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Profile of Coaching and Coach Education in Mexico

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The purpose of this paper is to describe the profile of coaching and coach education in Mexico. Mexico currently plays a prevailing sport role at a Pan-American level. Five types of coaches exist in Mexico: professional, amateur, personal or private, schooling and plainspeople. Each one is defined by the scopes, knowledge and its application, and sporting results achieved. The development of Mexican coaches is based on a traditional training model. It is important that coach developers in Mexico observe the progresses of countries that have advanced in the development of academic improvement programs and coach development opportunities offered through institutes of higher education.

Keywords: coach, professional knowledge, professional education

Very few reports about the profile of coaches and coach education in Mexico are available in scientific journals. The purpose of this article is to describe the profile of Mexican coaches and the professional education (system structure, limitations, successes and achieve-

ments obtained) that allows visible opportunities for the development of Mexican sport.

Before addressing the subject, it is necessary to put in context that Mexico is a diverse and polarized nation. This is the result of the fusion between the ancient native

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civilizations and Spanish colonization during three centuries. Mexico is now an independent country that has defended its sovereignty since 1810.

Currently, Mexico is a country with more than 119 million inhabitants (National Institute for Statistics and Geography [NISG], 2015), organized as a representative and democratic republic, divided politically and geographically in 32 states. The country is organized and leads the way through three Federal Branches: Executive, Legislative and Judicial (United Nations Development Programme [UNDP], 2017). With regard to the present article, the public policies development, including the provision of education depends on the executive branch.

The average national schooling is 15 years and 9.1 grades, which means a little more secondary school. In 2015, 44% of people between the ages of 15 and 24 went to an educational center (NISG, 2015). This represents 8 million young people attending high school and/or university. Approximately 50,000 of these students study in the area of physical culture.

Sport and Coaches in Mexico

Practices of self-expression through movement have been evident in Mexico since 1856 when they were integrated into the curriculum of the Mexican educational system (Santoyo, 2012; Villalpando, 2013). Initially there was a strong influence of Swedish-German gymnastics and later the French School model. In the early days of sport in Mexico, modelling and generating elements of body control that could be useful for personal hygiene and military service were emphasized.

At the end of the 19th century and until 1920, those bodily practices were exclusive to popular school centers. However, at that time the European influence flourished in Mexican culture and economy, expanding opportunities for leisure and sporting activities. In this period the practice of swimming was most common, followed by fencing, ball sports (particularly basketball and soccer) and tennis in private clubs.

Currently, public sports and the physical culture promotion generate programs so that 5.5 million students between the ages of 10 and 17 participate in competitive school sports (national Olympics, school games, natives sports games, popular sports games, national Paralympics, etc.). A further one million students from 18 to 27 years of age also participate in university games each year (Department of High School [DHS], 2015).

With regard to physical activity, the Sports and Physical Exercise Module in its 2017 report (NISG) showed that 58.2% of the Mexican population aged 18 and over are physically inactive. The average weekly time that the active population dedicates to perform sport or physical exercise is 5 hours with 21 minutes, of which 66.8% are active in public spaces and 30.7% in private clubs or gyms.

As for the most usual sports practice in Mexico, the sports federations (National Sports Commission [NSC],

2017) first recorded soccer, followed by basketball, volleyball, athletics and aerobic. However, the fastest growing media consumer sports are soccer, box, wrestling, baseball, basketball and football. At the sports level, Olympic medals have been won in athletics, boxing, cycling, weightlifting, diving and taekwondo (Mexican Olympic Committee [MOC], 2017).

To understand better the profile of coaches in Mexico, it is important to understand the stages of athlete competition designed by the Mexican Sports System that primarily consists of four stages:

- Stage 1—sports initiation in clubs, private schools or receiving municipal programs of talented athletes aged from 6 to 12
- Stage 2—sports prospectus development in a competition called National Junior Olympiad between 10–17 years old
- Stage 3—sports improvement that occurs between 18 and 27 and academically coincides with the athletes' undergraduate and postgraduate studies. For this stage the National Student Games (municipal, regional and national) has been designed
- Stage 4—national team phase where the age can range from 17 to 35 and is characterized by optimum sports performance

In each stage coaches are expected to consolidate the athlete's confidence, develop them physically and mentally, and accompany them at sports competitions. In Mexico, a coach can be a former athlete (Ibañez & Medina, 2000, 2006) with the minimum certification suggested by the National Sports Commission (NSC).

