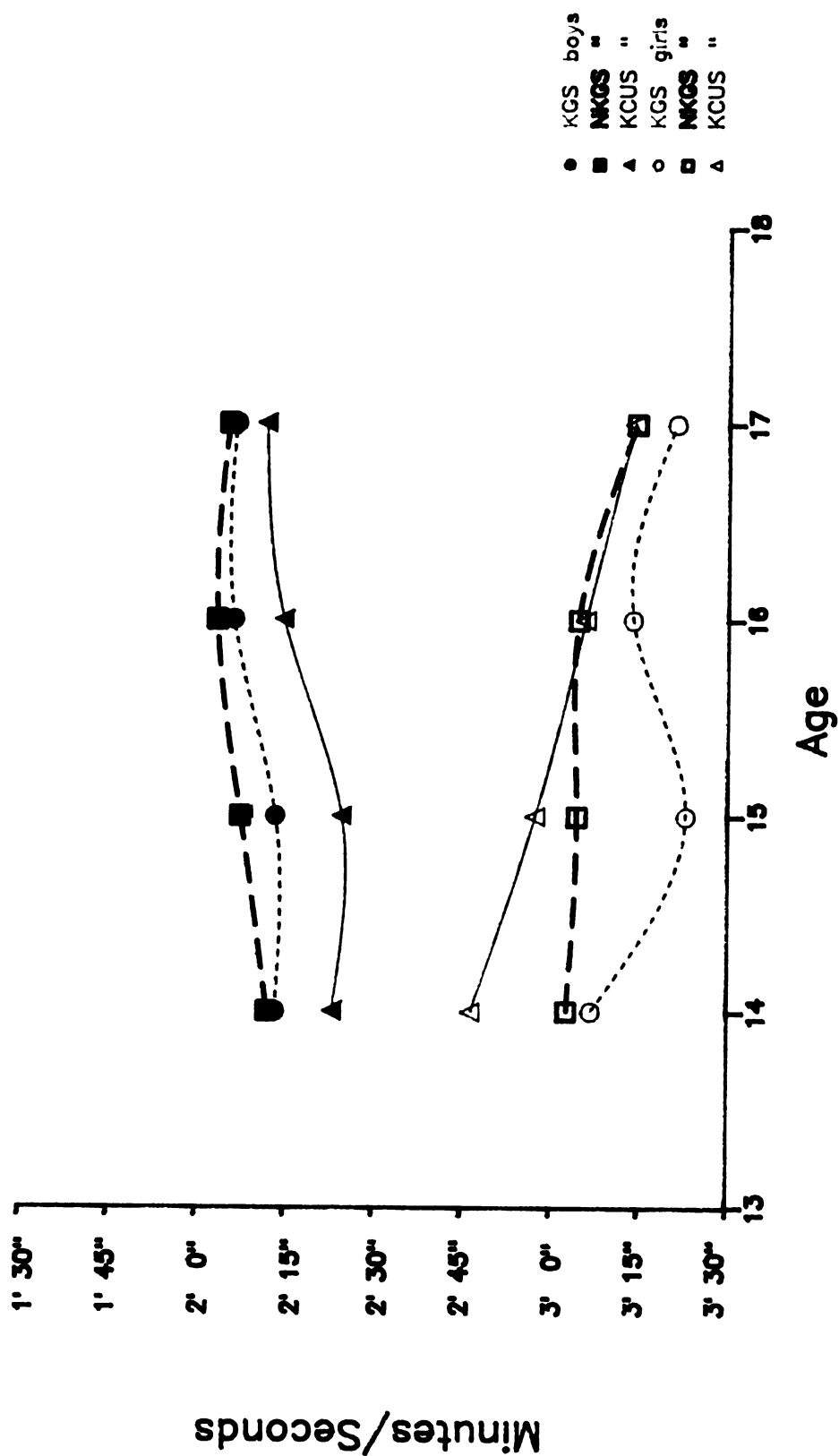


Figure 5.14.—Comparison of mean 600—yard run scores for Kuwait groups.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains (a) a summary of the study, stating the general purposes, procedures, statistical analyses, and findings; (b) conclusions that can be inferred from the analyzed data; and (c) recommendations for further action and research to evaluate and improve the physical fitness programs and status of youngsters in the State of Kuwait.

Summary

Purposes

The purposes of this study were to (a) establish national physical fitness norms in Kuwait for public secondary school students ages 14 through 17 by gender/age and gender/grade, (b) compare the physical fitness of students ages 14 through 17 in Kuwait with that of their counterparts in the United States, and (c) compare the mean differences in physical fitness among three groups of male and three groups of female students, ages 14 through 17, attending public secondary schools, grades 9 through 12, in the State of Kuwait.

Procedures

Whereas a four-stage cluster probability sampling technique was employed in America for the AAHPER Youth Fitness Survey of 1975, a two-stage cluster sampling procedure was used in Kuwait to select the subjects for this study. From each of the four governorates in Kuwait, the general secondary schools were selected randomly by gender. For the credit unit system, all three male schools were selected; of the eight female schools, three were drawn randomly. Next, from each selected school in both systems, classrooms were drawn. Then all of the students within those classrooms were tested except those with reasonable excuses. The sample size was 6,502 students or 8% of those in the Kuwait public secondary schools in 1985.

Ministry of Education approval was obtained to get the necessary support and to conduct the physical fitness tests in Kuwait public secondary schools. All of the selected schools received the equipment and supplies needed to conduct the fitness tests. Appropriate steps were taken to orient the physical education supervisors and teachers. The pilot study was administered in one male and one female school.

The fitness tests were carried out during the second half of March 1985. The AAHPER Youth Fitness Test battery was administered to the selected boys and girls, and their scores were recorded by their physical education teachers. The American statistics, means,

and standard deviations were obtained from Guy Reiff, a co-conductor of the 1975 national survey.

Statistical Analysis

Employing the Statistical Package for the Social Sciences (SPSS Manual, 1975), means, standard deviations, and cumulative frequencies, among other statistics, were determined from the Kuwaiti data. National percentile norms were constructed by gender/age and gender/grade in each fitness test for students ages 14 through 17 attending Kuwait public schools, grades 9 through 12.

Comparisons of physical fitness between scores of the youngsters in Kuwait and America were made by using the t-test for independent samples. An F-test preceded each t-test to ascertain whether the variances in each comparable group were equal. A pooled t-test was applied to those sets of means with equal variances, and an alternative t-test was used for those couples of means with unequal variances. The .05 alpha level was set to test each hypothesis of equal variances and equal means.

One-way ANOVA was used to test the equality of means in physical fitness among three groups of male and three groups of female students ages 14 through 17 attending Kuwait public secondary schools, grades 9 through 12. The Scheffe test was followed whenever the F-test of the ANOVA was found to be significant at the .05 level.

Findings

The physical fitness status of boys and girls, ages 14 through 17, attending public secondary schools in America in 1975 was significantly--statistically and practically--better than that of their counterparts in Kuwait.

The physical fitness levels of three groups of males and three groups of females, ages 14 through 17, in Kuwait public secondary schools were not equal in certain comparisons. In general, Kuwaiti male and female students in the credit unit system performed better than their Kuwaiti and non-Kuwaiti counterparts in the general system.

Conclusions

The statistical analyses of the comparisons of youth physical fitness in this study led to the following conclusions.

Youths in Kuwait and America

Male and female public secondary school students in Kuwait were significantly less physically fit than those in the United States at ages 14 through 17.

Youth Groups in Kuwait

Boys.

1. Pull-ups. Kuwaiti boys in the credit unit system had weaker arms and shoulder-girdle strength than Kuwaitis in the general system at ages 14, 16, and 17.

2. Sit-ups. Kuwaiti and non-Kuwaiti boys at ages 15, 16, and 17 in the same general system lacked abdominal and hip-flexor muscle efficiency when compared to Kuwaitis in the credit unit system.

3. Shuttle run. Kuwaiti boys, ages 14 and 17, plus non-Kuwaitis, age 17, both in the general system, were slower in the shuttle run than their Kuwaiti counterparts in the credit unit system. Kuwaiti boys, ages 14 and 15, were also inferior to non-Kuwaitis in the same general system and age groups.

4. Standing long jump. Kuwaiti boys at age 17 and non-Kuwaitis at ages 16 and 17, in the general system, jumped less well than their Kuwaiti counterparts in the credit unit system.

5. 50-yard dash. Kuwaiti boys at ages 14, 15, and 17 in the general system, plus non-Kuwaitis at age 14, were slower on the 50-yard dash than their Kuwaiti counterparts in the credit unit system.

6. 600-yard dash. Kuwaiti boys in the credit unit system were slower on the 600-yard run than Kuwaitis in the general system at ages 14 through 16, and non-Kuwaitis at every age, 14 through 17.

Girls.

1. In general, Kuwaiti girls in the credit unit system were significantly more physically fit than both Kuwaitis and non-Kuwaitis in the general system at ages 14 through 17.

2. In general, non-Kuwaiti girls, ages 14 through 17, were significantly more physically fit than their Kuwaiti counterparts in the same general system.

Both genders.

1. As in America, boys in Kuwait performed better than girls on all five identical physical fitness tests.

2. Boys in Kuwait tended to show a general improvement in all test items as they grew older.

3. In Kuwait, girls' performance on each physical fitness test regressed as they grew older.

One may assume that the present sedentary life style, accompanied by lack of motivation to participate regularly in appropriate physical exercises, has led to these low levels of fitness among boys and girls in Kuwait. Regular exercise is necessary to develop and maintain an optimal level of health, performance, and appearance. Research has shown that regular physical exercise enhances the function of the joints, increases the sense of physical well-being and promotes a sense of "feeling good," increases physical working capacity by increasing cardiorespiratory fitness and muscle strength and endurance, and decreases the risk of serious diseases that could lead to early disability and death (Pollock et al., 1978, p. 21).

Sharkey (1984) indicated six factors that influence aerobic (with oxygen) fitness. They are: (a) heredity, (b) potential for fitness, (c) gender, (d) age, (e) body fat, and (f) level of activity (pp. 12-17). Factors b and f, which relate to body fat, are essential points for youths to concentrate on, especially in Kuwait, because the other elements are beyond their control.

The investigator is convinced that, as Heyward (1984) stated, each component of physical fitness can be improved by a systematic program of exercise. With the knowledge and guidance of the exercise specialist, the individual's health and physical fitness status can be improved safely and effectively.

Recommendations

Based on the results of this first study of its kind in establishing national physical fitness norms by gender/age and gender/grade for all public secondary school students in Kuwait; comparing the physical fitness of boys and girls, ages 14 through 17, in Kuwait and America; and comparing the physical fitness of three groups of males and females in Kuwait, the writer hopes that the following recommendations for programs and research in Kuwait can be fulfilled in the future:

Programs

1. A national incentive program should be developed, similar to that applied by AAHPER in the United States, in which individuals and groups taking part in fitness testing and/or demonstrating exceptional physical achievement would receive awards and emblems or medals indicating their performance level on the tests.

2. Established national physical fitness norms should be used to assess current fitness levels, to prescribe exercise and activity programs, to monitor changes in fitness over time, and to test the success of various interventions.

