

TRABALLO FIN DE GRADO

Proceso de elaboración e  
publicación dun artigo  
nunha revista de impacto:

**INTERNATIONAL REVIEW FOR  
THE SOCIOLOGY OF SPORT**

**RELATIVE AGE EFFECT IN LOWER CATEGORIES OF  
FEMALE INTERNATIONAL BASKETBALL**

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44839406D



2013





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## XUSTIFICACIÓN E OBXECTIVO

### MOTIVACIÓNS PERSOAIS

Este traballo propúxonolo Miguel Saavedra (o noso supervisor) a David e a min co obxectivo de facer unha investigación. Isto foi debido a que ámbolos dous estivemos moi contentos coa materia "Metodoloxía da investigación na actividade física e o deporte" que el imparte e estabamos interesados en poder seguir aprendendo deste mestre e da súa area de coñecemento. O feito de que me "enganchase" ó mundo da investigación foi debido a que me gustou moito o traballo que tiven que facer na súa materia sobre a vantaxe de xogar na casa en fútbol, un traballo que segue este patrón.

O tema do traballo, "Efecto da Idade Relativa en baloncesto" déunolo o mestre, pois veu que era interesante. Por unha parte, comentounos que se ían facer dous artigos diferentes, un feminino e outro masculino, e que cada un publicaría un. Tanto a David como a min éranos indiferente quén facía cada un, así que decidimos sortealo. A min tocouse o feminino e a David o masculino.

A verdade é que gustoume que me tocase o Efecto da Idade Relativa en baloncesto na categoría feminina, porque foi pouco estudado, sendo Delorme *et al.* (2010), o único investigador que estudou este efecto no deporte feminino. Ademais disto, introdúcese no artigo algo novo ao efecto relativo, pois imos máis aló de si os convocados corresponden a un trimestre ou a outro, e fago unhas comparacións de todas as xogadoras con respecto aos seus datos estatísticos que tiveron cada unha.

Este traballo é, sen dúbida algunha, o desenrola dunha investigación de carácter estatístico e non unha revisión bibliográfica. Gustoume facer este tipo de traballo porque creo que é máis completo que unha simple revisión bibliográfica, pois esta é un apartado que se require tamén no meu propio traballo.

O traballo feito foi moi laboriosos pois tivemos que facer unha profunda revisión bibliográfica, así como unha base de datos moi longa, que se veu modificada en unha ocasión, para poder enriquecer o traballo. Esta base de datos foi analizada a través do SPSS, e de aí aparecen os resultados obtidos, para a formulación do artigo. Logo de obter os datos fusionámoslos para crear un só artigo pois viamos que así se ía enriquecer.

Tivemos a sorte de que o traballo que presento foi publicado nunha revista de fama mundial, a "*International Review for the Sociology of Sport*", cun factor de impacto de 0.827, e para iso tiven que facer certas adaptacións entre a primeira versión até a definitiva, pois os revisores da revista pedían uns requisitos específicos que tiña que cumprir esta investigación.

### OBXECTIVO DA INVESTIGACIÓN:

O principal obxectivo, e polo que comezamos a redactar este artigo, foi debido á posibilidade de que este artigo fose publicado nunha revista prestixiosa. Unha vez conseguido este obxectivo, cando a revista "*International Review for the Sociology of Sport*" aceptou o noso artigo, comentounos Miguel que este traballo poderíase orientar



ás esixencias do Traballo Fin de Grado e logo presentalo, introducindo ademais o proceso que tivemos que seguir para que crear o artigo e para que sexa publicado.

### **ORGANIZACIÓN XERAL DO TRABALLO**

O primeiro paso para realizar este traballo foi unha revisión bibliográfica dos artigos que atopamos na base de datos da universidade, unha revisión que fixemos cada un de nos de forma individual pero logo contrastamos os aspectos máis importantes de cada artigo para facer unhas conclusións máis profundas, xa que ambos precisabamos coñecer toda a información dispoñíbel. Neste apartado invertemos 345 horas.

Logo disto puxémonos coa recollida de datos que se fixo de forma individual, é dicir, ambos fixemos toda a base de datos (masculina e feminina) para eliminar posíbeis erros, e logo comparáronse. Un paso que nos levou moito tempo pois houbo diversos cambios que se fixeron, levándonos un total de 123 horas.

Unha vez que se recolleron os datos e se fixo unha selección das variábeis a observar fixemos un análise destes de forma individual, debido a que cada un tiña unha parte diferente. Eu fixen un artigo sobre a idade relativa na categoría feminina e David un artigo sobre a categoría masculina.

Logo de redactar cadanseu artigo, o mestre Saavedra comentounos a posibilidade de refundir ámbolos dous artigos e convertelo nun só máis completo co fin de que tivese un maior impacto.

Por último, fixemos o envío á revista "*International Review for the Sociology of Sport*" a cal nos obrigou a facer unha serie de revisións e modificacións.



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## Relative age effect in lower categories of international basketball

Miguel Saavedra García, Óscar Gutiérrez Aguilar, Juan J. Fernández Romero, David  
Fernández Lastra and Gabriel Eiras Oliveira

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## Relative age effect in lower categories of international basketball

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### Abstract

To be able to value the relative age effect in the male and female World Championships played between 2005 and 2010 in the U17 categories (athletes 17 years or younger), U19 (athletes 19 or younger) and U21 (athletes 21 years or younger) a sample of 954 players has been selected. The variables registered were their dates of birth, the category of the competition, gender, height and official statistics of each player obtained from the International Basketball Federation (FIBA). A clear relative age effect was found (in both male and female categories) fading with age, being higher in the U17 category, slightly less but also significant in the U19, and no significant effect found in U21. This effect persists when the different specific positions were analysed in the male categories, being clearer in the positions that require more physical strength. In female categories the results do not back the existence of the relative age effect. Also, differences were found in height in the male category with regard to the players' year-quarter of birth, but its interpretation is not consistent with the relative age effect. In the female category no differences were found in height. Finally, the performance difference of the players in the male and female categories hardly varies with regard to the year-quarter of birth.

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**Introduction**

The term Relative Age Effect (RAE) has been used to determine the effect of the influence of the date of birth in the performance of the person. The first studies that investigated this effect were done in the education environment (Armstrong, 1966; Freyman, 1965).

Investigations made in the education area by Russell and Startup (1986) based their study in the relevance of being born at the start or at the end of the academic year, concluding that pupils born at the start had an academic advantage over the rest until 18 years of age, but after this age, the ones born at the end of the year gave better performance.

Grondin et al. (1984) were the first to do a study of the RAE in sport, finding an unequal distribution in the dates of birth in the players in different levels of Canadian ice hockey and volleyball, concluding that many players were born near to the cut date. These studies have been revised, updated and confirmed (Gibbs et al., 2011; Nolan and Howell, 2010).

Musch and Hay (1999) investigated the age effect in an intercultural sample (Germany, Japan, Brazil and Australia) and concluded that the cut date in football is the main factor that effects relative age in professional football.

Other studies that analyzed the RAE in the formation ages of sport groups included the essays by Helsen et al. (1998), whose results indicated that youth football players born between August and October (the first part of the year for the selection) are more probable to be identified as talented and to be exposed to higher levels of training, whilst the players born at the end of the year tended to drop out at 12 years of age. Also, an essay with young footballers by Ashworth and Heyndels (2007) proved that players born after the cut-off date earned higher wages.

There are studies that found that age bias is not only prevalent in the minor leagues but also carries over into the professional leagues. The results of the Helsen et al. (2005) investigation show an excessive representation of players born in the first three months of the year (from January to March) for all youth National Teams in the under 15 years of age (U15), U16, U17 and U18, and the same being true for the UEFA Sub-16 and the Meridian Cup. The players with a relatively older age are more likely to be identified as talents because of the probable physical advantages that they have over the other, younger players. Continuing with football at professional level, Jullien et al. (2008) concluded that coaches tend to select players born in the first four months of the year.

Carling et al. (2009) investigated whether the maturity, the anthropometric profile and the valuation of physical state varied in the distribution of the date of birth in the elite. This study suggested that the relative age of the athlete does not always relate to a significant advantage in physical components.

Delorme and Raspaud (2009) found clear differences in the relative age effect in French athletes aged between seven and 18 years, in both male and female categories. They also studied the height of the players, finding that the ones born in the first two terms of the year were taller. Also, Delorme et al. (2011) investigated the relative age effect as a factor for abandoning sport in basketball players, finding a higher index of



leavers in players born at the end of the year. Nolan and Howell (2010) found that age bias is not only prevalent in the minor leagues but also carries over into the National Hockey League (NHL).

