

Results From Mexico's 2014 Report Card on Physical Activity for Children and Youth

María del Pilar Rodríguez Martínez, Karla I. Galaviz, Edna Jauregui Ulloa, Ines Gonzalez-Casanova, and Juan Ricardo Lopez y Taylor

Background: The Mexican Report Card on Physical Activity in children and youth was first developed in 2012 as a tool aimed at informing policy and practice. The objective of this paper is to update the Report Card to reflect the current situation in Mexico. **Methods:** A literature search was conducted in Spanish and English using major databases, and complemented with government documents and national health surveys. Information on the 9 indicators outlined in the Global Matrix of Report Card Grades was extracted. Experts from Mexico and Canada met to discuss and assign a grade on each indicator. **Results:** The physical activity indicator was assigned a C+, which was higher than in the previous report card. Sedentary behavior was assigned a D, which was lower than the previous report card. Organized Sports and Active Transportation, which were not graded in the previous report card, were assigned grades of D and B-, respectively. Government and Built Environment were assigned grades of C and F, respectively. Family and Peers and Active Play were not graded (INC). **Conclusions:** Levels of PA and sedentary behaviors among Mexican children and youth were below the respective recommended references. The implementation and effectiveness of current government strategies need to be determined. The Mexican Report Card is a promising knowledge translation tool that can serve to inform policies and programs related to physical activity.

Keywords: advocacy, policy, health communication, child health, knowledge translation

Physical activity (PA) among children and youth is associated with numerous health benefits,^{1,2} including obesity prevention.³ However, the prevalence of physical inactivity among children and youth has reached alarming levels in Mexico⁴ and across the globe.⁵ Physical inactivity among Mexican youth 10–18 years has increased 47% in the last 6 years.⁴ The amount of time Mexican children and youth spend in sedentary behaviors is also alarmingly high.⁴ Knowledge translation strategies are needed in Mexico to inform public policies and programs aimed at improving levels of PA and sedentary behaviors among children and youth.

A successful model of knowledge translation is the Active Healthy Kids Canada (AHKC) Report Card on Physical Activity for Children and Youth.^{6,7} The AHKC Report Card has been successful in influencing policies, programs and campaigns aimed at improving PA opportunities for children and youth.⁸ Based on this successful model, Mexico launched its first Report Card in 2012⁹ sponsored by the CAMBIO program, an international collaborative project aimed at battling childhood obesity in Mexico.¹⁰ The first Mexican Report Card collated information on 8 indicators related to PA among children and youth nationwide. The main findings in the first report card were that Mexican children and youth had low levels of PA and high levels of sedentary behavior. The first report card also showed that data for indicators of physical activity were scarce and lacked national representation.⁹

The 2014 Mexican Report Card summarizes the most recent evidence dealing with PA and sedentary behavior among children and youth that can be used to inform public policies and programs.

Methods

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) 2012,⁴ the National Youth Survey 2010,¹¹ reports from public institutions such as the National Commission on Physical Culture and Sports (CONADE),¹² 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 1–25 years of age published from 2010 forward were included.

Consistent with the Global Matrix of Report Card Grades,¹³ 9 indicators were considered (Table 1). National surveys (n = 2), government reports (n = 10), and academic articles (n = 22) were examined to gather information relevant to each indicator. Grades for each indicator were assigned by consensus during a meeting held with the Mexican 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.¹⁴ Based on the AHKC letter grading scheme, the corresponding letters for each grade were also included to facilitate comparisons. Assigned grades were as follows: 9–10 = A, we are succeeding with a large majority of children and youth

Rodríguez Martínez (corresponding author: pilaroma@iteso.mx) is with the Instituto Tecnológico de Estudios Superiores de Occidente (ITESO), Jalisco, México. Galaviz is with the School of Kinesiology and Health Studies, Queen's University, Kingston, Ontario, Canada. Ulloa is with the Ministry of Health, Jalisco, Guadalajara, Jalisco, México. Gonzalez-Casanova is with the Hubert Department of Global Health, Rollins School of Public Health, Emory University, Atlanta, GA. López y Taylor is with the State Council for the Promotion of Sports (CODE), Guadalajara, Jalisco, México.