3. All aspects, human and nonhuman, that relate to the physical education curriculum in Kuwait must be reevaluated, improved, and implemented conscientiously as soon as possible.

4. Every public and private youth-related sector, such as schools, sporting clubs, media, and other agencies, institutions, and organizations must coordinate, create awareness, provide encouragement, and take the responsibility to improve youth physical fitness at all levels--superior, average, and below average. Parents, writers, and religious leaders must also play a role in promoting fitness.

5. Appropriate fitness facilities for both boys and girls, within and outside of school, must be provided in convenient locations throughout Kuwait, with promotion of the use of such facilities.

6. Minimum passing points should be assigned to physical education courses in the general system, and more periods per week of such subjects should be offered, especially for girls in secondary schools.

7. Suitable ways and means must be sought to interest females in fitness exercises and other physical activities.

8. A national council on physical fitness and sports should be established to plan, improve, and evaluate different programs of physical activities.

Research

1. National fitness norms should be established for other age groups in public middle and elementary schools, as well as for youths of all ages and grades in private and higher education. Establishing

physical fitness norms for each subgroup in Kuwait, such as secondary general and credit unit systems, plus Kuwaitis and non-Kuwaitis in those systems, according to gender/age and gender/grade, is also recommended.

2. The national physical fitness norms should be updated every five or ten years to compare and evaluate the means of different periods.

3. National health-related physical fitness norms should be constructed, similar to the norms published by AAHPERD (1980) in America, and the results of both publications compared.

4. Fitness test items should be developed that are suitable for the physiques and activities of youths in Kuwait.

5. In-depth experimental research is needed to investigate the main reasons for the low fitness levels of boys and girls in Kuwait.

6. Comparisons of physical fitness should be carried out among students in the four Kuwaiti governorates (educational areas).

7. Comparative studies of physical fitness should be conducted periodically between youngsters in Kuwait and other Arab countries, in particular, and non-Arabs, in general.

Finally, the results of this study are to be accepted as a pioneer indication of an insufficient level of physical fitness among youths--males and females--in Kuwait, as well as a warning and challenge to educational administrators, physical education teachers, and citizens in the State of Kuwait and in many neighboring Arab countries

because the majority of Kuwait's present population is from that region.

APPENDICES

APPENDIX A

CORRESPONDENCE

A.. Letter in English from the investigator's academic advisor/
dissertation committee chairman, to whom it may concern in the
Kuwait Ministry of Education.

B. Letters in Arabic:

1. From the investigator to the Kuwait Vice-Minister of Education to approve the Ministry's support through its different departments. (Approved.)
2. From the Director of Secondary Education, Kuwait, to school principals in the Capital and Hawali educational areas, to facilitate the researcher's tasks and provide him the necessary support.
- 3 & 4. From the Assistant Vice-Minister of Education, Kuwait, to the Directors of the educational areas in (a) Ahmadi and (b) Jahra, to facilitate the researcher's tasks and provide him the necessary support.
5. From the author to the Kuwait Vice-Minister of Education, to approve the cooperation of the Department of Physical Education and Scouting, especially the physical education supervisors and teachers, with the researcher. (Approved.)

MICHIGAN STATE UNIVERSITY

COLLEGE OF EDUCATION
DEPARTMENT OF EDUCATIONAL ADMINISTRATION
ERICKSON HALL

EAST LANSING • MICHIGAN • 48824-1034

January 22, 1985

To Whom It May Concern:

Ahmad Jamal is a doctoral student in our department and I have the pleasure of serving as his academic advisor.

As a part of his doctoral dissertation, he is going to conduct a physical fitness test for male and female public secondary school students in Kuwait during this school year 1984-85.

I sincerely hope that the Kuwait Ministry of Education will assist him in his research.

Sincerely,

A handwritten signature in black ink, appearing to read 'Philip Cusick', written over a horizontal line.

Philip Cusick
Professor

PC/1h

"بسم الله الرحمن الرحيم"

التاريخ : ٢٧ / ١ / ١٩٨٥ م

حضرة السيد الموقر / وكيل وزارة التربية

الموضوع : طلب الموافقة لاجراء بحث علمي ميداني

لرسالة دكتوراة

تحية صادقة طيبة وبعد ،،،

لقد وافقت اللجنة العلمية المشرفة على الرسالة المقررة لدرجة الدكتوراه بجامعة ولاية متشجن بأن اقوم بدراسة مقارنة باللياقة البدنية للمرحلة الثانوية بنين / بنات بدولة الكويت بهدف وضع معايير باللياقة لطلبة وطالبات تلك المرحلة والمقارنة بين المستويات بالنظام التقليدي والمقررات ، وكذلك للمقارنة بين مستويات لياقة طلبة وطالبات الكويت والولايات المتحدة الامريكية .

وحيث ان نتائج تلك الدراسة سيكون لها ، ان شاء الله ، تأثير كبير على تطوير برامج التربية البدنية و**لياقة النشء** بدولة الكويت فان موافقتكم الكريمة ومساعدة بعض ادارات الوزارة (التعليما لثانوي ، التربية البدنية والكشاف ، الخدمات العامة ، والمخازن العامة) تعتبر ذات اهمية بالغة لتنفيذ البحث المقترح .

وبعد الموافقة ستجرى اختبارات اللياقة بالمدارس المختارة اثنا حصص التربية البدنية بالفترة من ١ فبراير الى ٣٠ ابريل ١٩٨٥ م وقد تم تحديد العينة بـ ٥٥ ٪ او ما يعادل ٢١٦٩ طالبا و ١٩١٢ طالبة من مجموع طلبة وطالبات المرحلة الثانوية بدولة الكويت .
وفتكم الله وسدد خطاكم .

وتفضلوا بقبول فائق التحية ،،،

المخلص

احمد عبد النور جمال



موجه تربيته بدنيه بالمرحلة الثانوية

ومبعوث من قبل الوزارة لنيل درجة الدكتوراة



بسم الله الرحمن الرحيم

٧٥/٣٠/١١٦٥/٨١/١٥٠



وزارة التربية

إدارة التعليم الثانوي

رقم الاشارة و ت / ت ث /

الكويت في ١٣ / ٥ / ١٤٠٥ هـ .

الموافق ٢ / ٢ / ١٩٨٥ م .

السيدة المحترمة / ناظرة ثانوية

بعد التحية ،

سيقوم الاستاذ / احمد عبدالنور جمال باجراء بحث ميداني على دليلة /

طالبات المرحلة الثانوية بدواة الكويت بعنوان (دراسة مقارنة باللياقة البدنية

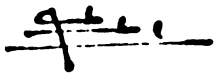
لطلبة / طالبات المرحلة الثانوية بالكويت) تمهيدا لتقديم لرسالة الدكتوراه

بجامعة ولاية ميتشجن بالولايات المتحدة .

يرجى تسهيل مهمته وتقديم العون اللازم له .

مع خالص التحية ،،،،

مدير التعليم الثانوي





نسخة / للطيف

ع . ي

بسم الله الرحمن الرحيم



وزارة التربية
مكتب وكيل الوزارة

التاريخ : ٢٠١٩ / ٢ / ٣

رقم الاشارة : فـ / وـ / دـ /

السيد المحترم / مدير منطقة الاحمدى التعليمية
بعد التحية ،

سيقوم الاستاذ / احمد عبدالغنى جمال باجراء بحث ميداني على طلبة
طالبات المرحلة الثانوية بدولة الكويت بعدنصوان :
دراسة مقارنه باللياقة البدنية للطلبة / طالبات المرحلة الثانوية بالكويت
تمهيدا للمتقدم لرسالة الدكتوراه بجامعة ولاية سيتشن بالولايات المتحدة .

يرجى تسهيل مهنته وتقديم العون اللازم له .

مع خالص التحية ،،،

وكيل وزارة التربية

نسخة / للطف

ع.ي

نسخة / للملف

حضرة السيد المقرر / وكيل وزارة التربية

الموضوع: تعاون الادارة مع الباحث لاجراء اختبارات لياقة على الطلبة

لهذا أرجو موافقتكم الكريمه لتتعاون الادارة المذكورة مع الباحث في توجيهه وتنفذه

• وفقكم الله

ولکم جزیل الشکر والامتنان ، ، ،

**موجه تربية بدنية بالمرحلة الثانية
ومبعوث من قبل الوزارة لئيل درجة الدكتوراه**

سيد محمد عبد الله (الملك)

APPENDIX B

LETTERS TO PHYSICAL EDUCATION TEACHERS

Two letters, in Arabic, from the Director of the Department of Physical Education and Scouting to school principals, to notify their physical education teachers to attend a meeting related to administering the test for this study. The first letter is to male teachers and the second to female teachers.

بسم الله الرحمن الرحيم

دولة الكويت

وزارة التربية

ادارة التربية البدنيه والكشافه

التاريخ : ١٨ / ٦ / ١٤٠٥

الموافق : ١٠ / ٣ / ١٩٨٥

الرقم :- (وت/ت ب/١/١٥٤)

حضرة / السيد ناظر

بعد التحية ،،،

على ضوء موافقة الوزارة على البحث الذي يجريه الاستاذ / احمد عبد النور جمال

في اللياقة البدنيه على عينات من طالبات والاب المدارس لثانويه ، يرجى تبليغ جميع

مدرسات / مدرسي التربية البدنيه بمدارسكم للاجتماع بالمذكور في الساعه الرابعه من بعد ظهر

يوم الأربعاء الموافق ١٣ / ٣ / ١٩٨٥ م بصالة مدرسة ثانويه الجابرية / بنين والتعاون مع

في تنفيذ الاختبارات الى ستجري في الفتره من يوم السبت ١٦ / ٣ / ١٩٨٥ م وحتى الاحد

٣١ / ٣ / ١٩٨٥ م .

وتفضلوا بقبول تحياتي ،،،

مدير



ادارة التربية البدنيه والكشافه

✖ نسخته للموجهة لفتى العام للتربية البدنيه

✖ نسخته للمشار اليه

✖ نسخته للملف

بسم الله الرحمن الرحيم

دولة الكويت

وزارة التربية

ادارة التربية البدنيه والكشافه

التاريخ : ١٨ / ٦ / ١٤٠٥

الموافق : ١٠ / ٣ / ١٩٨٥

الرقم :- (وت/ت ب/١ / ١٥٤)

حضرة / السيدة نائبة

بعد التحية ،،،

على ضوء موافقة الوزارة على البحث الذي يجريه الاستاذ / احمد عبد النور جمال

في اللياقة البدنيه على عينات من طالبات والمدارس لثانويه ، يرجى تبليغ جميع

مدرسات / مدرسي التربية البدنيه بمدرستكم للاجتماع بالمذكور في الساعه الرابعه من بعد ظهر

يوم الاربعاء الموافق ١٣ / ٣ / ١٩٨٥ م بصالة مدرسة المنصوريه لثانويه/بنات والتعاون معه

في تنفيذ الاختبارات الى ستجرى في الفتره من يوم السبت ١٦ / ٣ / ١٩٨٥ م وحتى الاحد

١٩٨٥ / ٣ / ٢١ م .

