

Prior and acquired knowledge after a day of training on first aids in future teachers of Physical Education

Conocimientos previos y adquiridos tras una jornada de formación sobre primeros auxilios en futuros docentes de Educación Física

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Abstract

This research was intended to investigate (test) the knowledge of the students of master degree in Elementary Education from the Faculty of Teacher Training Lugo about their knowledge on first aid and C.P.R, before and after receiving a theoretical and practical session of three hours with three different parts (First(1)-exhibition-demonstration, Second(2)-solving a practical situation of the problem in small groups and third(3)- solving a practical situation of the problem with a large group). The sample (N = 23) consisted of 9 men (39.1%) and 14 women (60.9%) studying the degree of P.E. To find out the previous knowledge about the topic and at the end of the training session, we elaborated a questionnaire that was given to them before the formative session : Initial questionnaire (IQ) and after training day ,Final questionnaire (FQ) to see the progress of the students after the session. The descriptive results of the FQ revealed a lack of knowledge of future teachers in the P.E topic of first aid. These procedures have been identified to make an improvement of the new teachers with appropriated training sessions. In data obtained from the FQ, we reach on average more than a 90% of correct answers proving the efficiency of the methodology and duration of training in a short period of time. The retention of knowledge about this topic was shown as a limitation of the study and will be evaluated later on. In conclusion, the importance of the knowledge on the topic first aid and C.P.R in future teachers of P.E is proved after doing the test and is proposed as part of the topics to be teach on the degree.

Key Words

Accidents; emergencies; protocols; initial assessment; training; final assesment.

Resumen

Con esta investigación se pretendió indagar acerca de los conocimientos sobre primeros auxilios, y en especial de RCP, que poseía el alumnado del grado de maestro en Educación Primaria de la Facultad de Formación de Profesorado de Lugo, antes y después de recibir una jornada de formación teórico-práctica de 3 horas en tres fases (1- expositiva-demostrativa, 2- interactiva con resolución de problemas en pequeños grupos y 3- interactiva con resolución de problemas en gran grupo). La muestra (N=23) estuvo compuesta por 9 hombres (39,1%) y 14 mujeres (60,9%) matriculados en la mención de Educación Física. Para saber los conocimientos previos (CI) y adquiridos (CF) tras la jornada de formación, se administró un cuestionario Ad Hoc con 25 ítems. Los resultados descriptivos del CI revelaron una falta de conocimiento de los futuros docentes de Educación Física en relación a los primeros auxilios. Los datos arrojados por el CF, alcanzando una media del 90 % de preguntas correctamente contestadas, avalan la eficacia de la metodología y duración de la formación propuesta a corto plazo. La retención de los conocimientos se presenta como limitación del estudio y será evaluada más adelante. En conclusión, se destaca la importancia de que los futuros docentes de Educación Física se formen adecuadamente en la materia de primeros auxilios y se propone que forme parte de los contenidos del grado en Educación Primaria.

Palabras clave

Accidentes; emergencias; protocolos; evaluación inicial; formación; evaluación final.

Introduction

Changes and modifications carried out in Primary Education motivated by the Organic Law 8/2013 9, December (B.O.E n° 295), to improve educative quality (LOMCE), and developed by the Real Decree (126/2014 B.O.E. N° 52) leads new Physical Education teachers to teach contents related to prevention of injuries and first aid. This reality, the involvement in the formation of teachers in this subject, and the importance given to this contents as social civic values, makes us consider and analyze the knowledge about first aid of this group of people (Navarro, Arufe y Basanta, 2015).

Referring to recent legislative text regarding education, neither Organic Education Law (LOE) or LOMCE (B.O.E n°295) mention in any of their parts, that one of the tasks of he teacher is the immediate assistance in case of emergency (Abilleira, Barcala and Abelairas, 2013), however, any person is required to act, or, at least, ask for help, as it is said in article

195 title IX of the Spanish Penal Code referring to the failure to provide assistance (Organic Law 10/1995)

There are researches which prove that population's knowledge, and specially student's about first aid and cardiovascular basic resuscitation (bCPR) can help to save lifes (Abelairas, Rodríguez, Casillas, Romo y Barcala, 2014). This evidence corroborate the investigations which have demonstrated the survival possibilities of a victim of cardiorespiratoy arrest (PCR) rises a 5% when witnesses of the accident start the bCPR (Sasson, Rogers, Dahl y Kellerman, 2010). Accorging to Miró, Díaz and Sánchez (2012), these exercises are easy to learn, they are being accepted among the educative community and they have positive pedagogical connotations because they do not need a lot of material or human resources to be tauhgt.