Other studies found that relative age effect is only prevalent in lower categories, diminishing over time and not being present in professional sport. In basketball, the investigation by Esteva et al. (2006) determined a strong tendency to select players born in the first three months of the year compared to those born towards the end of the year. This tendency loses its strength as the players go through the categories, until arriving at professional basketball. This is explained because in the first stages of the sport, the players are selected only because of their advanced maturity or other indicators such as height. This way, a great quantity of possible future talents are lost and other players have more opportunities of getting to become professional players only because they were born in the first three months of the year. Gibbs et al. (2011) found that the relative age effect is moderate for the average Canadian National Hockey League player and reverses when examining the most elite professional players.

Lidor et al. (2010) studied the effects in a small country (Israel) of the relative age and the place of birth of the players in various sports, in which basketball was included. No significant relative age effect or the effect of the place of birth was found.

Baker et al. (2010) revised the possible causes of the RAE and suggested some solutions. The most used explanation for justifying the RAE is the process of maturation of the athletes: the athletes born nearer the cut-off date have higher levels of performance than the younger ones (Barnsley and Thompson, 1988; Malina, 1994; Malina et al., 2004). The solutions suggested tend to be related to the variation of the age, which means that the RAE changes but is persistent (Helsen et al., 2000; Musch and Hay, 1999; Simmons and Paull, 2001). Other solutions suggest an enormous administrative complex, such as the one by Barnsley and Thompson (1988) who say that the selection of participants should adjust to a certain distribution or control of the average age in all types of teams Helsen et al. (1998, 2000).

The objective of this present study is to check whether the relative age effect does exist in the World Basketball Championship U17, U19 and U21 male and female categories, to investigate if the relative age effect exists in the different specific positions and also try to find differences in height and in performance between players depending on their date of birth.

## Material and methods

### Sample

The athlete populations were selected from the last male and female editions of the Basketball World Championships U17 played in 2010, U19 played in 2011 and U21 played in 2005 in the male category, and in 2007 in the female category. The total number of athletes in the sample is 954, of which 472 are from the male category (143 player in the U17, 191 in U19 and 138 in U21) and 482 from the female category (144 players in the U17, 194 in U19 and 144 in U21).



The International Basketball Amateur Federation (FIBA) defines the international rules of basketball and is responsible for controlling and regulating all international competitions. In the World Championship in the U17, U19 and U21 categories, the participation of the athletes must be that age or younger. The criteria selection used indicates that at least 10 participating athletes are born in the same year. Applying this rule, in the analysis, in the male category a 15-year-old athlete was excluded in the U17, another aged 16 in the U19 and eight athletes in the U21 (seven players were 18 years old and one was 17). In the female category five players aged 15 and two aged 17 were excluded in the U17, seven players aged 16 and two aged 15 in the U19 and four players aged 17 and two aged 16 in the U21.

### *Procedure*

The following variables were studied: gender, category, season, team, classification, position and date of birth. Also the height of the players was registered and the relative variables of the performance of the players (games played; minutes played; converted field goals, tries, and the percentage of effectiveness; two point field goals, tries, and the percentage of effectiveness; three point field goals, tries, and the percentage of effectiveness; free goals scored, tried, and the percentage of effectiveness; defensive rebounds; offensive and total of rebounds; assistances; personal faults; recuperations; stolen; blocked; points; points per game; rebounds per game and game assistance).

The information was collected from the FIBA website (<http://www.fiba.com/>). Afterwards the variable term was generated, dividing the dates of birth of the players into four terms (quarters) that start on the 1st of January and end on the 31st of December of the same year. This way the athletes born from the 1st of January until the 31st of March form the first term (Q1), the players born from the 1st of April until the 30th of June form the second term (Q2), the players born from the 1st of July until the 30th of September belong to the third quarter (Q3) and finally the players born from the 1st of October until the 31st of December make up the fourth term (Q4).

### *Analysis of information*

To determine the RAE, the Chi-squared test was used to determine if the distribution of the dates of birth differ significantly from the theory distribution that is hoped to be found (in which the probability of finding athletes born in whichever term of the year is the same).

To compare between the height of the players and the relative performance variables for each term of birth, an ANOVA was used and the post-hoc analysis used the Tukey range test, a previous guarantee of normality (Kolmogorov–Smirnov test) and an equality (Levene test). In the case that the requirements of application were not met, the use of ANOVA is rejected and the Kruskal–Wallis test is used. In this study the statistic tests are considered significant when  $p < 0.05$ .

## **Results**

Table 1 shows the term distribution of the birth dates of all players of the basketball world championships in lower categories.

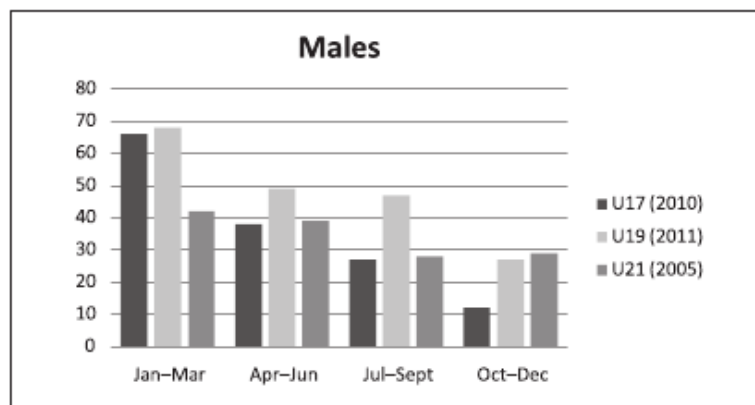


The global distribution observed is different than expected in both male ( $\chi^2=52.41$ ; d.f.=3;  $p<0.001$ ; Figure 1), and female categories ( $\chi^2=45.43$ ; d.f.=3;  $p<0.001$ ; Figure 2).

When analyzing the categories in the U17 competition, the distribution observed is different than the uniform expected in the male ( $\chi^2=43.66$ ; d.f.=3;  $p<0.001$ ) and female categories ( $\chi^2=11.28$ ; d.f.=3;  $p<0.011$ ). The same happened in the U19 category in both the male ( $\chi^2=17.65$ ; d.f.=3;  $p<0.001$ ) and female categories ( $\chi^2=22.87$ ; d.f.=3;  $p<0.001$ ). Finally in the U21 category the distribution observed does not differ from the expected in either male ( $\chi^2=4.32$ ; d.f.=3;  $p<0.229$ ) or female categories ( $\chi^2=6.50$ ; d.f.=3;  $p<0.091$ ).

**Table 1.** Terms of the date of births of all players in the Basketball World Championships U17, U19 and U21

| Gender  |          | Overall      |          | U17          |          | U19          |          | U21          |          |
|---------|----------|--------------|----------|--------------|----------|--------------|----------|--------------|----------|
|         |          | Observed     | Expected | Observed     | Expected | Observed     | Expected | Observed     | Expected |
| Males   | Q1       | 176          | 118      | 66           | 35.8     | 68           | 47.8     | 42           | 34.5     |
|         | Q2       | 126          | 118      | 38           | 35.8     | 49           | 47.8     | 39           | 34.5     |
|         | Q3       | 102          | 118      | 26           | 35.8     | 47           | 47.8     | 28           | 34.5     |
|         | Q4       | 68           | 118      | 12           | 35.8     | 27           | 47.8     | 29           | 34.5     |
|         | Total    | 472          |          | 142          |          | 191          |          | 138          |          |
|         | $\chi^2$ | 52.41        |          | 43.66        |          | 17.65        |          | 4.32         |          |
|         | Sig.     | <b>0.000</b> |          | <b>0.000</b> |          | <b>0.001</b> |          | <b>0.229</b> |          |
| Females | Q1       | 159          | 120.5    | 50           | 36       | 71           | 48.5     | 38           | 36       |
|         | Q2       | 144          | 120.5    | 40           | 36       | 57           | 48.5     | 47           | 36       |
|         | Q3       | 102          | 120.5    | 31           | 36       | 38           | 48.5     | 33           | 36       |
|         | Q4       | 77           | 120.5    | 23           | 36       | 28           | 48.5     | 26           | 36       |
|         | Total    | 482          |          | 144          |          | 194          |          | 144          |          |
|         | $\chi^2$ | 35.43        |          | 11.28        |          | 22.87        |          | 6.50         |          |
|         | Sig.     | 0.000        |          | 0.010        |          | 0.000        |          | 0.090        |          |



**Figure 1.** Distribution of the dates of birth in function of age in the male categories.

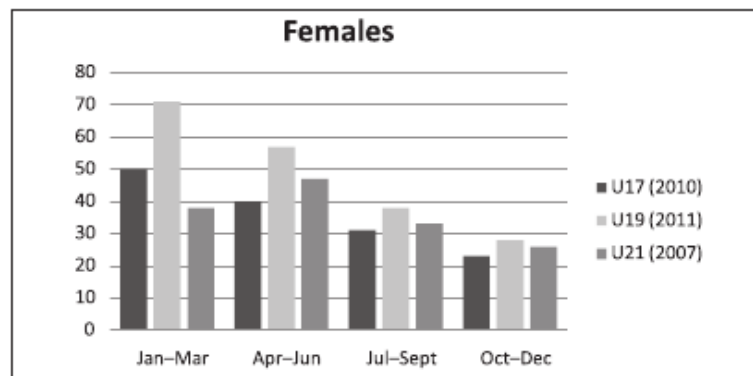


Figure 2. Distribution of the dates of birth in function of age in the female categories.