وتفضلوا بقبول تحياتي ،،،

مدير



ادارة التربية البدنيه والكشافه

* نسغه للموجهة لفي الحام للتربية البدنيه

* نسغه للمشار اليه

* نسغه للملف

APPENDIX C

ARABIC VERSION OF THE INSTRUCTIONS FOR THE 1975 AAHPER
YOUTH FITNESS TEST AND RECORDING FORMS

الشـد لـاعـلـى بـنـين

الادوات :-

يفضل استخدام عقله حديديه او خشبيه قطرها حوالى $\frac{1}{4}$ بوصة ويمكن استخدام عقله مثبتـه بمدخل الصاله ، وأما فى حالة عدم توفر الاداء الاعتياديه ، فان انبويه حديديه او انبويه سلم يمكنها ان تؤدى الغرض (شكل ١)

الشرح :-

يجب ان تثبت العقله بارتفاع مناسب بحيث يتمكن الطالب من التعلق مع بقاء ذراعه ممتدتان بالكامل وقدماه غير ملاسه للارض . وعلى الطالب ان يستخدم المسك من اعلى (اتجاه الكف للامام) (شكل ٢) وبعد اتخاذ وضع التعلق ، يرفع الطالب جسمه بواسطة ذراعه حتى يصل بذقنه فوق مستوى العقله ومن ثم يخفض جسمه ليصل لوضع التعلق الكامل كما فى وضع البدايه ويكرر هذا التمرين لكثر عدد من المرات كلما امكن .

الشروط :-

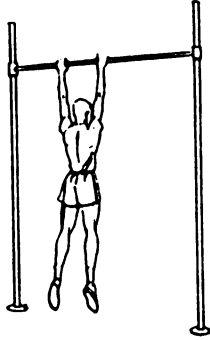
- ١ - تسمح بمحاوله واحده الا اذا كان من الواضح ان الطالب لم يحصل على فرصه عادله .
- ٢ - لا يجب ان يتمرجح الجسم خلال اداء الحركه ولا يجب ان يكون الشد بحركه نظر . واذا بدأ الطالب بالتمرجح اوقف ذلك بوضع ذراعك وهى ممتده امام فخذى الطالب بالتقاطع .
- ٣ - لا يجب ان ترفع الركبتان ولا يسمح بركل الرجلين .

التسجيل :-

سجل عدد المرات الصحيحه من الشد لاعلى (فى كل مره يكمل الطالب الشد لاعلى تسجل له نقطه ، وفى حالة عدم تكمله الشد لاعلى لا تحتسب نقطه) .



شكل ١
ادوات بديله للشد
لاعلى



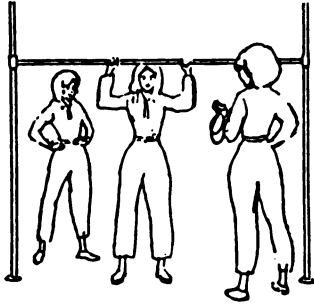
شكل ٢
الوضع الابتدائى للشد
لاعلى

التعلق بثني الذراعين بنات

الادوات :-

يفضل استخدام عقلة افقيه قطرها حوالي $1\frac{1}{2}$ بوصة ويمكن استخدام عقلة مدخل الصالة واذا لم تتوفر الاداء الاعتياديه ، فان قطعة انبوب يمكنها ان تؤدى الغرض . ومطلوب ساعة ايقاف .

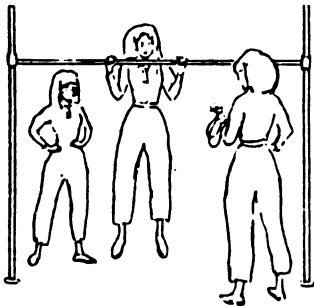
الشرح :-



شكل ٢
وضع الاستعداد للتعلق
بثني الذراعين

لا بد من تعديل ارتفاع العقلة لتقارب ارتفاع الطالبه في وضع الوقوف ولا بد ان تستخدم الطالبه المسك من اعلى (اتجاه الكف للامام) (شكل ٣) تقوم مدرستان احدهما من امام الطالبه والاخرى من خلفها ، بمساعدة الطالبه لترفع جسمها من على الارض لتصل لوضع يكون فيه ذقنها فوق مستوى العقلة ، والذراعان مشنيه وصدرها قريب من العقلة (شكل ٤) وتبقى الطالبه بهذا الوضع لاطول فتره ممكنه .

الشروط :-



شكل ٤
التعلق بثني الذراعين

- ١ - حالما تتخذ الطالبه وضع التعلق بثني الذراعين تدار ساعة الايقاف .
- ٢ - ويتم ايقاف الساعه عندما (ا) ذقن الطالبه يلامس العقلة ، (ب) رأس الطالبه يميل للخلف لتحفظ ذقنها فوق العقلة (ج) ذقن الطالبه يهبط اسفل مستوى العقلة .

التسجيل :-

يسجل الزمن بالثوان لا قرب ثانيه طوال مدة بقاء الطالبه في وضع التعلق الصحيح .

الادوات :-

ارضيه نظيفة او مرتبه او ارض جافه مزروعه نجيل
وساعة ايقات .

الشرح :-

شكل ٥
وضع البدن للجلوس من الرقود
بلفتي ركبتين

يرقد الطالب على ظهره مع ثنى ركبتيه مع وضع
قدميه على الارض بحيث لا يزيد بعد الكعبين
عن المقعده اكثر من ١٢ بوصة (٣٠سم) ولا يد
ان تكون الزاويه عند الركب اقل من ٩٠ درجة
يضع الطالب يديه خلف رقبته مع تشبيك الاصابع
ويضع مرفقيه بشكل مسطح على الارضيه او المرتبه
او النجيل . وتثبت القدمين على الارض بواسطة
الزميل . يقوم الطالب بشد عضلات بطنه ليرفع
رأسه ومرفقيه للامام كأنه يودى التكور ، واخيرا
يلاس مرفقيه بركبتيه وهذا الاداء يعتبر مرة -
واحد جلوس من الرقود - ويعود الطالب لوضع
البدن بحيث تلاص المرفقين السطح وذلك قبل
الجلوس مرة اخرى . الميقاتي يعطى اشارة
البدن (استعد - ابدأ) ويبدأ اداء الجلوس
من الرقود عند لفظ كلمة ابدأ . ويتوقف
الاداء عند لفظ كلمة قف . وتسجل عدد مرات
الجلوس من الرقود الصحيحه المنجزه في ٦٠ ثانيه
(دقيقه واحده) .



شكل ٦
الجلوس من الرقود
بلفتي ركبتين

الشروط :-

- ١ - ستسمح بمحاولة واحد فقط الا اذا اعتقد
المدرس ان الطالب لم يحصل على فرصه
عادله اثناء الاداء .
- ٢ - لا يسمح بالراحه عند اداء الجلوس من
الرقود .
- ٣ - لن يحتسب اداء الجلوس من الرقود عند ما
لا يتقيد الطالب (ا) حفظ اصابعه
متشابهه خلف عنقه (ب) تحريك كلا المرفقين
للأمام عند البدن بالجلوس بدون دفع
الارضيه بالمرفق ، او (ج) العوده لوضع
اليدين قبل الجلوس مرة اخرى ، وان كان
التزم بوضع مرفقيه بشكل مسطح على الارضيه

التسجيل :-

سجل عدد مرات الجلوس من الرقود الصحيحه
التي تمكن الطالب من القيام بها في ٦٠ ثانيه
(دقيقه واحده) والخطأ يلغى العده لذلك
الجلوس من الرقود . وتدار الساعه عند لفظ
كلمة "ابدأ" ويتم ايقاتها عند لفظ كلمة "قف" .

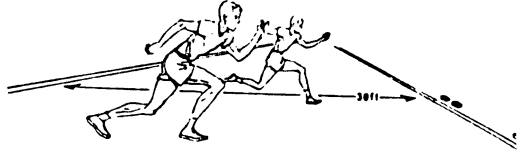
الجرى المكوكى

الادوات :

قطعتان من الخشب ، ٢ بوصة x ٢ بوصة
 x ٤ بوصة ، وساعة إيقاف . يمكن للطالب ان يلبس
 هذا تنس (مطاط) او يجرى حافى القدمين .

الشرح :-

يرسم خطين متوازيين على الارضيه والمسافه
 بينهما ٣٠ قدم . ويعتبر عرض ملعب كرة
 الطايره القانونى مكان مناسب ويخدم الغرض
 ضع قطعنا الخشب خلف احد الخطوط كما هو
 موضح بالشكل (٧) . ويبدأ الطالب الجرى
 من خلف الخط الاخر . وعند اعطاء الاشارة
 "ستعد ؟ ابدأ" يجرى الطالب نحو المكعبين
 ويلتقط احدهما ، ثم يعود جريا لخط البدأ
 ويضع المكعب خلف الخط وبعد ذلك يجرى
 مرة اخرى ليلتقط المكعب الاخر ، ويحمله



شكل ٧
 بدء جري مكوكى

ويعود ليغير خط البدايه ، واذا كان لدى -
 المختبر ساعتى إيقاف او واحده تعطى وقتين
 فى هذه الحاله يفضل جري طالبين بنفس الوقت
 ولتجنب ضرورة اعاده القِطْع بعد كل سباق
 ابدأ السباق بالتبادل اولا من خلف احد
 الخطوط وفى العره الثانيه من خلف الخط
 الاخر .

الشروط

يسمح بمحاولتين بينهما فتره راحه

التسجيل :-

سجل الزمن الافضل من المحاولتين ولا قرب عشر
 من الثانيه .

الوثب الطويل من الثبات

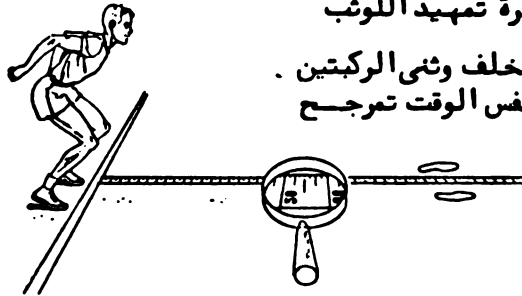
الادوات :-

مرتبه او ارضيه او حفرة خارج الصاله ، وشريط
قياس (بالباردة) .

الشرح :-

يقف الطالب كما هو موضح بالشكل (٨) مع
تباعد القدمين لعدة بوصات ووضع اصابع
القدمين خلف خط الارتقاء مباشرة تمهيداً للوثب
يقوم الطالب بمرجحة الذراعين للخلف وثني الركبتين .
وينفذ الوثب بعد الركبتين وفي نفس الوقت تمرجح
الذراعين للأمام .

الشروط :-



شكل ٨
فماس الوثب الطويل
من القنات

- ١ - اسعح بثلاث محاولات .
- ٢ - قس المسافه من خط الارتقاء الى العقب
او اى جزء من الجسم لا من الارضيه
والاقرب لخط الارتقاء (شكل ٨) .
- ٣ - وعند ما يعطى الاختبار داخل الصاله
يكون من الملائم ان تلتصق شريط القياس
بالارضيه من الزوايا اليمنى لخط الارتقاء
ودع الطلاب يشون على طول الشريط .
ويقف المسجل على الجانب ويرصد علامه
لاقرب بوصه .