From researches like Colquhoun's (2012), we realised we should start learning bCPR when we are young, and also, that contents related to first aid may be included in the shool programme, like in Galicia, thanks to Decree 105/2014, 4th September, which establishes Primary Education's curriculum in Galician Autonomous Community. This author also pointed out that shools are the ideal place to introduce future citizens in this kind of knowledge, since 100% of them must pass these stages (Primary and Secondary) of educative system. An efficient way to educate people on the importance of first aid knowledge is educating boys and girls since they are young, because they are an easy audience to teach and it does not cost to much to do it (Plant and Taylor,2013).

Another reason that justifies the inclusion of first aid and bCPR contents at school's environment is the result of another research from WHO (2008) that revealed that school accidents were the first cause of infantile death. This situation could make us think about active Physical Education teacher's lack of knowledge in this area, motivated by a limited formation to face a school accident. If these teachers had the right skills regarding this area, besides of acting in case is needed, they could teach those contents to Primary and Secondary Education students, because in Spain everyone needs to pass through this school cycles. (Navarro, Arufe & Basanta, 2015).

This way and following what is established on Galicians Decree of Primary Education (Decree 105/2014), we would assure that everyone passing through the educative system, would be able to know, explain and recognize preventive and first aid actions on real and

simulated situations. Therefore and having in mind the researches named previously, it would be understandable the inclusion and improvement of first aid and bCPR education of all actor taking part of the educative system, and would lead to a improvement of survival capacity in case of serious accident at school (Navarro, Arufe & Basanta, 2015; Sasson, Rogers, Dahl & Kellerman, 2010).

If we do not have previous knowledge about first aid and bCPR, we cannot understand the appropriated teaching-learning process regarding the contents of primary curriculum in this area, adns this situation would need specific formation, so we pose two scenarios and research objectives.

Scenarios and objectives

After carrying out a exhaustive theoric revision, these two scenarios are formulated, and they will or will not be valid, according to the research results:

- 1) Future teachers so not have the appropriated knowledge referring to fist aid and bCPR.
- 2) A specific educating programme will improve knowledge referring to first aid and bCPR acquired by the sample.

From these, the following objectives are emated:

- 1) To analyze the knowledge of future Physical Education teachers on aspects referring to first aid and bCPR.
- 2) Get to know the effect of applying a specific formative session about these knowledge.

Material and method

During the first part of the research, a questionnaire Ad Hoc was handed out to know the previous ideas (IK) of all students registered at Physical Education Mention at Lugo's Teachers Formation Faculty. After that, the students receive a theoretical and practical formation about aspects related to first aid and basic CPR. Later, the same questionnaire was given to them to evaluate the acquire knowldge (FK) during the formation session.

Subjects and sample

To give an answer to both scenarios, all students from Physical Education Mention at Teachers Formation Faculty of Santiago de Compostela's University (Lugo's Campus), were considered as population. The total sample was composed by 23 subjects, 9 men (39,1%) and 14 women (60%) and their average age was 23,65 years old (DT 3,84)

Questionnaire

In order to obtain data, a questionnaire Ad Hoc with twenty four (24) questions was elaborated, and it was based on the previous research made by Abilleira, Barcala and abelairas (2013), adjusting them to this research. All items were closed questions except from sociodemographic data referring to gender and age. Specifically, the questionnaire was composed by five (5) dichotomous questions; seventeen (17) polytomous all of them single choice.

Procedure

At first, the adjusted questionnaire was examined to value its validity by a expert committee. This group of experts, were college teachers or Primary Education teachers. After getting some instructions and making corrections, the questionnaire was given to all of the 23 subjects participating (IQ).

Once covered, the 3 hour theoretical-practical formation session took place. The session had three parts. During the first one, groups of four or five persons were made, and each one had an instructor. In it, instructors exposed the contents and realized demonstrations related to first aids and bCPR. In the second part, the small groups were maintained, and the students resolved problems and tried to give an theoretical and practical answer to the scenarios proposed by the instructors. The third, and las part was a catastrophe simulation, and all the knowledge acquired previously was put into practice by all the group at the same time.

After the formation session the questionnaire was given to them another time to evaluate the contents and the acquired knowledge (FQ) during the teaching-learning process.

