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PATTERNS OF SPORT PARTICIPATION AND
PHYSICAL ACTIVITY IN URBAN MEXICAN YOUTH

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Shannon R. Siegel

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PATTERNS OF SPORT PARTICIPATION AND PHYSICAL ACTIVITY IN URBAN MEXICAN YOUTH

By

Shannon R. Siegel

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ABSTRACT

PATTERNS OF SPORT PARTICIPATION AND PHYSICAL ACTIVITY IN URBAN MEXICAN YOUTH

By

Shannon R. Siegel

The purpose of this study was to assess participation and motivation for sport, and level and types of physical activity in urban Mexican school youth across three socioeconomic levels. This study also considered current growth status (height and weight) to provide an estimate of nutritional status (under- and overnutrition) and to place the sample in a secular context. Approximately 1,100 Mexican school youth between the ages of 9 and 18 years participated in a cross-sectional study involving sport preferences, motivation for sport, and level of physical activity. Heights and weights were measured and the BMI calculated for 1,085 subjects of the sample, and the females were asked their menarcheal status. Older primary school and high school youth (n = 591) completed surveys on sport and activity participation. Males and females differ in sport preferences. Females appear to prefer individual lifetime activities, whereas males seem to prefer sport activities. Reasons for sport participation in urban Mexican youth are similar to those for United States youth, with "fun" the primary reason for sport participation in urban Mexican youth. Physical fitness and coaching issues also impact sport

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motivation. However, among reasons for dropping out of sport, urban Mexican youth appear more concerned about their studies than United States youth. Urban Mexican males are more ego oriented in their sport motivation than females, while there is no difference in task orientation. Most males in this study are in the active category of the PAQ-A, while most females are in the inactive category. The very active category has the fewest representatives for both genders. Younger males and females (9-13 years) are consistently more active than their older counterparts (14-18 years). Urban Mexican male sport participants have higher activity scores and self-perceived physical condition than non-participants. Female sport participants have higher activity scores, self-perceived physical condition and self-perceived activity levels than non-participants. Sociodemographic and biological variables account for 1% to 14% of the variance in sport participation status and physical activity score. The BMI does not differ between sport participants and non-participants, or between inactive, active and very active activity categories. The prevalence of males 9-13 years who are at risk of overweight is 38%, and that for females 9-13 is 29%. The prevalence decreases with age. A positive secular trend in size (stature and body weight) has occurred in Mexico City youth between 1926 and 1998. No secular change appears in age at menarche in urban Mexican females.

Dedication

To my Dad and Mom,
who taught me that life is
what I make of it, and if I can
imagine it, I can make it happen.

ACKNOWLEDGMENTS

First and foremost, my thanks go to María Peña Reyes and Eyra Cárdenas Barahona for their help in my quest for a dissertation, and for their hospitality in Mexico City. I am also greatly indebted to many professors and students at ENAH: Denise Lambaer Urrutia, Martha Hurtado Santoyo, Aída Pérez Cárdenas, Hugo Torres López, Marcela del Olmo Ruiz, and Arturo Gómez Serrano. Without their help, I would not have a dissertation. I also thank all of the grade school and high school students who were my subjects, and my appreciation goes to their teachers for their patience and graciousness when we disrupted their class lessons. An abundance of thanks also go to my advisor Dr. Robert Malina, for working with me throughout my graduate career, and helping me find the focus in work that I truly enjoy. Thanks also to my committee members Dr. Crystal Branta, Dr. Martha Ewing, and Dr. Sharon Hoerr for their help and support during the process. And to all my friends both here at MSU and elsewhere who helped me survive Michigan winters with a sense of humor (and the ability to snowboard), thank you so much! Lastly, I would like to thank my family for supporting me, unconditionally, through everything. The data collection for this dissertation and its completion were partially funded by grants from the International Theme Group from the College of Education and a Dissertation Completion Grant from the College of Education and The Graduate School.

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CHAPTER I

INTRODUCTION

Physical activity and sport participation by youth have been the focus of study in many population samples in North America and Europe. In contrast, few studies have been done in Latin America, specifically Mexico. While there is a rich historical literature on the growth status of Mexican children, especially in a nutritional context, participation in physical activity and sport has not been systematically addressed. Organized sport is a major component of physical activity in American children; corresponding data are lacking for Mexico and other Latin American countries.

Sport is a focal point in many countries in the world, ranging from international competitions to local neighborhood challenges. Depending on the relative importance of sport in a particular culture, the youth of that population may invest considerable time and effort acquiring the skills and proficiencies of a sport. Current participation trends, the structure of youth sport programs, and the sports available are based primarily on North American and European models (De Knop et al., 1996). Minimal baseline data exist regarding sports available, levels of sport participation, and physical activity for Mexican youth, and for youth in other parts of Latin America.

Participation in leisure time physical activity, and by extension sport, may be influenced by nutritional status. Using height-for-age as an indicator of growth history or growth stunting, some data suggest that boys with a

history of undernutrition are not able to keep up with well-nourished boys in physical activity, including sport activities (Spurr and Reina, 1988). Thus, nutritional status may influence participation in physical activity, and in turn, sport.

Estimates of the prevalence of obesity in children in Latin America ranges from 8% to 33% depending on the study, and obesity is more common in the middle and lower middle socioeconomic levels (O'Donnell, 1988). In developed countries, obesity is correlated with low socioeconomic status (SES); this is not the case in developing countries; obesity is more related to high SES. Among Brazilian youth 7-12 years of age, 38% of upper class children were classified as obese (based on two out of three indicators: height, weight, arm circumference, and the triceps skinfold) in contrast to 12% of middle class and 4% of lower class children (Arteaga et al., 1982). A study of 1051 Chilean adolescents 13-15 years of age indicated a prevalence of obesity (weight-for-height) of 41% in girls and 26% in boys (Montecinos et al., 1986).

If childhood and adolescent obesity are increasing, as it appears to be in some Latin American countries (O'Donnell, 1988), and the Hispanic population in the Unites States (Troiano and Flegal, 1998), physical activity may become more important to the youth of these countries. It is, therefore, important to determine what children are doing with their free time or in school, whether they are being sufficiently active or inactive, and if they are not choosing to be active, how can they be motivated to be so.

Currently, Mexico City has a population of approximately 21 million people. The city is located at an altitude of 2200m (7200 feet), and the metropolitan area is roughly 500 km^2. The city sits in a valley and is ringed by volcanoes, which often cause a thermal inversion where the winds cannot circulate the air over the mountains. Thus, pollution levels are often very high since the contaminated air cannot escape over the hills. Due to altitude and pollution in Mexico City, children are often not allowed to play outdoors for physical education or recess. Thus, the activity levels of youth may be restricted due to the locale.

Mexico City primary and secondary school youth receive at least one hour of physical education per week depending on whether they are in a public or private school (Secretaría de Educación Pública, 1993), the amount varies by school for the high school youth. While individual school administrations make the decisions on physical education for each school, there is a recommended requirement based on grade level (Secretaría de Educación Pública, 1993).

Like many countries, Mexico has basically three socioeconomic levels, low (bajo), middle (medio), and high (alto). Socioeconomic status (SES) is often reflected by region of residence and school choice, as well as opportunity and access to extracurricular activities. Thus, SES has the potential to strongly influence an individual's access to sport and/or physical activity.

The purpose of this study is to assess participation and motivation for sport, and level and types of physical activity in urban Mexican school youth

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across three socioeconomic levels. This study also considers growth status (height and weight) of the school youth to provide an estimate of nutritional status (under- and overnutrition) and to place the sample in a secular context.

Research Questions

1. In what sports do urban Mexican youth 9-18 years of age, across three socioeconomic levels participate?

    a. How do Mexican youth perceive their own participation or non-participation in sport?

2. Why do urban Mexican children participate in sport? Or conversely, why do they discontinue participation in sport?

3. What is the level of physical activity among urban Mexican school youth 9-18 years of age as estimated with a seven-day recall?

4. What sociodemographic (gender, age, SES) and biological (height, weight, the BMI) variables are predictive of sport participation status and level of physical activity in urban Mexican school youth?

5. Using the Body Mass Index (BMI) as a proxy for nutritional status, what is the relationship between nutritional status and physical activity, including sport participation?

6. What is the current growth status of urban Mexican youth relative to United States (World Health Organization, WHO) reference data?

7. Have secular changes occurred in the stature, weight and BMI of Mexico City youth? Has secular change occurred in the age at menarche of urban Mexican females?

Significance of Study

This study is unique in that it is an international assessment of youth sports participation. Data on the activity levels and sport choices of Mexican youth are lacking. The proposed study extends the applicability of sport

participation surveys into another culture, and provides a basis for cross-cultural comparison using an established method.

This is a study of school youth using sport as the context. Sport is often an important component in the lives of many youth throughout the world. In addition, sport has the potential to favorably influence social and moral development, and to foster self-esteem and perceptions of competence (Ewing and Seefeldt, 1996). The results of this study should be comparable to those from a survey of American youth based on the same methodology (Seefeldt and Ewing, 1997).

Although information on level of sport participation and activity across SES is available (e.g., Greendorfer, 1978; Hasbrook et al., 1981; Gottlieb and Chen, 1985), these issues have not previously been addressed in a different cultural context, specifically in Mexico. Mexico, like all countries, has contrasting levels of poverty and wealth. These two extremes, however, are not distributed evenly in Mexico. A considerable percentage of the Mexican population lives under conditions of poverty, while a relatively small percentage lives under conditions of affluence. However, like many other countries, Mexico has not only a low SES and high SES, but also a substantial middle class. This study provides baseline information on the sport participation and physical activity of Mexican school children across the socioeconomic spectrum.

In tandem with addressing the question of levels of physical activity in urban Mexican youth, this study also attempts to discern why school youth

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choose to be active or inactive. While health concerns are not the focal point for most youth when they designate reasons for sport and physical activity participation (Seefeldt and Ewing, 1997), they do have relevance for health practitioners, physical educators and coaches. Physical activity is associated with lower risk of cardiovascular disease in adults, and activity patterns established during youth may track into adulthood and, in turn, influence future health risk factor profiles. There is evidence for increasing trends of cardiovascular risk factors in Latin American youth (Malina, 1996a), thus making the potential role of physical activity in health more pertinent. The results of this study may lend themselves to improving teacher education approaches and offer curriculum guidelines for physical education classes. For example, if it is apparent that overweight youth are choosing not to participate in sport or physical activity, perhaps programs of the schools can be restructured to target this population and encourage these youth to participate.

This study provides unique information on the participation and motivation of girls in sport and on activity levels. Participation rates of Mexican American females in vigorous activity are often substantially lower than in other groups in the United States (Andersen et al., 1998). Since there are many cultural links between Mexican American females in the United States and Mexican females in Mexico, this study may provide important insights for sport and activity participation motivation for Mexican American females.

Mechanisms underlying ethnic differences in socialization into sport (which could also be expanded to include socialization into physical activity) have not been addressed in depth (Gottlieb and Chen, 1985). While the applicability of this method of labeling to youth in Mexico City is tenuous due to the fact that students do not officially identify by ethnicity, the extrapolation of the information gleaned in Mexico may be of relevance to the United States That is, since sport participation for females in the past has often been considered inappropriate in the Mexican American culture (Hasbrook et al., 1981), it is pertinent to ascertain whether this attitude also occurs in Mexico.

Height and weight provide an indication of the growth status of the youth. Weight-for-height in the form of the BMI is often used as an index of current nutritional status (under- and overnutrition), while current height is an index of nutritional history, especially in developing countries. The current data also provide a base for examination of secular changes, or lack thereof, in the body size of urban Mexican school youth.

Limitations

The sample for this study was limited to those schools whose administrators allowed the questionnaires to be used. However, the results are informative because very little, if any, sport or physical activity data are available for Mexican youth. Reliance on self-reported data is an important limitation of this study. Nevertheless, the survey format allows for a larger

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quantity and greater variety of participants than would individual interviews or an outside observer. The use of location of specific schools is a crude index of SES and may lead to some misclassification, although SES determination was checked against student report of parental occupation.

Delimitations

The sample for the sport and activity survey, and height and weight was 1095 urban males and females between the ages of 9 and 18 years. The sample was drawn from three levels of SES in Mexico City. Because the subjects are school youth within a limited age range and within a specific geographic region and culture, broader application of the data may not be appropriate and should be done with care.

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CHAPTER II

REVIEW OF RELATED LITERATURE

This study assessed the sport preferences and motivations, level of physical activity, and body size of urban school youth 9-18 years of age in Mexico City. As such, the review of literature is divided into two parts, one relating to physical activity and sport, and the other relating to growth status and secular change in body size.

Physical Activity and Sport

Regular physical activity has the potential to improve blood pressure, body composition, and bone density, and to decrease the risk of diabetes, osteoporosis and hypertension among adults (Pinto et al., 1996). While the link between physical inactivity and increased risk of various chronic diseases has been substantiated in adults, the link is more tenuous in youth (Sallis et al., 1988b; Malina, 1995; Saunders et al., 1997). For example, interage correlations between physical activity (sport participation) from 13-17 years and activity status at 30 years of age are relatively low in Belgian males, ranging from 0.06 to 0.39 (Vanreusel et al., 1993). In addition, the availability of longitudinal data for measures of health-related physical fitness from childhood through adolescence is limited, and most interage correlations for activity and components of fitness are low to moderate (Malina, 1995).

Nevertheless, physically active youth tend to have a more favorable cardiovascular risk profile including a higher level of fitness (Pate et al., 1990), less obesity (Sasaki et al., 1987), and less body fat (Johnson et al., 1956; Dietz, 1983; Klesges et al., 1986).

A myriad of factors have been associated with participation in physical activity and sport. These range from hereditary to parental support to environmental concerns. Regardless of causality, however, if children are encouraged and taught to be active, it may be possible to slow or limit the onset of several chronic diseases. Many health behavior patterns that are learned in childhood may impact an individual throughout his/her lifetime (Stucky- Ropp et al., 1993). Thus, teaching children to be regularly active has the potential to be beneficial to their overall health by maintaining an active lifestyle and by decreasing the likelihood of obesity, hypertension and heart disease (Strong, 1990).

The transition of healthy active children to healthy active adults obviously includes the period of adolescence. For the most part, physical activity levels tend to decrease from childhood through adolescence, particularly in girls (Centers for Disease Control [CDC], 1993; Malina, 1995). The percentage of students in grades 9-12 who met the criteria of participating in vigorous activity 3 or more days per week was 50% for boys and 24% for girls. While White and Hispanic males had higher percentages of participation in vigorous activity than African American males, the percentages of active African American and Hispanic females were lower

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than for White females (CDC, 1993). Some data also indicate that Black adolescent girls have lower aerobic capacity than White adolescent girls, which may impact activity levels (Pivarnik et al., 1993).

Data on participation trends in physical activity, the structure of youth sport programs, and the sports available are based primarily on North American and European models (De Knop et al., 1996). Little information is present for Latin America; only Brazil was represented in an international survey of youth sport (De Knop et al., 1996). In addition, the uniqueness of a specific country's sport programs, as well as local cultural preferences, may limit comparisons among countries.

Physical activity levels of Mexican youth have not been systematically studied. Because a significant percentage of the Mexican school-aged population may have been nutritionally compromised during infancy and early childhood, activity levels may be affected by this nutritional history, especially in the lower socioeconomic strata (Spurr, 1990). Present food availability is an additional factor. It should be noted, however, that Mexican youth span both ends of the nutritional spectrum. While many are undernourished, a small percentage of the pre-school population is overnourished (WHO, 1997). The most recent WHO (1997) data for preschool children in Mexico indicate a prevalence of overweight that approached 4% in contrast to almost 15% for underweight and 23% for stunting (Table 1).

In a national survey of Brazilian youth 9-17 years, being White and having an urban residence were associated with a higher BMI than being

Black or Mulatto, or from a rural area (Sichieri et al., 1995). In addition, Brazilian girls had a consistently higher mean BMI than boys, and the disparity increased after puberty. Postpubertal girls (> 13 years) who were of the higher SES tended to exceed the mean BMI for their United States counterparts. Using the median BMI from the same national survey and comparing Brazilian youth with the British, Brazilian girls had lower values (dos Anjos et al., 1998).

The undernourished segment of the population has associated health concerns, involving higher mortality and morbidity, and compromised growth. The overnourished, while a much smaller part of the overall population, have increased risk of health problems associated with a sedentary lifestyle, obesity, elevated lipids, diabetes, etc. (Malina, 1996a). While these risk factors have been linked to adult chronic diseases, their significance to the health status of children and adolescents remains to be established (Bar-Or, 1994).

Activity Levels and Nutrition

Physical activity levels are strongly impacted by age, sex, body size (specifically excess weight for height), health status and nutritional status, to name several. A certain level of physical activity is apparently necessary to support normal growth and to maintain functional efficiency of bodily tissues (Viteri and Torún, 1981; Malina, 1984). Children with protein energy malnutrition (PEM) often exhibit lower levels of physical activity (Malina,

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1984). In developing countries where obtaining food is more difficult, non-subsistence physical activity is often lower than in countries where food availability is not an issue.

Differences in activity levels between food/vitamin supplemented and non-supplemented groups of infants have been reported in Mexico (Chávez et al., 1972, 1977). Commencing in 1968, the study was conducted with children in a rural subsistence agricultural community in Mexico. One group of children was given supplemental food and vitamins, while the other group had the locally available diet. The non-supplemented infants were smaller, had lower levels of physical activity, and interacted less with their mothers (Chávez et al., 1972). The supplemented infants were larger and more active, and interacted more demandingly with their mothers, increasing the frequency of mother-child interaction. By 2 years of age, the difference in physical activity between the supplemented and non-supplemented children was six-fold. The supplemented children were consistently more active. Similar results have been found with pre-school children in Guatemala, although the focus was primarily on the impact of physical activity on the recovery after severe nutritional insult than on the impact of supplementation on activity (Viteri and Torún, 1981).

In preschool children, chronic energy deficiency (CED) is associated with decreased activity, which is apparently the first defensive step against a reduced rate of growth. In addition, when CED children are active, levels of

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vigorous activity are lower than adequately nourished children. More time is spent standing and sitting than in higher energy cost activities (Spurr, 1990).

Age and nutritional status differences in energy expenditure are influenced by body size (Spurr and Reina, 1990). Basal metabolic rate and estimated energy expenditure in approximately 400 nutritionally normal and marginally malnourished Colombian boys and girls 6-16 years of age were distinct. Marginally malnourished boys were unable to physically cope with situations of increased activity above ordinary levels when they were placed into sport situations (Spurr and Reina, 1988). The smaller body size of the malnourished, CED, youth allows for reduced energy expenditure, possibly allowing the child's body to conserve energy needed for growth and maintenance of bodily functions rather than expending it in activity.

Growth stunting in childhood may ultimately negatively impact an individual as an adult and, in turn, the community as a whole due to reduced capacity for physical work. It is also possible that reduced body size associated with early undernutrition, may influence subsequent physical activity and sport at school age.

Socioeconomic Status (SES)

There are only a few studies on habits of physical activity in youth from different SES levels, whether in Mexico or other locations. Adults in Pennsylvania showed differences in both job-related activity and leisure time activity by gender and SES (Ford et al., 1991). Adolescents in the same region,

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in contrast, showed different trends (Aaron et al., 1993). Male adolescents were more active than females and Whites were more active than non-Whites, but SES was not a determinant of self-reported activity levels in either males or females (Aaron et al., 1993). In Canadian adults, participation in organized leisure activity showed a social class gradient, with higher participation levels in higher SES individuals (Stephens and Craig, 1990).

Links between SES and activity have been observed through the medium of sport choice and sport participation in the United States. Among female collegiate athletes (largely in the pre-Title IX era), team sport participants tended to be from lower SES, while individual and dual sport participants tended to be from higher SES (Greendorfer, 1978). Data for female university athletes surveyed between 1985 and 1995 showed similar trends. The highest SES category had the most participants in swimming, diving, and tennis, all individual sports. With the exception of one tennis player, the lowest SES category only had participants in basketball, volleyball, and track and field (Malina, unpublished data). While track and field is considered an individual sport, it tends to be more accessible to all SES levels than more expensive sports such as diving or tennis. These findings are perhaps related to the time when the surveys were done, the availability of given sports in various communities and access to them, the cost of sports, the availability of facilities, as well as the overall interest, health, and skills of the individuals participating. Title IX may have also had an influence on what sport opportunities were available for American females.

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Level of physical activity in both high and low SES individuals is inversely associated with age in adults. The nature of the activity is important in determining the interaction between SES and activity (Cauley et al., 1991). If the choice is organized sport, levels of participation are higher in the higher SES, and if the activity is more individualized and non-competitive (e.g., walking, cycling), levels are higher in the lower SES.

In addition to SES, ethnicity is a factor in sport choice and physical activity. In a sample of 7th and 8th grade youth in the United States, for example, White youth were more likely to participate in individual, aerobic activities compared to African American and Mexican American youth (Gottlieb and Chen, 1985). While ethnicity is not used as a descriptor in the Mexican school system (Peña Reyes, personal communication), differences between Mexican youth and other ethnic groups may be pertinent. According to Sallis et al. (1993, p. 895), "Any studies assessing physical activity levels need to be replicated in more ethnically and socioeconomically diverse samples than has occurred in the past."

Gender

Males and females in the United States often participate in sport and physical activity at different levels and for different reasons. From the prenatal period on, males are generally more active than females (Eaton and Enns, 1986; Malina, 1995). Data on adolescents from the Canada Fitness Survey (1983) substantiate this trend; 76-77% of males and 68-74% of females

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between 10-17 years of age reported being physically active (not including physical education classes or job-related activity) for > 3 hrs/wk for > 9 mo/yr. The Campbell Survey (Stephens and Craig, 1990) and the Youth Risk Behavior Survey (CDC, 1993) also reported differences in activity between males and females. The CDC survey (1993) of males and females in grades 9-12 showed 50% of boys and 24% of the girls as vigorously active >3 days per week. This trend was mirrored in Chile where 71% of males 13-15 years reported that they were practicing sport, while only 24% of the females were doing so (Montecinos et al., 1986).

During adolescence, girls are often at a higher risk for dropping out of sport and reducing physical activity, though many adolescents tend to have lower activity levels than they did in pre-adolescence (Reynolds et al., 1990; Pate et al., 1994; Malina, 1995). There is a negative association between activity and age in American adolescent females 12-16 years of age (Aaron et al., 1993). Likewise, in Canadian youth 10-14 years of age, 72% of the males and 49% of the females were classified as active (3+ kcal/kg/day) in leisure time activities. For the older Canadian group (15-19 year old males and females), the numbers were only slightly lower for males, 69%, but a bit more so for females, 39% (Stephens and Craig, 1990). Although these studies used different methods for assessing physical activity, the trends are similar.

In a large study in the United States (Ewing and Seefeldt, 1988), the prevalence of participation in organized sport for youth 10-18 years was 40% for males and 22% for females. In contrast, higher prevalences were found

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for females in a study of 183 middle school students in mid-Michigan; approximately equal percentages of males (30%) and females (29%) reported participating in organized sport (Katzmarzyk and Malina, 1998a). Males in southern California tend to have a significantly higher prevalence of participation on organized sport teams than females and a higher frequency of participation in vigorous activity outside of school (Sallis et al., 1996).

Low participation in physical activity and sport is also an issue in the Mexican American population in the United States, especially among females (CDC, 1993). Preschool Mexican American children were less active than White children, and girls were less active than boys during school recesses in two separate measurement periods two years apart in southern California (McKenzie et al., 1997). An earlier study showed that Mexican American preschool children were less active at home than White children, and again, girls were less active than boys (McKenzie et al., 1992). In an older sample of 5th to 12th grade girls from Massachusetts, Hispanic girls reported lower activity levels than White and Black girls (Wolf et al., 1993). Because Mexican American males and females have many cultural characteristics in common with Mexican males and females, this study of Mexico City youth may provide insights into their motivation and activity preferences. In addition, in the Mexican American population, females are sometimes the least active compared with males, or with males and females of other ethnicities (Andersen et al., 1998). It thus seems likely that sport participation and

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activity levels are lower in Mexican females than in Mexican males, but at this point, that is mostly conjecture.

Barriers to Physical Activity

Many barriers, both perceived and actual, exist to physical activity. Environmental issues range from lack of time to lack of access to an exercise or sport facility (Pinto et al., 1996). Safety issues are another concern; if a neighborhood is unsafe, encouraging physical activity may be counterproductive. A lower likelihood of participating in physical activity has also been attributed to limited access to physically active role models (Gottlieb and Chen, 1985; Branta and Goodway, 1996). Financial barriers may also exist; if a sport or activity is too expensive, whether it is equipment, registration fees, or transportation, a child's access to sport may be limited by financial resources.

Barriers may also differ between the sexes. If it is not culturally acceptable for females to participate in athletics, it will be more difficult for them to begin or to continue. The same may not be true for boys, since many cultures find athletics to be an acceptable pursuit for males. Somewhat related to this problem is a lack of exercise-based knowledge and a lack of social support for both males and females.

A strong relationship between parental exercise and encouragement and the child's exercise patterns were found in various studies (Gottlieb and Chen, 1985; Sallis et al., 1988a; Moore et al., 1991; Klesges et al., 1986).

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However, one study showed virtually no relationship between activity habits of children and parents (Godin and Shephard, 1986). Nevertheless, while lack of role models, unsafe neighborhoods, lack of social support, and lack of exercise-based knowledge may impact the physical activity of males and females, females are often at a higher risk from these barriers (Pinto et al., 1996). Family influence on gender roles of males and females may also impact activity (Malina, 1996b).

In a bi-ethnic sample of preschool children, physical activity lifestyle habits in the home influenced the physical activity levels of the children (McKenzie et al., 1992). Mexican American children were less active at home and at recess than White children, spent more time in the presence of supervising adults, and had less access to active toys (McKenzie et al., 1992).

The influence of family habits on the physical activity levels of family members cannot be overemphasized. While not necessarily a barrier, it is possible that low levels of physical activity in a given family, or a low priority for activity, may act as a deterrent. Preschool children of two active parents are six times more likely to be active than children of two inactive parents (Moore et al., 1991). Mother-child correlations ranged from 0.20 to 0.50 for time spent in physical activity for children aged 10-11 years (Sallis et al., 1988a). Although genetics may play a factor in physical activity levels in families, a path analysis of the Quebec Family Study indicated that most of the variation in habitual physical activity and exercise participation was accounted for by non-transmissible environmental factors (Pérusse et al.,

1989). Almost 30% of the variance in habitual physical activity was accounted for by genetic transmission, while 12% of the variance in exercise participation was attributed to transmissible cultural factors (Pérusse et al., 1989). Although it is difficult to tease out the complex role of family influences on physical activity levels, the family appears significant and may contribute to pursuit of physical activity as well as choice of physical activity.

Motives for Participation

Motives for participating in sport and physical activity are multiple, and vary for children and adults. According to Kenyon (1968a, 1968b), six factors exist that attract individuals to sport. These include social aspects, health and fitness aspects, vertigo (risk or challenge), aesthetic elements, catharsis, and ascetic elements. Beginning with these six factors, others have tested and modified the wording to make them more applicable to children and adults (Schutz et al., 1985). For example, the Children's Attitudes Toward Physical Activity survey uses seven factors that are mainly a re-organization of Kenyon's original set (Schutz et al., 1985). Participants at a summer sport school (n=1138) completed a 30-item survey on motivation for sport participation (Gill et al., 1983). A factor analysis was used to combine items, and the resulting dimensions of participation motivation indicated eight factors: achievement status, team, fitness, energy release, situational factors, skill development, friendship, and fun (Gill et al., 1983).

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Inherent in the literature on sport motivation is the concept of competence, and who is deciding the competence level of a child. Does the child decide if he/she is competent at a task (self-referenced, intrinsically motivated), or does the child rely on others to decide competence (norm-referenced, extrinsically motivated)? Task motivation theory is also related to competence (Nicholls, 1984). If a person is task oriented, he/she sees ability and success in terms of learning, improvement and effort. These qualities lead to improved mastery and achievement. An ego-oriented individual believes that a demonstration of competence is dependent upon performing favorably in comparison to others. Success and competence are subjective and norm-referenced (Nicholls, 1984; Williams and Gill, 1995). Thus, a pertinent step in assessing motivation may involve assessing goal orientation. If a task-motivated child is not learning new skills or perfecting existing ones, he/she may not be motivated to participate in sport or activity any longer (Klint and Weiss, 1987).

Using the Motivational Orientation in Sport Scale developed by Weiss et al. (1986) to assess motivation for physical activity and sport, Biddle and Armstrong (1992) found that 8-12 year old school boys could enjoy activity for its own sake more so than school girls of the same age. Boys were interested in the challenge of sport for its own sake rather than as a measure against someone else, and they were less interested in pleasing a teacher/coach. Active females, on the other hand, appeared to be more extrinsically

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motivated. Thus, females may require a higher social component in physical activity rather than an achievement or challenge-type of situation.

The Task and Ego Orientation in Sport Questionnaire (TEOSQ) was a modification of a questionnaire developed from an original academic context inventory to specifically assess the goal perspective of individuals in relation to sport (Duda, 1989). There were originally 16 items set on a Likert scale from unimportant to very important. The items are in response to the statement, "I feel most successful in sport when..." Currently, the TEOSQ is a 13-item scale with the items are clustered into task and ego orientation factors and the mean scores presented for each factor. Mean scores for task and ego orientation for interscholastic high school athletes (basketball, track and field, tennis, and softball) were, respectively, 4.28 ± 0.5 and 2.89 ± 0.9 for males, and 4.45 ± 0.8 and 2.59 ± 1.0 for females (Duda, 1989). Using the TEOSQ, American female high school athletes appear to be more task (intrinsically) motivated and American male high school athletes more ego (extrinsically) motivated (Duda, 1989).

Age may also impact motivation for sport and activity. Among competitive swimmers 6-74 years of age, factors such as social status, significant others, fun, health and fitness, and characteristics of competitive swimming were rated very differently across age groups. Younger children ranked fun higher than any other group, while social status was rated higher by both the older children and the high school group (Brodkin and Weiss, 1990). Other sport motivation studies have found factors such as fun,

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becoming a good player, making friends, winning trophies, getting exercise, and enjoying the excitement of competition (Gill et al., 1983; Gould and Petlichkoff, 1988; McCullagh et al., 1993; Kim and Gill, 1997), however, age differences were not assessed in any but the Brodkin and Weiss (1990) study.

The parental role in a child's attraction to physical activity and sport has a strong impact. In a study of fourth grade students, parental physical activity orientation and encouragement level were as important as influences as the child's perceived physical competence and gender (Brustad, 1993). In addition, boys reported higher perceived physical competence than girls. It was suggested that an increase in girls' perceived physical competence may need to come from outside support (Brustad, 1993).

Another component is the social desirability of response when children are asked for their participation motivation. For example, when the response of fitness is listed first by young children, it begs the question, why are they placing fitness first? A more important issue may be the child's concept or definition of fitness. Do young children truly participate in sport for physical fitness benefits? It seems unlikely; yet in a study of youth 7-14 years, many listed physical fitness as the most important motive for participating in recreational soccer (McCullagh et al., 1993). In an environment where the adults value fitness (as they do in Boulder, Colorado, where the study was done), children may reflect adult sensitivity in their answers, i.e., they may be telling the adults what the adults want to hear.

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Sport Participation

Participation in organized sport is a common activity for many youth in the United States. Not only do the children participate, but parents, local businesses, clubs and schools all encourage participation in America. Youth sports in the United States can be divided into six categories, agency sponsored, national youth service organizations, club sports, recreational programs, school sponsored intramural programs, and interscholastic programs. The largest number of youth are involved in non-school sport participation (Seefeldt et al., 1992).

In a survey of approximately 8,000 United States youth 10-18 years of age, 55% reported participating in a non-school sponsored sport (Ewing and Seefeldt, 1996). Boys participated in baseball (31.1%), basketball (30.9%), and football (27.3%) more than other sports. Girls, on the other hand, preferred swimming (26.7%), softball (26.6%), and basketball (22.1%), with volleyball (21.2%) a close fourth. The percentages of youth who participated in school-sponsored sport were approximately one-half of those involved in non-school sponsored sport. Basketball was the most popular school-sponsored sport at almost all ages, while the most popular free time sports were basketball and swimming. Other trends from the sport participation survey indicate a decrease in sport participation with age, and an under-representation of Hispanic American participants in all youth sports (Ewing and Seefeldt, 1996).

Activity Assessments

Physical activity is a multi-dimensional behavior, involving complex interactions of environment, genetics and personal choice. It can be defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Casperson et al., 1985). Habitual physical activity has been assessed in many different ways with a variety of instruments. Estimated levels of physical activity tend to increase from 5-6 years until early adolescence and then decline in North American and European children (Bouchard et al., 1997).

A variety of methods exist for assessing physical activity in various populations (Montoye and Taylor, 1984; LaPorte et al., 1985; Jacobs et al., 1993). Direct methods for assessing physical activity include questionnaires (self or interviewer administered), prospective diaries (self or observer recorded), and electronic monitoring (LaPorte et al., 1985; Paffenbarger et al., 1993). Indirect methods of assessment include energy intake, estimated body composition, participation in physical activity, physical and physiological fitness, and surveys of occupational categories (LaPorte et al., 1985; Paffenbarger et al., 1993). Despite the varied assessment tools, no single instrument has yet been developed which is valid and reliable, easy to use, and does not impact behavior.

Methods for assessing physical activity in adults may not be as useful for children and adolescents. For example, questionnaires are commonly used to estimate physical activity in large groups. However, errors in recall

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are often significantly greater for children than for adults, and questionnaires for children younger than ten years of age are quite limited (Montoye et al., 1996). Questionnaires must have age-appropriate language and concepts accessible to youth.

Nevertheless, questionnaires are commonly used with youth 10 years and older, and some inherent problems should be noted. For example, is the questionnaire estimating an individual's activity today, yesterday, last week, or last year? Or, is the survey just asking how active an individual is relative to his/her peers? When working with youth, the longer the interval between activity and report, the less accurate the recall (Sallis, 1991). Further, if one individual's interpretation of heavy exertion is not the same as another individual's interpretation, the mismatch between perceptions would impact the validity and reliability of self-administered questionnaires. There are multiple non-congruent dimensions of physical activity (Jacobs et al., 1993), and the questionnaire which is used may determine how much light, moderate or heavy vigorous activity is reported.

The shorter attention span and lower comprehension of children relative to adults is also problematic. Many questionnaires require a breakdown of the day into smaller time segments for activity assessment (Bouchard et al., 1983), or ask for hours and minutes per day of specified activities (Kriska et al., 1990). If the questionnaires are labor intensive or too complex, children may have difficulty using them. In addition, children are not very good at estimating the passage of time or units of time. School

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children from 3rd through 6th grades, for example, had difficulty in making accurate time assessments for self-reported aerobic activity (Baranowski et al., 1984).

Reliability and validity of activity questionnaires in children and adolescents vary. They often depend on what method of comparison is being used to measure physical activity. Reliability coefficients for vigorous activity in 100 junior high school students ranged from 0.87 when the re-test was one month later, to 0.48 when it was one year later (Aaron et al., 1993). Overall, reliabilities of physical activity recall in hours per week from the same study ranged from 0.54 to 0.78. The Bouchard et al. (1993) 3-day protocol had reliability coefficients of 0.91 for youth 9-18 years when they were re-tested 6 to 10 days later. In 10-20 year olds who were re-tested from 1 to 3 weeks after the completion of a physical activity recall, reliabilities were 0.37 and 0.35 for the past year and the past week, respectively (Kriska et al., 1990). Reliability of the Physical Activity Recall (PAR) over an interval of 7 days ranged from 0.47 to 0.81 in 5th to 11th grade youth, and the coefficients tended to be higher in the older age groups (Sallis et al., 1993).

The percentages of Pennsylvania adolescents who met the Healthy People 2000 criterion of 3.5 hours per week of light to moderate physical activity (United States Public Health Service, 1991) were 93% for White males, 95% for Non-White males, 71% for White females, and 61% for and Non-White females. Percentages for vigorous physical activity ($\geq$ 3 days/week for

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≥ 20 minutes/day) were lower, ranging from 31% in Non-white females to 59% for White males (Aaron et al., 1993).

The Physical Activity Questionnaires for Older Children and for Adolescents (PAQ-C and PAQ-A, respectively) assess moderate to vigorous activity levels in children and adolescents. These 7-day recall protocols were developed on Canadian youth at the University of Saskatchewan. They have 8 or 9 questions (depending on the instrument) which look at activity choices and leisure time activities over the past seven days (Crocker et al., 1997; Kowalski et al., 1997a; 1997b). Test-re-test reliabilities for the PAQ-C over a one week period were 0.75 for males and 0.82 for females (Kowalski et al., 1997a). Validity coefficients of the PAQ-A for Canadian youth 13-20 years ranged from 0.33 to 0.73, depending on the comparative tool (Kowalski et al., 1997b). The PAQ-A was moderately related to an internal activity rating ($r = 0.73$), Godin and Shephard's (1985) Leisure Time Activity Questionnaire ($r = 0.57$), a Caltrac motion sensor ($r = 0.33$), and the Sallis et al. (1985) 7-day physical activity recall interview ($r = 0.59$) (Kowalski et al., 1997b). Generalizability coefficients for the administration of the PAQ-A three times over the course of one year were ≥ 0.85 for the scores of 97 students 13-18 years of age (Kowalski et al., 1997b).

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Growth of Mexican Youth

Stature and Body Weight

A longitudinal study of growth, nutrition, and psychological development was begun in Mexico City in the late 1950s by Faulhaber (1976, 1978, 1979, 1989; see also Faulhaber and Saenz-F., 1994; Faulhaber and Villanueva, 1976). The sample included middle class Mexican school children in the Federal District from 1957-1970. While the Federal District children were taller and heavier than rural children in Mexico, they were still at least one standard deviation below children from the United States (although closer to samples of British children). However, in relation to midparent height, the urban Mexican children were comparable to United States reference data. According to Faulhaber (1976), they were not short due to possible nutritional deficits (although it is possible that their parents may have been nutritionally stressed during growth). Additionally, because their families were relatively prosperous by Mexican criteria and had access to sufficient food, the children were not considered undernourished. These data are probably representative of the status of healthy middle class urban Mexican children.

Children in rural communities in Mexico, on the other hand, are considerably smaller than their urban peers. This situation likely reflects a history of lower food availability and poorer overall health conditions in the rural environments in Mexico. In a series of cross-sectional studies in the Valley of Oaxaca in southern Mexico, Malina et al. (1980) studied the growth

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of school children in a Zapotec speaking community. No differences in height, weight, arm circumference and the triceps skinfold were apparent in the 10 year span between 1968 and 1978. The rural children were smaller than their same sex urban middle class peers, and mean statures and weights approximated the 5th percentiles of United States reference data.

A sample of preschool children in rural Juarez, Mexico were shorter and lighter than Hawaiian, Mexican American or American White children (Briley et al., 1979). This may be due to a high incidence of undernutrition; 76% of males and 55% of females were classified as thin, malnourished or very malnourished when plotted on growth charts from the Institute of Nutrition of Central America and Panama (INCAP).

Body Mass Index

The body mass index (BMI; weight (kg)/stature $(m)^2$) is one of several indicators currently used to estimate the fatness of individuals as well as chronic undernutrition (Malina et al., 1998). It is the most commonly used index of weight-for-stature (Roche et al., 1981). However, the BMI does not differentiate between the relative contributions of fat mass or fat-free mass to overall body weight. The utility of the BMI as an indicator of underweight, overweight and/or obesity for children and adolescents has not been substantiated, but its ease of use makes the BMI a good descriptor. The BMI can be used as an approximate criterion for overweight, normal weight and underweight (Malina et al., 1998). Presumably, a high BMI reflects excess

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fatness (overweight), while a low BMI reflects deficiency of muscle and adipose tissues (underweight). This criterion can be of considerable use since overweight and fatness in adolescents are significantly associated with higher risk profiles for cardiovascular disease and other obesity-related disease in adults (Himes and Dietz, 1994). Overweight and fatness may also negatively influence measures of physical fitness and performance (Malina et al., 1995) The role of overweight for physical activity is not clear. Currently available data on the energy expenditure of overweight/obese and non-obese youth are equivocal (Dietz and Gortmaker, 1985; Sallis et al., 1988b; Beunen et al., 1992).

Menarche

Age at menarche is the most commonly used indicator of sexual maturity status for females (Malina, 1979). In the United States, the average age at menarche is 12.8$\pm$1.0 years of age (Malina and Bouchard, 1991). In Mexico, the average age at menarche of middle SES females is comparable to the United States reference value, while in areas with a high prevalence of undernutrition, estimated ages at menarche are later (Malina et al., 1977; Malina, 1990).

Secular Trends in Body Size

Secular trends generally refer to the increase in stature and weight during childhood and adolescence which have occurred in many populations over several generations (Tanner, 1962; Van Wierengen, 1986; Malina, 1990).

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Such trends have been recorded since the mid-19th century in many, but not all, countries of the world.

Secular trends, however, may be positive (as indicated above) or negative, or they may not be present at all (Malina, 1990). For a positive trend to occur, the living conditions must have improved enough to allow optimum growth to occur if it is possible. Negative trends refer to a decrease in average body size over time most likely because living conditions have deteriorated. Lack of secular change may relate to the attainment of genetic potential by the population, or lack of improvement in health and nutritional conditions sufficient to bring about change. Since the growth status of children is often considered an indication of the overall health and nutritional status of a given community (WHO, 1976), a positive secular change in height and weight is an indication of improved health, nutritional, sanitation, and socioeconomic conditions in a population (Malina, 1979; Van Wierengen, 1986; Tanner, 1990).

Secular Trends in Mexico

A positive secular trend in stature and body weight has occurred in upper middle class Mexican schoolchildren in the 1970s (Ramos Galván, 1978), compared to school children in the 1920s (Priani, 1929). Several longitudinal and cross-sectional studies have been conducted with children in Mexico, both urban (Ramos Galván, 1978; Faulhaber, 1976) and rural

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(Chávez et al., 1972; Malina et al., 1977). Positive secular trends are evident in the middle class samples, but are absent in the rural samples.

Summary

Regular physical activity has the potential to improve the health status of children and youth. As such, encouraging children to begin and maintain regular physical activity should be a goal of sport, school, and activity programs. Children and youth participate, or do not participate, in sport and physical activity for diverse reasons. Gender, SES, availability of resources, appropriate instruction, and personal preference impact the likelihood of a youngster choosing or rejecting sport participation or other physical activities.

One specific benefit of regular physical activity is weight maintenance, and, thus, decreased risk of obesity and possibly obesity related diseases. Since obesity is a problem in parts of Mexico, as well as elsewhere, structuring physical activity and sport programs to encourage regular participation may help prevent overweight in Mexico City children.

A certain level of physical activity appears to be necessary for normal growth if and when nutritional and social conditions are adequate. The current height and weight of Mexican youth provides information on their present nutritional status and the conditions of Mexican society. Given the economic progress of Mexico over the last half century or so, children and youth of today should be taller and heavier than those in earlier surveys.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this study was to assess participation and motivation for sport, levels and types of physical activity, and growth status of urban Mexican school youth across three socioeconomic levels. In addition, growth status (height and body weight) of the current sample of urban Mexican youth was placed in a secular context within Mexico.

The focus of the study was school youth resident in Mexico City, the Federal District of Mexico. Mexico City sits at 2200m (7200 feet) and has more or less chronic problems with air pollution year round. The study was approved by the University Committee for Research Involving Human Subjects (UCRIHS, Appendix A) at Michigan State University, and sponsored by the Escuela Nacional de Antropología e Historia (ENAH, Appendix B) in Mexico City.

Background on Pollution Levels in Mexico City

The Indice Metropolitano de Calidad del Aire en Mexico (The Metropolitan Index of Air Quality in Mexico City) (IMECA) has set norms for air quality, and for the type of activities that are possible when the levels of certain gases (such as carbon monoxide, sulfur dioxide, and ozone) are too

high (Table 2). IMECA ratings are particularly important in the valley of Mexico City, as many industries and people reside in the area. At times during the course of the study, levels of air contamination in Mexico City were rather high. For example, on Tuesday May 27, 1998, the high ozone levels were at 220 IMECA points, and 201- 300 is considered poor. There was a phase 1 pollution alert which meant that extra cars (in addition to the standard rotating practice which removed cars with license plates ending in 1 or 2, 3 or 4, 5 or 6, 7 or 8 and 9 or 0 on a given day of the week) were pulled off the road until the pollution levels drop. A phase 1 alert also means that all scholastic outdoor activities are suspended for the duration of the alert; this affects the 4 million students of the Federal District. In addition, industrial activity is reduced by 30%, and the 3.6 million circulating vehicles in the area are reduced by 40%. Sample levels of contaminants in the air in Mexico City during the time of data collection are presented in Table 3.

Subjects

Approximately 1,100 (n = 1,095) Mexican school youth between the ages of 9 and 18 years participated in this study of sport preferences and motivation, and levels of physical activity. All youth were enrolled in school at the time of the study. The sample was divided by age, gender, and SES. The specific targeted ages were 10, 12, 14, and 16 years (roughly 4th, 6th, 8th, and 10th grades), but the actual data collection resulted in students 9-13 years

from the primary schools (primaria) and students 14-18 years from the high schools (preparatoria) The breakdown of the sample is shown in Table 4.

