

Socio-cultural Determinants of Physical Fitness: A Study among the Jats of Delhi

Inuka Gakhar and S.L. Malik

Department of Anthropology, University of Delhi, Delhi 110007, India

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ABSTRACT In order to study the physical fitness of Jats, the present study was conducted on 580 Jat school children of Delhi in the age range of 10 to 18 years. The study delineates the relationship between various socio-cultural variables and physical fitness. Family details including parental education, occupation, physical activity level, monthly income, residence and family types, consumption of milk and meals etc., were taken using questionnaire method. Results of bivariate analysis between these familial factors and various physical fitness tests indicated that parental occupation/ income, their activity level, nature of family and residence influenced the physical fitness of subjects. Therefore, we need to link physical fitness not only with health aspect of individuals, but also and more importantly with the availability of facilities or the socio-cultural milieu of the population under study.

INTRODUCTION

Physical fitness, a complex phenomenon, is a unified mosaic composed of many facets: biological, environmental and social. In other words, there is a synchronised integration among various bio-social determinants of physical fitness. The factors which have been responsible for modern concepts in physical fitness are like threads running through the fabric of history and even dating back to the prehistoric times.

Physical fitness is generally interpreted as 'total fitness' when it comprises a collective whole of components such as strength, cardio-respiratory endurance, flexibility, agility, speed and balance. Out of these components, strength, cardio-respiratory endurance and flexibility relate to energy production and work output by the human body and are categorised as health related components of physical fitness, whereas the latter three, i.e. agility, speed and balance relate to development and performance of motor or movement skills and are thus included under motor fitness. Health related fitness and motor fitness together comprise total physical

fitness. Besides, total physical fitness also comprises of a complex whole of certain bio-cultural components such as health, body mechanics, resistance to disease, muscular endurance, perfect body contour, psychological fitness, social consciousness, spiritual and moral qualities etc. A multifactorial approach is, therefore, necessary for a thorough understanding of physical fitness.

Earlier studies have delineated that physical fitness and its components in youngsters is differentiated according to their social and cultural situation (Renson, 1973, 1975; Renson et al., 1978, 1980 a, 1980 b; Gottlieb and Chen, 1985; Sallis et al., 1992; Lynch et al., 1998). Socio-cultural factors such as parental education, occupation, income, physical activity level, residence and family size, birth order, sport participation of the subject, etc. are some of the necessary and reliable tools in evaluating physical fitness in children (Renson, 1973; Vanreusel, 1985; Simons et al., 1990; Davis et al., 1994). Studies on youth sport participation indicated that both peers and parents played an important role in influencing physical fitness of subjects (Greendorfer and Ewing, 1981). Strong associations were reported between parental encouragement of physical activity and subject's physical activity level (Klesges et al., 1984, 1986; McKenzie et al., 1991). The physical activity level of siblings also influenced physical fitness of individuals in the Mexican-American and Anglo families (Sallis et al., 1988).

Previous investigations have shown that socio-economic status is a key determinant of physical fitness in children (Gottlieb and Chen, 1985; Sunnegardh et al., 1985). Stucky-Ropp and DiLorenzo (1993) found different family variables to predict the level of leisure time physical fitness activities among children. Familial aggregation of leisure time physical activity was studied in three generations by Aarnio

et al. (1997), and it appeared from the study that benefits of physical activity in children could be obtained by the influence of parental encouragement and their physical activity levels. Also, subjects' own physical activity level affect their performance in physical fitness tasks. Lewontin and his colleagues (Lewontin et al., 1984; Lewontin, 1991) argued that the interaction of genetic and environmental factors is the only sensible way to understand the affect of genes on our health. Physical fitness, is therefore, the result of interaction of biological and environmental factors including socio-cultural ones.

AIMS AND OBJECTIVES

The objective of the present study is to understand the relationship between a myriad array of socio-cultural factors and the performance of Jat boys and girls in various physical fitness tests. The focal aims of the study are :

- 1) to study the socio-cultural profile of the Jats; and
- 2) to examine the bivariate relationship between physical fitness tests and the socio-cultural concomitants.

MATERIALS AND METHODS

Data were collected on five hundred eighty (Males = 308, Females = 272) Jat school children in the age range of 10 - 18 years selected randomly by visiting six Government run schools in Jat dominant areas of Delhi. The AAHPER (American Association of Health, Physical education and Recreation) test battery, employed to assess the physical fitness levels of the subjects, included sit-ups, standing broad jump, shuttle run, fifty yard run, six hundred yard run, softball throw, and pull-ups for boys/ flexed arm hang for girls. Besides AAHPER tests, grip hand strength for both hands, Harvard's step test, sit and reach, plate tapping and balance flamingo stand test were also administered. For scoring the tests, necessary precautions were taken following the suggestions forwarded by earlier investigators (Renson et al., 1980; Council of Europe-Eurofit Manual, 1988; Claessens et al., 1990). The scoring method referred above has been described in detail in our

earlier publication (Gakhar and Malik, 1999).

