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Original

VIGILANCIA DE LESIONES EN FUTBOLISTAS PROFESIONALES MEXICANOS: ESTUDIO DE UN CASO

INJURY SURVEILLANCE IN PROFESSIONAL MEXICAN FOOTBALLERS: CASE STUDY

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RESUMEN

Objetivos: Las lesiones de los futbolistas profesionales han sido objeto de numerosos estudios de los países más competitivos del mundo. Se podría decir simplemente que "el fútbol es fútbol" y asumir que el perfil de lesiones y las tasas reportadas en Europa se aplican en todas partes. Sin embargo, como objetivo, se necesita un registro de lesiones para mejorar el seguimiento de la incidencia de las mismas y para demostrar que los métodos de vigilancia son válidos en los equipos profesionales mexicanos. Métodos: Se realizó un estudio de caso exploratorio en un club de fútbol profesional para vigilancia de lesiones. Se constituyó un cuestionario médico a partir de datos de lesiones durante los tiempos de entrenamiento y partido. Resultados: Se produjeron un total de 13 lesiones en 13/26 jugadores que se incluyeron en el estudio. Cuatro de las cuales fueron lesiones de entrenamiento y nueve fueron lesiones de partido. El seguimiento fue durante 59 entrenamientos y 17 partidos, lo que corresponde a una tasa de lesiones de 1,77/1000 horas de entrenamiento, 32,1/1000 horas de partido y 5,11/1000 horas de fútbol. La posición de juego del futbolista incrementó el riesgo de lesiones (p = 0,020) y el tipo de lesión se correlacionó con el contacto (p = 0,000). Conclusiones: Este estudio representa la primera investigación epidemiológica sobre lesiones en el fútbol en México. La tasa de lesiones del partido fue consistente con la literatura; sin embargo, encontramos una baja tasa de lesiones por entrenamiento que debe documentarse. Las posiciones de juego de mediocampo y delantero triplicaron el riesgo de lesiones, y el contacto también fue responsable de lesiones con resultados significativos.

Palabras clave: Lesión en el fútbol, Fútbol mexicano, Factores de riesgo de lesiones, Índice de lesiones, Estudio de lesiones, Programa de prevención de lesiones.

ABSTRACT

Objectives: Injuries of professional football players have been the subject of numerous studies from the most competitive countries in the world. One might simply say that ‘football is football’ and assume that the injury profile and rates reported in Europe apply everywhere. However, as a goal, an injury registry is needed to improve the tracking of lesions incidence and to prove that surveillance methods are valid in Mexican professional teams. Methods: An exploratory case study was conducted on a professional football club for injury surveillance. A medical questionnaire was constituted from injury data during training and match times. Results: A total of 13 injuries occurred to 13/26 players were included in the study. Four of which were training injuries and nine were match injuries. The monitoring was during 59 training sessions and 17 matches, which corresponds to a rate of injuries of 1.77/1000 training hours, 32.1/1000 match hours, and 5.11/1000 soccer hours. The play position of the soccer player incremented the risk of injuries (p = 0.020) and the type of injury was correlated with the contact (p = 0.000). Conclusions: This study represents the first epidemiological investigation on soccer injuries in Mexico. The match injury rate was consistent with the literature; however, we found a low training injury rate that must be documented. The play positions of midfield and forward increased the risk of injuries by three times, and the contact was likewise responsible for injuries with significant results.

Keywords: Soccer injury, Mexican soccer, Injury risk factors, Injury rate, Injury study, injury prevention program.

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INTRODUCTION

Injuries of professional football players have been the subject of numerous studies, the earliest of which were mostly cases of specific lesions. Serious attempts to define the incidence, type, and rate of injuries among professional football players began in 1983 with Ekstrand's work on the nature of football injuries and the possibility of decreasing the number of injuries by professional Swedish footballers (Ekstrand., 1982; Ekstrand & Gillquist, 1983; Ekstrand et al., 1983; Ekstrand et al., 1983; Lundgårdh et al., 2020; Krutsch et al., 2021). Several concepts that today are widely accepted were novel results of Ekstrand's work. For example, not all injuries occur during match plays themselves, a major injury is frequently preceded by an incompletely rehabilitated minor lesion, also that shinbone protection does indeed reduce leg abrasions and contusions, a structured warm up program that is adhered to will effectively reduce injuries, the highest rate of injury happens during the preseason and early in the competitive season, and there is an inverse relationship between the number of injuries on a team and the team's competitive success (Ekstrand., 1982; Ekstrand & Gillquist, 1983; Ekstrand et al., 1983; Ekstrand et al., 1983; Dai et al., 2018; Grassi et al., 2022).