Social class was defined with the cooperation of local school authorities and colleagues at ENAH in Mexico City. Based on the information from ENAH, the geographic location of the school was the determining factor for assignment to SES 1 (low class), SES 2 (middle class), or SES 3 (high class). In addition, the demographic information from the questionnaires helped in this determination. Both the home delegación and colonía were elicited from the subjects, so their region of residence was known, and like any city, certain regions of Mexico City are indicative of class differences. The occupation of the parents of the study participants was also elicited. While the school of the subject was the main criterion used to identify his/her SES, parental occupation was also used. For example, 16 high school aged individuals originally classified as high SES (SES 3) were changed to the low SES (SES 1) when the occupations of their parents were considered, i. e., "employee" or "worker". Likewise, high school aged individuals classified in SES 1 whose parents were listed as doctors, architects, and lawyers were switched to SES 3. For this second group, 13 individuals were changed from SES 1 to SES 3. For the younger subjects, youth were only switched from SES 1 to SES 3 if they listed the occupations of their parents as doctors, lawyers or architects; changes were not made in the other direction due to many younger youth not knowing the occupation of their parents. Thus, they often listed their parents' jobs as "employee" or "worker", regardless of actual occupation.

Overall, 17 youth between the ages of 9 and 12 years were reassigned to SES 3. The middle SES (SES 2) likely has components of both the high and low SES, although it does appear to differ from both by general parent occupation status.

Primarias in Mexico City had no recesses to speak of, though they did have a lunch break. In the schools observed, there was some "run and chase," but mostly socializing. The high school students were not observed playing soccer or basketball, though they may have had time to do this during their school day. Many smokers of both genders among the high school students were observed.

Study Design

The design of this study was a cross-sectional survey of school youth at selected ages and grades, distinguished by gender and social class. For the purposes of this study, the sampling unit was the classroom within the school.

Anthropometry

Chronological age and gender were provided on the demographic information sheet of the questionnaire, and for the younger children verified against school records. Decimal chronological age was calculated by subtracting the decimal equivalents of the measurement date from the subject's birth date.

Stature and weight were measured. Stature (cm) was measured to the nearest millimeter using a GPM anthropometer with the subject standing on the floor with no shoes and with heels together and weight evenly balanced on both feet. The measurement was taken from the rear with the subject's head in the horizontal plane. The subjects were positioned to stand as straight as possible, and the measurement was taken at the apex of the skull on the midline.

Weight (kg) was measured to the nearest 0.5 kg with the subject standing on the scale in school clothes and no shoes. A correction for the average weight of school clothes for both boys and girls was calculated by weighing a sample and using this as the correction factor for mass. For this particular sample, the correction factor was 1.0 kg. Stature and weight were used to calculate the BMI, weight (kg)/stature (m^2).

Questionnaires

Sport Participation and Motivation Questionnaire

Questionnaires developed and used to assess the patterns of sport participation and activities of children in the United States (Ewing and Seefeldt, 1988) were modified and translated into Spanish for use with Mexican school youth (Appendix C). Currently, no assessments of congruent validity exist for this questionnaire. In addition to basic demographic information, the participants were asked to answer questions regarding participation in organized sport, reasons for selecting a particular sport or

sports, perceived ability in sport, motivation for participation, and reasons for discontinuing participation in sport. If they had never participated in sport, they were also asked to consider why. The questions were designed so that school sponsored sport participants, non-school sponsored sport participants, and sport 'drop-outs' could be asked to answer questions addressing sport preferences. The questions were also designed to tease out what children and youth consider fun or not fun about sport participation so that teachers and coaches might learn more about what children want in sport activities.

From 13 to 42 response choices were available depending on the instrument. For example, the surveys assessing task or ego orientation consist of 13 items which can aid in categorizing what drives an individual to participate in sport. The survey which assesses motivation for sport participation in school and non-school sports has 28 items, while the survey assessing sport discontinuation has 42 possible items. Regardless of the instrument used, the questions were set on a 5-point Likert scale ranked from 5 (very important) to 1 (not important at all). The students also had the option of writing in choices that were not listed on the questionnaires. These responses were written in blank spaces at the end of each question section.

The Physical Activity Questionnaire for Adolescents (PAQ-A)

The Physical Activity Questionnaire for Older Children and for Adolescents (PAQ-C and PAQ-A, respectively) was translated into Spanish and given to all participants (Appendix D). The PAQ-C has been used for

children from 4th to 8th grades, and the PAQ-A for youth from 8th through 12th grades. The only difference between the PAQ-C and the PAQ-A is an item about recess activity. Because the Mexican system does not have an extra morning recess like the United States and Canadian systems, the PAQ-A was used for all youth in this study. The PAQ-A attempts to assess levels of moderate to vigorous physical activity. Physical activities are described as sports, games, or dances that make one breathe hard, make one's legs feel tired, or make one sweat (Crocker et al., 1997). The questionnaire asks the participants to recall the number of times that they performed certain activities for the previous week. In addition, there are questions regarding television (TV) viewing, video game playing, and activity levels compared to peers (Kowalski et al., 1997a, 1997b).

Test Administration

After school authorities granted permission, several schools in Mexico City were identified with the assistance of colleagues at ENAH. Local school officials were then contacted and the purpose of the study explained. The school was asked to provide informed consent for the students to participate in the study. Subjects were informed of their rights by classroom teachers, and by the investigators. Each questionnaire also included an assent form which explained the rights of the subject and requested his/her consent to participate in the survey. Consent and assent forms (Appendix E) were distributed to the children and their parents prior to data collection. The

original forms were translated into Spanish and checked for accuracy and correct grammar by a Mexican national.

The structure of schools in Mexico includes a primaria, secundaria, and preparatoria, which are roughly the equivalent of the United States system of elementary school, middle school, and high school, respectively. The elementary school has grades 1-6, ranging in age from about 6 to 12 years of age. The middle school has grades 1-3, ranging in age from approximately 13-14 years of age, and the high school also has grades 1-3, ranging in age from 15-18 years. However, compulsory schooling only requires students to attend until they are 16 years of age; therefore, many do not finish the high school levels. Trade school or college often follow high school.

For the 1996/1997 school year, 27,415 students were registered for all levels of school in the Federal District. Elementary schools had 14,651 students registered, middle schools had 4,809, and high schools had 2,222 (INEGI, 1998). In the original design for this study, the second year high school students were to be targeted during the first and second weeks (April 20-28); the second year middle school students the second and third weeks (April 29-May 7); the 4th and 6th year grade school students, the third and fourth weeks (May 8-May 15); and the focus groups were to be during the fifth week (May 18-May 22). The fifth week was also the week to return to any of the schools where questionnaires might have been left. While the questionnaires were administered to the high schools during the first week, very little of the remainder of the schedule was completed as planned. All of

the youth were involved in exams from May 1 through May 20. In addition, there were many festivals and vacation days within this time period, which included an administrative slowdown as well. As it turned out, the middle school students were not available for study at all. Nevertheless, the elementary school students were surveyed by the end of June, and the equivalent of 5th grade in the United States was added to the study to increase the sample size and offset the lack of the middle school students. The above reasons also account for the focus group sessions not being completed.

Survey Administration

The survey was conducted during the Spring of 1998, after Easter break. The children completed the sport participation questionnaire and physical activity recall in their school classrooms. The questionnaires were organized as follows: the demographic sheet was first, followed by the PAQ-A, followed by the sport participation questionnaire. All youth were asked to fill out the demographic information sheet and the PAQ-A. Heights and weights were measured with a GPM anthropometer and flat scale when the questionnaires were distributed. All females were asked whether or not they had yet attained menarche. The students were also asked to write their names, ages and classrooms on the front sheet of the questionnaire so that the heights and weights could be recorded more easily.

During a pilot run of the study, it was determined that the sport questionnaire was too elaborate for the 10 year old group. In addition, since

the 10 year olds are often just beginning organized sport in Mexico City, many of the questions did not apply. Thus, for simplification and ease of comprehension, the 4th and 5th grade students only replied to the demographic information and the PAQ-A. Heights and weights were measured, and menarcheal status of the girls was also collected. The 6th graders completed the demographic information, the PAQ-A, and the section of the questionnaire on non-school sponsored sport participation. None of the recruited elementary schools had school sponsored sports. The 6th grade students also had their heights and weights measured, and the females were asked about their menarcheal status. The few 14 year old subjects also completed the demographic information, the PAQ-A, the section of the questionnaire on non-school sponsored sport participation and reasons for dropping out. Heights and weights were also measured, and menarcheal status collected. The 14 year olds did not come from the middle schools as originally planned; rather, they were split between the 6th grade and high schools. There are thus very few 14 year olds in the sample. The 15 and 16 year old subjects were asked for the same information as the 14 year olds, with the possible addition of the school sponsored sport section of the questionnaire. Prior to collecting data at each of the high schools, the researcher determined whether the particular school had school-sponsored sport programs. If not, that part of the questionnaire was dropped to alleviate confusion. The primary investigator and the assistants checked the

questionnaires for completeness prior to leaving each classroom. The children were assured all information would be kept confidential.

Analyses

Age and sex specific means, medians, and standard deviations were calculated for height, weight, and the BMI. Responses to the questionnaires were assessed by age group for most of the analyses. Depending on the question, age groups were classified into two or three categories. The grouping of youth 9-13 years and 14-18 years roughly represents the grade school and high school divisions. The grouping of youth 9-10, 11-13, and 14-18 years, approximately represents pre-adolescence, mid-adolescence and later adolescence.

Each research question is subsequently reviewed along with corresponding statistical treatment of each. The Statistical Program for Social Sciences version 7.5 was used (SPSS, 1996).

1. In what sports do urban Mexican youth 9-18 years of age, across three socioeconomic levels participate?

This question required relatively straightforward descriptive analyses of the sport participation survey, with frequency distributions and central tendencies being of primary value. Statistical values were calculated by gender and age, by gender and age within social class, by sport, and by participant status.

2. *Why do urban Mexican children participate in sport? Or, conversely, why do they discontinue participation in sport?*

Basic descriptive analyses were used following the sport participation survey of Ewing and Seefeldt (1988). A MANOVA followed by univariate F-tests was run to determine if males and females differed in their reasons for not participating in sport or for dropping out of sport. When the sample size was not large enough on a given survey instrument to run a MANOVA, independent t-tests were used to test the significance of differences on specific items of the surveys. For both the non-school sponsored sport participation survey and the TEOSQ, exploratory factor analyses were run to determine whether some of the items could be combined into more general factors. For the sport participation survey, a MANOVA followed by univariate F-tests was then run to assess whether males and females significantly differed on the factors found with the factor analysis. The differences between male and female responses on the TEOSQ tested for significance with independent sample t-tests.

3. *What is the estimated level of physical activity of urban Mexican school youth 9-18 years of age as estimated with the PAQ-A?*

The PAQ-A was scored in the manner recommended by the authors (Kowalski et al., 1997a, 1997b). Each item of the PAQ-A is on a 5-point scale. Averages of the first item (a list of activities) and the last item (a tally of activities per day of the week) are initially calculated. These means are treated as individual items and are then summed with the remaining items. The overall mean of the eight items is the activity score. For this study the last

item was incompletely or incorrectly filled out too often; it was thus dropped from the overall scoring. The final composite activity scores range from 1-5, with higher levels of activity corresponding with higher scores on the scale (Kowalski et al., 1997b).

Five additional items pertaining to hours of television viewing and video game playing, relative physical fitness, relative physical activity, and sickness during the week of assessment provide related information, but are not used in the calculation of the overall activity score (Kowalski et al., 1997a; 1997b). The results for these non-scored items were summarized in a descriptive manner.

4. What sociodemographic (gender, age, SES) and biological (height, weight, the BMI) variables are predictive of sport participation status and level of physical activity in urban Mexican school youth?

The sport participation status part of this question was analyzed with logistic regression due to the dichotomous nature of the dependent variable. The independent variables were numerous and included gender, age, SES, perceived activity status of the parents (as a yes or no designation); height, weight and the BMI; and the physical activity score. The dependent variable was sport participation status. Potential predictors of physical activity score were assessed with a forward stepwise regression using the same independent variables as above, with the exception of the physical activity score, with the addition of sport participation status.

5. Using the Body Mass Index (BMI) as a proxy for nutritional status, what is the relationship between nutritional status and physical activity, including sport participation?

Gender specific correlations between the BMI and physical activity score were calculated. The BMI and the PAQ-A were treated as continuous variables; therefore, a one-way analysis of co-variance (ANCOVA), controlling for age, was used.

The BMI was also used to classify the sample as underweight (< 15th percentile), normal weight (15th - 85th percentiles), risk of overweight (≥ 85th percentile and < 95th percentile), and overweight (≥ 95th percentile) (Must et al., 1991; Himes and Dietz, 1994). Partial correlations, controlling for age, were used to assess the relationship between the BMI and the number of sports in two age group, 9-13 and 15-18 years. All analyses were gender specific.

6. What is the current growth status of urban Mexican youth relative to United States (WHO) reference data?

This question required descriptive statistics for height, weight, and the BMI. Individual and mean values for height and weight were plotted against the 10th, 50th and 90th percentiles of United States reference data to determine the relative growth status of urban Mexican youth. The BMI was plotted against the 15th, 85th and 95th percentiles of United States reference (Must et al., 1991). Individual and mean values for the BMI were also compared with United States data (Must et al., 1991) for underweight, and the Himes and Dietz (1994) criteria for risk of overweight and overweight. The percentages of individuals classified as underweight, normal weight, risk of overweight, and overweight are presented.

7. Have secular changes occurred in the stature, weight and BMI of Mexico City youth? Has secular change occurred in the age at menarche of urban Mexican females?

The first part of this question was addressed by plotting the present data against earlier samples from Mexico City (Priani, 1929; Faulhaber, 1989). Estimated rates of secular change per decade were also calculated.

For the second part of the question, median age at menarche was estimated using probit analysis. The resulting age was then compared with the median ages at menarche of previous Mexican and other Latin American samples.

CHAPTER IV

RESULTS

Introduction

A 7-day physical activity recall (PAQ-A) was collected, heights and weights were measured, and the BMI was calculated for 1,085 school students (526 males, 559 females), 9 -18 years of age, in the Federal District of Mexico City. Menarcheal status information was collected from females. A breakdown of the sample by age and by school is shown in Table 4. Sport and activity participation surveys were collected from 591 of the students. Only the older primary school students and high school students were asked to complete the sport participation surveys since the younger students had only recently began organized sport, and the questionnaires were too difficult for them to complete.

The following age groups were defined to approximate pre- or early adolescence (9.0 - 10.99), mid-adolescence (11.0 - 13.99), and later adolescence (14.0 - 18.99 years). However, for analyses dependent on the BMI and PAQ-A, only two age groups were used: 9.0 - 13.99 and 14.0 - 18.99 years. The latter division generally mirrors the age ranges in and the cut-off between primary school (primaria) and high school (preparatoria) youth.

Research Questions

1. In what sports do urban Mexican youth 9-18 years of age, across three socioeconomic levels participate?

Of the subjects who completed the youth sport participation questionnaires (n = 591), 124 males (42%) and 190 females (64%) did not participate in organized non-school sponsored sports at the time of the survey. A total of 168 boys (58%) and 109 girls (36%) reported that they were currently participating in organized non-school sponsored sports (Table 5). The subjects were only counted as sport participants in this category if they actually listed a sport in which they were currently participating. The assessment of reasons for participating in sport includes this group as well as those who previously played sport but who were no longer playing.

The preferred non-school sport for boys is soccer, followed by basketball and swimming. For girls, the preferred sport is basketball, followed by swimming. This differs slightly when the sample is divided by age (Table 6) and SES (Table 7). Percentages in all categories tend to exceed 100% since many individuals participate in more than one sport. Among males 9-13 years and 14-18 years, respectively, 66 of 80 (83%) and 61 of 87 (70%) prefer soccer (Table 6). For younger boys, soccer is followed by basketball, swimming, and skating (both in-line and roller). In older boys, soccer is followed by swimming, basketball and American football. Among girls 9-13 years, approximately equal numbers participate in skating (n = 34, 74%), swimming (n = 31, 67%), basketball (n = 30, 65%), and volleyball (n = 27, 59%) (Table 6).

Among older girls, the majority participate in basketball (n = 40, 63%) followed by swimming (n = 30, 48%), skating (n = 26, 41%), and gymnastics (n = 24, 38%).

Sport participation in boys and girls by SES is shown in Table 7. Over all ages (11-18 years), 48 of 95 (51%) of low SES, 83 of 136 (61%) of middle SES, and 37 of 61 (61%) of high SES boys participate in non-school sports. Soccer is the most common sport among low and middle SES boys, but ranks third among high SES boys. Basketball is the second most often indicated sport among boys in the three SES categories. Interestingly, baseball (which has a long tradition in Mexico) ranks fourth among low SES boys and sixth among middle and high SES boys. In contrast, American football has a higher rank than baseball among middle and high SES boys.

Sport participation in girls by SES is also presented in Table 7. Across ages 11-18 years, 25 of 96 low SES girls (26%), 55 of 130 middle SES girls (42%), and 29 of 73 high SES girls (40%) indicate participation in non-school sports. In all three SES categories, basketball is the top sport for girls. For low and middle SES girls, the top three sports are skating, swimming and gymnastics. Volleyball replaces gymnastics among high SES girls.

In contrast to non-school sports, only a small percentage of youth 14-18 years of age participate in school sponsored sports. It should be noted that most of the youth in school sponsored sports are also included in the sample for non-school sponsored sport. Only 18 of 292 males (6%) and 19 of 299 females (6%) indicated participation in school sponsored sports. The two

most common school sports for males are swimming and basketball, while the most common school sport for females is basketball, followed by swimming and soccer (Table 8).

Body size and estimated physical activity of organized sport participants and non-participants are compared using a series of one way ANCOVAs within gender, controlling for age, in Table 9. School and non-school participants are pooled for the analysis. Sport participants and non-participants do not differ in the BMI, body weight, and time spent viewing television or playing video games. Male and female sport participants are significantly younger than non-participants ($p < 0.05$). Male sport participants are also shorter than non-participants ($p < 0.05$). In contrast, males and females involved in organized sport are significantly more physically active ($p < 0.05$) and have a significantly higher self-perceived physical condition relative to their peers ($p < 0.05$). Self-perceived physical activity level relative to peers is significantly higher in female sport participants ($p < 0.05$), while the difference in males approaches significance ($p = 0.06$).

Whether involved in organized sport or not, all 591 individuals who received the sport participation questionnaires responded to the overall activity portion of the survey. The number and percentages of subjects who participate in various activities, whether in school, at home, in church, etc., are presented in Table 10. Higher percentages of males and females watch television than choose to participate in any other category overall. Relatively more males participate in sport activities outside of school (75%) than in

school (61%), while similar percentages of females participate in sport activities out of school (63%) and sport activities in school (65%). Physical activities tend to rank higher for males than females. Work also ranks higher for males than females, although females rank chores in the home slightly higher than males. As expected, dance classes are ranked considerably higher by females than males.

2. Why do urban Mexican children participate in sport? Or, conversely, why do they discontinue participation in sport?

The subsequent section deals with motivations of urban Mexican youth for participation in sport, for non-participation in sport, for discontinuing participation in sport, and for returning to participation in sport (Tables 11 to 23). The ten highest ranking responses in each category for males and females are presented subsequently; all responses are presented in Appendix F.

Reported motivations for participation in sport are summarized in Tables 11 and 12. The categories are non-school sponsored and school sponsored sports. Only the high school students completed the school sponsored sport survey because none of the primary schools offered organized scholastic sports. For non-school sponsored sports, the oldest grade school children (11-14 years) and high school students (14-18 years) completed the questionnaire.

For both school and non-school sponsored sports and for both genders, fun is the primary motivation for sport. After fun, motivations for participation in sport focus on fitness, exercise, and excess energy,

highlighting youth's interest in sport as a means for physical activity and physical fitness. The second reason in three of the four groups is physical fitness; for example, high school boys rank "to get exercise" as the second most important reason for participating in school sponsored sports.

Competition-related motives appear among the top ten reasons for participation in non-school sports more often for males than for females. For the smaller sample of high school youth participants in school sponsored sports, the same three competition related motives appear for males, but they are ranked higher. Two competition related motives appear among the top ten for females involved in school sponsored sport, compared to only one in those involved in non-school sponsored sports. Further, competition related motives are ranked higher by participants in school sports. Winning does not appear among the top ten reasons in any of the groups; it ranks instead from 13th to 15th depending on gender and school or non-school sport participation (Appendix F).

Additional write-in reasons for playing non-school sponsored sports vary. For males these include: to feel good, to be in the shape I like, to improve my health, to relax, to practice a skill, for personal defense, to grow spiritually, because I like it, because I do not want to be inactive, to have confidence, to play, and to wear Nikes. Additional responses of females for the question are also variable, although fewer chose to write in a response: to feel good, because I like it, to be healthy, to offset family stress, to improve, to get acknowledgment of my ability, and for the enjoyment.

Non-School Sponsored Sport

An exploratory factor analysis (EFA) was run to determine whether the items in the non-school sponsored sport motivation instrument cluster into several more comprehensive factors. A priori, the factors that seem to be present if the items were logically grouped include: competition, skill, recognition/external rewards, social, fitness/health, and outside activity (e. g., "to have something to do", "to get out of the house"). A maximum likelihood analysis with a varimax rotation was performed on the combined sample of males and females. Although males and females may have chosen their responses for different reasons, and thus contribute to differences in loadings and factors, the EFA was run on the combined sample because the sample size was not sufficient for gender-specific factor analyses.

In the first EFA of the data for genders combined, two items cross-loaded on more than one factor (loading ≥ 0.40), "to use the equipment and/or facilities" and "to play as part of a team". These were removed for the subsequent analysis. The final EFA resulted in five factors which account for 42% of the variance in the responses of high school students to the question "why do you play non-school sponsored sports?" One factor consists of only one item with an adequate loading for inclusion ("to improve my skills"). One item does not, however, constitute a factor, thus it was deleted. Three items still cross-load on more than one factor ≥ 0.40 ("to win") or do not pass the designated loading cutoff of 0.39 ("my parents or close friends want me to participate" and "to be with my friends"). Consequently, the four factors

which resulted from the second EFA are presented with their factor loadings, eigen values, reliabilities and estimated percentage of variance in Table 13. The reliabilities of the factors are based only on the items retained in the second EFA.

The nine items that load on factor one can be termed a recognition or external rewards factor. This factor accounts for 17% of the variance in reasons for participating in non-school sponsored sport. Factor two is a fitness factor with 4 items and accounts for an additional 12% of the variance. Factor three is a competition factor with three items which account for approximately 9% of the variance. Interestingly, in urban Mexican youth, team spirit loads with two competition items, and this factor has a relatively high reliability (0.78). Factor four is an outside activity factor that also includes a "fun" item, the internal reliability for factor four is 0.52; considering the diversity of the three items included in this factor, it is not surprising that its reliability is low. Factor four accounts for 4.8% of the variance.

Given the limitations that the second run of the EFA still had items cross-loading and a factor with only one item, results of the MANOVA of differences between genders on the factors for sport participation are potentially of interest. Males and females differ significantly in several factors identified with the EFA ($F_{(1,305)} = 10.86, p < 0.001$) (Table 14). Using

the univariate F-test, males and females differ significantly in three factors. Females have a mean score which is higher than that of males on the recognition/external rewards factor ($p < 0.001$), while males score higher, on average, on the competition factor ($p < 0.001$) and the outside activity/fun factor ($p < 0.05$).

Because the sample size for males and females combined was adequate for a MANOVA of all items, the combined sample was also analyzed to determine whether males and females differ in individual reasons for sport participation. The percentage of variance in responses ranges from 0.01% - 6.0%, with question 4 ("someone I admire played this sport") accounting for the largest amount of variance. Overall, the sport motivation responses differ significantly by gender ($F_{26,263} = 1.98, p < 0.01$). Items that significantly differ between males and females are summarized in Table 15. The five items in the sport motivation questionnaire which differ significantly between males and females are: "someone I admire played this sport", "for the travel that goes with playing", "to feel important", "to be popular by being a good athlete", and "to attract boys'/girls' attention". Males score significantly higher on all five items. Two additional items ("for the team spirit" and "for the challenge of competition") have F-ratios that approach significance ($p = 0.08$), and they are also higher in males.

Goal Orientation

The reason that individuals choose to play sport and their motivation for sport may be influenced by goal orientation. The Task and Ego Orientation in Sport Questionnaire (TEOSQ, Duda, 1992) was translated into Spanish and presented to the 245 students who responded to the non-school sport questionnaires (older primaria students and preparatoria students). Note, when time was an issue during data collection, it was invariably the TEOSQ which was not completed. The descriptive statistics for the TEOSQ items are summarized in Table 16. The hierarchically ordered responses to the statement, "I feel most successful in sport when..." show few differences between males and females. In general, both males and females obtain their best results from sport when they do their very best, when they are learning new skills, and when they are learning something that is fun.

Responses to the TEOSQ questionnaire were also analyzed using an EFA. Although the factors for the instrument have already been shown in the literature, whether or not a task orientation factor and an ego orientation factor would surface in the current sample was unknown. Because the intercorrelation between factors was relatively low in this sample, ($r = 0.23$, $p = 0.01$), a varimax rotation was used. The sample was combined by gender to reduce problems associated with small sample sizes.

Two factors emerge with an eigen value > 1.0, and account for 48% of the variance in task and ego orientation. One item (item 4, "When I am able to play better then my teammates"), cross-loads at 0.40 and 0.48 on the EGO

and TASK factors, respectively. Thus, item 4 was removed and the analysis was done again (Table 17). Six items load on the TASK factor, and four items load on the EGO factor. The TASK factor accounts for 32% of the variance in sport motivational orientation responses in urban Mexican youth, and the EGO factor accounts for 17% of the variance. Neither item 3 ("I learn something that is fun to do") nor item 10 ("I score more points/goals or have the fastest time") load higher than 0.39, and they are not included. The alpha scores (reliabilities) for TASK and EGO are 0.82 and 0.76, respectively, reflecting relatively high internal consistency.

Using independent t-tests, urban Mexican male and female youth do not differ significantly in Task orientation (3.87 ± 0.89 and 3.96 ± 0.88, respectively). Ego orientation is, on average, lower than task orientation in Mexican youth, with males (2.56 ± 0.97) scoring significantly higher than females (2.27 ± 0.91), ($t_{(240)} = 2.37$, $p < 0.02$).

School Sponsored Sport

Males and females differ significantly in four reasons for playing school sponsored sports. There are 28 items in the survey instrument, and the sample size of school sport participants was too small for a MANOVA. Thus, independent t-tests were run for each reason (Table 18). Males and females differ significantly on four items, though the sample sizes are small. Females rank the need "to have something to do" higher than males. Males, on the other hand, "want to go to a higher level of competition" and "to be popular"

more so than females. In addition, boys use sports as a way to attract the attention of the girls.

Discontinuing Sport Participation

The 'drop out' category includes only high school students, and a total of 42 items are included on the instrument. While the order of the choices differs slightly between males and females, the choices themselves are very similar (Table 19). The first three stated reasons for dropping out of sport in males and females are: "the games and practices are scheduled at times when I cannot attend," "I need more time to study," and "the sport requires too much time." Pressure, lack of interest, and coaching issues are indicated by both genders. Interestingly, "too much emphasis on winning" and "I was not having fun" appear among reasons for males, but not among females. In contrast, "I did not have the opportunity to play much" and "the coach only played his/her favorites" appear in the top ten for females but not for males. The "other" category, in which the subjects could write in additional reasons for dropping out of sport, provides additional insights. For males, other reasons for dropping out of sport range from "I wanted to," "I wanted to try something new," to money issues, and risk of injury. For females, other reasons include distance from playing, other responsibilities, change of school, change of coach, and not having time for other, often more important, activities.

Males and females differ significantly on only one reason for dropping out of sport, while two others approach significance (p <0.08 and p <0.09, respectively). Females score significantly higher than males on the item relating to the need for more time to study ($t_{(151)} = -3.16, p < 0.01$) (Table 20). Males score higher, but not significantly, on items related to having fun and emphasis on winning.

Returning to Sport

Changes that would make high school youth feel comfortable returning to sport are summarized in Table 21. The statement was: "I would return to sport if..." Males and females rank the choices somewhat differently, but the choices do not really differ. The need for more time to study is very apparent among the top four reasons for both males and females. The time commitment for sport and the distance to games and practice facilities are additional limiting factors. More playing time is an issue for both genders, but ranks higher for males (3rd) than females (5th). The role of the coach and coaching practices are also indicated by the youth: "I would return to sport if the coaches understood the players better," "the coach was a better instructor," and "the practices were more fun." Money issues and the need for more talent surface in the "other" or write-in category for young males, while money, return of a former coach, and being able to play again with friends are the additional items of importance to females that were not among the original choices for returning to sport.

Males and females differ significantly in the item "I would return to sport if... practices and games did not conflict with my studies" ($t_{(147)} = -3.75$, $p < 0.001$). Females have a higher mean score for this item, which corresponds with indicated reasons for dropping out of sport.

A related, open-ended question was also included in the activity recall inventory (PAQ-A). The students were asked to complete the following statement, "In general, I do not participate in sport or exercise because..." A summary of the responses of high school students are given in Table 22. If an individual recorded more than one reason, he/she was tallied more than once; thus the frequencies total more than the sample size. High school males and females feel they do not have time to be active in sport or exercise (males, 39%; females, 59%). Other reasons include laziness, (males, 15%; females, 19%), and dislike of sport and exercise (males, 9%; females, 10%). Smaller percentages indicate lack of money for sport or exercise (males, 8%; females, 4%). Interestingly, 16% of the females who responded to the question indicate an important role for the time commitment of homework/schoolwork; in contrast, only one male (3%) indicates homework as a reason for not participating in sport or physical activity.

3. What is the estimated level of physical activity of urban Mexican school youth 9-18 years of age as estimated with the PAQ-A?

The PAQ-A was scored in the manner recommended by the authors (Kowalski et al., 1997a; 1997b), although the last item was dropped due to response problems. Each item has a 5-point scale, and the composite score is the average of all eight items. The overall activity score ranges from 1-5, with

higher levels of activity corresponding with higher scores on the scale (Kowalski et al., 1997b).

A total of 1,085 youth, 526 males and 559 females 9-18 years of age completed the PAQ-A. A breakdown of the sample by age and SES is indicated in Tables 23 and 24, respectively. Mean PAQ-A scores fall in the middle range and tend to decrease slightly with age (Table 23). The age-associated decrease in PAQ-A scores is especially evident in later adolescence (15-18 years). For both males and females significant differences in the PAQ-A by age group were found using two 1x3 one-way ANOVAs ($p < 0.001$). Using a Scheffé post hoc F-test, the PAQ-A score differs significantly between 9-10 and 15-18 year old males ($p < 0.001$), and 11-13 and 15-18 year old males ($p < 0.01$). The PAQ-A score also differs significantly between 9-10 and 15-18 year old females ($p < 0.001$), and 11-13 and 15-18 year old females ($p < 0.001$).

When divided by SES within age group, the trends are similar (Table 24). The oldest youth have the lowest scores among both males and females, regardless of SES. In all but middle and high SES males, the PAQ-A is significantly different between 9-13 and 15-18 year old males and females. More specifically, the low SES males differ significantly in PAQ-A between 9-10 year olds and 15-18 year olds. Middle and high SES males do not differ among age groups in PAQ-A scores. Females in low and high SES differ in PAQ-A score between 9-10 and 15-18 year olds and between 11-13 and 15-18 year olds. The middle SES females only differ significantly between 9-10 and 15-18 year olds. The PAQ-A does not differ, however, by SES within age

groups for males or females: males 9-13 years, $F_{(2,366)}=2.31$, $p = 0.10$, males 15-18 years, $F_{(2,147)}= 0.16$, $p = 0.85$, females 9-13 years, $F_{(2,382)}=1.58$, $p = 0.21$, and females 15-18 years, $F_{(2,166)}=0.04$, $p = 0.96$.

The overall distribution of PAQ-A scores by gender are presented in Table 25. The data are presented by frequency in each category, 1.0-1.9, 2.0-2.9, 3.0-3.9, and 4.0-4.9; a higher score indicates a higher level of physical activity. The majority of males (n = 427, 82%) have PAQ-A scores between 2.0 and 3.9, but only 26 males (5%) are in the 4.0-4.9 category. For females, the majority have activity scores between 1.0 and 2.9 (n = 447, 80%), and only five females (1%) are in the 4.0-4.9 category. Across all ages, the average PAQ-A score of males (2.8 ± 0.7) is significantly greater than that of females (2.4 ± 0.7), based on a one-way ANCOVA with age as the covariate ($F_{(1,1083)}=80.29$, $p < 0.001$).

The distribution of PAQ-A scores by age group within gender is presented in Table 26. The four activity categories are about equally distributed among males in the two younger age groups. However, among older males, there is a relatively greater percentage in the 1.0-1.9 category. Overall, the majority of males are in the 2.0-2.9 and 3.0-3.9 categories.

Among females, the percentage of individuals in the 1.0-1.9 category increases with age, while the percentage in the 2.0-2.9 and 3.0-3.9 categories tend to decrease with age. The major age-associated differences occur between the 11-13 and 15-18 year age groups. The number of girls in the 4.0-4.9 category is small in all three age groups.

The PAQ-A scores were also used to classify youth as generally inactive (< 2.5), active (≥ 2.5 but < 3.5), and very active (≥ 3.5). The distributions are shown in Table 27. Less than one-half of the males (33%), and slightly more than one-half of the females (53%) are classified as generally inactive. Almost one-half of the males (48%) are in the active category, while 37% of the females are categorized as active. The very active category is the smallest for both males and females, 19% and 9%, respectively.

Corresponding distributions by age group and gender are given in Table 28. Most of the younger boys are in the active category (n = 80, 49%). Younger girls, on the other hand, are evenly distributed between the inactive (n = 89, 46%) and active (n = 86, 44%) categories. One-half of boys 11-13 years are in the active category (n = 98, 50%), with the remainder being distributed evenly between the inactive and very active categories. One-half of girls 11-13 years are classified as inactive (96, 50%), although more than one-third (n = 71, 37%) are classified as active. The oldest boys are evenly distributed between the inactive (n = 71, 45%) and active (n = 67, 43%) categories. Over one-half of the oldest girls (n = 114, 63%) are classified as inactive. Small percentages of older boys (n = 19, 12%) and girls (n = 7, 5%) are classified as very active.

Following the procedures of Kowalski et al. (1997) to estimate convergent validity, the PAQ-A scores were compared with one of the questions in the inventory. The activity rating (AR) required the students to

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assess their activity levels relative to others of the same age and gender. The question was phrased as follows:

> I am very inactive compared to others of my same age and sex.
> I am less active compared to others of my same age and sex.
> I am just as active as others of my same age and sex.
> I am a little more active than others of my same age and sex.
> I am much more active than others of my same age and sex.

The correlation between the PAQ-A score and the AR in the total sample of urban Mexican youth is r = 0.45 ($p < 0.001$). Gender-specific correlations of the PAQ-A with the AR are 0.37 ($p < 0.001$) in males and 0.53 ($p < 0.001$) in females. The PAQ-A is negatively correlated with age in the total sample (r = -0.20, $p < 0.001$), but the age correlation in males (r = - 0.17, $p < 0.001$) is somewhat lower than that in females (r = -0.25, $p < 0.001$), suggesting a greater decrease in physical activity scores with age in females.

PAQ-A scores by gender and SES category are summarized in Table 29. Results of the one-way ANCOVA, controlling for age, indicate no differences in PAQ-A by SES in males or females.

The PAQ-A also has an item that pertains to the determination of whether sickness or other events prevented the student from doing his/her regular activity. This question is not used in the calculation of the overall activity score (Kowalski et al., 1997a, 1997b). The reasons indicated for inactivity during the previous week for males and females ranked by frequency are listed in Table 30. Among males (n = 526), 16% (n = 84) indicate the flu, general sickness, sore throat and general body soreness in the top four reasons for not being active during the previous week. The three primary

reasons for 18% (n = 102) of females (n = 559) are flu, general sickness and sore throat, with homework ranking fourth.

Other questions in the PAQ-A that are not used to calculate the activity score, but which provide some insight into the activity habits of the Mexican youth, include questions 8 (perceived physical condition), 10 (perceived physical activity), 11 (time spent viewing television) and 12 (time spent playing video games).

Question 8:
My physical condition is excellent compared to others my age and sex.
My physical condition is equal compared to others my age and sex.
My physical condition is worse compared to others my age and sex.

Slightly over one-half of males (n = 300, 57%) feel that they are in better physical condition than their peers, while females are equally divided in feeling that their physical condition is better than (n = 239, 44%) or equal to (n = 275, 49%) that of their peers. By SES, the majority of males in all three SES categories rank their physical condition as excellent compared to others. The percentages for low, middle and high SES are 59%, 52%, and 61%, respectively. Roughly one-half of low and middle class females indicate that they are equally as fit as their peers, 50% and 52%, respectively. High SES females, however, are divided in their perceptions that they are equally as fit or more fit than their peers, 45% and 44%, respectively.

Question 10:
I am very inactive compared to others of my same age and sex.
I am less active compared to others of my same age and sex.
I am just as active as others of my same age and sex.
I am a little more active than others of my same age and sex.
I am much more active than others of my same age and sex.

For the most part, males and females indicate they are equally active compared to their peers (n = 233, 44%; n = 243, 43%, respectively). Females, however, choose the less active response (n = 110, 20%) more often than males (n = 79, 15%). Within SES category, both males and females feel they are equally as active as their peers.

Question 11, Television viewing:
I never watch television
0-2 hours per day
3-4 hours per day
5-6 hours per day
7+ hours per day

Question 12, Video game playing
I never play video games
1-2 hours per day
3-4 hours per day
5-6 hours per day
7+ hours per day

For questions 11 and 12, the data were reduced to a more manageable format. The responses, "I never watch television" and "I never play video games" were not used in calculating an overall estimate of mean hours watched or played. For television viewing, to some extent, and especially for video game playing, more females than males stated that they never watched television or played video games (see below). The remaining responses were keyed on the midpoints of the indicated ranges. Thus, 0-2 hours was listed as 1 hour of television viewing or video game playing per day, 3-4 hours was listed as 3.5 hours, 5-6 was listed as 5.5 hours, and 7 plus was listed as 7 hours. While this method of tallying causes some information to be lost, it provides an estimate of time devoted to television viewing and/or video games.

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Only 14 males (3%) and 18 females (3%) report never watching television. These small samples have mean ages of 12.8 $\pm$ 2.7 and 12.5 $\pm$ 3.0 years, respectively, and activity scores of 2.3 $\pm$ 0.7 and 2.7 $\pm$ 0.83, respectively. A substantially larger number report never playing video games, 137 (26%) for males and 290 (52%) for females. Mean ages of these samples are 13.3 $\pm$ 2.7 and 13.0 $\pm$ 2.7 years, respectively, and mean activity scores are 2.7 $\pm$ 0.8 for males and 2.4 $\pm$ 0.7 for females.

The estimated time of television viewing for those who report it is, on average, 3.1 $\pm$ 2.2 hours per day for males, and 2.9 $\pm$ 2.0 hours per day for females ($F_{(1,1037)}$=2.75, p = 0.09). However, males and females differ in time spent playing video games ($F_{(1,639)}$=20.05, $p < 0.001$). Males report playing video games 2.5 $\pm$ 2.2 hours per day while females report playing video games 1.8 $\pm$ 1.7 hours per day.

Mean television viewing time does not differ by age group among males (Table 31), but males 9-13 years spend more time playing video games than males 14-18 years ($F_{(1,378)}$=7.22, $p < 0.01$). In contrast, younger females devote slightly more time to television viewing, but the difference only approaches significance ($F_{(1,524)}$=3.15, $p < 0.08$). Time spent playing video games does not differ between older and younger females.

Mean time spent viewing television and playing video games does not differ between sport and non-sport participants among both males and females (Table 32). Time viewing television differs significantly by activity

level in males ($p < 0.01$), but time devoted to video games does not (Table 33). Inactive males watch significantly more television than active males ($p < 0.05$). Interestingly, inactive and very active males watch approximately the same amount of television. Despite this similarity, however, the difference in television viewing hours between the active and very active only approaches significance ($p < 0.09$). Time spent watching television or playing video games does not differ among females grouped by activity level (Table 33).

Of those who watch two hours or less of television per day and who completed the sport participation questionnaires (n=117), 64% of the males and 50% of the females are sport participants. For those who watch more than three hours of television per day (n=135), 75% of the males and 44% of the females are sport participants. There is thus no trend in males, but females show a slight decrease in percentage of sport participants with an increase in hours of television watched per day.

For males who watch television two hours or less per day (n = 246), 29% are inactive, 53% are active, and 18% are very active. For those who watch three or more hours per day (n = 276), 36% are inactive, 43% are active, and 21% are very active. The trends suggest that with an increase in amount of television watched per day, more males are in the inactive category, and fewer males are in the active category. Percentages in the very active category do not differ. For females who watch two hours or less of television per day (n = 262), 56% are inactive, 34% are active, and 10% are inactive. For those

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who watch three or more hours per day (n = 288), 52% are inactive, 40% are active, and 8% are very active. There thus does not appear to be a trend in females that corresponds to the trend in males.

The first item of the PAQ-A is an activity inventory which asks how many times in the past week the subject participated in a specific activity. Responses to the item are summarized in Tables 34a and 34b for the total sample of males and females, respectively. The three top ranking physical activities for males are soccer (81.9%), running (80.1%), and walking (71.5%). With a more restrictive criterion (participating in an activity ≥ 3 times per week), the order of activities does not change (Table 34a). Dance and aerobics are the activities with the fewest male participants during the prior week.

Skipping (78.7%), running (74.7%) and walking (73.5%) are the activities in which a majority of the females participate ≥ 1 time per week. The order changes slightly (skipping, walking, running) with the more restrictive criterion of ≥ 3 times per week. Depending on the criterion, about 33% and 20% of the females participate in aerobics and dance. Weightlifting, skateboarding, badminton and American football are the sports in which the majority of females do not participate (Table 34b). Sports which were added as write-ins are predominantly martial arts and squash for males, and martial arts and gymnastics for females.

There are several differences in the reported activities of males when the sample is divided by age, 9-13 and 14-18 years (Tables 35a and 35b). Soccer ranks first for younger boys, but fourth for older boys. Fitness activities are

more common in older boys, i.e., walking, and running, while sports, i.e., soccer and basketball, are among the top three activities for younger boys.

Among females of both age groups, sports are not included among the top three reported activities in the past week (Tables 36a and 36b). The primary activities are skipping, running, skating and walking in younger girls, and walking, skipping and running in older girls. Basketball and volleyball, ranking fifth and sixth, respectively, are the two sports indicated by younger girls, while basketball (fourth) and swimming (sixth) are the sports indicated by older girls.

4. What sociodemographic (gender, age, SES) and biological (height, weight, the BMI) variables are predictive of sport participation status and level of physical activity in urban Mexican school youth?

For the prediction of sport participation status, the sociodemographic variables included age, SES, PAQ-A, and perceived physical activity status of parents (1=active, 2=inactive), and biological variables included weight, height, and the BMI. All variables were entered into a logistic regression with no specified hierarchy to estimate their impact on sport participation (1=sport participant, 2=non-sport participant). These specific variables account for only a small portion of the variance in sport participation, $R^2 \leq 0.08$ for all significant variables. The probability of the observed results, -2 log likelihood (-2LL), is a measure of how well the estimated model fits the data. A good model would have a small value for the -2LL; however, the log likelihood is 249.6 for males and 252.0 for females. In general, the model does not classify the data well. Nevertheless, two gender-specific logistic regressions result in

two variables that are significantly predictive for males and only one for females. Age and the PAQ-A score are significant predictors of sport participation status for males (R^2 = 0.02 and 0.05, respectively), while the PAQ-A score is the only significant predictor of sport participation status for females (R^2 = 0.08). The unstandardized regression coefficients, odds ratios, and the 95% confidence intervals are presented in Table 37. Thus, physical activity status only has a small influence on sport participation status in males and females, and the coefficient is negative for both genders. Participation in sport was coded as a "1", and non-participation in sport was coded as a "2"; as the PAQ-A score increases, it is less likely that the sport participation status will be a "2". Thus, as the PAQ-A score increases, the likelihood of sport participation increases slightly in both males and females. Among males, age is another contributor. As age increases in males, however, the odds are more likely the participation status will be a 2, or that the male does not participate in sports.

For the prediction of physical activity score, sport participation status replaced the PAQ-A score in the regression. Results of the forward stepwise multiple regressions to determine predictors of activity score (PAQ-A) differ between males and females (Tables 38 to 40). Rather than using gender as a co-predictor, it seemed more logical to do gender-specific regressions since it is likely that predictors of activity may differ between males and females. Neither set of predictors accounts for much of the variance (R^2 = 0.04 for males, and R^2 = 0.12 for females), and the unstandardized regression

coefficients are not large (Table 38). There are, however, several interesting differences between males and females. The predictors of activity scores in males include age and perceived physical activity status of the mother, and both coefficients are negative. As age increases, the activity score decreases, and if the mother is perceived as inactive (2), the youth's activity score decreases. Age is the strongest predictor of the activity score in males, i.e., younger males are more active than older males, and the activity score increases if the mother is perceived as physically active (1).

The model for females includes age, stature, the BMI and the perceived physical activity status of the mother among the best predictors of activity scores. Age accounts for most of the variance (7%), followed by perceived physical activity of the mother (3%). Both stature and the BMI each account for (1%) of the variance. Thus, as age increases, the activity score decreases, and if the mother is perceived as physically active, the activity score increases. As the BMI increases, the activity score decreases slightly, but as stature increases, the activity score increases slightly. In both genders, nevertheless, a substantial amount of the variance in the PAQ-A score is not accounted for by the variables considered in this study.

Predictors of PAQ-A scores differ among SES groups and between genders within SES group (Table 39). The only significant predictor for low SES males is stature (4% of the variance), which has a positive coefficient, suggesting that as stature increases, so does activity level. For middle SES males, only the BMI accounts for a small proportion of the variance (4%), and

the coefficient is negative- the higher the BMI, the lower the activity score. In contrast, perceived physical activity status of the mother accounts for 4% of the variance in high SES males, and the coefficient is negative; if the mother is perceived as physically active, the activity score of the boy is higher.

