

# A COMPARATIVE STUDY ON THE EFFECT OF PEER PRESENCE UPON THE SPECIAL FITNESS TEST SCORES OF AMERICAN, EGYPTIAN AND BAHRAINI ORTHOPEDICALLY HANDICAPPED

DR. ALY HASSAN\*

---

The testing circumstance has a significant impact on test results. The aim of this study was to investigate the effect of the presence of others in a testing circumstance on an individual's performance. A total of 42 subjects were Selected from the U.S.A., Egypt and Bahrain, 14 subjects from each country (7 girls and 7 boys). All subject had been previously diagnosed as being orthopedically handicapped. Subjects were tested twice in the three special fitness tests: sit and reach, flexed arm hang and sit-up. In one testing method the subject and the investigator were the only individuals present in the testing area. In another testing method, the investigator and the child performed in front of a passive audience composed of four of the child's peers and one adult. The results showed that American children scored the highest in the total scores followed by Egyptian and Bahrini children respectively. There was also a significant difference between the two testing methods in favour of the presence of an audience method for the flexed arm hang and the sit-up tests.

---

\* Associate Professor, Department of physical Education, University of Bahrain, P.O. Box 28176. Bahrain.

There was however, no significant difference between the two testing methods for the sit and reach test. It was concluded that the peer presence has a beneficial effect on the total individual's performance. Further research in this area needs to be done.

Improving performance of the orthopedically handicapped children in the school and in the clinic, has been a constant challenge for teachers, coaches, trainers and therapists. They have developed new methods of increasing performance by developing improved physical, psychological, and motivational approaches. The presence of others in the testing circumstance has been shown to affect motivation and individual performance (3,6,7).

Some orthopedically handicapped children practice or perform alone, while others, practice or perform with others present. Social psychologists have long shown interest in the audience effect, or social facilitation, and how it affects performance. The audience effect involves the influence upon behavior of the presence of passive audience (5). Singer (1980) and others pointed out that presence of audience is likely to improve simple motor responses involving power, strength, repetition, or endurance of well learned tasks. They also pointed out that responses that are not well learned, or are in the early stages of learning are likely to be disturbed by the attentions of others (12).

If testing is taken on an individual basis, then the presence of an audience needs to be recognized as a variable which affects an individual's test performance (2;6). Standardized special physical fitness tests should include a description of the number and type of individuals present at the time of administering the test on a handicapped child so that results can be interpreted accordingly. The presence of spectators should be considered as a significant variable and an important methodological consideration (2;6). The American Alliance for Health, Physical Education, Recreation, and Dance. Special Fitness Test (AAHPERP, SFT, 1976) is perhaps the most frequently applied test on the handicapped individuals. However, the test directions do not explicitly state whether the test should be administered individually, in a group situation, or in the presence of others.

Obtaining an accurate assessment of performance level for the handicapped children is a major concern to educators and specialists who seek to be in compliance with the education for all handicapped children equally with normal children. Specialists and educators have become increasingly aware of the importance of assessment information concerning the physical education needs of the handicapped. The extent of adapted physical

education services and the setting in which they will be offered dependent upon good assessment data and circumstances (3).

The testing circumstance has a significant impact on test results. The finding has been verified for nonhandicapped children. A literature review failed to find other substantive studies which examine the effects of peer presence upon the special fitness testing for the handicapped children, it was important to investigate this area, regarding the orthopedically handicapped children in three different countries.

## **PURPOSES OF THE STUDY**

The purpose of the present study was to investigate the effect of peer presence on three special fitness test items with orthopedically handicapped children 8 through 12 years of age from U.S.A., Egypt, and Bahrain.

## **METHODS**

### **SELECTION OF SUBJECTS**

A total of 42 subjects were selected from U.S.A., Egypt, and Bahrain. 14 subjects were chosen from each country (7 boys and 7 girls). American subjects were selected from Unita Country School District No. one, Evanston; Wyoming. The Egyptian subjects were attending Alexandria Rehabilitation Centre. The Bahraini subjects were selected from Esa Town Elementary Schools for boys and girls. All subjects had been previously diagnosed as being orthopedically handicapped. They were free of any other handicapped such as mental retardation or emotionally disturbances. The subjects ranged in chronological age from 8 to 12 years with a mean of 10.00 years.

### **PROCEDURES**

Subjects were tested twice in the three special fitness tests. Sit and reach, flexed arm-hang, and sit-up. First the subject and the investigator were the only individuals present in the testing area. Secondly after half hour, the investigator and the child performed in front of a passive audience composed of four of the child's peer and one adult to keep them quiet during testing, and they did not verbally interact with the performer. They were seated on to one and half meter from the performer. To eliminate transfer of learning no practice have been done prior to or after the first method of testing, so the time between the two methods of testing was short, therefore transfer was impeded because of

the presence of fatigue (4;p.391.401).

### **SELECTION OF INSTRUMENT**

Subjects were tested on three special fitness items from the Americal Alliance, Health, Physical Education, Recreation, and Dance, Special Fitness Test (AAHPERD,SFT, 1976) The three test items were :1 Sit and reach test (held position for one second) as a measure of flexibility (extensibility) of the low back and posterior things. The test performance were measured to the nearest centimeter; the score is the most distant point reached by the fingertips of both hands; 2 flexed arm-hang was recorded in seconds (the lenght of time the subject holds the correct hanging position) the test was used as a measure of arms and shoulders muscular; 3 sit-up test used as a measure of a abdominal and back muscular strength and muscular endurance, performance was recorded as a number of sit-ups performed in 60 seconds.

### **DATA ANALYSIS**

Two sets of scores were obtained, one from the subject's individualized testing method, and another in the presence of audience (peer) for the American, Egyptian, and the Bahraini subjects. Since the two sets of scores can from the same individuals, the paired "t" test was utilized in analyzing the data. Mean scores for individual performance and in the presence of audience were computed for each country, as well as comparison between boys and girls was obtained for the American, Egyptian, and Bahrain subjects. A two by three (2x3) analysis of variance tested the null hypotheses. The least Significant Difference Test (L.S.D.) followed up as a further analysis of mean differences. An alpha level of .05 was used for all significant tests.

## RESULTS

The results of the study indicated that:

1-No significant difference was found between the two testing method used in the study for the sit and reach test for American, Egyptian, and Bahraini subjects. (Table 1. Figure1)

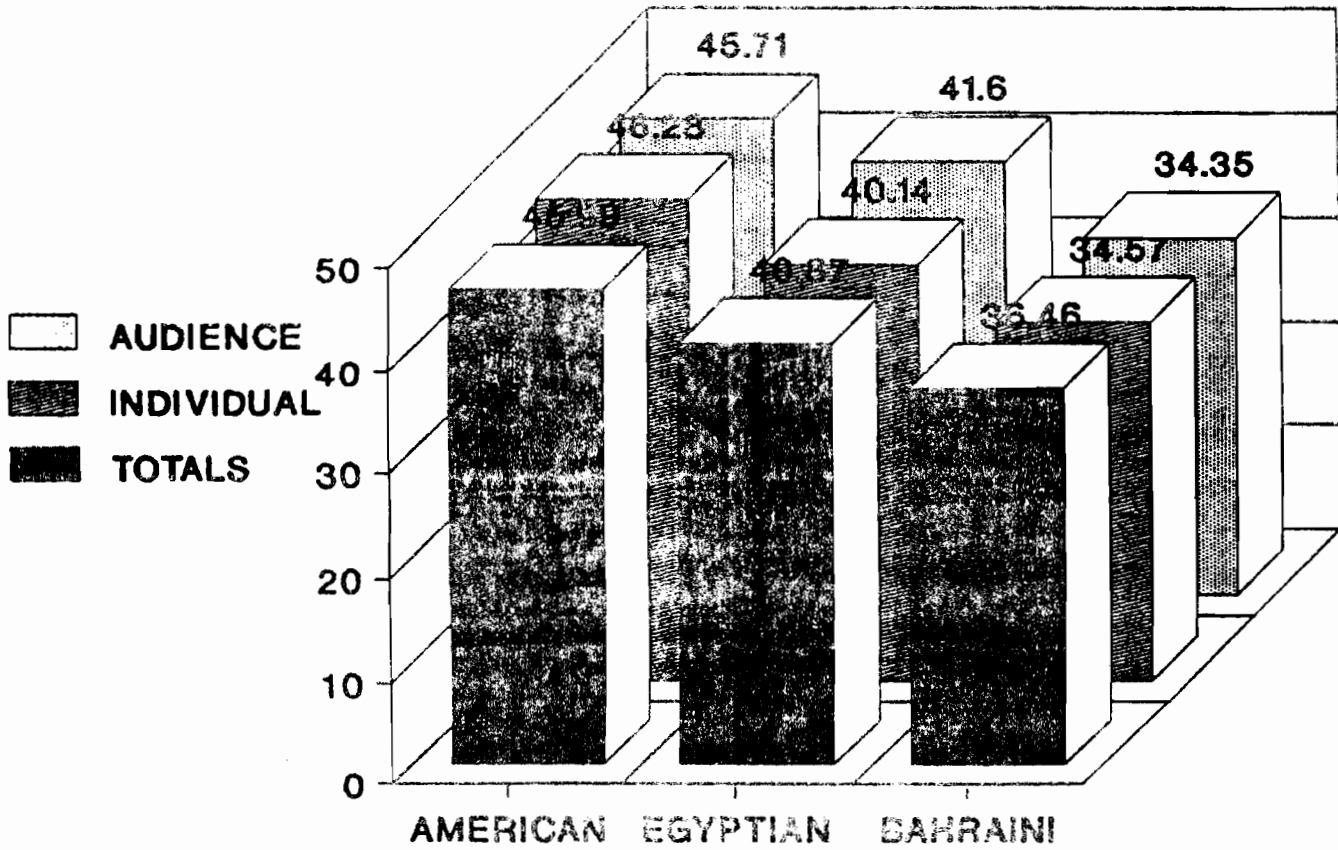
TABLE (1)  
MEANS, STANDARD DEVIATIONS, AND 't' VALUES  
FOR INDIVIDUAL TESTING, AND AUDIENCE  
TESTING FOR THE SIT AND REACH TEST  
(CENTIMETER0)

