



2014 The Mexican Report Card

on Physical Activity for
Mexican Children and Youth



LONG FORM



MEXICAN REPORT CARD ON PHYSICAL ACTIVITY FOR CHILDREN AND YOUTH 2014

Date of Publication: May 2014

Scientific Officers:

Mark Tremblay

Casey Gray

Lead Investigator:

Maria del Pilar Rodriguez

Research Work Group:

Juan Ricardo Lopez y Taylor

Karla I Galaviz

Edtna Jauregui

Ines Gonzalez Casanova

Contributing Authors:

Itzae Navarro Peña

Teresita Mendez Bravo

Giovanni Garrido

Monica Perez

Design:

Sergio Lozano

Julio Cesar Salazar

Translation:

Maira Lizbeth Davalos

Thomas Chamberlain

ACKNOWLEDGEMENTS

The following individuals have supported and/ or contributed to the development of the 2014 Mexican Report Card:

Mark Tremblay: Healthy Active Living and Obesity Research Group, Children’s Hospital of Eastern Ontario Research Institute, Ottawa, Canada.

Casey Gray: Healthy Active Living and Obesity Research Group, Children’s Hospital of Eastern Ontario Research Institute, Ottawa, Canada.

Jennifer Cowie Bonne: CEO. Active Healthy Kids Canada

Ian Janssen: Canadian Leader of CAMBIO, Queen’s University, Kingston, Canada.

Juan Ricardo López y Taylor: Mexican Leader of CAMBIO, University of Guadalajara, Guadalajara, México.

Jorge Sánchez González: Academic Vice Rector UAG

Alejandro Pliego Rayas: Coordinator of Physical Activity and Health Department in ITESO University.

Antonio Rivera Cisneros: Dean of Medical Sciences UAG.

Itzae Navarro Peña: Manager of the Program Ponte al 100 Jalisco

ACRONYMS

ANSA: National Agreement for Nutritional Health

CAMBIO: Canada-Mexico Battling Childhood Obesity

CONADE: National Sports Commission

CONAEDU: National Program for Physical Activation

ENSANUT: National Health and Nutrition Survey

EPODE: Ensemble, Prevenons L’Obesité Des Enfants

FIFA: International Soccer Federation

INEGI: National Institute of Statistics and Geography

IPN: National Polytechnic Institute

IPAQ: International Physical Activity Questionnaire

MVPA: Moderate-to vigorous-physical activity

PA: Physical Activity

PACE: Program for Action at School

PAQ: Physical Activity Questionnaire

PE: Physical Education

SEP: Ministry of Public Education

WHO: World Health Organization



INDEX

Introduction	page 3
Categories analyzed in the Mexican Report Card	page 5
Participation in physical activity	page 9
Sedentary behaviors	page 12
Physical activity in schools	page 15
Physical activity in family	page 17
Community and built environment	page 18
Active play	page 19
Active transportation	page 19
Organized sports	page 20
Government	page 21
General recommendation for action	page 25
Research gaps	page 27
Reference list	page 28



Introduction

The Mexican Report Card on Physical Activity for Children and Youth is a project that originated from the mutual interest and collaboration between Mexican and Canadian researchers. Its objective is to generate action to fight against the lack of physical activity in children and youth as a means to prevent obesity and the development of chronic and degenerative diseases.

The Canadian Report Card has proved to be a successful tool for increasing the level of awareness about the importance of physical activity. Additionally, it has guided the different social actors such as government, non-governmental organizations and private and scientific institutions to develop proposals concerned with increasing opportunities for children and youth to be physically active (Colley, et al., 2012). This model, which started in Canada nine years ago and will launch its tenth edition in 2014, has been replicated in different countries including the U.S.A., South Africa, Kenya, and Mexico. At least nine additional countries are working on their first edition. This expansion and growth trend makes it one of the most solid projects in promoting physical activity in children and youth worldwide.

Mexico launched its first Report Card in 2012, sponsored by the CAMBIO program (Canada and Mexico, Battling Childhood Obesity), (CAMBIO, 2012). It gathered the most relevant information nationwide in eight key indicators: physical activity participation, screen time, active transportation, physical activity in schools, community and built

environment, organized sports, physical activity with family; and lastly, physical activity programs and policies. In contrast to the Canadian model, which used an alphabetical grading system, the Mexican Report Card used a numeric system to evaluate the different indicators. The grading scheme for the Mexican Report Card was based on the national grading system, in which numbers below 5 represent failing grades and numbers above 6 represent passing grades.

In accordance with this logic, the “Participation in Physical Activity” indicator was given a grade of 5, which represents a regular classification based on the gathered data. In terms of indicators such as “Active Transportation”, “Physical Activity in Family”, and “Community and Built Environment”, they didn’t receive a grade due to the lack of available data in this regard.

The main findings in the first Mexican Report Card were that Mexican children and youth engaged in a high level of sedentary behavior and a low amount of physical activity. This investigation also demonstrated that there is very little data and research about physical activity and its related factors in Mexico. Moreover, the existing information was not representative of the nation and was based on self-reported measures. As a result, the level of reliability is reduced.

The second edition of the Mexican Report Card can be useful for informing public debate, elaborating and revising public policies, creating strategies and intervention programs and promoting the generation of scientific knowledge about this subject. Several decision makers of the organizations involved in physical activity and health for Mexican children and youth collaborated on this project.



Why is it important to promote physical activity in Mexico?

The promotion of active lifestyles is one of the most important public health issues not just in Mexico but internationally. According to estimates made by the World Health Organization (WHO), physical inactivity is the 4th leading mortality risk factor causing about 3 million avoidable deaths annually. Furthermore, physical inactivity is closely related to developing overweight and obesity, which represent 5% of world mortality (WHO, 2010).

In Mexico, the numbers are not any less alarming. Lifestyle changes in the population and nutritional transition effects have deeply impacted the health of Mexicans, including the younger population. Currently, Mexicans eat fatty and sugary foods and they consume an excessive amount of sweet drinks such as juices, sodas or sugary water. Per the National Obesity Survey (2013), 91% of Mexican children and youth, aged 6 to 16 years, consume sugary drinks on a regular basis. On the other hand, the opportunities to be physically active have been reduced, as many jobs now require longer periods of inactivity. In addition, very often cities do not have enough public spaces such as parks or sports facilities that offer adequate conditions for recreation and physical activity, largely due to crime.

The above-mentioned issues have translated into high levels of overweight and obesity for children and youth populations. According to the latest findings by ENSANUT, 2012 (National Health and Nutrition Survey), 9.7% of children aged 5

years and under were overweight, which was an increase from 2006. Among elementary school kids (5 to 11 year-olds) 34.4% were overweight and obese (1.1% decrease from 2006). Lastly, among teens (12- to 19-year-olds) the national prevalence of overweight and obesity is 35%.

In terms of health, childhood obesity represents an important risk factor in the development of cardiovascular, respiratory, gastrointestinal diseases and type 2 diabetes (Freedman et al., 2005). Further, childhood obesity causes some psychological conditions, normally associated with the adult population. In view of this reality, the federal government formulated the National Agreement for Nutritional Health, 2010 (ANSA), which establishes physical activity as one of the key strategies for controlling and preventing overweight and obesity nationwide. Because of the important role of physical activity for weight control, it constitutes a central point in the national public health agenda.

Within this context, promoting physical activity at an early age becomes quite relevant. According to scientific studies, engaging in physical activity during childhood and adolescence increases the chances of maintaining this lifestyle during adulthood and is a preventive factor for overweight and obesity later in life (Parsons et al., 1999). Thus, childhood and adolescence are critical periods to acquire healthy habits, including physical activity.

In order to increase physical activity levels among Mexican children and youth, it is necessary for the involved social sectors to coordinate efforts and discuss this subject collectively, taking into consideration contextual factors (e.g., family, school, community) that lead to adherence to physical activity guidelines for children and youth.



