apunts

SPORTS MEDICINE

www.apunts/org

SPECIAL ARTICLE

Translation into Spanish and proposal to modify the Orchard Sports Injury Classification System (OSICS) version 12

Juan de Dios Beas-Jiménez[a],*, Antonio León Garrigosa[b], Pilar Doñoro Cuevas[c], Luis Martínez Riaza[d], Xavier Peirau Terés[e], Juan Manuel Alonso[f], María Isabel Álvarez Recio[g], Cristian Cofré Bolados[h]

[a] Andalusian Center of Sport Medicine, Seville, Spain
[b] GVL Medical Services, Marbella, Malaga, Spain
[c] Medical Area, Spanish Basketball Federation, Madrid, Spain
[d] Sports Medicine Unit, Quirónsalud Albacete Hospital, Spain
[e] National Institute of Physical Education of Catalonia (INEFC), Center of Lleida, Spain
[f] Sports Medicine Department, Aspetar Hospital, Doha, Qatar
[g] Dosartes Medical Center, Valladolid, Spain
[h] ECIADES School of Physical Activity Sciences, University of Santiago, Chile

Abstract

Objective: To publish the Spanish translation of version 12 of the sports injury classification system called Orchard Sports Injury Classification System and propose a modification to include a numerical code which reflects the impact of the injury on sports functionality.

Method: The members of the working group on the epidemiology of sports injury, of the Group for the Study of the Muscle-Tendon System (GESMUTE), and of the Spanish Society of Sports Traumatology (SETRADE), carried out a bibliographical review on the epidemiological classification systems of injuries, three face-to-face consensus meetings and various online pieces of work, following the DELPHI work methodology.

Results: The Spanish translation of version 12 of the Orchard Sports Injury Classification System is fully accessible and free of charge at:

https://gesmute.es/traduccion-espanola-osics-12/

The current project proposes to add, at the end of the current coding system of version 12, a numerical code (0: No Functional impairment; 1: Limits Sports Activity; 2: Prevents Sports Activity; 3: Limits Daily Life Activities), to indicate any functional repercussions caused by the injury.

* Corresponding author.
  E-mail address: juandedios.beas@gmail.com (J.d.D. Beas-Jiménez).

Conclusions: We present the Spanish translation of version 12 of the Orchard Sports Injury Classification System. We propose as an improvement the inclusion of functionality criteria in sports injury classifications; more specifically, our proposal could be an improvement to the Orchard Sports Injury Classification System version 12.

Introduction

The Group for the Study of the Muscle-Tendon System (GESMUTE) is made up of specialists in various disciplines, all of them affiliated to the Spanish Society of Sports Traumatology (SETRADE). Within GESMUTE, the work group for the epidemiology of sports injury has analyzed the most commonly used classification systems in sports injuries, with the aim of assessing the pros and cons of each system used and propose one of them to GESMUTE, so that it may apply such a system for any of its future studies.

There are many classifications (Table 1) and one of the most commonly used was created in 1992 by Dr. Orchard, named *Orchard Sports Injury Classification System* (OSICS)[1] which is currently in its version 12. Version10 had previously been translated to Spanish[1,5–7] and it was now version 12's turn to be translated also into Spanish.[8]

The various fore-mentioned systems proposed[1,2,4,10] usually include a questionnaire-based document which collects data related to the injury or sports accident which are later introduced into a data base to be analyzed and studied, with the aim of:

1. Establish preventive measures.
2. Optimize the rules of the game for every sport.
3. Enable institutions to adequately plan health assistance during sporting events.

Despite being useful when it comes to performing epidemiologic studies and providing healthcare support, these systems are not constraint-free (Table 2),[1,4,6,7,10] enough reason to spur multiple groups to improve them[7,9,11] (Table 2) and reach consensuses in order to narrow the gap caused by discrepancies.[10]

After considering all the fore-mentioned, the GESMUTE work group decided to meet in Madrid on 22 September 2018 and agreed to analyze the different epidemiological Code-assignment systems used in sport injury classification, with the aim of choosing a single one to be applied in the future by the group. This study describes the results obtained and level of agreement reached.