COUNTRIES	METHODS		DECISION
	INDIVIDUAL TESTING	AUDIENCE TESTING	
American	mean 46.28 SD 1.33 Diff .57 t .527	45.71 1.55	n.sig
Egyptian	mean 40.14 SD 2.75 Diff 1.46 t 1.02	41.6 4.75	n.sig
Bahraini	mean 34.57 SD 1.87 Diff .22 t .42	34.35 1.67	n.sig
Total	40.33 1.98 .22 .667	40.55 2.55	n.sig

\* Significant at .05 level  
t Tabular = 2.056, df = 26  
t Tabular = 2.021, df = 39

FIGURE (1)

MEANS OF THE AMERICAN, EGYPTIAN & BAHRAINI SUBJECTS  
FOR THE SIT AND REACH TEST



2- There were significant differences between the American, Egyptian, and Bahraini and Bahraini subjects for the sit and reach test. The American total mean score was greater than the Egyptian total mean score, and the Egyptian total mean score was greater than the Bahraini total mean score (Table II,III, Figure 2).

TABLE (II)  
TWO BY THREE ANALYSIS OF VARIANCE FOR THE

Source of Variation	df	SS	MS	F	
				C	T
Methods of Testing	1	1.19	1.19	.07	4.17
Countries	2	871.16	435.58	26.57*	3.17
Methods by Countries	2	989.04	394.52	24.07*	3.32
Error	36	590.36	16.39		
Total	41	6071.04	-----		

\* Significant at .05 level

df = 1-36; 2-36

TABLE (III)  
LEAST SIGNIFICANT DIFFERENCE DIFFERENCE TEST ( L.S.D.)

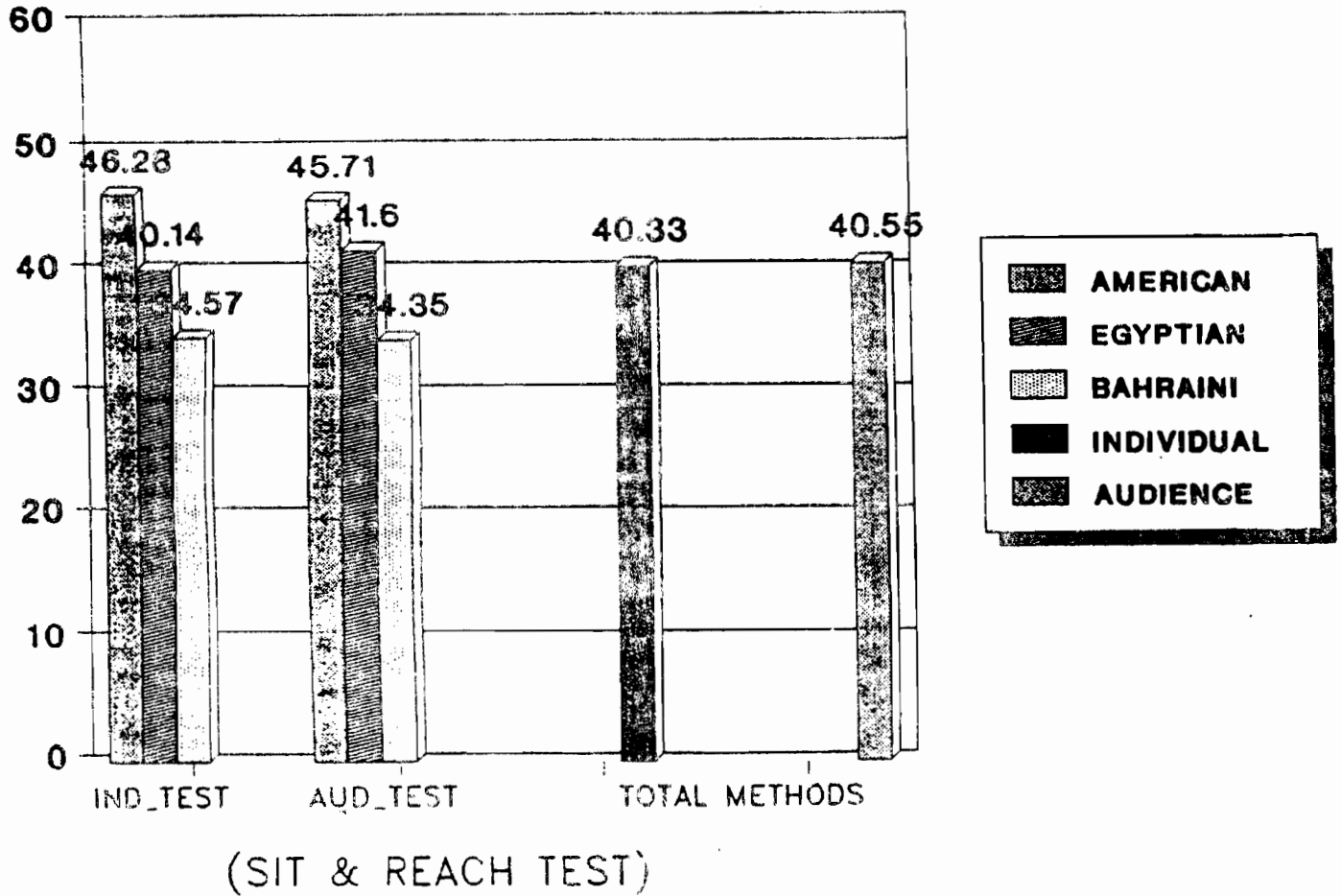
Countries	Total Means (cm)	Means diff.	L.S.D. value	Decision
American	45.99	5.12*	3.09	MA> ME
Egyptian	40.87	6.41*		ME>MB
Bahraini	34.46	11.63*		ME>MB

\* Significant at .05 level.

$L>S>D> = t / 2 \cdot 25 \cdot 2/n$ , while  $S=MS$  error; and  $t=2.021$ ,  $df=df$  error

FIGURE (2)

MEAN SCORES OF INDIVIDUAL TESTING AND AUDIENCE TESTING  
FOR THE AMERICAN, EGYPTIAN, AND BAHRAINI SUBJECTS  
(SIT & REACH TEST)





3- There was a significant disordinal interaction between methods of testing and countries for the sit and reach test, between the American and Egyptian mean scores, as well as between the Egyptian and the Bahraini mean scores (Table IV, figure 3).