Categories analyzed in the Mexican Report Card

As the work done on the 2012 Report Card, this document is the result of a significant effort of compiling information about physical activity of Mexican boys and girls and about the current physical activity promotion strategies in the country. By 2014 the model used in preparing the Report Card had been reproduced in 15 countries simultaneously, so Mexico has joined a worldwide network of researchers investigating children and youth physical activity. As part of this coordinated worldwide work, a set of common indicators from each of the Report Cards has been established, enabling comparisons to be made based on information submitted by each country. Therefore, the categories included in the 2014 Mexican Report Card that meet international specifications are: physical activity levels, sedentary behaviors, active transportation, physical activity at school, built environment, organized sports, free time, physical activity in the family, and government. Unlike the previous work carried out in this country, this Report Card includes the category of free time that was not included in the first edition.

The data shown are the result of information taken from Spanish as well as English language databases, and Mexican studies published since 2010. We also relied on national surveys such as the ENSANUT 2012 and the National Youth Survey 2010, National Infrastructures censuses and government documents and reports that bear witness to actions, policies and programs carried out by the public sector.

Figure 1: Main Indicators reviewed in the Mexican Report Card. This diagram was inspired by the design of the **2013 Active Healthy Kids Canada Report Card**



As some of the most pertinent aspects of this Report Card, we found that Mexican children and youth need to increase their level of physical activity. According to the data found, Mexican children and youth do not meet the recommendation of 60 minutes a day of moderate to vigorous physical activity. Furthermore, the percentage of children and youth spending more than two hours a day in sedentary behavior, especially in front of a TV screen, is greater than what was reported in the 2012 Report Card.

In response to the growing concern about child obesity in the country, over the past few years the Federal Government has implemented important programs seeking to foster physical activity in the children and youth population. Many of these programs have taken place in a school setting where besides formal physical education classes, active breaks are taken to increase students' physical activity time. Some of these efforts are still in place, waiting to be formally evaluated to determine their impact.

In comparison with the 2012 Report Card, the results in this edition show progress in indicators that

could not previously be evaluated due to a lack of information. This is the case for the organized sports, active transportation and built environment indicators that have been graded in this Report Card based on new data generated over the past few years. Categories such as physical participation in the family and active games remain ungraded in this edition due to the lack of relevant information.

Despite new data is available that allows the grading of more indicators, the available data about the physical activity levels of children and youth and related factors are scant. It is important conduct more studies that report the country's status in this issue and that serve as a basis for developing action strategies to help overcome the problem posed by physical inactivity in our children and youth. The Report Card model is useful for supporting these efforts and monitoring progress in this matter.





Participation in physical activity



In the 2012 Mexican Report Card, the indicator “Participation in Physical Activity,” received a grade of 5, demonstrating that the activity level of our Mexican children and youth was far from international recommendations, which recommend at least 60 minutes of moderate to vigorous physical activity daily. Research made available during two years, especially from the most representative national surveys (ENSANUT, 2012 and The National Youth Survey, 2010), shows an improvement in this category, with an increase in levels of physical activity in children and youth.

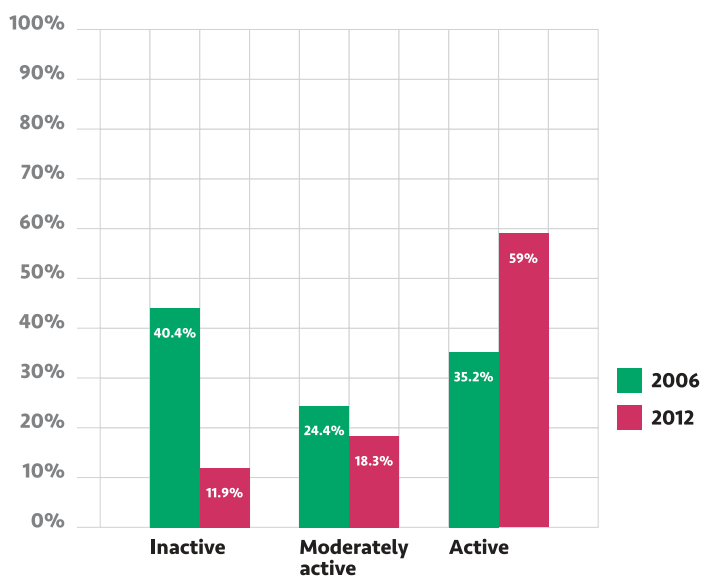


Figure 2: Proportion of Mexican Children and Youth that are Inactive, Moderately Active and Active. Comparative results from ENSANUT 2006 and ENSANUT 2012.

However, the physical activity changes observed from ENSANUT 2006 to 2012 were interpreted with caution because the age group assessed and the physical activity measure employed in the 2006 survey differed from the 2012 survey. Recognizing the increases in physical activity levels from 2006 to 2012 and considering the differences in the methodology employed, the grade for the 2014 Report Card was increased by one point (from 5 to 6).

Key Findings

The ENSANUT, 2012 was the main source of data for the overall physical activity indicator, which provides information about the health conditions of Mexicans. The previous Report Card grade was informed by the ENSANUT 2006, which reported that 40.4% of Mexican adolescents were inactive, 24.4% were moderately active, and 35.2% were active.

For the present Report Card, current data from ENSANUT 2012 were used. The age categories studied were classified as follows: children and adolescents (10-14 years olds), and adolescents (15-18 years old). For the first age group data available concerns participation in organized sporting activities such as soccer, basketball, volleyball and track during the last 12 months.

The findings of this survey show that 58.6% of children 10-14 years did not participate in any competitive sport during the previous 12 months. For the 15-18 year old group, the short version of the International Physical Activity Questionnaire (www.ipaq.ki.se/) was used. The results show an increase in the proportion of active youth (59%) and a decrease in the proportion of moderately active youth (18.3%) and inactive youth (22.7%). A comparison chart

showing 2006 and 2012 results is shown in Figure 2.

Thereby, it over 50% of Mexican adolescents fulfill the World Health Organization recommendations for physical activity. A decreasing trend of physical inactivity levels was also found in the National Youth Survey (2010), which reports youth inactivity levels went from 43.8% in 2005 to 32.1% in 2010 among the 12- to 14-year-olds and from 50.9% in 2005 to 37.9% in 2010 among 15-19 year-olds.

Data from studies conducted in the North, Center, East and South of the country from 2010 to 2013 informed the Report Card grades. In these studies, physical activity was measured through objective measures such as accelerometers and self-report methods such as questionnaires. The most relevant data is shown in Table 1.

Age Differences

Physical activity in Mexican children and youth appears to vary by age. For example, according to Siegel et al., (2011) among children and youth aged 9 to 18 years in Mexico City, younger boys and girls had the highest IPAQ scores. That is, kids aged 9 to 13 years were shown to be more active than youth aged 14 to 18 years. In younger age groups in the Center of Mexico, studies revealed that kindergarten-aged children accumulate, on average, more minutes of moderate-to-vigorous physical activity on weekdays and weekends (149.2 and 128.1 respectively) than first and second graders. The first graders accumulate 127.7 minutes of moderate to vigorous physical activity (MVPA) on weekday and 119.8 on the weekends while the second graders spend an average of 111.9 minutes of MVPA on the weekdays and 115.1 on the weekends (Jauregui et al., 2011).

In a study conducted with 307 students in the freshman year at the Psychology School from 17 to 24 years old, Ulla and Perez (2009) found that groups aged 17 to 24 years presented higher scores on physical activity than those 25 years and older. Although the differences are not significant in either study, the trend shows that as Mexican children and youth grow older, their physical activity levels diminish. These conclusions are the same as those described in the

2012 Report Card, which coincide with conclusions reached in other countries, as reflected in the 2013 Active Healthy Kids Canada Report Card. Nevertheless, the lack data in our country continues to limit our ability to discuss the factors that deter physical activity habits.

Gender Difference

In terms of gender, most of the data collected during the last few year shows that boys are more active than Mexican girls. This is what Galaviz, et al., (2012), reported during their work with 193 elementary school children aged 10-13 years from the city of Guadalajara. Measurements show that boys took an average of 17996 (\pm 5469) daily steps while girls took an average of 13372 (\pm 4615) daily steps.

Similar gender differences were observed in the studies by Jauregui et al., (2012), Ulla and Perez (2010) and Siegel et al., (2011), where boys had higher levels of physical activity than girls.