(81%–100%); 7–8 = B, we are succeeding with well over half of children and youth (61%–80%); 5–6 = C, we are succeeding with about one-half of children and youth (41%–60%); 3–4 = D, we are succeeding with relatively few children and youth (21%–40%); and 0–2 = F, we are succeeding with very small percentage of children and youth (0%–20%).

Results

Grades assigned for the 2012 and 2014 Mexican Report Cards are summarized in Table 1, while the front cover is illustrated in Figure 1.

Overall Physical Activity Level: 6 (C+)

Data from ENSANUT 2012 showed that 59% of Mexican adolescents between 15–18 years met the PA recommendation of 60 minutes of moderate-to-vigorous physical activity (MVPA) per day.^{4,15} ENSANUT 2012 also indicated that 23% of this population was inactive. However, these proportions were better than those reported in the 2006 survey, where 35% of children were physically active and 40% were inactive.¹⁶ Individual studies conducted in Mexico showed that PA decreases with age and that activity levels differ by sex.^{17–21} Changes in PA observed between ENSANUT 2006 and 2012 were interpreted with caution because the age group

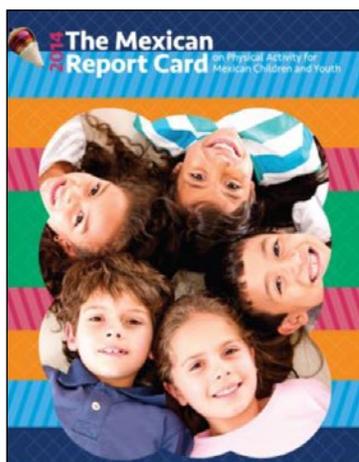


Figure 1 — Front cover of the 2014 Mexican Report Card on Physical Activity for Children and Youth.

assessed and the PA measure employed in 2006 differed from those employed in 2012. Nevertheless, recognizing the increase in PA levels between 2006 and 2012 and allowing for differences in the methodology, the grade for the 2014 Report Card was increased from 5–6.

Organized Sports Participation: 4 (D)

ENSANUT 2012 estimated that only 41% of children 10–14 years of age participated in 1 or more organized sports in the previous 12 months while 59% did not participate in organized sports in the previous 12 months.⁴ Relative to competitive sports, the National Youth Sports Games are held every year in Mexico; youth representing every state in the country compete in 46 sports disciplines.²² According to internal reports from the CONADE, about 4 million athletes participated in the qualifying events, and 24,739 athletes participated in the 2013 games. Given data from ENSANUT 2012 and information on the National Youth Sports Games a grade of 4 was assigned. This indicator was not graded in the 2012 Mexican Report Card due to insufficient data. As such, the assigned grade represents the first assessment of sports participation in Mexico.

Active Play: Incomplete

This indicator was not included in the 2012 Report Card. It was included in the 2014 Report Card to emphasize the importance of spontaneous, unorganized play as a natural trigger of PA in children. Active play has a significant impact on energy expenditure and should be part of efforts directed at promoting physical activity among children.²³ No data were available to grade this indicator in the present Report Card.

Active Transportation: 7 (B-)

ENSANUT 2012 showed that 66% of children 10–14 years walked to school,⁴ while a study done in 2000 showed that virtually all primary school children 6–13 years ($n = 688$) from both rural and urban areas in Oaxaca walked to school.²¹ Differences in the estimated number of steps to school taken by boys and girls were also observed in this study.²¹ This indicator was not graded in the 2012 Report Card because nationally representative data were nonexistent. The fact that this indicator was included in ENSANUT 2012 is encouraging and demonstrates that active transportation is being recognized as an important domain of PA in Mexico. Based on this trend and the fact that more than half of the surveyed children engaged in active transportation to school, a grade of 7 was assigned.