TABLE (IV)  
INTERCELLULAR MEANS FOR METHODS OF  
TESTING AND COUNTRIES  
FOR THE SIT AND REACH TEST  
(CENTIMETER )

Methods of Testing		Individual Testig			Audience Testing		
	Countries*	A	E	B	A	E	B
	Individual Testing	0	46.28	40.14	34.57	45.71	41.60
A		46.28	0	6.14	11.61	5.57	4.68
E		40.14		0	5.57	5.57	1.46
Audience Testing	B	34.57			0	11.14	7.03
	A	45.71				0	4.11
	E	41.6					0
	B	35.35	10.93	4.70	.78	10.36	6.23
							0

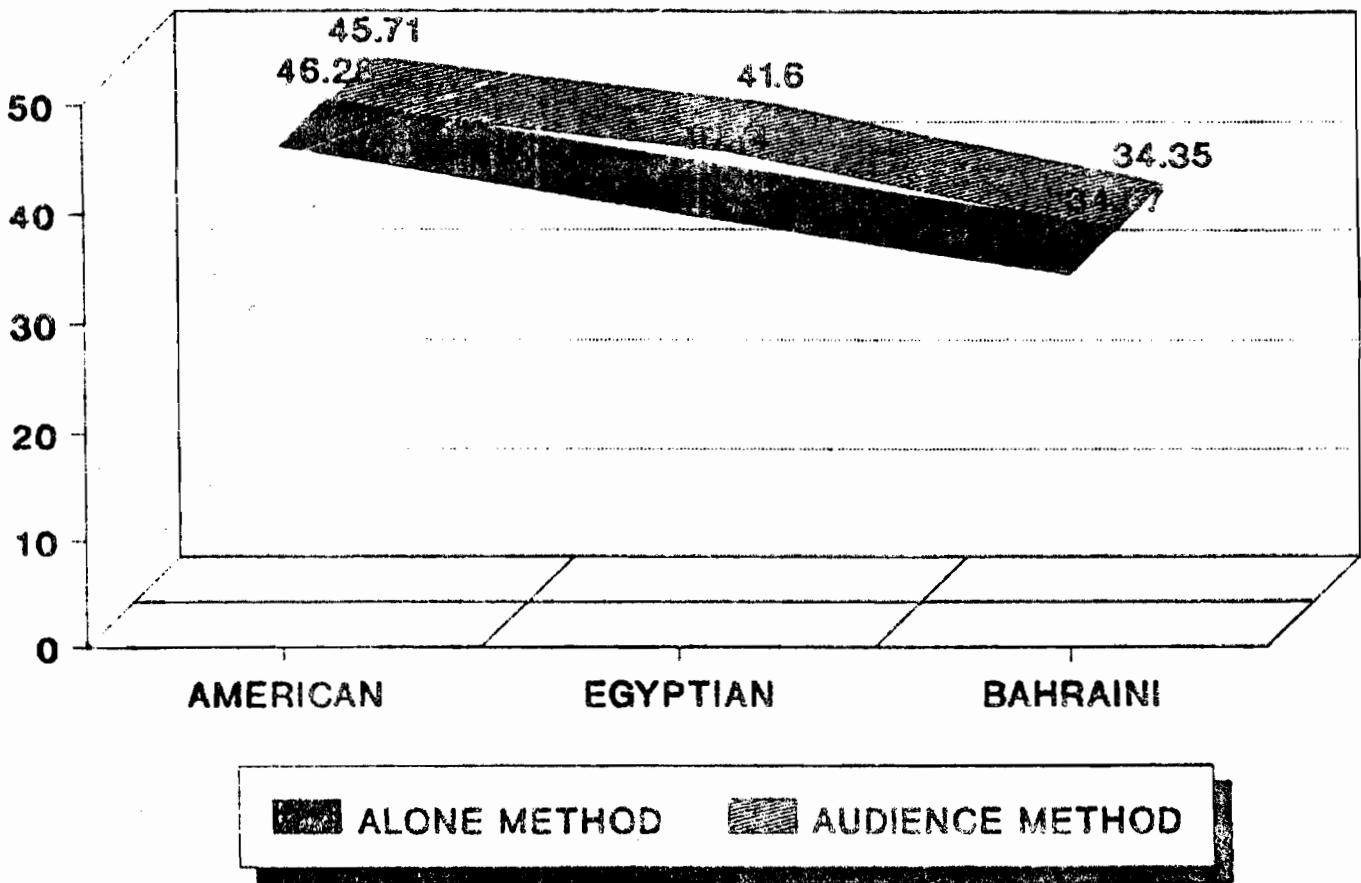
\* A -- American

E -- Egyptian

B -- Bahraini

FIGURE (3)

INTERACTION PLOTTING FOR THE SIT AND REACH TEST BETWEEN METHODS OF TESTING AND COUNTRIES



4- There was a significant difference between the two testing methods used in the study for the flexed armhang test for the American, Egyptian, and Bahraini subjects. The mean scores for the audience testing were greater than the mean scores for the individual testing (Table V, Figure 4).

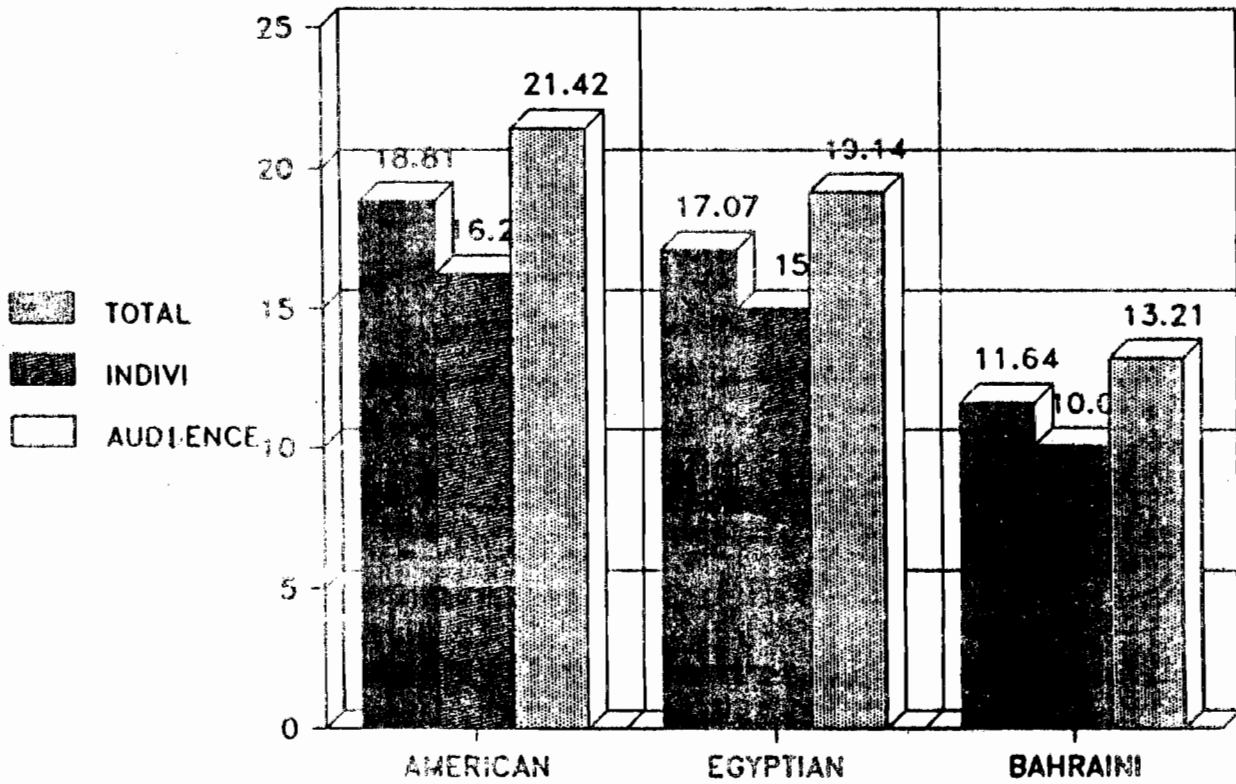
TABLE (V)  
MEANS, STANDARD DEVIATION, AND "t" VALUES  
FOR THE INDIVIDUAL TESTING, AND THE  
AUDIENCE TESTING FOR  
THE FLEXED ARM - HANG TEST

COUNTRIES	(SECONDS)			DECISION
	METHODS			
	INDIVIDUAL TESTING	AUDIENCE TESTING		
American	mean 16.21 SD 5.02 Diff t	21.42 3.42 5.21 6.07*	n.sig	
Egyptian	mean 15.00 SD 2.47 Diff t	19.14 2.23 4.21 5.20*	n.sig	
Bahraini	mean 10.07 SD 2.60 Diff t	13.21 1.72 3.14 3.65*	n.sig	
Total	mean 13.76 SD 3.36 Diff t	17.92 2.45 4.16 5.30*	n.sig	

\* Significant at .05 level  
t Tabular = 2.056, df = 26  
t Tabular = 2.021, df = 39

FIGURE (4)

MEANS OF AMERICAN, EGYPTIAN AND BAHRAINI  
SUBJECTS FOR THE FLEXED ARM-HANG TEST  
(SECONDS)



FIGER(4)

5- There was a significant difference between the Egyptian and the Bahraini subjects for the flexed arm-hang test. The Egyptian total mean score was greater than the Bahraini total mean score. However, no significant difference was found between the American and the Egyptian total mean scores (Table VI, VII, Figure 5).