### Specific positions

In the analysis of the specific positions (Table 2) a different distribution was found in the birth terms than the one expected in all of the positions ( $p < 0.05$ ) in the male category, being more distinct in the positions that require higher physical form (centre and power forward). In the female category the distribution in terms are different in the point guard, shooting guard and small forward ( $p < 0.05$ ).

### Height of players

When comparing height in the four terms, significant differences were found ( $p < 0.008$ ) in the male category, although no differences were found using the post-hoc analysis between the first and fourth term. Two homogeneous subsets were defined, the first formed by the heights of the first (195 cm), third (195.41 cm) and fourth terms (197.86 cm); the second is formed by the second (198.45 cm) third (195.41 cm) and fourth terms (197.86 cm). In the female categories no significant differences were found.

### Performance

**Male category.** In the U17 category after the application of the Kruskal–Wallis test, significant differences were found ( $p < 0.017$ ) in the percentage of three point field throws, showing better percentages in players born in the first (22.5%) or in the second term (22.8%) of the year than players born in the third (20.0%) and fourth terms (21.4%).

In the U19 category significant differences were found ( $p < 0.036$ ) using the Kruskal–Wallis test in the points obtained per game with values of 6.7% for the first term, 7.3% for the second term, 5.2% for the third term and 6.8% for the last term. In the U21 category no significant differences were found in either of the variables studied.

**Table 2.** Birth terms of players in the Basketball World Championships in predicting performance in specific positions

| Gender         |              | Point-Guard |      | Shooting-Guard |      | Small-Forward |      | Power-Forward |      | Centre |      |
|----------------|--------------|-------------|------|----------------|------|---------------|------|---------------|------|--------|------|
|                |              | Obs.        | Exp. | Obs.           | Exp. | Obs.          | Exp. | Obs.          | Exp. | Obs.   | Exp. |
| <b>Males</b>   | Q1           | 21          | 12.8 | 24             | 11.8 | 22            | 15.3 | 19            | 11.8 | 20     | 18   |
|                | Q2           | 6           | 12.8 | 7              | 11.8 | 18            | 15.3 | 12            | 11.8 | 27     | 18   |
|                | Q3           | 18          | 12.8 | 10             | 11.8 | 14            | 15.3 | 11            | 11.8 | 15     | 18   |
|                | Q4           | 6           | 12.8 | 6              | 11.8 | 7             | 15.3 | 5             | 11.8 | 10     | 18   |
|                | Total        | 51          |      | 47             |      | 61            |      | 47            |      | 72     |      |
|                | $\chi^2$     | 14.65       |      | 17.77          |      | 8.05          |      | 8.40          |      | 8.78   |      |
|                | Significance | 0.002       |      | 0.000          |      | 0.045         |      | 0.038         |      | 0.032  |      |
| <b>Females</b> | Q1           | 19          | 10   | 24             | 13.5 | 17            | 13.3 | 11            | 11.5 | 22     | 20.3 |
|                | Q2           | 11          | 10   | 9              | 13.5 | 21            | 13.3 | 13            | 11.5 | 23     | 20.3 |
|                | Q3           | 4           | 10   | 13             | 13.5 | 5             | 13.3 | 10            | 11.5 | 22     | 20.3 |
|                | Q4           | 6           | 10   | 8              | 13.5 | 10            | 13.3 | 12            | 11.5 | 14     | 20.3 |
|                | Total        | 40          |      | 54             |      | 53            |      | 46            |      | 81     |      |
|                | $\chi^2$     | 13.40       |      | 11.93          |      | 11.53         |      | 0.44          |      | 2.61   |      |
|                | Significance | 0.004       |      | 0.008          |      | 0.009         |      | 0.933         |      | 0.457  |      |

*Female category.* No significant differences were found in the performance by terms in the U17 category. In the U19 category differences were found in the percentage of field throws ( $p < 0.005$ ) with lower percentages in the first (33.1%) and second terms (34.8%) in relation to the third (41.7%) and fourth terms (39.2%). In the percentage of the two points ( $p < 0.005$ ), the same performance and values were found in all four terms respectively, 35.2%; 36.9%; 46.6% and 41.1%. The assistances ( $p < 0.013$ ) show values of 8.9%, 4.7%, 7.1% and 7.1% for the four terms respectively, showing lower values in the second term. The assistances per game ( $p < 0.013$ ) show values of 1.17%, 0.64%, 0.95% and 0.94% for the four terms, and also show lower values in the second term. Finally, in the U21 category no significant values were found in the performance with regard to the term of birth.

## Discussion

In the present study, the existence of the relative age effect has been confirmed in the Basketball World Championships in U17 and U19. In the U21 championship no significant differences were found. The same behaviour was found in the male and female categories. Also, the effects of relative age persist when talking about specific positions, proving to be more distinct in the positions that require more height in the male category. In the female category the effects of the relative age are more significant in the positions that require less height. However, the height of the players does not show expected values if the relative age effect exists. No significant differences were found in the height of the players analysed. Finally, small variations have been found in the performance of the



players with regard to the effect of the term of birth in both male and female categories, although these variations do not coincide with the existence of the relative age effect.

The existence of the relative age effect in basketball has been documented by various authors (Delorme and Raspaud, 2009; Delorme et al., 2010; Esteva et al., 2006) in male categories. Most investigations analyse male sport and few have been done in female categories and even fewer in basketball. Delorme et al. (2010) found a relative age effect in female basketball and Roman and Fuchslocher (2011) found it in football in 2011. These studies, as with the present one, disagree with the ones done by Delorme and Raspaud (2009) who found no relative age effect in female basketball. This effect may have been found in other young athletes in other sport disciplines (Ashworth and Heyndels, 2007; Helsen et al., 1998, 2005).

As in this study, the investigations done in German football by Schorer et al. (2009b) or in handball by Gutiérrez et al. (2012) found a slight fall in the relative age effect as the age of the athletes increases.

Schorer et al. (2009b) documented a relative age effect in different specific positions in German football, proving results that correspond with those obtained in the present study in the male categories, as the positions that require a higher physical form are taken more often by athletes born in the first months of the year. The results found in female categories do not support the idea of the relative age effect as the players born in the first months of the year tend to take base point, shooting guard and small guard positions, which are less dependent on biologic maturity. However, in football, Roman and Fuchslocher (2011) found a stronger relative age effect in goalkeeping and defence positions than in midfield and upfront positions.

In the present study no relative age effect was found in function of height or performance of the players. Schorer et al. (2009a) documented similar results in handball and determined that the cause of RAE is not related to either height, weight or technical abilities, as no differences were found between relatively older and younger players. Neither anthropometric factors nor physical performance in young footballers found a RAE (Carling et al., 2009; Hirose, 2009).

## Conclusions

The relative age effect exists and is significant in the Basketball World Championships in both male and female U17 and U19 players. This effect diminishes as the age of the athletes increases, and disappears in U21.

In specific positions the effect of relative age is also significant, being in the male category clearer in the centres, power forwards and small forwards and less in point guards and shooting guards. In the female category the results do not support the existence of the relative age effect.

In the male category, differences were found in the height of the players with regard to the term of birth, although these differences do not coincide with those expected if the relative age effect exists. However, no significant differences were found in height in the female categories.

The performance of the players with regard to the birth term shows minimal differences in the male category in the U17, as the players born in the first two terms obtained





better percentages in the three point field throws than the ones born in the last terms of the year. In the U19, the points obtained are fewer in players that belong to the third term than the rest of the terms. In the female category some differences were found in the U19 but they do not support the existence of the RAE and no differences were found in either U17 or U21.