The unstandardized coefficients and significant predictors of physical activity level for all SES levels of females are also presented in Table 39. The best predictors for low SES females include age, stature and perceived physical activity status of the father. Together the three variables account for 13% of the variance in the PAQ-A score. Age and perceived physical activity status of the father have negative coefficients, implying that as age increases, activity scores decrease, and that if the father is perceived as active, the activity score increases. For middle SES girls, perceived activity status of the mother and the BMI account for 14% of the variance in activity scores, while in high SES girls, age and perceived activity status of the father account for 11% of the variance in activity score. Age and perceived physical activity status of the father or mother have negative coefficients; as age increases, the activity score decreases, and if the mother or father is perceived as active, the activity score increases. Stature, has a positive relationship with activity scores in low SES females.

Age is a possible confounding variable. Thus, the gender-specific regressions were run within two age groups, 9-13 and 14-18 years (Table 40). Less than 5% of the variance is accounted for by any of the variables. The smaller sample sizes may lead to spurious results if too many variables are

entered into the equation. Perceived physical activity status of the mother is the only predictor of activity scores for younger males, while there are no significant predictors for older males. The unstandardized coefficient for mother's activity status is negative; thus, if the mother is perceived as active, the activity score of the younger boys increases. Both the perceived physical activity status of the mother and father are significant predictors of physical activity scores for 9-13 year old girls. Both coefficients are negative. Girls with an active mother or father tend to be more active, but the amount of variance explained is only (5%). Stature is the only predictor for older girls, and accounts for (4%) of the variance in activity scores. Taller females tend to be more active.

5. Using the Body Mass Index (BMI) as a proxy for nutritional status, what is the relationship between nutritional status and physical activity, including sport participation?

Descriptive statistics for the BMI by activity level and age are presented in Table 41. The majority of younger males are in the active category (47%), followed by the inactive (30%) and very active (22%) categories. The majority of older males are inactive (47%), followed by active (41%) and very active (12%). The BMI does not differ, on average, among activity categories of males in either age group (Table 41).

Although younger females tend to be more active than older females, both age groups are predominately inactive. One-half of 9-13 year old and 67% of 14-18 year old females are classified as inactive, while only 11% and

4%, respectively, are very active. As in males, the BMI does not differ among activity categories of females in each age group (Table 41).

Corresponding data for the BMI and age by sport participation status are presented in Table 42. The majority of younger and older males are sports participants (82% and 62%, respectively), but participants and non-participants do not differ in mean BMI in either age group. Most younger females are sport participants (65%), while most older females are non-participants (61%). Participants and non-participants do not differ significantly in mean BMI in either age group. Although mean BMIs do not differ by sport participation status, it is of interest, perhaps, that median BMIs are higher by one unit in the small sample of non-participant boys 9-13 years (who are also younger), and by almost one unit in non-participant girls in both age groups.

Partial correlations between the BMI and the PAQ-A, controlling for age, are low and not significant for males and females ($r = -0.05$ and $r = -0.02$, respectively). Corresponding partial correlations between the BMI and the PAQ-A within SES category, controlling for age, are also low, but are significant in middle SES males and females ($r = -0.15$, $p < 0.05$ for both genders). Correlations for low and high SES groups range from -0.004 to -0.06. Overall, the correlations are negative, but indicate a negligible relationship between physical activity as assessed by the PAQ-A and the BMI in this sample of urban Mexican youth.

Correlations between the BMI and number of sports played are -0.22 ($p < 0.01$) for males and -0.10 (ns) for females. Partial correlations, controlling

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for age, are lower, -0.15 ($p < 0.05$) for males and -0.01 (ns) for females. There is thus a trend in males for the number of sports to decrease as the BMI increases. There is no trend in females.

The percentages of sport participants in the four nutritional status categories are presented in Table 43. Nutritional status was classified as follows: underweight, BMI < 15th percentile; normal weight, BMI ≥ 15th percentile and < 85th percentile; risk of overweight, BMI ≥ 85th and < 95th percentiles; and overweight BMI ≥ 95th percentile (Must et al., 1991; Himes and Dietz, 1994). The data suggest that the percentages of sport participants do not differ across nutritional categories, particularly in males, although sample sizes may influence the trend. Among males 9-13 years who are underweight, for example, 94% are sport participants. The corresponding percentages for normal weight, risk of overweight and overweight are 80%, 73% and 87%, respectively. The trend for males 14-18 is similar, though the percentages of sport participants are smaller. Of females 9-13 years who are underweight, 75% are sport participants; however, the same is true for those who are overweight. Females 14-18 years, on the other hand, have fewer sport participants in each nutritional status category.

Mean PAQ-A scores by nutritional status for urban Mexican youth are shown in Table 44. The data suggest that within each age group, males and females in the four nutritional status categories do not differ in physical activity scores. But, within each nutritional status category based on the BMI, 9-13 year old males and females, respectively, tend to be consistently more

active than 14-18 year old males and females, although sample sizes differ between younger and older males and females.

Independent sample t-tests were run to determine whether males and females significantly differ in PAQ-A score within nutritional status category. Males 9-13 years have significantly higher PAQ-A scores than males 14-18 years in the underweight ($t_{(71)}$=3.81, p <0.001), normal weight ($t_{(271)}$=2.68, p <0.01), and risk of overweight ($t_{(98)}$=2.43, p <0.05) categories. Males do not differ in PAQ-A score between age groups in the overweight category.

Females differ significantly in PAQ-A score between age groups within all nutritional status categories, although the overweight category has a small sample size in one cell which could increase the likelihood of Type I errors. Nevertheless, females 9-13 years have significantly higher PAQ-A scores than females 14-18 years in the underweight ($t_{(60)}$=3.40, p =0.001), normal weight ($t_{(347)}$=3.62, p <0.001), risk of overweight ($t_{(96)}$=3.36, p =0.001), and overweight ($t_{(40)}$=3.75, p =0.001) categories.

6. What is the current growth status of urban Mexican youth relative to United States (WHO) reference data?

Descriptive statistics for age, height, weight, and the BMI in single year age groups of urban Mexican males and females are summarized in Table 45. Individual values and age-specific means and standard deviations are plotted relative to United States reference values in Figures 1 to 6. Because there are so few males and females 14 years of age, the means and individual values are not plotted for this age group. Individual values of 18 year old males and

females are plotted, but due to the small sample size, means for the 18 year olds are also not plotted in the figures.

Mean statures fall close to the United States reference medians from 9-13 years in males and from 9-12 years in females. Subsequently, mean statures are below the reference medians at all ages. In later adolescence, mean statures are near the 25th percentile. In contrast, mean body weights are slightly above the reference medians from 9-13 years in males and from 9-12 years in females. Subsequently, mean weights of males and females approximate the reference medians. Given the position of mean heights and weights relative to United States reference values, mean BMIs are above the United States reference medians at all ages and in both genders in this sample of urban Mexican school youth.

Only the 10, 11, and 16 year old age groups have adequate sample sizes across the three SES categories. The comparison of stature, weight, and the BMI by gender in these three age groups are summarized in Table 46a for males and in Table 46b for females. SES differences (using a series of 1x3 one-way ANOVAs) are significant only among 10 year old males for age. Low SES boys are significantly younger; otherwise, age, height, weight, and the BMI do not differ significantly by SES in the three age groups of males and females. Gender-specific descriptive statistics for age, stature, weight and the BMI for all ages by SES are summarized in Appendix G.

Given the context of underweight and overweight in the Mexican population, the sample was partitioned on the basis of the BMI into four

nutritional status categories. United States reference values (Must et al., 1991; Himes and Dietz, 1994) for the BMI were used. The four categories were as follows, underweight (< 15th percentile), normal weight (15th - 85th percentile), risk of overweight (≥ 85th but < 95th percentile), and overweight (≥ 95th percentile). Age-specific prevalences of underweight, risk of overweight, and overweight are summarized by gender in Table 47, while the prevalences in two broader age groups by gender are summarized in Table 48.

The contrast of undernutrition and overnutrition in the sample of urban Mexican youth is apparent, but overnutrition is more prevalent (Table 48). Among 9-13 year old youth, equal percentages of males and females are underweight (14%) and at risk of overweight (20%, 19%). However, more 9-13 year old males (18%) than females (10%) are overweight. Among 15-18 year old youth, fewer females (4%) than males (14%) are underweight. Percentages of 15-18 year old youth who are at risk of overweight and who are overweight are only slightly lower in females 14% versus 17% and 3% versus 5%, respectively.

7. Have secular changes occurred in the stature, weight and BMI of Mexico City youth? Has secular change occurred in the age at menarche of urban Mexican females?

The current sample of Mexico City youth are, on average, heavier and taller than two earlier samples of youth from Mexico City. These include an upper middle class mixed-longitudinal sample of 1,165 males 11-15.5 years and 1,068 females 10-15.5 years measured between 1977-1980 (for convenience called 1978) (Faulhaber, 1989), and a cross-sectional sample of school youth

(2,550 males and 2,207 females) 9-18 years measured in 1926 (Priani, 1929). Another large mixed-longitudinal sample of Mexico City youth is that of Ramos Galván (1975, 1978), but the sample is largely derived from a private pediatric practice and the majority are economically better off. Thus, for the purposes of secular comparison, only the 1926 sample (Priani, 1929) and the 1977-1980 sample (Faulhaber, 1989) were used. Since the earlier studies vary in SES, the total sample from the current study was used for secular comparisons by gender. Trends are summarized in Figures 7 to 9. The sample sizes for 18 year old males and females are small and are not included in the figures.

The present sample of urban Mexican youth is taller than the school sample measured in 1926, but the more recent samples from 1978 and 1998 are only slightly different in mean statures (Figure 7). The current sample of males is slightly taller than the 1978 sample between 11 and 15 years, and the current sample of females is slightly taller than the 1978 sample at 10, 12 and 15 years. In contrast, the current samples of males and females are consistently heavier than the 1926 and 1978 samples, with the exception of the small sample of 13 year old girls (Figure 8).

The secular comparison of the BMI is limited. BMIs were calculated for individuals in the current study, and age-specific means were subsequently calculated. Age-specific mean heights and weights from the earlier studies were used to estimate the BMI at each age for the comparison. The BMI for males in the current study is consistently higher than those estimated for the

1926 and 1978 samples. The data for females are less clear. Females from the current study have consistently higher BMIs than those estimated for the 1926 and 1978 samples from 9-12 years. However, the difference in the BMI is less pronounced in adolescence, which is influenced by the small sample sizes of 13 and 14 year old girls in the present study. Interestingly, the BMI in females from the 1978 sample are greater than those from 1926 from 10-12 years of age, but are then smaller in adolescence.

Estimated rates of secular change in weight and height were calculated from the means of the three samples of Mexico City youth for age groups with adequate numbers. The estimates are presented in Table 49. Change in stature between 1926 and 1998 (7.2 decades) is estimated at 0.9 cm per decade in males 10-12 years and 0.7 cm per decade in males 15-16 years. Corresponding estimates for females are 0.8 cm per decade for girls 10-12 years and 0.6 cm per decade for girls 15- 16 years. When partitioned between 1926 to 1978 (approximately 5.2 decades) and 1978 to 1998 (approximately 2 decades), the data suggest a rate of secular change in height of about 1 cm per decade between 1978 and 1998 in 11-12 year old youth of both genders. This estimate is slightly greater that the estimated rates for the previous five decades from 1926 to 1978 (about 0.7 and 0.8 cm per decade) for 10-12 year old youth. Among 15 year old youth of both genders, the estimated rate of secular change in height from 1978 to 1998 (0.9 and 1.2 cm per decade) is almost double the estimated rates of secular change for 1926 to 1978 (0.5 and 0.6 cm per decade).

The estimated rate of secular change in body weight from 1926 to 1998 is 1.2 kg per decade in boys 10-12 years and 1.4 kg per decade in boys 15-16 years. Corresponding estimates for weight in girls 10-12 and 15-16 years from 1926 to 1998 are 1.0 kg and 0.5 kg per decade, respectively. In contrast, estimated rates of secular change in body weight between 1978 and 1998 are almost three to five times greater than estimated rates between 1926 and 1978 for both males and females.

Menarche

Of a total 520 females, all but two above the age of 13 (n = 183) had begun menstruating by the time of the study. The distribution of menarcheal status in the total sample of girls by age is indicated in Table 50. The median age at menarche calculated with probits is 12.4 years with a confidence interval of 12.2-12.7 years.

The median age at menarche for females in Mexico City in 1998 is slightly earlier than the values of Mexico City girls from the late 1960s. An estimated secular decrease of 0.12 years per decade has occurred in the age of menarche of Mexico city females.

CHAPTER V

DISCUSSION

Introduction

This study considered sport participation, physical activity, and growth status of urban Mexican school youth 9-18 years of age. Although many factors influence sport participation and physical activity, ethnicity and culture are thought to have an important impact (Duda and Allison, 1990). The overall trends in sport participation and physical activity in urban Mexican youth are similar to the trends in United States youth, but the details differ somewhat.

Sport Participation

Of the 591 (292 males, 299 females) students 9-18 years who completed the sport participation questionnaires, 58% of males and 36% of females indicated participation in organized sport (school or non-school sponsored). A survey of United States youth 10-18 years showed percentages of sport participants of 40% and 22% for males and females, respectively (Ewing and Seefeldt, 1988). In a study of mid-Michigan middle school students, 30% of males and 29% of females reported participation in organized sport in mid-winter (Katzmarzyk and Malina, 1998a). The prevalence of sport participation in the current study is higher than those previously reported in the literature,

and males have a higher prevalence of participation than females. While the percentages of the Mexican males and females who participate in sport are seemingly high, perhaps the sample size or the definition of organized sport accounts for some of the variation. Both school and non-school sponsored sports are combined in the estimates. It is possible that some boys, and possibly some girls, included "pick-up" games in their responses, despite the requirement in the survey that a coach needed to be present to qualify the activity as an organized sport. If this is the case, then the responses of participants versus non-participants may, in fact, be more accurate than was first believed. That is, the respondents who participate in sport in all forms may be represented, rather than just those who have a coach and regular practice. If this is the case, however, the applicability of this survey to other estimates of sport participation has a limitation.

A shortcoming of the present study was the lack of a question regarding self-organized sport participation. Soccer, or fútbol, in Latin America has long been a street game that children just pick up and play when they have free time, and they often play every day, or at least on a regular basis. By not assessing this type of sport activity, information may be lacking on true levels of participation in sport. In addition, basketball is starting to have a more informal component in Mexico for both males and females, as is volleyball for females. If the subjects did indeed count these self-organized games in their list of sports, then the prevalence of sport participation may not be so out of line with prior reports. Nevertheless, this interpretation does beg the

question of how many Mexican youth participate in organized sport with regular practices, games or competitions, and a coach or trainer.

The higher percentages of participation in organized sport in Mexico City youth compared to United States youth, but relatively low levels of physical activity (especially in the older males and females) as estimated by the PAQ-A also beg the following questions: How active are these youth in sport? Do they exercise or train regularly? Do they practice at all? What is the frequency and duration of training or regular exercise? None of these questions were really addressed with the instruments used in the study. Similar questions arise with American youth, and energy expenditure is rarely documented. In a study of mid-Michigan youth 12-14 years of age, the percentage of estimated total daily energy expenditure attributed to participation in organized sport was 20% for males and 16% for females. The percentage of energy expenditure in moderate-to-vigorous activity which was attributed to youth sport participation was 55% and 65% for males and females, respectively (Katzmarzyk and Malina, 1998a). Thus, youth who participated in organized sport expended more energy in physical activity than youth who did not participate in organized sport. Thus, if urban Mexican youth are similar to mid-Michigan youth, the amount of energy expended by sport participants may be greater than that expended by non-sport participants. However, urban Mexican youth who participate in sport do not differ from non-participants in the PAQ-A score. It is possible that the

PAQ-A is not as sensitive as the three day diary used in the study of Michigan youth.

A serious confounder for sport participation and physical activity in the present sample, is the level of air pollution in Mexico City. Air quality in Mexico City is generally not very good. During the time of the study, for example, fires in the state of Chiapas in southern Mexico caused tremendous respiratory and throat problems in Mexico City. While air contamination is listed by very few youth as a reason for not participating in sport during the previous week, there were relatively high percentages of individuals who mentioned sore throats (13% of males and 10% of females) and flu (14% of males and 33% of females) as the reason for not participating in sport or physical activity (Table 30). These may be related to the level of pollution in Mexico City.

Sport and Activity Preferences

The three top ranking physical activities in which males participate one or more times per week are soccer, running, and walking. Skipping, running and walking are the activities in which the majority of the girls participate one or more times per week.

There are several differences in the reported activities of males when the sample is divided into two age groups, 9-13 and 14-18 years. Soccer ranks first among younger boys, but fourth among older boys. It appears that fitness activities (walking and running) are more common for older boys, while

team sports (soccer and basketball) are more important for younger boys. Fitness and play activities (running, walking, skipping and skating) are preferred over sports among the top three reported activities for both younger and older girls.

The results of sport and activity preferences are slightly different if a more stringent criterion of ≥ 3 times per week is used to rank activities. The percentage of participants changes considerably, but the rank order changes only slightly. It seems more accurate to use the more strict criterion since participating in something one or two times a week does not necessarily mean it is a habitual activity. Participating in something ≥ 3 times per week, however, would seem to suggest a more likely preference for an activity instead of a one time trial. Nevertheless, the differences are so slight that using a one time per week criterion for this urban Mexican sample would have been adequate to determine what sports are preferred on a regular basis.

For the sake of comparison with a Brazilian study using a similar survey instrument (da Silva, 1998), the percentages presented are those for participating in an activity ≥ 1 time per week. The top three ranked sports or activities in which urban Mexican males participate one or more times per week in the prior week are, in order, soccer (82%), running (80%) and walking (72%). Younger males, 9-13 years, choose soccer (87%), running (82%) and basketball (75%) as the top three, while older males, 14 -18 years, choose walking (78%), running (76%), and soccer (75%). Brazilian males 14 and 15 years indicate similar preferences. The top two sports for males are soccer

(76% and 75%, respectively) and running (62% for both ages). In 14 year old males, walking and bicycling (59%) tie for third, while in 15 year old males walking is third (55%) and bicycling (53%) is fourth (da Silva, 1998).

Urban Mexican females rank skipping (79%), running (75%) and walking (74%) as the top three activities in which they participate $\geq$ 1 time per week. Younger females, 9-13 years, choose skipping (84%), running (81%) and skating (74%), and older females choose walking (76%), skipping (67%) and running (60%). Brazilian girls prefer dancing or walking more than any other activity, although girls 14 years of age rank dancing first (64%) and walking second (62%). The reverse is the case for the 15 year old girls: 72% prefer to walk and 56% prefer to dance (da Silva, 1998).

Reasons for Sport Participation

While males and females may differ slightly in the overall order of their stated reasons for participating in sport, the top reasons are the same. Fun is a very important motivation for sport participation in both males and females, regardless of age or SES. Physical fitness and exercise are also indicated as important reasons for Mexico City youth to participate in sport.

Males and females differ significantly on four reasons for participating in school sponsored sports. Females rank the need to have something to do higher than males. Males want to go to a higher level of competition, to be popular, and to attract the attention of girls. On the other hand, males score higher than females on five reasons for non-school sport participation. In the

non-school sponsored sport category, males are more interested in external rewards for sport such as travel, attention and popularity.

The top ten reasons given by these urban Mexican youth and like-aged samples in the United States (Ewing and Seefeldt, 1988) tend to be very similar (Table 51). United States males and females 10-18 years participate in sport to have fun as their primary reason. United States youth also indicate skill, exercise, fitness, competition, and social components as other reasons for participating in sport. However, United States youth also indicate "to play as a part of a team" among the top ten reasons for participating in sport, while urban Mexican youth do not. When the urban Mexican sample is divided by gender, a social component is present for females, i.e., they play sport to be with their friends (Table 11).

The United States survey also reports reasons for participation in sport by ethnicity. Hence, the responses of Mexico City youth can be compared with Mexican Americans to determine whether the trends in reasons for sport participation are similar. The top ten responses indicated by the current sample are presented with the United States sample of Mexican American youth (Ewing and Seefeldt, 1988) in Table 51. Mexican American youth 10-18 years also list having fun as the top reason for participating in sport. It is followed by developing skills and staying in shape. Competition is also important to the Mexican American youth; much like with the urban Mexican youth. These two samples indicate three competition-related reasons among the top ten. Again, "to play as a part of a team" is present

among the top ten for Mexican American youth, but it does not surface among the top ten reasons of the Mexican sample.

Not surprisingly, males and females in Mexico City prefer to participate in different sports. Males tend to prefer soccer and basketball, and females prefer basketball and skating. The different preferences are congruent with United States data (Branta et al., 1987; Ewing and Seefeldt, 1996). The top three choices for United States youth 10-18 years of age are baseball, basketball and American football for males, while girls prefer swimming, softball and basketball (Ewing and Seefeldt, 1988).

Cultural characteristics help define what activities are popular within a given group. Among United States adults, urban Blacks and Whites tended to be more active than Hispanics, who participated in more sedentary activities such as sitting and talking (Hutchinson, 1987). However, when participation rates in soccer, basketball, baseball and tennis were assessed, Hispanics had higher participation rates than the other two groups. The current study also shows that soccer is the most played sport by males, followed by basketball, while females tend to participate in basketball more often than other sports. Hispanic youth 10-18 years of age from various cities in the United States prefer basketball, baseball, volleyball and swimming; the data were not, however, partitioned by gender within ethnic group (Ewing and Seefeldt, 1988).

While task orientation and ego orientation factors are evident in this sample of urban Mexican youth sport participants, the loading of items on each specific factor does not occur in the same manner as in previous studies of American high school athletes from several sports (Duda, 1989). American male and female high school athletes differ significantly in task and ego orientation; males score significantly higher in ego orientation and females score significantly higher in task orientation (Duda, 1989). Mean scores for task orientation for the American high school athletes are 4.28 $\pm$ 0.47 for males and 4.45 $\pm$ 0.80 for females. Mean ego orientation scores, 2.89 $\pm$ 0.87 for males and 2.59 $\pm$ 0.96 for females, are also higher than those in the current study, again keeping in mind that the number of items in the factors differs between studies (Duda, 1989).

In a study of 10-year old British school youth, males scored 3.94 $\pm$ 0.39 on task and 3.56 $\pm$ 0.80 on ego orientation, while females scored 3.89 $\pm$ 0.80 and 3.14 $\pm$ 0.76 on task and ego orientation, respectively. Males and females only differ significantly on ego orientation (Duda et al., 1992). The current study shows no gender difference in Mexican youth in task orientation (males, 3.87 $\pm$ 0.89; females, 3.96 $\pm$ 0.88), but males score higher for ego orientation than females, 2.56 $\pm$ 0.97 and 2.27 $\pm$ 0.91, respectively. However, both task and ego orientation scores are, on average, lower than scores for Duda's (1989) sample of high school athletes, and the ego orientation scores are lower in Mexican youth than in 10 year old British youth (Duda et al.,

1992). Note, however, that it is only possible to observe general trends in this comparison since the number of items in the studies differs. The analysis for the current study used a modified TEOSQ, with two items dropped due to cross-loading and failure to reach the criterion.

Cultural variation may also contribute to the observed differences. For example, in a study of Korean middle school athletes (13.9 $\pm$ 0.92 years), using a different modification of the TEOSQ, task orientation scores were 4.01 $\pm$ 0.58 for males and 3.96 $\pm$ 0.54 for females. The ego orientation scores were 3.59 $\pm$ 0.73 for males and 3.46 $\pm$ 0.63 for females (Kim and Gill, 1997). The Korean males and females did not differ significantly on either task or ego orientation. While the ego orientation scores of Korean youth are substantially higher than those in both the current study and that of Duda (1989), this may again be due to the modification of the factors, since only 10 of the 13 items were used in the Korean study. Due to the fact that this was a group of interscholastic athletes, and their success depended on being externally judged as better than other athletes, the ego orientation may have been higher than it would be in samples that were not athletes.

A comparative study of 67 Jordanian and 65 American youth (males and females 11-17 years of age) showed that Americans and Jordanians differed in stated reasons for sport participation and goal orientation (Hayajneh, 1989). Top reasons for sport participation among Americans included having fun and learning new things, while popularity, travel and the social components of sport were top reasons for Jordanians. In addition,

American youth showed more task orientation in achievement motivation and Jordanians showed more social approval (ego) orientation (Hayajneh, 1989). However, the questions were not part of an established instrument, but rather were developed and modified specifically for the Jordanian population.

Another consideration is the relationship between the task and ego orientation factors. While Duda (1989) did factor analyses with both orthogonal and oblique rotations, since the correlation between factors was quite low, an orthogonal rotation was ultimately used. In over 70 published studies which used the TEOSQ, or a translated version of it, an orthogonal rotation of the factors was ultimately used during the factor analyses (Duda and Whitehead, 1998). The factor analysis for the current study was also run with an orthogonal rotation due to a relatively low inter-factor correlation ($r = 0.23$, $p = 0.01$); however, this may not be the most appropriate method for all studies. In both the current study and that of Kim and Gill (1997), the factors were both positively and significantly correlated with each another. It may be that urban Mexican youth, and possibly Korean youth as well, are linking items differently than American youth. For example, the "fun" item did not score high enough on either factor in the current study to qualify for inclusion. This may be because the population associates fun with task and ego, not just with one or the other.

Considering that studies of motivation for sport and goal orientation have been conducted across sport and with many United States populations, it is interesting that cross-cultural work with the instruments has only

recently been reported. The results also beg the question: What does fun mean in different cultures? The factor analyses of both the sport motivation questionnaire and the TEOSQ in the current study showed that the data do not fit the hypothesized structure of either the sport participation factors or the TEOSQ well. Kim and Gill (1997) also noted this with Korean youth and thus used a specifically modified version of the TEOSQ. It may be that a modified version of the TEOSQ and the sport motivation questionnaires would also be more appropriate for Mexico.

It seems logical that the American form of the TEOSQ, 13 items which load onto task orientation and ego orientation factors, does differ from one sample to another, particularly when there is also cultural variation. Urban Mexican females, for example, group competition items with social items. It may be that competition is only used in a social context in Mexico for females. The qualitative differences which appear in the responses of urban Mexican youth to the TEOSQ (in contrast to those of American youth) are consistent with the argument of Maehr and Nicholls (1980). The authors argue that surveys, concepts, and task orientation models developed for American youth are insufficient for understanding the nature of achievement motivations of youth in other countries (Maehr and Nicholls, 1980). While achievement orientation for sport does exist in Mexico City youth, it may be that the TEOSQ is not the appropriate tool to assess it. Success and failure are culturally-specific concepts, whether in sport, business, or life in general. Within the United States, for example, Mexican American children have

been found to stress cooperative behavior when their motivation is assessed in a scholastic context (Knight and Kagan, 1977), and they may be less competitive than either Black American or Anglo American children in a scholastic context (Kagan and Zahn, 1983). Behavioral choices of Mexican Americans may also hold true for Mexican nationals, but the current study was not developed to ascertain this. Rather than continuing to use the TEOSQ in the Mexican population, it may be more beneficial to first determine what constitutes success and failure in sport in Mexican culture. Is playing enough? Or must one play well? Or must one win?

An additional point which may contribute to the differences in task and ego orientation scores between the Mexican, American, and Korean studies is sport participants versus athletes. While the urban Mexican sample was sport participants, the other two samples contained high school and junior high school athletes. The American sample included athletes from basketball, track and field, tennis, and softball. The Korean sample included athletes from a wide range of sports from basketball to wrestling; the Korean athletes were very active in their sports, participating for an average of 28.0 $\pm$ 9.5 hours per week. The results from the sample of British school children, however, appear more similar to the current study because the British children were described as sport participants. It is possible that there may be no quantitative difference between those who are sport participants and those who are athletes in the two studies, they may all consider themselves

athletes. However, the question does arise of whether athletes view their task and ego orientation differently than sport participants.

Another possibility is that more than two factors exist in goal orientation in sport for some populations. When the TEOSQ is used with non-elite samples (such as recreational sport or physical education classes), the task orientation domain sometimes splits into two factors rather than one. This tendency is often not discovered with confirmatory factor analyses, or when a two factor-solution EFA are run (Duda and Whitehead, 1998).

The cultural specificity of the factors used to assess sport motivation orientation or motivation for participation should also be considered. It is difficult to compare across studies if different factors for participation are used, much like the issue between Mexican males and females in the specific items that load on factors for both the TEOSQ and the sport motivation questionnaire. It was not possible to statistically compare males and females when gender-specific factor analyses were run. While factor 1 was a recognition/external rewards factor and had nine items for males, the recognition/external rewards factor for females had only six items. Comparisons, therefore, can only be done in a qualitative manner. It seems logical that instruments developed in one country may not give the same results in another country; therefore, qualitative assessment of the differences may be a necessity. Again, the problems with the instruments may be in their cultural-specificity. It is not unlikely that success and enjoyment in sport means one thing in the United States, but could mean something rather

different in Mexico, although similarities also exist. However, when females in Mexico group social items with competition items, and this trend does not appear in American youth, it makes cross-cultural comparisons more difficult to assess quantitatively.

Reasons for Discontinuing Sport

The age trends in sport participation for the current study mirror, to a large extent, those in the United States (Ewing and Seefeldt, 1996). The decline in sport participation and level of physical activity with age probably reflects many things. For example, high school age students may just have too many other things going on in their lives. While after school jobs are rather common in the United States, they appear to be less so in Mexico City. However, domestic chores and homework seem to be much more important in the responses of the Mexican students. Homework demands also increase as a child progresses through school. Thus, it makes sense that the older students would devote more time to study than younger students. In the context of variation in physical activity among United States girls of different ethnic groups, Wolf et al. (1993) suggested a possible devaluation of physical activity in Hispanic and Asian females, or possibly more emphasis on academics in the two cultures.

The time commitment of sport is a major concern for urban Mexican youth. Mexican youth are apparently concerned that sport participation takes up too much time, and that it may decrease the time available for study. But,

females indicate the need for more time to study than males. Coaching concerns, pressure to win and lack of interest also surface as reasons for discontinuing sport.

Concerns related to coaching also surfaced as reasons for dropping out of sport for American youth (Ewing and Seefeldt, 1988). Canadian males and females 7-19 years of age who discontinued sport participation stated that the emphasis of the program was the problem. The program was too serious, with too much emphasis on winning and being the best. Coaching factors such as favoritism, yelling at players, leaving people out, and pushing too hard also contributed to discontinuation of sport (Orlick, 1974).

Using gender-specific samples for both urban Mexican and the total sample of United States youth (Ewing and Seefeldt, 1988), the order differs for the top ten reasons for dropping out of sport, but few of the items differ (Table 52). Mean scores are not provided for the United States youth; hence, they are not presented for the Mexican youth in this table. While urban Mexican males dropped out because they could not make it to practices and games and because they needed more time to study, American males dropped out because they were no longer interested and because the sport was no longer fun (Ewing and Seefeldt, 1988). Time commitment, pressure, and coaching issues were also common to males and females, both Mexican and American. At variance with the United States data, urban Mexican males and females dropped out of sport because they could not afford to play and practice in their sport year round. In addition, Mexican females dropped out because they did

not get to play much. In contrast to the Mexican youth, American males and females discontinued sport participation because they were tired of playing and because they felt that the coach played favorites (Ewing and Seefeldt, 1988).

When the reasons for dropping out of sport reported by Mexican American youth and the current sample are compared, the top ten responses do not appear to differ very much (Table 53). For Mexican Americans, the fact that they were not having fun was the most important reason for dropping out of sport. Coaching issues, time issues, emphasis on winning and too much pressure were also listed. Though in a slightly different order, all of these issues are also pertinent to urban Mexican youth. In addition, Mexican youth dropped out of sport because they wanted to participate in other, non-sport activities, and they could not afford to play and practice all year-round. The items which appear as reasons for discontinuing sport for Mexican American youth, and which are not among the top ten reasons for Mexican youth, are that Mexican American youth perceived their ability at the sport as less than other players, and that the coach only played his/her favorites (Ewing and Seefeldt, 1988).

Comparisons of the top ten changes which would cause youth to return to sport are presented for Mexican and American youth in Table 54. Mexican youth would return to sport if it did not interfere with their studies (ranked 1st for males and females), while American youth would return to sport if practices were more fun (ranked 1st for males and females). Three

items which are on the top ten for Mexican youth are not on the list for American youth and three items on the list for American youth are not on the list for Mexican youth. Mexican youth want closer or more numerous practice facilities, less demand on their time, and more variation in the competition level available in the leagues. American youth want the coaches to yell less and to understand the game better, and want less emphasis on winning in the sport program (Ewing and Seefeldt, 1988). It appears that Mexican youth feel that they do not have enough access to places to play sport, while this is not a primary problem for American youth. However, this may represent an urban stricture more than a cultural difference.

Responses to the statement " I would return to sport if..." in urban Mexican and Mexican American youth are presented in Table 55. Changes in sport which would make Mexican American youth return to sport include making the practices more fun, better understanding from coaches, more playing time and less conflict with time needed for schoolwork (Ewing and Seefeldt, 1988). Less emphasis on winning is also important for Mexican American youth if they are to return to sport, this item is not in the top ten for urban Mexican youth. On the other hand, time conflicts and reducing the demands of sport characterize the top five responses indicated by Mexican youth before they would return to sport.

Physical Activity

Mean scores on the PAQ-A in the current sample of males and females 14-18 years are 2.6 ± 0.7 and 2.2 ± 0.7, respectively. They are similar to mean scores for Canadian youth 13-20 years, 2.5 ± 0.7 for males and 2.1 ± 0.5 for females (Kowalski et al., 1997b), and slightly higher than mean scores for 14-15 year old Brazilian adolescents, 2.2 ± 0.5 and 2.0 ± 0.6, for males and females, respectively (da Silva, 1998). In addition, both the current study and the Brazilian study deleted the last item which is a frequency of how many times per week activities are performed. Thus, the small differences between Mexican youth and Canadian youth may be methodological. The Brazilian youth, however, seem to be less active than either of the other two groups, although the age range is restricted compared to the other two studies. Nevertheless, it may also be that a larger age range would give activity scores closer to those of the Mexican and Canadian samples. Activity levels may be decreasing in Brazilian youth 14-15 years of age.

The correlations between the PAQ-A and the activity rating (question 10 in the PAQ-A) are similar in urban Mexican youth ($r = 0.45$) and urban Brazilian youth ($r = 0.40$) (da Silva, 1998), but lower than the correlation in Canadian youth ($r = 0.65$) (Kowalski et al., 1997b). Again, the small differences could be the exclusion of the last item in two of the studies, or it could be due, in part, to the smaller Canadian sample.

Activity choices in the instrument, the phrasing of the questions in translation, and the restricted scale for scoring each question perhaps

contribute to the variation in scores. The activity choices were modified for both the Brazilian and Mexican studies, but culturally specific items that would alter activity scores may have been inadvertently omitted. For example, among high school boys in southern California, weight lifting is a very common activity (Sallis et al., 1996); yet in the setting of Mexico City, it was one of the least popular choices for both males and females. Weightlifting, therefore, had a large percentage of non-participants. Another sport or activity may have received a higher percentage, and in turn may have increased activity scores. Soccer, for example, had high percentages of participation for urban Mexican males; if it had been omitted from the survey, the sample would have appeared less active. The best way to determine what sports might have been missed would be to ask the youth to list the sports in which they participate, rather than providing the sports. A more accurate assessment could then feasibly be made.

Gender Differences in Physical Activity

In Mexico, a somewhat heavier female body image is seen as more healthy and desirable than in the United States (Harris and Koehler, 1992). Exercise is also reportedly less accepted for females than males in the Mexican American culture (Sallis et al., 1988a; Sowers et al., 1995). The urban Mexican school age females in this study are less likely to be sport participants and are likely to have lower levels of physical activity, especially among high school girls. In the past, Mexican girls between 12 and 15 years of age were expected

to give up their friends and play habits, and devote themselves to household chores (Lewis, 1960). While this is no longer the case, the 15th birthday (quince años) of Mexican females is still of particular importance in the culture. The formalized stylistic celebration of this birthday is often a church ceremony followed by a reception to which the quinceñera and her damas (ladies) are escorted; the quinceñera then dances with all of her male kin. A new long dress, heels, and jewelry of an adult all indicate that this is the entrance of the quinceñera into young womanhood. Following this celebration, the young woman may now be formally courted by a boyfriend (Fisher, 1973). While most celebrations are no longer as formal, the birthday itself is still celebrated and the idea of this being a transition from child into young woman is still honored (Werner, 1997).

In addition, adolescents in many countries, both male and female, have lower levels of physical activity than pre-adolescents (Reynolds et al., 1990; Pate et al., 1994; Malina, 1995). There is a negative association between physical activity and age in adolescent females and males (Aaron et al., 1993; Ewing and Seefeldt, 1988; Andersen et al., 1998), and results of the current study are consistent. In the current study of urban Mexican youth, the association between activity score and age is -0.17 in males and -0.25 in females. While females are less active than males, the relative decline with age appears similar.

Adolescents often have other things in their daily routines than sport and physical activity. Females in Mexico City seem especially concerned

about their grades, to the extent that they often choose not to play sport so as not to compromise their studies. While in the past, females in Latin America did not continue their education much past high school (Sivard, 1995), this may be changing in Mexico. The mean number of years in school increased for both males and females between 1970 and 1990. In 1970 the mean number of years in school was 5.44 for males and 4.43 for females. In 1990 the respective means were 8.02 years for males and 7.25 years for females (INEGI, 1992). Perhaps the need of females to keep up with their studies is due to their desire to continue in school.

SES Variation

There are few differences in sport preferences among youth in the three SES categories used in the present study. However, the choices are ordered somewhat differently by SES. Soccer, basketball, and swimming are the top three choices for males of all three SES categories, but soccer is first and basketball second for low and middle SES males, while swimming is first for high SES males, basketball second and soccer third. Track and field ranks 6th, 10th and 11th for low, middle and high SES males, respectively, and tennis ranks 10th, 8th, and 5th, respectively. In an early study by Greendorfer (1978), female college athletes in the lower SES tended to be team sport participants, while individual and dual sport participants were more likely to be from a high SES. In addition, adults from a low SES background in the United States indicated higher preference for individualized, non-

competitive sport (Cauley et al., 1991). Although the current study was with youth 9-18 years instead of college students or adults, the results of activity preference in urban Mexican youth showed that lower SES males seem to prefer team sport activities slightly more than higher SES, but the trend is not apparent in females.

High SES urban Mexican males preferred to participate in swimming more than low and middle SES levels (84% for high SES, 43% for middle SES and 38% for low SES). Boys in the middle and low SES groups preferred soccer. The sample size for the high SES was smaller than for the other two categories, and perhaps this preference only applies to swimming, in contrast to other individual versus team sports. As in other countries, swimming in Mexico City is rather costly in time and money. For the most part, participation in swimming in Mexico City must be practiced at private clubs; thus, access for low and middle class youth may be limited. The trend for tennis is the same, with high SES males ranking it higher than youth in the other two categories.

For females, the top three activity choices are basketball, skating and swimming for low, middle and high SES categories, although high SES females rank swimming second, while the other two categories rank it third. Gymnastics is ranked fourth for the low and middle SES females, and volleyball is fourth for the high SES females. In contrast to males, females did not seem to rank the individual sports of tennis and track and field differently by SES category. Low, middle and high SES females ranked track

and field 5th, 11th and 6th, respectively, while tennis was ranked 11th, 6th, and 8th, respectively. The access to practice facilities and coaches may differ by social class, and thus influence sport preferences, the current study was not designed to assess this possibility.

Parental Activity

There is a positive relationship between parental exercise and a child's exercise patterns (Gottlieb and Chen, 1985; Moore et al., 1991). However, the current study looked at the question a bit differently. Perceived activity status of the youth's mother (as a yes/no answer to 'is your mother active?' and 'in what sport is she active?') was a significant predictor of activity level for males and females, although it only accounted for a small percentage of the variance (1% to 7%). This seems logical. It may be that in societies where athletic females are not a completely accepted norm, the influence of a regularly active mother might be strong for her daughters. For males in the current study, perceived activity status of the mother also predicted activity, but to a lesser extent (1% of the variance). However, in high SES females, the perceived physical activity status of the father was also a predictor of activity score (4% of the variance).

In another study, preschool children of active mothers and fathers were 5.8 times more likely to be active than children whose parents were inactive (Moore et al., 1991). In contrast, a study of United States grade school

boys and girls showed no correlation between children's self-report of activity and their parents exercise habits (McMurray et al., 1993). The same study also found a weak link between the mother's self-reported activity and the $\dot{V}O_2$ max of her children. For 11-14 year old American girls, participation in community sport, enjoyment of school physical education classes, race, and perception of mother's activity level were significant predictors of vigorous physical activity (Trost et al., 1997).

The influence of family members on the activity of youth cannot be overemphasized; nor should it be disregarded when educators are trying to get and keep youth involved in sport or physical activity. Parents and friends serve as significant role models in many aspects of an individual's life. Sport and activity levels are often affected by this influence (Anderssen and Wold, 1992; Bungum and Vincent, 1997). Familial and outside support also contributes to the maintenance of regular exercise patterns. In addition, when families are active together, it becomes an activity sharing event, which tends to prolong the involvement in activity. Lack of parental activity, even in preschool children, may already be influencing activity levels of the children (Sallis et al., 1988).

Barriers to Physical Activity

In the current sample, females tend to be less active than males, and older females (15-18 years) are the least active of all groups. Future research and application may need to focus on ways to alter these trends. Adult

women in Mexico run the same risks for diabetes, obesity and cardiovascular risk factors as do men (Sowers et al., 1995). It would only benefit the female portion of the population if they were taught as youngsters how to be active and how to maintain a physically active lifestyle.

For 11-14 year old girls in South Carolina, self-efficacy in overcoming barriers was a significant predictor of vigorous and moderate to vigorous physical activity. Overcoming barriers was also a predictor for vigorous physical activity in boys (Trost et al., 1997). The perceived barriers, however, differed between genders. Similar to the current study of urban Mexican females, overcoming barriers related to homework obligations were primary for the United States sample of girls. The activity of the boys, on the other hand, was more closely linked with their confidence in their ability to be active despite poor weather conditions (Trost et al., 1997).

Television and Video Games

The estimated time of television viewing in the current sample of Mexico City youth is 3.1 $\pm$ 2.2 hours per day for males and 2.9 $\pm$ 2.0 hours per day for females. Of those who reported playing video games the average time spent per day is 2.5 $\pm$ 2.2 hours for males and 1.8 $\pm$ 1.7 hours for females. Mean time spent viewing television and playing video games does not differ between sport and non-sport participants, and there is no consistent pattern of differences among youth classified by physical activity level. Males and females do not differ in television viewing time, but they do differ in time

spent playing video games; males spend more time playing video games in both the younger (9-13 years) and older (14-18 years) age groups (Table 31).

Television viewing and video game playing are forms of physical inactivity, and as such have public health relevance. Some data suggest that those who watch more television are fatter (Dietz and Gortmaker, 1985; Andersen et al., 1998), while others find no relationship (Robinson et al., 1993). There is a weak but significant relationship between television viewing time and obesity among males and females 12-17 years from the third cycle of the National Health Examination Survey (NHES), 1966-1970 (Dietz and Gortmaker, 1985). Data for youth 8-16 years assessed in the third National Health and Nutrition Examination Survey (NHANES III), 1992-1994, suggest that viewing television for four hours per day was not associated with the BMI or trunk skinfolds in females. However, males and females with a higher BMI and trunk skinfolds reported watching more television on the previous day (Andersen et al., 1998). On the other hand, no meaningful relationship was found for either television time and obesity, or television time and baseline activity levels for 6th and 7th grade adolescent females in northern California (Robinson et al., 1993).

Data from the Quebec Family Study (QFS) 1978-1981, showed that Canadian boys 9-18 years spent 2.3 hours per day watching television and girls spent 2.4 hours per day (Katzmarzyk et al., 1998). When broken down by age group, males 9-12 years in the QFS watched 120 $\pm$ 62 minutes of television per day and males 15-18 years watched 123 $\pm$ 75 minutes per day (Katzmarzyk et

al., 1998). Urban Mexican males 9-13 years from the current study watched an estimated 192 ± 138 minutes per day and males 15-18 years watched 179 ± 126 minutes per day. For females 9-12 and 15-18 years of age from the QFS, the mean time watching television was 112 ± 67 and 125 ± 80 minutes per day, respectively (Katzmarzyk et al., 1998). Urban Mexican females 9-13 years watched an estimated 186 ± 132 minutes per day and those 15-18 years watched 150 ± 102 minutes per day. Thus, the estimate of time spent watching television for urban Mexican males and females is higher than for Canadian youth, although the studies are also separated by almost 20 years in time and television viewing has become more prevalent. In Mexican youth, however, the younger age groups of both sexes appear to watch more television than the older groups. The older Canadians, on the other hand, appear to watch more television than the younger Canadians.

The analysis of the QFS study also found no significant relationship between time spent viewing television and estimated moderate to vigorous physical activity. The partial correlations, controlling for age, are -0.13 for males 9-12 years, -0.04 for males 13-15 years, and -0.16 for males 16-18 years (Katzmarzyk et al., 1998a). In the current study of urban Mexican youth, the correlations between time spent watching television and the PAQ-A are also not significant, and are slightly lower than those from the QFS study: -0.05 for males 9-13 years and -0.03 for males 15-18 years. The correlations for females from the QFS study are -0.09 for females 9-12 years, 0.04 for females 13-15 years, and -0.09 for females 16-18 years (Katzmarzyk et al., 1998a). The current

sample of Mexican females also show no trend. For females 9-13 years, the partial correlation between the time spent watching television and the PAQ-A, controlling for age, is < 0.001, and that for females 15-18 years it is -0.05.

