

# **Design and Validation of the Questionnaire on the Initial Training Degree of Sports Coaches: QUGRAFOR<sup>®</sup>**

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**Abstract:** The main objective of this research is to carry out a preliminary survey on the training of rugby coaches. To this end, an analysis was performed using the Delphi technique from a sample of 15 experts with extensive experience in training and teaching of this sport modality. It was implemented by elaborating a questionnaire of eight dimensions which must be taken into account in the preparation of rugby trainers: demographic variable, teaching experience, initial training, conception of rugby teaching, teaching methodology, personal aspects and training needs. This questionnaire was sent to some experts: the results show that most agree with all dimensions raised and 100% of them feel the need to know their teaching experience, the reasons for practising their profession, their training needs and their willingness to update their knowledge. Only some issues concerning their experience indifferent sports, and some repetitive aspects about the coachwork have been removed.

**Key-Words:** Training, Sports, Rugby, Delphi Method, Questionnaire, Validation.

## **1. Introduction**

The sports environment is often complex and besides players, it is composed of coaches, assistants, physiotherapist and other trainers, depending on the status and wealth of the club. They create a range of relationships in a context of socializing influences and play an important role in the development and training of young people who practise sport (Keegan, Spray, Harwood, & Lavalle, 2010, Torregrosa, Cruz, Sousa, Viladrich, Villamarín &

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García Mas, 2007). One of the main factors, on which the required training of young athletes depends, is the qualification of the coach (Fraile, 1996, Fraile, Arribas, Gutiérrez, & Hernandez, 1998, Griffin & Butler, 2005, Nuviala, 2003, Nuviala, Leon Galvez, & Fernandez, 2007). His behaviour and interactions, the relationship with the players, as well as the way he communicates with them, are some of the variables which have an impact on the education of his athletes. Therefore, coaches' training is considered to be essential to ensure certain guarantees of appropriate behaviours to their athletes (Goldhaber, 2010, Manrique, Gea, & Álvaro, 2016).

Rugby is a sport which transmits high educational values and promotes individual skills (Parise, Pagani, Cremascoli, & Lafrate, 2015); however, in order to transfer these values and competences, understanding that proper education is based on the respect of the athlete's characteristics (Till, Cogley, O'Hara, Cooke, & Chapman, 2014) as well as of the internal structure of the taught content is absolutely necessary. Besides, promoting the integral development of the person in cognitive, emotional, social and motor areas is essential. This must be, therefore, the basis for coaches of this sport, so that carrying out a proper teaching adapted to it. However, despite the above mentioned, there are very few surveys which reveal the benefits of rugby and training needs (Gilbert & Trudel, 2004).

This work compiles the design and validation process, an essential part of a research project whose purpose was to determine whether rugby coaches have sufficient knowledge to carry out a proper training of this sport. To achieve this, a questionnaire which could provide, as far as possible, some data on the reality of the teaching learning process received by the coaches of this sport was elaborated. The use of this questionnaire, whether done with an effective design and planning, can gather information about the object of study (Thomas & Nelson, 2007). Thus, for Rodríguez, Gil & García (1996), the questionnaire is a technique for collecting information based on the creation of previously established questions, raised in the same order and in the same way. The construction of a measuring tool like this is arduous and complicated (Padilla, Gonzalez & Perez, 1998). For this reason, we have followed the steps proposed by Martinez (2002) in order to elaborate a questionnaire:

1. Describing the information needed.
2. Writing the questions and the way to answer.
3. Writing an introductory text and the instructions.
4. Designing the formal aspect of the questionnaire.
5. Applying the questionnaire.

We opted for the development of a questionnaire with personal contact (McKernan, 1999), in which the researcher is directly related to the person who will be surveyed, making him/her complete the questionnaire.