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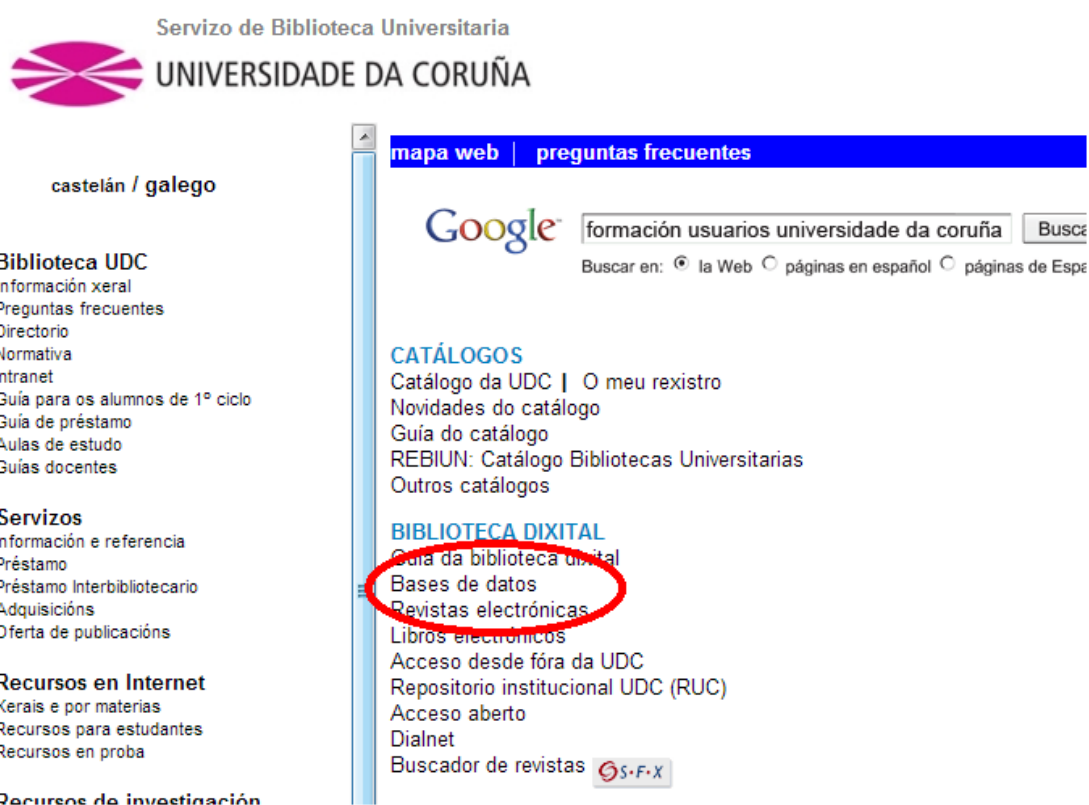


## PROCESO DE ELABORACIÓN E PUBLICACIÓN

### REVISIÓN BIBLIOGRÁFICA.

Unha vez que o mestre Miguel Saavedra nos comentou sobre a posibilidade de realizar o traballo sobre este tema tivemos que revisar a bibliografía toda sobre a Relative Age Effect, para afondar sobre isto e coñecer o marco teórico que hai ao redor deste termo, así como atopar as posíbeis congruencias ou ver outros puntos de vista diferentes ao que temos pensado enfocar a investigación.

Para recoller todos os artigos sobre dito tema tivemos que entrar na sección correspondente á biblioteca dentro da base de datos da UDC. Alí, hai un apartado, que é a biblioteca dixital, onde aparece unha extensa base de datos con diversas revistas e artigos de diferentes ámbitos.



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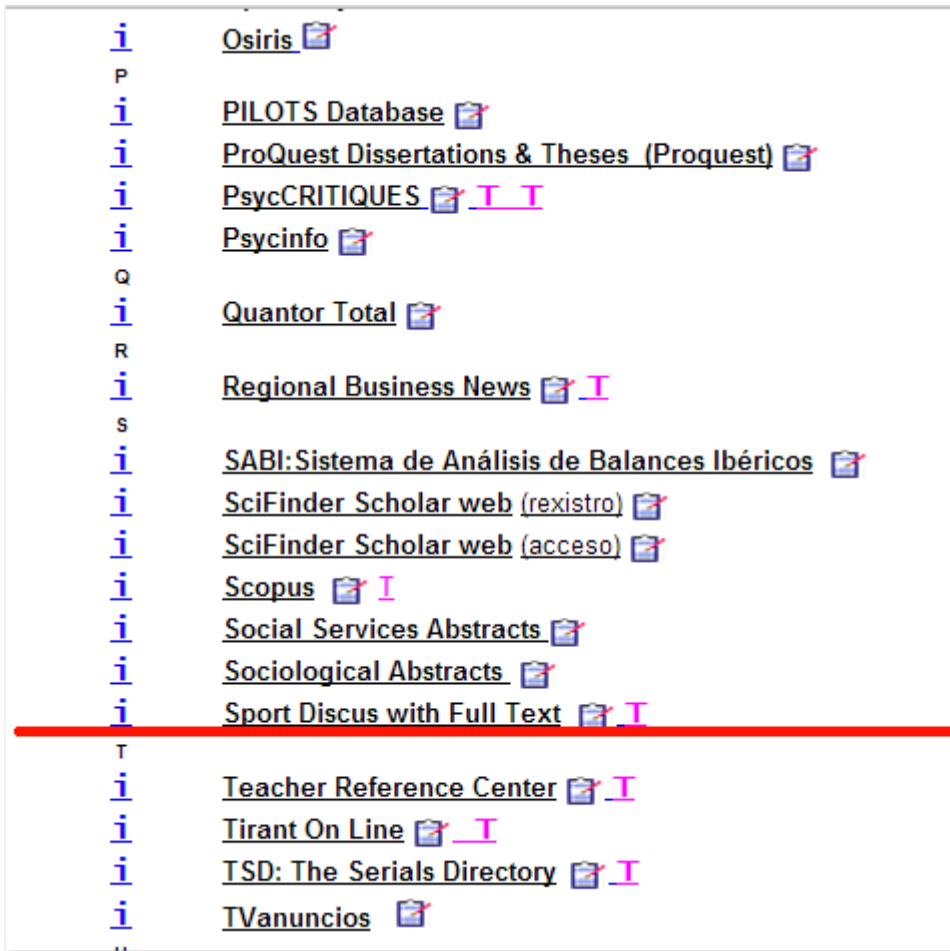
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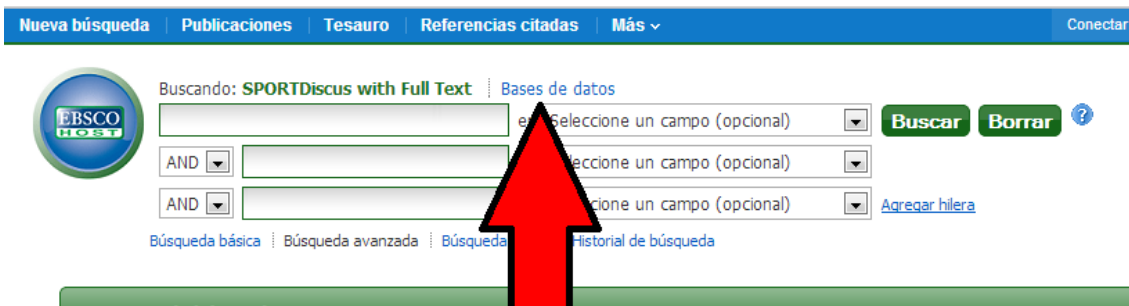
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Unha das revistas que aparecen é a de Sport discus with full text, a cal é específica de deportes, polo que entramos nesta.