Conversely, girls showed higher levels of physical activity in a study carried out in rural and urban communities of the state of Oaxaca (Malina et al., 2011) Girls averaged 2360 weekly steps on their commute to school while boys averaged 2217 weekly steps. Also, research conducted with college students (Mean age = 20.76 years) from the University of Veracruz and Colima, show that girls from the University of Veracruz average more minutes of light to intense physical activity than boys in the same university. Higher levels of light to moderate physical activity were also found in girls at the University of Colima (Salazar et al., 2011).

STUDY	AGE RANGE	SAMPLE	PA LEVELS												
Bacardi-Gascon et al, (2012)	3-5 years	35 preschool children	% time spent in different PA intensities <table border="1"> <tr> <td></td> <td>Home</td> <td>Preschool</td> </tr> <tr> <td>Light</td> <td>11%</td> <td>12%</td> </tr> <tr> <td>Moderate</td> <td>2.6%</td> <td>3.1%</td> </tr> <tr> <td>Vigorous</td> <td>1.2%</td> <td>1.5%</td> </tr> </table>		Home	Preschool	Light	11%	12%	Moderate	2.6%	3.1%	Vigorous	1.2%	1.5%
	Home	Preschool													
Light	11%	12%													
Moderate	2.6%	3.1%													
Vigorous	1.2%	1.5%													
Creighton et al., (2011)	3-15 years	Mexican Family Life Survey (MxFLS), collected in 2002 and 2005. An on-going longitudinal survey that interviewed 8440 households within 147 communities	Weekly indoor domestic labor (hours) 0 (60.5%) 0-5 (26.4%) >5 (13.1%) Weekly outdoor domestic labor (hours) 0 (88.8%) >0 (11.2%)												
Trejo et al, (2012)	6-11 years	138 children	Average of PA M= 2,5 ± 0,66 Scale from 1 to 5												
Elizondo et al., (2010)	6-12 years	198 healthy Mexican boys and girls	PA (days/week) Obese children: 3.4 (2.44) Non-obese: 3.1 (2.43)												
Elizondo et al., (2013)	6-12 years	96 overweight/obese children	Children engaged in 44 minutes per day of physical activity												
Perez et al, (2012)	8-10 years	191 children	Intensity of PA Before school (60-min period), min Light 9.16 5.1 MVPA 1.5 6 2.6 After school (60-min period), min Light 13.6 6 6.9 MVPA 1.7 6 2.7 After-school hours (8-h period), min Light 84.7 6 37.9 MVPA 10.5 6 10												
Ruiz-Ruiseño et al, (2012)	12-16 years	1,083 Mexican student	% of PA Insufficient (10%) Light (14.8%) Moderate (24.6%) Vigorous (17.2%)												
Ulla and Perez (2009)	17-24 years	307 Student Psychology school	Physical activity, mean (SD) Full time students: 2.08 (0.58) Part time students: 1.94 (0.61)												
Pliego et al., (2011)	18-65 years	749 members of University	Student PA (18-25 years) Active: 65% Inactive: 35%												

Table 1: Main result on physical activity levels in Mexican children and youth



Sedentary behaviors



An increasingly important health behavior that significantly affects the health of children and youth is sedentary behavior. Sedentary behaviors are those that require less than 1.5 METs (e.g. watching TV) and have been found to negatively impact health independently of physical activity levels. In modern society, the nature of jobs and the development of technology make it easy for people (kids and youth) to spend a lot of time each day watching TV, using a computer and playing videogames. Estimating screen time provides information the level of sedentarism among children and youth.

In the 2012 Report Card, screen time received a grade of 5. This number suggests that in 2012, our children and youth were not fulfilling the international recommendations. The Canadian Sedentary Behavior Guidelines recommend no more than two hours of screen time per day for this population. Based on these guidelines, more than half of Mexican children are not meeting this recommendation. For the 2014 Mexican Report Card, the grade assigned to this indicator is 4, which is one point less than the reported in the 2012 Report Card.

According to national data (ENSANUT 2012), there has been an increase in the number of screen time hours among children and youth. Findings show that 67% of 10-to-18 year-olds spend more than 2 hours in front of screens every day. In terms of the average number of hours spent in screen-based activity on a daily basis, studies show children spend an average of 2.5 to 3 hours per day in sedentary activities (Trejo et al., 2012; Perez et al., 2012; Elizondo et al., 2013). Others report children spend up to 4 hours per day in sedentary behaviors. (Creighton et al., 2011)

In the present edition of the Report Card, there are some regional studies available that measured sedentary behavior outside of screen time criteria. In a study conducted by Bacardi-Gascon et al., (2012) children from 3 to 5 years old spend 86% of their time at home in sedentary behavior and 83% of their time at school being sedentary. Similarly, in the Central part of Mexico, Balas et al., (2010) found that the 319 children spend more than 4 hours per day in sedentary behaviours. More studies are presented in Table 2.

STUDY	AGE RANGE	SAMPLE	SEDENTARY BEHAVIOUR
Bacardi-Gascon et al., 2012	3-5 years	35 preschool children	% time spent in sedentary activities: Home: 86% Preschool: 83%
Balas et al., 2010	8-12 years	319 Mexican school-aged children	All children were classified as sedentary (spending 4.2 hours/day on sedentary activities)
Ruiz Ruiseño et al., 2012	12- 16 years	1,083 Mexican students	33% of the students were classified as sedentary
Salazar et al., 2011	18-23 years	619 college students from University of Veracruz and University of Colima	Veracruz Mean minutes seated per week Men 445 Women 478 Colima Mean minutes seated per week Men 502.97 Women 472
Zamarripa et al., 2011	437	15-29 years	% has never exercised 20.10%

Table 2: Results from local studies related to sedentary behaviour

In this sense, as established by Janssen et al., (2013), it could be concluded that Mexican children and youth spend an average of 3 hours in screen time daily. Thus, less than 35% of Mexican children and youth fulfill the international recommendations of spending fewer than two hours in sedentary behaviours.

Age and gender tendencies

According to Janssen's (2013) report on the findings of the survey ENSANUT (2012), there are gender differences on screen time. In both age categories studied in the survey (10- to 14-

year olds and 15- to 18-year olds), girls average more screen time hours than boys (Figure 3). Regarding age, the time spent in front of a screen increases from 2.59 to 3.12 hours with increasing age among boys and girls.

This trend is also found in regional studies. In a study conducted with youth from the University of Veracruz and the University of Colima, women were found to average more screen time per week than men (Salazar et al, 2011).

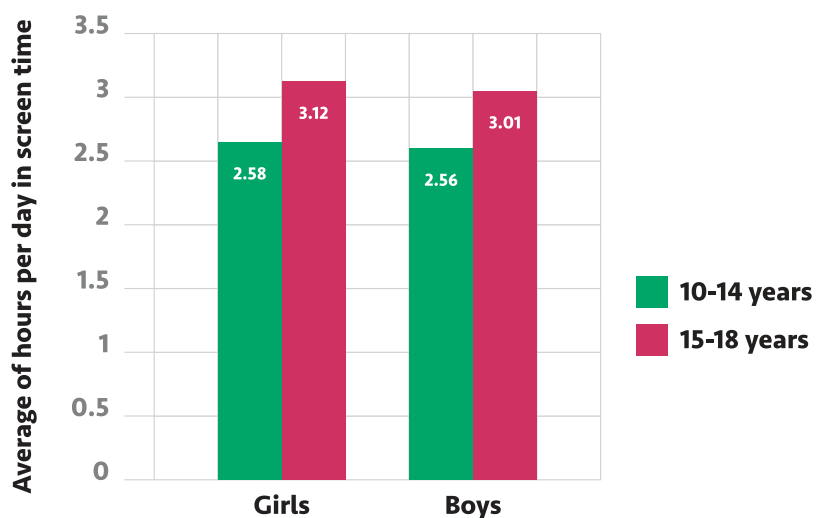


Figure 3: Screen time comparative results by age and gender (ENSANUT 2012).

In addition, Malina et al. (2011) found that among 6- to 18-year olds in the state of Oaxaca in both rural and urban communities, girls watch 1.7 hours of TV per day on average, while boys only watch 1.5 hours per day.