## **2. Material and methods: the tool**

For its construction a non-experimental and cross-cutting nature design was used, whose process of collecting information is done through a survey using the questionnaire technique (Hernández Sampieri, 2014). The assessment tool was specifically designed by researchers to obtain a preliminary approach on the teachers' training in rugby among them through the Delphi methodology carried out by experts in training and coaching of this sport. For content validation, the survey sample consisted of a significant group of experts in education and training of this sport (Landeta Rodríguez, 2002). For the selection of experts, two initial selection criteria were used, based on the statement by Cabero-Almenara & Barroso-Osuna (2013): Having training experience in the field of education and specifically rugby and have minimum qualifications Level 2 as a coach.

Another important issue was choosing the number of experts who would compose the sample which would evaluate the tool. There are various positions among the authors concerning the suitable number. Finally, the decision to follow Landeta (2002) is criteria was taken. This author indicates that the number should lie between 7 and 30. Once the selection criteria have been determined, some specialists were contacted who seemed to meet them, a priori, as they were professionals and teachers of rugby. Among the professional profiles of the selected experts group we could find: Trainers and Educators of the World Rugby, former teachers of the National School of Rugby Coaches (NSRC), teachers of the Andalusian School of Rugby Coaches (ASRC), ex-coaches of the Spanish Selection of Rugby, a director of training from the National School of Referees of Rugby (NSRR), a referee from the World Rugby, graduates in physical education and a social worker. The evaluation team included a total of 15 people (86.6 per cent of men and 13.4 per cent of women). The study took into account the number of refusals to participate, as well as the number of dropouts; that is why a total of 22 experts were selected initially through purposive sampling. We got in touch individually with 15 expert judges after getting the commitment to cooperate in the process of the creation of the tool.

## **3. Procedure**

Even though the Delphi method is applied in different ways, we chose the most widely used in education, the version called "modified Delphi" (Cabero, 2014, Mengual, 2011, Murry & Hammons, 1995). In this version two consultation rounds to experts were undertaken, preventing the task being long and costly and trying to maintain adequate responses rates; and at the same time, retaining the interest of the evaluators in the attempt to ensure a trend agreements.

#### **4. Validity**

In the initial phase of this survey, a first version of the questionnaire consisting of 24 items with a combination of closed and open-ended questions was developed. The items were made focusing on 8 essential dimensions to know the characteristics of trainers' training: initial training, teaching experience, teaching conception of rugby, methodology, individual training needs, as well as demographic and personal variables.

In a second phase of work and for content validity, experts' criteria were used to test the validity of the items. This method consist in asking experts in the field about the domain which measure such items, their degree of adequacy to a particular and previous criterion set in the steps of the construct of a test (Pérez-Gil, 2000). Thus, this criterion refers to the construct justification and intended to ensure validity in terms of the theory behind the concept by which its opinion is sought. Each expert assessed the criteria for each of the questionnaire using a Likert scale, ranging from 1 (high agreement), 2 (medium degree of agreement) and 3 (Low degree of agreement), following Osterling (1989)'s criteria.

#### **5. Data analysis**

In order to carry out the statistical analysis of the obtained data, an analysis was undertaken, using descriptive statistical techniques through SPSS 15.0 (Statistical Program of Social Science) statistical package, with which frequency tables, percentages and cumulative percentages were developed. Once the survey was completed and by virtue of the results, a second version was sent back to the experts. Then, a final version (including the received answers) was elaborated, conducting the present survey. It has been registered in the Spanish Patent and Trademark Office (SPTO) under number 3536128 and QUGRAFOR<sup>®</sup> name.

#### **6. Results**

The quantitative data collected in the validation questionnaire of the questions can be seen in Figure 1 and 2. The quantitative results of the experts' total evaluations on the tool issues are reflected in Figure 1. It reveals that 84 per cent of valuations considered a "high degree of agreement" on the issues, 10.9 per cent assessed an "average degree of agreement" and finally, only 5.1 per cent of the issues were rated "low level agreement". About 95 per cent of respondents considered a high or medium degree of agreement on the total valuations.