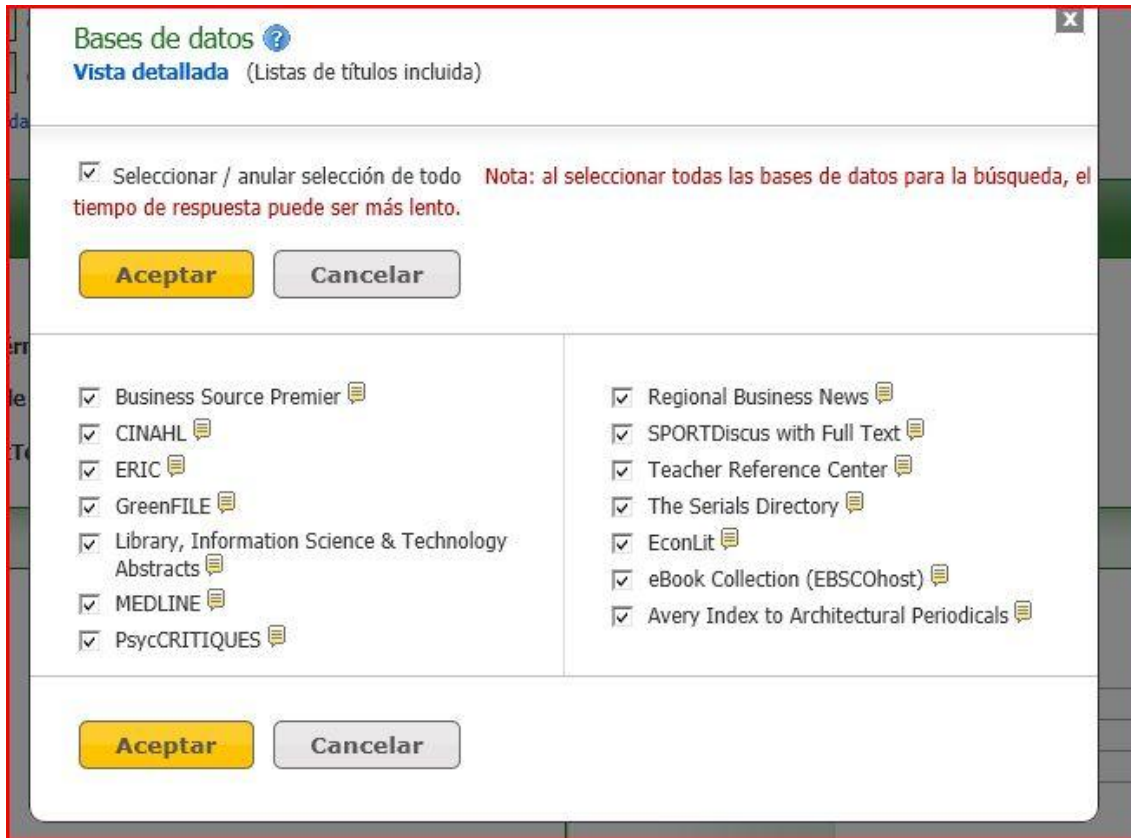


A screenshot of a database list interface. The list is organized by letter, with 'S' highlighted in pink. The entry 'Sport Discus with Full Text' is underlined and has a red horizontal line underneath it. Other entries include Osiris, PILOTS Database, ProQuest Dissertations & Theses (Proquest), PsycCRITIQUES, Psycinfo, Quantor Total, Regional Business News, SABI: Sistema de Análisis de Balances Ibéricos, SciFinder Scholar web (registro), SciFinder Scholar web (acceso), Scopus, Social Services Abstracts, Sociological Abstracts, Teacher Reference Center, Tirant On Line, TSD: The Serials Directory, and TVanuncios. Each entry has a small icon to its right.

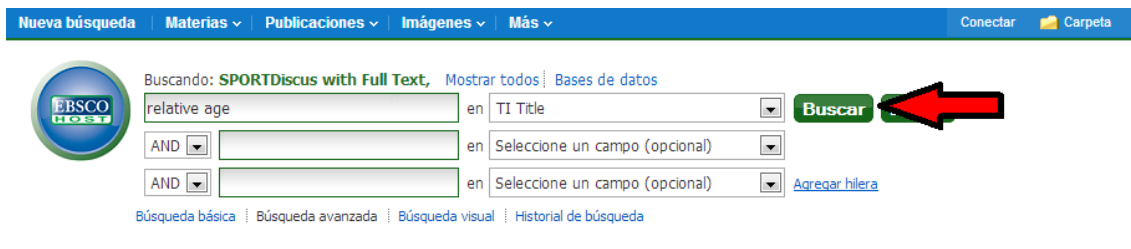
A pesares de entrar na propia revista de deportes xa mencionada, interézanos ver si hai algún artigo sobre a RAE mal situado (que fale de deportes e non estea reflectida nesta revista e si noutra) ou relacionado con outro ámbito que nos pode interesar para a nosa investigación. Polo tanto, seleccionamos todas as bases de datos, co fin de que nos busque todos os artigos do tema, tanto na revista Sport Discus como noutras revistas da mesma editorial (neste caso da editorial EBSCO HOST).



A screenshot of the EBSCO HOST search interface. The search bar contains the text 'SPORTDiscus with Full Text'. Below the search bar are three rows of 'AND' dropdown menus and input fields. A large red arrow points to the first input field. The interface includes a blue navigation bar at the top with options like 'Nueva búsqueda', 'Publicaciones', 'Tesauro', 'Referencias citadas', and 'Más'. There are also buttons for 'Buscar' and 'Borrar'.



Por último, introducimos como estratexia de busca a palabra clave de "Relative Age" no campo de título:



Con isto danos un total de 384 artigos.





O problema destes 384 artigos era que non se podían ler todos de forma completa polo que seleccionamos só os de lectura completa, que facían un total de 106 artigos. Na seguinte táboa móstrase os datos máis importantes (arquivo, revista, deporte, a mostra seleccionada, anos da mostra, método e observacións de interese) dos 73 artigos que utilizamos finalmente referidos ao deporte debido a que son os do noso ámbito.











Este foi o primeiro proceso que fixemos do traballo e quizais o máis laborioso e extenso, pois tivemos que manexar un gran número de artigos (non só deportivos senón tamén doutros ámbitos) que tivemos que analizar un por un seleccionando os importantes e descartando os que non necesitabamos por non aportar nada relevante. Ademais, a gran maioría estaban en lingua inglesa e tivemos dificultades para entender certas partes dos artigos por ter unha linguaxe complexa e porque nós carecemos dun gran nivel desta lingua, polo tanto, tivemos que botar man de axuda externa. Só con este proceso empregamos 345 horas de traballo.

Primeiro ámbolos dous fixemos toda a base de datos e logo comparámola.

### **PRIMEIRO PROCESO DE RECOLLIDA DE DATOS.**

Nun primeiro instante, o primeiro que se fixo foi observar as páxinas en internet que podían recoller os datos da idade relativa nos campionatos de Europa, Asia, África, América, Oceanía e a nivel Mundial. Logo de ver varias páxinas de federacións e equipos demos coa páxina principal para este traballo: Fiba.com. A páxina da federación internacional de baloncesto.

Nesta páxina miramos cales eran os campionatos que aparecían e de que categorías e decidimos facer só os mundiais de baloncesto, nas categorías de U17, U19 e U21, debido a que só con estes fan un total de 25 campionatos, unha gran cantidade de datos. Estes campionatos son:

- 2010 FIBA U17 World Championship for Women festexado en Francia.
- 2010 FIBA U17 World Championship for Men festexado en Alemaña.
- 2011 FIBA U19 World Championship for Women de Chile.
- 2009 FIBA U19 World Championship for Women de Tailandia.
- 2007 FIBA U19 World Championship for Women de Eslovaquia.
- 2005 FIBA U19 World Championship for Women de Tunisia.
- 2001 FIBA U19 World Championship for Junior Women de República Checa.
- 1997 FIBA U19 World Championship for Junior Women do Brasil.
- 1993 FIBA U19 World Championship for Junior Women de Korea.
- 1989 FIBA U19 World Championship for Junior Women de Bilbao
- 1985 FIBA U19 World Championship for Junior Women de EUA
- 2011 FIBA U19 World Championship for Men de Letonia.
- 2009 FIBA U19 World Championship for Men de Nova Celandia.
- 2007 FIBA U19 World Championship for Men de Serbia.
- 2003 FIBA U19 World Championship for Men de Grecia .
- 1999 FIBA U19 World Championship for Junior Men de Portugal.
- 1995 FIBA U19 World Championship for Junior Men do Grecia
- 1991 FIBA U19 World Championship for Junior Men do Canada.
- 1987 FIBA U19 World Championship for Junior Men de Italia.
- 1983 FIBA U19 World Championship for Junior Men de Palma de Mallorca (España)



- 1979 FIBA U19 World Championship for Junior Men do Brasil.
- 2007 FIBA U21 World Championship for Women de Rusia.
- 2003 FIBA U21 World Championship for Women de Croacia.
- 2005 FIBA U21 World Championship for Men de Arxentina.
- 2001 FIBA U21 World Championship for Men do Xapón.

Dentro destes campionatos recollemos nun Excell os datos de todas e todos os xogadores que consideramos importantes para o soporte da investigación do Efecto da Idade Relativa, que son os seguintes:

- Nome do campionato, categoría e xénero.
- Ano.
- Equipo.
- Clasificación do equipo.
- Nome do xogador.
- Posición que este xogador ocupa no campo.
- Fecha de nacemento (separando día, mes e ano).