Unfortunately, it was not until the middle 1990s that injury surveillance studies began to become more widespread in Europe. While there were smaller studies of a single season of a single team, the English Federation conducted the first widespread surveillance (Hawkins & Fuller, 1999; Hawkins et al., 2001; Woods et al., 2002; Woods et al., 2004; Longo et al., 2012). Using a common set of definitions, all clubs in the Premiership and First Divisions collected injury data to form one of the largest databases on football injuries available. Simultaneously, two associations were developing and refining methods of data capture on a wide scale. Ekstrand et al., (2011) was devising what would become the Union of European Football Associations (UEFA) Injury Study, which would collect information from top European clubs in their domestic leagues, thus leading to acquiring accurate data on all clubs participating in the UEFA Champions League (Hagglund et al., 2005; Hagglund et al., 2009) currently, over 75 papers have been published from the UEFA data (Junge et al., 2004; Dvorak et al., 2011; D'Hooghe., 2013; Alesandrini et al., 2021; Szymski et al., 2022). The other association that began when players' safety became relevant was the Fédération International of Football Association (FIFA) during the USA World Cup (1994). In FIFA appeared the new Medical Assessment and Research Centre (FMARC), whose first initiative was to develop a surveillance system that collected reliable and valid data on injuries at the World Cup. The first data were gathered at the France 1998 FIFA´s World Cup, and the process continues today at all FIFA-sponsored tournaments (Junge & Dvorak, 2013). Once the injury profile was established, FMARC began to test protocols to reduce injuries, which eventually resulted in the widespread acceptance of the 11+ injuries prevention program (Soligard et al., 2008). FMARC data have been influential in other sport science topics, such as age verification, doping, Ramadan and performance, heat guidelines, and concussion (Dvorak et al., 2006; Dvorak et al., 2007; Zerguini et al., 2007; Bangsbo et al., 2015; Nassis et al., 2015; Manley et al., 2017; Ahmad-Shushami et al., 2020; Feddermann-Demont et al., 2020). Information from FMARC-directed work has resulted in over 165 publications, the ramifications of which extend well beyond FIFA tournaments. The combination of reports from UEFA and FIFA has had profound effects on player health and safety (Junge et al., 2004; Dvorak et al., 2011; D'Hooghe et al., 2013; Tscholl et al., 2015). The UEFA and FIFA cooperation has stimulated studies on player safety in Eastern Europe, Africa (Akodu et al., 2012), Asia (Hassabi et al., 2010; Aoki et al., 2012; Eirale et al., 2013), and Oceania (Crema et al., 2016; Finch et al., 2016; Carey et al., 2017). Unfortunately, similar work has not extended to Central and South America. There are only three surveillance studies on domestic professionals from Brazil (de Freitas et al., 2013; Reis et al., 2015; Arliani et al., 2017), one paper on the 2015 Copa America tournament (Pangrazio & Forriol, 2016), and no studies from the other major football-playing countries of South America or Mexico. One of the reasons for conducting the present study is that there are so little data on professional football teams from Latin America.

The aim of this study, therefore, is to demonstrate that the proposed injury surveillance methods are valid and reliable for professional Mexican soccer players in competitive divisions.

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MATERIAL AND METHOD

Context and Participants

A descriptive, observational, and exploratory study was conducted. The study was performed in the middle of domestic spring season of 2018 (5 January through 22 April; 15 weeks) on a single professional Third Division professional club in La Liga TDP that's depends on Mexican Federation of Futbol Association A.C. where players from the 5th to the 1st division were considered professionals when they play full time and are paid for it. Four national teams competed in this tournament, with performance data collected on players in a single reference team (n = 26) aged 20.5 ± 1.96 years.

Data collection and procedure

Authorization was requested through a signed informed consent form from all members of the football team and their coaches and was performed in accordance with the ethical standards of the Helsinki Declaration. All participants were reassured that their data would remain confidential. A player lesions register was collected following a medical questionnaire modified by FMARC (Junge & Dvorak, 2000). This included anatomical region, type, diagnosis, kinematics, clinical history, and inclusive previous injuries that were explored at the beginning of the study. In general, we followed the definitions from the consensus panel on reporting soccer injuries (Fuller et al., 2006). A medical doctor of the team filled daily the data injury registry. The data were collected after a training session and / or during a match play (at home and when visiting other stadiums). Once an injured player was reported, a daily follow-up of his recovery and rehabilitation was carried out until the player rejoined the team.