Table 1 Grades for Each Physical Activity Indicator in the 2012 and 2014 Mexican Report Cards

Indicator	2012 letter grades*	2014 letter grades
Overall Physical Activity Levels	C	C+
Organized Sport Participation	INC	D
Active Play	Not included	INC
Active Transportation	INC	B-
Sedentary Behavior	C	D
Family and Peers	INC	INC
School	D-	D
Community and the Built Environment	INC	F
Government strategies and investments	B-	C

* Letter grades were used in this table to facilitate comparison with other report cards. For the number grades please see the results section.

Sedentary Behavior: 4 (D)

Overall, 67% of 10–18 years old children and youth spent more than 2 hours per day in front of a screen, but the prevalence was significantly higher among urban than rural populations (73% vs. 51%).^{4,24} Although the Canadian Sedentary Behavior Guidelines recommend no more than 2 hours of screen time per day,²⁵ more than one-half of Mexican children and youth did not meet this recommendation. Several individual studies indicated that Mexican children 6–11 years spent, on average, 2.5–3 hours per day in front of a screen,^{26–28} which was consistent with ENSANUT 2012 estimates.⁴ Given the increase in prevalence of sedentary behavior (screen time), the grade for this indicator was reduced from 5 in the 2012 Report Card⁹ to 4 in 2014.

Family and Peers: Incomplete

A grade could not be assigned in either the 2012 or the 2014 Mexican Report Cards. Data are lacking, which highlights the need for systematic data to grade indicator.

School: 4 (D)

Data on PA and related programs implemented in schools are very limited. Existing intervention studies provide a snapshot of PA in schools. A randomized control trial in public elementary schools in Mexico City noted that 10-year-old children (n = 699) completed, on average, 3513 steps during a school day (inter quartile range 2646–4693 steps).²⁹ A similar study in Mexico City public schools showed that school children (n = 899) spent 16 and 9 minutes in MVPA during physical education (PE) and recess, respectively.³⁰ Although limited to the major metropolitan area of Mexico, the data suggest relatively little PA in schools. Although a grade of 3 was assigned in the 2012 Report Card, it was increased to 4 in the current report card. The increase was given mainly because of the implementation of government efforts, specifically the National Food Health Strategy 2010³¹ which fosters specific strategies aimed at promoting PA within schools.

Community and the Built Environment: 1 (F)

A failing grade was assigned to this indicator in 2014, although a grade could not be assigned in the 2012 report card due to the lack of data. Based on the National Census of Sports Infrastructure,³² and on the Municipal Sports Centers website,³³ it was concluded that the available sports and PA related infrastructure were not sufficient to provide opportunities for children and youth. Promising programs for promoting PA within the community (eg, *Via Recre-activa*)³⁴ and for providing the infrastructure to bike within the city (eg, *Muevete en Bici*)³⁵ have been implemented, but these strategies have not been scaled-up across the country and their effectiveness is unknown. More data are needed to assess both the availability and the impact of opportunities provided in the community and built environments of Mexico.

Government: 6 (C)

Based on the National Food Health Strategy 2010,³¹ which included specific components aimed at encouraging PA among children, a grade of 7 was assigned to this indicator in the 2012 Report Card. The grade was decreased to 6 in 2014 as the proposed strategies are still in the developmental or implementation stage even though addressing physical inactivity is a priority for the new administra-

tion. An established program launched by the Secretary of Health during the previous administration is the *5 Pasos program*,³⁶ where children, adults, and older adults are encouraged to engage in PA and other healthy behaviors. CONADE¹² has launched school programs, such as *Tochito Bandera* and *Tenis va a tu Escuela*, with the goal of promoting PA among children at school. However, the implementation and impact of such programs remains unknown. To inform current and future programs critical evaluation of existing strategies is imperative.