Using questionnaire method, data were collected on subject's socio-cultural background. It included information regarding subject's subcaste, family, birthrank, residence, number of sibs, nutritional intake, physical activity level, Number of hours of exercise in a day and parental information. Details about father's and mother's education, profession, age, income and physical activity were also collected. This information was used to investigate the relationship of physical fitness tests with socio-cultural variables.

Coding was done to facilitate interpretation. For example, coding for residence included 1 as *Urban* and 2 as *Rural*. Nature of family was coded as 1 = *Nuclear*, 2 = *Joint*, 3 = *Extended*, 4 = *Others*. Education of the parents was coded as follows : 1 = *Illiterate*, 2 = *Primary*, 3 = *Middle*, 4 = *Senior secondary*, 5 = *Higher secondary*, 6 = *Graduate*, 7 = *Post Graduate*. Age of the parents was coded into six age groups, viz., 1 = *Below 30*, 2 = *Between 30-35*, 3 = *Between 35-40*, 4 = *Between 40-45*, 5 = *Between 45-50*, 6 = *50 and above*. Codes for parental occupation were 1 = *Govt. job*, 2 = *Private*, 3 = *Business*, 4 = *Doctor*, 5 = *Housewife*, 6 = *Army personnel*, 7 = *Retired*, 8 = *Professional*. Similarly, parental and household income was recorded in codes as follows : 1 = *Below Rs. 5,000 p.m.*, 2 = *Rs. 5,000-10,000 p.m.*, 3 = *Rs. 10,000-15,000 p.m.*, 4 = *Rs. 15,000-20,000 p.m.*, 5 = *Rs. 20,000-25,000 p.m.*, 6 = *Above 25,000 p.m.* Subject's and parental physical activity levels were recorded in coded form as 1 = *Sedentary*, 2 = *Very Low Active*, 3 = *Low Active*, 4 = *Moderately Active*, 5 = *Very Active*, 6 = *Intensely Active*. A description of the criteria for this categorisation of physical activity is mentioned in table 1.

Birth rank of the subject and number of meals taken in a day were recorded in numbers. However, the glasses of milk taken per day were converted to consumption of milk in litres. Coding for daily indulgence in physical activity and exercise by the subjects was 1 = *No*, and 2 = *Yes*.

RESULTS AND DISCUSSION

A detailed analysis of the responses cited by the

Table 1: Categories of Physical Activity Level in Jats

Category	Description
<i>Sedentary</i>	• Very low daily household activity • Level of inactivity constant all year round
<i>Very Low Active</i>	• Usually no activity leading to sweating • Activities of everyday requirement - Walking, Climbing stairs etc.
<i>Low active</i>	• No steady formal activity • Participation in a physically active task at any given time of short duration
<i>Moderately active</i>	• Engagement in little formal athletic activity • Frequent walks, aerobic activity at a low stress level
<i>Very active</i>	• Regular participation in athletic activities • Incorporation of physical activities into lifestyle as a complement to everyday activities
<i>Intensely active</i>	• Participation in aerobic activity at a high level, for an hour or more at a time, 5 to 7 days a week • Sustaining the activity level all-year-round

subjects for the above mentioned socio-cultural concomitants is provided in figures 1 to 13. Majority of the fathers (34.0%) are educated upto higher secondary level, followed closely by the graduates (26.7%) and senior secondary pass (24.5%) (Fig. 1). 8.8% fathers are educated upto middle school level. Only a small percentage (3.3%) out of the total are post graduates. 1.5% have studied upto primary level and 1.2% are illiterates. Majority (31.9%) of the mothers are illiterates. 24.4% have studied upto middle school level, and 20.7% have studied upto senior secondary level. 14.8% mothers are higher secondary pass. Only 4.1% are graduates and 0.5% are post graduates.

Majority (40.8%) of the fathers are between 40-45 years of age, followed by 31.6% who are between 35-40 years of age (Fig. 2). 14.2% belong to the age range of 45-50 years, and 10.5% are above 50 years of age. Only a small percentage of the fathers (2.8% and 0.1%) belong to 30-35 years and below 30 years age group respectively. More than 50% of the mothers are between 35 to 40 years of age. A sizeable percentage (20.7%) of the mothers belong to 40-45 years age range, whereas 14.1% are between 30-35 years of age. Only 6.0% mothers belong to 40-45 years age group in the present sample.