TABLE ( VI )  
TWO BY THREE ANALYSIS OF VARIANCE  
FOR THE FLEXED ARM-HANG TEST

Source of Variation	df	SS	MS	F C	F T
Methods of Testing	1	364.585	364.585	22.74*	4.17
Countries	2	784.597	392.29	24.47*	3.32
Methods by Countries	2	164.20	82.1	5.1*	3.32
Error	36	577.20	16.03	-----	
Total	41	1735.98	-----	-----	

\* Significant at .05 level

df = 1-36; 2-36

TABLE ( VII )  
LEAST SIGNIFICANCE DIFFERENCE TEST (L>S>D)  
FOR THE FLEXED ARM-HANG TEST

Countries	Total Means (cm)	Means diff.	L.S.D. value	Decision
American	18.81	1.74		no differem
Egyptian	17.07	5.43*	3.05	ME>MB
Bahraini	11.64	7.17*		ME>MB

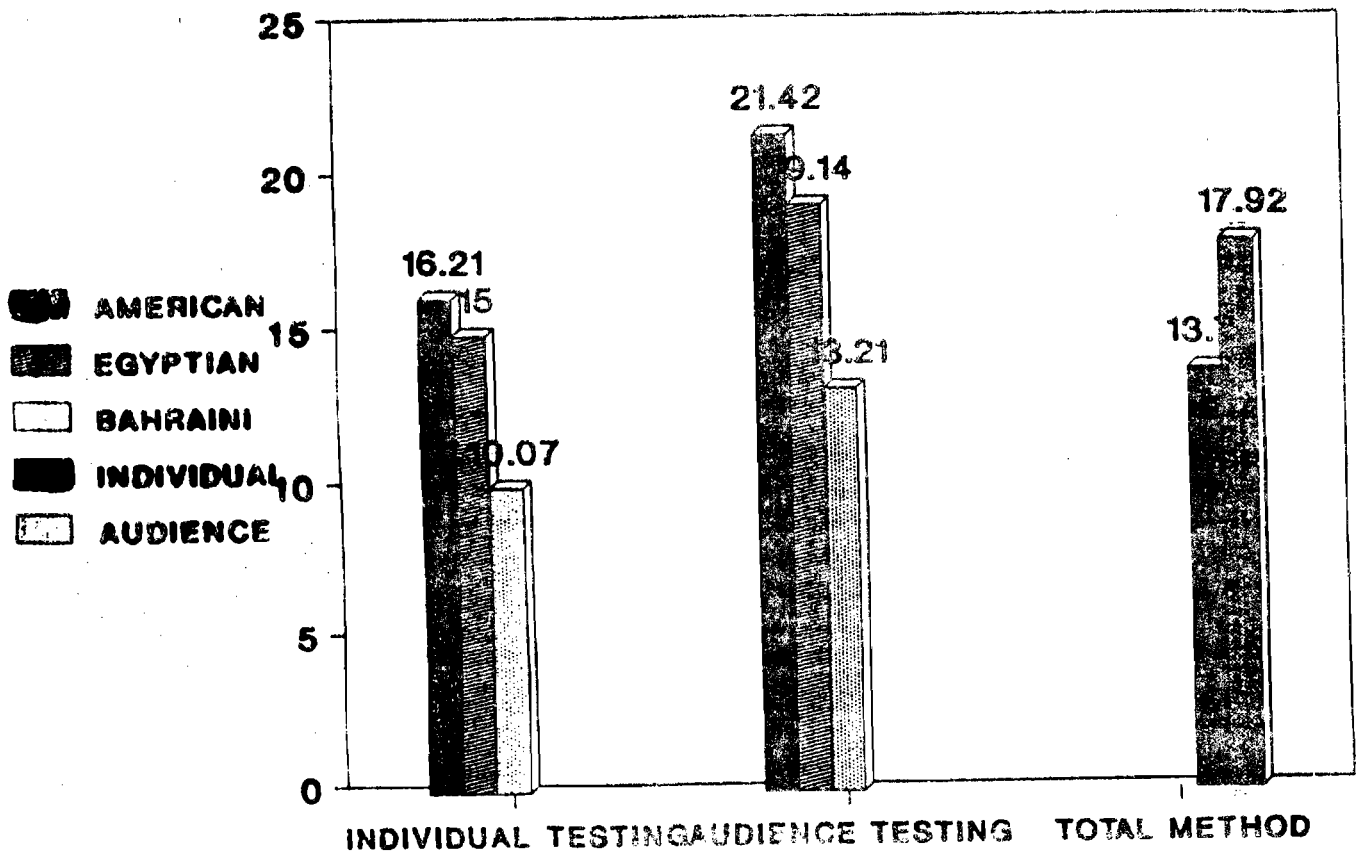
\* Significant at .05 level

$L>S>D = t / 2 \cdot 25 / n$ , while  $S = MS$  error, and  $t = 2.021$ ,

df = df erro

FIGURE (5)

MEAN SCORES OF INDIVIDUAL TESTING AND AUDIENCE TESTING FOR THE AMERICAN, EGYPTIAN AND BAHRAINI SUBJECTS (FLEXED ARM-HANG TEST)



6- There was a significant nonexistence interaction between the two method of testing used in the study and the three countries for the flexed arm-hang test. The American and the Egyptian mean scores and between the Egyptian and Bahraini's mean scores (Table VIII, Figure 6).

TABLE ( VIII )  
INTERCELLULAR MEANS FOR METHODS OF  
TESTING AND COUNTRIES  
FOR THE FLEXED ARM-HANG TEST

Methods of Testing		Individual Testig			Audience Testing		
Countries*		A	E	B	A	E	B
Individual Testing	0	16.21	15	10.07	21.42	19.14	13.21
	A	16.28	0	1.21	6.14	5.21	3.00
	E	15.00		0	5.07	6.42	4.14
	B	34.57			0	11.35	9.07
Audience Testing	A	45.71			0	42.28	8.21
	E	41.6				0	5.93
	B	13.21	3.00	1.79	3.14	8.21	5.93