Part of the objection to excess television time is that there is less time to participate in physical activity, and many more opportunities to consume excess calories. The current study, however, showed no difference in time spent watching television by sport participation status in urban Mexican youth. The obverse of this is shown in Mid-Michigan male and female middle school students, 12- 14 years, who participated in organized youth sport; the sport participants watched significantly less television per day than non-participants (Katzmarzyk and Malina, 1998a).

Body Size and Overweight

Mean statures of urban Mexican youth fall close to the United States reference medians from 9-13 years in males and from 9-12 years in females; they are below the reference medians at older ages (Figures 1 and 2). Mean body weights are slightly above the reference medians for 9-13 year old males and for 9-12 year old females, but they approximate the reference medians at older ages (Figures 3 and 4). On average, the BMIs of urban Mexican youth are above United States reference medians at all ages (Figures 5 and 6). The small samples of 13 and 14 year old youth may limit the comparisons between the current study and other studies at their ages.

Mean weights of urban Mexican youth are compared with those of youth 6-12 years from Sonora in northwestern Mexico (Peña Reyes, 1995; Ovando Hernández, 1995) and Veracruz on the central gulf coast of Mexico (Peña Reyes et al., 1999) in Figure 10. The sample from Sonora includes 293 males and females 6-11 years of age, and that from Veracruz includes 346 males and females 7-12 years of age. All three Mexican samples exceed the United States reference medians for body weight (Hamill et al., 1977). They also exceed the medians for Mexican Americans in the Hispanic Health and Nutrition Examination Survey (HHANES; Roche et al., 1990). The Mexican youth, however, are more similar to the Mexican Americans than the United States reference values which are based primarily on American White youth. Stature does not appear to differ among the three Mexican samples, Mexican American youth, and the United States reference values (Figure 11).

Mean BMIs of the current sample for 9-12 year old youth are plotted against those from Sonora (Peña Reyes, 1995; Ovando Hernández, 1995) and Veracruz, Mexico (Peña Reyes et al., 1999) in Figure 12. The mean BMIs of the three recent samples from different regions of Mexico are rather similar, and are greater than both the United States reference (Must et al., 1977), and HHANES (Roche et al., 1990). Thus, the present sample of urban Mexican youth is not atypical. Rather, the data for Mexico suggest an emerging public health issue with increased levels of overweight in Mexican youth.

The percentage of urban Mexican youth classified as overweight (BMI $\geq$ 95th percentile of United States reference values, Himes and Dietz, 1994)

appears high (Table 48). The problem seems to be especially apparent in the younger children in this sample, particularly males. Eighteen percent of males 9-13 years are classified as overweight compared to only 5% of males 15-18 years. Corresponding percentages for females by age group are 10% and 3%, respectively. The percentage of the sample at risk of overweight (≥ 85th and < 95th) is also rather high, 20% of males 9-13 years and 17% of males 15-18 years. The prevalences for girls are similar, 19% for the younger girls and 14% for the older girls.

The prevalences of overweight in Mexican American males 6-11 and 12-17 years from NHANES III (BMI ≥ 95th percentile NHES II and NHES III) are 17.4% and 14.6%, respectively (Troiano and Flegal, 1998). The corresponding data for females are 14.3% and 13.7%, respectively (Troiano and Flegal, 1998). Compared to Mexican American youth in NHANES III, the prevalence of overweight (BMI ≥ 95th percentile) is lower in the current sample of urban Mexican youth, with the exception of males 9-13 years, who are equivalent to the NHANES III sample.

The current study of urban Mexican youth seems to have much in common with the prevalence of obesity in Native Americans, although different cut-off points are used to indicate overweight. Estimates of the prevalence of obesity (≥ 90th percentile of WHO reference values) in male Native Americans ranges from 14% in a Chippewa group to 74% in an unidentified southwest tribe. Prevalence of obesity in female Native

Americans ranges from 11% in the Chippewa to 78% in the southwest tribe (Malina, 1993; Broussard et al., 1991).

A secular change towards increased adiposity over time seems to have occurred. Self-reported heights and weights from a health survey of adolescent Native Americans (including Alaskan Natives) revealed that 24.5% of the males and 25.0% of the females 12-18 years of age had BMIs >95th percentile of age- and sex- specific United States reference values, and were thus classified as obese (Broussard et al., 1991). A First Nation Canadian sample of youth 5-19 years had a prevalence of risk of overweight and overweight ($\geq$ 85th percentile NHANES II) of 28.6% for males and 29.4% for females (Katzmarzyk and Malina, 1998b). While relatively high compared to Canadians of European descent from the same community, the percentages for males are still less than the sample of urban Mexican males 9-13 years (38%). Urban Mexican females 9-13 years have a prevalence of the risk of overweight and of overweight which approximates that of the First Nation sample (29%). The older age groups of urban Mexican youth have lower prevalence of BMI $\geq$ 85th percentile (22% for males and 17% for females). Note, however, these comparisons are limited because the First Nation data were not partitioned by age group comparable to the present study.

In the context of sport and activity, there are no differences in the BMI of sport participants and non-sport participants in this sample of urban Mexican youth. The BMI also does not differ among Mexican youth classified as inactive, active and very active based on the PAQ-A. It might be expected

that those with a higher BMI would be less likely to participate in sport and would have lower levels of physical activity, at least at the extreme ends of the distribution.

The BMI is a ratio of weight-for-height, with no indication given of what contributes to the weight, especially excess weight-for-height. The concern is that the excess weight is in the form of fat; however, some of the current sample (particularly if they are athletes or just more muscular) may be heavy for their height due to increased muscle mass, not fatness. In addition, the ratio of lean to fat mass changes with growth and maturation so the BMI is not as accurate for youth as for adults. Nevertheless, the partial correlations for the BMI and the PAQ-A are negative and significant for the current sample of urban Mexican males ($r = -0.17$) and females ($r = -0.25$), implying that as the BMI increases, physical activity decreases. Despite their lower level of physical activity, the data for Brazilian youth show similar correlations between their PAQ scores and the BMI, $r = -0.16$ for males and $r = -0.11$ for females (da Silva, 1998). This is contrary to what was found in a portion of the NHANES III sample. The BMI and the sum of two trunk skinfolds were similar in boys and girls who were highly active compared to those who participated in little physical activity (Andersen et al., 1998).

Data from HHANES (1982 to 1984) show trends similar to those in the current sample. While body weight and the BMI of Mexican American youth from HHANES are higher than the United States reference median, the stature of males and females older than 12 years are lower (Roche et al., 1990).

The prevalence of overweight in the current study appears to be less than in a recent national study of adolescents who were measured between 1994 and 1996, although the age categories differ. In a longitudinal assessment of ~14,000 adolescents from 7th to 12th grade, 32% of the Mexican American males and females 13-18 years of age have a BMI $\geq$ 85th percentile from NHANES I (Popkin and Udry, 1998).

Percentage of overweight (BMI $\geq$ 85th percentile of NHES I) in youth from New York City (1989-1990) is 40% in second grade males and 34% in fifth grade males. For the girls, the percentages are 35% and 30%, respectively. More males are overweight than females, and overweight is associated with Hispanic origin. About 50% of the youth are of Puerto Rican ancestry. Among Hispanic youth, 45% of second grade youth and 40% of fifth grade youth are overweight (Melnik et al., 1998).

The prevalence of risk of overweight (BMI $\geq$ 85th percentile of NHES I) in the older urban Mexican youth (15-18 years) approximates that of Mexican university students (Casillas and Vargas, 1996). In 15-18 year old urban Mexican youth, the risk of overweight (BMI $\geq$85th percentile < 95th percentile) for males and females is 17% and 14%, respectively. In the sample of Mexican university students, it is 18% for both males and females. The prevalences of overweight (BMI $\geq$ 95th percentile) in the sample of 15-18 year old Mexican males and females are 5% and 3%, respectively, and for Mexican university students they are 4% and 3%, respectively (Casillas and Vargas, 1996).

Menarche

Median age at menarche, estimated by probits, for the current sample of Mexico City females is 12.4 years, with confidence intervals (CI) of 12.2 to 12.7 years. Comparative status quo estimates from other urban regions in Mexico, Brazil, Venezuela, and Argentina, are similar (Table 56). Menarcheal ages of several urban Mexican samples from the 1960s and early 1970s indicate median ages at menarche ranging between 12.55 to 12.76 years for samples ranging in size from 400 to almost 1000 (Malina et al., 1977). A later study of 151 Mexico City females followed longitudinally showed a mean age at menarche of 12.3 $\pm$ 1.1 years (Faulhaber, 1984), while a cross sectional study of almost 6,500 Argentinean schoolgirls yielded a median age at menarche of 12.53 $\pm$ 0.05 years (Lejarraga et al., 1980). A review of growth studies in Venezuela from 1936-1972 revealed a median age of 12.7 years for all studies, although the age changes slightly with SES. The Venezuelan assessment also noted a secular decrease in age at menarche of 0.4 years per decade from 1936-1972 (López Contreras et al., 1981). A probit estimate of Brazilian girls showed mean ages at menarche ranging from 12.2 $\pm$ 1.2 to 12.8 $\pm$ 1.2 years, depending on SES. The population median for this sample of almost 3500 was 12.6 $\pm$ 1.3 (Colli, 1988). While median age at menarche in rural areas of Latin America is higher, the urban populations appear to be consistent. It is likely that the access to food, sanitation, and medical services in urban centers is relatively consistent across Latin America, so that ages at menarche would not be differentially impacted; in rural areas, this may not be the case.

The median age at menarche for females in Mexico City is not markedly different from earlier surveys of urban girls in the region of Mexico City, however, there is a slight difference. The data from the earlier studies were collected in the mid to late 1960s based on the publication of the reports. For the purposes of convenience, secular change was estimated between 1968 and 1998. The data suggest a slight secular decline of about 0.12 years per decade. This decline may be related to the secular gain in height of 15 year old girls from 1978 to 1998, which is 0.9 cm per decade (Table 49). The estimated rate of change in age at menarche is somewhat less than those reported for European and United States populations, although secular change has ceased in many of these countries since the 1950s and 1960s (Eveleth and Tanner, 1990). Between 1880 and 1960, the mean age at menarche in European populations declined by ~ 0.25 years per decade (Tanner, 1977). The decline has been approximately the same in samples from the United States over the last century (Eveleth and Tanner, 1990; Malina, 1990). Between 1870 and the 1950s, the mean age at menarche for United States females declined by an estimated 0.24 years per decade, there has been no significant change since the 1950s in American White girls (Wyshak and Frisch, 1982; Herman-Giddons et al., 1997).

Secular Trends in Body Size

Mean weight and height have increased among Mexican school youth in the past 72 years, with greater gains in the last 20 years, particularly in body weight (Table 49; Figures 7 and 8). The gain in weight from 1978 to 1998 has

implications for the increasing prevalence of obesity in Mexico. In addition, there appears to be a slight secular decline in the age at menarche among urban girls in Mexico.

The current sample of Mexico City school youth approximates the mean statures and weights of the upper middle class sample of described by Ramos Galván (1975). This sample is largely derived from a private pediatric practice and the majority are economically well off. However, the fact that the current sample is as heavy and as tall as the sample of Ramos Galván (1975) is an indication of improved living conditions in Mexico City.

Relative to other populations in Europe and North America, the estimated rates of secular change in the height of urban Mexican males are comparable at younger ages, but less in adolescence. Estimated rates of secular change in height and weight from various samples and time periods throughout the world are presented in Tables 57 and 58. The estimated secular gain of European and North American school age males and females between 1880 and 1950 is about 1.0 cm in height per decade in childhood (5-7 years) and 2.5 cm per decade during adolescence (Tanner, 1977). For samples from Japan, Western Europe, Australia, Canada and the United States, the magnitude of the estimated secular increase in height over the last century is 1.3 cm per decade for boys and girls in late childhood (8-10 years) and 1.9 cm per decade at mid-adolescence (12-14 years) (Meredith, 1976). Estimated rates of secular change in stature for Mexican Americans from Brownsville in south Texas are slightly higher for 9-10 year old males (1.6 cm per decade) and

substantially less for adolescents (0.2 cm per decade). The estimated rates of change in height is less for females over the same time period and for the same ages (Malina et al., 1987). For English and Scottish youth 5-11 years of age, the estimated rate of change in height between 1972 and 1990 is 0.7 cm per decade for English boys and 1.3 cm per decade for Scottish boys. For English girls, the estimated rate of change is 0.5 cm per decade, and for Scottish girls it is 1.2 cm per decade (Hughes et al., 1997).

The estimated secular change in stature between 1926 and 1998 in the current sample of urban Mexican males 10-12 years are comparable to those in other parts of the world (Table 57). On the other hand, the estimated rates for changes in height are less for urban Mexican adolescents than those for European and North American samples, but greater than those for Mexican American samples in south Texas (Table 58).

Samples of Norwegian, Canadian and American males 10-18 years were surveyed over intervals of 40-47 years (Meredith, 1976). The gain in height for Norwegian 10 year olds between 1920 and 1960 was 10.2 cm, for Canadian Whites between 1892 and 1939 it was 7.9 cm, and for American Whites between 1880 and 1922-1924 it was 6.2 cm (Meredith, 1976). For adolescent males (16 years), the respective gains in height were 9.6 cm, 8.4 cm, and 6.5 cm (Meredith, 1976). Estimated differences in stature for Mexican American males from Brownsville, Texas between 1928 and 1983 were 5.3 cm for 9-10 year olds and 1.0 cm for 15-16 year olds (Malina et al., 1987). Urban Mexican males 10-11 years in 1998 are 7.2 cm taller than Mexican boys in 1926

and 2.8 cm taller than Mexican boys in 1978. The adolescent Mexican males (15-16 years) from the current study are 5.2 cm taller than Mexico City adolescent males in 1926 and 2.5 cm taller than those in 1978.

A similar comparison of school age females in Norway, Canada and the United States indicated the following trends. The average gain in height for 10 year olds was 8.7 cm for Norwegian girls (1920 to 1960), 7.6 cm for Canadian Whites (1892 to 1939), and 5.4 cm for American Whites (1880 to 1922-1924) (Meredith, 1976). For 16 year old girls from the same samples, the gains in height over the time span were 5.5 cm, 3.8 cm, and 2.1 cm, respectively. Estimated differences in stature for Mexican American females between 1928 and 1983 were 4.0 cm for 9-10 year olds and -1.4 cm for 15-16 year olds (Malina et al., 1987). The change in height in the current sample of urban Mexican females 10-11 years is 6.8 cm between 1926 and 1998, and 4.2 between 1998 and 1978, while the current sample of adolescent Mexican females (15-16 years) is 4.9 cm taller than Mexican girls in 1926 and 1.8 cm taller than Mexican girls in 1978.

Estimated rates of secular change in weight are also presented in Tables 57 and 58. Between 1928 and 1983, Mexican American school youth 9-10 years of age in south Texas gained an estimated 1.4 and 1.3 kg per decade in males and females, respectively (Malina et al., 1987). For adolescents 15-16 years, the changes over the same time period were less, 0.9 kg per decade in males and 0.8 kg per decade in females (Malina et al., 1987). The estimated secular

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change in weight in the current sample approximates that of the earlier sample of Mexican American youth in south Texas.

The increase in the prevalence of risk of overweight and overweight over time is not isolated to urban Mexican youth. The last 20 years have seen increases in the prevalence of overweight throughout the United States as well (Troiano and Flegal, 1998). In fact, even within the 6-year course of NHANES III, the data suggest an apparent trend toward an increase in prevalence of overweight for most of the ages assessed (Troiano and Flegal, 1998). Intrasurvey estimates comparing the prevalence of overweight in the first three years of NHANES III (1988-1991) to the last three years showed an increase of ~2% to 6% for most of the sex, age and racial groups (Troiano at al., 1995; Troiano and Flegal, 1998).

Similar to the estimated change in the BMI of 9-13 year old urban Mexican youth over time, weight-for-height indices for English and Scottish females indicates an increase in 6-11 year olds between 1980 and 1990. The greatest increase occurred in 9-10 year old females. Slight increases also occurred in the weight-for-height of males 9-10 years. The estimated secular change was greater in the Scottish youth than in the English youth (Hughes et al., 1997). A sample of 7 year old Swedish youth showed no secular change in the BMI between 1940 and 1950, while a negative trend was apparent from 1950-1970. But from 1970 to 1990, the estimated change in the BMI was positive in both males and females (Cernerud, 1993).

Results of an assessment of secular change in weight-for-height measures in youth in the United States have been equivocal. Between 1879 and 1970, nine year old American boys showed no secular increase in weight-for-height beyond that associated with a more rapid rate of growth and maturation. The weight for height of American youth 6-17 years remains proportional across time (Himes, 1979). According to Harlan et al. (1988), there has been no secular change in the BMI in youth 12-17 years of age over the time span of 1960-1980.

The estimated secular trends in body weight and the BMI for Mexican youth appear to mirror those of more recent Mexican American samples. Mexican American youth 1-18 years measured in NHANES III (1988-1994) are significantly heavier and have significantly higher BMIs than Mexican Americans from HHANES (1982-1984) (Ryan et al., in press).

While the easy explanation for increased prevalence of overweight is that the population is currently eating too much, and not expending enough of the excess calories, none of the United States surveys have reported a consistent increase in caloric intake among youth. Therefore, low levels of physical activity become even more pertinent to the health of the children. Unfortunately, data are not apparently available to determine whether urban Mexican youth are consuming more or fewer calories than in the past.

In the current sample of urban Mexican youth, the estimated increase in the BMI relative to earlier Mexican samples is of interest (Figure 9). It is likely that the transition from a diet based on tortillas and beans to one where

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high salt and fat fast foods are readily available and affordable has contributed to the increase in weight and the BMI over time. The lower level of physical activity in city dwellers relative to rural residents may also be a contributing factor. Until fairly recently, even central Mexico was predominantly agrarian, and physical labor often provided food to eat. However, the fact that it is the younger age group of urban Mexican youth (9-13 years) which has the higher prevalence of individuals with elevated BMIs is of interest. It may be that economic changes which have occurred in Mexico in the last two decades have been recent and profound enough to benefit the younger school youth with improved accessibility to food and health care, but may have not impacted the 15-18 year old youth. Perhaps the reason why the prevalence of risk of overweight and overweight is less in youth 15-18 years is because at the time that they were young children the last economic crisis in Mexico occurred, and the crash of the "economic miracle" in the early 1980's may have impacted their growth potential (Lustig, 1992).

CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The purpose of this study was to assess participation patterns and motivation for sport, and level and types of physical activity in urban Mexican school youth 9-18 years. In addition, height and weight were measured to provide an estimate of growth status. Demographic information (sex, chronological age, neighborhood of residence, grade in school, parental occupation, and perceived activity status of parents) were obtained. A 7-day physical activity recall was completed, and heights and weights were measured for 1095 school youth 9-18 years. Sport participation surveys were completed by 591 of the students. The sport participation surveys included items on sport choices, reasons for participation, reasons for discontinuing participation, reasons for feeling successful in sport, and reasons to return to sport. The BMI was also calculated from heights and weights, and the females were asked about their menarcheal status.

The analyses included descriptive statistics (means, standard deviations, medians, frequencies, and differences between means) for each variable. Multiple regressions were run to determine what sociodemographic and biological variables predicted sport participation status and activity level of the youth. To determine whether differences existed between the

responses of males and females on the questionnaires, multiple analyses of variance were used, or if the sample was too small, independent t-tests were used.

Mexican school youth play a variety of sports and most are non-school sponsored. Only a small percentage participate in school sponsored sports. Soccer is the most popular sport for males as a whole and by age or SES. Basketball is also very popular with Mexico City youth, both males and females. Sport participants and non-participants do not differ in the BMI, body weight, television viewing time or time playing video games. Sport participants do, however, have higher activity levels, higher perceived physical condition, and higher perceived physical activity.

Using a portion of the PAQ-A to assess sport and activity preferences and weekly participation, soccer and basketball are the preferred sports for males to play one or more times per week. Running, walking, skipping and bicycling are activities in which males also like to participate, regardless of age. Females prefer basketball or volleyball, and their activities of preference also include skipping, running, walking, and skating. The older girls prefer dancing over skating.

There is high interest in basketball among both males and females in Mexico City. While soccer is by far the favorite sport for boys in this sample, basketball is the second preferred team sport for all ages and the three levels of SES. For females, basketball is the preferred team sport for all ages and levels of SES.

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There is high interest in basketball among both males and females in Mexico City. While soccer is by far the favorite sport for boys in this sample, basketball is the second preferred team sport for all ages and the three levels of SES. For females, basketball is the preferred team sport for all ages and levels of SES.

Fun is a very important motive in sport participation for both males and females, regardless of SES or age group. Physical fitness and exercise are also indicated as important reasons for Mexico City youth to participate in sport. Females in this sample appear particularly concerned that sport not interfere with time needed for studies or homework. This response is present in the indicated reasons for discontinuing participation and in conditions for returning to sport. Males do not appear as concerned with their studies.

Males and females differ significantly in various individual items of non-school sport participation, school sport participation, reasons for dropping out of sport, and reasons for returning to sport. Males score higher than females on five reasons for non-school sport participation: "someone I admire played this sport," "for the travel that goes with playing," "to feel important," "to be popular by being a good athlete," and " to attract boys'/girls' attention." On the other hand, males and females differ on four reasons for participating in school sponsored sports: "to have something to do," "to go to a higher level of competition," "to be popular by being a good athlete," and "to attract boys'/girls' attention." Males score higher than females on ego orientation, but the genders do not differ on task orientation.

Among reasons for dropping out of sport, time commitment is a major concern for both males and females. Coaching-related issues, pressure to win and lack of interest also surface as reasons for discontinuing sport. Females also feel they need time to study more so than males. Reasons that would make males and females comfortable returning to sport are similar to the

reasons for discontinuing sport. If the sport required less time commitment and did not interfere with other activities, males and females would return. Coaching issues are also indicated in this category. Females rank the item about practices and games interfering with studies significantly higher than males.

Levels of physical activity, as estimated with the PAQ-A, vary between 2.0 and 3.9 in both males and females. Mean scores are lower in the older age group 15-18 years, regardless of gender or SES. More females than males are categorized as inactive (inactive, < 2.5, active ≥ 2.5 and < 3.5, very active, ≥ 3.5). The average PAQ-A score of males (2.8 ± 0.7) is significantly higher than that of females (2.4 ± 0.7). Younger boys and girls have higher percentages in the active category than the older groups, but the very active category has the lowest representation, regardless of gender, age group, or SES. The BMI does not differ among youth classified by level of physical activity.

Results from specific questions of the PAQ-A show that, on average, males feel they are in better physical condition than peers, while females feel their physical condition is equal to or better than peers. For the most part, males feel they are equally as active as peers, but females appear more likely than males to report that they are less active than peers.

Different demographic and biological variables are predictive of sport participation and level of physical activity. However, the variables account for only a small proportion of the variance in sport participation status or level of physical activity. The PAQ-A score and age are the best predictors for

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sport participation status in males, and the PAQ-A by itself is the best predictor in females. Age and perceived physical activity status of the mother are the significant predictors of physical activity scores for males, although the percentage of variance accounted for is only 4%. Age, stature, the BMI and perceived activity status of the mother are the best predictors of physical activity score for females, accounting for 12% of the variance. When grouped by SES level and age group within gender, the predictors of physical activity scores include age, perceived physical activity status of the mother and/or the father, the BMI, and stature. The variance accounted for ranges from 1% to 14% depending on whether there are single or multiple predictors.

Of those who completed the sport participation questionnaires, more younger than older males are sports participants than not (82% and 62%, respectively). Sports participants are slightly older than non-participants among younger males (9-13 years). The BMI does not differ between male sport participants and non-participants in both age groups (9-13 and 15-18 years). The majority of females 9-13 are sport participants (65%), but most older females are non-participants (39%). Female sport participants and non-participants do not differ in age and the BMI in either age group.

School youth of Mexico City are now heavier and taller than youth in 1926 and 1978. However, the current sample has an elevated BMI. Median age at menarche for urban Mexican females is 12.4 years (CI=12.2-12.7 years). This median differs slightly from other Latin American urban samples.

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Between 1967 and 1998 a secular decline in age at menarche has occurred in Mexico City; the estimated rate is 0.12 years per decade.

CONCLUSIONS

The following conclusions can be drawn within the limitations of this study. The conclusions are presented as responses to the research questions from chapter one:

1. In what sports do urban Mexican youth 9-18 years of age, across three socioeconomic levels participate?

Males and females differ in their sport preferences. Females appear to prefer individual activities, and males seem to prefer sport activities.

2. Why do urban Mexican children participate in sport? Or, conversely, why do they discontinue participation in sport?

Reasons for sport participation in urban Mexican school youth are similar to those indicated by United States youth. Fun is the primary reason for sport participation in urban Mexican youth. Physical fitness and coaching issues are also of concern. However, in reasons for dropping out of sport, urban Mexican youth appear more concerned about their studies than United States youth, females more so than males. The primary reason urban Mexican males drop out of sport is because "the games and practices were scheduled at times when I could not attend", and females felt they needed more time to study." In addition, urban Mexican males are more ego oriented in their sport motivation than females. There is no difference in task orientation.

3. What is the level of physical activity among urban Mexican school youth 9-18 years of age as estimated with a seven-day recall?

Most males in this study are in the active category of the PAQ-A, while most females are in the inactive category. The very active category has the fewest representatives for both genders. Younger males and females (9-13 years) are consistently more active than their older counterparts (15-18 years).

Male sport participants have higher activity scores and self-perceived physical condition than non-participants. Female sport participants have higher activity scores, self-perceived physical condition, and self-perceived activity levels than non-participants.

4. What sociodemographic (gender, age, SES) and biological (height, weight, the BMI) variables are predictive of sport participation status and level of physical activity in urban Mexican school youth?

The sociodemographic and biological variables used in this study are limited predictors of sport participation status and physical activity score. They only account for 1% to 14% of the variances.

Age, SES, PAQ-A, the perceived physical activity status of parents, weight, height, and the BMI account for only a small portion of the variance in sport participation status, $R^2 \leq 0.08$ for all significant variables. Age and the PAQ-A score are significant predictors of sport participation status for males ($R^2 = 0.02$ and 0.05, respectively), while the PAQ-A score is the only significant predictor of sport participation status for females ($R^2 = 0.08$).

For the prediction of PAQ-A score, neither set of gender specific predictors accounts for much of the variance ($R^2 = 0.04$ for males, and $R^2 = 0.12$ for females). For males the significant predictors are age (3% of the variance)

and perceived physical activity status of the mother (1%). For females, the predictors include age, stature, the BMI and the perceived physical activity status of the mother among the best predictors of activity scores. Age accounts for most of the variance (7%), followed by perceived physical activity of the mother (3%). Both stature and the BMI each account for (1%) of the variance.

Predictors of PAQ-A scores differ among SES groups and between genders within SES group. The only significant predictor for low SES males is stature (4% of the variance). For middle SES males, only the BMI accounts for a small proportion of the variance (4%). Perceived physical activity status of the mother accounts for the same amount of the variance in high SES males (4%). The best predictors of PAQ-A score for low SES females include age, stature and perceived physical activity status of the father (13%). For middle SES girls, perceived activity status of the mother and the BMI account for a similar portion of the variance in PAQ-A scores (14%), while in high SES girls, age and perceived activity status of the father account for a slightly smaller amount of the variance in PAQ-A score (11%).

5. Using the Body Mass Index (BMI) as a proxy for nutritional status, what is the relationship between nutritional status and physical activity, including sport participation?

The BMI does not differ between sport participants and non-participants, or among inactive, active, and very active youth of both genders.

6. What is the current growth status of urban Mexican youth relative to United States reference data?

Mean statures fall close to the United States reference medians from 9-13 years in males and from 9-12 years in females. In later adolescence, mean statures are near the 25th percentile. Mean body weights, however, are slightly above the reference medians from 9-13 years in males and from 9-12 years in females. Subsequently, mean weights of males and females approximate the reference medians. Mean BMIs are above the United States reference medians at all ages and in both genders in this sample of urban Mexican school youth.

Among 9-13 year old youth, equal percentages of males and females are underweight (14%) and at risk of overweight (20%, 19%). However, more 9-13 year old males (18%) than females (10%) are overweight. Among 15-18 year old youth, fewer females (4%) than males (14%) are underweight. Percentages of 15-18 year old youth who are at risk of overweight and who are overweight are only slightly lower in females 14% versus 17% and 3% versus 5%, respectively.

7. Have secular changes occurred in the stature, weight and BMI of Mexico City youth? Has secular change occurred in the age at menarche of urban Mexican females?

A positive secular trend in body size has occurred in Mexico City youth, with a resultant increase in the BMI. This increase has occurred more so in weight than in height in the past 20 years. There has been a slight secular decrease in the age at menarche in urban Mexican females.

Implications for Education

Lack of access to exercise facilities and lack of time were indicated by the current sample of urban youth as barriers to exercise and sport. Perhaps school or community recreation programs can be developed that incorporate activities. Children and youth should be taught from earlier ages that it is healthy and more productive for them to take some time to participate in physical activities between study sessions. Schools should be encouraged to teach physical education and/or offer sport activities, perhaps through an intramural program, to develop skills in order to sustain an active lifestyle. This may be particularly important for high school age school age girls who reported low activity scores.

The results of the current study suggest that most girls 9-18 years prefer lifetime activities such as walking and running to organized sport activities. Thus, community programs directed toward offering these activities on a regular basis, in a safe place, may be the best direction to take. An instructor in California found that dance was preferable to standard physical education classes for African American and Hispanic adolescent girls. A program was developed to provide aerobic activity in the form of dance for the targeted adolescents (Flores, 1995). Since the program did achieve the goals of improving aerobic capacity and improving attitudes toward physical fitness and activity, it may be a good model for older girls in Mexico City who ranked dance as fifth on the list of preferred activities.

For males, organized sports should be offered. Both males and females,

however, are concerned with the time commitment of sport and seem to prefer a more recreational approach to sport and activity. If a community recreation program could be set up which offers activities, supervision, and a safe place for participation, Mexican youth may choose to participate in sport and physical activity more often.

The secular increase in weight and the BMI suggest a less active lifestyle, more caloric intake, and possibly poorer food choices among Mexican youth. Teaching youth good nutritional habits in the context of physical education or health classes can begin to address these issues. In addition, using scheduled breaks such as lunch time for activity can help increase activity time for youth. Activities do not always have to be organized by an adult, but if equipment and space can be provided, and youth encouraged to use part of their free time for activity, it is possible to decrease sedentary time. The importance of activity in physical education classes cannot be overemphasized. For some youth, the only time they are truly active is in a physical education class. Thus, the classes need to be structured to teach skills to the youth so they may skillfully pursue activities outside of class, and to get them sweating and moving around in class.

While financial concerns may also be a barrier to activity, it seems as though some of this can be solved without too much stress. Sport and activity do not have to be organized to be effective. Even just walking to school when the weather is nice could increase activity levels to some extent, providing it is a safe environment. When done on a regular basis, a 15-

minute walk to school can become a reasonable start to an active lifestyle. Mexico City, of course, has its own particular barriers, with the pollution level and automobile traffic being major problems. Thus, an activity program set-up inside the schools, possibly in the morning before class, could encourage physical activity. Even just a free hour in morning to walk or run around the gym could be helpful in increasing overall activity levels of youth. Since the program could be run through the school, and the supervision possibly provided by the school or volunteers, the costs could be minimized.

Recommendations for Future Research

One of the main issues found during the course of data collection was the non-familiarity of Mexican youth with the standardized questionnaire format. Very few scholastic tests in Mexico are of the sort encountered in the United States, such as multiple choice. Thus, the younger groups needed substantially more time than was expected to complete the questionnaires. In part to resolve this issue, and in part because the next step needs to be taken, further research needs to look at the answers to specific open-ended questions regarding sport and activity in Mexico City youth. For example, how are sport participants viewed in Mexican culture? Does this perception differ for male versus female sport participants? The questions could be verbal or written, but more in an essay style format than a 'circle the response' style. Granted, this will mean a greater time investment for both subjects and researchers since responding to open ended questions and using qualitative analyses

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takes more time than other methods. But the information gained will add substantially to the overall knowledge base of why youth participate in sport and physical activity, or why they do not. In fact, it can also solve some of the problems with survey instruments not being culturally-specific.

Questions regarding what children do in their free time to determine 'pick-up' activities organized by children would also be a good topic to address in urban Mexican youth. Available sport programs may not meet the needs of all those who wish to participate, but there are other options for physical activity. Determining all of the activities in which youth participate may help guide teachers, coaches and parents in developing programs to encourage participation by greater numbers of youth.

The prevalence of overweight in Mexican youth 9-13 is high relative to other samples of youth. The causes underlying this trend need to be ascertained. Since the risk of overweight in United States adults appears to be higher in those who were overweight as children or adolescents, it is important to determine whether this is also the case in Mexico City.

The task and ego orientation constructs from the TEOSQ instrument seem to vary in different cultures. It would be useful to see how they differ, on which items, and if the survey instrument needs to be modified for use in other cultures.

A very pertinent issue which was overlooked in the current study: What is the prevalence of smoking in urban Mexican youth? From personal observation, prevalence is rather high, but exact numbers and when students

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start to smoke would be very useful information since smoking can severely impact activity levels.

Positive secular changes in height and weight have occurred in Mexico City youth in the last 72 years. Currently, however, there is no information on whether it has occurred in rural communities. An assessment of the growth status of rural Mexican youth to determine the presence or absence of secular change could provide insight to the overall health status of rural Mexican society.

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Table 1. Estimated percentage of underweight, stunting, wasting and overweight in preschool children (birth to 5 years) in Mexico.

Sex	Underweight[a] %	Stunting[b] %	Wasting[c] %	Overweight[d] %
Males	13.8	22.7	6.5	3.8
Females	14.7	22.8	5.6	3.6
Total	14.2	22.8	6.0	3.7

[a] Weight-for-age < -2 SD for international reference median value
[b] Height-for-age < -2 SD for international reference median value
[c] Weight-for-height < -2 SD for international reference median value
[d] Weight-for-height > 2 SD for international reference median value
Adapted from WHO (1997).

Table 2. IMECA* Ratings for Mexico City.

IMECA	Situation	Description
0-50	Good	Very favorable for all kinds of activity.
51-100	Satisfactory	Favorable for all kinds of activity.
101-200	Not Satisfactory	Increased minor discomfort in sensitive people.
201-300	Poor	Increased discomfort and relative intolerance to activity for people suffering from cardiovascular and respiratory problems.
301-500	Very Poor	Appearance of various symptoms of intolerance to activity in healthy populations.

* Indice Metropolitano de Calidad del Aire en México
Adapted from SEDUE (1985).

Table 3. Sample of air contaminants in Mexico City during the time of the current study.

Date	Region	N W	S W	NE	SE	Central
4 May	SO_2	15	8	10	22	32
	NO_2	38	16	24	50	52
	CO	38	29	56	26	29
	Ozone	129-high	174	130	163	163
		10- low	63	14	12	23
9 May	SO_2	26	17	12	13	18
	NO_2	102	61	49	107	93
	CO	64	62	75	61	70
	Ozone	199-high	181	142	134	173
		7- low	25	9	23	13
27 May	Ozone	142	158	173	220	163

Adapted from The Metropolitan Commission for Prevention and Control of Air Pollution in the Valley of Mexico (1998). Satisfactory levels, 0-100 points; unsatisfactory levels, 101-200 points; dangerous levels, 201- 300 points; very dangerous levels, 301-500 points.

Table 4. Breakdown of the total sample by school, grade, sex, and SES.

School	Grade	Males	Females	SES**
JA	4	34	40	1
JA	5	28	40	1
JA	6	15	20	1
JJ	4	22	36	1
JJ	5	26	26	1
JJ	6	26	20	1
Prepa 2	HS*	55	63	1
EM	4	18	13	2
EM	5	14	14	2
EM	6	16	16	2
GV	4	15	15	2
GV	5	20	20	2
GV	6	20	10	2
Prepa 8	HS*	52	59	2
RG	4	4	9	2
RG	5	5	11	2
RG	6	17	8	2
Prepa 6	HS*	57	53	3
PA	4	11	23	3
PA	5	31	33	3
PA	6	5	5	3
PN	4	14	10	3
PN	5	13	9	3
PN	6	8	16	3

*High School

**SES 1, low; SES 2, middle; SES 3, high.

Table 5. Non-school sponsored sports played by urban Mexican youth.

Males (n = 168)	n	%
Soccer	128	76
Basketball	97	58
Swimming	80	48
American Football	57	34
Baseball	49	29
Skating	47	28
Tennis	39	23
Volleyball	37	22
Bowling	28	17
Track and Field	26	15
Gymnastics	24	14
Wrestling	15	9
Other (martial arts, squash, racquetball)	44	26

Females (n = 109)	n	%
Basketball	70	64
Swimming	61	56
Gymnastics	47	43
Volleyball	47	43
Skating	47	43
Tennis	28	26
Soccer	27	25
Track and Field	20	18
Bowling	18	17
Baseball	17	16
American Football	17	16
Wrestling	9	8
Other (dance, martial arts)	36	33

Table 6. Non-school sponsored sports played by urban Mexican youth by age group.

Males					
9-13 years (n = 80)	n	%	14-18 years (n = 87)	n	%
Soccer	66	83	Soccer	61	70
Basketball	53	66	Swimming	49	56
Swimming	38	48	Basketball	42	48
Skating	30	38	American Football	26	30
Baseball	29	36	Baseball	21	24
American Football	28	35	Tennis	19	22
Tennis	20	25	Volleyball	19	22
Volleyball	17	21	Skating	17	19
Bowling	15	19	Bowling	13	15
Track & Field	14	18	Track & Field	12	14
Gymnastics	13	16	Gymnastics	11	13
Wrestling	11	14	Wrestling	4	5
Other [a]	25	31	Other [a]	21	24

Females					
9-13 years (n = 46)	n	%	14-18 years (n = 63)	n	%
Skating	34	74	Basketball	40	63
Swimming	31	67	Swimming	30	48
Basketball	30	65	Skating	26	41
Volleyball	27	59	Gymnastics	24	38
Tennis	22	48	Volleyball	20	32
Gymnastics	21	46	Soccer	13	21
Baseball	15	33	Track & Field	10	16
Soccer	14	30	American Football	7	11
Bowling	12	26	Bowling	6	10
American Football	10	22	Tennis	6	10
Track & Field	10	22	Wrestling	2	3
Wrestling	6	13	Baseball	2	3
Other [b]	16	35	Other [b]	23	37

[a] Karate, kung fu, tai kwan do, squash, racquetball.
[b] Hawaiian dance, jazz dance, karate.

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Table 7. Non-school sponsored sports played by urban Mexican youth 9-18 years by SES.

Males								
Low (n = 48)	n	%	Middle (n = 83)	n	%	High (n = 37)	n	%
Soccer	39	81	Soccer	67	81	Swimming	31	84
Basketball	22	46	Basketball	51	61	Basketball	24	65
Swimming	18	38	Swimming	36	43	Soccer	22	59
Football[c]	13	27	Football[c]	28	34	Football[c]	16	43
Baseball	11	23	Skating	26	31	Tennis	14	38
Track & Field	9	19	Baseball	24	29	Baseball	14	38
Skating	9	19	Volleyball	19	23	Bowling	12	32
Wrestling	8	17	Tennis	19	23	Volleyball	12	32
Volleyball	6	13	Bowling	15	18	Bowling	8	22
Tennis	5	10	Track & Field	12	14	Gymnastics	8	22
Bowling	5	10	Gymnastics	12	14	Track and Field	5	14
Gymnastics	4	8	Wrestling	5	6	Wrestling	2	5
Other[a]	7	15	Other[a]	27	33	Other[a]	11	30

Females								
Low (n = 25)	n	%	Middle (n=55)	n	%	High (n = 29)	n	%
Basketball	17	68	Basketball	35	64	Basketball	18	62
Skating	10	40	Skating	34	62	Swimming	17	59
Swimming	10	40	Swimming	34	62	Skating	16	55
Gymnastics	6	24	Gymnastics	30	55	Volleyball	12	41
Track & Field	4	16	Volleyball	29	53	Gymnastics	11	38
Soccer	3	12	Tennis	19	35	Track and Field	10	34
Volleyball	3	12	Bowling	14	25	Soccer	10	34
Football[c]	3	12	Soccer	14	25	Tennis	7	24
Baseball	2	8	Baseball	12	22	Football[c]	5	17
Bowling	2	8	Football[c]	9	16	Baseball	3	10
Tennis	2	8	Track & Field	7	13	Bowling	2	7
Wrestling	2	8	Wrestling	3	5	Wrestling	2	7
Other	6	24	Other	22	40	Other	11	38

[a] Karate, kung fu, judo, squash, racquetball.
[b] Hawaiian dance, jazz dance, karate.
[c] American Football

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Table 8. School sponsored sports played by urban Mexican youth 14-18 years.

Males (n = 18)	n	%
Swimming	14	78
Basketball	11	61
Volleyball	8	44
Soccer	7	39
Baseball	6	33
Skating	5	30
Bowling	5	30
Tennis	5	30
American Football	4	22
Gymnastics	1	5
Other[a]	3	17
Females (n = 19)		
Basketball	13	68
Swimming	9	47
Soccer	8	42
Track and Field	6	32
Volleyball	6	32
Gymnastics	5	26
Tennis	2	11
Other[b]	8	42

[a] Karate, kung fu, judo.
[b] Dance, judo.

Table 9. Descriptive statistics and results of ANCOVAs, with age as the covariate, of body

Table 9. Descriptive statistics and results of ANCOVAs, with age as the covariate, of body size, estimated physical activity, television and video game time, and perceived physical activity and physical condition of sport participants and non-sport participants.

Variable	Participants			Non-participants			F
	n	M	SD	n	M	SD	
Males							
Age, yrs	176	14.5	2.4	77	15.3	2.4	6.29*
Stature, cm	171	160.2	12.8	75	162.1	12.3	4.86*
Weight, kg	172	54.0	14.3	75	57.6	14.8	0.00
BMI, kg/m^2	171	20.7	3.7	75	21.6	3.9	1.05
PAQ-A	176	2.9	0.7	77	2.4	0.7	18.23*
TV viewing, hrs/day	176	3.1	2.1	76	2.7	2.2	1.36
Video game playing, hrs/day	176	1.5	1.9	75	1.1	1.5	0.62
Relative activity level	175	3.2	1.1	76	2.9	0.9	3.45
Relative physical condition[a]	176	1.4	0.6	76	1.7	0.6	7.69*
Females							
Age, yrs	111	14.6	2.4	129	15.6	1.9	12.56*
Stature, cm	107	154.7	8.1	127	155.7	7.1	2.09
Weight, kg	107	50.6	10.4	127	52.9	10.4	0.00
BMI, kg/m^2	107	21.0	3.4	127	21.7	3.5	0.51
PAQ-A	113	2.6	0.7	129	2.0	0.6	44.91*
TV viewing, hrs/day	113	2.5	1.8	129	2.6	1.8	1.34
Video game playing, hrs/day	113	0.8	1.1	129	0.5	0.9	0.95
Relative activity level	111	3.2	1.0	129	2.6	0.9	19.15*
Relative physical condition[a]	111	1.6	0.6	129	1.9	0.5	20.08*

*$p < 0.05$. [a]A higher score indicates poorer perceived physical condition relative to others.

Table 10. Activities in which urban Mexican youth participate.

Males (n = 292)	n	%
Watch television	251	86
Hang out with friends	238	82
Biking, walking, skating	232	79
Informal games	225	77
Chores (at home)	223	76
Sport activities outside of school	219	75
Going to parties	218	75
Going to the movies	214	72
Talking on the phone	206	71
Playing video games	202	69
Sport activities in school	179	61
Music classes	162	55
Seeing my girlfriend	117	40
Youth groups	78	26
Work	74	25
Drama classes	71	24
Church activities	70	24
Dance classes	38	13

Females (n = 299)	n	%
Watch television	246	82
Chores (at home)	239	80
Talking on the phone	238	80
Hang out with friends	237	79
Biking, walking, skating	230	77
Going to the movies	230	77
Going to parties	230	77
Sport activities in school	193	65
Informal games	190	64
Sport activities outside of school	188	63
Music classes	160	54
Playing video games	128	43
Seeing my boyfriend	111	37
Dance classes	111	37
Drama classes	83	28
Youth groups	74	25
Church activities	70	23
Work	38	13

Table 11. Descriptive statistics for the top ten reasons for playing non-school sponsored sports among older primary school and high school students.

Males	n	M	SD
To have fun	184	4.34	1.06
To be physically fit	184	4.31	1.05
To get exercise	184	4.10	1.10
To get rid of energy	184	3.99	1.21
To improve my skills	186	3.95	1.24
To do something at which I am good	184	3.89	1.26
To learn new skills	185	3.89	1.33
For the excitement of competition	184	3.79	1.36
For the challenge of competition	182	3.60	1.38
To go to a higher level of competition	184	3.55	1.56

Females	n	M	SD
To have fun	131	4.37	1.08
To be physically fit	129	4.28	1.40
To get exercise	127	4.22	1.02
To get rid of energy	129	4.15	1.09
To improve my skills	130	3.96	1.27
To do something at which I am good	128	3.92	1.20
For the excitement of competition	128	3.91	1.28
To learn new skills	129	3.90	1.26
To have something to do	129	3.38	1.39
To be with my friends	128	3.35	1.32

Table 12. Descriptive statistics for the top ten reasons for playing school sponsored sports among high school students.