Physical activity level has been categorised in an ascending order as sedentary, very low active, low active, moderately active, very active, and intensely active depending on the nature and intensity of regular physical activity performed by the parents. Majority (35.9%) of the fathers are low active, followed by 23.6% moderately active fathers (Fig. 3). A sizeable percentage (19.3%) are very active physically, followed closely by those (18.6%) who have very low physical activity. Only 0.3% fathers are sedentary. In case of mothers, however, more than 50% are low active, followed by those (26.7%) who are moderately active. 9.7% mothers are very active physically, whereas 5.3% have very low physical activity level. Only a minor percentage of mothers (0.1%) are sedentary. None of them are intensely active.

Majority (53.0%) of the fathers are in Govt. job, followed by those (28.3%) in private occupation (Fig. 4). Sizable number (9.8%) of fathers are Army personnel. 5.3% are in business. Small percentage of the fathers are doctors (1.4%), and other professionals (1.0%) respectively. 1.2% out of the total number of fathers are retired. Largest percentage (90%) of the mothers, on the other hand, are housewives. Few are in Govt. job (4.2%), or private job (4.2%). Only a slight proportion of the mothers are either doctors (0.3%) or in business (0.3%).

Majority (71.1%) of the fathers have a monthly salary below Rs. 5000, followed by those (26.0%) who draw a monthly salary between Rs. 5,000-10,000 (Fig. 5). 1% fathers have the monthly salary between Rs. 10,000-15,000. Below 1% fathers draw a monthly salary of Rs. 15,000-20,000 (0.9%), Rs. 20,000-25,000 (0.7%), and above Rs. 25,000 (0.3%) respectively. In contrast, mothers are mostly housewives and usually non-earning members of the family. Among the working mothers (10%), all of them draw a monthly salary below Rs. 5000. Based on the incomes of father, mother and any other earning member in the family, the total household income is below Rs. 5000 in majority of the cases (66.2%). In 27.9% cases, the total household income is between Rs. 5000-10,000. In only few cases, the total household income is between Rs. 10,000-15,000 (3.1%), between Rs. 15,000-20,000 (0.9%), Rs. 20,000-25,000 (1.4%) or above Rs. 25,000 (0.5%).

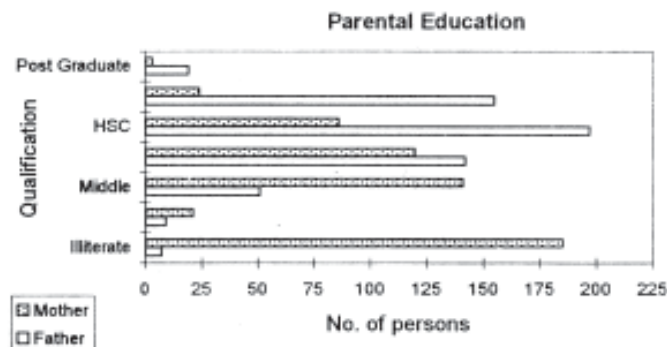


Fig. 1. Distribution of parents (fathers and mothers) by educational qualification