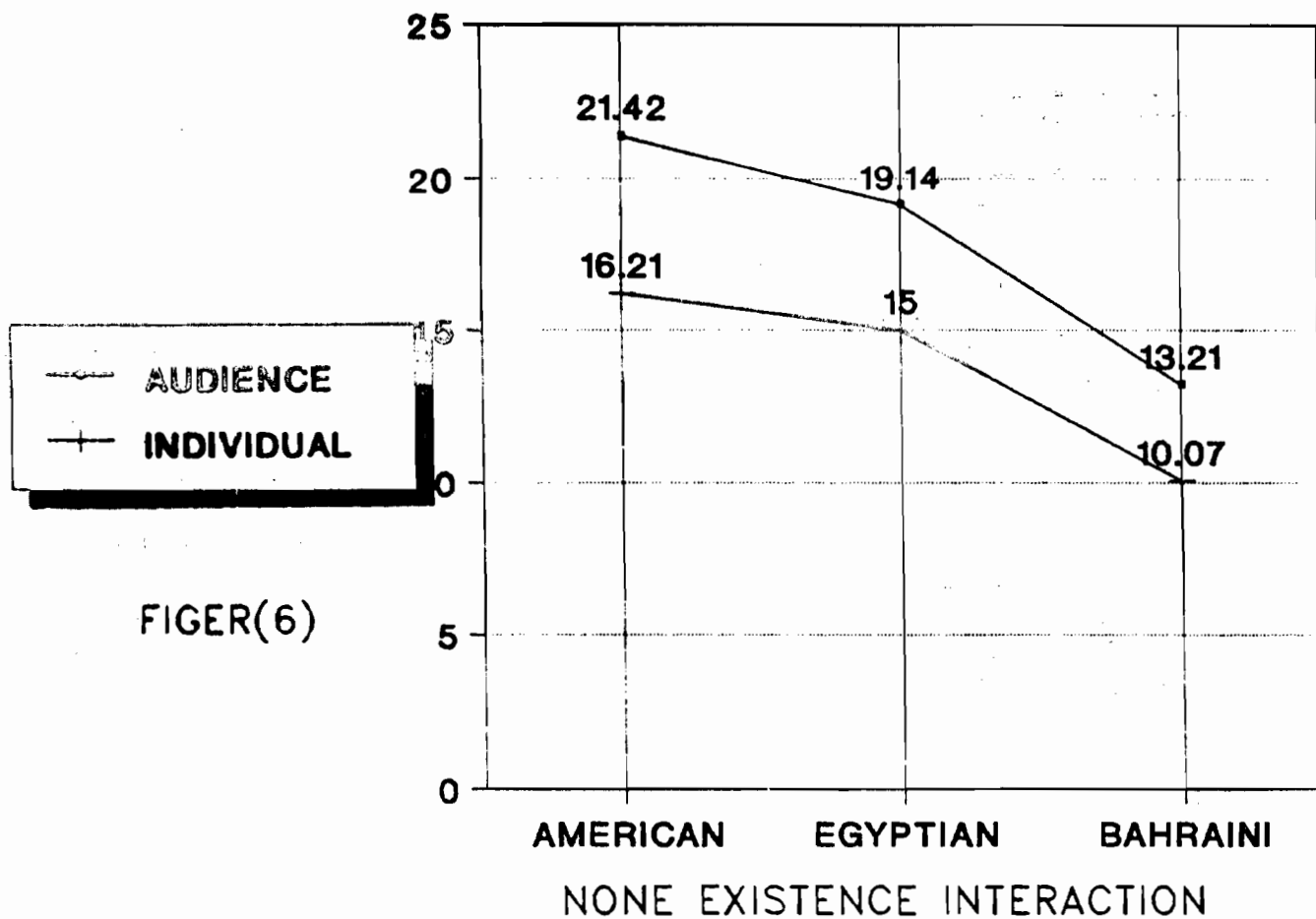
\* A -- American

E -- Egyptian

B -- Bahraini

FIGURE (6)

INTERACTION PLOTTING FOR THE FLEXED ARM-HANG TEST BETWEEN METHODS OF TESTING AND COUNTRIES





7- There was a significant difference between the two testing methods used in the study for the sit-up test, for the American, Egyptian and Bahraini subjects, The mean scores of audience testing were greater than the mean scores of the individual testing (Table IX Figure 7).

TABLE (IX)  
MEANS, STANDARD DEVIATION, AND "t" VALUES  
FOR INDIVIDUAL TESTING, AND AUDIENCE  
TESTING FOR THE SIT-UP TEST  
(NUMBERS)

COUNTRIES	METHODS		DECISION
	INDIVIDUAL TESTING	AUDIENCE TESTING	
American	mean SD Diff t	24.85 3.79 6.15 9.04*	31.00 3.04 n.sig
Egyptian	mean SD Diff t	22.71 2.01 5.15 6.02*	28.07 1.63 n.sig
Bahraini	mean SD Diff t	19.57 1.80 5.74 7.08*	25.28 2.21 n.sig
Total	mean SD Diff t	22.37 2.53 5.74 7.08*	28.11 3.85 n.sig

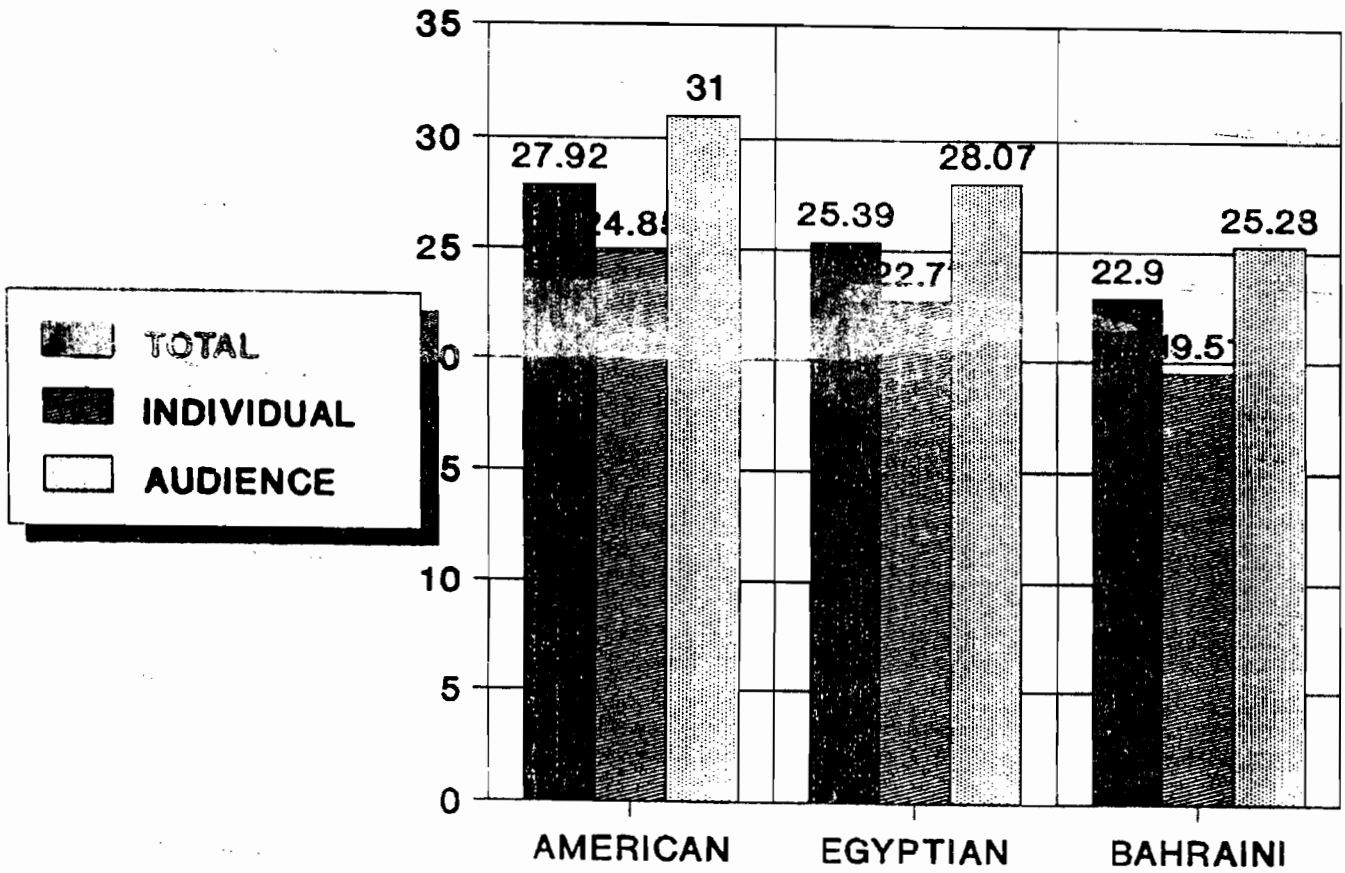
\* Significant at .05 level

t Tabular = 2.056, df = 26

t Tabular = 2.021, df = 39

FIGURE (7)

MEANS OF THE AMERICAN, EGYPTIAN AND BAHRAINI SUBJECTS  
FOR THE SIT-UP TEST



8- There was a significant difference between the Egyptian and Bahraini subjects for the sit-up test. The Egyptian total mean score was greater than the Bahraini total mean-score. However, no significant difference was found between the American and the Egyptian total mean scores (Table X, XI, Figure 8)

TABLE ( X )  
TWO BY THREE ANALYSIS OF VARIANCE FOR  
THE SIT-UP TEST  
(NUMBERS)

Source of Variation	df	SS	MS	F C	F T
Methods of Testing	1	9025.726	9026.726	111.69*	4.17
Countries	2	767.25	383.625	4.74*	3.32
Methods by Countries	2	117.96	58.98	.72	3.32
Error	36	2909.186	80.81	-----	-----
Total	41	67001.75	-----	-----	-----