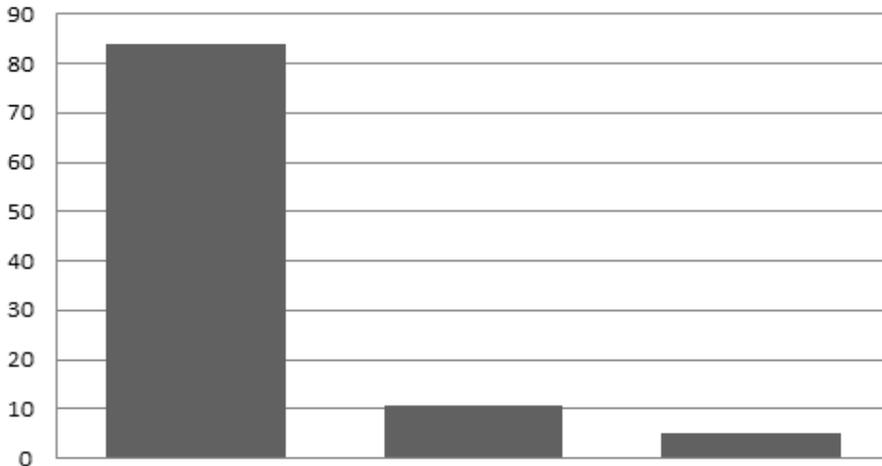


Figure 1. Overall rating of the questionnaire

The quantitative results of the questions validation can be seen in Figure 2. It shows that in every case, except in four items, more than 90 per cent of the evaluations consider a high or medium degree of agreement. The valuations generated the following average of central tendency:  $\bar{x} = 2.80$  (between half degree of agreement=2 and high degree of agreement=3), and with  $S(x)=0.18$ .

According to these results, the experts considered that the questionnaire questions were adequate in their wording, presentation, clarity, as well as in the adequacy of their response options, quantity and effectiveness in providing the required data. However, 20 per cent ( $f=3$ ) of the experts showed their disagreement with items 8, 9 and 13, and 13.33 per cent ( $f=2$ ) of the experts showed their disagreement in item 14.

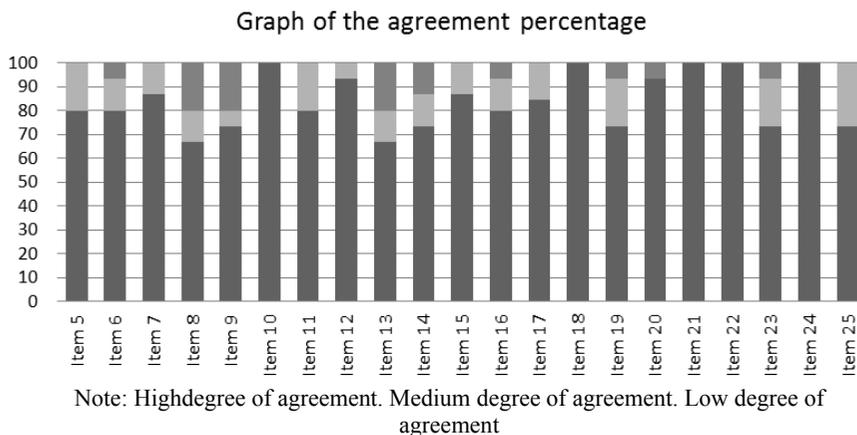


Figure 2. Agreement percentage in the items

The results of the statistical analysis of the questions can be verified in Figure 3. In all cases, the average of the experts' evaluations solve above  $\bar{x} \geq 2.47$  (between half-degree of agreement=2 and high degree of agreement=3). Among the data, we found 5 items whose average solves with the maximum score:  $\bar{x} = 3$  (items 10, 18, 21, 22 and 24), and 4 items whose average solves below  $\bar{x} \leq 2.60$  (items 8, 9, 13 and 14).