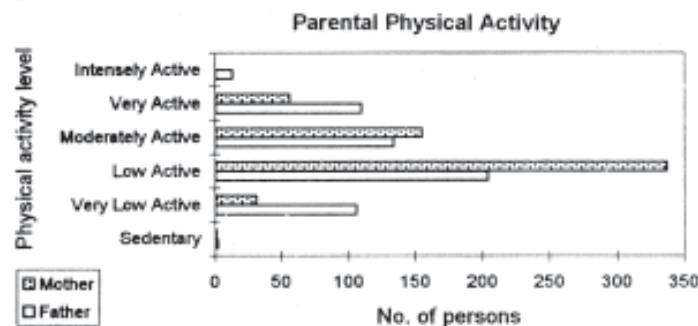


Fig. 2. Distribution of parents (fathers and mothers) by age

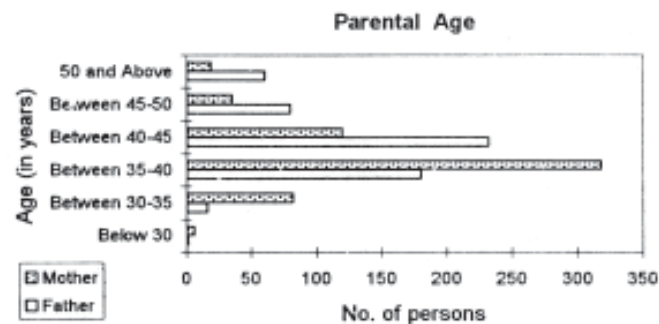


Fig. 3. Distribution of parents (fathers and mothers) by physical activity level

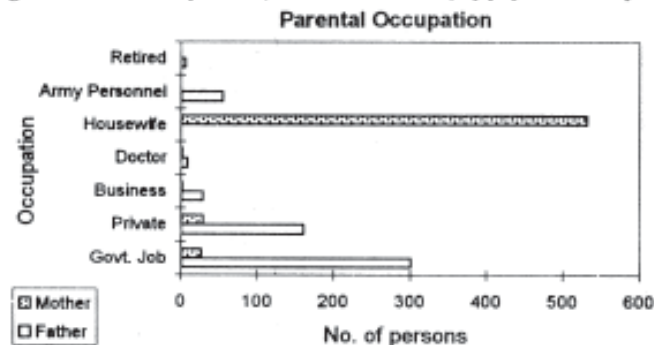


Fig. 4. Distribution of parents (fathers and mothers) by occupation

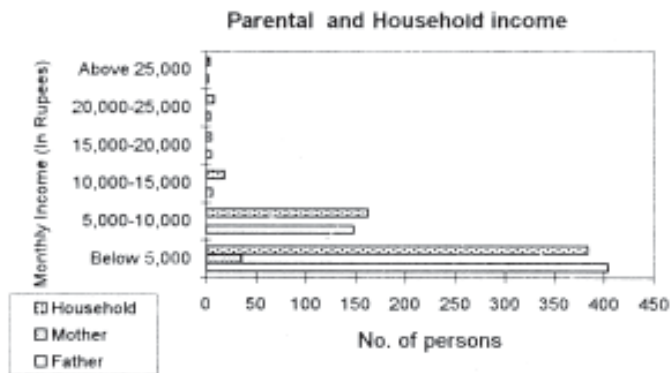


Fig. 5. Distribution of parents (fathers and mothers) by monthly income

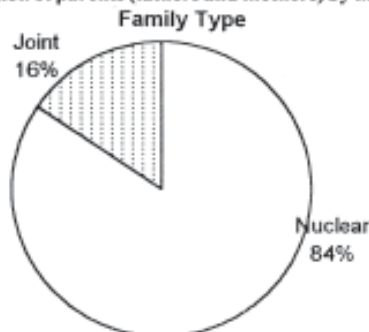


Fig. 6. Distribution of subjects by residence type



Fig. 7. Distribution of subjects by family type

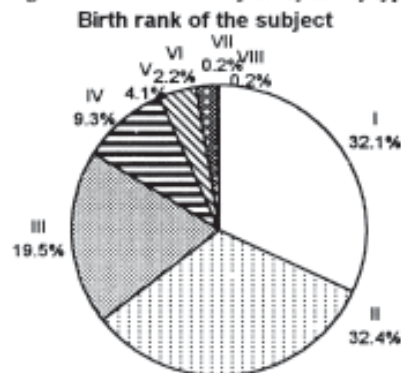


Fig. 8. Distribution of subjects by birth rank

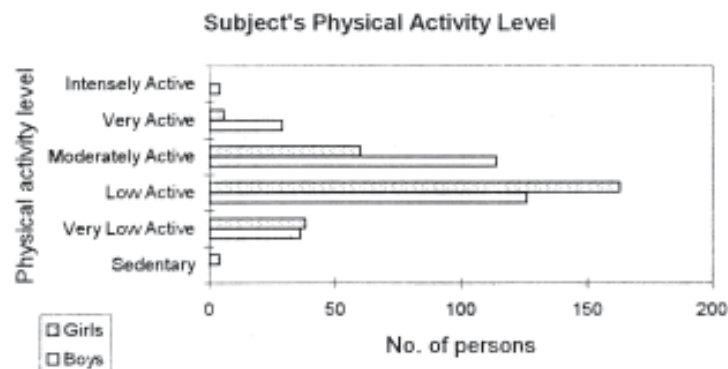


Fig. 9. Distribution of subjects (Jat boys and girls) by physical activity level

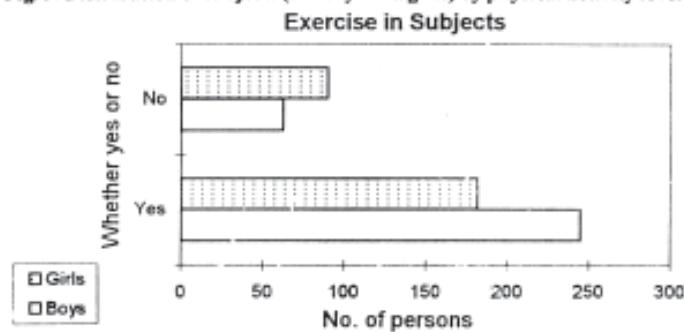


Fig. 10. Distribution of subjects (Jat boys and girls) by indulgence in physical activity