التسجيل

سجل احسن مسافه من الثلاث محاولات بالقدم والبوصه لاقرب بوصه .

العدو ٥٠ ياردة (٤٥ متر) بنين وبنات

الادوات :-

ساعتا إيقاف او واحدہ تستخرج زمن الاول وا لثانى

الشرح :-

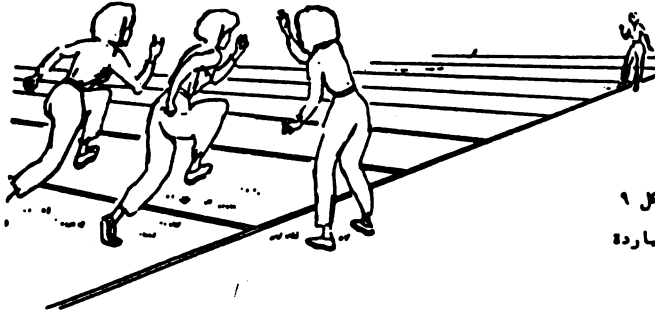
يفضل اجراء هذا الاختبار لطالين بنفس الوقت .
دع الاثنان ليستعدا خلف غط البد .
وسيستخدم الاذن بالبد النداء "ان" هل انتم
مستعدون ؟ "وابدأ" والنداء الاخير سيحاسب
بخفض ذراع اذن البد لاسفل حتى يعطى
اشارة مرثيه للمقاتي ، الذى يقف عند خط
النهايه .

الشروط :-

النتيجه هى الفتره الزمنية بين اشارة اذن البد
ولحظة عبور الطالب لخط النهايه .

التسجيل :-

سجل بالثوان لا قرب عشر من الثانيه



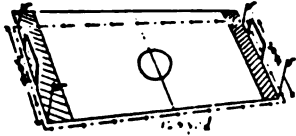
شكل ١

بدلية عدو ال ٥٠ ياردة

الجرى ٦٠٠ ياردة (٥٤٠) متر

بنين وبنات

الادوات :-

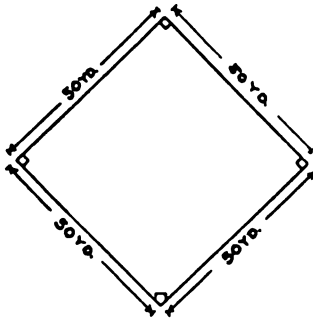


شكل ١١

استخدام ملعب كرة قدم لجرى
٦٠٠ ياردة

مضمار جري او مساحة مغططة حسب الاشكال
(١١، ١٢، ١٣) وساعة ايلاف .

الشرح :-

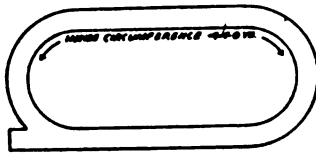


شكل ١٢

استخدام منطقة مناسبة لجرى
٦٠٠ ياردة

يتخذ الطالب وضع البدء العالى وعند الاشارة
"ستعد" "ابدا" يبدأ الطالب بالجرى مسافة
ال ٦٠٠ ياردة . ويمكن ان يتخلل الجرى
فترات من المشى . ويمكن ان يجرى عدد من
الطلاب بوقت واحد بشرط تواجد زميل لكل
متسابق يعين قبل بدء السباق . وبعد ذلك
كل طالب يصفى لزم زميله المتسابق ويتذكرو
عندما يعبر خط النهاية . والميقاتى عليه
بتلك الحاله ان ينادى على الزمن كلما يعبر
متسابق خط النهاية .

الشروط :-



شكل ١٣

استخدام المضمار من الداخل
لجرى ٦٠٠ ياردة

يسمح بالمشى ، ولكن الهدف هو ان تقطع
المسافه بأقصر فتره ممكنه .

التسجيل :-

سجل بالدقائق والثوان .

PERSONAL DATA
البيانات الشخصية

School _____ : المدرسة
Grade _____ : الصف
12th رابعة 11th ثالثة 10th ثانية 9th أولى
Name _____ : الاسم
Gender _____ : الجنس
Female أنثى Male ذكر
Birthday _____ : تاريخ الميلاد
Month شهر Day يوم Year سنة
Age (in years) _____ : السن (بالسنوات)
Nationality _____ : الجنسية
Non-Kuwaiti غير كويتي Kuwaiti كويتي

Date _____ : التاريخ
Month شهر Day يوم Year سنة 1985
Pull-up (Boys) _____ : الشد لاعلى (بنين)
No. عدد
Flexed Arm Hang (Girls) _____ : التعلق بثني الزراعين (بنات)
Sec. ثانية
Sit-up (one minute) _____ : الجلوس من الرقود (دقيقة واحدة)
No. عدد
Shuttle Run _____ : الجرى المكوكي
Sec ثانية Tenthس عشرة الثانية
Standing Long Jump _____ : الوثب الطويل من الثبات
Feet قدم Inches بوصة
Date _____ : التاريخ
Month شهر Day يوم Year سنة 1985
50-Yard Dash _____ : ٥٠ يارده عدو
Sec. ثانية Tenthس عشرة الثانية
600-Yard Run _____ : ٦٠٠ يارده عدو
Min دقيقة Sec ثانية
Head Teacher _____ : المدرس الاول
Supervisor _____ : الموجه



APPENDIX D

LETTERS OF VERIFICATION FOR THE ARABIC VERSION OF THE
INSTRUCTIONS OF THE 1975 AAHPER YOUTH FITNESS TEST

Education & Psychology Dept.
College of Basic Education
Edaliah, Kuwait
December 6, 1986

TO WHOM IT MAY CONCERN

In reviewing the Arabic translation of the AAHPER youth fitness tests, I assure you that Mr. Jamal did an excellent job in maintaining the clarity and preciseness of the original text.

I am positive that his present work as part of his Doctoral requirement will contribute positively to the development of the physical education area in the State of Kuwait.

Please do not hesitate to write to me in case of any further inquiry regarding this matter.

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'Ali G. Askar' with a stylized flourish at the end.

Ali G. Askar, Ph.D.

Education & Psychology Dept.
College of Basic Education
Edaliah, Kuwait
December 7, 1986

TO WHOM IT MAY CONCERN

With regard to the Arabic translation of the AAHPER youth fitness tests, it is clear that Mr. Jamal took into consideration all aspects of this kind of work. The Arabic version of the tests is very accurate.

I hope that his effort in establishing test norms for the youth in the State of Kuwait will be a successful one.

Please write for any further inquiry in this respect.

Yours truly,

A handwritten signature in dark ink, appearing to read 'H/ Jamea'.

Hassan H. Jamea, Ph.D.

APPENDIX E

ENGLISH VERSION OF THE INSTRUCTIONS OF THE 1975 AAHPER YOUTH FITNESS TEST

pull-up

BOYS

1

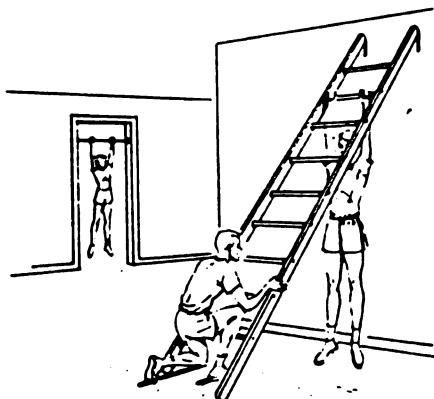


FIGURE 1
Improvised equipment for pull-up—
doorway gym bar in background,
ladder in foreground.

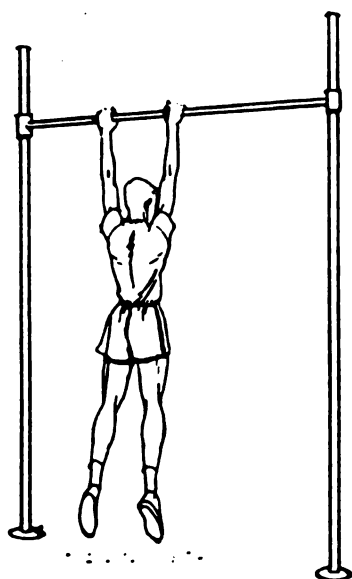


FIGURE 2
Starting position for pull-up.

EQUIPMENT

A metal or wooden bar approximately 1½ inches in diameter is preferred. A doorway gym bar can be used, and, if no regular equipment is available, a piece of pipe or even the rungs of a ladder can also serve the purpose (FIGURE 1).

DESCRIPTION

The bar should be high enough so that the pupil can hang with his arms and legs fully extended and his feet free of the floor. He should use the overhand grasp (FIGURE 2). After assuming the hanging position, the pupil raises his body by his arms until his chin can be placed over the bar and then lowers his body to a full hang as in the starting position. The exercise is repeated as many times as possible.

RULES

1. Allow one trial unless it is obvious that the pupil has not had a fair chance.
2. The body must not swing during the execution of the movement. The pull must in no way be a snap movement. If the pupil starts swinging, check this by holding your extended arm across the front of the thighs.
3. The knees must not be raised and kicking of the legs is not permitted.

SCORING

Record the number of completed pull-ups to the nearest whole number.

EQUIPMENT

A horizontal bar approximately 1½ inches in diameter is preferred. A doorway gym bar can be used; if no regular equipment is available, a piece of pipe can serve the purpose. A stop watch is needed.

DESCRIPTION

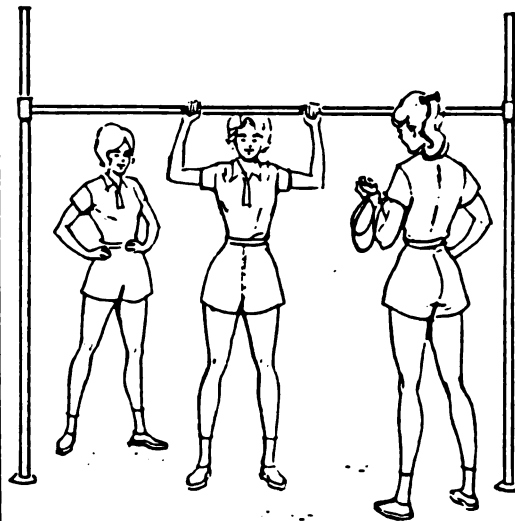
The height of the bar should be adjusted so it is approximately equal to the pupil's standing height. The pupil should use an overhand grasp (FIGURE 3). With the assistance of two spotters, one in front and one in back of pupil, the pupil raises her body off the floor to a position where the chin is above the bar, the elbows are flexed, and the chest is close to the bar (FIGURE 4). The pupil holds this position as long as possible.