	N	Minimum	Maximum	Average	Standard deviation	Variance
University degree	15	2	3	2,80	,414	,171
Experience as a trainer	15	1	3	2,73	,594	,352
Age categories that he/she trains	15	2	3	2,87	,352	,124
Has he/she got a University degree?	15	1	3	2,47	,834	,695
Sport modality?	15	1	3	2,53	,834	,695
Has he/she been an associated member?	15	3	3	3,00	,000	,000
Highest age category headed	15	2	3	2,80	,414	,171
Highest academic degree obtained	15	2	3	2,93	,258	,067
Importance of coach 1's work	15	1	3	2,47	,834	,695
Importance of coach 2's work	15	1	3	2,60	,737	,543
Content of most useful courses	15	2	3	2,87	,352	,124
Opinions on Courses	15	1	3	2,80	,561	,314
What kind of coach did he/she learn from?	13	2	3	2,85	,376	,141
Why did he/she decide to coach?	15	3	3	3,00	,000	,000
Indicate which ones in case the answer is "others"	15	1	3	2,67	,617	,381
Improvements in the coach's Training	15	1	3	2,87	,516	,267
Would you like to continue with further training?	15	3	3	3,00	,000	,000

Attitude to continue with further training	15	3	3	3,00	,000	,000
Indicate which ones in case the answer is "others"	15	1	3	2,67	,617	,381
Content he/she suggests for courses	15	3	3	3,00	,000	,000
Indicate which ones in case the answer is "others"	15	2	3	2,73	,458	,210
Valid number (according to the list)	13					

Figure 3. *Statistical descriptions of experts' valuations.*

Although there was a good degree of consensus regarding the experts' assessment of the items raised in the questionnaire, those whose average was below ( $\bar{x} \leq 2.60$ ) were eliminated. The items which affected a high degree of consensus were preserved. The summary of the suggested changes, which have been organized according to the parts which composed the validation guide, can be seen in Figure 4.

Item 8: Have you got the academic degree in coaching in other sports different from rugby?
Item 9: If you reacted positively to the previous question, what is your sportive modality?
Item 13: How IMPORTANT do you think the FOLLOWING ASPECTS are regarding the rugby I COACH'S WORK?
Item 14: How IMPORTANT do you think the FOLLOWING ASPECTS are regarding the rugby II COACH'S WORK?

Figure 4. *Deleted items*

The following figure (Figure 5) summarizes the magnitude of changes applied to the questionnaire by comparing the variables, indicators and questions between its initial and final versions.

Dimensions	Initial Version	Final Version
Demographic variables	6 items	6 items
Teaching experience	4 items	2 items
Initial training	6 items	4 items
Lifelong training	1 item (9 questions)	1 item (9 questions)
Conception of rugby teaching	1 item (5 questions)	1 item (5 questions)
Methodology	1 item (33 questions)	1 item (33 questions)

Personal	2 items	2 items
Training needs	4 items	4 items

Figure 5. *Comparative summary between the questionnaire initial and final versions, in terms of the elements which define its design.*

## 7. Discussion and conclusions

The criteria for finalizing Delphi have to consider the extent of consensus and stability in panel answers. They guide data analysis and decision making (López Gómez, Ernesto, 2016).

The consensus "responds to the philosophy of the technique, since its main objective is precisely the convergence between the opinions of the participants" (Martínez, 2003). There is no a single way of estimating consensus (Arregui Ayatuy, Vallejo Alonso, & Villarreal Larrianaga, 1996, E. Martínez, 2003, Shah & Kalaian, 2009, Von der Gracht, Heiko A., 2012). Across the different possibilities, they can be the median or coefficient of variation because they are the most used in practice.