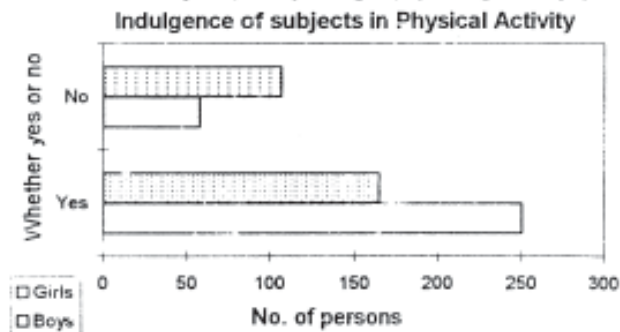


Fig. 11. Exercise in Jat boys and girls

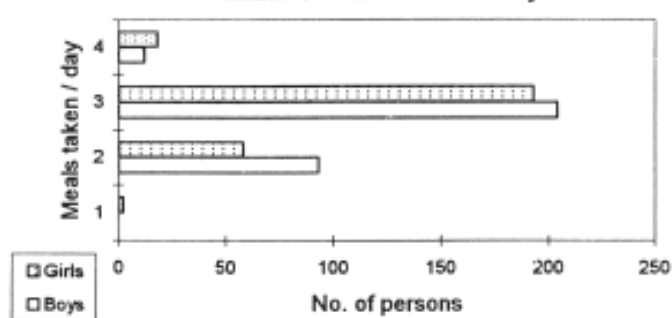


Fig. 12. Number of meals taken in a day by Jat boys and girls

70% of the subjects belong to urban areas, whereas only 30% of the subjects belong to rural areas (Fig. 6). Distribution of subjects according to the nature of their families is shown in figure 7. 85% of the subjects have nuclear families, whereas the rest 15% have joint families. In terms of birth order, maximum number (32.4%) of the subjects have birth rank 2 (Fig. 8). It is followed closely by those having birth rank 1 (32.1%). 19.5% subjects have birth rank 3. In case of the remaining subjects, who belong to large families, their birth rank is either 4 (9.3%), 5 (4.1%), 6 (2.2%), 7 (0.2%), or 8 (0.2%).

In terms of physical activity, most (40.7%) of the boys are low active (Fig. 9). It is followed by moderately active (37.0%) boys, followed again by those having very low (11.6%) physical activity. 9.4% boys are very active physically, whereas 1.3% are intensely active in their physical activity level. None of the boys are sedentary. More girls (60.3%) than boys are low active physically. 22.0% girls are moderately active. In case of the remaining girls, 14.0% have very low physical activity level, whereas 2.2% are intensely active physically. 1.5% girls out of the total are sedentary. Indulgence in physical activity is higher in Jat boys (81.2%) than in Jat girls (60.7%) (Fig. 10). More boys (79.5%) than girls (66.9%) exercise regularly (Fig. 11). It includes walking from home to school, cycling for the same purpose, and regular exercise at home and school.

Majority of the boys (66.2%) take meals thrice a day, whereas 30.2% take meals twice a day (Fig. 12). The corresponding percentages of girls are 70.9% and 22.4% respectively, in terms of number of meals taken in a day. A small percentage of boys (3.6%) and girls (6.0%) take meals four times a day.

The boys consume more milk per day than the girls (Fig. 13). While majority of the boys (72.4%) and girls (77.2%) consume about half a litre milk per day, a large number of boys (19.2%) consume about one litre milk per day. In girls, however, this figure is very low (7.7%). Some boys consume about one and a half litres (2.3%) or two litres (2.5%) milk on daily basis. Girls usually do not drink more than one litre milk in a day. On the other hand, the percentage of girls who do not drink milk is quite high (15.1%) as compared to that of the boys (3.6%).

Bivariate Relationship of Physical Fitness Tests with Socio-cultural Variables

Results of bivariate relationship between physical fitness tests and socio-cultural concomitants are presented for Jat boys and girls in table 2. Subject's activity level is significantly related to the performance of most of the physical fitness tests in boys (Table 2). Positive nature of correlation suggests that higher is the activity level, greater is the achievement in terms of score of various physical fitness tests in boys. Right and left hand grip strengths, standing broad jump, pull-ups, sit-ups, speed of fifty yard run and softball throw performance are influenced chiefly by subject's activity level in boys. In girls, grip strength of the left hand, standing broad jump, sit-ups and softball throw are positively related to subject's activity level (Table 2). Indulgence in physical activity is found to be positively associated with all the above mentioned physical fitness tests in boys and with sit and reach, plate tapping and balance in girls. This implies that subjects having prior engagement in physically active tasks as a part of their daily regimen score higher in most of the physical fitness tests. Due to regular practice, these subjects perform these tasks easily and eventually score better than their counterparts who do not indulge in regular physical activities. Although, the beneficial effects of physical activity and sport involvement on general physical fitness has been well documented (Malina, 1978, 1979; Renson et al., 1981), Health related fitness has recently been found to be positively associated with both