RULES

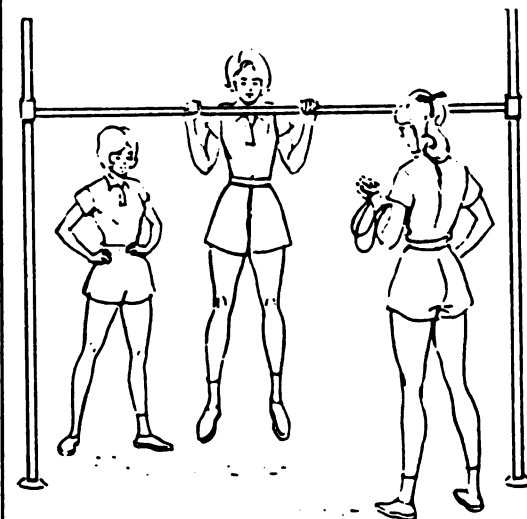
1. The stop watch is started as soon as the subject takes the hanging position.
2. The watch is stopped when (a) pupil's chin touches the bar, (b) pupil's head tilts backwards to keep chin above the bar, (c) pupil's chin falls below the level of the bar.

SCORING

Record in seconds to the nearest second the length of time the subject holds the hanging position.

1**GIRLS****flexed-arm hang****FIGURE 3**

Starting position for flexed-arm hang.

**FIGURE 4**
Flexed-arm hang.

sit-up (flexed leg) BOYS AND GIRLS

2



FIGURE 5
Starting position for flexed leg sit-up

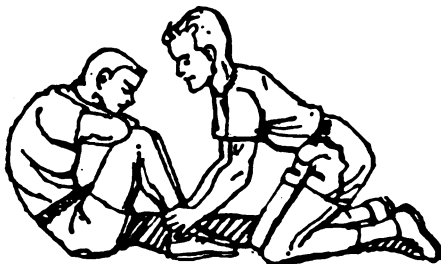


FIGURE 6
Flexed leg sit-up

EQUIPMENT

Clean floor, mat or dry turf and stopwatch.

DESCRIPTION

The pupil lies on his back with his knees bent, feet on the floor and heels not more than 12 inches from the buttocks. The angle at the knees should be less than 90 degrees. The pupil puts his hands on the back of his neck with fingers clasped and places his elbows squarely on the mat, floor or turf. His feet are held by his partner to keep them in touch with the surface. The pupil tightens his abdominal muscles and brings his head and elbows forward as he curls up, finally touching elbows to knees. This action constitutes one sit-up. The pupil returns to the starting position with his elbows on the surface before he sits up again. The timer gives the signal "ready-go," and the sit-up performance is started on the word "go." Performance is stopped on the word "stop." The number of correctly executed sit-ups performed in 60 seconds shall be the score.

RULES

1. Only one trial shall be allowed unless the teacher believes the pupil has not had a fair opportunity to perform.
2. No resting between sit-ups is permitted.
3. No sit-ups shall be counted in which the pupil *does not* (a) keep the fingers clasped behind the neck; (b) bring both elbows forward in starting to sit up without pushing off the floor with an elbow; or (c) return to starting position, *with elbows flat on the surface*, before sitting up again.

SCORING

Record the number of correctly executed sit-ups the pupil is able to do in 60 seconds. A foul nullifies the count for that sit-up. The watch is started on the word "go" and stopped on the word "stop."

EQUIPMENT

Two blocks of wood, 2 inches x 2 inches x 4 inches, and stopwatch. Pupils should wear sneakers or run barefooted.

DESCRIPTION

Two parallel lines are marked on the floor 30 feet apart. The width of a regulation volleyball court serves as a suitable area. Place the blocks of wood behind one of the lines as indicated in FIGURE 7. The pupil starts from behind the other line. On the signal "Ready? Go!" the pupil runs to the blocks, picks one up, runs back to the starting line, and *places* the block behind the line; he then runs back and picks up the second block, which he carries back across the starting line. If the scorer has two stopwatches or one with a split-second timer, it is preferable to have two pupils running at the same time. To eliminate the necessity of returning the blocks after each race, start the races alternately, first from behind one line and then from behind the other.

RULES

Allow two trials with some rest between.

SCORING

Record the time of the better of the two trials to the nearest tenth of a second.

3

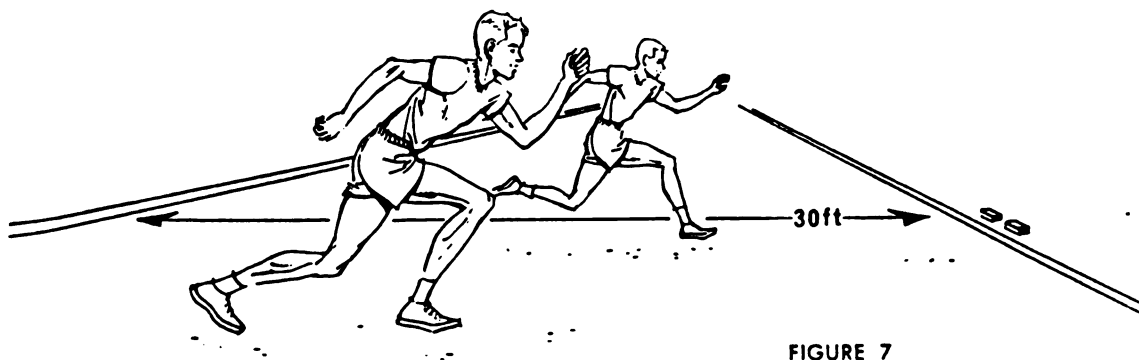
shuttle run**BOYS AND GIRLS**

FIGURE 7
Starting the shuttle run.

standing broad jump

BOYS AND GIRLS

4

EQUIPMENT

Mat, floor, or outdoor jumping pit, and tape measure.

DESCRIPTION

Pupil stands as indicated in FIGURE 8, with the feet several inches apart and the toes just behind the take-off line. Preparatory to jumping, the pupil swings the arms backward and bends the knees. The jump is accomplished by simultaneously extending the knees and swinging forward the arms.

RULES

1. Allow three trials.
2. Measure from the take-off line to the heel or other part of the body that touches the floor nearest the take-off line (FIGURE 8).
3. When the test is given indoors, it is convenient to tape the tape measure to the floor at right angles to the take-off line and have the pupils jump along the tape. The scorer stands to the side and observes the mark to the nearest inch.

SCORING

Record the best of the three trials in feet and inches to the nearest inch.

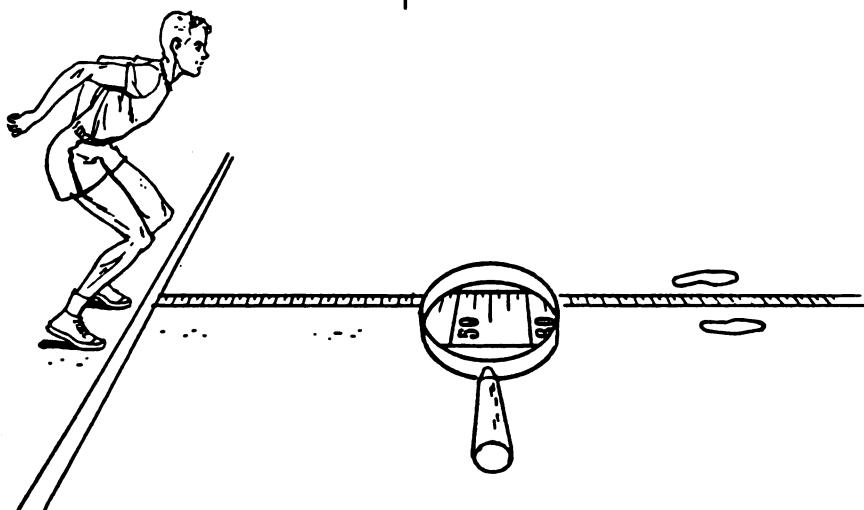


FIGURE 8
Measuring the standing broad jump.

EQUIPMENT

Two stopwatches or one with a split-second timer.

DESCRIPTION

It is preferable to administer this test to two pupils at a time. Have both take positions behind the starting line. The starter will use the commands "Are you ready?" and "Go!" The latter will be accompanied by a downward sweep of the starter's arm to give a visual signal to the timer, who stands at the finish line.

RULES

The score is the amount of time between the starter's signal and the instant the pupil crosses the finish line.

SCORING

Record in seconds to the nearest tenth of a second.

5

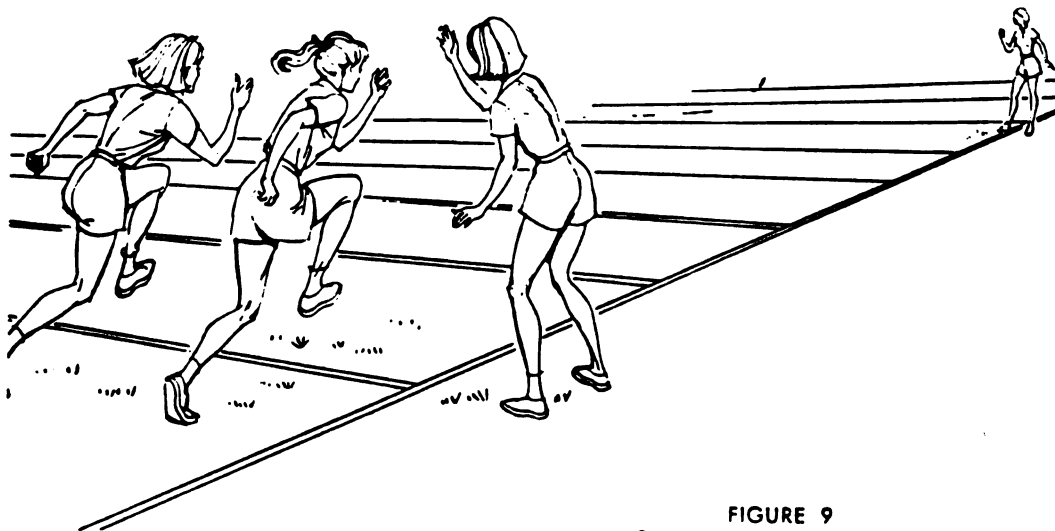
50-yard dash**BOYS AND GIRLS**

FIGURE 9
Starting the 50-yard dash.

EQUIPMENT

Track or area marked according to FIGURES 11-13, and stopwatch.

DESCRIPTION

Pupil uses a standing start. At the signal "Ready? Go!" the pupil starts running the 600-yard distance. The running may be interspersed with walking. It is possible to have a dozen pupils run at one time by having the pupils pair off before the start of the event. Then each pupil listens for and remembers his partner's time as the latter crosses the finish. The timer merely calls out the times as the pupils cross the finish.

RULES

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

SCORING

Record in minutes and seconds.

600-yard run-walk

BOYS AND GIRLS

Options:

Ages 10-12, 1-mile or 9-minute run

Ages 13 or older, 1½-mile or 12-minute run

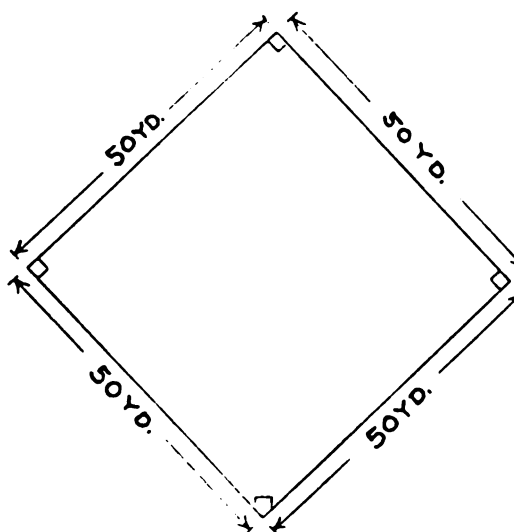


FIGURE 12
Using any open area for 600-yard run-walk.