Na seguinte táboa mostrase un exemplo:



|      | A                                 | B    | C        | D  | E   | F | G  | H | I    | J |
|------|-----------------------------------|------|----------|----|---|---|----|---|------|---|
| 4068 | worls championship for junior men | 1999 | PORTUGAL | 16 | <a href="#">Francisco Gil ALVES FERNANDES</a> | G | 22 | 1 | 1980 |   |
| 4069 | worls championship for junior men | 1999 | PORTUGAL | 16 | <a href="#">Paulo CUNHA</a>                   | F | 1  | 8 | 1980 |   |
| 4070 | worls championship for junior men | 1999 | PORTUGAL | 16 | <a href="#">Dinis Miguel CASTRO DE AMORIM</a> |   | 12 | 3 | 1980 |   |
| 4071 | worls championship for junior men | 1999 | PORTUGAL | 16 | <a href="#">Mário Rui CARVALHO GONÇALVES</a>  |   | 3  | 4 | 1980 |   |
| 4072 | worls championship for junior men | 1999 | PORTUGAL | 16 | <a href="#">Samba CAMARÁ</a>                  |   | 6  | 2 | 1980 |   |
| 4073 | worls championship for junior men | 1999 | PORTUGAL | 16 | <a href="#">Pedro Jorge LOURENÇO SANTOS</a>   |   | 5  | 1 | 1980 |   |
| 4074 |                                   |      |          |    |   |   |    |   |      |   |

Unha vez feito isto, démonos conta de que tiñamos que haber separado o xénero e categoría do nome do campionato, poñendo en diferentes celas para así poder ser sometido a un análise diferenciado.

|   | Campeonato                 | Championship  | Category | Gender | Season | Equipo | Classificati | Player_Na | Posicion | Day | Month | Year |
|---|----------------------------|---------------|----------|--------|--------|--------|--------------|-----------|----------|-----|-------|------|
| 1 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Quinn Co  | G        | 23  | 3     | 1993 |
| 2 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Anthony   | G        | 13  | 4     | 1993 |
| 3 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Marquis   | G        | 28  | 2     | 1993 |
| 4 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Chasson   | G        | 5   | 2     | 1993 |
| 5 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Bradley   |          | 28  | 6     | 1993 |
| 6 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Michael   | F        | 26  | 9     | 1993 |
| 7 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Justin A  | G/F      | 19  | 11    | 1993 |
| 8 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | Adonis T  | G/F      | 25  | 3     | 1993 |
| 9 | Fiba U17 World Championshi | World Champio | U17      | Male   | 2010   | USA    | 1            | James Mc  | F        | 4   | 1     | 1993 |



Logo de ter todos os datos recollidos e supervisados, apareceron as primeiras dúbidas e dificultades:

A primeira dificultade foi que apareceron datos erróneos, pois nos anos máis afastados ao presente aparecen algún xogador e xogadora que tiñan a fecha de nacemento superior á fecha do campionato, é dicir, segundo a Fiba.com o xogador aínda non nacera cando se disputou o campionato. Os casos foron os seguintes: o xogador de Estados Unidos de América, Maurice Rayshawn Williams, que tiña como fecha de nacemento o 12 de Decembro do 1983, os xogadores de Exipto, Ahmed Moustafa Elsayed Mohadmed Gazar e Hiroyuki Kinoshita, que teñen como fecha de nacemento o 20 de xaneiro do 1993 e o 18 de febreiro do 1980 respectivamente, disputaron o campionato do mundo de 1979. Tamén ocorreu o mesmo co xogador estadounidense James Blackmon que disputou o campionato de 1983 e ten reflectida no informe a fecha de nacemento do día 25 de Abril do 1995.

Caso parecido pasa co xogador da Unión Soviética, Makoto Nagayama, que ten como fecha de nacemento o 21 de decembro de 1977, é dicir tería dous anos de idade cando disputou o campionato de 1979.

En todos estes casos houbo que suprimir estes datos.

Outra dificultade que apareceu foi a non presenza de todos os datos, polo tanto, algún campionato quedábase moi coxo neste aspecto.

E, por último, outro problema foi a de que aparecesen xogadores con unha diferenza de idade de até 6 anos, é dicir, entre a maior e a menor había 6 anos de diferenza.

Todos estes datos foron recollidos á man, postos un a un no excell, pois non se podía copiar e pegar, xa que a fecha había que ir poñendo en diferentes variábeis (día, mes e ano). Ademais houbo que facer unha revisión dos datos para impedir que houbo algún tipo de erro na transcripción, por iso foi un traballo moi laborioso, non pola complexidade pero si pola gran atención que se debe ter en non cometer ningún fallo de transcripción, pois calquera despiste pode levar a que se introduza unha cifra mal, e con iso que a investigación xa non fose correcta.

O tempo de traballo realizado foi de un total de 79 horas, xa que contamos con 4073 casos e cos seus respectivos 11 atributos. 62 horas dedicámolas a pór os datos todos nunha folla de excell e, un total de 17 horas para revisar todos os casos.

| Nº de casos | Nº de variábeis | Tempo de transcripción por cela (s) | Tempo total de transcripción (h) | Nº de casos | Tempo de revisión por caso (s) | Tempo total de revisión (h) | Tempo total |
|-------------|-----------------|-------------------------------------|----------------------------------|-------------|--------------------------------|-----------------------------|-------------|
| 4073        | 11              | 5                                   | 62,23                            | 4073        | 15                             | 16,97                       | 79,2        |



Tempo total de transcripción:  $4073 \cdot 11 = 44803 \cdot 5_s = 224.015_s / 3600 = 62,23$  horas

Tempo total de revisión:  $4073 \cdot 15 = 61.095_s / 3600 = 16,97$  h

Tempo Total: 79,2 h.

### PRIMEIRO PROCESO DE TRATAMENTO DE DATOS.

Unha vez adquiridos todos os datos, e unha vez que apareceron os primeiros problemas buscamos as solucións para estes. O primeiro que facemos son eliminar os datos erróneos, e miramos a porcentaxe de datos que temos en cada campionato, resultando:

| Categoría        | Año  | N   | %     | Año-Nº deportistas  | Categoría       | Año  | N     | %   | Año-Nº deportistas                                 |
|------------------|------|-----|-------|---|-----------------|------|-------|---|--|
| <b>Masculino</b> |      |     |       |   | <b>Femenino</b> |      |       |   |  |
| <b>U17</b>       | 2010 | 144 | 100%  | 1993-126; 1994-17; 1995-1   | <b>U17</b>      | 2010 | 144   | 100%  | 1993-102; 1994-35; 1995-5; 1996-2                  |
|                  | 1979 | 145 | 17,2% | 1960-12; 1961-6; 1962-3   |                 | 1985 | 120   | 52,5%   | 1964-2; 1965-12; 1966-19; 1967-9; 1968-5; 1969-4   |
| <b>U19</b>       | 1983 | 166 | 38,6% | 1963-14; 1964-29; 1965-13; 1966-7                                 | 1989            | 144  | 81,9% | 1968-1; 1969-44; 1970-34; 1971-28; 1972-6; 1973-4; 1975-1 |  |
|                  | 1987 | 142 | 88,9% | 1967-48; 1968-38; 1969-21; 1970-4                                 | 1993            | 144  | 83,3% | 1973-48; 1974-37; 1975-25; 1976-8; 1977-2                 |  |
|                  | 1991 | 191 | 100%  | 1961-1; 1969-2; 1970-2; 1971-89; 1972-61; 1973-28; 1974-6; 1975-2 | 1997            | 140  | 100%  | 1977-1; 1978-70; 1979-46; 1980-15; 1981-6; 1982-2         |  |
|                  | 1995 | 190 | 100%  | 1976-120; 1977-46; 1978-18; 1979-4; 1980-2                        | 2001            | 144  | 100%  | 1982-76; 1983-51; 1984-10; 1985-6; 1986-1                 |  |
|                  | 1999 | 192 | 100%  | 1980-129; 1981-42; 1982-20; 1983-1                                | 2005            | 145  | 100%  | 1986-69; 1987-51; 1988-22; 1989-3                         |  |
|                  | 2003 | 192 | 100%  | 1984-108; 1985-60; 1986-20; 1987-3                                | 2007            | 190  | 100%  | 1988-103; 1989-58; 1990-27; 1991-1; 1992-1                |  |
|                  | 2007 | 192 | 100%  | 1988-129; 1989-42; 1990-16; 1991-4; 1992-1                        | 2009            | 189  | 100%  | 1990-91; 1991-67; 1992-27; 1993-4                         |  |
|                  | 2009 | 192 | 100%  | 1990-136; 1991-44; 1992-10; 1994-1                                | 2011            | 196  | 99%   | 1992-96; 1993-57; 1994-32; 1995-7; 1996-2                 |  |
|                  | 2011 | 192 | 100%  | 1992-122; 1993-57; 1994-12; 1995-1                                |                 |      |       |   |  |
| <b>U21</b>       | 2005 | 146 | 100%  | 1984-66; 1985-41; 1986-30; 1987-7; 1988-1                         | <b>U21</b>      | 2003 | 145   | 100%  | 1982-47; 1983-42; 1984-22; 1985-22; 1986-9; 1987-2 |
|                  | 2011 | 143 | 100%  | 1980-72; 1981-43; 1982-24; 1983-2; 1984-1; 1986-1                 |                 | 2007 | 144   | 100%  | 1986-60; 1987-36; 1988-31; 1989-11; 1990-4; 1991-2 |

Observamos como os primeiros anos non teñen un gran número de datos, pero a partires do ano 1993 xa hai en case todos os campionatos o 100% dos datos.