However, some studies show different results. A study carried out in Mexico City with 1,085 children and youth (9 to 18-years) found that boys spend more hours per day watching TV and playing videogames than girls. In addition, the data from the study showed that younger children spend more time in screen time activity than the older ones. Boys aged 9-10 years spend 3.3 hours per day watching TV and 2.4 hours playing videogames. Girls have lower averages than boys (2.9 hours per day). Boys and girls spend more time watching TV than using videogames (Siegel et al., 2011).

Other related factors

In the 2012 Report Card, it was concluded that urban children and youth spent more time in sedentary activities than kids in rural communities, based on regional data collected from Malina et al., (2008) and Hernandez, et al., (2000). In the current Report Card, national data collected from the ENSANUT 2012 survey confirmed those trends. According to Janssen et al., (2013), urban children and youth aged 10 to 14 years have an average screen time of 3.14 hours per day and 15- to 18-year-olds

have an average of 3.2 hours per day, while their rural counterparts have in average 2.19 hours per day for 10- to 14-year-olds and 1.44 hours per day for 10- to 18-year-olds. These numbers show that on average urban children and youth have an extra hour of screen time compared with their rural counterparts.

These data appear to be related to socio-economic status. The survey ENSANUT 2012 divided the sample into three categories: low-income, middle-income, and upper-income and found a positive relation between the income levels and the number of screen time (the greater the income, the more time spent in front of a screen). Thus, it is noticeable that in urban populations, where the socioeconomic income is higher, the time spent in front of a screen is also high. This could be the result of the living conditions in rural communities, which tend to demand more physical activity and have safer surroundings. On the other hand, in urban communities life in the neighborhoods and public spaces is less safe. Having a greater purchasing power makes it possible to buy a broader variety of screen-based devices such as TVs, videogames, smartphones, computers, mobile gadgets, etc.





Physical activity in schools

4
GRADE

Similarly to the 2012 Report Card, there are limited data on physical activity levels in schools available for this year's Report Card. In 2014, a grade of 4 was assigned due to the increased number of national efforts, particularly after implementing the ANSA policy, which aims to foster programs that encourage physical activities for students. The 2014 Report Card grade for this indicator is based on new data for children aged 6-years and under, in addition to the previously available data for older age groups. Moreover, new data were gathered using objective measures such as accelerometers, which provide more accurate estimates.

Key findings

There were no nationally representative data upon which to base the school physical activity grade. Rather, the data available were gathered by local studies mainly conducted in Mexico City. In a study by Perez et al., (2012), students aged 8 to 10-years engaged in sedentary

activities for 344.1 ± 26.6 minutes on average during a 7-hour school day. Within the same school day, the number of minutes spent doing light physical activity was 57.6 ± 22.8 , and 5.8 ± 5.5 doing MVPA. During recess time specifically (30 minutes per day), 21.9 ± 4.6 minutes were spent being sedentary, 7 ± 3.6 were spent in light activity and 0.7 ± 1.3 were dedicated to MVPA.

Safdie et al., (2013) showed slightly more positive results in their conducted a study of elementary school students from Mexico City, where children and youth had an average of 9 minutes of MVPA per day during recess. As for Physical Education (PE) classes, this study indicated that children only engaged in 16 minutes of MVPA during a 50-minute PE class.

A study in the North of Mexico conducted with 8- to 10-year-olds showed even lower MVPA during a PE class. Of the time that was dedicated to two 50-minute PE classes each week, Bacardi-Gascon et al., (2012) observed

that only 0.90 ± 0.39 hours a week were actually used on physical activity. Finally, Aburto et al., (2011) evaluated the number of steps taken by elementary school kids during a school day finding a median of 3,413 steps, which is much lower than international recommendations of 10 thousand steps per day.

Physical activity

School Programs

According to statistics by the Ministry of Public Education (SEP) from 2011, in Mexico there are 19,319,151 children in basic education (kindergarten, elementary, and middle school) at 207,203 public schools. With 79,752 PE teachers, there are not enough PE teachers to serve every school. As part of the ANSA policy, the federal government established the goal of activating 100% of the schools by the end of the administration 2006-2012. Currently, these goals are under revision and there is a new National strategy in progress. The goal established in 2012 aimed that all Mexican students in school would participate in at least 60 minutes of daily physical activity every day, for 30 minutes during the school day and 30 minutes during extra-curricular periods through the National Program for Physical Activation (CONAEDU, 2008). The National Sports Commission (CONADE) was responsible for

implementing this program through its state institutions. Towards the end of 2012, it was reported that all of the 32 states and the National Polytechnic Institute (IPN) were participating, reaching a total of 11.3 million students in 62,696 schools (CONADE, 2012)

The program's main initiatives are the following:

1. Agreements for collaboration
2. Sporting didactic kits
3. National Musical Routines Competition
4. The program, "Tennis goes to your school"
5. School program, "Flag Football"

Moreover, through the Ministry of Public Education this program was created to strengthen the actions that promote physical activity in school and Municipal Sporting Centers, which are spaces with adequate infrastructure to practice sports in schools and for the general public as well.

The promoted programs in School and Municipal Sporting Centers and the number of kids that participate are found in Table 3.

PROGRAM	NUMBER OF CHILDREN
Centers of school sports	11,048,220
Municipal sport centers	9,121,028
School and municipal Lightning Tournaments	23,120
School and municipal summer camps	16,776
Rehabilitation of public spaces	228,457
Sports centers of high marginalization	235,363
Always open school	2,873,445
Sport and recreation safe school	10,696

Table 3: Number of kids participating in programs promoted by School and Municipal Sport Centers from 2006-2011 (CONADE 2012).



Physical activity in family



One of the most impactful environments where the development of physical activity habits is fostered is within the family. In order to promote active lifestyles, it is very important that parents and relatives understand the importance of being physically active. Also, it is critical to create spaces for children to be constantly involved in sports and to participate with them in physical activities. The role of parents and relatives in the context of children and youth is considered a key factor when evaluating the Report Card model.

No data was available to grade this indicator

in the 2012 report card. Data remain scarce so no grade was assigned in 2014. Nevertheless, there has been some research on parents reports of children's physical activity. Bacardi-Gascon et al., (2012) validated a questionnaire about parents' perceptions of the levels of physical activity among their preschool aged children. A questionnaire was completed by parents who were asked to evaluate the level of their children's physical activity in the school setting as well as at home. These data were compared with the use of accelerometers in the children. The results of this work showed that the information given by the parents about the level of their children's physical activity is moderately related to the direct data obtained by measuring physical activity by accelerometer.

Another study addressing the issue of parents and physical activity was conducted by Ulla and Perez (2010). The main objective of this study was to learn the socio-demographic factors influencing healthy behavior in freshmen college students. Among the variables studied was the parents' level of education; it was found that youth whose parents had a college education had higher levels of physical activity.

Lastly, Siegel et al. (2011) studied 1,044 students between 9 and 18 years old living in Mexico City and evaluated possible factors related to physical activity levels with scores from the PAQ questionnaire. They found that perception of parents' physical activity was related to high PAQ scores in 9 and 10 year-old boys and girls. Furthermore in the 11 to 13 year-old range, girls who perceived their mother as physically active were more likely to practice physical activity. Therefore the study shows that parents who are physically active are a positive role model for their children, especially at an early age.



Community and built environment



For the 2014 Report Card, a failing grade of 1 was given to the Community and Built Environment indicator. In the previous edition, it was concluded that there was not enough data available to evaluate the state of Mexican sport infrastructure based on underreporting of private and public sporting facilities in the National Sporting Infrastructure Census led by CONADE.

This year a notable increase in the number of registered sporting facilities was observed as shown in Figure 4. In addition, statistics provided from the School and Municipal Sporting Centers Direction, where free-access

sporting centers are listed at school centers and municipally facilities were considered in the grade. The National Census reports a total of 51,595 facilities in the 31 States and the Capital, and the School and Municipal Sporting Centers Direction register reports, 2,508 School Centers nationally and 1,597 Municipal Centers.