Discussion

The results of the 2014 Mexican Report Card on Physical Activity of Children and Youth highlight the need to improve grades for all indicators where data are available. According to the best available evidence, most Mexican children and youth do not meet the recommendation of 60 minutes of MVPA every day.⁴ Moreover, the percentage of children and youth engaging in 2 or more hours of screen time per day increased between 2012 and 2014, suggesting a potential worsening of sedentary behavior patterns in the country. In response to a growing concern for the epidemic of childhood obesity,⁴ the Mexican government has proposed several policies to promote PA in Mexican children and youth.³¹ However, formal evaluations are still underway, and the effect of the policy on children and youth PA remains unknown.

Compared with the 2012 Mexican Report card, results of the current edition show improvements in several indicators with sufficient data for grading (eg, organized sports, active transportation, community and built environment), but poorer grades on other indicators where comparisons are possible (sedentary behavior and government). Small improvements were registered for PA levels and school. Although a relatively large increase (35%–59%) in the percentage of Mexican children meeting the PA recommendations was noted, this is probably an artifact of methodological differences between studies in the previous and present editions of the Mexican report card. As a result, the overall PA grade was increased only slightly to acknowledge the positive change without overlooking the potential limitations. Similarly, a slight increase in the grade for the school indicator was decided due to the implementation of the National Food Health Strategy,³¹ which introduced school-based strategies for promoting PA. The impact of such strategies is currently being evaluated. As mentioned earlier, the lack of published evaluations of national policies for the promotion of PA in Mexican children and youth is a major limitation that needs to be addressed.

Recommendations

Moving forward, it is important to continue scientific and governmental efforts to obtain reliable and high quality surveillance data (both self-reported and objective) to evaluate changes in PA levels of Mexican children and youth. These efforts should include evaluations of the implementation and impact of current policies and programs to improve the PA and sedentary behaviors among this population. International and national collaborations, such as those formed during the development of the present Report Card, are a means to exchange innovative ideas, move the field forward and tailor strategies to the Mexican context. The Report Card model represents a successful knowledge translation tool^{7,8} that should continue to be used and refined to influence public policies and programs in Mexico.

Limitations

Because of the limited data available, only 7 of the 9 indicators could be graded. This limits conclusions and comparisons with Report Cards from other countries. Most studies lack national representation and/or adequate research methodology. As a result, most of the results in this report card are based on ENSANUT 2012. Further, the PA and sedentary behavior data used in this Report Card were mainly self-reported, which may bias true estimates. Finally, evidence about the effectiveness of current policies and programs is lacking, which prevents conclusions on their potential to promote PA among children and youth.

Conclusion

PA levels of Mexican children and youth continued to be below the recommended standard of international guidelines. Likewise, children and youth also exceeded the recommendations for screen time and as such have high levels of sedentary behavior. Nevertheless, government strategies to promote PA have been implemented over the past few years, albeit their effectiveness is unknown. The Report Card model represents a successful knowledge translation tool that should continue to be used and refined to potentially influence public policies and programs in Mexico.

Acknowledgments

The authors thank the following members of the Mexico Report Card working group for their contributions to the 2014 Mexican Report Card. For their participation in the grading process, we thank Dr. Jorge Sanchez Gonzalez, Academic Vice Rector UAG, Dr. Alejandro Pliego Rayas, Coordinator of Physical Activity and Health Department in ITESO University, and Antonio Rivera Cisneros, Dean of Medical Sciences UAG. For their contribution in the data gathering process, we thank Itzae Navarro Peña, Manager of the Program *Ponte al 100 Jalisco*, Teresita Mendez Bravo, MSc. Candidate and Lic. Giovanni Garrido, from CONADE.