En vermello (masculino) e verde (femenino) seleccionamos os datos que non se collen polo feito de que haxa menos xogadores de 10. Este feito de eliminalo faise debido a que non creemos que é un número óptimo para comparar a Relative Age Effect, podendo xerar algún erro.



En canto á posición houbo moitos datos que non aparecían e estes non se tiveron en conta á hora do traballo, pero os xogadores mantivéronse para avaliar a Idade Relativa.

Unha vez supervisado máis artigos e indagar na páxina da Federación Internacional de Baloncesto, puidemos observar que había máis datos de interese, por iso decidimos escoller só os últimos campionatos de cada categoría e analizalos máis en profundidade e por aportar algo novo á bibliografía, pois observamos que en ningún caso se fixo tales comparacións. Os campionatos que escollemos, entón, son:

|                  | U21              | U19            | U17            |
|------------------|------------------|----------------|----------------|
| <b>MASCULINO</b> | 2005 (Arxentina) | 2011 (Letonia) | 2010 (Alemaña) |
| <b>FEMININO</b>  | 2007 (Rusia)     | 2011 (Chile)   | 2010 (Francia) |

## SEGUNDO PROCESO DE RECOLLIDA DE DATOS

Unha vez que decidimos usar os últimos campionatos, introducimos todos os datos posíbeis, para facer comparacións segundo a súa idade relativa. Entón, outra vez na páxina da Federación Internacional de Baloncesto recolleemos os datos do xogador un a un e de cada selección. As variábeis que recolleemos a maiores son, agás a altura do xogador ou xogadora, todas de carácter estatístico, do que fixeron no transcurso do campionato. Estas son:

- Partidos xogados,
- Minutos disputados,
- Lanzamentos de campo convertidos, intentados, e o porcentaxe de efectividade,
- Lanzamentos de dous puntos convertidos, intentados, e o porcentaxe de efectividade,
- Lanzamentos de tres puntos convertidos, intentados e o porcentaxe de efectividade,
- Tiros libres convertidos, intentados, e o porcentaxe de efectividade,
- Rebotes defensivos, ofensivos e totais de rebotes,
- Asistencias,
- Faltas persoais,
- Recuperacións,
- Roubos,
- Bloqueos,
- Puntos anotados no campionato,
- Porcentaxe de puntos por partido,
- Porcentaxe rebotes por partido,
- Porcentaxe asistencias por partido.

Unha vez iniciado este segundo proceso de recollida de datos pensamos que ía a ser máis duro que o anterior, xa que, a pesares de contar cun número inferior de xogadores (956), o número de variábeis ascendeu a 27. Pola contra, o tempo empregado neste proceso foi de un total de 43,82 horas (35,85 de transcripción e 7,97 de revisión). Ao igual que no caso anterior necesitamos gran concentración e precaución debido a evitar erros de



transcripción de datos e ademais había que ir repasando os datos para comprobar que estivesen ben anotados.

| Nº de casos | Nº de variábeis | Tempo de transcripción por cela (s) | Tempo total de transcripción (h) | Nº de casos | Tempo de revisión por caso (s) | Tempo total de revisión (h) | Tempo total |
|-------------|-----------------|-------------------------------------|----------------------------------|-------------|--------------------------------|-----------------------------|-------------|
| 956         | 27              | 5                                   | 35,85                            | 956         | 30                             | 7,97                        | 43,82       |

**Tempo de transcripción:**  $956 \text{ liñas} * 27 = 25812 \text{ celas} * 5 \text{ s} = 129.060 \text{ s} / 3600 = 35.85 \text{ h.}$

**Tempo de revisión:**  $956 \text{ liñas} * 30 = 28.680 / 3600 = 7.97 \text{ h}$

**Tempo Total:** 43.82h.

### REDACCIÓN DO ARTIGO (PARTE FEMININA).

Unha vez recopilados e seleccionados os datos, decidimos separar o traballo en dúas partes:

- Efecto da idade relativa nas categorías inferiores do baloncesto internacional masculino.
- Efecto da idade relativa nas categorías inferiores do baloncesto internacional feminino.

Esta división do traballo, fíxose co fin de realizar un análise o máis exhaustivo posíbel dos datos dispoñibles en cada un dos xéneros, podendo desta maneira elaborar un traballo máis preciso e completo.

No meu caso, fun o encargo de levar a cabo o estudio do "*Efecto da idade relativa nas categorías inferiores do baloncesto internacional feminino*":

### EFFECTO DE LA EDAD RELATIVA EN LAS CATEGORÍAS INFERIORES DEL BALONCESTO INTERNACIONAL FEMININO DE ALTO NIVEL

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### Palabras clave

Efecto de la edad relativa, baloncesto, análisis del rendimiento





## Resumen

Para valorar el efecto de la edad relativa en los Campeonatos del Mundo femeninos disputados entre 2007 y 2011 en categorías U17 (deportistas de 17 o menos años), U19 (deportistas de 19 o menos años) y U21 (deportistas de 21 o menos años) se ha seleccionado una muestra compuesta por 482 jugadores. Las variables registradas fueron la fecha de nacimiento, la categoría de la competición, el género, la altura y las estadísticas oficiales de cada jugador ofrecidas por la International Basketball Federation (FIBA).

Se ha encontrado un claro efecto de la edad relativa en categoría femenina que disminuye con la edad, siendo máximo en la categoría U17, algo menor, aunque significativo en U19, para, finalmente no encontrar un efecto significativo en U21.

Los resultados no apoyan la existencia de un efecto de la edad relativa con respecto a los puestos específicos. Tampoco se encontraron diferencias con respecto a la altura. Finalmente, con respecto al rendimiento de los jugadores se encontraron ligeras diferencias en U19 (que no apoyan la existencia del RAE) y no se encontraron diferencias en U17 y U21.

## Introducción

El termino Relative Age Effect (RAE) ha sido utilizado para determinar el efecto de la influencia de la fecha de nacimiento en el rendimiento de las personas. Los primeros trabajos que investigan sobre dicho efecto han sido realizados en el ámbito de la educación (Armstrong, 1966; Freyman, 1965)

Investigaciones realizadas en el ámbito de la educación, como la de Russell, y Startup (1986), se centraron en la relevancia de nacer a principio o a final del año académico, concluyendo que los alumnos nacidos a principio de año tienen ventaja académica sobre el resto hasta los 18 años, pero una vez llegados a esta edad, los nacidos a finales de año dan su mejor rendimiento.

Así, Grondin, Deshaies, y Nault (1984) fueron los primeros en realizar estudios sobre la RAE en el deporte, encontrando una distribución desigual en las fechas de nacimiento de los jugadores en distintos niveles del hockey hielo y el voleibol canadiense, concluyendo que había muchos más jugadores nacidos próximos a la fecha de corte.



Estos estudios han sido revisados y actualizados y corroborados (Nolan, y Howell, 2010; Gibbs, Jarvis, y Dufur, 2011).

Musch, y Hay (1999) investigaron sobre el efecto de la edad relativa en una muestra intercultural (Alemania, Japón, Brasil y Australia) y concluyeron que la fecha de corte en el fútbol es la principal causa para el efecto de la edad relativa en el fútbol profesional.

Hay otros trabajos que analizan la RAE en los grupos de deportistas en edades de formación, como son los trabajos de Helsen, Starkes, y Van Winckel (1998), cuyos resultados indicaron que los jugadores de fútbol juveniles nacidos entre agosto y octubre (la primera parte del año de selección) tienen más probabilidades de ser identificados como talentosos y estar expuestos a niveles más altos de entrenamiento, mientras que los jugadores nacidos a finales del año tienden a la deserción a los 12 años de edad. También con futbolistas jóvenes está el trabajo de Ashworth, y Heyndels (2007), los cuales encuentran que los jugadores nacidos con posterioridad a la fecha de corte cobran sueldos más elevados.

Los resultados de la investigación de Helsen, Van Winckel, y Williams (2005) muestran una excesiva representación de jugadores nacidos en el primer trimestre del año (de enero a marzo) para todas las selecciones nacionales jóvenes en los menores de 15 años (U-15), U 16, U 17 y U 18, así como para los torneos de la UEFA Sub-16 y la Copa Meridian. Los jugadores con una edad relativamente mayor tienen más probabilidades de ser identificados como talentos, debido a las probables ventajas físicas que tienen sobre los demás. En la misma línea Barnsley, Thompson, y Legault (1992) encuentran un efecto de la edad relativa en campeonatos del mundo de fútbol U17 y U20.

Siguiendo con el fútbol, dentro del ámbito profesional, Jullien, Turpin, y Carling (2008) concluyeron que los entrenadores tienden a seleccionar los deportistas nacidos dentro del primer cuatrimestre del año.