To obtain results, the answers were codified and introduced in an Excel's 2010 version spreadsheet. Later, data was exported and analyzed with a statistical treatment programme (IBM SPSS 20.0 version). After obtaining data for the research, frequency tables were made with it, distinguished by gender, with absolute values and percentages. This way, the analysis would be easier and clear for the readers.

Results

The research data was analyzed in a quantitative way through a descriptive exploratory analysis, synthesizing and presenting them in tables in a descriptive manner. An analysis about before-after formation by gender was also carried out, highlighting relevant information and making it easy to understand. Demographic data shows that women's presence is higher between all the future Physical Education teachers of Primary Education (60, 90%). The average age of the sample was 23, 65 keeping in mind that they were studying 4th grade of Primary Education teaching degree (see Table 1)

Table 1. Characteristics of the research sample.

Variable		N	Average (%)
GENDER	Women	14	60,9
	Men	9	39,1
AGE (years)		23	23,65

Answer to question number 5 about given formation related to first aids (see table 2), shows that 87,0% of the subjects confirm to have received first aids formation at some point in their lives.

Table 2. First aids received formation(IQ).

	N° of students	Percentage
YES	20	87,0
NO	3	13,0
Total	23	100,0

General first aids knowledge dimension results

Regarding the obtained results of general first aids knowledge (see table 3) it is shown that:

- 100% of the sample knows free emergency number.
- A 78,3% (34,8% men and 43,5% women) knows PAS(IQ) behaviour and 100% of them the FQ; ; $p = ,043$
- Regarding the procedure to Calm-Help-Value-Intervene (CHVI), it goes from 26,1% (IQ) (8,7% men and 17,4% women) to a 78,3% (FQ) (34,8 % men y 43,5 % women); $p = ,001$.
- Referring to survival chain, the IQ showed a 8,7% who knows which are the links (4,3% men and 4,3 women) and goes up to 91,3% (FQ) (30,4 % men and 60,9 % women); $p = 1,0$
- Referring to security lateral position, the IQ shows that the 87% (30,4% men and 56,5% women) knew how to do it, and the FQ shows a 95,7% (39,1 % men and 56,5 % women); $p = 328$.
- Finally, regarding the importance of immobilization of a multiple trauma person, the IQ showed that only a 43,5 % (8,7 % men and 34,8 % women), knew the

protocol and importance of it while the FQ shows a 78,3% (34,8 % men and 43,5 % women); $p = ,029$

Table 3. Basic first aid knowledge before and after applying formative programme.

Variables	Men (%)				Women (%)				Total (%)			
	IQ		FQ		IQ		FQ		IQ		FQ	
	A	E	A	E	A	E	A	E	A	E	A	E
TELEM	39,1	-	39,1	-	60,9	-	60,9	-	100	-	100	-
PAS	34,8	4,3	39,1	-	43,5	17,4	60,9	-	78,3	21,7	100	-
TAVI	8,7	30,4	34,8	4,3	17,4	43,5	43,5	17,4	26,1	73,9	78,3	21,7
CSUP	4,3	34,8	30,4	8,7	4,3	56,5	60,9	-	8,7	91,3	91,3	8,7
PLS	30,4	8,7	39,1	-	56,5	4,3	56,5	4,3	87,0	13,0	95,7	4,3
INMOV	8,7	30,4	34,8	4,3	34,8	26,1	43,5	17,4	43,5	56,5	78,3	21,7

Legend: **TELEM:** knows emergency phone number **PAS:** knows PAS behaviour; **TAVI:** knows TAVI's behaviour; **C,SUP:** survival chain; **PLS:** Facing unconscious person who is breathing; **INMOV:** Importance of immobilization of a multi trauma patient; **IQ:** initial questionnaire; **FQ:** Final questionnaire; **A:** right; **E:** wrong.

Specific adults and kids specific CPR knowledge dimension results.

Table 4 shows the the obtained results about knowledge regarding bCPR (see table4). Related to specific knowledge adults have in this area (see table 5).

- A 73,9 % (17,4 % men and 58,5 % women) knew what would be the perfect compression/aeration proportion (IQ). The FQ shows a 100% of right answers; $p = ,05$
- A 47,8 % (8,7 % men y 39,1 % women) knew what should be the compression per minute correct rhythm on the IQ. After formation, the percentage increased to 78,3%; $=,096$

- Only 17,4% (4,3 % mne and 13,0% women) knew what should be the minimal depth to have a quality thoracic compression before the formative session. This percentage rised to 100% of right answers in the FQ; $p = ,011$

Table 4. Participants perceptin about carrying out a bCPR before and after applying the formative programme.