Researchers from the Universities of Colima, Veracruz and Sinaloa states (these last two universities were recently the headquarters of the National Student Games, respectively in 2012 and 2013), followed coaches of the highest amateur-elite category on the national finals in Mexico for two years. The purpose of that study was to determine the professional knowledge acquired—and applied—by the Mexican coach and their experiences of formal and nonformal education. Seven coach profiles were found (see Figure 1).

Educational degrees and certifications are not relevant in the decision to elect the head coach of national teams; these decisions are made by each sports federation and often based on a coach's popularity. The national sport federations are managed mostly by former athletes and professionals from other study areas; they decide who will be the coaches for an Olympic cycle and Pan American Games. Unfortunately this often puts Mexican high performance coaches at a disadvantage.

According to the Mexican Trust High Performance Sports Fund (HPSF), there are 190 high performance athletes registered across 31 disciplines and 22 adapted sports. Most of these athletes are coached by foreign coaches (mostly Argentineans, Russians, Cubans and Chinese). Similarly, the government system has implemented a Scholarship Program—Talent Coaches National

Reserve—where coaches receive financial resources to remain and enhance athlete development. An agreement has also been made with China and Cuba to promote bringing ‘near foreign’ coaches to work with high performance athletes and at the same time work with Mexican amateur coaches. Likewise, calls have been made for young Mexican coaches to develop their coaching skills abroad in countries such as Germany where they can take sports training courses. However, not many Mexican coaches have been able to participate in study abroad programs because many amateur and school coaches work full-time in other areas, preventing them being 100% involved as coaches.

Amateur coaches perform most of the athlete development labor in Mexico. To lead and train athletes, amateur coaches must at minimum have completed the Training and Certification System for Coaches. Private or personal coaches are a growing population that goes along with the trend of physical activity oriented toward health and societies’ functional improvement (Harvey, Vachhani & Williams, 2014). These coaches implement strategies and programs based on their personal experience and training-certification acquired in fitness disciplines supported by the wellness industry (Harris & Medina, 2014).

An overview of the main types of coaches in Mexico is provided in Table 1.