Despite the increase in the number of facilities, the inaccuracy is still noticeable. The data presented by the National Census in important states such as Nuevo Leon, Jalisco, Puebla, Sonora, and Coahuila, to name a few, shows fewer facilities than smaller states such as Aguascalientes, Baja California Norte or Nayarit. Additionally, in statistics from the School and Municipal Sporting Centers Direction, Mexico City, Nuevo Leon, Oaxaca and Tamaulipas have not registered a single facility. If we take into account that Mexico had a population of approximately 112 million as of 2010 according to the INEGI (National Institute of Statistics and Geography), out of which 32,500,000 were 0-14 year-olds and approximately 29,706,560 were 15-29 year-olds, the ratio of inhabitants-sporting facilities in the country is still insufficient (INEGI, 2011).

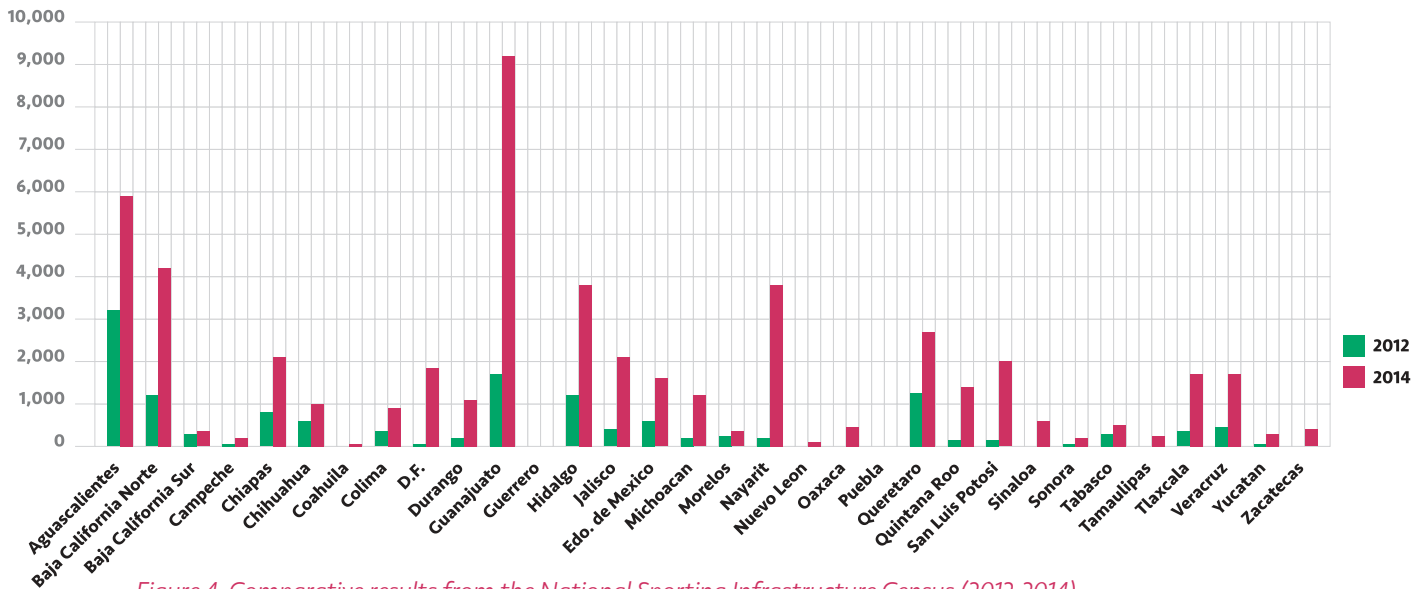


Figure 4: Comparative results from the National Sporting Infrastructure Census (2012-2014)

Active play



Active play is a very important component of spontaneous, unorganized play as a natural trigger of physical activity in children. In the Canadian Report Card model, this category was not included in the first three editions. It was not until 2008 that it was taken into account. Nonetheless, there was not enough data to assign a grade until 2010, when it was granted a failing grade.

This indicator was not evaluated in the 2012 Mexican Report Card. The 2014 Report Card edition includes active play to emphasize how important this behavior is as a natural engine for children's physical activity. Active and spontaneous play is considered an essential element in

kids' lives and an excellent medium to learn and explore through movement. Furthermore, it has been demonstrated that play boosts and improves motor skills, creativity, decision-making abilities, and in general, it offers great physical, psychological, social, and emotional benefits for kids. (Janssen, in press).

Data to determine the time Mexican children and youth spend on active play is lacking. Thus, this indicator remains without a grade. Future research is needed to provide an understanding of the role of active play in the lives of Mexican children and youth, which will let us establish the value of play in our population.

Active transportation



For the present edition, we rely on statistics provided by the ENSANUT 2012 survey, which assessed the number of Mexican children and youth that walk to school. According to this national data, 66.4% of 10 to 14 year-olds walk to and from school. Based on this, a grade of 6 is assigned to this indicator. In the 2012 Report Card, no grade was as-

signed to this indicator because of the lack of nationally representative data, although some regional data from Oaxaca were available (e.g., Malina et al., 2008; 2011). Nevertheless, there are still few studies examining active transportation among Mexican children and youth. Thus, we encourage research that would gauge information on how active transportation boosts physical activity in Mexico.





Organized sports

4
GRADE

The organized sports indicator makes reference to the participation of children and youth in any organized sports on a regular basis. In the 2012 Report Card this indicator remained without a grade due to the lack of data. For the present report card, we rely on the ENSANUT 2012 survey, which measured sports participation over the past 12 months among 10-14 year-olds. According to ENSANUT 2012 58.6% of the sample reported not being part of any organized athletic activity during the previous 12 months, 38.9% participated in 1 or 2 athletic activities and only 2.5% was involved in more than three (Figure 5).

An important piece of information reported in

Mexico is the number of children and youth (9- to 18-year-olds) that competes at the National Youth Olympics Games each year. In this sporting event the top rated young athletes compete representing their respective states in about 46 sports. In 2013, 24,739 athletes participated and about 4 million athletes competed during the qualifying process, meaning about 9.5% of the Mexican young population participated to some extent (CONADE, 2011).

Another national setting for sports promotion is the National Elementary School Sporting Games; in 2011, about 14,933 students participated. Based on these findings, this indicator receives a grade of 4.

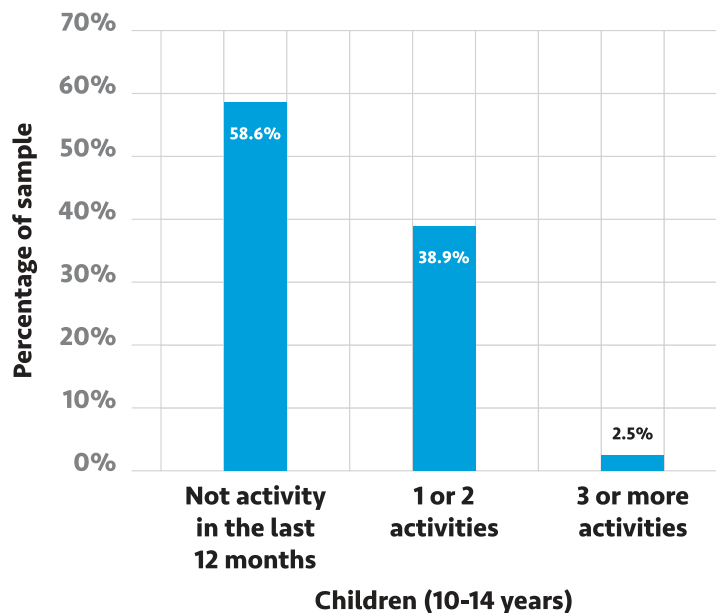


Figure 5: Proportion of Mexican Children in organized sport activity. (ENSANUT 2012)



Government



The notable increase in the prevalence of overweight and obesity in Mexico's child and youth populations has led to governmental initiatives that may impact states and municipalities. The 2012 Report Card referred to sports on the national level (e.g., The General Law on Physical Culture and Sports) and in the different states of the Republic as well as efforts headed by the CONADE and by private entities (i.e., non-profit federations and organizations), and assigned a grade of 7. This edition gives a grade of 6 to the "Government" indicator, acknowledging the government's role in reducing overweight and obesity levels and that physical activity together with nutrition are the pivotal elements of the government's strategy. The grade is informed by the creation of inter-sector programs, mainly from the Ministry of Health and the Ministry of Public Education that have reached different sectors of the population, some of which have been implemented with the help of State Sports Institutes. The main nationwide initiatives as of 2010 include: the ANSA policy launched by the administration of the President Calderón, the "Five Steps for Your Health" program headed by the Ministry of Health, the "11 for Health" program created by the Ministry of Health and the Mexican Soccer Federation, the "School Environment Action Program" and the "National Full-time School Program" headed by the Ministry of Public Education.