Males	n	M	SD
To have fun	33	4.30	1.05
To get exercise	33	4.24	0.87
To get rid of energy	33	4.21	1.08
To be physically fit	33	4.18	1.16
To go to a higher level of competition	33	4.03	1.16
For the excitement of competition	33	4.00	1.15
To improve my skills	33	3.85	1.15
For the challenge of competition	33	3.82	1.18
To learn new skills	33	3.79	1.17
To do something at which I am good	33	3.67	1.32

Females	n	M	SD
To have fun	26	4.58	0.90
To be physically fit	26	4.42	0.99
To get rid of energy	26	4.54	0.71
To get exercise	26	4.31	1.09
For something to do	26	4.12	1.14
To do something at which I am good	26	4.04	1.00
For the challenge of competition	26	3.96	1.11
To improve my skills	26	3.93	1.02
For the excitement of competition	26	3.93	1.16
To play with the team	26	3.73	1.25

Table 13. Structure matrix coefficients and explained variance for sport motivation items for non-school sponsored sport for the combined sample of urban Mexican school youth (n =315).

Items	F1	F2	F3	F4	F5	Reliability
To be popular by being a good athlete	.82					.86
For the recognition	.67					
To attract boys'/girls' attention	.67					
For the rewards, such as trophies	.62					
To feel important	.61					
For the travel that goes with playing	.57					
To go to a higher level of competition	.56					
Someone I admire played this sport	.47					
I like the coaches	.44					
To get exercise		.72				.81
To get rid of energy		.71				
To be physically fit		.62				
To do something at which I am good		.52				
For the excitement of competition			.69			.78
For the challenge of competition			.69			
For the team spirit			.51			
To have something to do				.54		.52
To get out of the house				.51		
To have fun				.47		

Total Variance Explained

	Eigen value	% of Variance	Cumulative Variance
F1	4.09	17.0	17.0
F2	2.81	11.7	28.7
F3	2.07	8.6	37.3
F4	1.14	4.8	42.1

F1 is a recognition/external rewards factor, F2 is a fitness factor, F3 is a competition factor, F4 is an outside activity/fun factor.

Table 14. Descriptive statistics and univariate F-tests of gender differences in sport motivation factors in non-school sponsored sports among urban Mexican school youth.

	Sex						
	Males			Females			
Item	n	M	SD	n	M	SD	F
Recognition/external rewards factor	174	3.4	1.1	116	3.9	0.9	12.80**
Fitness factor	174	2.6	1.1	116	2.6	1.0	0.47
Competition factor	174	4.0	1.0	116	3.5	1.0	18.76**
Outside activity/fun factor	174	3.6	1.1	116	3.3	1.2	5.85*

*$p < 0.05$
**$p < 0.001$

Table 15. Descriptive statistics and univariate F-tests of gender differences in individual items of motivation for non-school sponsored sports among urban Mexican school youth.

	Sex						
	Males			Females			
Item	n	M	SD	n	M	SD	F
Someone I admire played this sport	174	3.0	1.5	116	2.7	1.4	20.87*
For the travel that goes with playing	174	2.4	1.5	116	1.9	1.3	7.98*
To feel important	174	2.7	1.5	116	2.2	1.3	6.94*
To be popular by being a good athlete	174	2.7	1.5	116	2.1	1.2	12.92*
To attract boys'/girls' attention	174	2.2	1.4	116	1.8	1.1	7.27*
For the team spirit	174	3.3	1.5	116	3.0	1.4	3.07
For the challenge of competition	174	3.6	1.4	116	3.3	1.4	3.08

* $p \leq 0.01$

Table 16. Descriptive statistics by gender for responses to: "I feel most successful in sports when..." among older primary school and high school students.

Males	n	M	SD
I do my very best	146	4.34	0.91
A new skill I learn really feels right	148	3.92	1.21
I learn a new skill and it makes me want to practice more	146	3.87	1.23
Something I learn makes me want to practice more	145	3.86	1.23
I learn something that is fun to do	146	3.76	1.03
I learn a new skill by trying hard	146	3.65	1.28
I work really hard	146	3.62	1.26
I score the most points/goals or have the fastest time	146	3.43	1.38
I can do better than my teammates	145	3.35	1.32
I am the best	146	2.72	1.39
The other cannot do as well as me	146	2.63	1.23
I am the only one who can to the play or skill	146	2.49	1.19
Others mess up and I do not	146	2.42	1.29
Females			
I do my very best	97	4.44	1.00
A new skill I learn really feels right	97	4.07	1.18
I learn something that is fun to do	97	4.03	1.06
Something I learn makes me want to practice more	94	4.02	1.15
I learn a new skill by trying hard	96	3.84	1.22
I learn a new skill and it makes me want to practice more	96	3.80	1.23
I work really hard	94	3.53	1.37
I score the most points/goals or have the fastest time	95	3.43	1.23
I can do better than my teammates	95	3.14	1.33
I am the best	94	2.36	1.41
The other cannot do as well as me	95	2.33	1.24
I am the only one who can to the play or skill	95	2.33	1.17
Others mess up and I do not	96	2.01	1.12

Table 17. Structure matrix coefficients and explained variance for Task and Ego orientation items for non-school sponsored sport for the combined sample of urban Mexican school youth.

Items	TASK	EGO	Reliability
Something I learn makes me want to go practice more	.69		.82
I work really hard	.67		
A new skill I learn feels right	.67		
I do my very best	.65		
I learn a new skill that makes me want to practice more	.61		
I learn a new skill by trying hard	.61		
I am the best		.73	.76
The others cannot do as well as me		.71	
Others mess up and I do not		.65	
I am the only one who can do the play or skill		.55	

Total Variance Explained

	Eigen value	% of Variance	Cumulative Variance
TASK	3.85	32.1	32.1
EGO	2.07	17.2	49.4

TASK- Task orientation
EGO- Ego orientation

Table 18. Significant independent t-tests of gender differences in motivation for school sponsored sport among high school students 14-18 years of age.

		Sex						
		Males			Females			
Item	df	n	M	SD	n	M	SD	t
To have something to do	57	33	3.3	1.4	26	4.1	1.1	-2.54*
To go to a higher level of competition	57	33	4.0	1.2	26	3.3	1.4	2.09*
To be popular by being a good athlete	57	33	2.7	1.3	26	2.0	1.1	2.23*
To attract boys'/girls' attention	57	33	2.4	1.3	26	1.5	0.8	3.08*

*$p < 0.05$

Table 19. Descriptive statistics for the top ten reasons for dropping out of sport in high school males and females 14-18 years of age.

Males	n	M	SD
The games and practices were scheduled at times when I could not attend	69	2.74	1.49
I needed more time to study	67	2.69	1.58
The sport required too much time	71	2.62	1.53
Too much emphasis was placed on winning	70	2.61	1.47
I was not having fun	70	2.57	1.62
There was too much pressure	71	2.56	1.49
My coach was a poor teacher	70	2.53	1.58
I could not afford to play and practice year round	67	2.43	1.52
I was no longer interested in this sport	69	2.29	1.46
I wanted to participate in other non-sport activities	69	2.28	1.53

Females	n	M	SD
I needed more time to study	86	3.49	1.54
The sport required too much time	87	2.98	1.44
The games and practices were scheduled at times when I could not attend	88	2.92	1.53
I could not afford to play and practice year round	86	2.80	1.53
There was too much pressure	88	2.61	1.49
My coach was a poor teacher	88	2.43	1.54
I did not have the opportunity to play much	88	2.40	1.47
I wanted to participate in other non-sport activities	88	2.36	1.50
I was no longer interested in this sport	87	2.29	1.54
The coach played only his/her favorite players	88	2.23	1.44

Table 20. Significant independent t-tests of gender differences in reasons for dropping out of sport among high school students 14-18 years of age.

	Sex						
	Males			Females			
Item	n	M	SD	n	M	SD	t
I needed more time to study	67	2.7	1.6	87	3.5	1.5	-3.16*
I was not having fun	67	2.6	1.6	87	2.1	1.5	1.72
Too much emphasis was placed on winning	67	2.6	1.5	87	2.2	1.3	1.80

* $p < 0.01$

Table 21. Descriptive statistics for the top ten responses to the statement: "I would return to sport if..." in urban Mexican high school males and females 14-18 years of age.

Males	n	M	SD
The practices or games did not conflict with my studies	66	3.29	1.53
The games and practices were scheduled at other times	66	3.11	1.49
I could play more	66	3.00	1.61
The practices or games did not interfere with my social life	66	2.89	1.63
The sport did not demand so much time	66	2.86	1.54
The practices were more fun	66	2.83	1.64
There were more or closer practice facilities	66	2.70	1.64
There were more leagues so the other players were closer to my ability level	66	2.71	1.60
The coaches understood the players better	66	2.62	1.57
The coach were a better instructor	66	2.53	1.62

Females	n	M	SD
The practices or games did not conflict with my studies	83	4.17	1.29
The games and practices were scheduled at other times	83	3.37	1.43
The practices or games did not interfere with my social life	83	3.01	1.46
The sport did not demand so much time	83	2.86	1.49
I could play more	83	2.80	1.53
There were more or closer practice facilities	83	2.78	1.64
The coach were a better instructor	82	2.68	1.59
The coaches understood the players better	82	2.67	1.55
The practices were more fun	83	2.66	1.60
There were more leagues so the other players were closer to my ability level	83	2.25	1.54

Table 22. Responses of urban Mexican high school youth 14-18 years of age to the statement: "In general, I do not participate in sport or exercise because..."

Males (n = 33)	n	%	Females (n = 80)	n	%
I do not have time	13	39	I do not have time	47	59
I am lazy	5	15	I am lazy	15	19
I do not like it	3	9	School/homework	13	16
I do not have the money for it	2	8	I do not like it	8	10
I do not want to	2	8	I have other things to do	4	5
Homework	1	3	I do not have money for it	3	4
Health problems	1	3	There is no place near my house	2	3
I only have time on weekends	1	3	I prefer to play with my friends	2	3
It bores me	1	3	I do not have the motivation	2	3
I have other things to do	1	3	My parents do not like it	2	3
I tire rapidly	1	3	I do not know how to play	1	1
I do not come from a sporting culture	1	3	I help at home instead	1	1
There are not many sports I like	1	3	I tire rapidly	1	1

Table 23. Mean PAQ-A scores of urban Mexican youth by age group and gender with ANOVAs for differences in PAQ-A by age group.

Age Group	n	M	SD	F
Males				
9-10	175	2.8	0.7	11.14*[a]
11-13	194	2.9	0.7	
15-18	157	2.6	0.7	
Females				
9-10	195	2.6	0.6	18.71*[b]
11-13	190	2.5	0.7	
15-18	174	2.1	0.7	

*$p < 0.001$

[a] Post-hoc Scheffé tests show that activity scores of males differ between 9-10 years and 15-18 years ($p < 0.001$), and between 11-13 years and 15 -18 years ($p < 0.01$).

[b] Post-hoc Scheffé tests show that activity scores of females differ between 9-10 years and 15-18 years ($p < 0.001$), and between 11-13 years and 15 -18 years ($p < 0.001$).

Table 24. Mean PAQ-A scores of urban Mexican youth by age group, gender and SES category with ANOVAs for differences in the PAQ-A by age group within SES category.

	Low				Middle				High			
Age Group	n	M	SD	F	n	M	SD	F	n	M	SD	F
Males												
9-10	85	2.9	0.6	5.85*[a]	44	2.8	0.8	2.80	46	2.7	0.6	2.69
11-13	73	2.9	0.7		86	2.9	0.7		35	2.8	0.7	
15-18	48	2.6	0.7		51	2.6	0.7		58	2.5	0.7	
Females												
9-10	105	2.6	0.6	8.83*[b]	47	2.6	0.6	4.53*	43	2.5	0.7	4.61*
11-13	78	2.6	0.7		69	2.5	0.7		43	2.5	0.7	
15-18	62	2.1	0.7		59	2.2	0.8		53	2.2	0.6	

*$p < 0.01$

[a] Post-hoc Scheffé tests show that activity scores of males in the low SES differ between 9-10 years and 15-18 years ($p < 0.01$), and between 11-13 years and 15 -18 years ($p < 0.01$).

[b] Post-hoc Scheffé tests show that activity scores of females in the low and high SES differ between 9-10 years and 15-18 years ($p < 0.001$ and $p < 0.05$, respectively), and between 11-13 years and 15 -18 years ($p < 0.01$ and $p < 0.05$, respectively). The middle SES females only differ between 9-10 and 15-18 ($p < 0.05$).

Table 25. Distribution of PAQ-A scores by gender in urban Mexican youth 9-18 years.

Activity Category [a]	n	%
Males		
1.0-1.9	73	14
2.0-2.9	242	46
3.0-3.9	185	35
4.0-4.9	26	5
Females		
1.0-1.9	161	29
2.0-2.9	286	51
3.0-3.9	107	19
4.0-4.9	5	1

[a] The PAQ-A ranges from 1-5, with 1 being very inactive and 5 being very active.

Table 26. Distribution of PAQ-A scores in urban Mexican school youth by gender and by age.

	Age Groups					
	9-10		11-13		15-18	
Activity Category [a]	n	%	n	%	n	%
Males						
1.0-1.9	17	10	19	10	37	24
2.0-2.9	84	48	83	43	75	48
3.0-3.9	66	38	78	40	41	26
4.0-4.9	8	5	14	7	4	3
Females						
1.0-1.9	39	20	47	25	75	43
2.0-2.9	110	56	98	52	78	45
3.0-3.9	45	23	42	22	20	11
4.0-4.9	1	1	3	2	1	1

[a] The PAQ-A ranges from 1-5, with 1 being very inactive and 5 being very active.

Table 27. Relative distribution of physical activity status among urban Mexican school youth 9-18 years of age by gender.

	Activity Category[a]					
	Inactive		Active		Very Active	
	n	%	n	%	n	%
Males	173	33	251	48	102	19
Females	300	53	210	37	50	9

[a]Inactive < 2.5, active ≥ 2.5 < 3.5, and very active ≥ 3.5.

Table 28. Relative distribution of physical activity status among urban Mexican school youth by age group and gender.

Activity Category[a]	Age Group 9-10 n	%	11-13 n	%	15-18 n	%
Males						
Inactive	52	30	50	26	71	45
Active	80	49	98	50	67	43
Very Active	37	21	46	24	19	12
Females						
Inactive	89	46	96	50	114	65
Active	86	44	71	37	53	53
Very Active	20	10	23	12	7	5

[a]Inactive < 2.5, active ≥ 2.5 < 3.5, and very active ≥ 3.5.

Table 29. Means and standard deviations of PAQ-A scores by gender and SES, and results of ANCOVA with age as the covariate.

SES Level	PAQ-A Scores n	M	SD	F
Males				
Low	206	2.9	0.7	2.24
Middle	181	2.8	0.7	
High	139	2.7	0.7	
Females				
Low	245	2.5	0.7	0.62
Middle	175	2.4	0.7	
High	140	2.4	0.7	

Table 30. Stated reasons of urban Mexican school youth for not being active during the previous week.

Reasons Males (n = 84)	n	%
Generally sick (diarrhea, colds, cough, etc.)	19	22.6
Influenza	12	14.3
Sore throat	11	13.1
Soreness (body parts hurt, headache, injuries)	10	11.9
Homework or studying	9	10.7
Other (went to movies, on a trip, did not want to, surgery.)	6	7.1
Chicken pox and measles	5	6.0
Stomach problems	4	4.8
Inclement weather (which includes contamination levels)	4	4.8
Hepatitis	2	2.4
Asthma	1	1.2
Unknown	1	1.2

Females (n = 102)	n	%
Influenza	34	33.3
Generally sick (diarrhea, colds, cough, etc.)	18	17.6
Sore throat	10	9.8
Homework or studying	9	8.8
Soreness (body parts hurt, headache, injuries, etc.)	6	5.9
Other (went to movies, on a trip, did not want to, surgery)	6	5.9
Asthma	6	5.9
Stomach problems	5	4.9
Chicken pox and measles	3	2.9
Other health issues (low glucose, allergies)	2	2.0
Inclement weather (which includes contamination levels)	1	1.0
Unknown	2	2.0

Table 31. Results of ANCOVAs, with age as the covariate, for hours of television viewing and video game playing by age group in urban Mexican school youth.

	Age Group (years)									
	9.0-13.9			14.0-18.9			Total			
Variable	n	M	SD	n	M	SD	n	M	SD	F
					Males					
TV viewing (hrs/day)	355	3.2	2.3	146	3.0	2.1	501	3.1	2.2	0.16
Video game playing (hrs/day)	283	2.9	2.3	98	1.4	1.2	381	2.5	2.2	7.22*
					Females					
TV viewing (hrs/day)	364	3.1	2.1	163	2.5	1.7	527	2.9	2.0	3.15
Video game playing (hrs/day)	188	2.0	1.9	66	1.2	0.9	254	1.8	1.7	1.35

*$p < 0.01$

Table 32. Results of ANCOVAs, with age as the covariate, for hours of television viewing and video game playing by sport participation status in urban Mexican school youth 11-18 years of age.

	Participation Status						
	Participant			Non-participant			
Variable	n	M	SD	n	M	SD	F
			Males				
TV viewing (hrs/day)	174	3.1	2.1	72	2.9	2.2	0.61
Video game playing (hrs/day)	128	2.0	1.9	47	1.8	1.6	0.15
			Females				
TV viewing (hrs/day)	110	2.6	1.8	125	2.7	1.7	1.43
Video game playing (hrs/day)	62	1.4	1.2	54	1.3	1.0	0.13

Table 33. Results of ANCOVAs, with age as the covariate, for hours of television viewing and video game playing by activity level in urban Mexican school youth 9-18 years of age.

	Activity level									
	Inactive			Active			Very Active			F
Variable	n	M	SD	n	M	SD	n	M	SD	
					Males					
TV viewing (hrs/day)	164	3.4	2.3	243	2.8	2.1	101	3.4	2.3	4.70*[a]
Video game playing (hrs/day)	114	2.3	2.1	193	2.4	2.0	77	3.1	2.5	2.14
					Females					
TV viewing (hrs/day)	288	2.9	2.1	197	3.0	1.9	47	2.8	2.1	0.20
Video game playing (hrs/day)	128	1.9	1.8	110	1.6	1.5	20	2.3	2.2	1.51

*$p < 0.01$

[a] A post-hoc Scheffé F-test shows that activity scores of males differ between inactive and active groups, $p < 0.05$. Females do not differ.

Table 34a. Relative frequency of different physical activities for urban Mexican males 9-18 years of age (n = 526).

	Frequency of physical activity per week					Total percentage*		Rank*	
Activity	None	1-2	3-4	5-6	7+	1	2	1	2
Soccer	18.1	11.2	13.7	15.4	41.6	81.9	70.7	1	1
Running	20.0	17.9	21.9	17.5	22.8	80.1	62.2	2	2
Walking	28.5	20.2	16.3	12.9	22.1	71.5	51.3	3	3
Skipping	27.8	20.5	18.6	10.8	21.3	71.2	49.7	4	5
Basketball	31.6	18.4	15.7	15.7	18.4	68.2	49.8	5	4
Bicycling	39.7	16.3	13.7	9.7	20.5	60.2	43.9	6	6
Am. Football	55.9	17.1	11.4	6.8	8.7	44.0	26.9	7	7
Swimming	57.4	16.2	8.9	7.4	10.1	42.6	26.4	8	8
Volleyball	57.4	19.4	9.5	6.8	6.8	42.5	23.1	9	9
Skating	58.7	18.6	8.7	5.9	8.0	41.2	22.6	10	10
Baseball	63.7	13.6	7.8	5.3	9.5	36.2	22.6	11	10
Weights	66.9	15.6	7.6	4.4	5.5	33.1	17.5	12	12
Skateboard	74.7	10.5	4.8	4.8	5.3	25.4	14.9	13	13
Badminton	83.5	6.8	4.4	2.8	2.5	16.5	9.7	14	14
Aerobics	87.3	5.7	3.6	1.5	1.9	12.7	7.0	15	15
Dance	94.5	2.7	0.9	1.1	0.8	5.5	2.8	16	16

*Total % 1 and Rank 1 = Percentage and rank of activities $\geq$ 1 time per week. Total % 2 and Rank 2 = Percentage and rank of activities $\geq$ 3 times per week.

Table 34b. Relative frequency of different physical activities for urban Mexican females 9-18 years of age (n = 559).

	Frequency of physical activity per week					Total percentage*		Rank*	
Activity	None	1-2	3-4	5-6	7+	1	2	1	2
Skipping	21.3	17.7	18.1	15.7	27.2	78.7	61.0	1	1
Running	25.4	21.1	21.5	14.0	18.1	74.7	53.6	2	3
Walking	26.5	17.9	18.6	11.8	25.2	73.5	55.6	3	2
Basketball	38.5	20.2	12.0	11.8	17.5	61.5	41.3	4	4
Skating	41.0	20.0	11.8	9.7	17.5	59.0	39.0	5	5
Volleyball	48.1	17.7	13.2	8.9	12.0	51.8	34.1	6	6
Bicycling	52.4	18.2	9.7	8.1	11.6	47.6	29.4	7	7
Swimming	58.1	14.7	9.3	6.8	11.1	41.9	27.2	8	8
Aerobics	67.4	12.3	8.6	5.4	6.3	32.6	20.3	9	10
Dance	70.1	9.3	6.3	5.2	9.1	29.9	20.6	10	9
Soccer	72.6	12.3	6.6	3.6	4.8	27.3	15.0	11	12
Baseball	75.8	10.0	5.9	4.5	4.7	25.1	15.1	12	11
Am. Football	87.5	2.5	5.2	2.7	2.1	12.5	10.0	13	13
Badminton	89.3	3.8	3.4	1.1	2.5	10.8	7.0	14	14
Skateboard	89.3	4.5	3.0	1.8	1.4	10.7	6.2	15	16
Weights	90.5	3.0	2.9	2.1	1.4	9.4	6.4	16	15

*Total % 1 and Rank 1 = Percentage and rank of activities $\geq$ 1 time per week. Total % 2 and Rank 2 = Percentage and rank of activities $\geq$ 3 times per week.

Table 35a. Relative frequency of different physical activities for urban Mexican males 9-13 years of age (n = 369).

	Frequency of physical activity per week					Total percentage*		Rank*	
Activity	None	1-2	3-4	5-6	7+	1	2	1	2
Soccer	13.3	7.6	14.1	14.1	50.9	86.7	79.1	1	1
Running	18.4	15.4	22.8	17.6	25.7	81.5	66.1	2	2
Basketball	24.7	19.7	16.3	17.9	21.4	75.3	55.6	3	3
Skipping	28.5	19.2	17.1	10.3	24.9	71.5	52.3	4	5
Walking	31.2	21.4	15.4	12.2	19.8	68.8	47.4	5	6
Bicycling	32.5	14.1	15.2	11.9	26.3	67.5	53.4	6	4
Am. Football	45.5	19.2	15.4	8.4	11.4	54.4	35.2	7	7
Skating	48.2	22.8	10.8	7.6	10.6	51.8	29.0	8	10
Volleyball	51.8	20.9	9.2	8.9	9.2	48.2	27.3	9	11
Baseball	52.8	17.1	9.8	7.0	13.3	47.2	30.1	10	8
Swimming	55.6	14.6	8.9	8.4	12.5	44.4	29.8	11	9
Skateboard	69.1	11.1	6.5	6.2	7.0	30.8	19.7	12	12
Weights	64.5	17.6	8.1	4.1	5.7	33.0	15.4	13	13
Badminton	77.5	9.2	5.9	4.1	3.2	22.4	13.2	14	14
Aerobics	87.8	4.6	3.5	1.9	2.2	12.2	7.6	15	15
Dance	94.9	2.7	1.1	0.8	0.5	5.1	2.4	16	16

*Total % 1 and Rank 1 = Percentage and rank of activities $\geq$ 1 time per week. Total % 2 and Rank 2 = Percentage and rank of activities $\geq$ 3 times per week.

Table 35b. Relative frequency of different physical activities for urban Mexican males 14-18 years of age (n = 157).

	Frequency of physical activity per week					Total percentage*		Rank*	
Activity	None	1-2	3-4	5-6	7+	1	2	1	2
Walking	22.3	17.2	18.5	14.6	27.4	77.7	60.5	1	1
Running	23.6	23.6	19.7	17.2	15.9	76.4	52.8	2	2
Soccer	26.1	26.8	22.3	12.1	12.7	73.9	47.1	3	4
Skipping	29.3	19.7	12.7	18.5	19.7	70.6	50.9	4	3
Basketball	47.8	15.3	14.6	10.8	11.5	52.2	36.9	5	5
Bicycling	56.7	21.7	10.2	4.5	7.0	43.4	21.7	6	6
Swimming	61.8	19.7	8.9	5.1	4.5	38.2	18.5	7	7
Volleyball	70.7	15.9	10.2	1.9	1.3	29.3	13.4	8	9
Weights	72.6	10.8	6.4	5.1	5.1	27.4	16.6	9	8
Am. Football	80.3	12.1	1.9	3.2	2.5	19.7	7.6	10	10
Skating	83.4	8.9	3.8	1.3	1.9	15.9	7.0	11	11
Aerobics	86.0	8.3	3.8	0.6	1.3	14.0	5.7	12	12
Skateboard	87.9	8.9	0.6	1.3	1.3	12.1	3.2	13	15
Baseball	89.2	5.7	3.2	0.7	0.6	10.2	4.5	14	13
Dance	93.6	2.5	0.6	1.9	1.3	6.3	3.8	15	14
Badminton	97.5	1.3	0.6	-	0.6	2.5	1.2	16	16

*Total % 1 and Rank 1 = Percentage and rank of activities $\geq$ 1 time per week. Total % 2 and Rank 2 = Percentage and rank of activities $\geq$ 3 times per week.

Table 36a. Relative frequency of different physical activities for urban Mexican females 9-13 years of age (n = 385).

	Frequency of physical activity per week					Total percentage*		Rank*	
Activity	None	1-2	3-4	5-6	7+	1	2	1	2
Skipping	16.1	17.4	17.9	17.4	31.2	83.9	66.5	1	1
Running	18.7	19.0	22.9	16.4	23.1	81.4	62.4	2	2
Skating	26.2	21.3	15.3	12.2	24.9	73.7	52.4	3	4
Walking	27.5	19.2	19.7	11.4	22.1	72.4	53.2	4	3
Basketball	29.9	20.3	11.4	15.1	23.4	70.2	49.9	5	5
Volleyball	37.4	18.4	16.4	11.9	15.8	62.5	44.1	6	6
Bicycling	42.1	18.7	11.1	11.4	16.6	57.8	39.1	7	7
Swimming	55.1	11.9	9.6	7.5	15.8	44.8	32.9	8	8
Aerobics	65.2	12.5	8.8	6.8	6.8	34.9	22.4	9	9
Baseball	65.7	13.0	8.1	6.5	6.8	34.4	21.4	10	10
Soccer	72.2	10.6	7.3	4.2	5.7	27.8	17.2	11	11
Dance	73.8	9.4	4.9	4.4	7.5	26.2	16.8	12	12
Am. Football	83.4	6.0	3.6	3.9	3.1	16.6	10.6	13	13
Badminton	85.7	4.7	4.4	1.6	3.6	14.3	9.6	14	14
Skateboard	86.0	5.2	4.2	2.6	2.1	14.1	8.9	15	15
Weights	89.6	3.4	2.9	2.3	1.8	10.4	7.0	16	16

*Total % 1 and Rank 1 = Percentage and rank of activities $\geq$ 1 time per week. Total % 2 and Rank 2 = Percentage and rank of activities $\geq$ 3 times per week.

Table 36b. Relative frequency of different physical activities for urban Mexican females 14 -18 years of age (n = 174).

	Frequency of physical activity per week					Total Percentage*		Rank	
Activity	None	1-2	3-4	5-6	7+	1	2	1	2
Walking	24.1	14.9	16.1	12.6	32.2	75.8	60.9	1	1
Skipping	32.8	18.4	18.4	12.1	18.4	67.3	48.9	2	2
Running	40.2	25.9	18.4	8.6	6.9	59.8	33.9	3	3
Basketball	57.5	20.1	13.2	4.6	4.6	42.5	22.4	4	5
Dance	62.1	9.2	9.2	6.9	12.6	37.9	28.7	5	4
Swimming	64.9	20.7	8.6	5.2	0.6	35.1	14.4	6	7
Volleyball	71.8	16.1	6.3	2.3	3.4	28.1	12.0	7	8
Aerobics	72.4	12.1	8.0	2.3	5.2	27.6	15.5	8	6
Soccer	73.6	16.1	5.2	2.3	2.9	26.5	10.4	9	9
Skating	73.6	17.2	4.0	4.0	1.1	26.3	9.1	10	10
Bicycling	75.3	17.2	6.3	0.6	0.6	24.7	7.5	11	11
Weights	92.5	2.3	2.9	1.7	0.6	7.5	5.2	12	12
Baseball	95.4	3.4	1.1	-	-	4.5	1.1	13	13
Skateboard	96.6	2.9	0.6	-	-	3.5	0.6	14	15
Am. Football	96.6	3.4	-	-	-	3.4	0.0	15	16
Badminton	97.1	1.8	1.1	-	-	2.9	1.1	16	13

*Total % 1 and Rank 1 = Percentage and rank of activities $\geq$ 1 time per week. Total % 2 and Rank 2 = Percentage and rank of activities $\geq$ 3 times per week.

Table 37. Results of the logistic regression of predictors of sport participation status in urban Mexican school youth 11-18 years of age by gender.

Item	Unstandardized Coefficients	Odds Ratio	95% Confidence Intervals
Males			
PAQ-A	-0.92	0.4	0.3 - 0.6
Age	0.38	1.5	1.1 - 1.9
Females			
PAQ-A	-1.29	0.3	0.2 - 0.5

Table 38. Results of the forward stepwise multiple regression of predictors of PAQ-A score in urban Mexican school youth 11-18 years of age by gender.

	Unstandardized Coefficients	R^2	R^2 Change	*p*
Males				
Age	-0.04	0.03	0.03	0.00
Mother's Activity[a]	-0.16	0.04	0.01	<0.01
Females				
Age	-0.10	0.07	0.07	0.00
Mother's Activity[a]	-0.22	0.10	0.03	0.00
Stature	0.01	0.11	0.01	<0.01
BMI	-0.91	0.12	0.01	<0.03

[a]Perceived physical activity status of the mother.

Table 39. Results of the forward stepwise multiple regression of predictors of PAQ-A score in urban Mexican school youth 9-18 years of age by gender and SES.

	Unstandardized Coefficients	R^2	R^2 Change	*p*
Males				
Low SES				
Stature	-0.01	0.04	0.04	<0.01
Middle SES				
BMI	-1.87	0.04	0.04	<0.01
High SES				
Mother's Activity[a]	-0.26	0.04	0.04	<0.03
Females				
Low SES				
Age	-0.12	0.09	0.09	0.00
Father's Activity[a]	-0.21	0.11	0.02	0.01
Stature	0.01	0.13	0.02	<0.05
Middle SES				
Mother's Activity[a]	-0.36	0.07	0.07	<0.01
BMI	-2.27	0.14	0.07	<0.01
High SES				
Age	-0.08	0.07	0.07	0.00
Father's Activity[a]	-0.30	0.11	0.04	0.01

[a]Perceived physical activity status of the mother or father.

Table 40. Results of the forward stepwise multiple regression of predictors of PAQ-A score in urban Mexican school youth by gender and age group.

	Unstandardized Coefficients	R^2	R^2 Change	*p*
Males				
9-13 years				
Mother's Activity[a]	-0.20	0.02	0.02	< 0.01
Females				
9-13 years				
Father's Activity[a]	-0.18	0.04	0.04	0.01
Mother's Activity[a]	-0.15	0.05	0.01	<0.05
14-18 years				
Stature	0.02	0.04	0.04	<0.02

[a]Perceived physical activity status of the mother or father.

Table 41. Age and the BMI by activity level and age group in urban Mexican school youth with results of ANCOVAs, controlling for age, for the BMI by level of physical activity within age group.

	Age Groups															
	9.0-13.9 yrs								14.0-18.9 yrs							
Activity		Age			BMI					Age			BMI			
Category[a]	n	M	SD	n	M	Md	SD	F	n	M	SD	n	M	Md	SD	F
Males																
Inactive	112	11.0	0.9	112	19.7	18.2	4.3	3.21	73	16.4	0.7	70	21.5	21.0	3.5	1.30
Active	174	11.2	1.0	174	19.7	18.8	4.2		64	16.4	0.7	61	22.4	21.3	3.5	
Very active	83	11.1	0.9	83	18.7	18.0	3.4		19	16.6	0.8	18	21.6	21.0	2.5	
Females																
Inactive	193	11.1	1.0	193	19.2	18.8	3.4	0.16	117	16.5	0.6	115	22.2	21.5	3.2	1.68
Active	150	11.0	1.0	150	19.1	18.0	4.0		50	16.5	0.7	44	21.3	20.8	2.7	
Very active	43	11.1	0.9	43	19.1	19.0	3.4		7	16.2	0.5	7	21.2	22.0	1.7	

[a]Inactive < 2.5, active ≥ 2.5 < 3.5, and very active ≥ 3.5.

Table 42. Age and the BMI by sport participation status in two age groups of urban Mexican school youth with results of ANCOVAs, controlling for age, for the BMI by level of physical activity within age group.

	Age Groups															
	9.0-13.9 yrs								14.0-18.9 yrs							
	Age			BMI					Age			BMI				
	n	M	SD	n	M	Md	SD	F	n	M	SD	n	M	Md	SD	F
Males																
Participant	80	12.0	0.8	80	19.6	18.5	4.0	0.30	95	16.5	0.7	90	21.7	21.0	3.0	1.13
Non-participant	18	11.2	0.7	18	19.4	19.7	3.2		59	16.5	0.6	57	22.3	21.2	3.8	
Females																
Participant	45	11.8	0.9	45	20.2	19.1	4.2	1.19	68	16.5	0.7	62	21.6	20.8	2.5	0.74
Non-participant	24	11.9	0.8	24	19.8	19.7	3.8		106	16.5	0.6	103	22.1	21.6	3.2	

Table 43. Percentages of sport participants in nutritional status categories within age groups of urban Mexican school youth.

	Nutritional Status*							
	UW		NW		ROW		OW	
Age Group	n	SP[a]	n	SP	n	SP	n	SP
Males								
9.0-13.9 yrs	17	94	44	80	22	73	15	87
14.0-18.9 yrs	19	58	85	64	26	58	7	43
Females								
9.0-13.9 yrs	8	75	40	60	13	69	8	75
14.0-18.9 yrs	7	0	128	41	25	36	5	20

[a] SP = percentage who are sport participants.

* Underweight (UW), BMI < 15th percentile; normal weight (NW), BMI ≥ 15th percentile and < 85th percentile; risk of overweight (ROW), BMI ≥ 85th and < 95th percentiles; overweight, BMI ≥ 95th percentile.

Table 44. Mean PAQ-A scores by nutritional status category within age groups of urban Mexican school youth.

	Nutritional Status*											
	UW			NW			ROW			OW		
	n	M	SD	n	M	SD	n	M	SD	n	M	SD
Males												
9.0-13.9 yrs	52	3.0	0.6	178	2.9	0.7	74	2.9	0.7	65	2.7	0.6
14.0-18.9 yrs	21	2.4	0.7	95	2.6	0.7	26	2.5	0.5	7	2.5	0.8
Females												
9.0-13.9 yrs	55	2.7	0.7	221	2.5	0.6	73	2.6	0.7	37	2.7	0.6
14.0-18.9 yrs	7	1.8	0.7	128	2.2	0.7	25	2.1	0.6	5	1.7	0.3

* Underweight (UW), BMI < 15th percentile; normal weight (NW), BMI ≥ 15th percentile and < 85th percentile; risk of overweight (ROW), BMI ≥ 85th and < 95th percentiles; overweight, BMI ≥ 95th percentile.

Table 45. Descriptive statistics for age, stature, weight, and the BMI for the total sample of urban Mexican school youth by sex.

		Age (yrs)		Stature (cm)		Weight (kg)			BMI (kg/m^2)		
Age	n	M	SD	M	SD	M	Md	SD	M	Md	SD
Males											
9	45	9.7	0.2	137.2	5.0	35.6	33.0	7.9	18.8	17.6	3.4
10	130	10.5	0.3	139.5	5.6	37.2	36.0	8.9	19.0	18.2	3.7
11	124	11.5	0.3	145.5	7.0	42.8	39.8	11.8	19.6	18.4	4.1
12	60	12.5	0.3	149.4	8.0	44.2	41.3	11.6	19.6	18.4	4.2
13	11	13.4	0.3	157.5	4.9	49.3	48.0	12.2	19.7	19.2	4.1
14	7	14.7	0.3	167.9	8.2	56.4	52.0	13.1	19.8	18.5	3.6
15	28	15.7	0.3	167.2	6.8	60.0	57.0	11.8	21.3	20.5	3.1
16	98	16.6	0.2	169.5	6.0	63.4	61.5	10.5	22.1	21.2	3.5
17	19	17.3	0.3	171.3	5.5	65.5	61.3	11.9	22.3	21.5	3.5
18	4	18.6	0.3	170.4	2.1	66.8	64.5	7.8	23.0	22.7	2.8
Females											
9	62	9.7	0.2	33.5	31.5	8.5	135.5	6.8	18.0	17.2	3.4
10	133	10.5	0.3	37.0	36.5	8.8	141.1	6.6	18.4	18.0	3.4
11	119	11.5	0.3	41.7	40.5	10.2	145.4	6.9	19.5	18.9	3.7
12	61	12.3	0.2	47.8	45.5	10.4	151.1	6.2	20.8	20.5	3.6
13	11	13.2	0.2	45.1	43.5	7.0	151.2	4.5	19.7	18.8	2.8
14	6	14.5	0.4	44.4	44.2	8.7	152.0	11.7	19.1	18.9	1.6
15	26	15.6	0.2	55.8	56.0	9.2	158.2	5.8	22.3	21.6	3.5
16	116	16.5	0.2	54.8	53.5	8.0	157.8	5.7	22.0	21.4	3.0
17	24	17.2	0.2	56.2	56.8	8.7	159.9	8.1	21.9	21.5	2.5
18	4	18.4	18.5	47.8	45.8	5.2	154.9	2.3	19.9	19.1	1.6

Table 46a. Results of ANOVA for age, stature, weight, and the BMI by SES in urban Mexican males 10, 11, and 16 years.

			Age (yrs)			Stature (cm)			Weight (kg)				BMI (kg/m^2)			
Age	SES	n	M	SD	F	M	SD	F	M	Md	SD	F	M	Md	SD	F
10	Low[a]	57	10.4	0.3	3.36*	140.0	5.8	1.08	39.1	36.3	9.7	2.38	19.8	18.9	4.1	2.86
	Mid[b]	28	10.6	0.3		140.1	4.5		35.3	35.5	6.6		17.9	17.6	2.6	
	Hi[c]	45	10.5	0.3		138.5	6.1		35.9	34.3	8.7		18.6	17.6	3.6	
11	Low	49	11.5	0.3	0.23	145.7	7.1	1.17	44.4	41.5	13.2	0.77	20.7	19.1	5.0	0.76
	Mid	43	11.5	0.2		144.4	7.1		41.3	38.5	11.0		19.6	18.5	4.3	
	Hi	32	11.5	0.3		146.4	7.3		41.6	39.5	11.5		19.2	18.2	4.4	
16	Low	19	16.5	0.2	1.29	168.0	5.9	1.16	59.0	57.5	10.6	2.17	20.8	21.1	3.2	1.74
	Mid	39	16.6	0.2		169.3	5.7		64.8	63.0	9.4		22.6	21.5	3.3	
	Hi	38	16.5	0.2		159.1	6.0		54.4	54.0	6.8		21.5	21.6	2.5	

[a] Low SES, [b]Middle SES, [c]High SES.

*$p < 0.05$. Post hoc Scheffé F-tests show that age significantly differs between low and middle SES ($p < 0.05$).

Table 46b. Results of ANOVA for age, stature, weight, and the BMI by SES in urban Mexican females 10, 11 and 16 years.

			Age (yrs)			Stature (cm)			Weight (kg)				BMI (kg/m^2)			
Age	SES	n	M	SD	F	M	SD	F	M	Md	SD	F	M	Md	SD	F
10	Low[a]	67	10.5	0.3	0.46	141.9	6.9	1.20	37.6	36.5	9.5	0.70	18.5	17.9	3.7	0.62
	Mid[b]	33	10.5	0.3		140.1	6.5		35.5	34.0	8.3		17.9	17.2	3.2	
	Hi[c]	33	10.5	0.3		140.3	6.3		37.3	38.0	7.8		18.8	19.5	3.1	
11	Low	54	11.5	0.3	0.76	146.0	6.6	2.46	42.6	40.5	9.9	1.13	19.8	19.1	3.4	0.37
	Mid	32	11.5	0.3		146.7	6.8		42.5	41.5	11.4		19.6	19.3	4.2	
	Hi	33	11.4	0.2		143.2	7.5		39.4	39.5	9.2		19.1	18.7	3.5	
16	Low	35	16.5	0.2	1.72	156.5	5.2	1.83	55.0	53.0	9.2	0.06	22.5	21.2	3.5	0.87
	Mid	43	16.5	0.3		157.8	5.7		55.0	53.5	8.0		22.1	21.2	2.9	
	Hi	38	16.5	0.2		159.1	6.0		54.4	54.0	6.8		21.5	21.6	2.5	

[a] Low SES, [b]Middle SES, [c]High SES.

Table 47. Prevalence (%) of underweight (UW), risk of overweight (ROW) and overweight (OW) by age and gender in urban Mexican school youth 9-18 years of age.

Age Group	n	UW*	ROW*	OW*
Males				
9	45	9	16	24
10	130	10	21	15
11	124	18	27	17
12	60	18	10	20
13	11	18	-	18
15	28	11	14	4
16	93	11	17	5
17	19	26	16	5
18	3	-	-	-
Females				
9	62	18	15	13
10	133	15	17	11
11	118	16	21	8
12	61	7	25	7
13	11	9	9	-
15	26	-	23	4
16	116	5	13	3
17	22	-	17	-
18	4	-	-	-

* Underweight, BMI < 15th percentile; risk of overweight, BMI ≥ the 85th and < the 95th percentiles; overweight, BMI ≥ the 95th percentile.

Table 48. Prevalence (%) of underweight (UW), risk of overweight (ROW) and overweight (OW) by age group and gender in urban Mexican school youth.

Age Group	n	UW*	ROW*	OW*
Males				
9.0-13.9	370	14	20	18
15.0-18.9	150	14	17	5
Females				
9.0-13.9	386	14	19	10
15.0-18.9	167	4	14	3

* Underweight, BMI < 15th percentile; risk of overweight, BMI ≥ 85th and < 95th percentiles; overweight, BMI ≥ 95th percentile.

Table 49. Estimated rates of secular change in the heights and weights of urban Mexican youth from Mexico City, D. F.

Age (yrs)	Males Height (cm/dec)	Males Weight (kg/dec)	Females Height (cm/dec)	Females Weight (kg/dec)
		1926 - 1998[a]		
10-12	0.9	1.2	0.8	1.0
15-16	0.7	1.4	0.6	0.5
		1926 - 1978[b]		
10-12	0.8	0.8	0.7	0.6
15	0.5	0.7	0.6	0.0
		1978 - 1998[c]		
11-12	1.0	2.5	1.1	2.4
15	1.2	3.2	0.9	2.8

[a]Based on the current study (1998) and Priani (1929).
[b]Based on Faulhaber (1989) and Priani (1929).
[c]Based on the current study (1998) and Faulhaber (1989).

Table 50. Total number and percentage of females 9-18 years who have attained menarche in a sample from Mexico City.

Age	M	SD	n	yes[a]	%
9	9.8	0.2	60	1	2
10	10.5	0.3	124	9	8
11	11.5	0.3	107	17	16
12	12.3	0.3	45	24	53
13	13.3	0.2	8	7	88
14	14.6	0.4	5	5	100
15	15.6	0.2	26	26	100
16	16.5	0.2	116	115	99
17	17.2	0.2	24	24	100
18	18.4	0.1	4	4	100

[a]yes: those who have attained menarche.

Table 51. Mean scores for the top ten reasons for playing non-school sponsored sports among urban Mexican school youth 9-18 years of age, American youth 10-18 years of age, and a Mexican American subset of the American sample 10-18 years of age. The data are for genders combined.

Current Study	M	Total United States[a]	M	Mexican American[a]	M
To have fun	4.35	To have fun	4.52	To have fun	4.39
To be physically fit	4.30	To do something at which I am good	4.23	To improve my skills	4.23
To get exercise	4.15	To improve my skills	4.21	To stay in shape	4.22
To get rid of energy	4.05	To stay in shape	4.19	To do something at which I am good	4.22
To improve my skills	3.95	To get exercise	4.14	To learn new skills	4.11
To do something at which I am good	3.90	To learn new skills	4.08	To get exercise	4.07
To learn new skills	3.89	For the excitement of competition	4.03	For the challenge of competition	3.95
For the excitement of competition	3.84	To play as a part of a team	3.95	To play as a part of a team	3.95
To go to a higher level of competition	3.47	For the challenge of competition	3.91	For the excitement of competition	3.90
For the challenge of competition	3.47	To go to a higher level of competition	3.85	To go to a higher level of competition	3.90

[a] Adapted from Ewing and Seefeldt (1988).

Table 52. Summary of the top ten reasons in order of importance for dropping out of sport in high school aged Mexican males and females 14-18 years of age, and in American youth 10-18 years of age

	Current Study		United States[a]	
Rank	Males	Females	Males	Females
1	The games and practices were scheduled at times when I could not attend	I needed more time to study	I was no longer interested in this sport	I was no longer interested in this sport
2	I needed more time to study	The sport required too much time	I was not having fun	I was not having fun
3	The sport required too much time	The games and practices were scheduled at times when I could not attend	The sport required too much time	I needed more time to study
4	Too much emphasis was placed on winning	I could not afford to play and practice year round	The coach played favorites	There was too much pressure
5	I was not having fun	There was too much pressure	My coach was a poor teacher	My coach was a poor teacher
6	There was too much pressure	My coach was a poor teacher	I was tired of playing	I wanted to participate in other non-sport activities
7	My coach was a poor teacher	I did not have the opportunity to play much	Too much emphasis was placed on winning	The sport required too much time
8	I could not afford to play and practice year round	I wanted to participate in other non-sport activities	I wanted to participate in other non-sport activities	The coach played favorites
9	I was no longer interested in this sport	I was no longer interested in this sport	I needed more time to study	I was tired of playing
10	I wanted to participate in other non-sport activities	The coach played only his/her favorite players	There was too much pressure	The games and practices were scheduled at times when I could not attend

[a] Adapted from Ewing and Seefeldt (1988); mean scores are not reported.