Method

Using DELPHI methodology[12] (work and consensus following an in-line process structure used in group meetings) members of GESMUTE's epidemiology work group, carried out the following activities:

- 1 September to 20 September 2018: Agreed on consensus to establish task goals to achieve.
- 22 September 2018: GESMUTE agreed to revise and analyze all fore-mentioned injury classification systems so that one of them may be used and applied by GESMUTE in the future.
- 23 September 2018 to 30 March 2019: revised references and analyzed the various epidemiological sport-injury classification systems.
- 30 March 2019: GESMUTE chose the OSICS-12 classification system and reached consensus to use it in future studies. It additionally agreed to add a numerical code system which defines functional impact caused by injury.
- 30 March 2019 to 11th November 2019: contacted Dr. Orchard so he may approve translation of the OSICS-12 classification system into Spanish. Additionally, established points to discuss for next meeting to be held on 23 November 2019 by GESMUTE.
- 23 November 2019: Modifications proposed for the OSICS-12 classification system were approved and a functional code added.
- 25 November to 15 December: consensus reached upon work methodology to follow when translating and also regarding full translation of OSICS-12 into Spanish.
- 15 December 2019 to 30 January 2020: discrepancies solved, and consensus reached concerning OSICS-12 translation proposals.
- 13 January 2020 to 20 January 2020: the Iberoamercian group (Chile, Argentina, Uruguay y México) of specialists in sports medicine were contacted and joined the main group in order to translate OSICS-12 into Spanish.
- 30 January 2020 to 5 March 2020: OSICS-12 translation consensus was finalized.
- 24 April 2020: Spanish version of translated OSICS-12 and proposed improvements were published in Spanish scientific journals.

All group meetings where held at Clínica CEMTRO on 22 September 2018, 30 March 2019 and 23 November 2019.

Results

All 1733 diagnostic terms, 41 injury categories and 13 body areas which make up the OSICS-12 system were translated. Translated information and full text in spread sheet format, is available and free at:

https://gesmute.es/traduccion-espanola-osics-12/

The most important decisions taken by all of GESMUTE work group members at their meetings were:

- To use the OSICS code system of sports injuries for future epidemiological studies.
- To translate OSICS-12[8] into Spanish.
- To categorize each injury into corresponding anatomical regions. We believe such categories help to make a more efficient use of this classification system.

Table 1 Most commonly used classification systems for diseases and disorders.[1–4,7,9,10]

Name	Institution	Year
International Classification of Diseases (ICD-10)	World Health Organization	1990
Injury Surveillance System (ISS)	National Collegiate Athletic Association (NCAA)	1982
Sport Medicine Diagnostic Coding System (SMDCS)	Canadian Intercollegiate Sport Injury Registry	1991
International Olympic Committee's Injury Surveillance System	International Olympic Committee	2008
Australian Sports Injury Data Dictionary (ASIDD)	Sports Medicine Australia (SMA)	1998
Australian National Minimum Dataset for Injury Surveillance (NDS-IS)	Australia	1990
Orchard Sports Injury Classification System (OSICS-10)	Elite Australian Football	1992
The National Football League's (NFL) Injury Surveillance System	National Football League	1980
Annual Injury Survey	Australian Football League (AFL)	1993
Injury Surveillance Database	Fairfax County Public School System	1999
Fédération Internationale de Football Association Surveillance System	Fédération Internationale de Football Association (FIFA)	2007
The Cricket Australia Injury Survey	Cricket Australia Sports Science Medicine	2006
UEFA Champions League Injury Study	Union of European Football Associations (UEFA)	2001
The Norwegian Professional Football League Injury Reporting System	Norwegian Professional Football League	2002
The England Professional Rugby Injury Surveillance Project	England Professional Rugby (RFU)	2002
The National High School Sports-Related Injury Surveillance System	National High School (USA)	2005
International Ski Federation Injury Surveillance System	International Ski Federation (FIS)	2006
International Association of Athletics Federations Surveillance System	International Association of Athletics Federations (IAAF)	2007
International Olympic Committee Injury Surveillance System for Multi-Sports Events	International Olympic Committee	2007
CORE-AT Electronic Medical Record and Injury Surveillance System	Athletic Training Practice-Based Research Network (AT-PBRN)	2009
The Major League Baseball Injury Surveillance System	Major League Baseball	2010