Variables	Men (%)				Women(%)				Total (%)			
	IQ		FQ		IQ		FQ		IQ		FQ	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
CbCPR	34,8	4,30	39,1	-	60,9	-	60,9	-	95,7	4,3	100	-
SbCPR	26,1	13,0	39,1	-	43,5	17,4	60,9	-	69,6	30,4	100	-

Leyenda: CbCPR: know what it is a bCPR; SbCPR: know how to do a bCPR. IQ: Inicial questionnaire; CF: Final questionnaire; Y: yes; N:No.

Table 5. CPR adult knowledge before and after applying the formative programme

Variables	Men(%)				Women (%)				Total (%)			
	IQ		FQ		IQ		FQ		IQ		FQ	
	A	E	A	E	A	E	A	E	A	E	A	E
RACVbCPRA	17,4	21,7	39,1	-	58,5	4,3	60,9	-	73,9	26,1	100	-
RICbCPRA	8,7	30,4	34,8	4,3	39,1	21,7	43,5	17,4	47,8	52,2	78,3	21,7
PCbCPRA	4,3	34,8	39,1	-	13,0	47,8	60,9	-	17,4	82,6	100	-

Leyenda: RACVbCPRA: Adult Compression aeration bCPR ratio; RICbCPRA: Adult Compression aeration Rhythm bCPR; PCbCPRA: Adult Compression aeration depth bCPR; IQ:Initial questionnaire; FQ: Final questionnaire A: Acierto; E: Error.

Percentages are even worse when we talk about specific knowledge of girls and boys (see table 6):

- IQ shows a 34,8%(17,4 % boys and 17,4 % girls) who knew what was the compression aeration ideal ratio. When the formative session finished, all of the participants answered right; $p = ,000$

- A 17,4%(4,3 % boys and 13,0 % girls) knew what the ideal compression per minute rhythm was when they realized the IQ. The FQ rises this percentage to a 69,6% ; $p = ,000$.
- A 26,1% (13,05% boys and 13,05% girls) knew what was the minimal depth to reach a correct thoracic compression. In the FQ 91,3% of participants got the answer right; $p = ,000$

Table 6. CPR kids knowledge before and after applying formative programme

Variables	Boys(%)				Girls (%)				Total (%)			
	IQ		FQ		IQ		FQ		IQ		FQ	
	A	E	A	E	A	E	A	E	A	E	A	E
RACVbCPRN	17,4	21,7	39,1	-	17,4	43,5	60,9	-	34,8	65,2	100	-
RICbCPRN	4,3	34,8	34,8	4,3	13,0	47,8	34,8	26,1	17,4	82,6	69,6	30,4
PCbCPRN	13,0	26,1	34,8	4,3	13,0	47,8	56,5	4,3	26,1	73,9	91,3	8,7

Legend: **RACVbCPRN:** kids compression aeration bCPR ratio; **RICbCPRN:** Kids compression aeration CPRb Rhythm; **PCbCPRN:** Kids compression aeration CPRb depth; **IQ:** Initial questionnaire; **CF:** Final questionnaire; **A:** right; **E:** wrong.

Knowledge and use of semi-automatic external defibrillator (SAED)

Regarding SAED knowledge (see table 7) we verify that:

- A 95% knew at first what a SAED was and a 60,9% knew how to use it. These percentages increased to a 100% and a 95,7% respectively after formation; $p = ,000$.
- None of the participants knew before formative session the steps to use a SAED. The percentage shown in the FQ was 43,5% ; $p = ,000$
- Referring to the distinction between an automatic defibrillator (AED) and SEAD at first we obtained a 34,8% and then, after the formative session, a 100% of right answers ; $p = ,000$.

Table 7. Knowledge about SAED before and after the applying the formative programme

Variables	Men(%)				Women (%)				Total (%)			
	IQ		FQ		IQ		FQ		IQ		FQ	
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
CSAED	34,8	4,3	39,1	-	69,9	0,0	60,9	-	95,7	4,3	100	-
SSAED	21,7	17,4	34,8	4,3	39,1	21,7	60,9	-	60,9	39,1	95,7	4,3
PSAED	0,0	39,1	21,7	17,4	0,0	60,9	21,7	39,1	-	100	43,5	56,5
DDEASAED	17,4	21,7	39,1	-	17,4	43,5	60,9	-	34,8	65,2	100	-

Legend: CSAED: Know what a SAED is; SSAED: Know how to use a SAED. PSAED: Steps to use a SAED; DDEASAED; Difference between AED and SAED; IQ: Initial questionnaire; FQ: Final questionnaire; Y: Yes; N:No.