\* Significant at .05 level

df = 1-38; 2-36; 2-36

TABLE ( XI )  
LEAST SIGNIFICANT DIFFERENCE TEST (L.S.D. ) FOR  
THE SIT-UP TEST

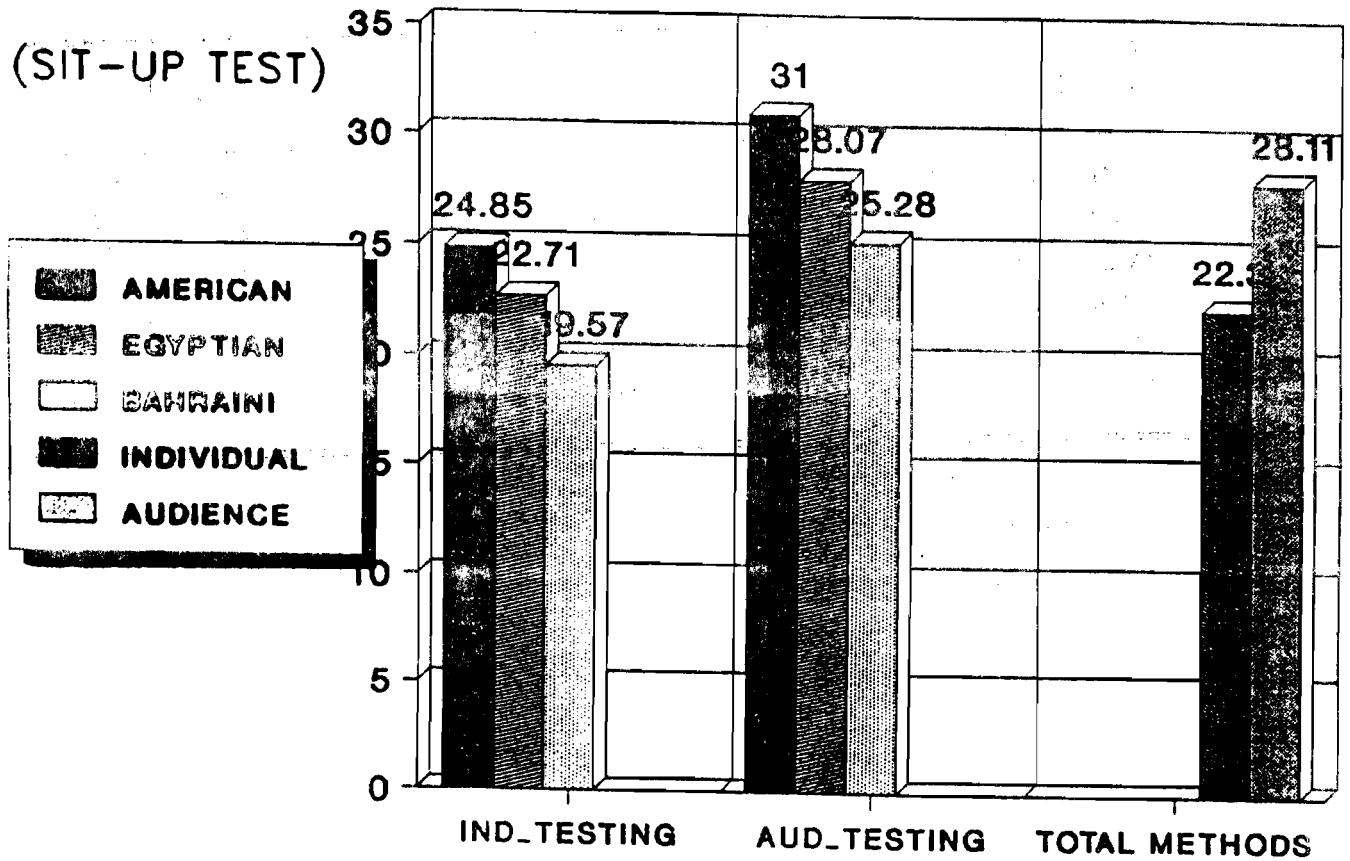
Countries	Total Means (cm)	Means diff.	L.S.D. value	Decision
American	27.92	2.53	3.00	no differem
Egyptian	25.39	3.39*		ME>MB
Bahraini	22.00	5.92*		ME>MB

\* Significant at .05 level

L.S.D. =  $t_{2.25} \sqrt{2/n}$ , while  $s = MS$  error, and  $t = 2.021$ ,  $df = df$  error

FIGURE (8)

MEAN SCORES OF INDIVIDUAL TESTING AND AUDIENCE TESTING  
FOR THE AMERICAN, EGYPTIAN AND BAHRAINI SUBJECTS  
(SIT-UP TEST)



9- No Significant interaction was found between the two methods of testing used in the study and the three countries for the sit-up test (Table X )

10- There were significant difference between boys and girls Special Fitness Test Scores for the Orthopedically handicapped children for the American, Egyptian and Bahraini subjects.

a - The girls mean scores were greater than the boys mean scores for the sit and reach test, in the two methods of testing used in the study regarding the three countries (Table XII, Figure 9).

**TABLE XII**  
**MEANS, STANDARDS DEVIATIONS, AND "t" VALUES**  
**FOR BOYS AND GIRLS FOR THE SIT AND REACH TEST**  
**( CENTIMETERS )**

COUNTRIES		AMERICAN		EGYPTIAN		BAHRAINI	
METHODS	SEX	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
INDIVID. SD Testing Diff	mean	45.14	47.42	35.28	45.00	32.71	36.42
	SD	.80	.47	.45	5.33	.45	.49
	t	2.28-5.18*		9.72-5.22*		3.71-9.39*	
Audience SD Testing Diff	mean	44.57	46.85	35.28	42.00	32.71	36.42
	SD	1.26	1.04	.45	0.00	.45	0.00
	t	2.28-3.82*		6.72-234*		3.71-13.58*	
Total SD	mean	44.85	47.13	35.28	43.5	32.71	36.42
	SD	1.03	.75	.45	0.00	.45	5.00
	t	2.28-2.8*		8.22-6.56*		3.71-14.49*	

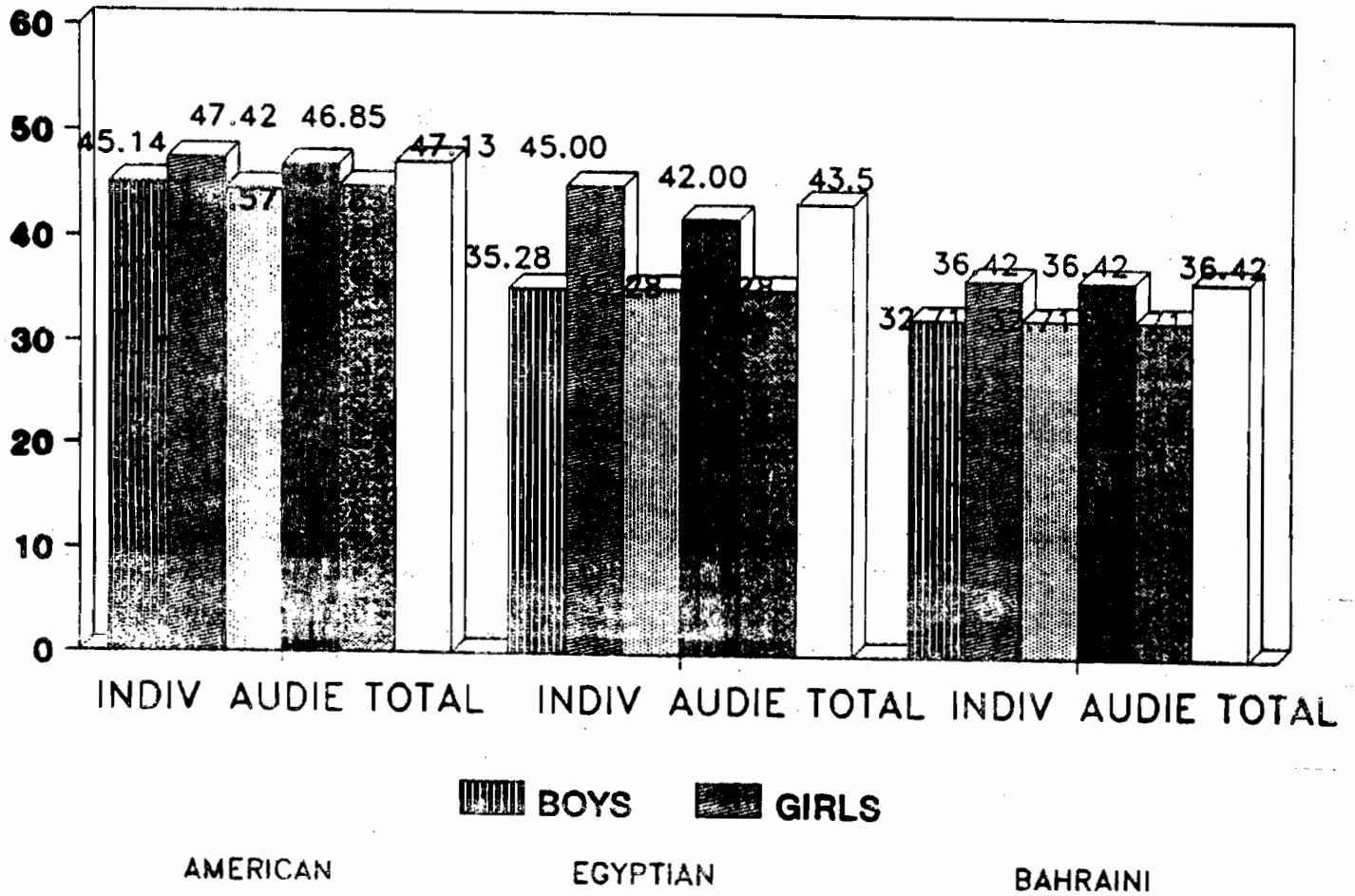
\* Significant at .05 level

t Tabular = 2.179, df = 12

t Tabular = 2.056, df = 26

FIGURE (9)