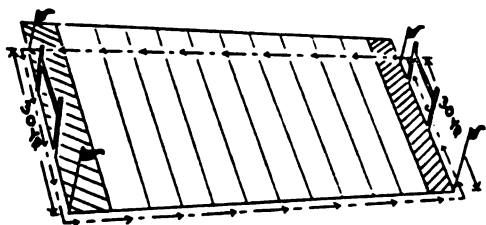


FIGURE 11
Using football field for 600-yard run-walk.

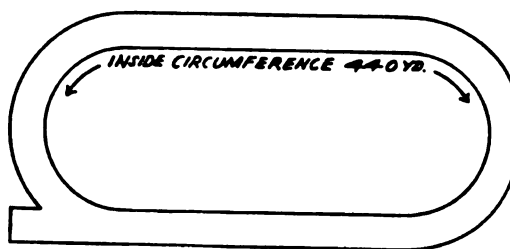


FIGURE 13
Using inside track for 600-yard run-walk.

APPENDIX F

KUWAIT PERCENTILE NORMS BY GENDER/AGE AND GENDER/GRADE

Table F.2.--Kuwait norms by age and by grade for sit-ups: boys (number in 60 seconds).

Percentile	Age					Grade				Percentile
	14	15	16	17+	9	10	11	12		
100	57	60	60	64	57	60	65	61	100	
95	46	46	46	46	45	46	47	49	95	
90	42	42	43	43	42	43	44	45	90	
85	40	40	42	41	40	41	42	42	85	
80	40	39	40	40	39	39	40	40	80	
75	38	37	39	39	38	37	39	39	75	
70	37	36	37	37	36	36	38	38	70	
65	36	35	36	36	35	35	37	37	65	
60	35	34	35	35	34	34	36	36	60	
55	33	32	33	34	32	32	35	35	55	
50	32	31	32	33	31	31	34	34	50	
45	30	30	31	32	30	30	33	32	45	
40	30	29	30	30	29	29	31	31	40	
35	28	28	29	29	28	28	30	30	35	
30	26	27	28	28	26	27	29	29	30	
25	25	25	27	26	25	25	27	27	25	
20	23	24	25	25	23	24	26	25	20	
15	20	21	24	22	21	22	25	23	15	
10	18	19	22	20	19	20	21	20	10	
5	13	16	19	15	13	18	17	14	5	
0	0	0	0	0	0	2	0	1	0	

Table F.3.--Kuwait norms by age and by grade for shuttle run: boys (in seconds).

Percentile	Age				Grade				Percentile
	14	15	16	17+	9	10	11	12	
100	7.6	8.2	8.0	8.3	7.7	8.9	8.4	7.1	100
95	9.0	9.2	9.2	9.0	9.0	9.2	9.0	9.0	95
90	9.4	9.6	9.4	9.2	9.4	9.5	9.3	9.2	90
85	9.7	9.8	9.6	9.5	9.7	9.8	9.5	9.3	85
80	9.9	9.9	9.8	9.7	9.9	9.8	9.7	9.5	80
75	10.0	10.0	9.9	9.8	10.0	10.0	9.8	9.7	75
70	10.0	10.0	10.0	9.9	10.0	10.0	9.9	9.8	70
65	10.2	10.2	10.0	10.0	10.2	10.0	10.0	9.9	65
60	10.3	10.2	10.1	10.0	10.2	10.2	10.0	10.0	60
55	10.4	10.3	10.2	10.1	10.4	10.2	10.1	10.0	55
50	10.5	10.5	10.3	10.2	10.5	10.3	10.2	10.1	50
45	10.7	10.6	10.4	10.2	10.7	10.5	10.3	10.1	45
40	10.8	10.8	10.5	10.4	10.9	10.6	10.4	10.2	40
35	11.0	11.0	10.7	10.5	11.0	10.8	10.5	10.4	35
30	11.0	11.0	10.9	10.7	11.1	10.9	10.7	10.5	30
25	11.2	11.2	11.0	10.9	11.3	11.0	10.9	10.7	25
20	11.5	11.4	11.2	11.0	11.5	11.2	11.0	11.0	20
15	11.9	11.8	11.4	11.3	11.9	11.4	11.2	11.3	15
10	12.2	12.0	11.8	11.8	12.2	11.9	11.5	11.8	10
5	12.7	12.5	12.2	12.4	12.8	12.2	12.0	12.7	5
0	13.8	15.2	14.5	15.0	14.8	13.4	15.8	14.5	0

Table F.4A.--Kuwait norms by age and by grade for standing long jump: boys (in feet and inches).

Percentile	Age				Grade				Percentile
	14	15	16	17+	9	10	11	12	
100	8'03"	8'06"	8'04"	9'00"	8'10"	8'04"	8'09"	9'02"	100
95	7'02"	7'06"	7'07"	8'01"	7'06"	7'08"	7'11"	8'03"	95
90	7'00"	7'02"	7'04"	7'09"	7'02"	7'04"	7'06"	8'00"	90
85	6'09"	7'00"	7'02"	7'06"	7'00"	7'02"	7'04"	7'09"	85
80	6'07"	6'09"	7'00"	7'04"	6'10"	7'00"	7'02"	7'06"	80
75	6'06"	6'08"	7'00"	7'02"	6'08"	6'11"	7'01"	7'05"	75
70	6'03"	6'06"	6'10"	7'00"	6'06"	6'09"	7'00"	7'03"	70
65	6'01"	6'04"	6'08"	7'00"	6'05"	6'08"	6'10"	7'01"	65
60	6'00"	6'03"	6'08"	6'10"	6'03"	6'07"	6'08"	7'00"	60
55	5'11"	6'02"	6'06"	6'08"	6'02"	6'05"	6'07"	7'00"	55
50	5'09"	6'01"	6'05"	6'08"	6'00"	6'04"	6'06"	6'10"	50
45	5'07"	6'00"	6'03"	6'06"	5'11"	6'02"	6'05"	6'08"	45
40	5'06"	5'10"	6'03"	6'05"	5'09"	6'01"	6'04"	6'06"	40
35	5'04"	5'08"	6'01"	6'03"	5'07"	6'00"	6'03"	6'05"	35
30	5'02"	5'06"	6'00"	6'02"	5'06"	5'10"	6'02"	6'03"	30
25	5'02"	5'04"	5'10"	6'00"	5'04"	5'08"	6'00"	6'01"	25
20	5'00"	5'03"	5'07"	5'10"	5'02"	5'06"	5'10"	6'00"	20
15	4'10"	5'00"	5'04"	5'07"	5'00"	5'05"	5'07"	5'07"	15
10	4'07"	4'11"	5'02"	5'03"	4'09"	5'01"	5'05"	5'02"	10
5	4'02"	4'06"	4'08"	4'10"	4'03"	4'08"	5'00"	4'04"	5
0	3'04"	3'06"	3'04"	3'05"	3'03"	3'09"	3'07"	2'00"	0

Table F.48. Kuwait norms by age and by grade for standing long jump: boys (in centimeters).

Percentile	Age				Grade				Percentile
	14	15	16	17+	9	10	11	12	
100	251	259	254	274	269	254	267	279	100
95	218	229	231	246	229	234	241	251	95
90	213	218	224	236	218	224	229	244	90
85									
85	206	213	218	229	213	218	224	236	85
80	201	206	213	223	208	213	218	229	80
75	198	203	213	218	203	211	216	226	75
70									
70	191	198	208	213	198	206	213	221	70
65	185	193	203	213	196	203	208	216	65
60	183	191	203	208	191	201	203	213	60
55									
55	180	188	198	203	188	196	201	213	55
50	175	185	196	203	183	193	198	208	50
45	170	183	191	198	180	188	196	203	45
40									
40	168	178	191	196	175	185	193	198	40
35	163	173	185	191	170	183	191	196	35
30	157	168	183	188	168	178	188	191	30
25									
25	157	163	178	183	163	173	183	185	25
20	152	160	170	178	157	168	178	183	20
15	147	152	165	170	152	165	170	170	15
10									
10	140	150	157	160	145	155	165	157	10
5	127	137	142	147	130	142	152	132	5
0	102	107	102	74	99	114	109	61	0

Table F.5.--Kuwait norms by age and by grade for 50-yard dash: boys (in seconds).

Percentile	Age				Grade				Percentile
	14	15	16	17+	9	10	11	12	
100	5.8	5.7	5.3	5.1	5.5	5.6	5.2	5.1	100
95	6.3	6.1	6.0	5.9	6.2	6.1	5.9	5.8	95
90	6.5	6.3	6.2	6.1	6.4	6.2	6.0	6.1	90
85	6.8	6.5	6.3	6.2	6.6	6.3	6.2	6.2	85
80	7.0	6.7	6.4	6.4	6.8	6.5	6.3	6.3	80
75	7.0	6.8	6.5	6.4	6.9	6.6	6.4	6.4	75
70	7.2	7.0	6.6	6.5	7.0	6.8	6.4	6.5	70
65	7.2	7.1	6.8	6.7	7.1	6.9	6.6	6.7	65
60	7.3	7.2	6.8	6.8	7.2	7.0	6.7	6.8	60
55	7.5	7.2	7.0	6.9	7.3	7.0	6.8	6.9	55
50	7.6	7.3	7.0	7.0	7.4	7.1	6.9	7.0	50
45	7.8	7.4	7.1	7.0	7.6	7.2	7.0	7.0	45
40	8.0	7.6	7.2	7.2	7.8	7.3	7.0	7.1	40
35	8.1	7.8	7.3	7.2	7.9	7.4	7.1	7.2	35
30	8.2	7.9	7.4	7.4	8.0	7.5	7.2	7.3	30
25	8.4	8.0	7.6	7.5	8.2	7.6	7.4	7.4	25
20	8.6	8.2	7.8	7.7	8.4	7.8	7.6	7.5	20
15	8.8	8.9	8.0	7.9	8.6	8.0	7.9	7.7	15
10	9.0	8.9	8.3	8.2	9.0	8.4	8.1	8.0	10
5	9.7	9.4	9.0	8.8	9.4	9.0	9.0	8.6	5
0	11.1	12.8	11.0	12.0	11.9	11.3	11.0	13.0	0

Table F.6.--Kuwait norms by age and by grade for 600-yard run: boys (in minutes and seconds).