Discussion

In this research we've analyzed the knowledge referring to first aids and bCPR of future Physical Education teachers of Primary Education. The Sample was formed by students of the mention from Santiago de Compostela's University of Physical Education. It is considered that the obtained data is representative from the analyzed population, however, in order to get a better result of reality in Galicia's Community, it would be convenient to give this questionnaire and formative sessions to the rest of students at the same mention in different Galician Universities, what would let us contrast data between provinces. Like Navarro, Arufe and Basanta (2015) pointed out, we could even expand the research to the rest of students of Primary Education degree, because this first aids area is not exclusive of Physical Education area, it also includes Natural Science and Social and Civil Values (Decree 105/2014, D.O.G. nº 171).

Recently, first aids and bCPR made their own space on educative curriculum contents. Lawmakers related to education discovered the importance that these kind of knowledge has realted to health, but aso in a educative environment (Miró, Díaz & Sánchez, 2012). However, if we wnt students to learn this contents, we need educated teachers in this area. Following

this, Navarro, Arufe and Basanta (2015) point out that teachers must participate in formative sessions related to first aids and bCPR.

Based on what was previously said, and after carrying out a statistical analysis, we will analyze and contrast the obtained results, and which ones could be the causes of them.

Even though 87% of the participants confirm to have received previous formation regarding first aids and bCPR, the IQ revealed that formation of Primary Education teachers from Lugo was not enough. This statement is due to the fact that a really low porcentaje of students (<50%) answered right to questions related to TAVI behaviour, survival chain, immobilization importance, compression aeration in adults and kids, compression aeration depth in adults and kids, compression aeration ratio in kids, steps to use a SAED and the difference between AED and SAED. Also because the IQ average of right questions among all the participants was 50,9%. Specially, worrying was that none of them knew at first the steps to use a SAED.

In order to have a better result interpretation it would have been better to ask about previous formation and how much time ago was it, this aspect may be included in future researches regarding this subject. Anyway, data revealed that formation acquired in other formative sessions was not significant because it was not remembered correctly. If previous formation was appropriated, our results would prove the need of periodical formation regarding first aids and bCPR, to upgrade and reinforce it.

Analyzing the results before the formative session took place, we could say that future Physical Education teachers who completed the questionnaire are not prepared enough to start a teaching learning process in primary grades. However, the first questionnaire helped us identify the most difficult contents to remember, and this can be used in future formative sessions regarding this subject.

On the other hand, the FQ results let us think that the formation method in three parts (1- expository-demonstrative 2- interactive solving problems in reduced groups and 3- interactive solving problems as a big group) and the time of 3 hours, was effective to improve participant' knowledge about first aids and bCPR at least at short-term. Like it is said in the imitations part of the research, (because of the date of the congress) we did not have time for now to carry out a post-test studio to know what the retention capacity is regarding this

contents after formation. What we do know is that the increase of the right answers below 50% in the IQ is 55,5% and the average of right answers of the FQ was 90%, a 40% increase in relation to the IQ ones. The only question that participants were not able to answer correctly was the one related to the steps to use a SAED (43,5%), however, we should keep in mind that none of them answered correctly in the IQ. This fact, makes us think about the need of reinforcing the taught of these contents in future formative sessions. Also, about the kid's compression aeration, which did not reach the 70% of correct answers.

Conclusions

To finish this research we remind the first scenario: Future teachers do not have appropriate knowledge regarding first aids and bCPR. This scenario could be valid because of the obtained results, because sample subjects, even though they answer better than expected, they do not have enough knowledge to think they have an appropriate formation.

Besides, it is necessary to consider the chance that any problem or accident can show up in class and the teacher may have to intervene, and also, we have to keep in mind that inside the Primary Education official curriculum, first aids are included, that is why teachers should be prepared to teach these contents at school. In order to do it, they should receive formation during their study period, in a specific way, because it is the manner to acquire them and then teach them to the students.

Referring to the second scenario, a specific formative programme will improve the knowledge about first aid and bCPR acquired by the sample, we have to accept it as valid. That is why, it seems proper to review the studying plan of the Spanish Universities in order to include a mandatory subject that allows Teaching Primary Education Degree students to acquire a specific formation regarding first aids.