- To propose the introduction of a modification in the OSICS-12[8] system which implies adding a number code at the end of the already existing code, with the aim of indicating how the injury affects this area functionally (Table 3).

Additionally, validation of OSICS-12 Spanish translation has started both in Spain and Latin-America.

Discussion

Main results in this study include GESMUTE adopting the OCICS classification system and translating into Spanish OSICS-12.[8] The translated information, full text in spread sheet format, may be accessed for free on:
https://gesmute.es/category/publicaciones/

Additionally, a proposal to improve OSIC's injury classification system was made by which a final figure is added at the end of each code which indicates functional repercussion of the injury when practicing sport.

The OSICS-12 system follows a four-character structure, assigned to each injury.[1,2,5,6] The first letter in this structure indicates an anatomical region, the second letter corresponds to a specific injured tissue or the name of the pathology present, the third and fourth letters describe the pathology and provide further diagnosis. This system[1,5,7] is constantly updated, it is flexible enough to include new categories and adapt to new concepts[8] without invalidating previous versions and has a wide-enough range to include all types of injuries. Since it was first published, its authors have refused to have any copyright ownership; it has been validated,[2] its applicability has been proven[7] and is widely used in sport-injury epidemiology.[1,5,13] The main reasons for this system being mentioned so often in papers are that it provides a precise encoding system

Table 2 Main deficiencies shown by sport injuries classification systems.

Deficiencies
Various definitions of the concept *sport injury*
Are not immediately applicable to sports practice
Observer-dependant
Unclear and complicated procedure to fill in
Not aimed at treating injury
Unidimensional, simply describe injury
Functionality data not included
Lack of data referring to recreational athletes
Low-quality data
No system refers specifically to female or infant injuries
Non-multidisciplinary
No complementary data included (Chronic/Acute, Degree of Severity, spectator's consequences, non-regulated sports, Young athletes, Recidive, very serious injuries cared for at hospitals, etc.)

Table 3 Proposed codes to indicate functional repercussion of every injury.

Proposed code	Functional repercussion of lesion
0	No functional side-effects
1	Limited sport activity
2	Unable to practice sport activity
3	Limits everyday activities

and that forthcoming modifications have always lead to improved versions. The OSICS system has improved over time, adding new codes and categories which allow structural anomalies to be included, as well as pathologies shown by para-athletes, pediatric injuries, post-surgical conditions, medical pathologies, administrative actions taken and data collected regarding uninjured athletes.[1,5,7] Additionally, it has been translated to several languages, including Spanish.[5,6,8]

Classifying an injury implies describing it, as well as including it in a category and establishing its level of severeness.[14]

- Keeping all three of the above in mind, the applied taxonomy should[14–21]:
- Show reproducibility.
- Establish clear differences amongst categories.
- Be easily remembered.
- Be concise and easily understandable.
- Include prognosis variables.