The quantitative results of this survey provide relevant information on expert appreciation. The most valuable ones come from the quantitative results. As we have seen above, this study shows that 8 per cent of experts' assessments consider a "high degree of agreement" regarding the issues raised, which is a good level of consensus. Although there is no universal referent, consensus can be understood as "the degree of convergence of individual estimates to a minimum of 80 per cent" (Pozo, Gutiérrez & Rodríguez, 2007). The coefficient of variation provided by the experts' answers ( $S(x)=0.18$ ) also indicates a high degree of consensus concerning the issues raised in the tool, since for (Shah & Kalaian, 2009) this coefficient is the most adequate test for this type of studies. Once the questionnaire structure was established, after the second consultation with the experts, the final design of the instrument was elaborated in telematic version, being its link: <http://bit.ly/1EGNx4Y>.

From the validity and reliability processes carried out with the designed instrument, it can be established that QUGRAFOR questionnaire can be used in the field of physical education and sports science teaching because it has the optimal levels of reliability and validity to evaluate the level of training, learning needs, updating processes, the conception of teaching methodology and its practical application, as well as the demographic variables of rugby coaches.

Finally, it is necessary to mention that this new tool, which did not exist previously, can involve opening up future lines of work in different training actions of rugby coaches which are taught worldwide, to ensure that these are more appropriate to needs reality of those who are interested in teaching and learning this sport.

## References

- Arregui Ayatuy, G., Vallejo Alonso, B., & Villarreal Larrianaga, O. (1996). Aplicación de la metodología delphi para la previsión de la integración española en la unión económica y monetaria. *Investigaciones Europeas de Dirección y Economía de la Empresa*, 2 (2), 13-37.
- Cabero Almenara, J. (2014). Formación del profesorado universitario en TIC. aplicación del método delphi para la selección de los contenidos formativos. *Educación XXI*, 17 (1), 109-132.  
doi:<http://dx.doi.org/10.5944/educxx1.17.1.10707>
- Cabero Almenara, J., & Barroso Osuna, J. (2013). La utilización del juicio de experto para la evaluación de TIC: El coeficiente de competencia experta. *Bordón. Revista de Pedagogía*, 65 (2), 25-38.
- Fraille, A. (1996). Reflexiones sobre la presencia del deporte en la escuela. *Revista de Educación Física. Renovar la Teoría y la Práctica*, 64, 5-10.
- Fraille, A., Arribas, H., Gutiérrez, S., & Hernández, A. (1998). La salud y las actividades físicas extraescolares. En M. Santos y A. Sicilia (dir.). *Actividades físicas extraescolares. Una propuesta alternativa* (pp. 53-62). Barcelona: INDE.
- Pérez-Gil, J.A. (2000). *Proyecto docente: Psicometría I*. Universidad de Sevilla.
- Gilbert, W. D., & Trudel, P. (2004). Analysis of coaching science research published from 1970–2001. *Research Quarterly for Exercise and Sport*, 75 (4), 388-399.
- Goldhaber, D. (2010). Licensure tests: Their use and value for increasing teacher quality. En Kennedy, M. (ed.) *Teacher assessment and the quest for teacher quality: A handbook* (pp. 133-147). San Francisco: Jossey-Bass.
- Griffin, L. L., & Butler, J. I. (2005). *Teaching games for understanding: Theory, research and practice*. Champaign I. L.: Human Kinetics.
- Hernández Sampieri, R. (2014). *Metodología de la Investigación* (6ª ed.). Mexico: McGraw-Hill/Interamericana Editores, S.A.
- Keegan, R., Spray, C., Harwood, C., & Lavalle, D. (2010). The motivational atmosphere in youth sport; coach, parent, and peer influences on motivation in specializing sport participants. *Journal of Applied Sport Psychology*, 22 (1), 87-105.
- Landeta Rodríguez, J. (2002). *El método delphi: Una técnica de previsión del futuro*. Barcelona: Ariel.
- López Gómez, E. (2016). El método delphi: Fundamentos teóricos y metodológicos. *Educación XXI* (in press),
- López, E. G., & Cabero-Almenara, J. (2011). Diseño y validación de un cuestionario dirigido a describir la evaluación en procesos de educación a distancia. *Edutec: Revista Electrónica de Tecnología Educativa*, (35), 5.