As future Physical Education teachers, they could be capable to teach those contents to their students, and even organize courses at their own job place, this way the rest of teachers could learn about this, because as we can prove with this research, a formative session lasting only 3 hours, produces important changes on first aid and bCPR's knowledge of Physical Education students.

Research limitations

As possible limitations we need to highlight, on one hand that, even though the sample reflects faithfully the students collective, it seems small to us.

It would be a more attractive research if we could count on a wider sample and also from all three galician universities, so this way we can also compare them.

On the other hand, we would like to give another questionnaire (retest) after a bigger period of time (6 months), so this would allow us to test at long-term the reminded contents by our sample.

Bibliographic references

1. Abelairas, C., Rodríguez, A., Casillas, M., Romo, V., y Barcala, R. (2014). Schoolchildren as life savers: At what age do they become strong enough?. *Resuscitation*, 85(6), 814-819.
2. Abilleira, M., Barcala, R., y Abelairas, C. (2013). *Conocimientos y actitudes sobre la RCP de estudiantes universitarios de educación infantil, primaria y ciencias de la actividad física y del deporte*. Trabajo Fin de Grado no publicado. Universidad de Vigo: Facultad de Ciencias de la Actividad Física y el Deporte de Pontevedra.
3. Colquhoun, M. (2012). Learning CPR at school-everyone should do it. *Resuscitation*, 83, 543-544.
4. Decreto 105/2014, de 4 de septiembre, por el que se establece el currículo de la Educación Primaria en la Comunidad Autónoma de Galicia. *Diario Oficial de Galicia*, 171.
5. Ley Orgánica 10/1995, de 23 de noviembre, del Código Penal. *Boletín Oficial del Estado*, 281.
6. Ley Orgánica 2/2006, de 3 de mayo, de Educación. *Boletín Oficial del Estado*, 106.
7. Ley Orgánica 8/2013, de 9 de diciembre, para la mejora de la calidad educativa. *Boletín Oficial del Estado*, 295.

8. López, R., Navarro, R., y Basanta, S. (2015). Formación y actitud del profesorado de educación física en Educación Primaria con respecto a los primeros auxilios en la provincia de Lugo. *Trances*, 7(1), 91-112.
9. Miró, O., Díaz, N., y Sánchez, M. (2012). Aprender reanimación cardiopulmonar desde la escuela. *Emergencias*, 24, 423-425.
10. Navarro, R., Arufe, V., y Basanta, S. (2015). Estudio descriptivo sobre la enseñanza de los primeros auxilios por el profesorado de Educación Física en centros de Educación Primaria. *Sportis. Revista Técnico-científica del deporte escolar, educación física y psicomotricidad*, 1(1), 35-52.
11. Navarro, R., Basanta, S., Abelairas, C., y López, S. (2015). *Análisis de la situación de los primeros auxilios en los planes de estudio de los grados de maestra y maestro en Educación Primaria* (Sin publicar).
12. Navarro, R., Penelas, G., y Basanta, S. (2015). ¿Tienen las futuras maestras y maestros de Educación Primaria la formación necesaria para iniciar maniobras de reanimación cardiopulmonar en caso de emergencia escolar? Un estudio descriptivo. *Educar*. En prensa.
13. Plant, N., y Taylor, K. (2013). How Best to Teach CPR to Schoolchildren: A Systematic Review. *Resuscitation*, 84, 415-421.
14. Real Decreto 1513/2006, de 7 de diciembre, por el que se establecen las enseñanzas mínimas de la Educación Primaria. *Boletín Oficial del Estado*, 293.
15. Real Decreto 126/2014, de 28 de febrero, por el que se establece el currículo básico de la Educación Primaria. *Boletín Oficial del Estado*, 52.
16. Reder, S., y Quan, L. (2003). Cardiopulmonary resuscitation training in Washington state public high schools. *Resuscitation*, 56(3), 283-8.
17. Sasson, C., Rogers, M. A. M., Dahl, J., y Kellermann, A. L. (2010). Predictors of Survival From Out-of-Hospital Cardiac Arrest. A Systematic Review and Meta-Analysis. *Circ. Cardiovasc. Qual. Outcomes*, 3, 63-81.

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18. WHO (2008). *European report on child injury prevention*. Roma: WHO Regional Office for Europe. [En línea] Disponible en: http://www.euro.who.int/_data/assets/pdf_file/0003/83757/E92049.pdf



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