However, the OSICS system begins to lack precision when the encoding system is applied by non-healthcare staff,[2] giving ground to the proposal of variations which may somehow assess injury relapses (*Subsequent injury categorization – SIC – Model*).[11]

Sports injury research needs an appropriate encoding system for the different pathologies with the aim of truly knowing their incidence, a precise location, the injury mechanism that caused it, any efficient preventive measures to

be taken, the efficacy of all different treatments applied to the same injury[1,2,5,10,13] or making the right return-to-play decisions. Nevertheless, a same lesion may have various effects on the sports activity such as when an achilles paratendinopathy (Code OSICS-12: ATAP) is invariably assigned the same code, whether it is totally incapacitating for the athlete or it allows him/her to train as usual. If we wish to analyze the efficacy of various treatments or choose the kind of exercise we may apply when treating an injury, it is essential to know to what extend the injury affects sport activity. This is why the GESMUTE epidemiology work group agreed to add a number indicating the extent to which an injury functionally affects the athlete.[8] As an example, take an achilles paratendinopathy which may not hinder an athlete's physical activity, that is, without functional side-effects. We would code it as ATAP-0. But if such an injury does produce pain which does not allow any kind of physical practice, we would code it ATAP-2. Such coding could be useful when establishing a treatment protocol to apply to the injury for, in the case of a non-limiting achilles paratendinopathy (ATAP-0), we may use eccentric and plyometric exercises almost limitlessly, whereas in the case of a highly functionally limiting achilles paratendinopathy (ATAP-2), those exercises would be unadvisable. We are thus favoring a collaborative approach from all sports health-care specialists, from diagnosis, treatment and rehabilitation to the prevention of injuries. Hence our position on considering it advisable to add a number after every OSICS-12 code with the aim of referencing functional impact of each and every injury.

For the future, we are considering validating the Spanish translation of OSICS-12 both in Spain and Latin-America, as well as translating into Spanish any future versions of OSICS. Furthermore, GESMUTE is promoting the development of an application program which facilitates injury code assignment using OSICS-12.

Support and financial data

Conflict of interest

The authors declare that they don't have any conflict of interest.

Acknowledgments

the Santiago de Chile University, Chile; for their contribution to the English to Spanish translation.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.apunsm.2020.05.002.

References

1. Orchard J, Rae K, Brooks J, Hägglund M, Til L, Wales D, et al. Revision, uptake and coding issues related to the open access Orchard Sports Injury Classification System (OSICS) versions 8, 9 and 10.1. Open Access J Sports Med. 2010;1:2017–114, http://dx.doi.org/10.2147/OAJSM.S7715.

2. Finch CF, Orchard JW, Twomey DM, Saas Saleem M, Ekegren CL, Lloyd DG, et al. Coding OSICS sports injury diagnoses in epidemiological studies: does the background of the coder matter? Br J Sports Med. 2014;48:552–6, http://dx.doi.org/10.1136/bjsports-2012-091219.

3. Kerr ZY, Dompier TP, Snook EM, Marshall SW, Klossner D, Hainline B, et al. National Collegiate Athletic Association Injury Surveillance System: review of methods for 2004–2005 through 2013–2014 data collection. J Ath Train. 2014;49:552–60, http://dx.doi.org/10.4085/1062-6050-49.3.58.

4. Ekegren CL, Gabbe BJ, Finch CF. Sports injury surveillance systems: a review of methods and data quality. Sports Med. 2016;46:49–65, http://dx.doi.org/10.1007/s40279-015-0410-z.

5. Til-Pérez L, Orchard J, Rae K. El sistema de clasificación y codificación OSICS-10 traducido del inglés. Apunts Med Esport. 2008;43:109–12. https://www.apunts.org/en-el-sistema-clasificacion-codificacion-osics-10-articulo-X0213371708263891

6. Til-Pérez L. Aclaraciones a la traducción del sistema de clasificación y codificación OSICS-10. Apunts Med Esport. 2008;43:154–7. https://www.apunts.org/es-aclaraciones-traduccion-del-sistema-clasificacion-articulo-X0213371708263981

7. Crossway AK, Games KE, Eberman LE, Fleming N. Orchard sports injury classification system 10.1 plus: an end-user study. Int J Exerc Sci. 2017;10:284–93. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5360368/

8. Beas-Jiménez JDD, León-Garrigosa A, Doñoro-Cuevas P, Martínez Riaza L, Peirau Terés X, Alonso JM. Traducción al español y propuesta de modificación de la clasificación de lesiones deportivas Orchard Sports Injury Classification System (OSICS) Versión 12. Rev Med Deporte. 2020 [in press]. https://ws072.juntadeandalucia.es/ojs/index.php/ramd/article/view/778

9. Finch CF, Staines C. Guidance for sports injury surveillance: the 20-year influence of the Australian Sports Injury Data Dictionary. Inj Prev. 2018;24:372–80, http://dx.doi.org/10.1136/injuryprev-2017-042580.