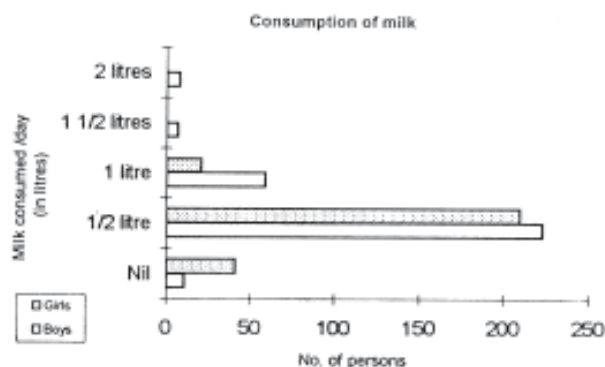


Fig. 13. Milk consumption per day in Jat boys and girls

Table 2: Relationship between Physical Fitness Tests and Socio-cultural Concomitants in Jat boys and girls

Socio-cultural Variables	Physical Fitness Tests (Coefficient of correlation)												
	Grip Strength (R)*	Grip Strength (L)*	Broad Jump	Pull-ups	Sit-ups	RFI	600 Yard Run	Sit and Reach	Shuttle Run	Plate Tapping	50 Yard Run	Softball Throw	Balance
Boys													
Residence (urban/ rural)	-0.06	-0.05	0.02	-0.19	0.11	-0.03	-0.14	-0.35	-0.01	-0.18	-0.08	-0.05	-0.08
Family type	-0.03	-0.04	-0.01	0.05	-0.07	0.05	0.02	0.14	0.00	0.07	0.09	-0.07	-0.11
Number of sibs	0.00	0.01	0.06	-0.00	0.07	-0.00	0.04	0.02	0.05	0.03	0.02	0.14	0.03
Birth rank	0.00	0.00	0.05	-0.06	0.39	-0.04	0.03	-0.01	-0.00	0.02	-0.00	0.10	0.00
Father's education	0.10	0.10	-0.00	0.14	0.01	0.06	0.05	0.05	0.00	0.02	0.01	0.05	-0.04
Mother's education	-0.04	-0.02	-0.03	0.02	-0.02	0.00	-0.02	-0.02	-0.04	-0.04	-0.02	-0.02	-0.00
Father's age	0.29	0.29	0.30	0.13	0.16	-0.00	0.15	0.03	-0.17	0.09	-0.21	0.36	0.05
Mother's age	0.33	0.33	0.31	0.12	0.16	-0.04	0.21	0.00	-0.19	0.08	-0.22	0.35	0.04
Father's profession	-0.03	-0.04	-0.02	0.03	0.00	0.06	0.00	0.13	-0.04	0.06	0.00	-0.02	-0.01
Mother's profession	-0.07	-0.06	-0.02	-0.00	0.07	0.03	-0.05	0.08	0.01	-0.02	0.02	-0.03	0.02
Father's income	0.02	0.02	0.03	-0.02	-0.13	-0.03	-0.07	0.07	-0.08	0.09	-0.05	0.04	-0.08
Mother's income	-0.02	-0.02	0.00	-0.05	-0.03	-0.03	0.00	-0.08	-0.02	-0.06	-0.03	0.02	0.02
Household income	0.00	0.01	0.05	-0.04	-0.16	-0.05	0.07	0.10	-0.03	0.14	-0.04	0.05	-0.05
Father's activity level	-0.05	-0.05	-0.04	-0.05	-0.04	-0.03	-0.09	0.00	0.07	-0.03	0.07	-0.08	0.03
Mother's activity level	-0.23	-0.23	-0.14	-0.27	-0.07	-0.21	-0.19	-0.17	0.17	-0.20	0.11	-0.11	0.02
Quantity of milk	0.24	0.25	0.30	0.27	0.24	0.10	0.15	0.09	-0.16	0.00	-0.27	0.27	-0.07
Number of meals / day	0.01	0.03	-0.15	0.12	-0.05	0.04	0.07	0.05	-0.04	-0.05	-0.09	0.19	0.00
Physical activity status	0.22	0.23	0.18	0.25	0.19	0.08	0.22	0.03	-0.11	0.14	-0.06	0.33	0.00
Subject's activity level	0.36	0.37	0.28	0.23	0.25	0.03	0.12	-0.10	-0.12	0.09	-0.18	0.33	-0.02
Exercise status	0.00	0.00	0.00	0.07	0.04	-0.01	-0.01	0.01	0.05	0.00	0.03	0.05	0.04
Girls													
Residence (urban/ rural)	-0.02	0.02	0.12	-0.09	0.19	0.04	-0.30	0.18	-0.30	0.04	-0.06	0.33	0.04
Family type	-0.08	-0.07	-0.00	-0.02	0.11	0.00	0.07	0.14	-0.04	0.04	0.09	-0.00	-0.03
Number of sibs	-0.00	-0.00	-0.04	-0.05	0.03	0.10	-0.09	-0.07	-0.02	0.05	0.02	-0.00	0.02
Birth rank	-0.12	-0.11	-0.06	-0.07	0.07	0.00	-0.09	-0.06	0.08	-0.10	0.09	0.40	0.35
Father's education	0.04	0.05	-0.00	-0.09	0.02	-0.12	0.05	0.05	0.10	-0.10	0.08	-0.06	-0.04
Mother's education	0.00	0.00	-0.04	-0.06	0.04	-0.08	-0.03	0.04	0.01	-0.11	0.00	-0.04	-0.07
Father's age	0.18	0.21	0.05	0.03	0.06	0.02	-0.09	-0.07	-0.02	0.06	-0.02	0.04	-0.04
Mother's age	0.22	0.23	0.17	0.11	-0.03	-0.00	0.01	-0.14	-0.13	0.10	-0.01	0.20	0.01
Father's profession	0.05	0.06	0.04	-0.08	0.04	0.05	-0.09	0.02	0.02	0.09	0.06	-0.05	-0.02
Mother's profession	0.00	0.00	-0.00	0.11	0.03	0.12	-0.04	-0.06	-0.10	0.09	-0.00	-0.02	0.07
Father's income	0.10	0.11	0.03	-0.07	-0.09	-0.11	0.10	-0.02	-0.02	0.05	0.00	0.05	-0.03
Mother's income	-0.02	-0.03	0.01	-0.05	-0.00	-0.08	0.02	0.06	0.02	-0.08	0.00	0.02	0.04
Household income	0.10	0.11	0.02	-0.00	-0.07	-0.09	0.02	0.08	-0.03	0.09	-0.12	0.13	0.03
Father's activity level	-0.04	-0.02	-0.00	0.04	0.03	-0.05	-0.07	-0.00	0.05	-0.05	0.09	-0.08	-0.03
Mother's activity level	-0.15	-0.17	-0.01	0.00	0.09	-0.04	-0.06	-0.12	0.07	-0.16	0.05	-0.09	0.06
Quantity of milk	-0.08	-0.08	-0.02	-0.04	0.08	-0.00	-0.07	-0.00	-0.02	-0.09	0.06	0.08	-0.03
Number of meals / day	0.02	0.05	0.06	0.04	0.06	-0.02	0.02	0.04	0.00	0.13	0.05	-0.00	0.02