Table 53. Descriptive statistics for the top ten reasons for dropping out of sport in high school aged Mexican youth 14-18 years of age and Mexican American youth 10-18 years of age. The data are for genders combined.

Current Study	M	SD	Mexican Americans[a]	M	SD
I needed more time to study	3.14	1.6	I was not having fun	2.89	1.6
The games and practices were scheduled when I could not attend	2.84	1.5	I needed more time to study	2.85	1.6
The sport required too much time	2.82	1.5	I was no longer interested in this sport	2.80	1.6
I could not afford to play and practice year round	2.64	1.5	Too much emphasis was placed on winning	2.73	1.4
There was too much pressure	2.59	1.5	There was too much pressure	2.60	1.4
My coach was a poor teacher	2.47	1.6	The games and practices were scheduled at times when I could not attend	2.59	1.6
Too much emphasis was placed on winning	2.39	1.4	I was not as good a player as the others in my sport	2.59	1.5
I was not having fun	2.33	1.6	My coach was a poor teacher	2.58	1.5
I wanted to participate in other non-sport activities	2.32	1.5	The sport required too much time	2.57	1.5
I was no longer interested in this sport	2.29	1.5	The coach played only his/her favorite players	2.57	1.6

[a] Adapted from Ewing and Seefeldt (1988).

Table 54. Summary of the top ten responses to, "I would return to sport if..." in order of importance in urban Mexican high school youth 14-18 years of age and American youth 10-18 years of age, by gender.

	Current Study		United States[a]	
Rank	Males	Females	Males	Females
1	The practices or games did not conflict with my studies	The practices or games did not conflict with my studies	The practices were more fun	The practices were more fun
2	The games and practices were scheduled at other times	The games and practices were scheduled at other times	I could play more	The practices or games did not conflict with my studies
3	I could play more	The practices or games did not interfere with my social life	The coaches understood the players better	The coaches understood the players better
4	The practices or games did not interfere with my social life	The sport did not demand so much time	The practices or games did not conflict with my studies	The practices or games did not interfere with my social life
5	The sport did not demand so much time	I could play more	The coach were a better instructor	I could play more
6	The practices were more fun	There were more or closer practice facilities	The coaches understood the game better	The coach were a better instructor
7	There were more or closer practice facilities	The coach were a better instructor	The practices or games did not interfere with my social life	The games and practices were scheduled at other times
8	There were more leagues so the other players were closer to my ability level	The coaches understood the players better	The games and practices were scheduled at other times	The coaches understood the game better
9	The coaches understood the players better	The practices were more fun	The coach did not yell so much	There was less emphasis on winning
10	The coach were a better instructor	There were more leagues so the other players were closer to my ability level	There was less emphasis on winning	The coach did not yell so much

[a] Adapted from Ewing and Seefeldt (1988); mean scores are not reported.

Table 55. Descriptive statistics for the top ten responses to, "I would return to sport if..." in urban Mexican high school youth 14-18 years of age and Mexican American youth 10-18 years of age. The data are for genders combined.

Current Study	M	SD	Mexican American[a]	M	SD
The practices or games did not conflict with my studies	3.78	1.5	The practices were more fun	3.14	1.5
The games and practices were scheduled at other times	3.26	1.5	The coaches understood the players better	3.12	1.6
The practices or games did not interfere with my social life	2.96	1.5	I could play more	3.12	1.6
I could play more	2.89	1.6	The practices or games did not conflict with my studies	3.04	1.5
The sport did not demand so much time	2.86	1.5	The coach understood the sport better	2.91	1.6
There were more or closer practice facilities	2.75	1.6	The coach were a better instructor	2.85	1.6
The practices were more fun	2.74	1.6	There were less emphasis on winning	2.84	1.5
The coaches understood the players better	2.65	1.6	Practices or games did not interfere with my social life	2.83	1.5
The coach were a better instructor	2.61	1.6	The games and practices were scheduled at other times	2.79	1.5
There were more leagues so the other players were closer to my ability level	2.46	1.6	The sport were offered for my age group	2.65	1.6

[a] Adapted from Ewing and Seefeldt (1988).

Table 56. Median ages at menarche in urban Latin American girls.[a]

Locale	n	Median	SD	Study, year
Mexico				
Mexico City*	183	12.40		Current Study, 1998
Villa de Xochimilco*	670	12.76	1.2	Malina et al., 1977
Mexico City*	400	12.75	1.3	Malina et al., 1977
Mérida	993	12.61	1.4	Malina et al., 1977
Port of Tampico	416	12.55	1.3	Malina et al., 1977
Mexico City	151	12.30	1.1	Faulhaber, 1984
La Plata, Argentina	6,494	12.53	1.2	Lejarraga et al., 1980
Venezuela		12.70		Lopez Contreras et al., 1981
Brazil	3,368	12.60	1.3	Colli, 1988

[a]All are based on probit estimates except that of Faulhaber (1984) which is a mean age from a prospective study of Mexico City school youth.
*Median ages from samples of Mexico City girls.

Table 57. Estimated rates of secular change in the heights and weights of international samples of youth 5-12 years of age.

Age, yrs	Years of Study	Males		Females		Combined
		Ht (cm/dec)	Wt (kg/dec)	Ht (cm/dec)	Wt (kg/dec)	Ht (cm/dec)
5-7	1880-1950[a]					1.0
8-10	1892-1970[b]					1.3
5-11*	1972-1990[c(1)]	0.7		0.5		
5-11	1972-1990[c(2)]	1.3		1.2		
9-10	1928-1983[d]	1.6	1.4	0.7	1.3	
10-12	1926-1998[e]	0.9	1.2	0.8	1.0	
10-12	1926-1978[f]	0.8	0.8	0.7	0.6	
11-12	1978-1998[g]	1.0	2.5	1.1	2.4	

[a]Adapted from Tanner (1977); the estimate is based on European and North American children.

[b]Adapted from Meredith (1976); the estimate is based on children from Japan, Western Europe, Australia, Canada and the United States.

[c]Adapted from Hughes et al. (1997); the estimate is based children from England[(1)] and Scotland[(2)].

[d]Adapted from Malina et al. (1987); the estimate is based on Mexican American children from Brownsville in southwest Texas.

[e]Based on the current study (1998) and Priani (1929).

[f]Based on Faulhaber (1989) and Priani (1929).

[g]Based on the current study (1998) and Faulhaber (1989).

Table 58. Estimated rates of secular change in heights and weights of international samples of youth 12-18 years of age.

		Males		Females		Combined
Age, yrs	Years of Study	Ht (cm/dec)	Wt (kg/dec)	Ht (cm/dec)	Wt (kg/dec)	Ht (cm/dec)
adolescents	1880-1950[a]					2.5
12-14	1892-1970[b]					1.9
15-16	1928-1983[c]	0.2	0.9	-0.3	0.8	
15-16	1926-1998[d]	0.7	1.4	0.6	0.5	
15	1926-1978[e]	0.5	0.7	0.6	0.0	
15	1978-1998[f]	1.2	3.2	0.9	2.8	

[a]Adapted from Tanner (1977); the estimate is based on European and North American children.

[b]Adapted from Meredith (1976); the estimate is based on children from Japan, Western Europe, Australia, Canada and the United States.

[c]Adapted from Malina et al. (1987); the estimate is based on Mexican American children from Brownsville in southwest Texas.

[d]Based on the current study (1998) and Priani (1929).

[e]Based on Faulhaber (1989) and Priani (1929).

[f]Based on the current study (1998) and Faulhaber (1989).

FIGURES

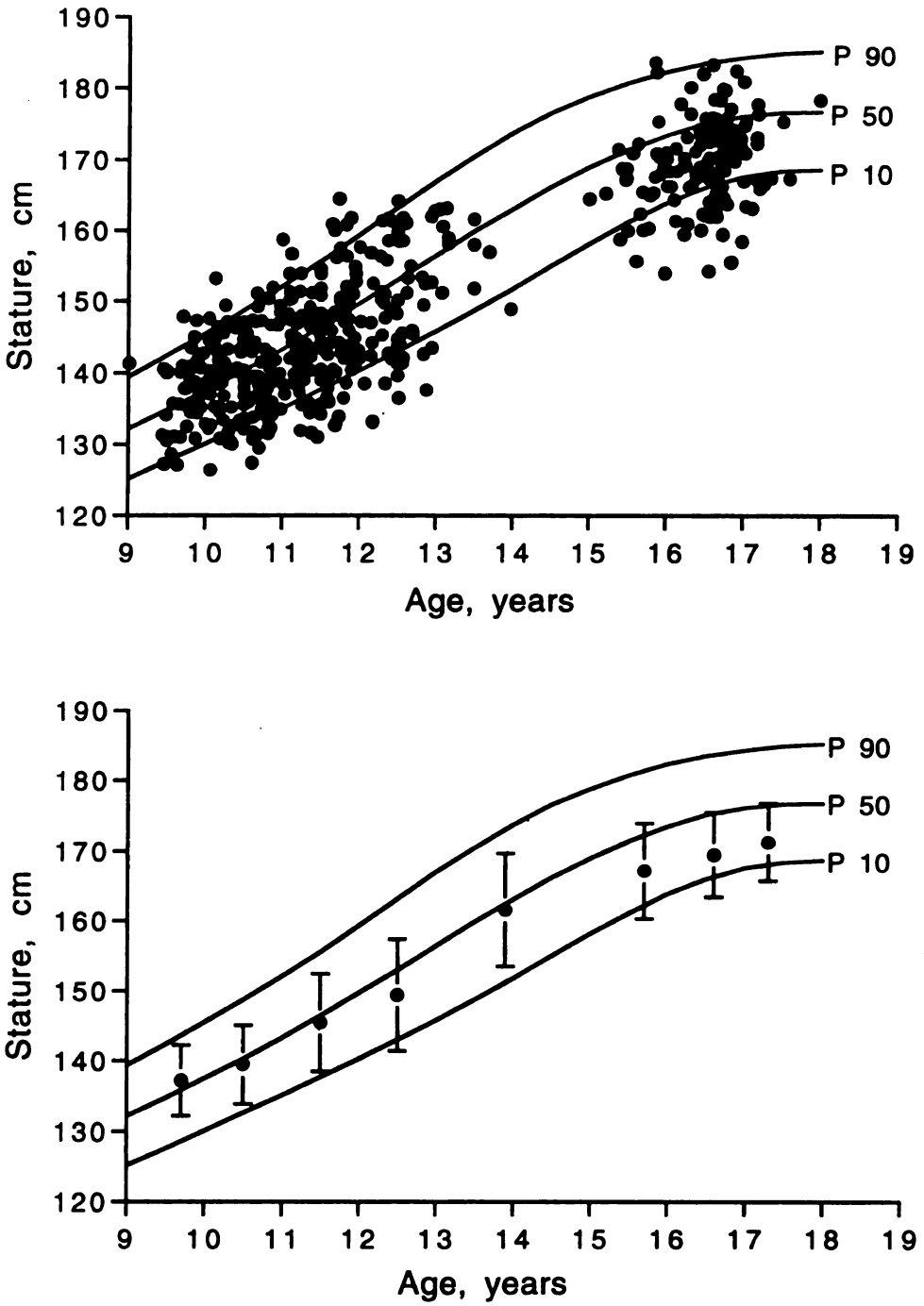

Figure 1. Statures of individual boys (top) and age specific means and standard deviations (bottom) relative to United States reference values (Hamill et al., 1977). P10, P50 and P90 refer to the 10th, 50th and 90th percentiles, respectively.

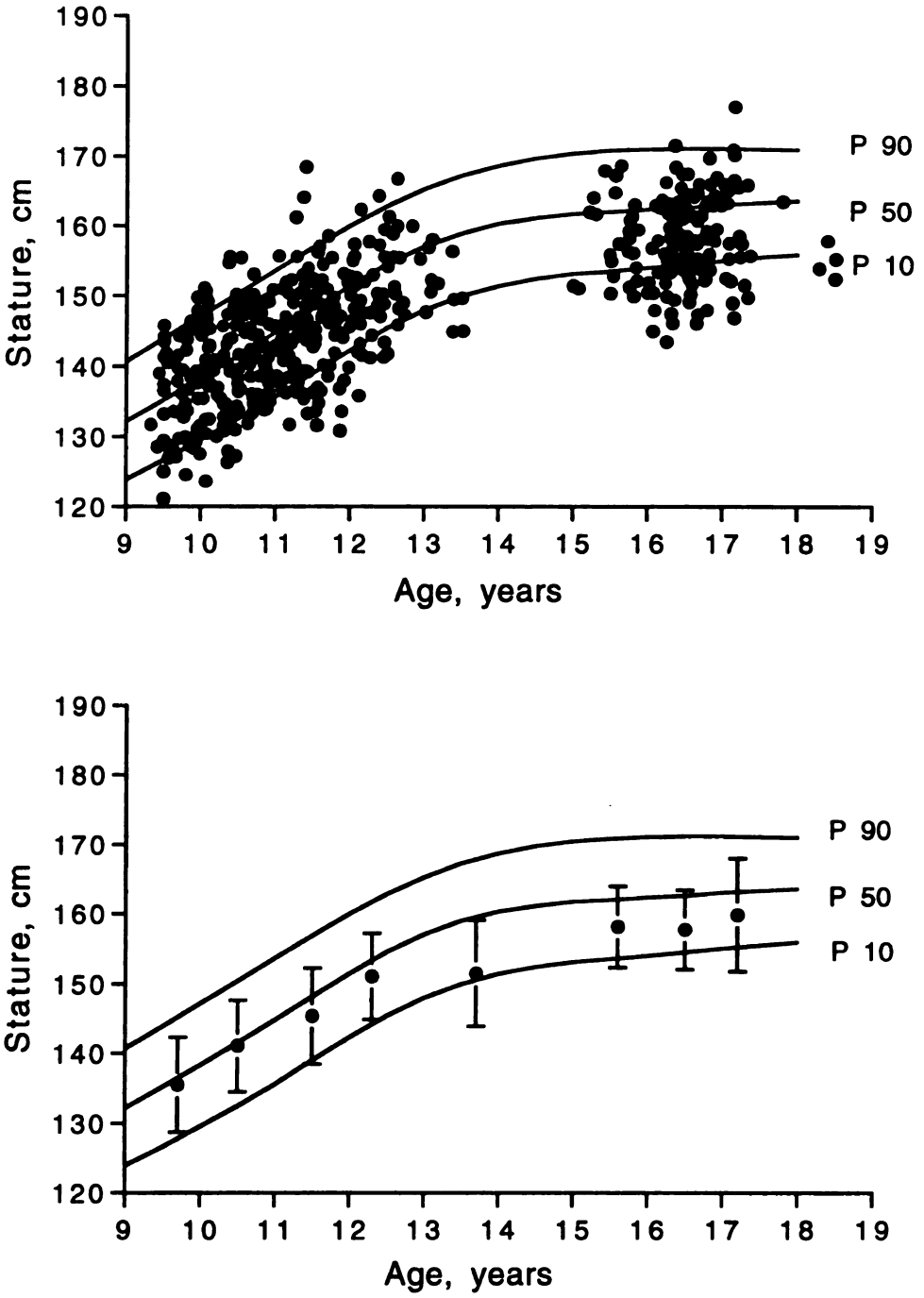

Figure 2. Statures of individual girls (top) and age specific means and standard deviations (bottom) relative to United States reference values (Hamill et al., 1977). P10, P50 and P90 refer to the 10th, 50th and 90th percentiles, respectively.

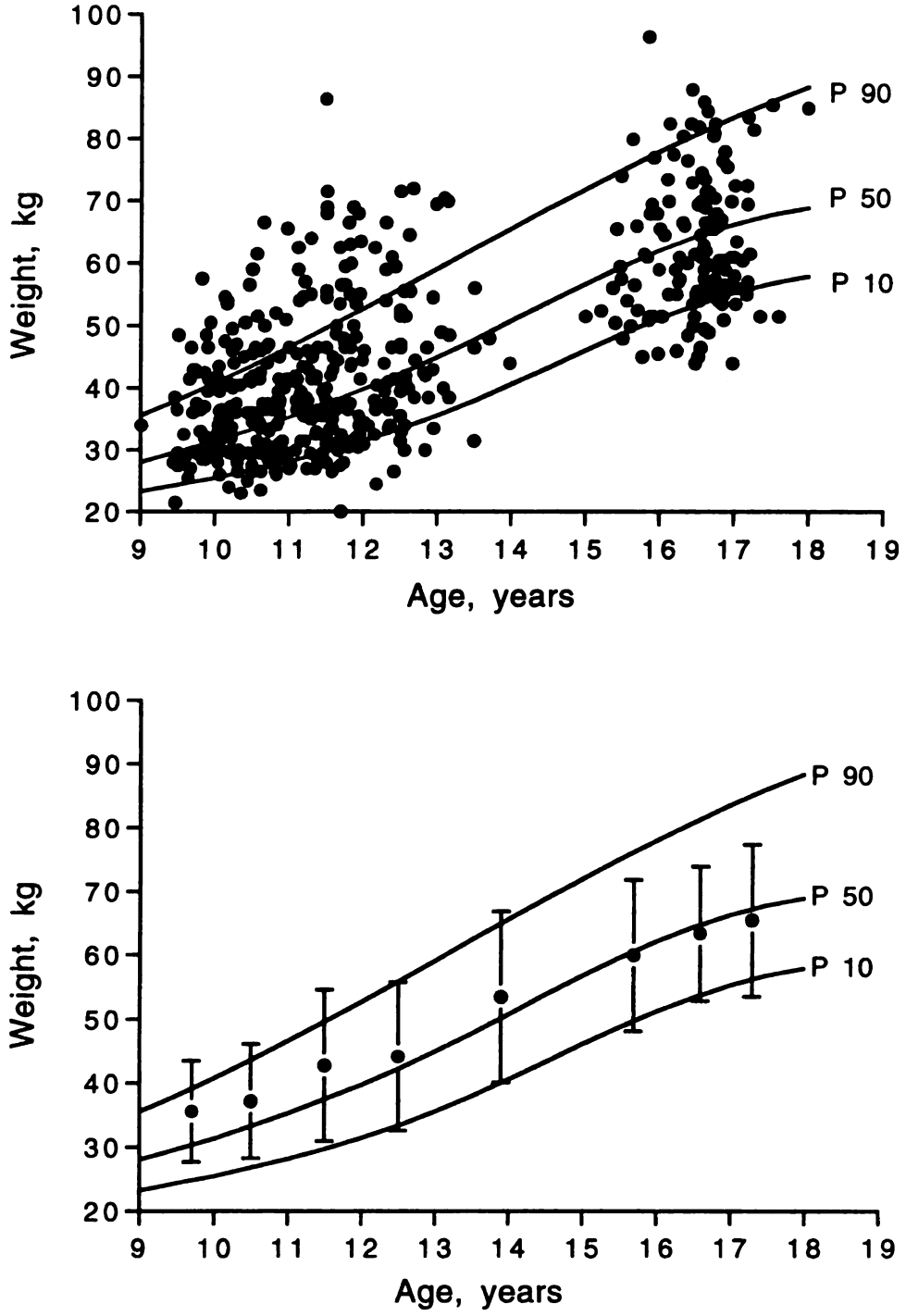

Figure 3. Body weights of individual boys (top) and age specific means and standard deviations (bottom) relative to United States reference values (Hamill et al., 1977). P10, P50 and P90 refer to the 10th, 50th and 90th percentiles, respectively.

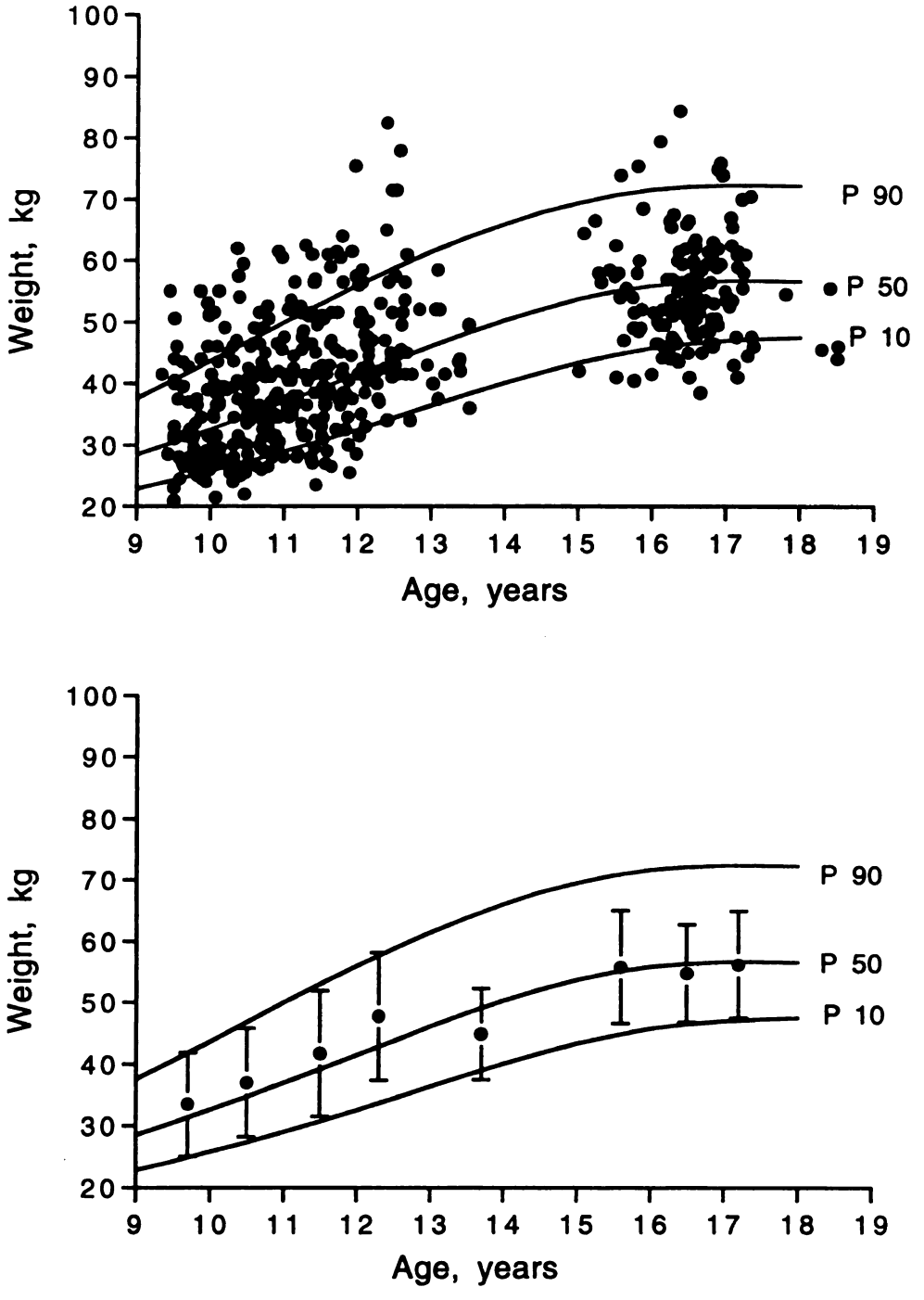

Figure 4. Body weights of individual girls (top) and age specific means and standard deviations (bottom) relative to United States reference values (Hamill et al., 1977). P10, P50 and P90 refer to the 10th, 50th and 90th percentiles, respectively.

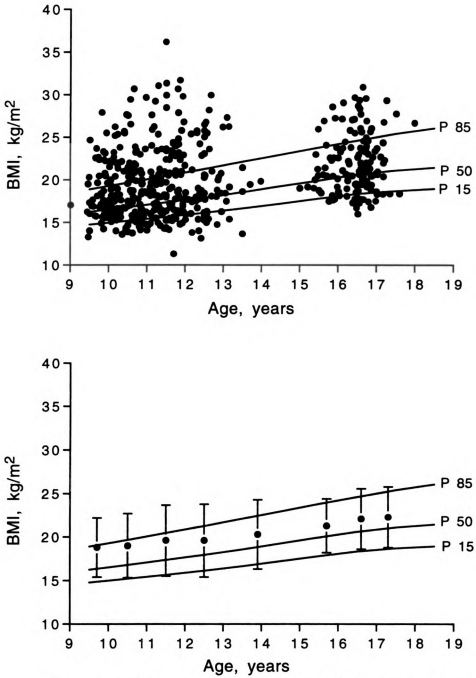

Figure 5. The body mass index of individual boys (top) and age specific means and standard deviations (bottom) relative to United States reference values (Must et al., 1991). P15, P50 and P85 refer to the 15th, 50th and 85th percentiles, respectively.

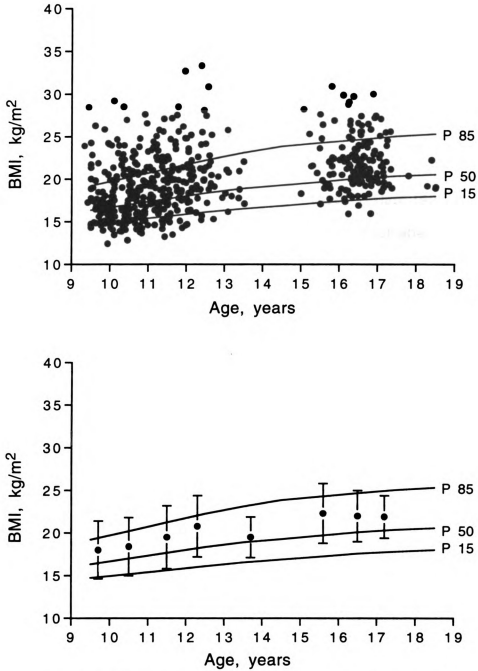

Figure 6. The body mass index of individual girls (top) and age specific means and standard deviations (bottom) relative to United States reference values (Must et al., 1991). P15, P50 and P85 refer to the 15th, 50th and 85th percentiles, respectively.

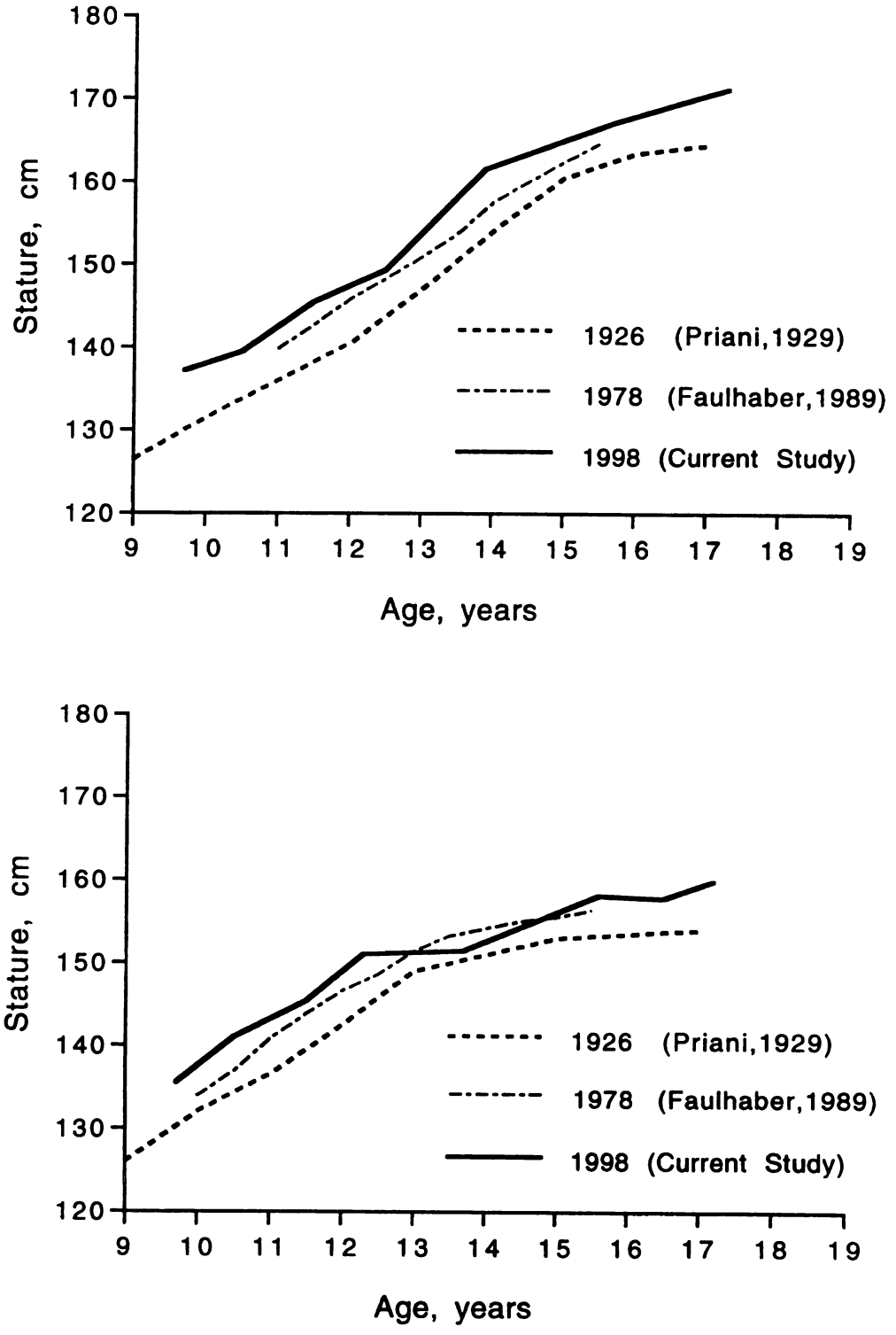

Figure 7. Mean statures of Mexico City males (top) and females (bottom) between 1929 and 1998.

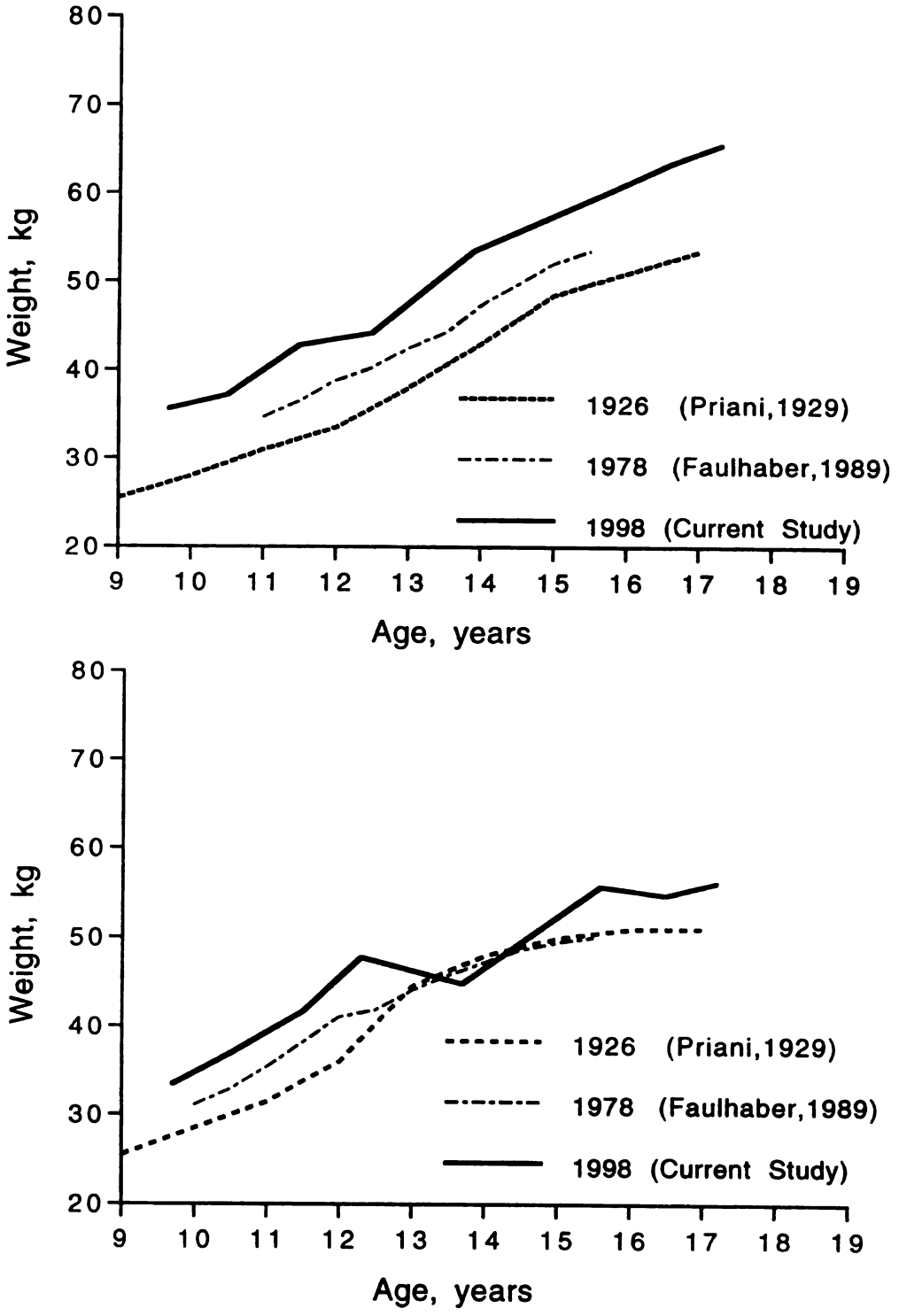

Figure 8. Mean body weights of Mexico City males (top) and females (bottom) between 1929 and 1998.

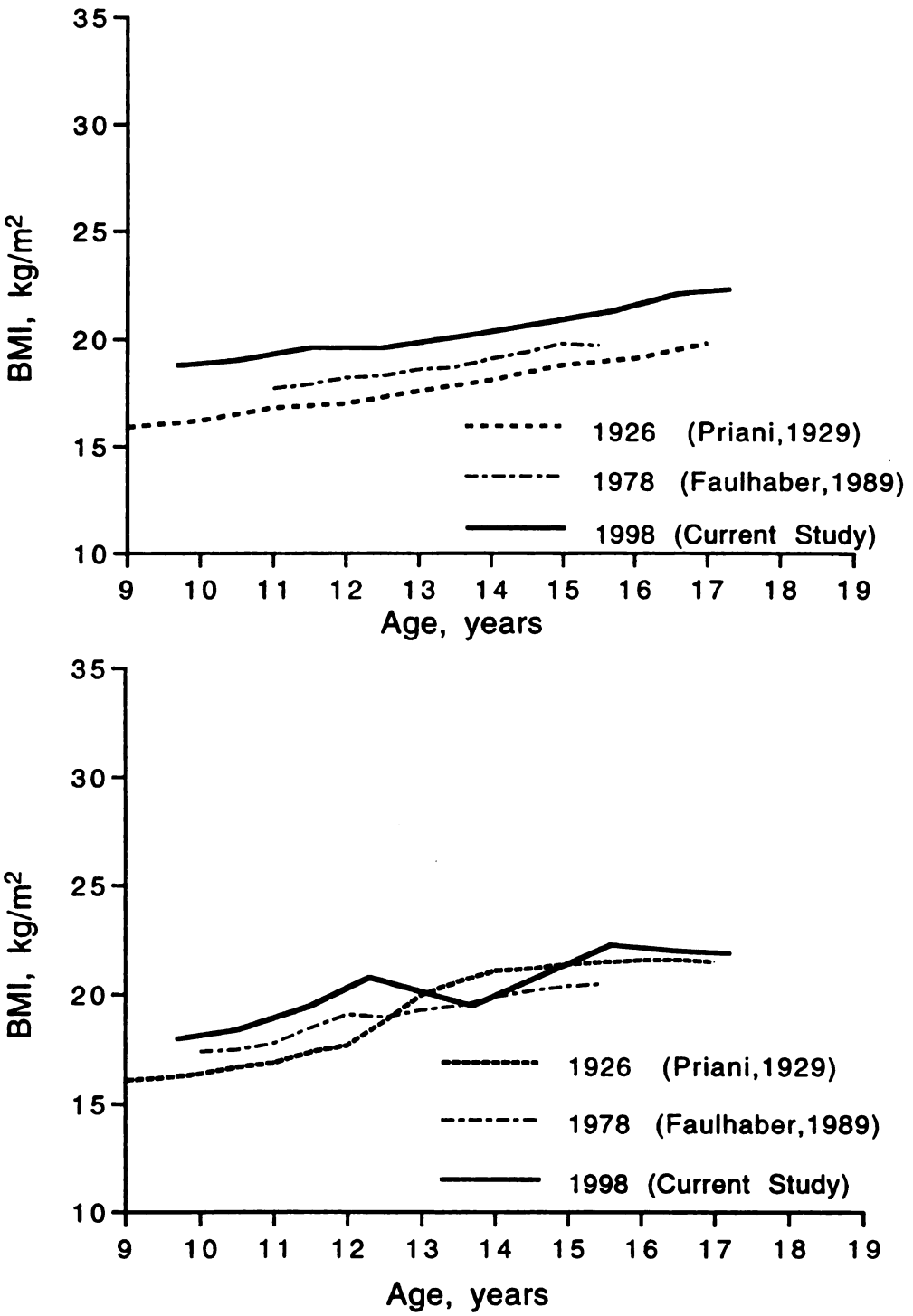

Figure 9. Mean body mass index of Mexico City males (top) and females (bottom) between 1929 and 1998. The BMI was calculated from individual values for the current study and from age-specific means of height and weight for the earlier studies.

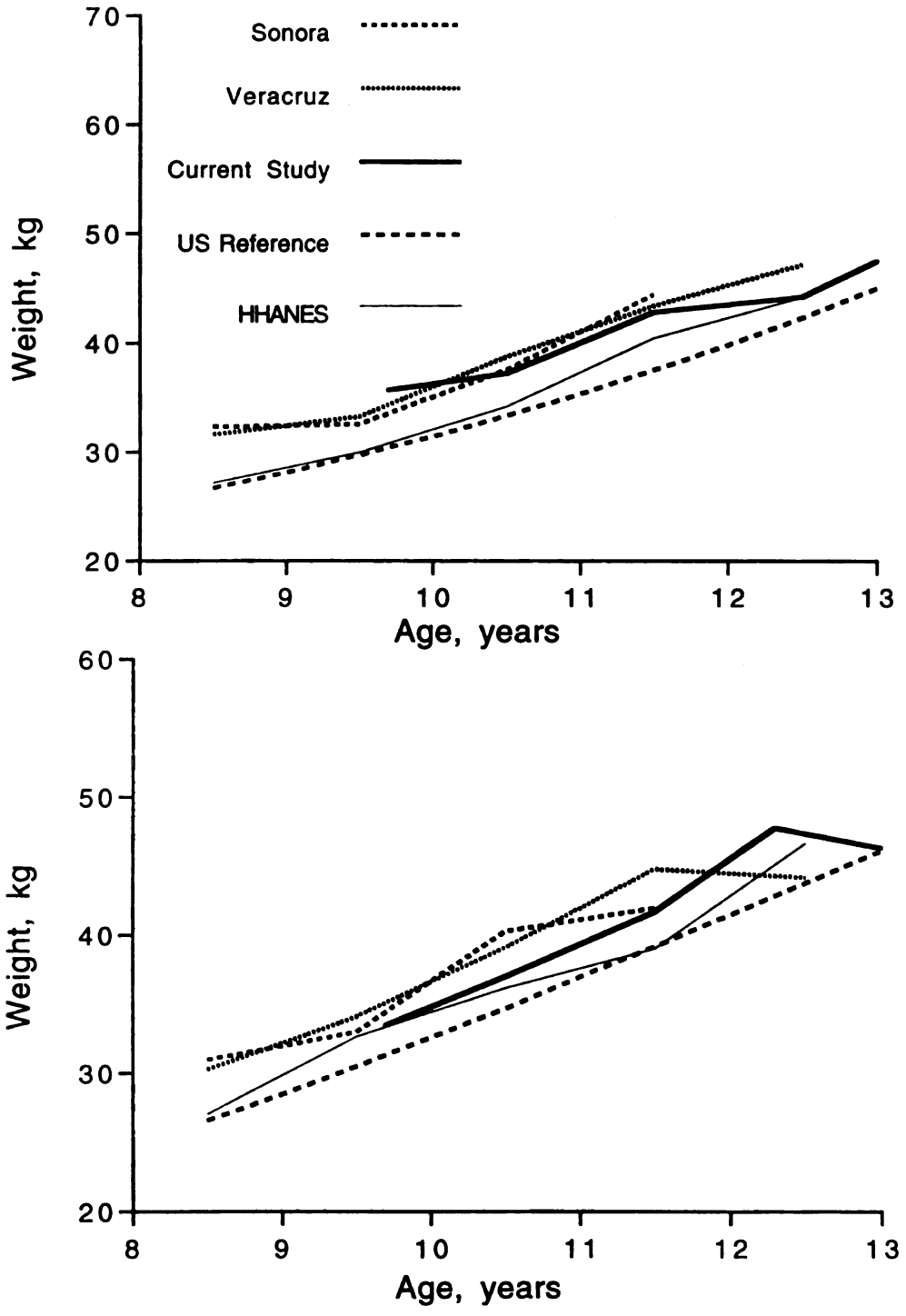

Figure 10. Mean weights of Mexico City males (top) and females (bottom) compared to samples from Sonora (Peña Reyes, 1995; Ovando Hernández, 1995) and Veracruz, Mexico (Peña Reyes et al., 1999), the United States reference (Hamill et al., 1977), and the Hispanic Health and Nutrition Examination Survey (Roche et al., 1990).

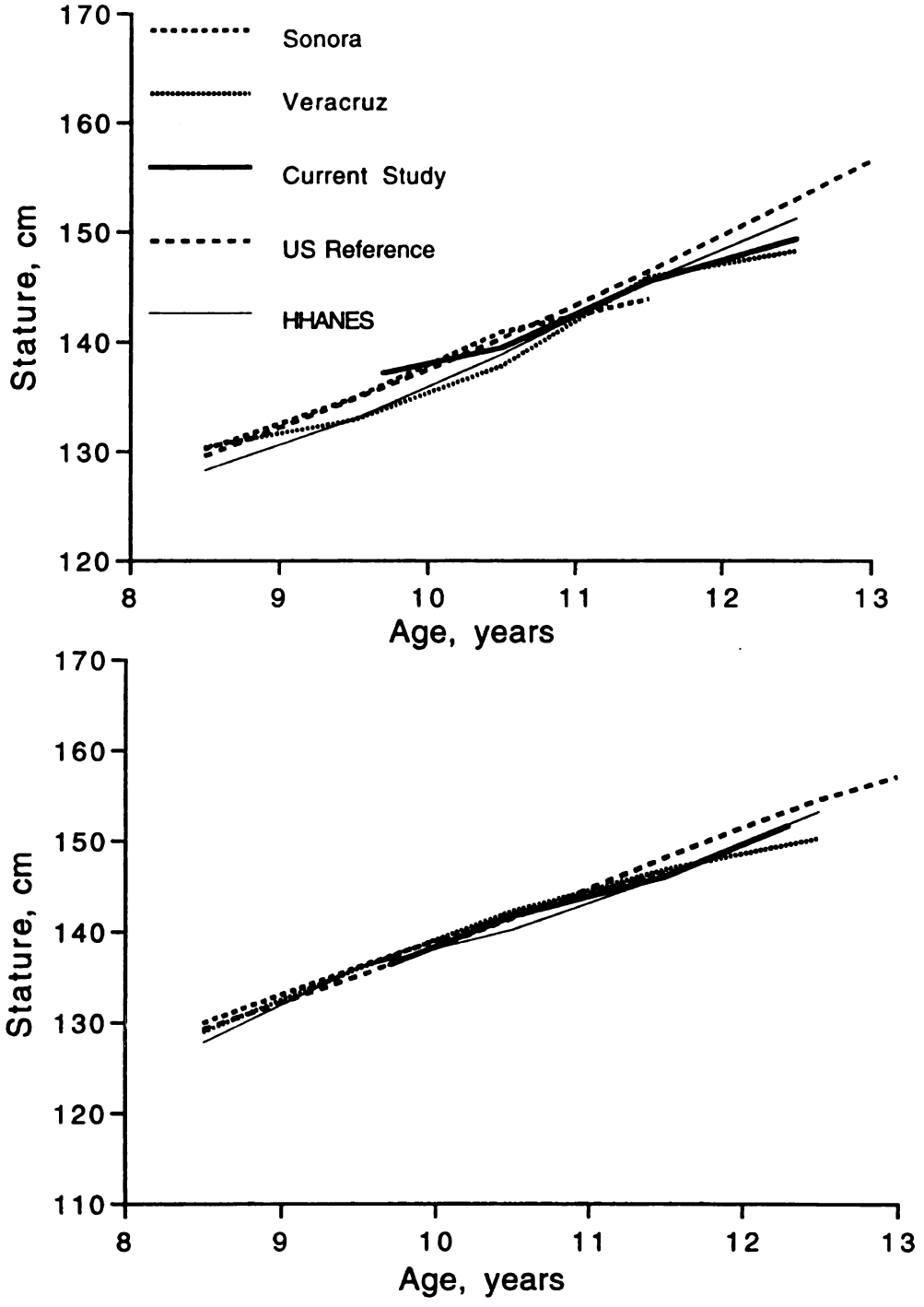

Figure 11. Mean statures of Mexico City males (top) and females (bottom) compared to samples from Sonora (Peña Reyes, 1995; Ovando Hernández, 1995) and Veracruz, Mexico (Peña Reyes et al., 1999), the United States reference (Hamill et al., 1977), and the Hispanic Health and Nutrition Examination Survey (Roche et al., 1990).