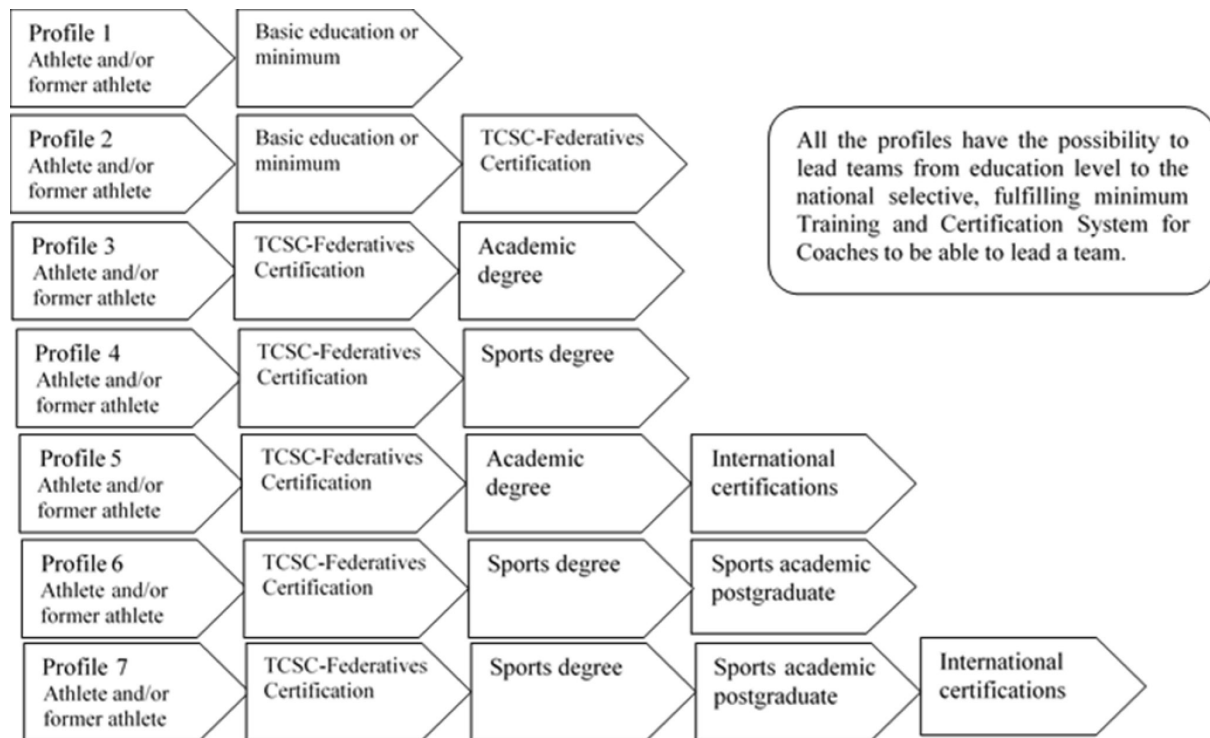


Figure 1 — Coach Profiles in Mexico

Table 1 Types of Coaches in Mexico

Type of coach	Basic knowledge suggested by the Mexican sports authorities	Athlete profiles
Olympic or Elite	Training and Certification System for Coaches	National team
Professional	Depends on the sports application certification, but mostly former athletes with empirical knowledge	Common in sports such as soccer, boxing, wrestling, golf, tennis, baseball, basketball, etc.
Amateur	Training and Certification System for Coaches	Sports talents and youth representative teams
School	Bachelor degree or interns in Physical Education and Sport	Sports initiation and school games
Private-Personal	Commercial organizations or brands certifications	Gyms, fitness classes and personal training
Social	Preferably former athletes who have coaching knowledge	Clubs, neighborhood teams, etc.

Financial compensation for coaches in Mexico ranges from \$6,000 pesos (300 US dollars) to \$10,000 pesos monthly (500 US Dollars) depending on years of experience, training and academic degree achieved (National Minimum Wage Commission [NMWC], 2017; Villanueva, 2010). Undoubtedly compensation is a factor that is closely linked to the coach's performance and motivation. Coaching contracts are based on the number of contact hours agreed upon, but seldom take full account of the many duties that coaches must perform. It is possible to infer that an athlete's training might get diminished from the economic point of view by an unmotivated coach.

Professional sport coaches are the only coaches in Mexico who enjoy prominence, substantial economic wages and recognition.¹ However, professional sport coaches are the ones who experience the greatest job turnover due to the excessive competitiveness and many economic interests that influence professional sport. In Mexico there are few professionalized sport opportunities and foreign coaches typically compete for the position.

Coach Education in Mexico

In March 1923, the Elementary School of Physical Education was created. From that moment schools were opened and closed due to government's imprecisions and instability. This model prevailed until 1949 when the National School of Physical Education (NSPE) was instituted. From 1976 until present day the Higher School of Physical Education (Aguilar, 2003; Santoyo, 2012) has met the demand of higher prior qualifications. Subsequent to the emergence of NSPE, higher normal educational schools and university programs emerged (Zueck, Blanco & Chávez, 2009). Since then, the same educational programs have trained physical educators with a focus on psychomotor formative aspects and athlete talent development.

In the 1920s, physical educators with generalist training assumed the role of sports coaches. Shortly thereafter though due to a lack of physical educators performing the task of coaches and the overwhelming need for sporting practice, former athletes increasingly assumed the role of coaches. This was problematic though because former athletes tended to simply replicate what they had learned as athletes. Mexico's performance in international sporting competitions was inconsistent, sometimes coming out winners and on many occasions losers.

The expectations for coaches in Mexico is comparable to expectations in other countries. For example, León, Dorticós, Camacho, Castro and Zamarripa (2007) carried out an analysis about the current situation in sport-school education and development process in Cajeme, Sonora and found that coaches are expected to have proficiency in the process of planning, implementation and professional-sport training. Six years later, Nava, Flores and Gómez (2013) examined the abilities of Mexican coaches from the Technological Institute of

Sonora related to the process of planning, implementation and training evaluation. They found that the coaches were proficient in these areas.