References

- Janssen I, LeBlanc AG. Systematic review of the health benefits of physical activity and fitness in school-aged children and youth. *Int J Behav Nutr Phys Act*. 2010;7(1). [PubMed doi:10.1186/1479-5868-7-40](#)
- Andersen LB, Harro M, Sardinha LB, et al. Physical activity and clustered cardiovascular risk in children: a cross-sectional study (The European Youth Heart Study). *Lancet*. 2006;368(9532):299–304. [PubMed doi:10.1016/S0140-6736\(06\)69075-2](#)
- Janssen I, Katzmarzyk PT, Boyce WF, et al. Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. *Obes Rev*. 2005;6(2):123–132. [PubMed doi:10.1111/j.1467-789X.2005.00176.x](#)
- Gutiérrez JP, Rivera-Dommarco J, Shamah-Levy T, et al. *Encuesta Nacional de Salud y Nutrición 2012. Resultados Nacionales*. Cuernavaca, México: Instituto Nacional de Salud Pública; 2012.
- Hallal P, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U. Physical activity levels of the world population: surveillance progress, gaps and prospects. *Lancet*. 2012;380(9838):247–257. [PubMed doi:10.1016/S0140-6736\(12\)60646-1](#)
- Barnes JD, Colley RC, Tremblay MS. Results from the Active Healthy Kids Canada 2011 Report Card on Physical Activity for Children and Youth. *Appl Physiol Nutr Metab*. 2011;37(4):793–797. [PubMed doi:10.1139/h2012-033](#)
- 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 Promot Pract*. 2012;13(3):320–330. [PubMed doi:10.1177/1524839911432929](#)
- Tremblay MS, Barnes JD, Cowie BJ. Impact of the Active Healthy Kids Canada Report Card: a 10-year analysis. *J Phys Act Health*. 2014;11(1):S3–S20.
- Ramírez EC, Martínez 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.
- Roselló AM, Guzmán PS, Bolaños AM. Efecto de un programa de rehabilitación cardíaca en la alimentación, peso corporal, perfil lipídico y ejercicio físico de pacientes con enfermedad coronaria. *Revista Costarricense de Cardiología*. 2001;3:15–20.
- Kain BJ, Uauy DR, Leyton DB, Cerda RR, Olivares CS, Vio DF. Efectividad de una intervención en educación alimentaria y actividad física para prevenir obesidad en escolares de la ciudad de Casablanca, Chile (2003-2004). *Rev Med Chil*. 2008;136:22–30. [PubMed doi:10.4067/S0034-98872008000100003](#)
- García R, Suárez R. Resultados de un seguimiento educativo a personas con diabetes mellitus tipo 2 y sobrepeso u obesidad. *Revista Cubana de Endocrinología*. 2003;14(3).
- Tremblay MS, Gray CE, Akinroye K, et al. Physical activity of children: a global matrix of grades comparing 15 countries. *J Phys Act Health*. 2014;11(Suppl 1):S113–S125.
- La Estructura del Sistema Educativo Mexicano. http://www.sep.gob.mx/work/models/sep1/Resource/1447/1/images/sistemaedu-mex09_01.pdf.
- Tremblay MS, Warburton D, Janssen I, et al. New Canadian Physical Activity Guidelines. *Appl Physiol Nutr Metab*. 2011;36(1):36–46. [PubMed](#)
- Shamah T, Villalpando S, Rivera J. *Resultados de Nutrición de la ENSANUT 2006*. Cuernavaca, México: Instituto Nacional de Salud Pública; 2007.
- Jáuregui A, Villalpando S, Rangel-Baltazar E, Castro-Hernández J, Lara-Zamudio Y, Méndez-Gómez-Humarán I. The physical activity level of Mexican children decreases upon entry to elementary school. *Salud Publica Mex*. 2011;53(3):228–236. [PubMed](#)
- Galavíz KI, Tremblay MS, Colley R, Jáuregui E, López-Taylor J, Janssen I. Associations between physical activity, cardiorespiratory fitness, and obesity in Mexican children. *Salud Publica Mex*. 2012;54(4):463–469. [PubMed doi:10.1590/S0036-36342012000500002](#)
- Ulla-Díez SM, Pérez-Fortis A. Socio-demographic predictors of health behaviors in Mexican college students. *Health Promot Int*. 2010;25(1):85–93. [PubMed doi:10.1093/heapro/dap047](#)
- Siegel SR, Malina RM, Reyes MEP, Barahona EEC, Cumming SP. Correlates of physical activity and inactivity in urban Mexican youth. *Am J Hum Biol*. 2011;23(5):686–692. [PubMed doi:10.1002/ajhb.21197](#)
- Malina RM, Peña ME, Tan SK, Little BB. Physical fitness of normal, stunted and overweight children 6-13 years in Oaxaca, Mexico. *Eur J Clin Nutr*. 2011;65:826–834. [PubMed doi:10.1038/ejcn.2011.44](#)
- Ramírez-Vélez R, Aguilar de Plata AC, Mosquera-Escudero M, et al. Efecto del ejercicio físico aeróbico sobre el consumo de oxígeno de mujeres primigestantes saludables. Estudio clínico aleatorizado. *Rev Colomb Obstet Ginecol*. 2011;62:15–23.
- Janssen I. Active play: an important physical activity strategy in the fight against childhood obesity. *Can J Public Health*. 2014;105(1):e22–e27. [PubMed](#)
- 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 Mex*. 2013;55(5):484–491. [PubMed](#)