MEAN SCORES FOR BOYS AND GIRLS FOR THE SIT AND REACH TEST  
(AMERICAN, EGYPTIAN AND BAHRAINI)



b- However, the boys mean scores were greater than the girls mean scores for the flexed arm-hang test and the sit-up test in the two methods of testing used in the study regarding the three countries table XIII, Figure 10, Table XIV, Figure II ).

**TABLE ( XIII )**  
**MEANS, STANDARD DEVIATION, AND "t" VALUES**  
**FOR BOYS AND GIRLS FOR THE FLEXED ARM-HANG TEST**  
**( SECONDS )**

COUNTRIES		AMERICAN		EGYPTIAN		BAHRAINI	
METHODS	SEX	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
INDIVID. SD Testing Diff	mean	18.42	14.00	17.42	12.57	12.57	7.57
	SD	.98	.00	.49	.50	.90	.49
t	Diff	4.42		4.85-		5.00	
	t	2.48*		14.27*		10.39*	
Audience SD Testing Diff	mean	24.42	18.42	21.14	17.14	15.00	11.42
	SD	1.88	.37	.98	.99	0.00	.90
t	Diff	6.00		4.00		3.58	
	t	10.53*		12.15*		9.258*	
Total SD	mean	21.41	16.21	19.28	14.85	13.78	9.49
	SD	1.43	.19	.74	.75	.89	.70
t	Diff	5.21		4.43		4.29	
	t	6.35*		6.6*		7.84*	

\* Significant at .05 level

t Tabular = 2.179, df = 12

t Tabular = 2.056, df = 26

FIGURE (10)

MEAN SCORES FOR BOYS AND GIRLS FOR THE FLEXED ARM-HANG TEST  
(AMERICAN, EGYPTIAN AND BAHRAINI)

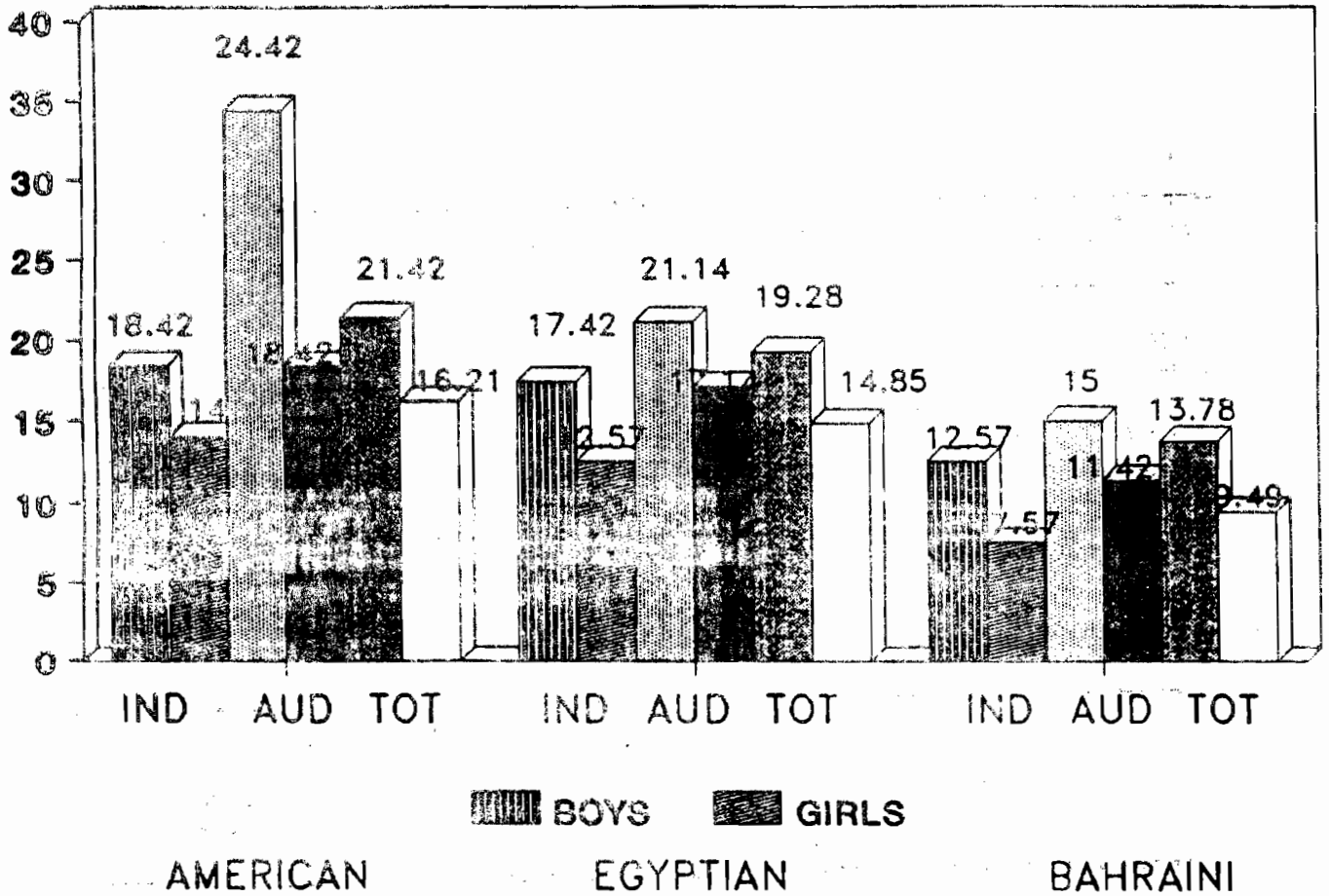




TABLE ( XIV )  
 MEANS, STANDARD DEVIATION, AND "t" VALUES  
 FOR BOYS AND GIRLS FOR THE SIT-UP TEST  
 ( NUMBERS )

COUNTRIES		AMERICAN		EGYPTIAN		BAHRAINI	
METHODS	SEX	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
INDIVID. SD Testing Diff	mean	27.14	22.57	24.57	20.85	21.14	18.00
	SD	1.09	2.38	.49	.99	.99	.925
	t		4.57 2.59*		3.72 7.51*		3.14 10.39*
Audience SD Testing Diff	mean	33.85	28.14	29.57	26.51	27.14	23.42
	SD	.98	.83	.49	1.38	0.98	1.39
	t		5.71 8.88*		3.00 3.15		3.72 5.928*
Total SD	mean	30.49	25.35	27.07	23.71	24.14	20.71
	SD	1.04	1.16	.50	1.19	.98	1.20
	t		5.14 5.00*		3.36 4.54*		3.43 6.08*