National Sports Commission (NSC) through Training and Certification System for Coaches (TCSC) has made efforts to standardize coaching knowledge at the community or youth sport level, training coaches and developing grassroots sport. However, few efforts have been directed in knowing the motivations, needs and concerns of these coaches (Wiersma & Sherman, 2005).

Ramírez (2014) made a comparison between soccer and handball coaches to analyze the differences in application of professional education knowledge in medalist coaches and losing teams. It was found that handball coaches were certified in physical education training and federative certification, as opposed to soccer coaches who are professionals trained in other areas and Certified in Basic Sporting Training Courses like Training and Certification System for Coaches (TCSC). It was also found that handball coaches apply professional knowledge training and the soccer coaches rely more on their sport experience.

Empirical coach practice was legitimized with some international successes, a situation that remains but does not provide Mexican athletes with an optimal development pathway. In 1987 an educational program called Continuing Education Center for Higher Studies of Sports (CECHSS) arose for coaches at the National Autonomous University of Mexico. This program was used to train hundreds of coaches across 19 disciplines. The program was three years (3,000 hours) long and required completion of 300 credits. Coaches were required to have first completed high school studies and have some minimum experience as an athlete (Runne, 1995).

Around the same time National School of Sports Coaches (NSSC) was created in 1984 with the aim of being a higher educational institution and assuming the commitment to train competent sports coaches on the scientific and methodological elements in response to the needs of Mexican sport. Immediately thereafter, the Mexican President Carlos Salinas de Gortari in 1988 decreed the creation of the National Sports Commission (NSC). This administrative office has the responsibility to manage actions and policies for the development of the sport's high competition and the social physical activities practices besides being the section that organizes, operates and supervise the NSSC's actions since 1990 per the agreement 156 described in the Federation Official Journal (NSC, 2017).

However, a national school was not enough to meet the populations' sporting practices demands, and tracking sports talents in each State of the Republic and much less for the sports training of the high-performance athletes. Therefore, in 1995 it was decided to create the Training and Certification System for Coaches (TCSC). Thousands of sports coaches with higher education, professionals in the sports field and likewise those who did not complete basic training were accredited by being required to attend

this program to coach any kind of competitions. In 2016 just over 9,000 coaches completed the TCSC.

This measure pushed to seek the accreditation of professionals in sports and physical activity and other related professions as well as coaches who were athletes and now at the head of a team. The TCSC certification card guarantees the mastery of the basic elements of coaching and leading. The course is now offered in weekend sessions and at a reduced number of hours. It is possible with this accreditation to become a national team coach in any sport (NSSC, 2015).

The sports' group that have adopted the TCSC (NSSC, 2015) are: fitness, underwater activities, chess, athletics, badminton, basketball, baseball, bowling, boxing, canoeing, cycling, special athletes, equestrian, fencing, jai alai, soccer, gymnastics, rhythmic gymnastics, springboard, handball, hockey, judo, karate do, weightlifting, Lima-lama, wrestling, synchronized swimming, swimming, ice skating, roller skates, pentathlon, racquetball, rowing, softball, squash, taekwondo, tennis, table-tennis, archery, shooting and hunting, triathlon, volleyball and yoga. These are the same disciplines that coincide with the existence of a Sporting Federation with the national representation, and it is precisely these entities who design the content and knowledge of every certification.

The TCSC training levels are divided in two: 10 curricular levels (former and traditional model) and 5 levels (current model by coaching competencies). The current 5 level model is described in Table 2.

After completing the ten or five modules depending on the model subscribed, coaches must also meet other TCSC requirements:

- Progressive update (levels) and feedback of suitable contents of sports training and sciences applied to their sport.
- Continuous improvement of their coaching practice.
- Allocation of a hierarchical scale score given by the Joint Commission of Scale for Mexican teachers and gradutors in Physical Education and in Sports Training.
- Obtaining didactic materials specialized in their sport (handbooks).