- Manrique, J. C., Gea, J. M., & Álvaro, M. (2016). Perfil y expectativas del técnico de deporte escolar en el municipio de segovia (españa). *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte*, 13 (50), 367-387.
- Martínez, E. (2003). La técnica delphi como estrategia de consulta a los implicados en la evaluación de programas. *Revista de Investigación Educativa*, 21 (2), 449-463.
- Martínez, F. (2002a). *El cuestionario. Un instrumento para la investigación en las ciencias sociales*. Barcelona: Laertes.
- Martínez, F. (2002b). *El cuestionario: Un instrumento para la investigación en las ciencias sociales*. Barcelona: Laertes.
- McKernan, J. (1999). *Investigación-acción y currículum: Métodos y recursos para profesionales reflexivos*. Madrid: Ediciones Morata.
- Mengual, S. (2011). *La importancia percibida por el profesorado y el alumnado sobre la inclusión de la competencia digital en educación superior*. Alicante: Departamento de Didáctica General y Didácticas Específicas de la Facultad de Alicante.
- Murry, J. W., & Hammons, J. O. (1995). Delphi: A versatile methodology for conducting qualitative research. *The Review of Higher Education*, 18 (4), 423.
- Nuviala, A. (2003). *Las escuelas deportivas en un entorno rural aragonés: El caso del servicio comarcal ribera baja*. Zaragoza: Gobierno de Aragón.
- Nuviala, A., León, J. A., Gálvez, J., & Fernández, A. (2007). Qué actividades deportivas escolares queremos: Qué técnicos tenemos. *Revista Internacional de Medicina y Ciencias de la Actividad Física y del Deporte*, 7 (25), 1-9.
- Osterling, S. J. (1989). *Constructing Test Items* Boston: Kluwer Academic.
- Padilla, J. L., González, A., & Pérez, C. (1998). Elaboración del cuestionario. *En Rojas, Fernández y Pérez (ed.), Investigar mediante encuestas. fundamentos teóricos y aspectos prácticos* (pp. 115-140). Madrid: Síntesis S.L.
- Parise, M., Pagani, A., Cremascoli, V., & Lafrate, R. (2015). Rugby self-efficacy and prosocial behaviour: Evidence from italian "rugby project for schools". *Revista Iberoamericana de Psicología del Ejercicio y el Deporte*, 10 (1), 57-61.
- Pozo, M. T., Gutiérrez, J., & Rodríguez, C. (2007). El uso del método delphi en la definición de los criterios para una formación de calidad en animación sociocultural y tiempo libre. *Revista de Investigación Educativa*, 25 (2), 351-366.
- Rodríguez, G., Gil, J., & García, E. (1996). *Metodología de la Investigación cualitativa*. Málaga: Aljibe, S.L.
- Shah, H. A., & Kalaian, S. A. (2009). Which is the best parametric statistical method for analyzing delphi data? *Journal of Modern Applied Statistical Methods*, .8 (1), 226-232

- Thomas, J. R., & Nelson, J. K. (2007). *Métodos de investigación en actividad física*. Barcelona: Paidotribo.
- Till, K., Cogley, S., O'Hara, J., Cooke, C., & Chapman, C. (2014). Considering maturation status and relative age in the longitudinal evaluation of junior rugby league players. *Scandinavian Journal of Medicine & Science in Sports*, 24 (3), 569-576.  
doi:<http://dx.doi.org/10.1111/sms.12033>
- Torregrosa, M., Cruz, J., Sousa, C., Viladrich, C., Villamarín, F., García Mas, A., & Palou, P. (2007). La influencia de padres y madres en el compromiso deportivo de futbolistas jóvenes. *Revista Latinoamericana de Psicología*, 39 (2), 227-237.
- Von der Gracht, Heiko A. (2012). Consensus measurement in delphi studies. *Technological Forecasting and Social Change*, 79 (8), 1525-1536.  
doi:<http://dx.doi.org/10.1016/j.techfore.2012.04.013>



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