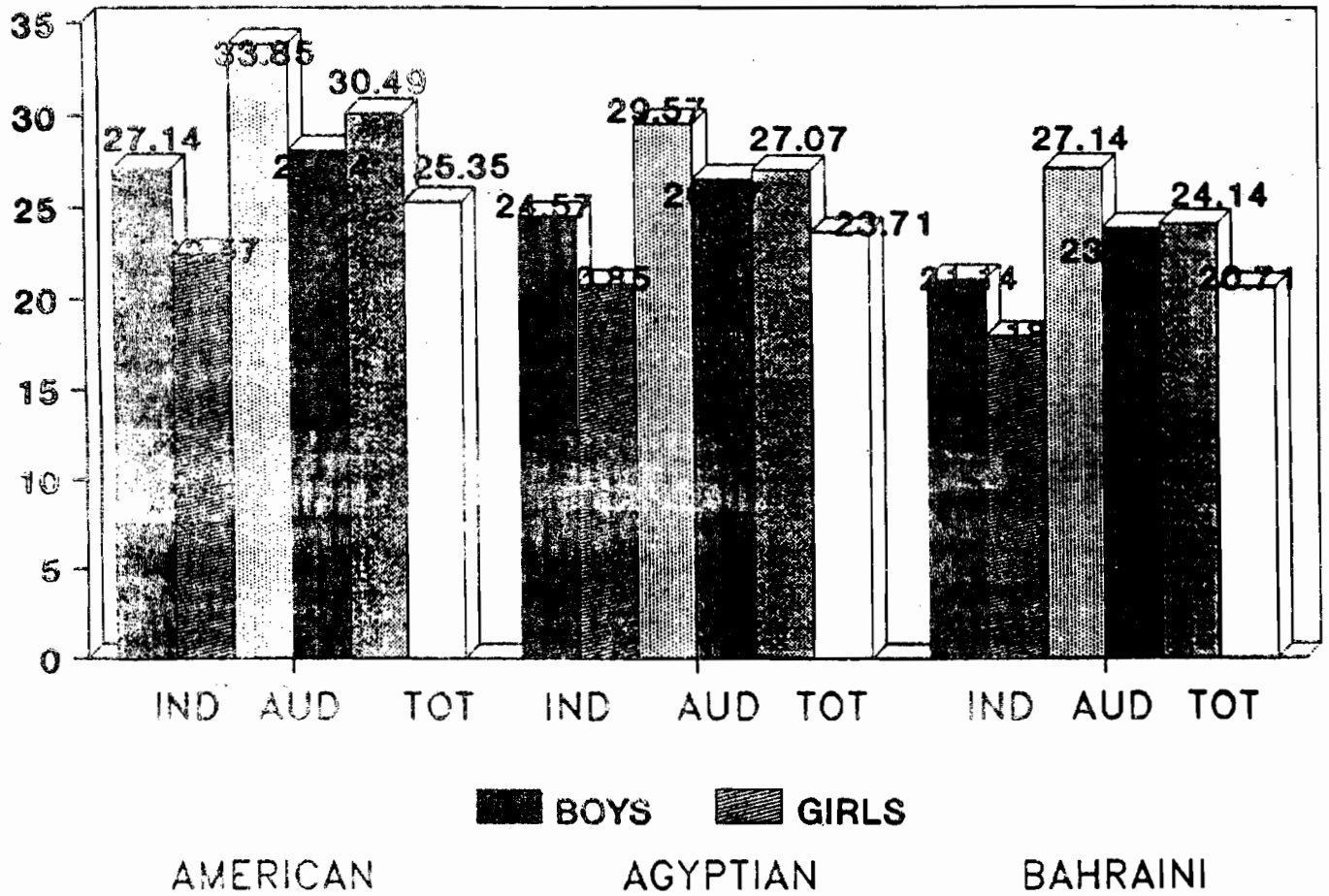
\* Significant at .05 level

t Tabular = 2.179, df = 12

t Tabular = 2.056, df = 26

FIGURE (11)

MEAN SCORES FOR BOYS AND GIRLS FOR THE SIT-UP TEST  
(AMERICAN, EGYPTIAN AND BAHRAINI)



## DISCUSSION

This study has demonstrated that strenght (flexed arm-hang test ) and endurance (sit-up test) scores in creased when handicapped children (orthopedically) were tested in the presence of their peers. The results of this study support other studies in demosntrating that the presence of peers in testing circumstance affects performance (3,1). The flexed arm-hang test and the sit up test were not considered as complex motor task which the subjects had prior experience. This observation is consistent with zajonc's findings that socia facilation enhances the performance of well-learned tasks. The investigator refers this result to the nature of this handicaps which forces the individual to use their arms and the upper bodies more than other parts of their bodies.

The nonsignificant changes in flexibility between the individual testing and the audience testing for all subjects are in agreement with other studies related to testing handicapped children specially the orthopedically. The sit and reach test as unfamiliar task to the subjects, may have been less aaffected by the presence of other two test items used in the study (14,6).

It was observes in the present study that the majority of the subjects had previous experience with flexed arm-hang test and the sit-up test. It could be referred to the fact that the handicapped individuals perform their maximal efforts in tasks required strenght, and endurance more than tasks required flexibility, because flexibility tasks depend on the body structure and built, as well as limits extensibility (6).

To enhance performance during training, teachers may want to set-up exercise regimens which encourage group participation. Therapist and special educators may want to organize treatment regimens which encourage handicapped children with similar problems such as othopedically handicapped to work together. However; care must be taken when generalizing form this study to other situation. More studies which will examine the effects of peers on other population are needed.

## CONCLUSION

Based on the analysis of the data obtained from the present study, the following conclusions were drawn:

1) There were significant differences between the America, Egyptian, and Bahraini subjects. The American children scored the highest in the total scores followed by the Egyptian and Bahraini subjects respectively. It may refer to the fact that the American awareness with the orthopedically handicapped children in schools and clinics are superior than the attention given to the same sample from other countries. However, there was no significant difference between the American scores and the Egyptian scores for the Flexed arm-hang test and the sit-up test.

2) There was a significant difference between the two testing methods used in the study for the flexed arm-hang test and the sit-up test. Although; there was no significant differences between the two testing methods for the sit and reach test.

3) There was a significant difference between the special fitness test scores for boys and girls (Orthopedically handicapped). Boys performed better than girls in both flexed arm-hang test, and the sit-up test. However; girls performed better than boys in the sit and reach test.

## REFERENCES

- 1-AAHPERD.(1976). Special Fitness Test Manual, Washington D.C., U.S.A.
- 2- Bending, A.W. (1964). Factor analytical scale of need achievement. Journal of Genetic Psychology, 90:59-67. Bowman, R., & Dunn J.M. (1982). Effect of peer presence on psychomotor measures of EMR children. Journal of Exceptional Children, 48, 5, 449-451.
- 3 - Cratty, B. (1983). Movement behavior and motor learning. Third edition, Lea and Febigh, 280, 391, 401.
- 4 - ----- (1981). Social Psychology in Athletics, Prentic, Hall, Inc., Englewood cliffs, 191-210.
- 5 - El Baden, B.M. (1983). The effect of peer presence upon health related physical fitness scores of college students. Unpublished doctoral dissurtation, Oregon State University, U.S.A.
- 6 - Hassan, A.A. (1983). The effect of an eight-week instructional program upon the blaance performance of hearing-impaired children, age 6-12. Unpublished doctoral dissurtation, Oregon State University, U.S.A.
- 7 - ----- (1985). The effect of peer presence upon the special fitness test scores of the orthopedically handicapped children. The Bulletin of the High Institute of Public Health, University of Alexandria, 193-202.
- 8 - Pearson, E.S. & Hartley, H.O. (1966). Biometrika tables for statisticians. Third edition, Syndics of Cambridge University press, Vol.1, Table 18.
- 9 - Reisman, M.A., Hassan, A.A. & El Baden, B.M. (1988). The effect of peer presence on strength test scores of Bahraini male athletics. accepted by the Bulletin of the High Institute of Public Health, University of Alexandria.

- 10 - Schmidt, R.A. (1982) Motor control and learning. A behavioral emphasis. Human Kinetic Publishers Champaign, Illinois, U.S.A.
- 11- Singer, R.N. (1980). Motor learning and human performance. An application to motor skill and movement behavior. Third edition, Mc millan publishing, 505-513.
- 12 - Triplett, N. (1897). The dynamogenic factors in pre-making competition. American Journal of Psychology, 9, 507-533.
- 13 - Zajonc, R.B. (1975). Social Facilitation. Science, 149, 269-274.

### ABSTRACT

The Longitudinal Study for Some morphological,  
and physiological measurements growth for Gymnastic  
Players Under 12 to above 16 years

The aim of this study to identify of the dynamic and amount growth for morphological, and physiological measurements. The descriptive survey method was used to present study and applied on 17 subjects for Gymnastic players under 12 to above 16 years were selected by purposive sample from Cairo and Alexandria.

The study revealed some results which helps the trainers to use the shown morphological and physiological measurements to selection direction, training and evaluation in this sport.

\* Assis. Professor in Faculty of Physical Education for Men. Alexandria.