- Given an Official Certification based on labor (coaching) competencies by the Secretary of Public Education and National Sports Commission.

Coach Education in Higher Education

Education in the case of the Higher Education Institutions (HEI), also referred to as public and private universities, is oriented for those accredited at the basic level (primary and secondary) and high school. Yet, few HEI offer an education degree oriented to the field of Sports Training. Instead, the degree most related to sports coaching is the Bachelor in Physical Education and Sport.

Mexican Higher Institutions of Physical Culture Association C.A. (MHIPCA C.A) is the organization that brings together the institutions that train human resources in any of the Physical Activity disciplines, but just 17 of 35 are part of the Association. The rest are private universities with more flexible, blended learning, virtual and four-month course program options. Only 3 of these 17 are oriented to Sports Training at the undergraduate level (see Table 3). The rest are oriented to Physical Education and general education (PE, Sports Training, Leisure and Recreation and very recently, Physical Activity and Health).

Of these 17 educational programs, a divergence of nomenclatures is evident: *Bachelor in Physical Education and Sport, Bachelor in Sports Training, Bachelor in Physical Culture, Bachelor in Physical Activity and Sport, Bachelor in Exercise Sciences, Bachelor in Sport and Recreation*. The diversity of names reflects a conflict of national unification of professional competencies, concepts and insights about the training of professional resources for Physical Culture and/or Physical Education.

Universities that promote coach education degree programs are mostly located at the north of the country (see Figure 2). It is important to emphasize the coincidence with the origin nationwide of the most outstanding athletes in Mexico. Within the center of the country (Federal District, capital of Mexico) is located the traditional National School of Sports Coaches, founded three decades ago and sponsored by the National Sports Commission. The main mission of this institution is to train sports coaches and most of the teaching staff were

Table 2 TCSC Levels and Description

Level	Description
Level 1. Theoretical and practical	A course is taken by presenting a theoretical and practical assessment.
Level 2. Theoretical and practical	A course is taken by presenting a theoretical and practical assessment.
Level 3. Theoretical and practical	A course is taken by presenting a theoretical and practical assessment.
Level 4. Technical research	Consultancies are taken and results are reported by presenting a research project.
Level 5. Technical research	Consultancies are taken and results are reported by presenting a research project.

Table 3 Higher Education Institutions in Mexico that offer Sports Coach Training Programs

Higher Education Institution	School	Degree
University of Colima (UDC)	Education Sciences	Bachelor in Physical Education and Sport
Autonomous University of Carmen (UNACAR)	Health Sciences	Bachelor in Physical Education and Sport
Morelos Autonomous State University	Institute of Education Sciences	Bachelor in Physical Education
Autonomous University of Ciudad Juárez	Institute of Biomedical Sciences	Bachelor in Sports Training
University of Guadalajara / University Centre of the Costa	University Centre of the Costa	Bachelor in Physical Culture and Sport
Autonomous University of Sinaloa (UAS)	Higher Education School of Physical Education	Bachelor in Physical Culture
Autonomous University of Querétaro	Nursing	Bachelor in Physical Education and Sport Sciences
Autonomous University of Nuevo León	Sports Organization	Bachelor in Exercise Sciences
Sonora State University (UES)	Higher Education Centre of Sonora State	Bachelor in Sports Training
University of Guadalajara	University Center of Health Sciences	Bachelor in Physical Culture and Sport
Technological Institute of Sonora (ITSON)	Technological Institute of Sonora Obregón Campus	Bachelor in Exercise Sciences
Autonomous University of Baja California (UABC)	Sports School	Bachelor in Physical Activity and Sport
University of Sonora (UNISON)	Biological and Health Sciences Division	Bachelor in Physical Culture and Sport
Veracruzana University (UV)	Physical Education	Bachelor in Physical Education, Sport and Leisure
Meritorious Autonomous University of Puebla (BUAP)	Physical Culture	Bachelor in Physical Culture
Autonomous University of Chihuahua (UACH)	Physical Education and Sport Sciences	Bachelor in Physical Education
Autonomous University of Juárez Durango	Physical Education and Sport	Bachelor in Physical Education and Sport

trained in the 1980s in postgraduate studies in Germany and Cuba.