The National Physical Culture and Sports Commission together with State Sports Institutes and the Ministry of Public Education have set several programs in motion at schools such as the "Didactic Kit", "The National Musical Routine Pageant", the "Tennis Goes to Your School Program", and the "National Student Flag Football Program". One of the current challenges is to determine the impact of these initiatives on the current levels of physical activity. This way, current programs could be strengthened and consolidated while at the same time new projects could be promoted to contribute to physical activity culture in Mexico from an early age.

Physical Activity Policies

Most of the physical activity policies carried out were inter-sectorial in nature (e.g., with the participation of different government institutions), with most programs created by the Ministry of Health and the Ministry of Public Education and/or with the collaboration of the private sector.

The ANSA Strategy

The National Agreement for National Health (ANSA) was established in 2010 to combat overweight and obesity. It is a public policy that employs a team of nutritionists, activators and sports medicine physicians focused on fighting obesity through physical activity and healthy eating in different settings such as schools, the workplace and the community. The policy is current under evaluation and the results of its effectiveness are expected within the next two years. Personnel involved in the strategy continue to lend support to the 2013-2018 National Strategy for the Prevention and Control of overweight, Obesity and Diabetes (Cordova-Villalobos, 2010).

Five Steps for Your Health

Five Steps for Your Health was a strategy based on the proposals of the EPODE organization (Ensemble, Prevenons L' Obestité Des Enfants; Borys et al., 2010). Headed by the Ministry of Health, it is a nationwide initiative. Due to the important role of physical activity in this national strategy against overweight and obesity, the federal government allocated substantial financial resources to the state governments to set up coordination offices to promote physical activity programs. The main purpose of the program was to encourage people to change their behavior by adopting healthy habits through five major actions: (1) be active, (2) drink water, (3) eat fruit and vegetables, (4) measure yourself, and (5) share with others (Cordova Villalobos et al., 2010). This program was later transferred from the Ministry of Health to the Ministry of Public Education. This program is evidence based (e.g., guided by EPODE), however its impact on physical activity remains unknown.

11 for Health

One of the actions taken by the Ministry of Public Education jointly with private organizations was the initiative identified by FIFA (the International Soccer Federation, 2011) as "11 for Health." This program consists of broadcasting basic health-related messages to youth, especially those aimed at preventing certain diseases. FIFA's medical director, Jiri Dvorak, says that the program is based on handling the three factors jeopardizing children's health: "fast food, sodas and inactivity." This problem is just as present in Mexico as in Europe. The FIFA program attacks "transmittable as well as non-transmittable diseases", and improves knowledge, attitudes and the awareness children have about these diseases. This program, in which the Physical Education teacher at school plays a key role, has been successfully implemented in other countries (Dvorak, 2012; Fuller, 2010). It was recently introduced in several states of Mexico as a pilot program, after adapting it to social and cultural circumstances, and implemented nation-wide in 2013.

The program consists of group games during eleven sessions, where students learn simple prevention mes-

sages based on scientific facts closely related to specific soccer plays. The program's appeal lies in the fact that health-related messages are given by soccer players who are "role models from around the world". These health ambassadors include Argentina's Lionel Messi who sends a message about the importance of having a "balanced diet"; Colombian Radamel Falcao Garcia who asks them to "control their weight", and Uruguay's Diego Forlan who asks for "respect for boys and girls". The group also includes Mexico's Javier "El Chicharito" Hernandez who underscores the importance of playing soccer and participating in physical activities, and Brazilian Neymar who asks them to be careful and avoid sexually transmitted diseases. There is no evidence of continuity of this program at schools.

Action Program (PACE)

In response to the ANSA, 2010, the Ministry of Public Education in coordination with the Ministry of Health developed a joint intervention program called Program for Action at School (PACE) that includes three main lines of action: 1) health promotion and education, 2) encouragement of regular physical activity, and 3) access to and availability of healthy food and beverages at public and private schools.

The program established the need of at least 30 minutes a day of moderately intense physical activity at schools in addition to the time allotted to physical education. The activities take place during any of three moments during the school day: 1) at the beginning of the school day in group; 2) in the classrooms as a playful activity that is part of a pedagogical process in support of study plans and programs; and 3) during "active recreation" with the support of the faculty



and administration in carrying out recreational physical activity. State education authorities support the schools in this effort with the required material to carry out playful or recreational physical activity.

Likewise a “Physical Activity Guide” was written to facilitate promotional actions in the school setting, targeting teachers at the three levels of basic education (www.sep.gob.mx). It includes simple motor routines for playful physical activation that can be performed at any time during the school day.

Gym Equipment at Schools

Most schools in Mexico do not have an inside gym for physical activity. Although the government began delivering equipment specifically for open spaces at several elementary schools in 2010, the programs were not implemented until 2012 as part of physical education classes. This equipment is noted for being accessible and easy to use. It is designed to work on coordination, balance, strength and cardiovascular resistance.

National Fulltime School Program

This program is offered as a pedagogical alternative where students and faculty extend their stay to foster the development of competencies defined in study plans and programs for basic education. School is open from 8 a.m. to 4 p.m. where besides working on subjects in the curriculum, students are taught a second language, computer skills, PE, and art education and learn independent study techniques. Its focus is highly social, pedagogical and humanist (basica.sep.gob.mx).

2011 Physical Education Program

Physical education in Mexico require substantial changes. Elementary School PE occurs only once a week for an hour, with two sessions at the junior high school level. Unfortunately, many schools and children still do not have the benefit of a PE teacher. Statistics show a conflicting picture; one report shows that 35% of schools have a PE teacher, while other says that 70% of all schools have a PE teacher. As for the new PE curriculum designed for the basic education system (Ministry of Public Education, 2011), including preschool,

elementary and middle school (ages from 3 to 14), the main purpose is to influence the student's education by developing their body, for them to become familiar with it, cultivate it and over all, to accept it, with actions that develop competencies to know, feel, take care of and accept the human body. It is above all education whose uniqueness lies in operating through movement. Therefore, it is not PE but rather education via motor skills. The curriculum underscores the playful and recreational nature of appropriate physical activation proper for students' developmental stages. Regular physical activity promoted at school is characterized by two central themes: as a response to students' characteristics and interests at each school level (preschool and elementary school students and teenagers), and to promote actions that bolster students' self-esteem and their physical self-fulfillment based on physical motor activities with games and the connection with playful aspects. Movement is not understood as the mere mechanical movement of body parts but as an expression of perceptions and feelings so that conscious voluntary movement is a significant factor of human behavior. The meaningful change in this new concept of PE is that motor behavior places the individual in the center of the entire process as a manifestation of his/her personality.

The components of the new educational program that are addressed are the child's traits and interests in PE, including games, sports, physical training, exercise and health. These elements are adapted and developed in a specific way, depending on each academic grade. These actions are in process, however there is no clear evaluation model to produce evidence about its impact. In another context, the National Physical Education Program has promoted and brought back regional and indigenous dances and games (the Pre-Columbian Games Federation). This is an attempt to facilitate national identity through several games that have existed in Mexico for centuries, but as a motion strategy, we have yet to see its impact on children.

In conclusion, several different programs and strategies have been applied to date but we have no evidence of their impact on physical activity. The programs continue to lack clear elements for evaluating the impact of physical activity on children's health and motor functions.