Percentile	Age					Grade				Percentile
	14	15	16	17+		9	10	11	12	
100	1:19	1:23	1:23	1:24		1:19	1:26	1:26	1:20	100
95	1:40	1:37	1:36	1:33		1:38	1:36	1:33	1:34	95
90	1:45	1:44	1:40	1:39		1:44	1:40	1:37	1:39	90
85	1:49	1:46	1:44	1:42		1:46	1:45	1:40	1:42	85
80	1:52	1:49	1:46	1:45		1:49	1:47	1:44	1:46	80
75	1:55	1:51	1:49	1:48		1:52	1:50	1:47	1:50	75
70	1:56	1:54	1:51	1:50		1:54	1:53	1:50	1:51	70
65	2:00	1:57	1:54	1:53		1:56	1:55	1:51	1:54	65
60	2:03	2:00	1:56	1:55		2:00	1:57	1:54	1:57	60
55	2:06	2:03	1:58	1:58		2:02	1:59	1:57	1:59	55
50	2:08	2:05	2:00	2:00		2:05	2:02	1:59	2:03	50
45	2:11	2:09	2:02	2:03		2:08	2:05	2:01	2:05	45
40	2:14	2:11	2:05	2:06		2:10	2:08	2:04	2:10	40
35	2:18	2:15	2:08	2:10		2:13	2:12	2:06	2:15	35
30	2:23	2:20	2:11	2:13		2:19	2:15	2:10	2:20	30
25	2:30	2:25	2:16	2:19		2:25	2:20	2:14	2:25	25
20	2:36	2:34	2:22	2:24		2:33	2:26	2:19	2:30	20
15	2:45	2:46	2:32	2:32		2:42	2:35	2:27	2:40	15
10	2:56	2:57	2:40	2:43		2:56	2:45	2:36	2:55	10
5	3:13	3:14	2:58	3:01		3:09	2:59	2:58	3:06	5
0	4:14	4:20	4:12	4:15		4:14	4:10	4:00	5:09	0

Table F.7.--Kuwait norms by age and by grade for flexed arm hang: girls (in seconds).

Percentile	Age					Grade				Percentile
	14	15	16	17+		9	10	11	12	
100	30	29	34	38		29	52	27	33	100
95	18	16	15	16		16	18	15	16	95
90	12	11	11	12		12	12	10	12	90
85	10	9	9	10		9	10	8	9	85
80	8	7	7	7		8	9	7	7	80
75	7	6	6	6		6	7	6	6	75
70	6	5	5	5		6	6	5	4	70
65	5	5	5	5		5	5	4	5	65
60	5	4	4	4		4	5	3	3	60
55	4	4	3	3		4	4	3	3	55
50	3	3	3	3		3	3	3	2	50
45	3	2	2	2		2	3	2	2	45
40	2	2	2	2		2	2	2	2	40
35	2	1	1	1		1	2	1	1	35
30	1	1	1	1		1	1	1	1	30
25	1	1	0	1		1	1	0	1	25
20	1	0	0	0		0	0	0	1	20
15	0	0	0	0		0	0	0	0	15
10	0	0	0	0		0	0	0	0	10
5	0	0	0	0		0	0	0	0	5
0	0	0	0	0		0	0	0	0	0

Table F.8.--Kuwait norms by age and by grade for sit-ups: girls (number in 60 seconds).

Percentile	Age					Grade				Percentile
	14	15	16	17+		9	10	11	12	
100	45	34	33	35		37	36	33	36	100
95	31	28	27	27		29	27	27	27	95
90	28	25	25	24		25	24	25	25	90
85	25	23	23	22		22	22	23	23	85
80	24	20	21	20		20	20	22	21	80
75	22	20	20	19		20	20	20	20	75
70	20	18	19	18		18	18	19	19	70
65	20	18	18	17		17	17	18	17	65
60	18	16	17	15		16	16	17	16	60
55	17	15	16	15		15	15	16	15	55
50	17	15	15	14		15	15	15	14	50
45	16	14	14	13		14	14	14	13	45
40	15	13	13	12		13	13	13	13	40
35	14	12	12	12		12	12	12	12	35
30	13	11	11	11		11	11	11	11	30
25	12	10	10	10		10	10	10	10	25
20	11	9	9	8		8	9	9	9	20
15	9	7	7	6		6	7	8	7	15
10	7	4	4	4		4	4	5	5	10
5	1	1	1	1		0	1	2	2	5
0	0	0	0	1		0	0	0	0	0

Table F.9.--Kuwait norms by age and by grade for shuttle run: girls (in seconds).

Percentile	Age					Grade				Percentile
	14	15	16	17+		9	10	11	12	
100	9.0	8.5	8.1	8.0		9.8	9.0	8.5	9.8	100
95	10.2	10.5	10.5	10.3		10.4	11.0	10.0	10.3	95
90	11.0	11.0	11.0	11.0		11.0	11.0	10.7	10.9	90
85	11.0	11.3	11.2	11.2		11.2	11.3	11.0	11.0	85
80	11.2	11.7	11.4	11.5		11.5	11.7	11.2	11.4	80
75	11.5	12.0	11.9	12.0		12.0	12.0	11.6	11.9	75
70	11.7	12.0	12.0	12.0		12.0	12.0	12.0	11.9	70
65	12.0	12.0	12.0	12.0		12.0	12.0	12.0	11.9	65
60	12.0	12.2	12.2	12.2		12.1	12.3	12.1	12.1	60
55	12.0	12.3	12.4	12.4		12.3	12.5	12.3	12.2	55
50	12.1	12.5	12.6	12.6		12.5	12.9	12.5	12.4	50
45	12.4	13.0	13.0	13.0		12.9	13.0	12.8	12.9	45
40	12.5	13.0	13.0	13.0		13.0	13.0	13.0	12.9	40
35	13.0	13.0	13.0	13.1		13.0	13.2	13.0	12.9	35
30	13.0	13.2	13.2	13.4		13.2	13.4	13.2	13.1	30
25	13.0	13.5	13.5	14.0		13.5	14.0	13.5	13.5	25
20	13.5	14.0	14.0	14.0		14.0	14.0	14.0	13.9	20
15	14.0	14.0	14.0	14.2		14.0	14.2	14.0	14.1	15
10	14.1	14.3	14.4	14.8		14.5	14.9	14.2	14.5	10
5	15.0	15.0	15.0	15.4		15.2	15.3	15.0	15.3	5
0	20.0	20.0	18.2	19.2		20.0	20.0	19.0	18.2	0

Table F.10A.--Kuwait norms by age and by grade for standing long jump: girls (in feet and inches).

Percentile	Age					Grade				Percentile
	14	15	16	17+		9	10	11	12	
100	7'00"	7'00"	7'00"	7'03"		6'08"	7'03"	7'00"	7'05"	100
95	6'02"	6'02"	6'02"	6'06"		6'01"	6'04"	6'03"	6'06"	95
90	6'00"	6'00"	6'00"	6'01"		6'00"	6'00"	6'00"	6'02"	90
85	5'08"	6'00"	6'00"	6'00"		5'08"	6'00"	6'00"	6'00"	85
80	5'07"	5'07"	5'08"	5'08"		5'06"	5'08"	5'08"	5'10"	80
75	5'05"	5'05"	5'06"	5'06"		5'04"	5'06"	5'06"	5'08"	75
70	5'04"	5'03"	5'04"	5'05"		5'03"	5'04"	5'04"	5'06"	70
65	5'02"	5'01"	5'02"	5'03"		5'01"	5'02"	5'03"	5'05"	65
60	5'00"	5'00"	5'01"	5'01"		5'00"	5'00"	5'01"	5'03"	6-
55	5'00"	5'00"	5'00"	5'00"		5'00"	5'00"	5'00"	5'01"	55
50	5'00"	5'00"	5'00"	5'00"		5'00"	5'00"	5'00"	5'00"	50
45	5'00"	5'00"	5'00"	4'11"		5'00"	5'00"	5'00"	5'00"	45
40	5'00"	4'10"	4'09"	4'08"		4'09"	4'09"	4'08"	4'11"	40
35	4'08"	4'07"	4'07"	4'06"		4'07"	4'08"	4'06"	4'08"	35
30	4'07"	4'06"	4'05"	4'05"		4'05"	4'06"	4'04"	4'06"	30
25	4'06"	4'04"	4'03"	4'03"		4'03"	4'05"	4'02"	4'05"	25
20	4'04"	4'02"	4'02"	4'00"		4'01"	4'03"	4'00"	4'02"	20
15	4'01"	4'00"	4'00"	4'00"		4'00"	4'00"	4'00"	4'00"	15
10	4'00"	4'00"	3'10"	3'09"		3'10"	3'11"	3'08"	4'00"	10
5	3'07"	3'05"	3'04"	3'04"		3'05"	3'04"	3'04"	3'06"	5
0	0'05"	3'08"	2'00"	2'08"		2'07"	2'04"	3'03"	2'03"	0

Table F.108.--Kuwait norms by age and by grade for standing long jump: girls (in centimeters).

Percentile	Age					Grade				Percentile
	14	15	16	17+	9	10	11	12		
100	213	213	213	221	203	221	213	226	100	
95	188	188	188	198	185	193	191	198	95	
90	183	183	183	185	183	183	183	188	90	
85	173	183	183	183	173	183	183	183	85	
80	170	170	173	173	168	173	173	178	80	
75	165	165	168	168	163	168	168	173	75	
70	163	160	163	165	160	163	163	168	70	
65	157	155	157	160	155	157	160	165	65	
60	152	152	155	155	152	152	155	160	60	
55	152	152	152	152	152	152	152	155	55	
50	152	152	152	152	152	152	152	152	50	
45	152	152	152	150	152	152	152	152	45	
40	152	147	145	142	145	145	142	150	40	
35	142	140	140	137	140	142	137	147	35	
30	140	137	135	135	135	137	132	137	30	
25	137	132	130	130	130	135	127	135	25	
20	132	127	127	122	124	130	122	127	20	
15	124	122	122	122	122	122	122	122	15	
10	122	122	117	114	117	119	112	122	10	
5	109	104	102	102	104	102	102	107	5	
0	13	81	61	72	79	71	69	69	0	

Table F.11.---Kuwait norms by age and by grade for 50-yard dash: girls (in seconds).

Percentile	Age				Grade				Percentile
	14	15	16	17+	9	10	11	12	
100	6.1	6.4	6.4	6.5	6.4	7.0	6.0	6.0	100
95	7.5	8.0	7.5	7.9	7.8	7.8	7.4	7.5	95
90	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.9	90
85	8.0	8.2	8.2	8.3	8.3	8.2	8.1	8.1	85
80	8.3	8.5	8.5	8.6	8.6	8.6	8.4	8.4	80
75	8.5	9.0	9.0	9.0	9.0	9.0	8.7	8.5	75
70	8.7	9.0	9.0	9.0	9.1	9.0	9.0	8.9	70
65	9.0	9.1	9.1	9.3	9.5	9.2	9.0	8.9	65
60	9.0	9.5	9.4	9.7	10.0	9.9	9.2	9.1	60
55	9.2	10.0	9.9	10.0	10.0	10.0	9.5	9.4	55
50	9.5	10.0	10.0	10.0	10.1	10.1	10.0	9.8	50
45	10.0	10.3	10.0	10.3	10.5	10.3	10.0	9.9	45
40	10.0	11.0	10.4	11.0	11.0	11.0	10.2	10.0	40
35	10.1	11.0	11.0	11.0	11.0	11.0	10.5	10.3	35
30	10.5	11.2	11.0	11.3	11.3	11.2	11.0	10.9	30
25	11.0	12.0	11.3	12.0	12.0	12.0	11.2	11.0	25
20	11.3	12.0	12.0	12.2	12.0	12.0	12.0	11.9	20
15	12.0	12.3	12.4	12.9	12.4	12.4	12.3	12.2	15
10	12.1	13.0	13.0	13.0	13.0	13.0	13.0	12.9	10
5	13.1	14.0	14.0	14.0	14.0	14.0	14.0	13.5	5
0	17.2	17.0	18.0	18.0	18.0	17.0	20.0	16.0	0

Table F.12.--Kuwait norms by age and by grade for 600-yard dash: girls (in minutes and seconds).