Statistical analysis

Data are presented as mean ± SD, or mean difference (including lower and upper limits of 95% confidence interval "CI") as appropriate. In qualitative variables, the statistical test used was chi-square, and for quantitative variables the bivariate and multivariate analysis with logistic regression was used; $p < 0.05$ was considered significant. Data were analyzed using the Stata version 8.0 (StataCorp, College Station, TX).

RESULTS

A total of 26 players participated in this project and the results are shown in table 1–3. Injured and uninjured players had similar physical characteristics. Most of the players in this study were around 20 years old, with an average weight of 71.14 ± 6.99 kg, height of 1.75 ± 0.59 m, and BMI of 23.2 ± 1.83 kg/m^2 (Table 1).

Table 1. Descriptive characteristics of the soccer players.

	Uninjured (n = 13)	Injured (n = 13)	Overall (n = 26)
	Mean (SD)	Mean (SD)	Mean (SD)
Age (yr)	20,23 (1,78)	20,76 (2,16)	20,5 (1,96)
Height (m)	1,77 (0,052)	1,73 (0,062)	1,75 (0,59)
Weight (kg)	73,15 (7,79)	69,12 (5,69)	71,14 (6,99)
BMI	23,28 (2,21)	23,07 (1,43)	23,17 (1,83)
Education	N (%)	N (%)	N (%)
Middle school	2 (15)	1 (8)	3 (11)
High school	6 (46)	9 (69)	15 (58)
College	5 (38)	3 (23)	8 (31)
Position			
Goalkeeper	2 (15)	1 (8)	3 (11)
Defender	6 (46)	2 (15)	8 (31)
Midfield	4 (31)	5 (38)	9 (35)
Forward	1 (8)	5 (38)	6 (23)
Dominant leg			
Right	7 (54)	9 (69)	16 (62)
Left	5 (38)	2 (15)	7 (27)
Both	1 (8)	2 (15)	3 (11)

There were no statistically significant differences. Values are presented as mean, standard deviation (SD) and number (%).

The monitoring consisted of 59 training sessions (each approximately 90 minutes in duration) and 17 matches; this corresponds to 2301 hours of training (59 training sessions x 1,5 hrs x 26 players) and 280,5 hours of competition (17 matches x 1,5 hrs x 11 players). The total time of exposure to injuries of the players was 2581,5 hours. Results of the injury surveillance are presented in table 2.

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Table 2. Incidence and injury rate of the studied players.

		Training injuries	Match injuries	Overall injuries (% of players injured)	Injury/1000 training hours	Injury/1000 match hours	Overall Injury /1000 hours
		N (%)	N (%)	N (%)	IR (CI)	IR (CI)	IR (CI)
Injury setting		4 (31)	9 (69)	13 (50)	1,77 (0 – 4,4)	32,1 (1,7 – 43,2)	5,11 (1,5 – 9,5)
Anatomical region	Head	0	1	1 (8)	0	3,57 (1,4 – 7,3)	0,39 (1,2 – 1,6)
	Leg/achilles tendon	1	2	3 (23)	0,44 (0 – 1,7)	7,13 (1,5 – 12,4)	1,18 (1,3 – 3,3)
	Thigh	3	3	6 (46)	1,33 (0 – 3,6)	10,70 (1,6 – 17,1)	2,36 (1,4 – 5,4)
	Ankle	0	1	1 (8)	0	3,57 (1,4 – 7,3)	0,39 (1,2 – 2,5)
	Knee	0	2	2 (15)	0	7,13 (1,5 – 12,4)	0,79 (1,3 – 2,5)
Side	Right	2	4	6 (43)	0,88 (0 – 2,7)	14,26 (1,6 – 21,7)	2,36 (1,4 – 5,4)
	Left	2	5	7 (54)	0,88 (0 – 2,7)	17,83 (1,6 – 26,1)	2,75 (1,4 – 6,0)
Type	Sprain	0	3	3 (23)	0	10,70 (1,6 – 17,1)	1,18 (1,3 – 3,3)
	Abrasion	0	1	1 (8)	0	3,57 (1,4 – 7,3)	0,39 (1,2 – 1,6)
	Strain	3	5	8 (61)	1,33 (0 – 3,6)	17,83 (1,6 – 26,1)	3,15 (1, 4 – 6,6)
	Tendon injury/rupture	1	0	1 (8)	0,44 (0 – 1,7)	0	0,39 (1,2 – 1,6)
Cause	Fatigue	3	3	6 (46)	1,33 (0 – 3,6)	10,70 (1,6 – 17,1)	2,36 (1,4 – 5,4)
	Trauma	1	6	7 (54)	0,44 (0 – 1,7)	21,39 (1,7 – 30,4)	2,75 (1,4 – 6,0)
Mechanism	Non-contact	6	2	8 (62)			
	Contact with other player	0	2	2 (15)			
	Contact with ball	0	2	2 (15)			
	Contact with other object	1	0	1 (8)			
Previous injury	Yes	0	3	3 (23)			1,18 (1,3 – 3,3)
	No	4	6	10 (77)			3,93 (1,5 – 7,8)
Is their 2nd injury in the season different from their first?	Yes	2	0	2 (15)			
	No	-	-	11 (85)			0,79 (1,3 – 2,5)
Foul called?	No	-	8 (62)	8 (61)		28,52 (1,7 – 39,0)	4,33 (1,5 – 8,4)
	Yes	-	1 (8)	1 (8)		3,57 (1,4 – 7,3)	
	N/A (training injury)	4 (31)	-	4 (31)			
Minute injury occurred. Mean (SD)		45	58	54 (23)			