Postgraduate studies in Mexico are scarce in proportion to other labor areas. Only eight public and private universities offer master's degrees in sport or physical education. Only six of these universities belong to The Mexican Higher Institutions of Physical Culture Association C.A. (see Table 4). Furthermore, in a recent report by the National Quality Postgraduate Program (NCST, 2014), there were only two masters and one doctorate with recognition from the National Council for Science and Technology (NCST).

Recently NCST joined to its Research Lines a sociology subdiscipline in the subject of Physical Culture and Sport. It is not surprising therefore that in Mexico there does not exist a tradition of coaches continuing their studies beyond an undergraduate degree. They typically rely on temporary training often conferred by the education system (if also teaching PE) or the federal system (such as TCSC). The few coaches who have gone to foreign universities to pursue graduate studies prefer countries such as Cuba, Germany, Portugal, Brazil, Colombia, England

and Spain. For those who pursue PhDs related to Physical Culture, many have joined the university teaching staff that now instructs the new generation.

In 2016, the National System of Researchers (NSI)² belonging to the National Council for Science and Technology (Rodríguez, 2016) reported that of 25,072 researchers, there was a fluctuating income and NSI permanence of 30–40 researchers in the field of Physical Culture per year. This figure has been increasing among university teachers of training schools that integrate the Mexican Higher Institutions of Physical Culture Association (MHIPCA C.A).

Summary

Historically, Mexican sports training has been a field oriented more toward professional sports with reliance on coach learning through personal experience. There has been relatively little emphasis on formal coach education. This has permeated deeply into the social imagination, where coaches are judged by their personal and team's



Figure 2 — Geographical location of Mexican Higher Education Institutions of Physical Culture Association C.A. that offer degree options related to Physical Education and Sport. *Notes.* 1. Miguel Herrera coach of the Mexican National soccer team from October 2013 to July 2015 earned \$2.7 million US dollars annually. 2. NSI aims to promote and strengthen through assessment scientific and technological quality research and the innovation that occurs in the country. The system contributes to the formation and consolidation of researchers with scientific and technological knowledge at a highest level as a fundamental element to increase culture, productivity, competitiveness and social welfare.

Table 4 Higher Education Institutions with Postgraduate Programs in Sports Training

Higher Education Institution	System	Sports Training	Master's	PhD
Veracruzana University	Public		X	
Autonomous University of Carmen	Public		X	
Autonomous University of Sinaloa	Public		X	
Autonomous University of Nuevo León	Public	X	X**	X*
Autonomous University of Chihuahua	Public	X	X	X*
National School of Sports Coaches	Public	X	X	
Sonora Teacher Training State Institute	Public		X	
Sonora State University	Public	X	X	
Autonomous University of Sinaloa	Public		X	
University of Guadalajara	Public	X	X	
Soccer University	Private	X	X	

*First PhD interinstitutional in Mexico between the universities of UANL and UACH with recognition by the National Council for Science and Technology (NCST)

** Offers over three master's degree options; unique in the country.

sports achievements with few questions about the educational contribution of coaches.

It is disappointing that Mexico, being a country with large sports facilities across the nation and many university institutions that emphasize youth sports training along with more than five million children and adolescents who participate annually in sport, is not in the top three Pan-American places in sports competitions.

With regards to professionalization, training and certification programs of Mexican coaches, it is clear that the curriculum for physical educators and sports coaches is not functional and may not lead to sports achievement. It is necessary that employers consider coaching as a full-time labor activity due to the various functions and activities that coaches must perform. Also more attention should be paid to Article 47 of the General Law of Physical Culture and Sports that states the National Sports Commission will promote, coordinate, boost and endorse in coordination with the respective institutions or public and private universities, the training, certification and ongoing development of coaches.