Table 2: Contd...

Socio-cultural Variables	Physical Fitness Tests (Coefficient of correlation)												
	Grip Strength (R)*	Grip Strength (L)*	Brood Jump	Pull-ups	Sit-ups	RFI	600 Yard Run	Sit and Reach	Shuttle Run	Plate Tapping	50 Yard Run	Softball Throw	Balance
Physical activity status	-0.06	0.10	0.03	0.02	0.10	0.05	0.07	0.12	-0.11	0.15	-0.07	0.08	-0.16
Subject's activity level	0.11	0.15	0.25	-0.05	0.20	-0.11	0.02	0.05	-0.05	0.09	-0.05	0.17	0.02
Exercise status	-0.06	-0.06	-0.00	0.03	0.11	0.00	0.04	0.04	-0.00	-0.03	0.11	0.11	-0.07

Physical activity status -0.06
 Subject's activity level 0.11
 Exercise status -0.06

* (R) and (L) represent Right Hand Grip Strength and Left Hand Grip Strength respectively
 Bold and Underline values of r (Coefficient of correlation) are significant at 5% probability

intense and frequent, energy consuming exercises (Shepherd and Bouchard, 1995; Rowland, 1998).

Consumption of milk also influences the performance of boys significantly in most of the physical fitness tests (Table 2). Greater is the consumption of milk, higher is the performance level. Number of meals taken in a day negatively influences standing broad jump performance in boys. It denotes that performance in standing broad jump is poorer in subjects taking meals many a times in a day as compared to those who take fewer number of meals in a day. Performance in girls, however, is not influenced either by consumption of milk or number of meals taken / day (Table 2).

