

THE industrialization and urbanization that are rapidly occurring in Bahrain have reduced demands for the vigorous muscular exercise previously needed to earn a living. Since modern technology has provided motorized transportation and labour-saving devices for the majority, it is now possible to spend an entire lifetime at a level of energy expenditure barely above the resting state. The effect of this reduction in the work demanded of the body is deleterious, leading to increased incidence of cardiovascular disease, digestive and respiratory ailments, and joint and muscle pains.

To counter this trend, it is necessary to increase public awareness of the dangers of the popular life style and to educate the public regarding both the importance and methods of improving physical fitness. One such effort was undertaken by the U.S. Sports Academy in co-operation with the High Council for Youth and Sports and the Ministry of Education, beginning in January 1977.

The International Physical Fitness Test was administered to 4,150 boys aged eight through twenty one years and to 2,080 girls over a similar age span. A wide geographic distribution of the population was obtained at the primary, intermediate, and secondary schools of Muharraq, Bahrain, and Sitra Islands. The test scores were collected and sent to the University of S. Alabama computer analysis, including computation of means, standard deviations, and percentiles for the eight performance items, plus multiple correlation and linear regression. Norms were constructed for each physical fitness test and are printed in a test manual, affording quick,

# The Physical Fitness of Bahraini Youth

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easy comparisons for individuals of each age and sex.

## RESULTS

*Physical Growth :* Bahraini children of both sexes grow more slowly than their counterparts in Europe, North American, and Japan. In other words, the hypothetical average Bahraini child generally is smaller and leaner at any given age than his/her counterpart from the reference populations. There appears to be no need for alarm, since the direction and speed of growth for the population conform to Wetzel Grid, worldwide standards. However, follow-up is indicated to identify those children with sub-par physical growth and to refer them for medical examinations.

Girls, on the average, were taller and heavier than boys at each age until 14 to 15 years. The period of most rapid growth for girls was from 11 to 13, and for boys from 13 to 15 years of age, the so-called "adolescent growth spurts." Among girls, relatively greater increases in height compared to weight were replaced by a small shift in the opposite direction as they passed 14 years of age. This post-menarche gain in weight and physique probably is associated

with changing social roles and a more sedentary life pattern, and is not peculiar to Bahrain.

*Grip Strength :* For girls, grip strength of the dominant hand improved from 12.4 Kgs. at age 10, to 23.8 Kgs. at 16 years. Grip strength improved for boys from age to age, as a natural function of growth and closely correlated with gains in size ( $r = .67$  with height, and  $.70$  with weight for Bahraini boys 9 to 12 years of age).

*Fifty Meter Dash :* Mean performance in the 50 m. dash for boys was nearly identical to time of Indonesian boys tested by Dr. Thomas P. Rosandich in the early 1960's. Times for boys improved as the boys became older, except that at 12 years the mean was slightly slower than for the previous age.

Girls' 50 m. dash times decreased as expected from 10 to 12 years, but then began to increase. Running speed slowed from ages 12 - 16 so that 10 year-olds and 16 year-olds had identical mean scores of 10.6 seconds. The loss in running speed corresponded to an observed gain in body weight at 15 and 16 years of age.

*Sit and Reach :* In the sit and reach test, a measure of flexibility, slight improvements were noted for girls throughout, from 50.0 at age 10 to 53.6 cms. at age 16 years. A score of 50 corresponds to touching one's toes with the knees extended; greater than 50 indicates the ability to reach beyond the toes.

The superiority of girls over boys in this test increased after age 10 years.

*Shuttle Run :* Among girls, the shuttle run test of agility showed small improvements from 10 to 14, a slowing down at 15, and then

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slight improvement again to age 16 years. The change in boys was from 12.6 to 11.1 seconds over the 10 year span.

*Standing Long Jump :* Standing long jump scores revealed only small changes, from 1.2 to 1.4 m. for girls over the seven-year span, and from 1.2 to 2.0 m. for boys over a ten-year interval. These performances are satisfactory for younger children, but more increase would be expected toward later years, given good growth and opportunities to engage in activities requiring jumping.

*Distance Run :* The 800 m. run performance declined gradually and steadily for girls, from an average time of 5 min. 4 sec. at age 10 to 5 min. 32 sec. at age 16 years. Boys 9 through 12 years of age improved from 3 min. 00 sec. to 2 min. 52 sec. in the 600 m. run. Times of older boys in the 1000 m. run improved from 4 min. 50 sec. at age 12 to 4 min. 15 sec. at age 19 years, with the greatest improvements observed between 13 and 14, and 15 and 16 years of age.

*Sit Ups :* In bent-knee sit ups timed for 30 seconds, girls

increased from a mean of 11 repetitions at age 10 to 14 repetitions at age 15, and then decreased at age 16 to 13 repetitions. A plateau was visible at 12 to 13 years of age.

Boys performed well on the sit-up test, averaging 14 at age 9 and improving steadily to 25 reps. at age 19 years.

*Pull Ups :* The pull-up and flexed arm hang tests indicated a low level of arm and shoulder strength for boys and girls of all ages. As many as 45 percent of the boys in a given age group could not do a single pull-up. Flexed arm hang times showed that the girls were unable to sustain their body weight in the required position for more than a few seconds. Scores became poorer with advancing age.

## SUMMARY

The study was undertaken to determine the physical fitness of Bahraini youth by testing 4,150 boys and over 2,000 girls in the public schools. Physical fitness norms were established and are now being used in a national physical fitness improvement program.

In three tests, namely grip strength, sit ups, and sit and reach, the mean scores for girls were lower at age 13 years than a year earlier. Overall, the performance trends in girls tests indicated less than expected developmental progress in physical fitness with increasing age.

For boys, deficiencies in upper body strength and endurance, and in cardio-respiratory stamina were especially noted. Strength and endurance of the abdominal musculature, however, was found to be high.

Comments in this paper regarding physical fitness were made on the basis of mean trends evident from plotting cross sectional data. The results do not indicate the reasons for observed trends. Any of a number of environmental causes could be involved, e.g. nutritional status, motivation, influence of body type, or predominant life styles. Regardless, follow-up testing is suggested (1) to identify areas where weaknesses prevail, (2) to instruct the students in methods of improving fitness, and (3) to adapt facilities and programs so as to encourage the desired development. □□