25. Tremblay MS, LeBlanc AG, Carson V, et al. Canadian sedentary behaviour guidelines for the early years (aged 0–4 years). *Appl Physiol Nutr Metab*. 2012;37:370–380. [PubMed doi:10.1139/h2012-019](#)
26. Perez-Rodríguez 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. [PubMed](#)
27. Trejo-Ortiz PM, Jasso-Chairez S, Mollinedo-Montaña F, Lugo-Balderas L. Relación entre actividad física y obesidad en escolares. *Revista Cubana De Medicina General Integral*. 2012;28(1):34–41.
28. Elizondo-Montemayor L, Ugalde-Casas PA, Serrano-González M, Cuello-García CA, Borbolla-Escoboza JR. Serum 25-Hydroxyvitamin D concentration, life factors and obesity in Mexican children. *Obesity (Silver Spring)*. 2010;18:1805–1811. [PubMed doi:10.1038/oby.2009.448](#)
29. 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*. 2011;43(10):1898–1906. [PubMed doi:10.1249/MSS.0b013e318217ebec](#)
30. Safdie M, Jennings-Aburto N, Lévesque L, et al. Impact of a school-based intervention program on obesity risk factors in Mexican children. *Salud Publica Mex*. 2013;55(3):S374–S387. [PubMed](#)
31. Córdova-Villalobos JÁ. El Acuerdo Nacional para la Salud Alimentaria como una estrategia contra el sobrepeso y la obesidad. *Cir*. 2010;78(2):105–107. [PubMed](#)
32. Dauenhauer BD, Keating XD. The influence of physical education on physical activity levels of urban elementary students. *Res Q Exerc Sport*. 2011;82(3):512–520. [PubMed doi:10.1080/02701367.2011.10599784](#)
33. Dornelas E, Stepnowski R, Fischer E, Thompson P. Urban ethnic minority womens attendance at health clinic vs. church based exercise programs. *J Cross Cult Gerontol*. 2007;22(1):129–136. [PubMed doi:10.1007/s10823-006-9023-1](#)
34. Glasgow RE, Lichtenstein E, Marcus AC. Why Don't We See More Translation of Health Promotion Research to Practice? Rethinking the Efficacy-to-Effectiveness Transition. *American Journal of Public Health*. August 1, 2003 2003;93(8):1261-1267.
35. Eakin EG, Bull S, Riley K, Reeves MM, Gutierrez S, McLaughlin P. Recruitment and retention of Latinos in a primary care-based physical activity and diet trial: The Resources for Health study. *Health Educ Res*. 2007;22(3):361–371. [PubMed doi:10.1093/her/cyl095](#)
36. Keller C, Fleury J. Factors related to physical activity in Hispanic women. *J Cardiovasc Nurs*. 2006;21(2):142–145. [PubMed doi:10.1097/00005082-200603000-00012](#)