Values are presented as number (%), injury rate (IR) and standard deviation (SD). Overlapping confidence intervals (CI) indicates the rates being compared are not statistically different.

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During this data collection 13 injuries occurred to 13/26 players (one injury per player). Four were training injuries and nine were match injuries. Of all those injured, 50% of the players required 10 days on average to recover from their injuries. The thigh was the most frequently injured anatomical site (46.15%), the left side was the most injured (53.85%), and muscle strains (61.54%) were the most common type of injury among the individuals included. It is important to mention that 76.92% of the individuals had no previous injuries and, in most instances, there was no foul play involved in the cause of the lesion (61.54%). The multivariate analysis showed that the midfield and forward play positions of the soccer player had a three times greater risks of developing injuries (p = 0.020) (Table 3). The type of injury was correlated with the contact (p = 0.000). The rate of injuries was 1.77/1000 training hours, 32.1/1000 match hours, and 5.11/1000 soccer hours. An alternative match rate is the number of injuries per match, and for this data there were 0.76 injuries per match. The existence of overlapping 95% confidence intervals in Table 2 indicates that the compared rates of injuries are not significantly different. The injury rates during training, matches and overall were 1,77, 32,1 and 5,11 respectively.

Table 3. Multivariate logistic regression models for the association between injuries and players characteristics.

Players characteristics	OR	SD	p value	[95% CI]
Position	4,2746	2,6654	0,020	1,2592–14,5101
Age	1,7889	0,6652	0,118	0,8630–3,7079
Weight	0,8298	0,0815	0,058	0,6843–1,0061
Dominant leg	0,7395	0,6015	0,711	0,1501–3,6419

Values are presented as odds ratio (OR), standard deviation (SD) and p significant less than 0.05. The pseudo $R^2 = 0.3104$; Prob > $chi^2 = 0.245$

DISCUSSION

The present investigation represents the first Mexican exploratory study on the incidence and characteristics of football injuries in the third division club in La Liga TDP during the domestic spring season of 2018. Nearly 2581.5 monitored exposure hours to injuries were observed.

Analyzed players were mainly of midfielders (9/26) and defenders (8/26), similarly to epidemiological studies in professional football of Shalaj et al., (2016) (midfielders 41.3% and defenders 32.9%) and Hwang-Bo & Joo, (2019) (midfielders 40.3% and defenders 36.6%). Dominant right foot was preferentially used by soccer players (90.2 %), as was found in this study (Table 2). In the study by Lee et al., (2020) they found that defenders had the highest frequency of injury while playing in synthetic grass. Demonstrating the relation of the position of the players and the type of grass they play in. Another study performed by Shalaj et al., (2016) showed that the positions with the highest risk of injury are strikers in first place (21.1%), internal defenders as second (20.3%) and midfielders in third place (16.9%). In relation with our investigation a similarity was found to the research made by Shalaj et al., (2016) we observed that midfielders and defenders had the highest number of injuries in comparison to other players.