Percentile	Age				Grade				Percentile
	14	15	16	17+	9	10	11	12	
100	1:47	1:58	1:55	1:55	1:50	1:57	1:50	1:35	100
95	2:05	2:15	2:16	2:20	2:10	2:17	2:15	2:25	95
90	2:15	2:25	2:25	2:30	2:20	2:26	2:25	2:37	90
85	2:20	2:32	2:32	2:37	2:28	2:31	2:32	2:46	85
80	2:30	2:35	2:38	2:43	2:35	2:36	2:36	2:51	80
75	2:35	2:40	2:42	2:47	2:40	2:40	2:41	2:54	75
70	2:39	2:45	2:45	2:51	2:45	2:45	2:45	2:59	70
65	2:44	2:49	2:50	2:56	2:48	2:46	2:47	3:01	65
60	2:46	2:55	2:55	3:00	2:52	2:54	2:51	3:04	60
55	2:50	2:58	3:00	3:04	2:56	2:58	2:56	3:09	55
50	2:54	3:00	3:01	3:09	3:00	3:00	3:00	3:14	50
45	2:58	3:05	3:06	3:15	3:04	3:07	3:04	3:18	45
40	3:00	3:10	3:12	3:19	3:09	3:13	3:10	3:23	40
35	3:05	3:15	3:16	3:25	3:12	3:18	3:15	3:27	35
30	3:09	3:20	3:22	3:30	3:20	3:23	3:20	3:38	30
25	3:15	3:26	3:30	3:40	3:25	3:31	3:30	3:44	25
20	3:20	3:35	3:38	3:50	3:35	3:40	3:36	3:52	20
15	3:35	3:45	3:45	4:00	3:45	3:54	3:40	4:00	15
10	3:47	4:00	3:55	4:05	4:00	4:00	3:52	4:12	10
5	4:00	4:10	4:03	4:30	4:10	4:02	4:10	4:38	5
0	5:00	5:32	5:10	6:05	5:00	5:35	5:20	6:22	0

APPENDIX G

SCHOOLS AND PERSONNEL PARTICIPATING IN 1985 KUWAIT SURVEY

Ministry Personnel

So'ad Al-Refa'ei, Assistant Undersecretary for General Instruction
 Abdulmohsen Al-Sa'eed, Assistant Undersecretary for Students' and
 Sports' Affairs
 Abdulazeez Al-Hamdan, Director of Secondary Education (for the Capital
 and Hawali Areas)
 Abdulla Al-Luqman, Director of Ahmadi Educational Area
 Rasheed Al-Hamad, Director of Jahra Educational Area
 Jasem Al-Jemaz, Director of Physical Education and Scouting

Physical Education Supervisors, Male, (for boys' schools)

Yousef Kherabot, General Physical Education Supervisor
 Abdulkareem Abdulroda (Chairman of the Capital and Hawali Educational
 Areas)
 Bahjet Al-Jamel
 Khaled Al-mo'athen
 Khaleel Alosch
 Mohammad Al-Zend
 Mohammad K. Hedar
 Dr. Morad Torfa
 Mostafa Azmi
 Roda Al-Alfi (Chairman of Ahmadi Educational Area)
 Ta-Ha Abolila
 Abbas Al-Zaid (Chairman of Jahra Educational Area)
 Abdul'lateef A. Al-Sa'edi

Physical Education Supervisors, Female, (for girls' schools)

Dr. Samira Ibrahim (Acting General Physical Education Supervisor and
 Chairwoman of the Capital and Hawali Educational Areas)
 Botheana M. Al-Jaress
 Hanefa A. Abo Sa'da
 Mona A. Al-Hashash
 Sameha M. Amin
 Schair A. Zaki
 Thana'a Al-Wardani
 Rofia S. Khoder (Chairwoman of the Ahmadi Educational Area)
 Ibtesam Al-Shirbeni
 Umayma Hamed (Chairwoman of the Jahra Educational Area)
 Dr. Thana'a A. Hassanian

Governorate	School	School Principal	Physical Education Teachers
Males, General System			
Capital	Al-Jaheth	Ahmad Al-Romi	Atef M. Abo Hindiah, Mohsen A. Al-Husaini, Al-Sewafi Y. Abo Al-Hagag, Abdulazeem M. Abo Ello, and Mo'awad W. Radwan
Hawali	Jealeab Al-Sheyogh	Mohammad Al-Haza'a	Abdulmo'ati Slamah, Adnan Al-Jayosi, Adel Abduljaleel, Mostafa Ali, and Abdulmon'am E. Abdulla
	Be'yan	Abdulrazak Al-Molefi	Abdulroda Husain, Adel A. Salem, Salahal-deen Roshdi, Shoki Ismail, Al-Hassan M. Radi, Nouraldeen M. Al-Janoni, and Hosam-aldeen H. Awais
	Abdulla Al-Salem	Fessal Al-Nasser	Mohammad R. Orabi, Samir M. Ma'moon, Mohammad E. Al-Mansi, Hanafi Nassar, Sami Rizk, and Mohammad N. Al-Kasrawi
	Al-Romethia	Sadik Al-Selman	Farok Alosch, Hedar A. Hassan, Mohammad M. Husni, Hedar Abdulla, Mohammad Samara, Sa'eid Alsakeer, and Ahmad A. Morad
	Hawali (second shift)	Husain Al-Yahia	Zohair E. Al-Alami, Abdulmon'am M. Hassan, and Ahmad Sekake
	Al-Jaberiah (served for the pilot study)	Ahmad Al-Khalefi	Eisa A. Karam, Hazem M. Saudi, Mohammad Roda Reyad, Moktar M. Wehaba, and Hassan Al-Sayed H. Saleh

Governorate	School	School Principal	Physical Education Teachers
Ahmadi	Al-Sabahia	Husain K. Husain	Abdulfatah Mohani, Waleed Al-Masoti, Mahmod Al-biri, Abdulazeem Saleem, Hisham Nour, and Osama Ismail
Jahra	Al-Jahra	Mohammad Al-Khoderi	Farok Al-Henawi, Adel M. Shehata, Karem A. Hassan, Ali M. Kasho'a, Husni A. Abo Ajlah, and Anwar S. Al-Sharhan
Males, Credit Unit System			
Capital	Kefan	Abdulrazak Al-Modaf	Mohammad A. Faraj, Saleh A. Saleh, Khaled K. Atiah, Sa'ed A. Al-Syed, Abdulazeem Al-Ash'al, Ahmad Al-Saharti, Amadaldeen Abdullhadi, Assmat Abdulazeem, Hatim M. Kazi, Mahmud Semasim, Mahmoud A. Al-Mokazi, Mahmoud S. Shahata, Mohammad A. Al-Bader, and Mohammad S. Hajres
Hawali	Sabah Al-Salem	Abdulla Al-Sakor	Mohammad Al-Holi, Ahmad M. Hassan, Mohammad N. Besyoni, Jamal Aldeen Al-Nahass, Tawfik H. Al-Haj, Husain A. Hassan, Mohammad Al-Shemi, Ali M. Saleh, Moneer Abdeen, Majdi Salem, Adel A. Al-Asal, Mohammad W. Ibrahim, and Abdulsalam Hanafi
	Al-Qurtobi	Abdulla Al-Rahmani	Alias Haji Merza, Medhat Hussamaldeen, Taher Alsyed Al-Badawi, Hamza Al-Abasseri, Ahmad S. Ismail, Jamal A. Bodair, Izaldeen Abdulghafar, Afifi S. Mahmoud, Abdulkhareh, Naji Y. Al-Masri, Ra'af Soleman, Mohammad A. Ahmad, Ahmad Abdulrahman, and Baker A. Abdulroda

Governorate	School	School Principal	Physical Education Teachers
Females, General System			
Capital	Kefan	Lolwah Al-Dehaim	Fitoh Abdulla, Zenab M. Shaker, and Salwa Alsayed Afifi
	Jomana Bent Abi Taleb	Aisha Al-Sakor	Takreed K. Fareed, Marim S. Husain, and Sohair I. Amer
	Al-Morkab (served for the pilot study)	Latefa Al-Bader	Lila F. Saleh, Madeha M. Abdulhak, and Merfet K. Ibrahim
	Al-Rawdah	So'ad Al-Bahar	Hoda H. Amin, Karema S. Mohammad, Hoda M. Fadel, and Seham Abdulmon'am
Hawali	Sabah Al-Salem	Falwah Shehab	Na'elah Faheem, Nejlat Majedalddeen, and Fatima M. Kamel
	Al-Ardia	Sharefa Al-Kattan	Nabawiah M. Syed, Najah H. Abadah, Nadiyah A. Sayed, and Birlanty H. Ismail
	Al-Fahaheel	Noha A. Al-Bettar	Ismahan A. Al-Hassanain, Aziza M. Al-Serenjawe, Ekla H. Ali, Monerah M. Abdulrahman, Eman S. Abo Aldahab, and Aida M. Khafaja
Jahra	Um Alhareth Al-Ansariah	Fatema I. Al-Sharhan	Samia A. Abo Zaid, Foziah A. Thekri, Amani Alsayed Abo Alfotoh, and Susan A. Faheem

Governorate	School	School Principal	Physical Education Teachers
Females, Credit Unit System			
Capital	Al-Mansoriah	Najjiah Al-Bader	Ferial M. Tawfek, Nadia M. Abdulhameed, Mona M. Khaleel, Nafosa F. Ghaleb, Nohad M. Al-Bateki, Salwa H. Abdo, Samiah M. Abbas, Fa'ezah Abdulhafeth, Safia Ibrahim, Samiah A. Jaber, Mona S. Mostafa, Saniah Z. Yakoot, Ferial M. Abdul'al, and So'ad A. Al-Arabi
	Al-Jazair	Sabeka Al-Jo'aan	Mona A. Abdulraheem, Merfet M. Abdul- azeed, Samiah A. Ahmad, Wafa'a A. Ateya, Awatef Abdulhameed, Nadiyah M. Ali, Najat M. Atamiss, Najla Abdulatheem, Nadiyah Alsayed, Aziza U. Mokbel, Tyseer Uthman, Nahed M. Hassanian, Noha Abdulhameed, Ablah M. Hamdi, and Anisa H. Bayomi
Hawali	Khaleda Bent Alaswad	Amei Al-Kateeb	Da'ad Robab Mahmood, So'ad Hanem A. Abdulaleem, Salwa Alsayed Rizk, Kareman M. Abdulazeed, Fatima H. Mostafa, Ablah Salahaldeem, Afaf Omer, Samia M. Tal'at, Mona I. Abdulla, Majedah A. Rajeb, Nahed M. Ahmad, Aziza K. Al-Za'abi, and Misa Ahmad

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