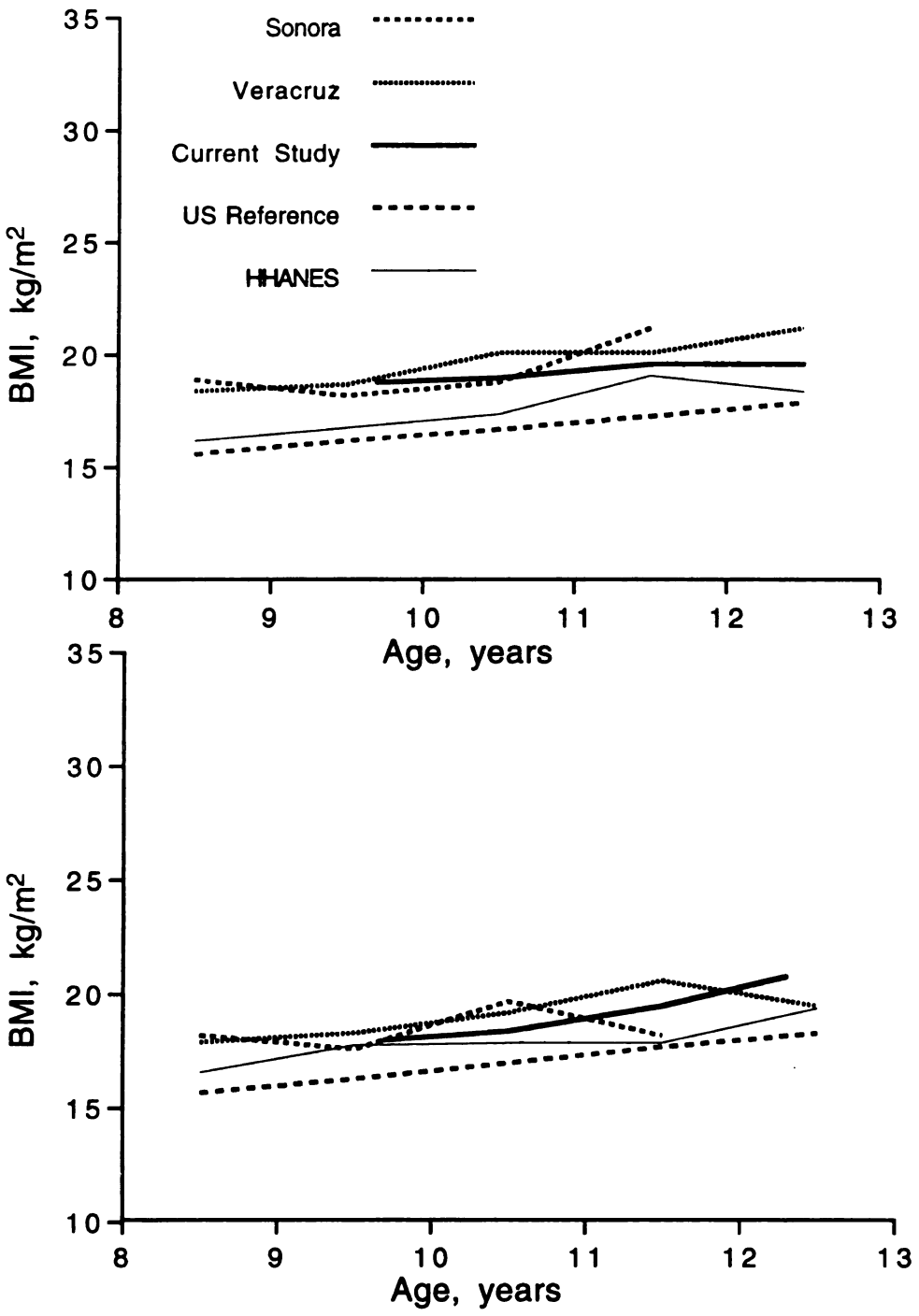

Figure 12. Mean body mass indices of Mexico City males (top) and females (bottom) compared to samples from Sonora (Peña Reyes, 1995; Ovando Hernández, 1995) and Veracruz, Mexico (Peña Reyes et al., 1999), the United States reference (Must et al., 1991), and the Hispanic Health and Nutrition Examination Survey (Roche et al., 1990). The BMI was calculated for individual values in each study.

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APPENDIX A

UNIVERSITY COMMITTEE ON RESEARCH INVOLVING HUMAN SUBJECTS FORM

MICHIGAN STATE
UNIVERSITY

March 17, 1998

TO: Robert M. Malina
213 IM Sports Circle

RE: IRB#: 98-143
TITLE: PATTERNS OF SPORT PARTICIPATION AND PHYSICAL ACTIVITY IN MEXICAN YOUTH
REVISION REQUESTED: N/A
CATEGORY: 1-C
APPROVAL DATE: 03/17/98

The University Committee on Research Involving Human Subjects (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/
CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Shannon Siegel

OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES

ity Committee on
esearch Involving
Human Subjects
(UCRIHS)

gan State University
ministration Building
t Lansing, Michigan
48824-1046

517/355-2180
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APPENDIX B

FORM OF SPONSORSHIP FOR ESCUELA NACIONAL DE ANTROPOLOGIA E HISTORIA

INAH

Instituto Nacional de
Antropología e Historia

Escuela Nacional de
Antropología e Historia

Periférico Sur y Zapote s/n
Col. Isidro Fabela
México D.F. C.P. 14030
606-03-30 y 606-01-97
FAX 665-92-26

ESCUELA NACIONAL
PREPARATORIA

98 MAR 11 AM 11:37

DIRECCION GENERAL
7°. PISO.

"POSEEDORES DE LEYENDAS"

México, D.F. a 11 de marzo de 1998

LIC. JOSE LUIS BALMASEDA BECERRA
DIRECTOR GRAL. DE LA ESCUELA NACIONAL
PREPARATORIA U.N.A.M.
P R E S E N T E

Por medio de la presente me permito solicitar a usted la autorización para aplicar las encuestas sobre patrones de participación y abandono de los deportes en clubes o equipos en la población escolar de educación media superior, cuyas edades estén comprendidas entre los 15 y los 18 años. Estas encuestas son parte del proyecto "Antropología y Deporte" registrado en esta Escuela por las profesoras Eyra Cárdenas Barahona y María Eugenia Peña. Uno de los objetivos de esta investigación es el de evaluar la efectividad de los programas deportivos para jóvenes.

En la medida en que es indispensable contar con el mayor número posible de encuestas realizadas que permitan un análisis real del problema, consideramos de suma importancia su aval para llevarlo a cabo en las Escuelas bajo su jurisdicción.

Sin otro particular le reitero las seguridades de mi atenta y distinguida consideración.

ATENTAMENTE

ANTROP. SOC. ALEJANDRO PINET PLASENCIA
DIRECTOR DE LA ENAH

ESCUELA NACIONAL DE PREPARATORIA
DIRECCIÓN

APPENDIX C

SPORTING GOODS MANUFACTURERS ASSOCIATION SPORT PARTICIPATION QUESTIONNAIRE (Spanish/English)

Patrones de Participacion y Abandono de los deportes en
Clubes o Equipos Escolares

Introduccion

A muchos entrenadores, maestros, y administradores deportivos les interesa saber si los programas deportivos para niños y jóvenes son efectivos (como por ejemplo los equipos de pequeña liga en beisbol, futbol soccer, tenis o natación) y si satisfacen las necesidades de cada persona en su comunidad, si están de acuerdo a los distintos niveles económicos y clases sociales, además de conocer las razones por las cuales niños y jóvenes dejan de practicar los deportes

Con el propósito de conocer lo que te gusta y lo que te disgusta acerca de los deportes, solicitamos tu ayuda. Deseamos saber acerca de tus experiencias en los deportes y por que no participas en deportes o haces ejercicio. Que es lo que te gusta de tu entrenador, de tu equipo y del deporte que practicas, y Que es lo que NO te gusta. Tus respuestas sinceras nos ayudaran a mejorar los programas y las oportunidades para todo los que participan en deportes en general.

Este estudio abarcara estudiantes de escuelas seleccionadas del Distrito Federal. Tu participación en el estudio es voluntaria. Tus respuestas son muy importantes y nos ayudaran a promover cambios en los programas para que se ajusten mejor a tus necesidades. Si aceptas participar en el estudio tus respuestas son confidenciales (no se comentaran con los entrenadores, amigos o padres). Este NO es un examen y no tiene nada que ver con tus calificaciones en la escuela. Si no quieres participar en el estudio no hay ningún problema. Pero queremos que sepas que lo que tu piensas es muy importante y por ello quisieramos que contestes lo mas preciso que te sea posible. Si hay alguna palabra que no entiendas por favor pide ayuda y con gusto te explicaremos.

Agradecemos mucho tu ayuda y disposición a participar, ya que eso nos ayudara a conocer tus experiencias en los deportes.

Nombre_____

Edad_____

Grupo_____

Peso_____

Estatura_____

Instrucciones

Por favor usa un lápiz del número 2 para contestar las siguientes preguntas. Para cada pregunta, llena el círculo que corresponde a la mejor respuesta a cada pregunta. Pocas preguntas requieren que escribas tu respuesta, en esos casos habrá algunas lineas para tu respuesta. Si no entiendes la pregunta pide ayuda a quien te de el cuestionario.

Edad hoy: 9 10 11 12 13 14 15 16 17

Fecha de nacimiento:
_____/_____/_____
Día Mes Año

Sexo: 1 Masculino 2 Femenino

Grado escolar:
Primaria : 1 2 3 4 5 6
Secundaria: 1 2 3
Preparatoria: 1 2 3

Nombre de la escuela _____

¿En relación a los compañeros de grupo de tu mismo sexo, como te consideras?:

1 MAS ALTO que los demás 2 IGUAL que la mayoría

3 MAS BAJO que los demás

¿En relación a los compañeros de grupo de tu mismo sexo, como te consideras:

1 peso MENOS que los demás 2 peso IGUAL que la mayoría

3 peso MAS que los demás

Algunos datos generales sobre la familia y lo que hace

¿**Dónde vive**? (En que parte de la ciudad, delegación, colonia)_____

Ocupación del padre _____**Ocupación de la madre**_____

¿**Número de hijos en la familia**?_____

¿**Que lugar ocupas entre tus hermanos** (1o., 2o. etc) **del mayor al menor**?_____

¿**Tus padres practicaron algun deporte en los años anteriores**?

Madre Sí No

¿que deporte?_____

Padre Sí No

¿que deporte? _____

¿**Cuando practicas deportes tienes que ir a algun parque, gimnasio o campo deportivo lejos de tu casa**? Sí No

¿**Explica que tan lejos está** (en tiempo o distancia, 1 hora, 2 hs o 1 km, 10 km o más)?

_____

Nombre_____

I. Cosas que me gusta hacer

Instrucciones: Lee las actividades enlistadas a continuación. Si te encuentras realizando esas actividades en este periodo, encierra en un circulo-- "1". Si realizaras durante los próximos meses de este año, encierra en un circulo-- "2". Si realizaste esta actividad el año anterior , pero ya no la realizas, encierra en un círculo--"3" . No marques aquellas actividades que no hayas practicado nunca.

Actividades	Lo estoy haciendo ahora	Haré este año en algún momento	Lo hice el año pasado pero ya no lo hago.
Clases de música (tocar instrumento o cantar)	1	2	3
Trabajar (empacando o vendiendo periódicos)	1	2	3
Quehaceres domésticos (barrer, limpiar, tirar la basura, etc)	1	2	3
Grupos juveniles (e.g., Scouts, Guías)	1	2	3
Juegos o partidos informales (entre amigos)	1	2	3
Clases de baile/ballet	1	2	3
Otros pasatiempos (computación, arte,trabajos manuales)	1	2	3
Teatro escolar	1	2	3
Actividades deportivas en la escuela	1	2	3
Actividades deportivas fuera de la escuela	1	2	3
Actividades organizadas por la iglesia (coros, clases, deportes, etc.)	1	2	3
Salir con el novio/novia	1	2	3
Ir al cine	1	2	3
Salir a fiestas	1	2	3
Ver TV	1	2	3

Actividades	Lo estoy haciendo ahora	Haré este año en algún momento	Lo hice el año pasado pero ya no lo hago.
Video juegos	1	2	3
"Salir con amigos"	1	2	3
Andar en bicicleta, patinar, caminar	1	2	3
Hablar por teléfono	1	2	3
Usar Internet o....	1	2	3
Otras: _____ (lista de actividades)	1	2	3
_____	1	2	3
_____	1	2	3

II. Experiencias en deportes que No sean escolares

Diversos grupos fuera de la escuela (Como por ejemplo en los deportivos, parques recreativos, las iglesias, IMSS, YMCA, CONADE) ofrecen actividades deportivas a las que te puedes integrar. Si haz participado en alguna de esas actividades, queremos que pienses como fue tu experiencia para contestar las siguientes preguntas.

Sección A.

1. Algunas vez has jugado en algun **equipo deportivo (con entrenador)** que haya sido organizado fuera de la escuela? (por ej. deportivo, parque recreativo, IMSS,YMCA, iglesia)?

   1 Sí 2 No

2. Como entraste al equipo...

   1. Fuiste seleccionado por to habilidades

   2. No pasaste or selección

3. Estas pensando en jugar algún deporte de equipo fuera de la escuela en este periodo, o en algun momento este año?

   1 Sí 2 No

Sección B. **Historia de experiencias deportivas no-escolares**

Para cada deporte listado a continuación encierra en un círculo lo que corresponda, si alguna vez haz practicado el deporte, o te haz inscrito a algún club, si antes jugaste pero ahora ya no practicas el deporte como parte de un equipo o club.

Deporte	Actualmente practico el deporte	Probé pero no me aceptaron en equipo	Estuve pero ya no juego	Numero de años de participar antes dejarlo
1. Beisbol	1	1	1	_____
2. Basquetbol	1	1	1	_____
3. Boliche	1	1	1	_____
4. Patinaje	1	1	1	_____
5. Futbol Americano	1	1	1	_____
6. Gimnasia	1	1	1	_____
7. Futbol Soccer	1	1	1	_____
8. Nadar/Bucear	1	1	1	_____
9. Tenis	1	1	1	_____
10. Atletismo	1	1	1	_____
11. Voleibol	1	1	1	_____
12. Lucha	1	1	1	_____
13. Otros _____ (lista de deportes)	1	1	1	_____
14. _____	1	1	1	_____
15. _____	1	1	1	_____

Si ya no perteneces a algún equipo que NO SEA ESCOLAR pasa a la PARTE III en la página 14.

Sección C. De los **deportes de equipo que marcaste arriba** selecciona sólo el deporte que tu consideras que es el mejor juegas (con más habilidad).

De los deportes no escolares escribe el número (1 - 15) del que tú consideras es el que mejor juegas en esta línea._____

El deporte que mejor juegas fuera de la escuela, **¿por qué lo juegas?** Considera cada una de las razones que mejor lo explican en la lista que sigue, por cada rázon encierra en un círculo el número que corresponda al grado de importancia que tiene para tí.

		Muy Importante		Algo Importante	Poco Importante	Nada Importante
1.	Para mejorar mis destrezas	5	4	3	2	1
2.	Para estar con mis amigos	5	4	3	2	1
3.	Para ganar	5	4	3	2	1
4.	Porque alguien que admiro juega ese deporte	5	4	3	2	1
5.	Porque hay que viajar para jugar	5	4	3	2	1
6.	Para jugar con el equipo	5	4	3	2	1
7.	Por la emoción de competir	5	4	3	2	1
8.	Porque mis padres o amigos quieren que yo participe	5	4	3	2	1
9.	Para aprender nuevas destrezas	5	4	3	2	1
10.	Para hacer algo en lo soy bueno	5	4	3	2	1
11.	Para emplear mi energía	5	4	3	2	1
12.	Por las recompensas, por ejemplo trofeos	5	4	3	2	1
13.	Para hacer algo de ejercicio	5	4	3	2	1
14.	Para tener algo que hacer	5	4	3	2	1
15.	Por el espíritu de equipo	5	4	3	2	1
16.	Para sentirme importante	5	4	3	2	1
17.	Para ir a competencias de más alto nivel	5	4	3	2	1

		Muy Importante		Algo Importante	Poco Importante	Nada Importante
18.	Para ser popular por ser buen deportista	5	4	3	2	1
19.	Por el reto de la competencia	5	4	3	2	1
20.	Porque me agradan los entrenadores	5	4	3	2	1
21.	Para divertirme	5	4	3	2	1
22.	Para usar el equipo y las instalaciones	5	4	3	2	1
23.	Para llamar la atención de las muchachas/muchachos	5	4	3	2	1
24.	Por el reconocimiento	5	4	3	2	1
25.	Para estar en buena condición física	5	4	3	2	1
26.	Para salir de casa	5	4	3	2	1
27.	Otras _____	5	4	3	2	1
28.	Otras _____	5	4	3	2	1

Sección D. De todas las razones enlistadas arriba, ¿cual es la MAS importante de todas para que tu participes en el deporte que mejor realizas FUERA DE LA ESCUELA?

Escribe el número que corresponda (1 - 28) a esa razón en esta línea._____

1. ¿Durante cuantos años (o meses) haz jugado este deporte? _____

2. ¿Como calificarías tu habilidad en el deporte que mejor practicas fuera de la escuela comparado con los otros miembros de tu equipo?

1	2	3	4	5
muy mala	mala	igual	buena	muy buena

3. ¿Que tan importante es para tí seguir perteneciendo a ese equipo?

5	4	3	2	1
muy importante	importante	algo importante	poco importante	no es importante

4. ¿Qué tan satisfecho te sientes de tu experiencia jugando en deporte que mejor realizas fuera de la escuela?

1	2	3	4	5
nada satisfecho	poco satisfecho	algo satisfecho	satisfecho	muy satisfecho

5. Algunas veces los entrenadores nos preguntan que quieren decir los deportistas cuando dicen que quieren divertirse en el deporte. Si seleccionaste los números 4 o 5 para el Número 23, "para divertirme", **¿que significa divertirse en el deporte para tí?** Si seleccionaste 1, 2, or 3, PASA a la pregunta 6.

6. ¿Qué es lo que no te divierte de practicar los deportes fuera de la escuela?

Motivos para participar en el deporte

Para explicar que hace que tengas buenos resultados en el deporte o actividad física encierra en un círculo el número que mejor indica tu motivación.

Siento que mis resultados son mejores en el deporte cuando...

	No tan Importante	Poco Importante	Algo Importante	Importante	Muy Importante
1. Aprendo una nueva destreza que me hace practicar más.	1	2	3	4	5
2.Soy el único que puede mostrar el juego o la destreza.	1	2	3	4	5
3. Cuando aprendo algo que es divertido.	1	2	3	4	5
4. Cuando puedo hacerlo mejor que mis compañeros de equipo.	1	2	3	4	5
5. Aprendo una nueva destreza con gran esfuerzo.	1	2	3	4	5
6. Los demás no pueden hacerlo tan bien como yo.	1	2	3	4	5
7. Trabajo muy intensamente.	1	2	3	4	5
8. Soy el mejor	1	2	3	4	5
9. Cuando aprendo algo, eso me hace ir y practicar más.	1	2	3	4	5
10. Anoto más puntos/alcanzo metas o logro el mejor tiempo	1	2	3	4	5
11. Aprender una nueva destreza me hace sentir bien.	1	2	3	4	5
12. Otros se equivocan y yo no.	1	2	3	4	5
13. Pongo mi mejor esfuerzo.	1	2	3	4	5

Nombre_____

III. Experiencias en deportes <u>En tu escuela</u>

Si tu escuela tiene equipos deportivos (Si la escuela cuenta con entrenadores, proporciona uniformes y se organizan competencias con otras escuelas) o equipos, responde la pregunta 1 y todas las otras preguntas que se apliquen a tu caso.

<u>Sección A</u> 1. Alguna vez haz jugado en algún **equipo deportivo (con entrenador) patrocinado por tu escuela?**

1 Si (PASA a la Sección B) 2 No

2. Eres miembro de alguno de los **equipo deportivos de tu escuela?** o piensas entrar al equipo de tu escuela?

1 Si 2 No

<u>Sección B</u>. **Historia de la experiencia en deportes escolares**

Nos interesa conocer los deportes que practicas actualmente o que paracticaste.Para cada uno de los deportes que se enlistan abajo, encierra en un círculo si alguna vez haz practicado el deporte, si haz entrado a algun club para practicar el deporte, o si haz jugado alguna vez pero ya no lo juegas con algun equipo o club.

<u>Deporte</u>	Actualmente practico <u>el deporte</u>	Probé pero no me aceptaron <u>en equipo</u>	Estuve pero ya no <u>juego</u>	Numero de años de participar antes <u>dejarlo</u>
1. Beisbol	1	1	1	_____
2. Basquetbol	1	1	1	_____
3. Boliche	1	1	1	_____
4. Patinaje	1	1	1	_____
5. Futbol Americano	1	1	1	_____
6. Gimnasia	1	1	1	_____
7. Futbol Soccer	1	1	1	_____
8. Nadar/Bucear	1	1	1	_____
9. Tenis	1	1	1	_____
10.Atletismo	1	1	1	_____

Deporte	Actualmente practico el deporte	Probé pero no me aceptaron en equipo	Estuve pero ya no juego	Numero de años de participar antes dejarlo
11. Voleibol	1	1	1	_____
12. Lucha	1	1	1	_____
13. Otros _____ (lista de deportes)	1	1	1	_____
14. _____	1	1	1	_____
15. _____	1	1	1	_____

Sección C. De los **equipos deportivos organizados por tu escuela** en los cuales haz participado, selecciona el deporte que tu consideras es el que mejor juegas (en el que tienes más habilidad).

Escribe el número del deporte patrocinado por tu escuela (1 - 15) que mejor juegas en esta línea._____

El deporte ESCOLAR que mejor juegas, **por qué lo juegas?.**
Considera cada una de las razones que mejor lo explican en la lista que sigue, por cada razon encierra en un círculo el número que corresponda al grado de importancia que tiene para tí.

		Muy Importante		Algo Importante	Poco Importante	Nada Importante
1.	Para mejorar mis destrezas	5	4	3	2	1
2.	Para estar con mis amigos	5	4	3	2	1
3.	Para ganar	5	4	3	2	1
4.	Porque alguien que admiro juega ese deporte	5	4	3	2	1
5.	Porque hay que viajar para jugar	5	4	3	2	1
6.	Para jugar con el equipo	5	4	3	2	1
7.	Por la emoción de competir	5	4	3	2	1

		Muy Importante		Algo Importante	Poco Importante	Nada Importante
8.	Porque mis padres o amigos quieren que yo participe	5	4	3	2	1
9.	Para aprender nuevas destrezas	5	4	3	2	1
10.	Para hacer algo en lo soy bueno	5	4	3	2	1
11.	Para emplear mi energía	5	4	3	2	1
12.	Por las recompensas, por ejemplo trofeos	5	4	3	2	1
13.	Para hacer algo de ejercicio	5	4	3	2	1
14.	Para tener algo que hacer	5	4	3	2	1
15.	Por el espíritu de equipo	5	4	3	2	1
16.	Para sentirme importante	5	4	3	2	1
17.	Para ir a competencias de más alto nivel	5	4	3	2	1
18.	Para ser popular por ser buen deportista	5	4	3	2	1
19.	Por el reto de la competencia	5	4	3	2	1
20.	Porque me agradan los entrenadores	5	4	3	2	1
21.	Para divertirme	5	4	3	2	1
22.	Para usar el equipo y las instalaciones	5	4	3	2	1
23.	Para llamar la atención de las muchachas/muchachos	5	4	3	2	1
24.	Por el reconocimiento	5	4	3	2	1
25.	Para estar en buena condición física	5	4	3	2	1

		Muy Importante		Algo Importante	Poco Importante	Nada Importante
26.	Para salir de casa	5	4	3	2	1
27.	Otras _____	5	4	3	2	1
28.	Otras _____	5	4	3	2	1

Sección D. De todas las razones enlistadas antes, cual es la razón MÁS importante para que tu participes en el deporte ESCOLAR que mejor juegas? Escribe el número (1 - 28) que corresponda a esa razón en este línea. _____

1. Durante cuántos años (o meses) haz jugado este deporte? _____

2. Como calificarías tu habilidad en tu mejor deporte escolar comparado con los otros miembros de tu equipo?

1	2	3	4	5
muy mala	mala	igual	buena	muy buena

3. Que tan importante es para tí seguir perteneciendo a ese equipo?

5	4	3	2	1
muy importante	importante	algo importante	poco importante	no es importante

4. ¿Que tan satisfecho te sientes de tu experiencia jugando en tu mejor deporte en la escuela?

1	2	3	4	5
nada satisfecho	poco satisfecho	algo satisfecho	satisfecho	muy satisfecho

5. Algunas veces los entrenadores nos preguntan que quieren decir los deportistas cuando dicen que quieren divertirse en el deporte. Si seleccionaste los números 4 o 5 para el Número 23, "para divertirme", **¿qué significa divertirse en el deporte para tí?** Si seleccionaste 1, 2, or 3, PASA a la pregunta 6.

6. ¿Que es lo qué no te divierte de practicar los deportes en la escuela?

Nombre_____

IV. Información acerca de los Deportes que he dejado de practicar

Muchos de nosotros hemos jugado más de un deporte cuando estabamos creciendo. Sin embargo, por diversas razones abandonamos o dejamos de practicar uno o más deportes. Desearíamos saber cuales son los deportes que haz dejado de jugar, por que los dejaste, y que te gustaría cambiar acerca de los deportes en los que aún participas.

Sección A.Diversas razones pueden haber provocado que dejaras de practicar algun deporte. Quisieramos saber por qué lo dejaste. Indica cual es el deporte escolar o no escolar que dejaste de practicar más recientemente. Indica de que deporte se trata y por favor responde las siguientes preguntas. Piensa algunos minutos que es lo que sientes y que fue lo que pensaste cuando tomaste la decisión de dejar de practicarlo.

1. Escribe el número del **deporte no-escolar** (1 - 15) que dejaste de practicar más recientemente en esta línea._____

2. Cuando practicabas el deporte, que tanto tiempo te permitian jugar o estar en una competencia?

0	1	2	3	4
ningún tiempo	muy poco tiempo	algún tiempo	mucho tiempo	casi todo el tiempo

3. ¿En comparación con tus compañeros de equipo, la última vez que practicaste ese deporte, como crees que eras?

1 MAS alto que los demás 2 IGUAL que la mayoría

3 MAS BAJO que los demás

4. ¿En comparación con tus compañeros de equipo, la última vez que practicaste ese deporte, como te eras?

1 pesaba MENOS que los demás 2 pesaba IGUAL que los demás

3 pesaba MAS que los demás

5. ¿Qué tan satisfecho estabas con tu experiencia practicando este deporte?

1	2	3	4	5
nada satisfecho	poco satisfecho	algo satisfecho	satisfecho	muy satisfecho

6. ¿Qué tanto disfrutabas practicar ese deporte?

5	4	3	2	1
muchísimo	bastante	algo	un poco	casi nada

7. ¿ Cómo consideras tu habilidad para este deporte en comparación con el resto de los miembros de tu equipo?

1	2	3	4	5
muy mala	mala	igual	buena	muy buena

Sección B. A continuación enlistamos algunas de las razones por las cuales algunos deportistas dejan de participar en ciertos deportes. Piensa en cada una de ellas y selecciona el número que mejor indique que tan importante fue cada una de las razones para que tu dejarás de participar en los deportes escolares o no-escolares que se encontraban en el número 1, de la lista en la página 12.

	No tan Importante	Poco Importante	Algo Importante	Importante	Muy Importante
a. Ponían demasiado énfasis en ganar	1	2	3	4	5
b. Mi entrenador no era buen instructor	1	2	3	4	5
c. No me divertía.	1	2	3	4	5
d. Me sentía muy presionado(a).	1	2	3	4	5
e. Siempre estuve en un equipo perdedor	1	2	3	4	5
f. Este deporte requiere demasiado tiempo	1	2	3	4	5
g. Practicar el deporte no mejoraba mi aptitud física.	1	2	3	4	5
h. Practicar el deporte representaba mucho stress físico para mi (p.ej., lesiones).	1	2	3	4	5
i. No era tan buen jugador como los demás en ese deporte	1	2	3	4	5

	No tan Importante	Poco Importante	Importante	Algo Importante	Muy Importante
j. El entrenador siempre me gritaba cuando cometía errores	1	2	3	4	5
k. El entrenador tenía sus jugadores preferidos	1	2	3	4	5
l. Las practicas y los juegos eran aburridos.	1	2	3	4	5
m. Ya no tenía interés en ese deporte.	1	2	3	4	5
n. Los jugadores en ese deporte son demasiado rudos.	1	2	3	4	5
o. No tuve oportunidad de jugar mucho.	1	2	3	4	5
p. Los juegos y los entrenamientos estaban programados en horarios a los que no podía asistir	1	2	3	4	5
q. No me gustaba el entrenador	1	2	3	4	5
r. Nunca me sentí parte del equipo.	1	2	3	4	5
s. Mis compañeros de equipo no me querían.	1	2	3	4	5
t. Quería participar en otras actividades no deportivas.	1	2	3	4	5
u. Tenia que trabajar	1	2	3	4	5
v. Mi padre no quería que jugara.	1	2	3	4	5
w. Mi madre no quería que jugara.	1	2	3	4	5
x. Estaba cansado de jugar y de entrenar.	1	2	3	4	5

	No tan Importante	Poco Importante	Algo Importante	Importante	Muy Importante
y. Este deporte me impedía practicar otros deportes.	1	2	3	4	5
z. No había deportes que estuvieran de acuerdo a mi edad.	1	2	3	4	5
aa. Me sentía avergonzado por la forma en que se me veía con el uniforme de juego	1	2	3	4	5
bb. Necesitaba mas tiempo para estudiar.	1	2	3	4	5
cc. No podía comprar el equipo.	1	2	3	4	5
dd. No era lo suficientemente bueno para seguir jugando.	1	2	3	4	5
ee. No podía cubrir los juegos y entrenamientos todo el año	1	2	3	4	5
ff. No estaba mejorando mis destrezas	1	2	3	4	5
gg. Jugar no me permitía estar en buena forma.	1	2	3	4	5
hh. No podía estar con mis amigos	1	2	3	4	5
ii. No me gustaba viajar	1	2	3	4	5
jj. Mis amigos no querían que yo jugara	1	2	3	4	5
kk. En nuestro grupo no había suficiente espíritu de equipo	1	2	3	4	5
ll. No estaba aprendiendo nuevas destrezas	1	2	3	4	5
mm. No reconocían mi esfuerzo	1	2	3	4	5

	No tan Importante	Poco Importante	Algo Importante	Importante	Muy Importante
nn. No me sentía importante jugando en ese equipo	1	2	3	4	5
oo. No representaba ningún esfuerzo	1	2	3	4	5
pp. Mi entregador gritaba demasiado	1	2	3	4	5
qq. Otras_____ (por favor enlistar)	1	2	3	4	5

Sección C. **Cambios a los programas deportivos escolares y no-escolares**

¿Si volvíeras a practicar el deporte que indicaste antes que habías abandonado que te gustaría que cambiara para que lo disfrutaras o para hacer que tú participaras mas en el deporte?. Por favor califica cada una de las siguientes afirmaciones que se enlistan a continuación en función de la importancia de los cambios para hacer que tú participes de nuevo en el deporte.

	No tan Importante	Poco Importante	Algo Importante	Importante	Muy Importante
Volvería a jugar si:					
a. el entrenador fuera un mejor instructor.	1	2	3	4	5
b. hubiera menos énfasis en ganar.	1	2	3	4	5
c. el deporte estuviera de acuerdo a mi edad.	1	2	3	4	5
d. practicaramos menos.	1	2	3	4	5
e. pudiera jugar más.	1	2	3	4	5
f. el entrenador entendiera mejor el deporte.	1	2	3	4	5
g. el entrenador no gritara tanto	1	2	3	4	5
h. juegos y practicas se programaran en otros horarios.	1	2	3	4	5
i. las practicas fueran más divertidas.	1	2	3	4	5

	No tan Importante	Poco Importante	Algo Importante	Importante	Muy Importante
j. los entrenadores entendieran mejor a los jugadores.	1	2	3	4	5
k. no les permitieran a mis padres venir a los juegos.	1	2	3	4	5
l. la temporada fuera. más corta	1	2	3	4	5
m. mis padres no me. presionaran.	1	2	3	4	5
n. que hubiera más opciones de equipos para competir con jugadores de mi mismo nivel.	1	2	3	4	5
o. que no me lastimaran en el juego.	1	2	3	4	5
p. el equipo fuera menos costoso.	1	2	3	4	5
q. Si pudiera jugar en una equipo mixto .	1	2	3	4	5
r. si hubiera instalaciones más cercanas.	1	2	3	4	5
s. el deporte no demandara tanto tiempo.	1	2	3	4	5
t. el deporte no necesitara equipo especial.	1	2	3	4	5
u. las practicas o juegos no interferieran con mi tiempo libre	1	2	3	4	5
v. las practicas o juegos no afectaran mis estudios.	1	2	3	4	5
w. Otras_____ (por favor enlista)	1	2	3	4	5

Participation and Drop-out Patterns in American Agency-sponsored and Interscholastic Sports

Introduction

Many coaches, teachers, and sport administrators are interested in understanding how effective youth sport programs (for example, Little League baseball, soccer, tennis, and swimming) are in meeting the needs of the youth in their community. In particular, questions have been raised as to how effective sports programs are in meeting the needs of girls and people of differing economic/social classes. In addition, a lot of young people have been dropping out of sports. Coaches, teachers, sport administrators and parents want to know why.

To learn what youth like and do not like about sports, we are asking for your help. We would like to know about your experiences in sport and why you are not participating in sport or physical activity. What do you like about your coach, team and sport? What do you NOT like? Your honest thoughts to some of these difficult questions will help us to improve sport programs and opportunities for all of you.

This survey involves students in selected schools throughout the Federal District. Your participation in this survey is voluntary. However, your responses are important and will help us to change sports programs to better meet your needs. As a participant in this survey, please understand that your responses are confidential (they will not be shared with your coaches, friends or parents). This is NOT a test and will not count in any of your school grades. You have the right to stop participation at any time. What you think is important and we would like you to answer the questions as accurately as possible. Therefore, if there are words you do not know or understand, ask your teacher for help.

We really appreciate your willingness to help us learn more about the sport experiences you have had.

Directions

Please use a Number 2 pencil to answer the following questions. For each question, blacken the circle of the best answer for the question. A few questions require that you write the answer on the lines provided. If you do not understand a question, please ask your teacher for help.

Your age today: 9 10 11 12 13 14 15 16

Birthdate:
_____/_____/_____
Day Month Year

Sex: 1 boy 2 girl

Grade in school:
Primaria: 1 2 3 4 5 6
Secundaria: 1 2 3
Preparatoria: 1 2 3

Name of your school _____

Compared to most of your classmates who are the same sex, are you:

1 TALLER than most 2 about the SAME as most

3 SHORTER than most

Compared to most of your classmates who are the same sex, do you:

1 weigh LESS than most 2 weigh about the SAME as most

3 weigh MORE than most

A Little background information on your family and life

Where do you live? (in what region of the city?) Delagacion
Colonia

What do your parents do for a living? :Mother_____

Father_____

Number of children in your family?_____ Which number are you ?_____

Were your parents ever active in sports??
Mother Yes No
Which sport(s)?_____

Father Yes No
Which sport(s)?_____

If you play sports, how far is it from your house to the sports field, or the place you practice?
_____ km _____ minutes driving time

I. **Things I like to do**

Directions: Read each activity listed below. If you are currently doing the activity or will be doing the activity later this year, circle the "1". If you did the activity last year, but will NOT be doing the activity this year, circle the "2" Skip those activities that you have never done.

Activities	I am or will be doing this year	I did last year but will NOT be doing this year
Musical instruments or singing lessons	1	2
Have a job (e.g., delivering newspapers, work for pay)	1	2
Sport team NOT sponsored by my school (e.g., Jr. Pro, AAU)	1	2
Chores at home (e.g., mowing lawn, taking out trash)	1	2
Youth clubs (e.g., Scouts, Guias)	1	2
Playing pick-up games	1	2
Dance lessons	1	2
Classes for fun (e.g., computer, art)	1	2
School counsel or governing activities (asociacion de los alumnos)	1	2
Drama club or school plays	1	2
Intramural sports	1	2
Sport lessons (e.g., tennis, swimming)	1	2
Sport camps/schools (e.g., basketball, soccer)	1	2
Church-related activities (e.g.,choir, classes, sport teams, etc.)	1	2
Dating	1	2
Going to movies	1	2
Parties	1	2
Watching TV	1	2
Playing video games	1	2

Activities (cont.)	I am or will be doing this year	I did last year but will NOT be doing this year
"Hanging out" with friends	1	2
Bicycling, rollerblading, walking	1	2
Talking on the telephone	1	2
Surfing the Net or visiting chat rooms	1	2
Others: _____ (list activity)	1	2
_____	1	2
_____	1	2

II. Sport Experiences Not Sponsored By Your School (NON-SCHOOL)

Many groups outside of schools (such as parks and recreation, churches, YMCAs, YWCAs, Jr. Pro, AAU) provide sport teams for you to join. Think about your experiences on these teams and answer the following questions.

Section A.

1. Have you ever played on a **sport team (with coaches)** that was organized by groups outside your school (e.g., parks & rec, YM/YWCA, Jr. Pro, AAU, PAL, churches)?

1 Yes (Go to Question 2) 2 No (SKIP to PART III, p. 8)

2. Are you a playing on a **sport team outside your school** now or do you plan to join one this year?

1 Yes 2 No

Section B. **History of non-school sport experiences**

For each sport below, blacken the appropriate circle if you have ever tried out for the sport, if you have joined a club to participate in the sport, or if you have played but are no longer playing the sport as part of a team or club.

Sport	Currently playing this sport	Tried out for but did not join the team	Joined a club to participate	Joined, but am no longer playing
1. Archery	1	1	1	1
2. Baseball	1	1	1	1
3. Basketball	1	1	1	1

Sport	Currently playing this sport	Tried out for but did not join the team	Joined a club to participate	Joined, but am no longer playing
4. Bowling	1	1	1	1
5. Cross Country	1	1	1	1
6. Equestrian Events	1	1	1	1
7. Field Hockey	1	1	1	1
8. Figure Skating	1	1	1	1
9. Football (Tackle)	1	1	1	1
10. Gymnastics	1	1	1	1
11. Soccer	1	1	1	1
12. Softball	1	1	1	1
13. Swimming/Diving	1	1	1	1
14. Tennis	1	1	1	1
15. Track and Field	1	1	1	1
16. Volleyball	1	1	1	1
17. Wrestling	1	1	1	1
18. Other _____ (list sport)	1	1	1	1
19. _____	1	1	1	1
20. _____	1	1	1	1

If you are NO LONGER a member of a NON-SCHOOL sport team, go to PART III on page 9.

Section C. Of the **sport teams checked above** that you have played on, select the sport that you think you play the best (have the most ability).

Write the number of the sport outside of school (1 - 20) you play best on this line._____

For your best sport outside of school **why do you play this sport?** For each of the following reasons, circle the number in the column that best describes how important the reason is for your playing on this team. Please blacken one circle for each reason.

		Very Important		Somewhat Important	A Little Important	Not at all Important
1.	To improve my skills	5	4	3	2	1
2.	To be with my friends	5	4	3	2	1
3.	To win	5	4	3	2	1
4.	Someone I admire played this sport	5	4	3	2	1
5.	For the travel that goes with playing	5	4	3	2	1
6.	To stay in shape	5	4	3	2	1
7.	To play as part of a team	5	4	3	2	1
8.	For the excitement of competition	5	4	3	2	1
9.	My parents or close friends want me to participate	5	4	3	2	1
10.	To learn new skills	5	4	3	2	1
11.	To meet new friends	5	4	3	2	1
12.	To do something I'm good at	5	4	3	2	1
13.	To get rid of energy	5	4	3	2	1
14.	For the rewards, such as trophies	5	4	3	2	1
15.	To get exercise	5	4	3	2	1
16.	To have something to do	5	4	3	2	1
17.	For the team spirit	5	4	3	2	1
18.	To feel important	5	4	3	2	1
19.	To go to a higher level of competition	5	4	3	2	1
20.	To be popular by being a good athlete	5	4	3	2	1
21.	For the challenge of competition	5	4	3	2	1

		Very Important	Important	Somewhat Important	A Little Important	Not at all Important
22.	I like the coaches	5	4	3	2	1
23.	To have fun	5	4	3	2	1
24.	To use the equipment and/or facilities	5	4	3	2	1
25.	To attract boy/girls' attention	5	4	3	2	1
26.	For the recognition	5	4	3	2	1
27.	To be physically fit	5	4	3	2	1
28.	To get out of the house	5	4	3	2	1
29.	Other _____	5	4	3	2	1
30.	Other _____	5	4	3	2	1

Section D. Of all the reasons listed previously, what is the MOST important reason for your participating in your best NON-SCHOOL sponsored sport? Write the number (1 - 30) of the reason on this line._____

1. How many years have you played this sport? _____

2. How would you rate your ability in your best non-school sport compared to other players on your team?

1	2	3	4	5
very poor	poor	same	good	very good

3. How important is it to you to remain a member of this team?

5	4	3	2	1
very important	important	somewhat important	a little bit important	not at all important

4. How satisfied are you with your playing experience in your best non-school sport?

1	2	3	4	5
not at all	a little satisfied	somewhat satisfied	satisfied	very satisfied

5. Coaches often ask us what athletes mean when they say they want to have fun in their sport. If you circled a 4 or 5 for Number 23, "to have fun", what is fun about playing your sport? If you circled a 1, 2, or 3, Go to Question 6.

6. What is NOT fun about playing your best NON-SCHOOL sport?

III. Sport Experiences Within Your School

If your school sponsors sport teams (that is, provides coaches, uniforms and a schedule of games with other school) or intramural teams (that is, scheduled games after school in which you play teams from your own school) answer question 1and all other questions that apply to you. **IF YOUR SCHOOL DOES NOT SPONSOR SPORTS OR INTRAMURAL TEAMS GO TO PART IV, PAGE 12.**

Section A. 1. Have you ever played on a **sport team (with coaches) sponsored by your school?**

1 Yes (SKIP to Section B) 2 No (SKIP to PART IV)

2. Are you a member of **your school's sport teams** or do you plan to join a sport team in your school?

1 Yes 2 No

Section B. **History of school sport experiences**

For each sport below, blacken the appropriate circle if you have ever tried out for the sport, if you have joined a club to participate in the sport, or if you have played but are no longer playing the sport as part of a team or club.

Sport	Currently playing this sport	Tried out for but did not join the team	Joined a club to participate	Joined, but am no longer playing
1. Baseball	1	1	1	1
2. Basketball	1	1	1	1
3. Cross Country	1	1	1	1
4. Equestrian Events	1	1	1	1
5. Figure Skating	1	1	1	1
6. Gymnastics	1	1	1	1
7. Soccer	1	1	1	1
8. Softball	1	1	1	1
9. Swimming/Diving	1	1	1	1
19. Tennis	1	1	1	1
10. Track and Field	1	1	1	1
11. Volleyball	1	1	1	1
12. Wrestling	1	1	1	1

13. Other _____ (list sport)	1	1	1	1
14. _____	1	1	1	1
15. _____	1	1	1	1

If you are NO LONGER a member of a SCHOOL sport team, go to PART IV, page 12.

Section C. Of the **sport teams sponsored by your school** you have joined, select the sport that you think you play the best (have the most ability).

Write the number of the sport sponsored by your school (1 - 15) you play best on this line._____

For your best SCHOOL sport, why do you play this sport? For each of the following reasons, blacken the number in the column that best describes how important the reason is for your playing on this team. Please blacken one circle for each reason.

		Very Important		Somewhat Important	Slightly Important	Not at all Important
1.	To improve my skills	5	4	3	2	1
2.	To be with my friends	5	4	3	2	1
3.	To win	5	4	3	2	1
4.	Someone I admire played this sport	5	4	3	2	1
5.	For the travel that goes with playing	5	4	3	2	1
6.	To stay in shape	5	4	3	2	1
7.	To play as part of a team	5	4	3	2	1
8.	For the excitement of competition	5	4	3	2	1
9.	My parents or close friends want me to participate	5	4	3	2	1
10.	To learn new skills	5	4	3	2	1
11.	To meet new friends	5	4	3	2	1
12.	To do something I'm good at	5	4	3	2	1
13.	To release energy	5	4	3	2	1

		Very Important		Somewhat Important	Slightly Important	Not at all Important
14.	For the rewards, such as trophies	5	4	3	2	1
15.	To get exercise	5	4	3	2	1
16.	To have something to do	5	4	3	2	1
17.	For the team spirit	5	4	3	2	1
18.	To feel important	5	4	3	2	1
19.	To go to a higher level of competition	5	4	3	2	1
20.	To be popular by being a good athlete	5	4	3	2	1
21.	For the challenge of competition	5	4	3	2	1
22.	I like the coaches	5	4	3	2	1
23.	To have fun	5	4	3	2	1
24.	To use the equipment and/or facilities	5	4	3	2	1
25.	To attract boy/girls attention	5	4	3	2	1
26.	For the recognition	5	4	3	2	1
27.	To be physically fit	5	4	3	2	1
28.	To get out of the house	5	4	3	2	1
29.	Other _____	5	4	3	2	1
30.	Other _____	5	4	3	2	1

Section D. Of all the reasons listed above, what is the MOST important reason for your participating in your best SCHOOL sponsored sport? Write the number (1 - 30) of the reason on this line._____

1. How many years have you played this sport? _____

2. How would you rate your ability in your best school sport compared to other players on your team?

1	2	3	4	5
very poor	poor	same	good	very good

3. How important is it to you to remain a member of this team?

5	4	3	2	1
very important	important	somewhat important	a little bit important	not at all important

4. How satisfied are you with your playing experience in your best school sport?

1	2	3	4	5
not at all	a little satisfied	somewhat satisfied	satisfied	very satisfied

5. Coaches often ask us what athletes mean when they say they want to have fun in their sport. If you circled a 4 or 5 for Number 23, "to have fun", what is fun about playing your sport? If you circled a 1, 2, or 3, Go to Question 6.