General recommendation for action

1. Increase the opportunities for Mexican children and youth to be active. Ensure that both competitive and recreational options are made available.
2. Invite parents to regulate the amount of time their children watch TV, electronic devices and/or videogames so that it does not add up to more than two hours a day of sedentary activities.
3. Take advantage of family activities to promote children's active transportation; i.e., go shopping or someplace nearby on foot or on a bike.
4. Continue the efforts made at school to implement physical activation spaces; it is essential to learn about the impact of the initiatives carried out to date.
5. Promote participation by the private sector in campaigns and programs that strengthen public sector initiatives to overcome the sedentarism problem.
6. Implement evaluation strategies enabling us to gauge the impact of programs developed in Mexico over the past few years for the purpose of giving them direction and ensuring achievement of the goals set for them.
7. Prepare health professionals in the academic setting to face the problems posed by lack of physical activity by children and youth; they could be essential agents of change in Mexican society.
8. Create programs that attend to the special needs of the population, taking into account social, cultural and economic differences of the children and youth.
9. Create a larger number of extracurricular programs easily accessible by the general public, using the infrastructure of schools and municipalities.
10. Encourage group and recreational physical activities to create greater levels of attachment and motivation to practice them.
11. Create conditions of better security in public spaces; this is a very important action for inviting the general public to make proper and constant use of such spaces.
12. Plan the urban development of towns and cities taking into account the use of spaces for leisure and active transportation.
13. Build more spaces accessible to the public apt for the safe practice of physical activity and sports.

14. Work on physical education curriculum to prepare future professionals on how to encourage physical activity in children and youth.
 15. Create programs headed by professionals to encourage physical activity in public spaces inside cities and municipalities.
 16. Work at sports centers in programs that encourage participation in organized sports.
 17. Inform Mexicans about the importance of parents and those close to children and youth being positive physical activity role models.
 18. More work should be done in hiring physical education specialists to teach said subject in elementary education.
 19. Respect the time allotted to physical education classes at school, striving for greater optimization of said classes to create more time for moderate to vigorous physical activity for children and youth.
 20. Build greater awareness of the importance of free time as a natural element hugely beneficial for children and youth.
21. Promote the use of active transportation such as walking, riding a bike, skateboards, etc. to go to school or activities outside school, on school days as well as the weekend.
 22. Have permanent campaigns informing Mexicans about the benefits of being physically active, especially at an early age, and about the repercussions of inactivity during adulthood.
 23. Make greater inter-sector efforts involving the public and private sectors and the health and education sectors in coordinated approaches to fight sedentarism, thereby having greater impact on Mexican society.
 24. Continue efforts to rehabilitate public spaces such as parks, sports centers and public squares, to facilitate the activation of the younger population.



Research gaps

1. Knowledge existing in the country about levels of physical activity continues to be scarce; more research in this area identifying context (school, home, extracurricular time, etc.) continues to be needed.
2. Deeper knowledge is needed about the physical activity levels of children and youth as varied by region, gender, socio-economic and educational level.
3. More studies are needed that enable us to know the amount of time Mexican children and youth devote to sedentary behavior.
4. Learning the impact of sedentary behavior on the health of Mexican children and youth is a pertinent topic for research.
5. Establishing physical activity guidelines for children and youth, taking into account information about the country and local context, is quite pertinent for creating an environment for promoting physical activity in Mexico.
6. Research on the free time pursuits of Mexican children and youth will be needed to learn the status of this factor and to create strategies to promote it.
7. More knowledge is needed about the participation of families as promoters of physical activity.
8. It is important to conduct research in this country that would uncover information of how and why families are involved in physical activity.
9. More studies are needed about the role played by peers and friends in the practice of physical activity.
10. More studies are needed to explore the obstacles and motivation for Mexican children and youth to commence and maintain physical activity.
11. Precise systems are required for registering the public spaces earmarked for physical activity and to know the country's real infrastructure.
12. Better records need to be kept nationwide about the level of participation by our children and youth in organized sports.
13. More information is needed about the use of active transportation in the country (walking, riding a bike, skating, skateboards) as a means of transportation to school or home.
14. Precise evaluation methodologies need to be developed to shine a light on the impact of public and private programs on schools and public spaces.
15. Studies are needed to establish the relationship between the perception of security and physical activity.



Reference list

1. Aburto NJ, Fulton JE, Safdie M, Duque T, Bonvecchio A, Rivera JA. Effect of a school-based intervention on physical activity: cluster-randomized trial. *Med Sci Sports Exerc.* Oct 2011;43(10):1898-1906.
2. Bacardi-Gascon M, Reveles-Rojas C, Woodward-Lopez G, Crawford P, Jiménez-Cruz A. Assessing the Validity of a Physical Activity Questionnaire Developed for Parents of Pre-school Children in Mexico. *Journal of Health, Population and Nutrition* . 2012; 30(4):439-446.
3. Balas-Nakash M, Benítez-Arciniega A, Perichart-Perera O, Valdés-Ramos R, Vadillo-Ortega F. The effect of exercise on cardiovascular risk markers in Mexican school-aged children: comparison between two structured group routines. *Salud Publica De Mexico.* 2010;52:398-405.
4. Borys JM. Preventing Child Obesity. *Epode (EP-ODE-Ensemble, Prevenons, l'Obesite Des Enfants) European Network Recommendations.* Chapter 3. The epode methodology International development;40-41
5. CAMBIO. Canada and Mexico, Battling Childhood Obesity. (2012). The Mexican report card on physical activity for children and youth 2012. Retrieved from <http://www.haloresearch.ca/cambio/SpanishLongFormWEB.pdf>
6. CEDEM: Censo de la Direccion de Deporte Escolar y Municipal. Available at: <http://cedem.deporte.org.mx/Documentos/DirectoriodeCentrosbannerrosa.xlsx>
7. Colley RC, Brownrigg M, Tremblay MS. A model of knowledge translation in health: the Active Healthy Kids Canada Report Card on Physical Activity for Children and Youth. *Health Promotion Practice.* 2012;13(3):320-330.
8. CONADE: Censo Nacional de Infraestructura Deportiva Available at: http://sistemas.conade.gob.mx/portal-Censo/index_2.aspx
9. CONADE (2011). Subdirección General de Cultura Física. Dirección Activación física y recreación. Unpublished report.
10. Cordova-Villalobos JA, Barriguete-Melendez A, Radilla-Vázquez C, et al (2010). Estrategia cinco pasos para la salud escolar (Five steps strategy for healthy school children).
11. Cordova-Villalobos JA. El Acuerdo Nacional para la Salud Alimentaria como una estrategia contra el sobrepeso y la obesidad. *Cirugia y Cirujanos.* 2010;78(2):105-.

12. Creighton MJ, Goldman N, Teruel G, Rubalcava L. Migrant networks and pathways to child obesity in Mexico. *Social Science & Medicine* 72. 2011; 685-693
13. Dvorak J, Fuller C, Junge A. Planning and implementing a nationwide football-based health-education program. *British Journal of Sports Medicine*. 2012; 46, 6-10.
14. Elizondo-Montemayor L, Ugalde-Casas PA, Serrano-Gonzalez M, Cuello-Garcia CA, Borbolla-Escoboza JR. Serum 25-Hydroxyvitamin D Concentration, Life Factors and Obesity in Mexican Children. *Obesity*. 2010;18:1805-1811.
15. Elizondo-Montemayor L, Gutierrez NG, Moreno DM, Martinez U, Tamargo D, Treviño M. School-based individualised lifestyle intervention decreases obesity and the metabolic syndrome in Mexican children. *Journal of Human Nutrition and Dietetics*. 2013; 26 (Suppl. 1), 82-89.
16. Encuesta Nacional sobre Obesidad (2013). Alianza por la Salud Alimentaria: <http://elponderdelconsumidor.org/saludnutricional/encuesta-nacional-sobre-obesidad-2a-entrega/>
17. Federation International Football Association (FIFA) (2011). FIFA's 11 for Health Programme. Retrieved from website: <http://FIFA.com>
18. Freedman D, Kettel Khan L, Serdula M, Dietz W, Srinivasan G. The relation of childhood BMI to adult adiposity: the Bogalusa Heart Study. *Pediatrics*. 2005;115:348-351.
19. Fuller C, Kimga A, DeCelles JD, Jankelowitz R, Dvorak J. Football for health: A football-based health-promotion program for children in South Africa: A parallel cohort study. *British Journal of Sports Medicine*. 2010; 44, 546-554.
20. Galaviz KI, Tremblay MS, Colley R, Jau-regui E, Lopez-Taylor J, Janssen I. Associations between physical activity, cardiorespiratory fitness, and obesity in Mexican children. *Salud Publica de Mexico*. 2012;54(4):463-469.
21. Gutierrez JP, Rivera-Dommarco J, Shamah-Levy T, et al. Encuesta Nacional de Salud y Nutricion 2012. Resultados Nacionales. Cuernavaca, Mexico: Instituto Nacional de Salud Publica; 2012.
22. Hernandez B, Gortmaker S, Laird N, Colditz G, Parra-Cabrera, S, Peterson K. Validez y reproducibilidad de un cuestionario de actividad e inactividad fisica para escolares de Mexico. *Salud Publica Mexico*. 200; 42 (4):315-323.
23. IMJUVE (2011). Encuesta Nacional de la Juventud 2010. Instituto Mexicano de la Juventud. Secretaria de Educacion Publica. Mexico.
24. Instituto Nacional de Estadistica y Geografia (INEGI). Censo de Poblacion y Vivienda 2010. Cuestionario basico. Consulta interactiva de datos. Mexico, INEGI, 2011.
25. Janssen I, Medina C, Pedroza A, Barquera S. Screen time in Mexican children: findings from the 2012 National Health and Nutrition Survey (ENSANUT 2012). *Salud Publica de Mexico*. 2013;55(5):484-491.
26. Janssen I. Active play: an important physical activity strategy in the fight against childhood obesity. *Canadian Journal of Public Health*. in press.