10. Bahr R, Clarsen B, Derman W, Dvorak J, Emery CA, Finch CF, Hägglund M, et al. International Olympic Committee consensus statement: methods for recording and reporting of epidemiological data on injury and illness in sport 2020 (including STROBE Extension for Sport Injury and Illness Surveillance (STROBESIIS)). Br J Sports Med. 2020;54(7):372–89. https://bjsm.bmj.com/content/54/7/372.citation-tools

11. Finch CF, Cook J. Categorising sports injuries in epidemiological studies: the subsequent injury categorisation (SIC) model to address multiple, recurrent and exacerbation of injuries. Br J Sports Med. 2014;48:1276–80. https://bjsm.bmj.com/content/48/17/1276

12. Reguant-Álvarez M, Torrado-Fonseca M. El método Delphi. REIRE. 2016;9:87–102. https://doi.org/10.1344/reire2016.9.1916//

13. Altarriba-Bartes A, Drobnic F, Til L, Malliaropoulos N, Bruno Montoro J, Irurtia A. Epidemiology of injuries in elite taekwondo athletes: two Olympic periods cross-sectional retrospective study. BMJ Open. 2014;4:e004605. https://bmjopen.bmj.com/content/4/2/e004605

14. Hamilton B, Alonso JM, Best TM. Time for a paradigm shift in the classification of muscle injuries. J Sport Health Sci. 2017;6:255–61, http://dx.doi.org/10.1016/j.jshs.2017.04.01.

15. Bisciotti GN, Volpi P, Amato M, Alberti G, Allegra F, Aprato A, et al. Italian consensus conference on guidelines for conservative treatment on lower limb muscle injuries in athlete. BMJ Open Sport Exerc Med. 2018;4:e000323, http://dx.doi.org/10.1136/bmjsem-2017-000323.

16. Cohen SB, Towers JD, Zoga A, Irrgang JJ, Makda J, Deluca PF, et al. Hamstring injuries in professional football players. Sports Health. 2011;3:423–30, http://dx.doi.org/10.1177/1941738111403107.

17. Pollock N, James SLJ, Lee JC, Chakraverty R. British athletics muscle injury classification: a new grading system. Br J Sports Med. 2014;48:1347–51, http://dx.doi.org/10.1136/bjsports-2013-093302.

18. Tscholl P, Meynard T, Le Thanh N, Neroladaki A. Diagnostics and classification of muscle injuries in sports. Swiss Sports Exerc Med. 2018;67:8–15. https://sgsm.ch/fileadmin/user_upload/Zeitschrift/66-2018-1/1-2018_1_Tscholl.pdf

19. Valle X, Malliaropoulos N, Párraga Botero JD, Bikos G, Pruna R, Mónaco M, et al. Hamstring and other thigh injuries in children and young athletes. Scand J Med Sci Sports. 2018;28:2630–7, http://dx.doi.org/10.1111/sms.13282.

20. Valle X, Mechó S, Pruna R, Pedret C, Isern J, Monllau JC, et al. The MLG-R muscle injury classification for hamstrings. Examples and guidelines for its use. Apunts Med Esport. 2019;54:73–9. https://www.apunts.org/en-the-mlg-r-muscle-injury-classification-articulo-S1886658118300422

21. Balius R, Blasi M, Pedret C, Alomar X, Peña-Amaro J, Vega JA, et al. A histoarchitectural approach to skeletal muscle injury. Searching for a common nomenclature. Orthop J Sports Med. 2020;8, 2325967120909090. https://doi.org/10.1177/2325967120909090