The most often etiology observed was traumatic injuries (54%), results like those shown in the Kosovo study (70.96%). Types of injuries most frequently reported were muscle strains (61%) and sprains (23%), and the anatomical regions most affected were the Achilles tendon (n = 3, 23%) and thigh (n = 6, 46%) (Table 2); by comparison, the other study also found strains or ruptures of thigh muscles as the most common form of injury (14.3 %), and the body parts most frequently affected were the knee (n = 35, 12.9 %), thigh (n = 14, 5.1 %) and ankle (n = 12, 4.1 %) (Shalaj et al., 2016). Another research on male professional soccer players in Australia found as most common injuries were at thigh (23-36%), of which the majority were hamstring injuries (54%-65%). All lesions were constant across the seasons (Lu et al., 2020). In a prospective cohort study conducted on professional football players competing in the English Football League and National Conference similarly reported the thigh was the most common site of injury (31.7%), muscle strains accounted for 41.2% of all injuries. The work team conclusions mention that incidence of injury has increased over the last years with muscle strains remaining the most prevalent injury (Jones et al., 2019). A systematic review and meta-analysis showed the most common types of injuries were muscle/tendon (4.6 injuries/1000 hours of exposure), which were frequently associated with traumatic incidents (López-Valenciano et al., 2020).

This Mexican study demonstrated that injury type correlated with physical contact (p = 0.000), contrary

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in Australia the non-contact injuries were the more common (p>0.05) (Lu et al., 2020).

The most interesting results about injury rates found within other studies are described below where we found that some studies evaluated football-related injuries with heterogeneity incidence results of injuries in soccer leagues from various countries.

Total time of exposure for traumatic injury was 2.75 (CI: 1.4, 6.0) and overuse injuries 2.36 (CI: 1.4, 5.4), in the Raiffeisen Football Super league study. Another study showed lower injury rates for traumatic injuries (IR: 5.24, CI: 4.84, 5.68) and higher for overuse injuries (IR: 2.15, CI: 1.77, 2.60) (Shalaj et al., 2016). The study realized by Manore et al., (2017) found that the injury rate was 42% in males, very close to that obtained in our study (50%), although it was a smaller sample.

The injury rates during training and matches were also evaluated which showed that in this study as well as in others (Walden et al., 2005; Walden et al., 2007; Carling et al., 2010; Hassabi et al., 2010; Junge & Dvorak, 2013; Stubbe et al., 2015; Noya et al., 2014; Reis et al., 2015) an IR match/in play higher than 30, which demonstrates that the probability of getting injured is higher during an official game. Injury rates during training were compared with other authors, finding that the training IR of our work was the lowest (1,77), in comparison with 4,4 from Qatar 2008-2009 league (Eirale et al., 2013), 6,84 English 2015-2016 (Jones et al., 2019), 2,5 Australian 2017-2018 (Lu et al., 2020), 2,78 Sweden 2001 (Waldén et al., 2005), 11,5 Iran 2005-2006 (Hassabi et al., 2010), 2,8 Netherlands 2009-2010 (Stubbe et al., 2015), 3,8 Spanish 2008-2009 (Noya et al., 2014), 2,4 Brazilian (Reis et al., 2015); while for the IR during matches the lowest value was the one reported in Australians (3,0) (Lu et al., 2020).

The main difference we found in this study was that our injury rate was the lowest among all other studies of 1.77 injuries/1000 hours of training exposure. In contrast, the match rate (32.1 injuries/1000 match-hours) is marginally higher than the average for all the match injury rates, where the unweighted mean for all revised studies is 31.82 injuries/1000 match-hours (Junge & Dvorak, 2015). The match injury rate is consistent with other studies and suggests that the presence of the team physician at each match ensures that data collection is accurate and complete (Del Coso et al., 2018).