- 27.** Jauregui A, Villalpando S, Rangel-Baltazar E, Castro-Hernandez J, Lara-Zamudio Y, Mendez-Gomez-Humaran I. The physical activity level of Mexican children decreases upon entry to elementary school. *Salud Publica De Mexico*. 2011;53(3).
- 28.** Jauregui A, Villalpando S, Rangel-Baltazar E, Lara-Zamudio YA, Castillo-Garcia MM. Physical activity and fat mass gain in Mexican school-age children: a cohort study. *BMC Pediatrics*. 2012; 12:109.
- 29.** La Estructura del Sistema Educativo Mexicano. http://www.sep.gob.mx/work/models/sep1/Resource/1447/1/images/sistemaedumex09_01.pdf.
- 30.** Malina R, Peña Reyes M, Kheng Tan S, Little B. Physical activity in youth from a subsistence agriculture community in the Valley of Oaxaca, southern Mexico. *Applied Physiology, Nutrition, and Metabolism*. 2008; 33:819-830
- 31.** Malina RM, Peña ME, Tan SK, Little BB. Physical fitness of normal, stunted and overweight children 6-13 years in Oaxaca, Mexico. *European Journal of Clinical Nutrition*. 2011;65:826-834.
- 32.** OMS (2010). Recomendaciones mundiales de actividad física para la salud. Ginebra. Organización Mundial de la Salud
- 33.** Parsons TJ, Power C, Logan S, Summerbell CD. Childhood predictors of adult obesity: a systematic review. *International journal of obesity and related metabolic disorders*. 1999;23 Suppl 8:S1-S107
- 34.** Perez-Rodriguez M, Melendez G, Nieto C, Aranda M, Pfeffer F. Dietary and Physical Activity/Inactivity Factors Associated with Obesity in School-Aged Children. *American Society for Nutrition*. 2012; 3:622S-628S.
- 35.** Pliego-Rayas SA., Celis-Rivera R, Rodriguez, MP. Hábitos de actividad física en la comunidad universitaria del Instituto Tecnológico de Estudios Superiores de Occidente. *Revista Mexicana de Investigación en Cultura Física y Deporte*. 2011; 3(3):13-21.
- 36.** Ramirez EC, Martinez LC, Tejeda AO, Vergara A, Villa AR. Efecto de una intervención escolar basada en actividad física y dieta para la prevención de factores de riesgo cardiovascular (RESCATE). *Revista española de nutrición comunitaria*. 2009;15(2):71-80.
- 37.** Ruiz-Risueño Abad J, Ruiz-Juan F, Zamarripa Rivera JI. Alcohol y tabaco en adolescentes españoles y mexicanos y su relación con la actividad físico-deportiva y la familia. *Revista Panamericana de Salud Publica*. 2012; 31(3):211-20.
- 38.** Safdie M, Jennings-Aburto N, Levesque L, et al. Impact of a school-based intervention program on obesity risk factors in Mexican children. *Salud Publica de Mexico*. 2013;55(3):S374-S387.
- 39.** Salazar M, Sebastian F M, Del Rio-Valdivia J, Hernandez-Lopez S, Flores-Moreno, PJ. Actividad Física e IMC de los universitarios de Veracruz y Colima. *Revista Mexicana de Investigación en Cultura Física y Deporte*. 2011; 3(3): 53-69
- 40.** Secretaria de Educación Pública. Programa Nacional de escuelas de tiempo completo. Available at: basica.sep.gob.mx

41. Secretaria de Educacion Publica. Available at; (www.sep.gob.mx).
42. Shamah T, Villalpando S, Rivera J. Resultados de Nutricion de la ENSANUT 2006 Cuernavaca, Mexico: Instituto Nacional de Salud Publica. 2007.
43. Siegel SR, Malina RM, Reyes MEP, Barahona EEC, Cumming SP. Correlates of physical activity and inactivity in urban mexican youth. *American Journal of Human Biology*. 2011;23(5):686-692.
44. Trejo-Ortiz PM, Jasso-Chairez S, Molinedo-Montaña F, Lugo-Balderas L. Relacion entre actividad fisica y obesidad en escolares. *Revista Cubana De Medicina General Integral*. 2012;28(1):34-41.
45. Ulla-Diez SM, Perez-Fortis A. Socio-demographic predictors of health behaviors in mexican college students. *Health Promotion International*. 2010;25(1):85-93.
46. Zamarripa-Rivera JI, Lopez Walle JM, Ruiz-Juan F, Carranza-Garcia LE, Medina-Corrales M, Ochoa-Ahmed, F. La inactividad fisico-deportiva de los habitantes de Monterrey, Nuevo Leon, Mexico. *Revista Mexicana de Investigacion en Cultura Fisica y Deporte*. 2011; 3(3):129-142



THE GRADING SYSTEM

The Mexico Report Card working group included experts from academic institutions in Mexico, Canada and the United States, and from governmental agencies in Mexico. A search of the English and Spanish language literature was conducted in the summer of 2013. The main sources of data were the National Health and Nutrition Survey (ENSANUT) 2012, the National Youth Survey 2010, reports from public institutions such as the National Commission on Physical Culture and Sports (CONADE), and published academic articles. The literature search for published articles was conducted on major data bases including Academic Search Complete, EBSCO host, Web of Science and Medline for English articles, and on SCIELO, Cochrane México and *Biblioteca virtual en Salud* for Spanish articles. Articles reporting on Mexican populations 1 to 25 years of age published from 2010 forward were included.

Grades for each indicator were assigned by consensus during a meeting held with the Mexico Report Card team and members from the AHKC Report Card team. The grading scheme for the Mexican Report Card was based on the national grading system, where numbers below 5 represent failing grades and numbers above 6 represent approbatory grades. Assigned grades can be seen in Table 4. Oversight to the grading procedure for this Report Card was provided by the Scientific Officer of Active Healthy Kids Canada.

GRADING TABLE

9-10	we are succeeding with a large majority of children and youth (81 - 100%);
7-8	we are succeeding with well over half of children and youth (61 - 80%);
5-6	we are succeeding with about one-half of children and youth (41 - 60%);
3-4	we are succeeding with relatively few children and youth (21 - 40%);
0-2	we are succeeding with very small percentage of children and youth (0 - 20%).

Table 4: Grades for The Mexican Report Card 2014

CONTACT INFORMATION

PhD. Maria del Pilar Rodríguez Martínez

Head of the Center of Physical Education and Health

Instituto Tecnológico de Estudios Superiores de Occidente (ITESO)

Periferico Sur Manuel Gomez Morin # 8585, Tlaquepaque, Jalisco, Mexico.

e-mail: pilaroma@iteso.mx