6. What is NOT fun about playing your best SCHOOL sport?

IV. Information about Sports I Have Stopped Playing

Many of us have played more than one sport when we were growing up. However, for all kinds of reasons we have had to drop out of one or more sports. We would like to know what sports you have stopped playing, why you stopped playing, and what you would change about the sport to stay involved.

Section A. Background Information on Sports

For each sport below, blacken the appropriate circle if you have ever tried out for the sport, if you have joined a club to participate in the sport, or if you have played but are no longer playing the sport as part of a team or club.

Sport	Currently playing this sport	Never played this sport	Joined, but am no longer playing	Number of years played before I quit
1. Archery	1	1	1	_____
2. Baseball	1	1	1	_____
3. Basketball	1	1	1	_____
4. Bowling	1	1	1	_____
5. Cross Country	1	1	1	_____
6. Equestrian Events	1	1	1	_____

Sport	Currently playing this sport	Never played this sport	Joined, but am no longer playing	Number of years played before I quit
7. Figure Skating	1	1	1	_____
8. Football (Tackle)	1	1	1	_____
9. Gymnastics	1	1	1	_____
10. Soccer	1	1	1	_____
11. Softball	1	1	1	_____
12. Swimming/Diving	1	1	1	_____
13. Tennis	1	1	1	_____
14. Track and Field	1	1	1	_____
15. Volleyball	1	1	1	_____
16. Wrestling	1	1	1	_____
17. Other _____ (list sport)	1	1	1	_____
18. _____	1	1	1	_____
19. _____	1	1	1	_____
20. _____	1	1	1	_____

Section B. There are many reasons that may cause you to stop playing a sport. We would like to know why you stopped. Select the school or non-school sport you have stopped playing the most recently. Please identify the sport and answer the following questions. Take time to think about how you felt and what you thought when you decided to stop playing.

1. Write the number of the **school or non-school sport** (1 - 20) you stopped playing most recently on this line._____

2. When you stopped playing, how much playing time or competitive opportunities were you receiving?

0	1	2	3	4
none of the time	very little of the time	some of the time	a lot of the time	almost all the time

3. Compared to most of your teammates when you last played this sport, were you:

1 TALLER than most 2 about the SAME as most

3 SHORTER than most

4. Compared to most of your teammates when you last played this sport, did you:

1 weigh LESS than most 2 weigh about the SAME as most

3 weigh MORE than most

5. How satisfied were you with your playing experiences in this sport?

1	2	3	4	5
not at all satisfied	a little satisfied	somewhat satisfied	satisfied	very satisfied

6. How much did you enjoy being an athlete in this sport?

5	4	3	2	1
very much	a lot	somewhat	a little	not at all

7. How would you rate your ability in this sport compared to the other members of your team?

1	2	3	4	5
very poor	poor	same	good	very good

Section C. Below is a list of reasons why athletes have stopped playing certain sports. Think about each reason and rate how important each reason was for your stopping play in the school or non-school sport you listed in item # 1 on page 12.

	Not at all Important	A little Important	Somewhat Important	Important	Very Important
a. Too much emphasis was placed on winning.	1	2	3	4	5
b. My coach was a poor teacher.	1	2	3	4	5
c. I was not having fun.	1	2	3	4	5
d. Participation placed too much pressure on me.	1	2	3	4	5
e. I was always on a losing team.	1	2	3	4	5

	Not at all Important	A little Important	Somewhat Important	Important	Very Important
f. This sport required too much time.	1	2	3	4	5
g. Participation was not improving my physical fitness.	1	2	3	4	5
h. Participation placed too much physical stress on me (e.g., injuries).	1	2	3	4	5
i. I was not as good a player as the others in my sport.	1	2	3	4	5
j. Coach always shouted at me when I made an error.	1	2	3	4	5
k. Coach played only his/her favorite players.	1	2	3	4	5
l. Practices and games were boring.	1	2	3	4	5
m. I was no longer interested in this sport.	1	2	3	4	5
n. Players in this sport are too rough.	1	2	3	4	5
o. I didn't get to play very much.	1	2	3	4	5
p. Games and practices were scheduled at times when I could not attend.	1	2	3	4	5
q. I did not like the coach.	1	2	3	4	5
r. I never felt like I belonged with the team.	1	2	3	4	5
s. My teammates did not like me.	1	2	3	4	5
t. I wanted to participate in other non-sport activities.	1	2	3	4	5
u. I wanted to get a job.	1	2	3	4	5
v. My father didn't want me to play.	1	2	3	4	5

	Not at all Important	A little Important	Somewhat Important	Important	Very Important
w. My mother didn't want me to play.	1	2	3	4	5
x. I was tired of playing and practicing.	1	2	3	4	5
y. This sport conflicted with other sports I wanted to play.	1	2	3	4	5
z. No sport was offered for my age group.	1	2	3	4	5
aa. I felt embarrassed by how I looked in the uniform.	1	2	3	4	5
bb. I needed more time to study.	1	2	3	4	5
cc. I could not afford the equipment.	1	2	3	4	5
dd. I wasn't good enough to keep playing.	1	2	3	4	5
ee. I could not afford to play and practice year round.	1	2	3	4	5
ff. I was not improving my skills	1	2	3	4	5
gg. Playing did not allow me to stay in shape.	1	2	3	4	5
hh. I did not want to be part of a team.	1	2	3	4	5
ii. I could not be with my friends	1	2	3	4	5
jj. I did not like the traveling	1	2	3	4	5
kk. My friends did not want me to play	1	2	3	4	5
ll. Our team did not have enough team spirit	1	2	3	4	5
mm. I was not learning new skills	1	2	3	4	5

nn. I did not receive enough recognize	1	2	3	4	5
oo. I did not feel important playing on this team	1	2	3	4	5
pp. It was not challenging	1	2	3	4	5
qq. My coach yelled too much	1	2	3	4	5
rr. Other_____ (please list)	1	2	3	4	5

Section D. **Changes to school or non-school sport programs**

If you could start playing the sport you listed above as having dropped out of, what would you like to change to either make your experience more enjoyable or to keep you involved in the sport? Please rate each statement below as to how important the change is to get you to play the sport again.

I would play again if:	Not at all Important	A little Important	Somewhat Important	Important	Very Important
a. the coach were a better teacher.	1	2	3	4	5
b. there were less emphasis on winning.	1	2	3	4	5
c. the sport were offered for my age group.	1	2	3	4	5
d. we practiced less.	1	2	3	4	5
e. I could play more.	1	2	3	4	5
f. the coach understood the sport better.	1	2	3	4	5
g. the coach didn't yell as much	1	2	3	4	5
h. games and practices were scheduled at different times.	1	2	3	4	5
i. practices were more fun.	1	2	3	4	5
j. coaches understood the players better.	1	2	3	4	5
k. my parents were not allowed to come to games.	1	2	3	4	5
l. the season were shorter.	1	2	3	4	5

m. parents stopped pushing me.	1	2	3	4	5
n. there were more leagues so the other players were closer to my ability level.	1	2	3	4	5
o. I would not get hurt.	1	2	3	4	5
p. the equipment were less expensive.	1	2	3	4	5
q. I could play in a coed league.	1	2	3	4	5
r. there were more or closer facilities.	1	2	3	4	5
s. the sport did not take so much time.	1	2	3	4	5
t. the sport did not need special equipment.	1	2	3	4	5
u. practices or games did not conflict with my social life.	1	2	3	4	5
v. practices or games did not conflict with studies.	1	2	3	4	5
w. Other_____ (please list)	1	2	3	4	5

V. Motivation to participate in sport

Think about a time that you felt successful in sport or doing a physical activity. For each of the statements below, blacken the number that indicates how much each is a reason for your feeling successful (use the same scale as above...1 = not at all important and 5 = very important).

I feel most successful in sport when....

1. I learn a new skill and it makes me want to practice more.	1	2	3	4	5
2. I'm the only one who can do the play or skill.	1	2	3	4	5
3. I learn something that is fun to do.	1	2	3	4	5
4. I can do better than my teammates.	1	2	3	4	5
5. I learn a new skill by trying hard.	1	2	3	4	5
6. The others can't do as well as me.	1	2	3	4	5
7. I work really hard.	1	2	3	4	5

8. I'm the best.	1	2	3	4	5
9. Something I learn makes me want to go and practice more.	1	2	3	4	5
10. I score the most points/goals or have the fastest time	1	2	3	4	5
11. A new skill I learn really feels right.	1	2	3	4	5
12. Others mess up and I don't.	1	2	3	4	5
13. I do my very best.	1	2	3	4	5

APPENDIX D

PHYSICAL ACTIVITY QUESTIONNAIRE FOR ADOLESCENTS (Spanish/English)

Nombre_____

NOTA. Si no participas en deportes u otras actividades parecidas, quisieramos saber por que no lo haces. Usa el espacio que sigue para decirnos por que no participas en deporte danza o ese tipo de actividades.

Completa el siguente enunciado:

No estoy muy activo durante el día porque.....

Tambien nos interesa saber sobre las actividades que realizaste durante los 7 días de la última semana. Incluyendo deportes o danza, ballet actividades que te hayan hecho sudar, que hayas sentido el cansancio en las piernas, o juegos que te hayan hecho respirar con mas intensidad como saltar, correr, trepar, andar en bicicleta u otras parecidas.

1. **INSTRUCCIONES.** ¿Haz realizado algunas de las siguientes actividades en los últimos 7 días (durante la última semana)?. Si las haz realizado, cuántas veces? Encierra en un círculo solo el número que corresponda en cada renglón.

Actividad	Cero	1-2	3-4	5-6	7 veces o más
Andar en bicicleta	0	1	2	3	4
Patinar	0	1	2	3	4
Caminar para hacer ejercicio	0	1	2	3	4
Trotar o correr	0	1	2	3	4
Andar en patineta	0	1	2	3	4
Aerobicos	0	1	2	3	4
Nadar	0	1	2	3	4
Beisbol o softbol	0	1	2	3	4
Danza/Ballet	0	1	2	3	4
Levantar pesas	0	1	2	3	4
Futbol Americano	0	1	2	3	4
Badminton	0	1	2	3	4

Actividad	Cero	1-2	3-4	5-6	7 veces o más
Futbol Soccer	0	1	2	3	4
Brincar	0	1	2	3	4
Voleibol	0	1	2	3	4
Basquetbol	0	1	2	3	4
Otras _____	0	1	2	3	4
Otras _____	0	1	2	3	4

2. ¿En los últimos 7 días cuando estas en clase de Educación física con que frecuencia haces mucha actividad (Jugar fuerte, correr, saltar, lanzar)?

No tengo clases de Educación Física _____

Siempre muy fuerte _____ marca

Algunas veces _____ sólo

Con mucha frecuencia _____ una

Siempre _____

3. ¿En los últimos 7 días, que fue lo que hiciste con mas frecuencia durante el recreo o el descanso?

Estar sentado (platicando,leyendo , haciendo tareas) _____

Estar de pie o caminar _____ marca

Correr o jugar un poco _____ sólo

Correr o jugar bastante _____ una

Correr o jugar fuerte casi todo el tiempo _____

4. ¿En los últimos 7 días, cuantos días, saliendo de la escuela practicaste deportes, danza, ballet, o participas en juegos de mucha actividad?

ninguno	_____	
1 vez a la semana	_____	marca
2 o 3 veces por semana	_____	sólo
4 veces a la semana	_____	una
5 veces a la semana	_____	

5. ¿En los últimos 7 días, durante cuantas tardes practicas danza, ballet, otros juegos o deportes de mucha actividad?

ninguno	_____	
1 vez a la semana	_____	marca
2 - 3 veces a la semana	_____	sólo
4- 5 a la semana	_____	una
6-7 veces a la semana	_____	

6. ¿En la última semana cuantas veces en total practicaste deporte, danza, ballet o juegos de mucha actividad?

ninguno	_____	
1 vez	_____	marca
2 - 3 veces	_____	sólo
4- 5 veces	_____	una
6 o más veces	_____	

7. De las siguientes frases cual describe mejor lo que tu hiciste los últimos 7 días
Lee las CINCO frases antes de decidir cual es la que te describe mejor

A) Todo o casi todo mi tiempo lo paso haciendo cosas que no requieren de ningún esfuerzo (como por ejemplo ver TV, hacer tarea, jugar con la computadora o video juegos) _____

B) Una o dos veces en la semana hice ejercicio en mi tiempo libre (por ejemplo deportes, correr, nadar, andar en bicicleta, aerobicos) _____

C) Con frecuencia (3-4 veces en la semana) hice ejercicio en mi tiempo libre _____

D) Con bastante frecuencia (5-6 veces por semana) hice ejercicio en mi tiempo libre. _____

E) Casi todo los días siempre (7 veces en la última semana hice ejercicio en mi tiempo libre. _____

8. Como te encuentras en cuanto a condición física comparado con los compañeros de tu misma edad y sexo?

Mi condición fisica es excelente _____ marca

Mi condición física es menor que la de los demás _____ sólo

Mi condición física es peor que la de los demás _____ una

9. ¿Estuviste enfermo en la última semana, o tuviste algun problema que te impidiera. realizar de manera normal tus actividades y ejercicios?

Si _____

No _____

Si tu respuesta es sí, qué te lo impidió?_____

10. ¿En comparación con otros compañeros de tu misma edad y sexo, que tan físicamente activo estuviste, tomando en cuenta los últimos 7 días?

Estuve muy inactivo comparado con otros _____

Estuve menos inactivo que los otros _____ marca

Estuve tan activo como otros _____ sólo

Estuve un poco más activo que los demás _____ una

Estuve mucho más activo que los demás _____

11. En la última semana, cuánto tiempo viste la televisión cada día?

0-2 horas _____ marca

3-4 horas _____ sólo

5-6 horas _____ una

7 or más _____

No veo nunca TV _____

12. En la última semana, cuánto tiempo jugaste con videojuegos cada día?

0-2 horas _____ marca

3-4 horas _____ sólo

5-6 horas _____ una

7 or más _____

No juego nunca videojuegos _____

MUCHAS GRACIAS

NOTE If you do not participate in sport or other activities, we want to know why. Please complete the following sentence.

I am not very active during the day because....

V. We are also trying to find out about your physical activity levels for the last 7 days (in the last week). This includes sports or dance that make you sweat or make your legs feel tired, or games that make you breathe harder, like skipping, running, climbing, bicycling, and others

1. **DIRECTIONS.** Have you done any of the following activities in the past 7 days (last week)? If yes, how many times? Circle one number per row.

Activity	Zero	1-2	3-4	5-6	7 times or more
Bicycling	0	1	2	3	4
Rollerblading	0	1	2	3	4
Walking for exercise	0	1	2	3	4
Jogging or running	0	1	2	3	4
Skateboarding	0	1	2	3	4
Aerobics	0	1	2	3	4
Swimming	0	1	2	3	4
Baseball or softball	0	1	2	3	4
Dance	0	1	2	3	4
Lift weights	0	1	2	3	4
Football	0	1	2	3	4
Badminton	0	1	2	3	4
Soccer	0	1	2	3	4
Skipping	0	1	2	3	4
Volleyball	0	1	2	3	4
Basketball	0	1	2	3	4
Ice skating	0	1	2	3	4
Other _____	0	1	2	3	4
Other _____	0	1	2	3	4

2. In the last 7 days, during your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)?

I don't do PE	_____	
Hardly ever	_____	check
Sometimes	_____	one
Quite often	_____	only
Always	_____	

3. In the last 7 days, what did you normally do <u>at lunch</u> (besides eat eating lunch)?

Sat down (talking, reading, doing school work)	_____	
Stood around or walked around	_____	check
Ran or played a little bit	_____	one
Ran around and played quite a bit	_____	only
Ran and played hard most of the time	_____	

4. In the last 7 days, how many days <u>right after school</u>, did you do sports, dance or play games in which you were very active?

none	_____	
1 time last week	_____	check
2 or 3 times last week	_____	one
4 times last week	_____	only
5 times last week	_____	

5. In the last 7 days, on how many <u>evenings</u> did you do sports, dance, or play games in which you were very active?

none	_____	
1 time last week	_____	check
2 - 3 times last week	_____	one
4- 5 times last week	_____	only
6-7 times last week	_____	

6. On the last weekend, how many times did you do sports, dance, or play games in which you were very active

none _____

1 time _____ check

2 - 3 times _____ one

4- 5 times _____ only

6 or more times _____

7. Which one of the following describes you best for the last 7 days?
Read ALL FIVE statements before deciding on the one answer that describes you

A) All or most of my free time was spent doing things that involve little physical effort (e. g., watching TV, doing homework, playing computer or video games _____

B) I sometimes 1-2 times last week) did physical things in my free time (e. g., played sports, went running, swimming, biking riding, did aerobics),

_____ check

C) I often (3-4 times last week) did physical things in my free time.

_____ one

D) I quite often (5-6 times last week) did physical things

E) I very often (7 or more times last week did physical things in my free time.

_____

8. How fit (in good shape do you think you are compared to other your age and sex?

Very fit _____

Fitter than most _____ check

Less fit than most _____ one

Very unfit _____ only

9. Were you sick last week, or did anything prevent you from doing your normal physical activities?

Yes _____

No _____

If yes, than what prevented you? _____

10. Compared to other children of your age and sex, how would you rate yourself as to how physically active you were in the last 7 days?

I was much less active than others _____

I was a little less active than others _____ check

I was about the same as others _____ one

I was a little more active than others _____ only

I was much more active than others _____

11. On an average day, I watch TV and/or play video games for _____

I don't watch TV or play video games _____

1-2 hours per day _____ check

3-4 hours per day _____ one

5-6 hours per day _____ only

7 or more hours a day _____

THANK YOU

APPENDIX E

CONSENT/ASSENT FORMS (Spanish/English)

Estimados padres de familia:

Nos encontramos realizando un estudio en el Distrito Federal, acerca de los intereses de los niños y jóvenes en los deportes. Estos estudios se realizan en colaboración entre el Instituto Nacional de Antropologia e Historia y el Instituto para el estudio del deporte en niños y jóvenes, de la Universidad Michigan State en los Estados Unidos. Nos interesa saber que deportes se practican, por que eligen ciertos deportes, y con que frecuencia en promedio por semana hacen ejercicio, ademas de conocer su estado de crecimiento a traves de datos como el peso y la estatura. Este estudio puede proporcionar datos muy importantes sobre las preferencia de los niños y jóvenes en cuanto a deportes, los niveles de actividad física y el estado de su crecimiento que pueden ser de utilidad para quienes organizan y conducen los programas de actividad física y deporte para niños y jóvenes en general. Por este medio solicito autorización para que su hijo/hija sea incluido en el estudio, que comprende: la medición del peso y la estatura que son simples y no producen daño alguno, sólo les pediré quitarse los zapatos y sweter o chamarra para un mejor registro de tales datos. Además les pediré llenar un cuestionario en el que se incluyen datos generales y sobre su participación en los deportes, que los motiva a hacer deporte, que les gusta o les disgusta, les pedire que recuerden las actividades realizadas en el curso de la última semana antes del estudio y las registren en el formato del cuestionario. Además nos gustaría platicar con ellos para conocer su opinión sobre los problemas que han experimentado, o si han contado con el apoyos del medio que les rodea para hacer ejercicio o participar en los deportes, que diferencias hay entre la participación de hombres y mujeres en los deportes en México y otras preguntas similares.

A través de este escrito solicito su aceptación para que su hijo (a) participe en el estudio. Los datos que se obtengan con este trabajo seran utilizados en conjunto y no de manera individual para el estudio y como parte de una tesis profesional por una de las investigadoras, Shannon Siegel, de tal manera que la información es confidencial.

Atentamente,

Shannon R Siegel
Estudiante de Doctorado

Le agradeceremos proporcionarnos algunos datos generales que nos servirán para ubicar las características de los grupos del estudio en general

Nombre del niño (a)_____
Lugar y fecha de nacimiento_____
¿Dónde vive?(Delegación, colonia)_____
Ocupación del padre_____Ocupación de la madre_____
Ingreso, favor de seleccionar el número que corresponde al rango de ingreso promedio.
(**1**) un salario mínimo (**2**) De 2 a 3 salarios mínimos (**3**) 4 o más salarios mínimos.
Ingreso Padre _____ Ingreso Madre _____
Edad Padre _____ Edad Madre_____
Número de hijos en la familia_____Edades_____
¿ Practican o practicaron los padres algún deporte?
Padre Sí No **Madre** Sí No
¿Cuál? Padre_____ Madre_____

_____Estoy de acuerdo en que mi hijo (a) participe en el estudio
_____ No estoy de acuerdo en que mi hijo (a) participe en el estudio
_____Nombre del hijo (a)

_____Firma del padre_____Fecha

Estimado participante:

Nos encontramos realizando un estudio en el Distrito Federal, acerca de los intereses de los niños y jóvenes en los deportes. Estos estudios se realizan en colaboración entre el Instituto Nacional de Antropologia e Historia y el Instituto para el estudio del deporte en niños y jóvenes, de la Universidad Michigan State en los Estados Unidos. Nos interesa saber que deportes se practican, por que eligen ciertos deportes, y con que frecuencia en promedio por semana hacen ejercicio, ademas de conocer su estado de crecimiento a traves de datos como el peso y la estatura. Este estudio puede proporcionar datos muy importantes sobre las preferencia de los niños y jóvenes en cuanto a deportes, los niveles de actividad física y el estado de su crecimiento que pueden ser de utilidad para quienes organizan y conducen los programas de actividad física y deporte para niños y jóvenes en general.

La medición del peso y la estatura son simples y no producen daño alguno, sólo te pediré quitarte los zapatos y sweter o chamarra para un mejor registro de tales datos. Además te pediré llenar un cuestionario en el que se incluyen datos generales y sobre tu participación en los deportes, que te motiva a hacer deporte, que te gusta y que te disgusta, te pediré que recuerdes las actividades realizadas en el curso de la ultima semana antes del estudio y las registres en el formato del cuestionario. Además nos gustaría platicar contigo para conocer tu opinión sobre los problemas que haz experimentado, o si haz contado con el apoyo de tus padres, o del medio que te rodea para hacer ejercicio o participar en los deportes, que diferencias hay entre la participación de hombres y mujeres en los deportes en México y otras preguntas similares.

A través de este escrito solicito tu aceptación para participar en el estudio. Los datos que se obtengan con este trabajo son sólo para presentar un trabajo en mi universidad y la información es confidencial, sólo yo (Shannon R Siegel), como investigadora responsable del estudio manejaré los datos.

Si durante el estudio decides ya no participar puedes dejar de hacerlo, esto no representara ningún problema, castigo o reclamación por parte de ninguna persona.
Agradezco mucho tu cooperación para la realización del presente trabajo

Atentamente,

Shannon R Siegel
Estudiante de Doctorado

_____Firma del participante_____Fecha

Dear Parents:

Greetings, my name is Shannon R Siegel and I am a graduate student at Michigan State University in the US. I am working on a research project with my advisor, Dr. Robert M Malina, and I would like to ask whether your child can participate. I am undertaking a study of sport participation, motivation and physical fitness levels of the children of Mexico City. I am interested in what sports children are playing, or not playing, why they chose those sports over others, how much physical activity they have in an average week, and their heights and weights so I can assess their growth status. The study will provide basic information on the sport preferences, physical activity levels and growth status of youth in Mexico City.

Measurements will include weight and height; all measurements are non-invasive and do not require the removal of clothing (except for shoes, sweaters, jackets, etc.). The survey I am asking your child to fill out asks just a few demographic questions such as age, sex, and area of residence. The sport participation portion of the questionnaire asks questions about why your child participates in sport, or why he/she does not. The physical activity recall asks your child to remember what kind of activities he/she participated in during the previous 7-day period. In addition, your child may be asked to participate in a small focus group which will look more deeply into questions regarding barriers to physical activity, overall attitude to sports in general, parental support of sport and activity participation, and cultural issues surrounding girls participating in sport in Mexico.

I am asking you to grant permission for your child to participate in this survey. All information on your child is confidential and will be available only to the primary researcher (Shannon Siegel). I would also appreciate if you would check one box for miminum household salaries for demographic information. Thank you for your cooperation.

Sincerely yours,

Shannon R Siegel
Ph.D. Candidate

_____My child may be included in the study

_____My child may not be included in the study

_____Child's name

_____Parent's signature_____Date

1-2 Minimum salaries _____
3-4 Minimum salaries _____
5-6 Minimum salaries _____
6+ Minimum salaries _____

Do you play sport? yes no **What Sport**(s)?_____

Birthdate of your child? (M/D/Y)_____
Birthorder of child?_____

Dear participant,

I am asking if you will consent to be surveyed for my study of sport participation, motivation and physical fitness levels of the youth of Mexico City. I am interested in what sports and activities you are playing, or not playing, why you might choose certain sports over others, how much physical activity you might have had in an average week, and your height and weight so I can assess your growth status. The study will provide basic information on the sport preferences, physical activity levels and growth status of youth in Mexico City.

I will measure your weight and height; both measurements are non-invasive and do not require the removal of clothing (except for shoes, sweaters, jackets, etc.). The survey I am asking you to fill out asks just a few demographic questions such as age, sex, and area of residence. The sport participation portion of the questionnaire asks questions about why you participate in sports, and which sports, or why you do not. The physical activity recall asks youto remember what kind of activities you participated in during the previous 7-day period. In addition, you may be asked to participate in a small focus group which will look more deeply into questions regarding barriers to physical activity, overall attitude to sports in general, parental support of sport and activity participation, and cultural issues surrounding girls participating in sport in Mexico.

I am asking you to consent to participate in this survey. All your information is confidential and will be available only to the primary researcher (Shannon R Siegel).

You may choose to stop your participation at any time and you will not be penalized in any way. Thank you for your cooperation.

Sincerely yours,

Shannon R Siegel
Ph.D. Candidate

_____Participant's signature

_____Date

APPENDIX F

COMPLETE SPORT PARTICIPATION RESPONSES

Table 59. Descriptive statistics for the reasons for playing non-school sponsored sports among older primary school and high school males.

	n	M	SD
To have fun	184	4.34	1.06
To be physically fit	184	4.31	1.05
To get exercise	184	4.10	1.10
To get rid of energy	184	3.99	1.21
To improve my skills	186	3.95	1.24
To do something at which I am good	184	3.89	1.26
To learn new skills	185	3.89	1.33
For the excitement of competition	184	3.79	1.36
For the challenge of competition	182	3.60	1.38
To go to a higher level of competition	184	3.55	1.56
To play as part of a team	186	3.44	1.45
To be with my friends	186	3.40	1.24
To win	185	3.39	1.47
For the team spirit	183	3.32	1.50
To have something to do	184	3.30	1.44
For the recognition	184	2.92	1.51
For the rewards, such as trophies	185	2.88	1.52
Someone I admire played this sport	186	2.77	1.68
To get out of the house	182	2.75	1.51
To use the equipment and/or facilities	183	2.73	1.46
To be popular by being a good athlete	184	2.67	1.53
To fell important	184	2.64	1.52
For the travel that goes with playing	183	2.40	1.51
My parents or close friends want me to participate	182	2.32	1.49
To attract girls' attention	183	2.16	1.42
I like the coaches	181	2.16	1.30

Note: The fill-in or "other" category is discussed in the text.

Table 60. Descriptive statistics for the reasons for playing non-school sponsored sports among older primary school and high school females.

	n	M	SD
To have fun	131	4.37	1.08
To be physically fit	129	4.28	1.40
To get exercise	127	4.22	1.02
To get rid of energy	129	4.15	1.09
To improve my skills	130	3.96	1.27
To do something at which I am good	128	3.92	1.20
For the excitement of competition	128	3.91	1.28
To learn new skills	129	3.90	1.26
To have something to do	129	3.38	1.39
To be with my friends	128	3.35	1.32
To go to a higher level of competition	129	3.35	1.47
For the challenge of competition	128	3.27	1.47
To play as part of a team	128	3.20	1.48
To win	129	3.20	1.45
For the team spirit	128	2.97	1.41
To get out of the house	128	2.71	1.44
For the recognition	126	2.69	1.44
For the rewards, such as trophies	129	2.59	1.44
To use the equipment and/or facilities	128	2.46	1.39
My parents or close friends want me to participate	128	2.30	1.43
To feel important	127	2.21	1.28
To be popular by being a good athlete	128	2.09	1.22
Someone I admire played this sport	129	1.96	1.38
I like the coaches	126	1.93	1.11
For the travel that goes with playing	127	1.88	1.31
To attract boys' attention	128	1.77	1.14

Note: The fill-in or "other" category is discussed in the text.

Table 61. Descriptive statistics for the reasons for playing school sponsored sports among high school males.

	n	M	SD
To have fun	33	4.30	1.05
To get exercise	33	4.24	0.87
To get rid of energy	33	4.21	1.08
To be physically fit	33	4.18	1.16
To go to a higher level of competition	33	4.03	1.16
For the excitement of competition	33	4.00	1.15
To improve my skills	33	3.85	1.15
For the challenge of competition	33	3.82	1.18
To learn new skills	33	3.79	1.17
To do something at which I am good	33	3.67	1.32
To be with my friends	33	3.55	1.35
For the team spirit	33	3.45	1.30
To play as part of a team	33	3.33	1.55
To win	33	3.33	1.36
To have something to do	33	3.27	1.35
To use the equipment and/or facilities	33	3.13	1.31
For the recognition	33	2.93	1.39
To get out of the house	33	2.82	1.31
for the rewards, such as trophies	33	2.79	1.24
To feel important	33	2.73	1.31
To be popular by being a good athlete	33	2.70	1.33
I like the coaches	33	2.58	1.35
Someone I admire played this sport	33	2.45	1.44
To attract girls' attention	33	2.42	1.30
For the travel that goes with playing	33	2.27	1.28
My parents or close friends want me to participate	33	2.18	1.40

Note: The fill-in or "other" category is discussed in the text.

Table 62. Descriptive statistics for the reasons for playing in school sponsored sports among high school females.

	n	M	SD
To have fun	26	4.58	0.90
To be physically fit	26	4.42	0.99
To get rid of energy	26	4.54	0.71
To get exercise	26	4.31	1.09
For something to do	26	4.12	1.14
To do something at which I am good	26	4.04	1.00
For the challenge of competition	26	3.96	1.11
To improve my skills	26	3.93	1.02
For the excitement of competition	26	3.93	1.16
To play with the team	26	3.73	1.25
To learn new skills	26	3.69	1.19
For the team spirit	26	3.58	1.36
To be with my friends	26	3.38	1.33
To go to a higher level of competition	26	3.35	1.35
To win	26	3.11	1.45
To use the equipment and/or facilities	26	3.04	1.27
To get out of the house	26	2.85	1.29
For the recognition	26	2.69	1.35
For the rewards, such as trophies	26	2.50	1.39
To feel important	26	2.27	1.15
I like the coaches	26	2.15	1.12
To be popular by being a good athlete	26	1.96	1.15
For the travel that goes with playing	26	1.85	1.08
Someone I admire played this sport	26	1.81	1.02
My parents or close friends want me to participate	26	1.69	0.74
To attract boys' attention	26	1.54	0.76

Note: The fill-in or "other" category is discussed in the text.

Table 63. Descriptive statistics for reasons for dropping out of sport in high school males 14-18 years.

	n	M	SD
The games and practices were scheduled at times when I could not attend	69	2.74	1.49
I needed more time to study	67	2.69	1.58
The sport required too much time	71	2.62	1.53
Too much emphasis was placed on winning	70	2.61	1.47
I was not having fun	70	2.57	1.62
There was too much pressure	71	2.56	1.49
My coach was a poor teacher	70	2.53	1.58
I could not afford to play and practice year round	67	2.43	1.52
I was no longer am interested in this sport	69	2.29	1.46
I wanted to participate in other non-sport activities	69	2.28	1.53
Coach played only his/her favorite players	70	2.16	1.43
I was tired of playing and practicing	70	2.14	1.35
Practices and games were boring	70	2.14	1.29
This sport conflicted with other sports I wanted to play	68	2.13	1.42
I did not get to play very much	69	2.13	1.36
I was not as good a player as the others in my sport	70	2.09	1.39
My friends did not want me to play	68	2.06	1.34
Participation was not improving my physical fitness	69	2.00	1.35
Participation placed to much physical stress on me (e.g. injuries)	70	1.99	1.26
I never felt like I belonged with the team	69	1.96	1.34
I did not want to be a part of a team	67	1.94	1.18
I was not improving my skills	68	1.93	1.31
I was not learning new skills	68	1.84	1.24
Coach always shouted at me when I made an error	70	1.83	1.15
Our team did not have enough team spirit	69	1.80	1.15
Playing did not allow me to stay in shape	68	1.78	1.20
I was not good enough to keep playing	67	1.78	1.19
I did not like the coach	69	1.77	1.33
Players in this sport are too rough	69	1.77	1.78
It was not challenging	68	1.76	1.26
I was always on a losing team	70	1.74	1.11
I did not receive enough recognition	68	1.69	1.03
My teammates did not like me	70	1.67	1.15
I did not feel important playing on this team	67	1.64	0.96
I could not afford the equipment	69	1.64	1.07
My father id not want me to play	69	1.57	1.19
I did not like the traveling	68	1.50	1.00
No sport was offered for my age group	68	1.50	0.92
I wanted to get a job	68	1.44	0.97
My mother did not want me to play	69	1.43	1.02
I felt embarrassed by how I looked in the uniform	68	1.40	0.79
I could not be with my friends	69	1.35	0.74

Note: The fill-in or "other" category is discussed in the text.

Table 64. Descriptive statistics for the reasons for dropping out of sport in high school females 14 -18 years.

	n	M	SD
I needed more time to study	86	3.49	1.54
The sport required too much time	87	2.98	1.44
The games and practices were scheduled at times when I could not attend	88	2.92	1.53
I could not afford to play and practice year round	86	2.80	1.53
There was too much pressure	88	2.61	1.49
My coach was a poor teacher	88	2.43	1.54
I did not have the opportunity to play much	88	2.40	1.47
I wanted to participate in other non-sport activities	88	2.36	1.50
I was no longer am interested in this sport	87	2.29	1.54
The coach played only his/her favorite players	88	2.23	1.44
Too much emphasis was placed on winning	88	2.22	1.32
Participation placed too much physical stress on me (e.g., injuries)	88	2.18	1.38
I was not having fun	87	2.14	1.50
Participation was not improving my physical fitness	88	2.05	1.40
My friends did not want me to play	87	2.01	1.42
I was not improving my skills	87	2.00	1.38
I was not as good a player as the others in my sport	88	2.00	1.15
I was tired of playing and practicing	88	1.97	1.27
I was not learning new skills	87	1.97	1.39
I did not want to be part of a team	87	1.93	1.16
It was not challenging	85	1.91	1.44
This sport conflicted with other sports I wanted to play	87	1.90	1.29
I never felt like I belonged with the team	87	1.86	1.33
Our team did not have enough team spirit	87	1.86	1.40
Practices and games were boring	88	1.86	1.22
I was not good enough to keep playing	87	1.86	1.29
I did not like the coach	87	1.86	1.37
Coach always shouted at me when I made an error	87	1.85	1.20
I did not feel important playing on this team	85	1.82	1.28
I was always on a losing team	88	1.76	1.20
I did not receive enough recognition	86	1.73	1.14
Playing did not allow me to stay in shape	86	1.63	1.15
No sport was offered for my age group	87	1.59	1.11
I could not afford the equipment	86	1.56	1.15
My father did not want me to play	88	1.56	1.18
I felt embarrassed by how I looked in the uniform	87	1.55	1.03
My mother did not want me to play	87	1.54	1.18
Players in this sport are too rough	88	1.53	1.03
My teammates did not like me	87	1.53	1.02
I could not be with my friends	87	1.40	0.97
I wanted to get a job	88	1.39	0.94
I did not like the traveling	87	1.36	0.93

Note: The fill-in or "other" category is discussed in the text.

Table 65. Descriptive statistics for responses to the item, "I would return to sport if..." in urban Mexican high school males 14-18 years.

	n	M	SD
The practices or games did not conflict with my studies	66	3.29	1.53
The games and practices were scheduled at other times	66	3.11	1.49
I could play more	66	3.00	1.61
The practices or games did not interfere with my social life	66	2.89	1.63
The sport did not demand so much time	66	2.86	1.54
The practices were more fun	66	2.83	1.64
There were more or closer practice facilities	66	2.70	1.64
There were more leagues so the other players were closer to my ability level	66	2.71	1.60
The coaches understood the players better	66	2.62	1.57
The coach were a better instructor	66	2.53	1.62
The coach understood the sport better	66	2.47	1.54
The coach did not yell as much	66	2.24	1.51
The sport were offered for my age group	66	2.02	1.33
There were less emphasis on winning	66	2.00	1.31
The equipment were less expensive	65	1.98	1.33
Parents stopped pushing me	66	1.95	1.35
We practiced less	66	1.92	1.31
I would not get hurt	66	1.91	1.39
The sport did not need special equipment	66	1.88	1.28
I could play in a coed league	65	1.80	1.33
The season were shorter	66	1.72	1.15
My parents were not allowed to come to the games	66	1.70	1.14

Note: The fill-in or "other" category is discussed in the text.

Table 66. Descriptive statistics for responses to the item, "I would return to sport if..." in urban Mexican high school females 14-18 years.

	n	M	SD
The practices or games did not conflict with my studies	83	4.17	1.29
The games and practices were scheduled at other times	83	3.37	1.43
The practices or games did not interfere with my social life	83	3.01	1.46
The sport did not demand so much time	83	2.86	1.49
I could play more	83	2.80	1.53
There were more or closer practice facilities	83	2.78	1.64
The coach were a better instructor	82	2.68	1.59
The coaches understood the players better	82	2.67	1.55
The practices were more fun	83	2.66	1.60
There were more leagues so the other players were closer to my ability level	83	2.25	1.54
The coach understood the sport better	82	2.24	1.49
The sport were offered for my age group	82	2.15	1.47
I would not get hurt	83	2.11	1.47
The coach did not yell as much	82	2.01	1.40
I could play in a coed league	83	1.93	1.31
Parents stopped pushing me	83	1.90	1.36
There were less emphasis on winning	82	1.85	1.28
The sport did not need special equipment	83	1.83	1.30
The season were shorter	83	1.73	1.06
The equipment were less expensive	83	1.73	1.16
We practiced less	81	1.62	1.07
My parents were not allowed to come to games	83	1.40	0.88

Note: The fill-in or "other" category is discussed in the text.

APPENDIX G

COMPLETE DESCRIPTIVE STATISTICS FOR AGE, HEIGHT, WEIGHT AND THE BMI BY AGE, SEX AND SES

Table 67. Descriptive statistics of age, weight, stature and the BMI for urban Mexican males and females in the low SES.

		Age (yrs)		Weight (kg)			Stature (cm)		BMI (kg/m^2)		
Age	n	M	SD	M	Median	SD	M	SD	M	Median	SD
Males											
9	21	9.8	0.2	36.7	36.0	8.8	137.8	5.4	19.2	18.1	3.8
10	57	10.4	0.3	39.1	36.3	9.7	140.0	5.8	19.8	18.9	4.1
11	49	11.5	0.3	44.4	41.5	13.2	145.7	7.1	20.7	19.1	5.0
12	19	12.4	0.2	44.4	42.0	12.3	148.1	7.5	20.0	18.8	4.3
13	1	13.1		70.5			160.6		27.3		
14	7	14.7	0.3	56.4	52.0	13.1	167.9	8.2	19.8	18.5	3.6
15	22	15.7	0.2	58.4	56.3	10.0	167.1	6.5	20.9	20.5	2.9
16	19	16.5	0.2	59.0	57.5	10.6	168.0	5.9	20.8	21.1	3.2
17	3	17.4	0.6	73.3	81.5	17.3	172.0	6.0	24.8	26.7	5.7
18	2	18.6	0.6	68.0	68.0	10.6	171.5	1.4	23.2	23.2	4.0
Females											
9	34	9.7	0.2	35.0	31.8	9.6	136.4	6.9	18.6	17.4	3.7
10	67	10.5	0.3	37.6	36.5	9.5	141.9	6.9	18.5	17.9	3.7
11	54	11.5	0.3	42.6	40.5	9.9	146.0	6.6	19.8	19.1	3.4
12	19	12.3	0.3	49.8	49.5	11.8	151.7	5.3	21.5	21.3	4.1
13	4	13.4	0.2	46.9	46.5	9.5	150.4	4.7	20.7	19.9	4.0
14	4	14.6	0.4	46.6	48.0	8.8	155.3	7.2	19.2	19.5	1.9
15	15	15.7	0.2	53.6	54.0	7.8	157.3	5.8	21.6	21.6	2.9
16	35	16.5	0.2	55.0	53.0	9.2	156.5	5.2	22.5	21.2	3.5
17	4	17.3	0.3	50.0	50.5	4.8	155.4	6.5	20.7	20.9	1.0
18	2	18.5	0.1	45.0	45.0	1.4	153.9	2.0	19.0	19.0	0.1

Table 68. Descriptive statistics of age, weight, stature and the BMI for urban Mexican males and females in the middle SES.

		Age (yrs)		Weight (kg)			Stature (cm)		BMI (kg/m^2)		
Age	n	M	SD	M	Median	SD	M	SD	M	Median	SD
Males											
9	16	9.7	0.2	35.4	34.8	5.9	137.3	4.6	18.7	18.9	2.7
10	28	10.6	0.3	35.3	35.5	6.6	140.1	4.5	17.9	17.6	2.6
11	43	11.5	0.2	41.3	38.5	11.0	144.4	7.1	19.6	18.5	4.3
12	37	12.5	0.3	44.8	41.5	11.7	150.4	8.2	19.7	18.1	4.3
13	8	13.4	0.3	48.1	47.2	11.4	156.8	5.6	19.4	19.1	3.6
15	3	15.8	0.1	74.5	66.0	19.2	171.5	10.5	25.0	24.1	3.2
16	39	16.6	0.2	64.8	63.0	9.4	169.3	5.7	22.6	21.5	3.3
17	7	17.2	0.2	63.8	60.5	10.8	169.9	5.0	22.0	20.8	2.8
18	1	18.6		64.5			168.4			22.7	
Females											
9	14	9.7	0.2	31.1	28.3	6.2	133.3	5.8	17.5	16.9	3.0
10	33	10.5	0.3	35.5	34.0	8.3	140.1	6.5	17.9	17.2	3.2
11	32	11.5	0.3	42.5	41.5	11.4	146.7	6.8	19.6	19.3	4.2
12	31	12.3	0.2	46.6	45.0	10.9	151.3	6.0	20.2	19.9	3.6
13	5	13.1	0.1	45.5	42.0	6.0	152.8	4.6	19.4	18.8	1.4
14	1	14.2		46.5			160.0		18.2		
15	2	15.8	0.1	64.8	64.8	15.2	156.3	0.1	26.5	26.5	6.3
16	43	16.5	0.3	55.0	53.5	8.0	157.8	5.7	22.1	21.2	2.9
17	12	17.2	0.1	58.3	59.5	9.6	159.7	8.2	22.8	23.3	3.0
18	2	18.3	0.1	50.5	50.5	7.1	155.9	2.8	20.7	20.7	2.2

Table 69. Descriptive statistics of age, weight, stature and the BMI for urban Mexican males and females in the high SES.

		Age (yrs)		Weight (kg)			Stature (cm)		BMI (kg/m^2)		
Age	n	M	SD	M	Median	SD	M	SD	M	Median	SD
Males											
9	8	9.7	0.4	32.8	30.5	7.1	135.9	4.1	17.7	16.9	3.0
10	45	10.5	0.3	35.9	34.3	8.7	138.5	6.1	18.6	17.6	3.6
11	32	11.5	0.3	41.6	39.5	11.5	146.4	7.3	19.2	18.2	4.4
12	4	12.5	0.3	37.9	38.0	3.7	143.9	9.9	17.5	16.9	1.9
13	2	13.2	0.0	43.5	43.5	7.1	158.6	0.6	17.3	17.3	2.7
15	3	15.5	0.5	56.7	51.5	9.8	164.1	5.1	21.0	20.0	2.5
16	40	16.6	0.3	64.1	61.8	11.3	170.6	6.3	22.0	21.0	3.6
17	9	17.3	0.3	64.1	61.3	11.2	172.4	6.1	21.5	21.5	3.3
Females											
9	14	9.7	0.2	32.0	31.0	7.1	135.6	7.3	17.3	16.2	2.9
10	33	10.5	0.3	37.3	38.0	7.8	140.3	6.3	18.8	19.5	3.1
11	33	11.4	0.2	39.4	39.5	9.2	143.2	7.5	19.1	18.7	3.5
12	11	12.3	0.3	47.6	46.5	5.9	149.5	8.5	21.4	20.9	2.7
13	2	13.2	0.2	40.8	40.8	4.6	148.6	5.2	18.6	18.6	3.4
14	1	14.4		33.5			131.0		19.5		
15	9	15.5	0.2	57.4	58.0	10.0	160.0	6.2	22.4	21.5	3.7
16	38	16.5	0.2	54.4	54.0	6.8	159.1	6.0	21.5	21.6	2.5
17	8	17.2	0.1	56.2	60.0	7.4	163.1	8.5	21.0	21.0	1.4