References

- Aguilar, L. (2003). *Physical education in the twentieth century*. Federal District: Educar.
- General Direction of High School. (2015). *Sectoral report on sports and physical education*. Retrieved from: http://www.dgb.sep.gob.mx/acciones-y-programas/ESDM/Informes_Sectoriales/1_Edu_Fisica_Deporte_universitario.pdf
- Harris, L., & Medina, P. (2014). *Personal trainer as your job: A step by step guide on how you can become a working personal trainer*. Bloomington, IN: AuthorHouse.
- Harvey, G.J., Vachhani, S., & Williams, K. (2014). Working out: Aesthetic labour, affect and the fitness industry personal trainer. *Leisure Studies*, 33(5), 1–17. doi:10.1080/02614367.2013.770548
- Ibáñez, S., & Medina, J. (2000). Contributions from the physical educator's education towards the sports coach's education. *Physical Education and Sports*, 24, 1–2.
- Ibáñez, S., & Medina, J. (2006). Relationship between the sports coach's education and the physical education's training. *Apunts Journal*, 55(2), 39–45.
- León, G., Dorticós, F., & Camacho, A. Castro & Zamarripa, F. (2007) *Diagnostic of the current situation of the athlete's preparation process in the municipality of Cajeme, Sonora*. Unpublished text. Cajeme, Sonora, Mexico: Technological Institute of Sonora.
- Mexican Olympic Committee. (2017). Olympic stories. Retrieved from: <http://www.com.org.mx/>
- National Council for Science and Technology. (2014). Monitoring process to propose researchers that could be considered for the renewal of the NSI 2014 Judging Committees. Retrieved from http://www.foroconsultivo.org.mx/asuntos/academicos/sni2014/resultados_comisiones_dictaminadoras_2014.pdf
- National Institute of Statistic and Geography. (2015). Population of Mexico. Retrieved from <http://cuentame.inegi.org.mx/poblacion/default.aspx?tema=P>
- National Institute of Statistic and Geography. (2017). Sports and physical exercise module. Retrieved from http://www.inegi.org.mx/saladeprensa/boletines/2017/moprade/moprade2017_01.pdf
- National Minimum Wages Commission. (2017). *Minimum wages effective January 1st*. Retrieved from http://www.gob.mx/cms/uploads/attachment/file/175865/Tabla_de_salarios_minimos_vigentes_a_partir_de_01_enero_2017.pdf
- National School of Sports Coaches. (2015). *Gob.mx*. Retrieved from <http://ened.conade.gob.mx/>
- National Sports Commission. (2017). *Gob.mx*. Retrieved from <http://www.gob.mx/conade>
- Nava, A., Flores, P., & Gómez, A. (2013). Diagnostic of the professional skills of the selective coaches at the Technological Institute of Sonora. *EFdeportes. Digital Magazine*, 18, 188.
- Ramírez, O. (2014). Professional knowledge of the handball and soccer coaches of the 2012 National Olympiad of the State of Colima. Unpublished bachelor degree dissertation. University of Colima: Colima, Mexico.
- Rodríguez, C. (2016). National system of researchers. In numbers. Mexico: Scientific and Technological Consultative Forum. Retrieved from http://www.foroconsultivo.org.mx/libros_editados/SNI_en_numeros.pdf
- Runne, K. (1995). Reformulation of the coach's academic education. *Educational Profiles*, 68, 1–9.
- Santoyo, R. (2012). *History of physical education in Mexico*. Puebla, Mexico: SEP Puebla.
- United Nations Development Program of Mexico. (2017). Mexico in brief. Retrieved from <http://www.mx.undp.org/content/mexico/es/home/countryinfo.html>
- Villalpando, I. (2013). Mexico. In K. Hallmann & K. Petry (Eds.), *Comparative sport development: System, participation and public policy* (pp. 281–299). London: Springer.
- Villanueva, R. (April 27, 2010). Conade must pay boxing coaches. *The Journey*, A15. [Online Version]. Retrieved from <http://www.jornada.unam.mx/2010/04/27/deportes/a15n2dep>
- Wiersma, L., & Sherman, C. (2005). Volunteer youth sport coaches' perspectives of coaching education/certification and parental codes of conduct. *Research Quarterly for Exercise and Sport*, 76(3), 324–338. PubMed doi:10.1080/02701367.2005.10599303
- Zueck, C., Blanco, H., & Chávez, A. (2009). *School of physical education and sport sciences. History and Curricular Reform*. Chihuahua, Mexico: UACH University.