In boys, shuttle run, fifty yard run and balance flamingo tests are positively and significantly correlated with both father's and mother's physical activity level (Table 2). Flexed arm hang, sit-ups, shuttle run and fifty yard run in girls are positively and significantly correlated with father's and mother's physical activity (Table 2). Father's physical activity also influence standing broad jump and sit and reach performance in girls, whereas mother's physical activity level influences their daughters' balancing skills in the present study. Several studies revealed that both parents' physical fitness and encouragement had an effect on childrens' physical fitness (Gottlieb and Chen, 1985; Anderssen and Wold, 1992; Klesges et al., 1984; Sallis et al., 1992). Also, more active parents were shown to have more active children (Ross and Pate, 1987; Moore et al., 1991). In this study, parental age is an also important determinant of performance level in boys. It is evident from the positive values of coefficient of correlation between father's and mother's age and grip strength of both the hands, standing broad jump, pull-ups, sit-ups, six hundred yard run, shuttle run, fifty yard run, and softball throw in boys (Table 2). Parental age influences grip strengths of both the hands, standing broad jump, sit and reach, shuttle run, and softball throw in girls as well (Table 2).

Education of parents is, however, not associated with any of the physical fitness tests both in boys and girls. Except for the association of father's education with pull-ups in boys (Table 2) and rapid fitness index in girls (Table 2), none

of the physical fitness tests are influenced by the education level of either the father or the mother. Profession of the parents also generally does not influence the performance of physical fitness tests in Jat boys and girls. Parental and household income does not influence performance of the girls in any of the tests of physical fitness (Table 2). However, it influences the number of sit-ups and plate tapping in boys (Table 2). Renson (1975) did not find any relation between mother's educational level and motor ability of 13 year old Belgian boys, but he observed a positive relation between father's socio-professional status and overall motor development in them.

Birth rank of the subject determines the number of sit-ups done by the boys (Table 2), and right hand grip strength and softball throw in girls (Table 2). Nature of the family also determines the average number of sit-ups done both by the boys and the girls. Number of sibs do not influence any of the physical fitness tests performed by the boys and the girls. Physical activity level of siblings was, however, found important determinant of physical fitness assessment in Mexican American and Anglo families by Sallis and his colleagues (1988). Residence in boys affects their performance in pull-ups, six hundred yard run, sit and reach and plate tapping. Negative association of residence with all these tests suggest greater achievement by those having a rural background. This suggests that moving to urban area has decreased the ability of Jat boys at least in some the tests of physical fitness, especially those related to muscular strength, cardio-respiratory endurance, agility and speed. A number of factors, including a decrease in consumption of milk and a decrease in heavy physical active tasks related to agricultural activities, may be responsible for such a trend. Conversely, positive significant associations between residence and standing broad jump, sit-ups, sit and reach, shuttle run and softball throw in girls suggest that girls having an urban upbringing perform better than their counterparts belonging to rural areas.

Jats, in general, are known for their hard labour. Jat women are as hard working as Jat men, if not more. They also share the load of occupation of their men folk besides completing the daily household chores. This, however, cannot

be said with confidence for Jat girls. There are often restrictions, or at least a lack of motivation from the elders of the family for girls to undertake exercises. The girls, specially the older ones, are therefore, shy as far as conducting regular physical fitness activities are concerned, because the community favours them to be so. It is clearly reflected in the abysmally poor performance of older Jat girls in the tests of strength, cardio-respiratory endurance, flexibility, agility and speed as compared to that of Jat boys in these tests. Thus, the performance in the physical fitness tests is subject to the exposure and adaptation to chronological socio-cultural environments in younger and older Jat children. Also, socialisation of boys and girls regarding sports and physical activity is quite different, so it is important to separate biological influences on physical fitness from their socio-cultural circumstances.

CONCLUSION

In translating knowledge from research base to intervention programs to improve health and fitness of the Jats, special emphasis must be placed on the neighbourhood environments and family attitudes for involvement in physical fitness activities apart from school based activity schedules. One of the fundamental issues in this regard is to create a climate that fosters physical fitness and for which there is an immediate need to make physical fitness a social norm. In order to fulfil this objective, an attempt has been made, through the present study, to enlighten the Jats of their declining physical fitness standards.

The Jats, who were traditionally known for their physical acumen, used to undertake fitness activities regularly since early childhood. Presently the younger lot do not indulge in regular physical activity. This is one of the reasons for the poor performance of Jats in physical fitness tests. Other than this, an array of socio-cultural factors also influence their performance in physical fitness tests. Nature of the family, residence, consumption of milk, subjects' activity level, Parental occupation and income are important determinants of performance level in boys, while physical fitness in girls is influenced greatly by their mother's activity level, birth rank and Parental age. Therefore, through the study it

appears that it is essential to understand the socio-cultural profile of any group or population before assessing their actual physical fitness levels. By doing so, genuine efforts can be made to improve their physical fitness.

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