Regardless of the reason for the low rate, consistent reporting of training-related injuries will have to be addressed (Bizzini & Dvorak, 2015). A systematic review and meta-analysis of epidemiological data of injuries in professional male football reported the overall incidence of injuries was 8.1 injuries/1000 hours of exposure, match injury incidence was 36 injuries/1000 hours of exposure and training injury incidence rate was 3.7 injuries/1000 hours of exposure (López-Valenciano et al., 2020). Last mentioned study reports an injury rate that shows similar tendency as our currently research. One of the more interesting insights on match injuries comes from the UEFA Injury Study where a different injury profile between Northern Europe teams *versu*s Southern Europe teams (as defined by standard weather region data) was shown (Peel et al., 2007). Another paper that presents data according to an environmental influence is Aoki et al., who categorized injury according to the match day being sunny, cloudy, or rainy. Overall injury rates were similar on sunny and cloudy days but were 27% lower when matches were played in the rain (Aoki et al., 2012).

An important exception of this type of research is that it is a basic surveillance system that must first focus on those injuries that are the most frequent, involve the greatest time loss, or are the costliest to patient, team, or community. Our data are focused primarily on acute injuries. Overuse injuries, which may be responsible for nearly 40% of treatments by a sports medicine team, require more effort to collect data and evaluate (Dvorak & Junge, 2000). The report of acute injuries incidence has a fast and unpredictable event as a cause, contrary to the overuse injuries that are developed over time until the athlete finally seeks medical attention or is unable to continue training. Bahr et al., (2009) has described the challenges of capturing overuse injuries in a surveillance program and suggests that the data collecting process needs to also focus on situations where the athlete may be in pain that causes function at low physical performance without time loss, but not necessarily injured (implying time loss), and these need to be reported as prevalence and not incidence, as routinely is done in most surveillance studies. A surveillance that focuses on acute injury will be missing a substantial number of athletes who, though able to train, are unable to function optimally (Bahr et

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al., 2009). Another rate comparison, the number of injuries per match, is based on the FIFA surveillance studies. For this paper, there were 0.76 injuries per match. By comparison, Junge and Dvorak., (2013) reported 2.3 injuries per match in different tournaments (1998–2012) for four men's FIFA World Cups (1.5 time-loss injuries per match). A primary reason for differences between studies is due to the observation made by Junge et al., 2000 was done on players which were playing in a higher level of competition and also, they played very often during the world cup competitions (the world cups tournaments are shorter than the regular Mexican professional third division tournament: 4 weeks *versus* 15 weeks). We see a difference in the hours of training and the competitive demand while in training and on the field, which can have an effect in the quantity of injuries during a game. Another difference is also the sample size analyzed (approximately 736 players versus 26 per competition) of our study.

This study found no statistically significant differences due to the small number of participants, minimal injuries, and low match exposure (280.5 hours) compared to the FIFA injury surveillance program which in 2012 had data from over 6,000 players, almost 4,000 injuries and 55,001.5 hours of match exposure (Fuller et al., 2012). Despite the above, the match injury rate in our study is consistent to what is reported in the literature, although we also found a low rate of training injuries that we believe should be documented and reported as a precedent for future studies.

CONCLUSIONS

This is first exploratory study was conducted on a single professional club for half of the competitive season and used for testing the modified medical questionnaire to injury surveillance in Mexico; however we need to improve registration medical questionnaires and data collection processes for soccer training and include more of the variables suggested by Fuller et al. (e.g., injury severity, recurrent injuries, environmental factors, shoe design, dehydration, sleep, nutrition, training design and load, etc.), and others that are known to affect performance; therefore, we need to consider these when designing a surveillance program (Fuller et al., 2012). However, surveillance injury data are usually not so available in some of the most competitive leagues and countries in the world. Knowing that player health is directly related to club success and that there are no current data on injuries regarding Mexican professional footballers, it behooves club management to know exactly what injuries are causing their players to be unavailable for competition and to establish prevention protocols that are known to minimize injury occurrence and severity.

While a team-based surveillance can be started using a simple chart review of medical records, the most successful, acceptable, and complete systems are the evaluation of the team's training and match schedule. This means that the medical team needs to be more time dedicated to the surveillance and be accountable for the accuracy and completeness of the data.

In conclusion, our findings suggest that match injury rate was similar with reported in literature, but we found a low training injury rate, and the play position (midfield and forward) can cause increased risk of injury by 3-fold. The physical contact was related as responsible of injuries with significant results, and the muscle strains were the most prevalent injury type.

This brief exploratory study has shown that a basic surveillance program is possible and that our overall results provide data that are consistent with that reported elsewhere, therefore for the future it will be necessary to implement a registry and surveillance of injuries that includes all teams from the Mexican soccer league for a long period of time, as soon as possible with the help of the leaders and medical staff of the official leagues.

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