Carling, le Gall, Reilly, y Williams (2009) investigaron si la madurez, los perfiles antropométricos y la valoración del estado físico varían de acuerdo a la distribución de la fecha de nacimiento en la élite. Este estudio concluyó sugiriendo que la edad relativa del deportista no siempre puede estar relacionada con una ventaja significativa en los componentes físicos.

En baloncesto la investigación realizada por Esteva, Drobnic, Puigdellivol, Serratosa, y Chamorro (2006) determinó que hay una fuerte tendencia a la selección de los



deportistas nacidos en los primeros trimestres del año frente a los nacidos en los últimos. Esta tendencia se mantiene pero pierde fuerza a medida que se sube de categorías, hasta llegar al baloncesto profesional. Este hecho se explica por qué en las primeras etapas de este deporte los deportistas se seleccionan sólo por su maduración avanzada o por uno de sus indicadores: la talla. De esta forma, una gran cantidad de posibles futuros talentos tiende a perderse y otros deportistas tienen más opciones de llegar a la élite o al deporte profesional sólo por haber nacido en el primer trimestre del año.

Por su parte Delmore, y Raspaud (2009) encontraron un claro efecto de la edad relativa en deportistas franceses desde los 7 a los 18 años, tanto en categorías masculinas como en las femeninas. Además estudiaron la altura de los jugadores, encontrando que los nacidos en los dos primeros trimestres del año son los más altos. También Delmore, Chalabaev, y Raspaud (2010) investigaron el efecto de la edad relativa como un factor para el abandono de la práctica deportiva en jugadores de baloncesto encontrando un mayor índice de abandono en los jugadores nacidos hacia el final del año.

Lidor, Côte, Arnon, Zeev, y Cohen-Maoz (2010) estudian los efectos en un país pequeño (Israel) de la edad relativa y del lugar de nacimiento en jugadores de varios deportes, entre los que se incluye el baloncesto. No encuentran un efecto de la edad relativa significativo ni tampoco un efecto debido al lugar de nacimiento.

Baker, Schorer, y Copley (2010) hacen un repaso de las posibles causas de la RAE y proponen algunas soluciones. La explicación más utilizada para justificar la RAE es el proceso de maduración de los deportistas, según la cual los que nacen más cerca de la fecha de corte tienen unos mayores valores de rendimiento que los más jóvenes (Barnsley, y Thompson, 1988; Malina, 1994; Malina, Bouchard, y Bar-Or, 2004). Las soluciones propuestas suelen estar ligadas a la variación de la edad de corte, lo que supone que la RAE es modificada, pero esta persiste (Helsen, Starkes, y Van Winckel, 2000; Musch, y Hay, 1999; Simmons, y Paull, 2001). Otras soluciones suponen una enorme complejidad administrativa, como la propuesta por Barnsley, y Thompson (1988) de que las selecciones de participantes deban ajustarse a una determinada distribución, o mediante el control de la edad media de todo un equipo, tal y como exponen Helsen *et al.* (1998; 2000).

El objetivo del presente estudio es comprobar si existe el efecto de la edad relativa en los campeonatos del mundo U17, U19 y U21 de baloncesto en categoría masculina.



Conocer si existe el efecto de la edad relativa en los diferentes puestos específicos. También se intenta encontrar diferencias en la altura de los jugadores o de rendimiento en función de la fecha de nacimiento.

## **Material y métodos**

### *Muestra*

Se han seleccionado los deportistas participantes en las últimas ediciones femeninas de los campeonatos del mundo de baloncesto: U17 jugado en el 2010, U19 jugado en el 2011 y U21 jugado en el 2007. El total de jugadores de la muestra es de 482 (144 jugadoras en categoría U17, 194 en U19 y 144 en U21).

La “Federación Internacional del Baloncesto Amateur” (FIBA) es una organización reconocida como la única autoridad competente en baloncesto por el Comité Olímpico Internacional (COI), formada por 213 Federaciones Nacionales de este deporte. Este organismo es el encargado, entre otras tareas, de controlar y regular todas las competiciones internacionales. En los mundiales U17, U19 y U21 se permite la participación de deportistas de la edad límite o de menor edad. Por ello se ha utilizado como criterio de selección que al menos participen diez deportistas de un mismo año para que este sea considerado. Mediante este procedimiento se ha excluido del análisis, a cinco jugadoras de 15 años y dos de 16 años en U17, a siete jugadoras de 16 años y dos de 15 años en U19 y a cuatro jugadoras de 17 años y dos de 16 años en U21.

### *Procedimiento*

Se han recogido las siguientes variables: Género, categoría, temporada, equipo, clasificación, posición y fecha de nacimiento.

Además se ha registrado la altura de los jugadores y las variables relativas al rendimiento de los jugadores (partidos jugados, minutos jugados, lanzamientos de campo convertidos, intentados, y el porcentaje de efectividad, lanzamientos de dos puntos convertidos, intentados, y el porcentaje de efectividad, lanzamientos de tres puntos convertidos, intentados, y el porcentaje de efectividad, tiros libres convertidos, intentados, y el porcentaje de efectividad, rebotes defensivos, ofensivos y total de rebotes, asistencias, faltas personales, recuperaciones, robos, bloqueos, puntos, puntos por partido, rebotes por partido y asistencias por partido).

Los datos han sido recogidos de la página web de la FIBA (<http://www.fiba.com/>).



Posteriormente se ha generado la variable trimestre, que divide las fechas de nacimiento de los jugadores en cuatro trimestres (cuartos) y comienzan a partir del 1 de enero del año de nacimiento para terminar el 31 de diciembre de ese mismo año. Así los deportistas nacidos del 1 de enero al 31 de marzo configuran el primer trimestre (Q1), los nacidos de el 1 de abril al 30 de junio pertenecen al segundo trimestre (Q2), los nacidos del 1 de julio al 30 de septiembre pertenecen al tercer trimestre (Q3) y, finalmente, los nacidos del 1 de octubre al 31 de diciembre configuran el cuarto trimestre (Q4).

#### *Análisis de datos*

Para determinar el efecto de la edad relativa (RAE) se utilizó la prueba de Chi-cuadrado para determinar si la distribución de las fechas de nacimiento difiere significativamente de la distribución teórica que espera encontrar (en la que la probabilidad de encontrar deportistas nacidos en cualquier trimestre del año es la misma).

Para realizar las comparaciones entre las alturas de los jugadores y de las variables relativas al rendimiento por cuatrimestre de nacimiento se utilizó el ANOVA de una vía y el análisis post-hoc con Tuckey, previa garantía de normalidad (prueba de Kolmogorov-Smirnov) y de igualdad de varianzas (Prueba de Levene). En caso de que no se cumplieran los requisitos de aplicación se desestima el uso del ANOVA y ha realizado la prueba de Kruskal-Wallis.

En este estudio los test estadísticos se consideran significativos cuando  $p < 0,05$ .

### **Resultados**

La tabla 1 muestra la distribución trimestral de los nacimientos de los jugadores del campeonato del mundo de baloncesto en categorías inferiores.

De forma global la distribución observada es distinta de la esperada ( $\chi^2=45,43$ ; g.l.=3;  $p < 0,001$ ; Figura 2).

Tabla 1.- Trimestre de nacimiento de los jugadores del Campeonato del Mundo de Baloncesto U17, U19 y U21.

| Gender  |          | Overall      |          | U17          |          | U19          |          | U21      |          |
|---------|----------|--------------|----------|--------------|----------|--------------|----------|----------|----------|
|         |          | Observed     | Expected | Observed     | Expected | Observed     | Expected | Observed | Expected |
| Females | Q1       | 159          | 120,5    | 50           | 36       | 71           | 48,5     | 38       | 36       |
|         | Q2       | 144          | 120,5    | 40           | 36       | 57           | 48,5     | 47       | 36       |
|         | Q3       | 102          | 120,5    | 31           | 36       | 38           | 48,5     | 33       | 36       |
|         | Q4       | 77           | 120,5    | 23           | 36       | 28           | 48,5     | 26       | 36       |
|         | Total    | 482          |          | 144          |          | 194          |          | 144      |          |
|         | $\chi^2$ | 35,43        |          | 11,28        |          | 22,87        |          | 6,50     |          |
|         | Sig.     | <b>0,000</b> |          | <b>0,010</b> |          | <b>0,000</b> |          | 0,090    |          |



En el análisis por categorías se encontró que en la competición U17 la distribución observada es diferente de la esperada ( $\chi^2=11,28$ ; g.l.=3;  $p<0,011$ ). Lo mismo ocurre en la categoría U19, ( $\chi^2=22,87$ ; g.l.=3;  $p<0,001$ ). Finalmente en categoría U21 la distribución observada no difiere de forma estadísticamente significativa de la esperada ( $\chi^2=6,50$ ; g.l.=3;  $p<0,091$ ).

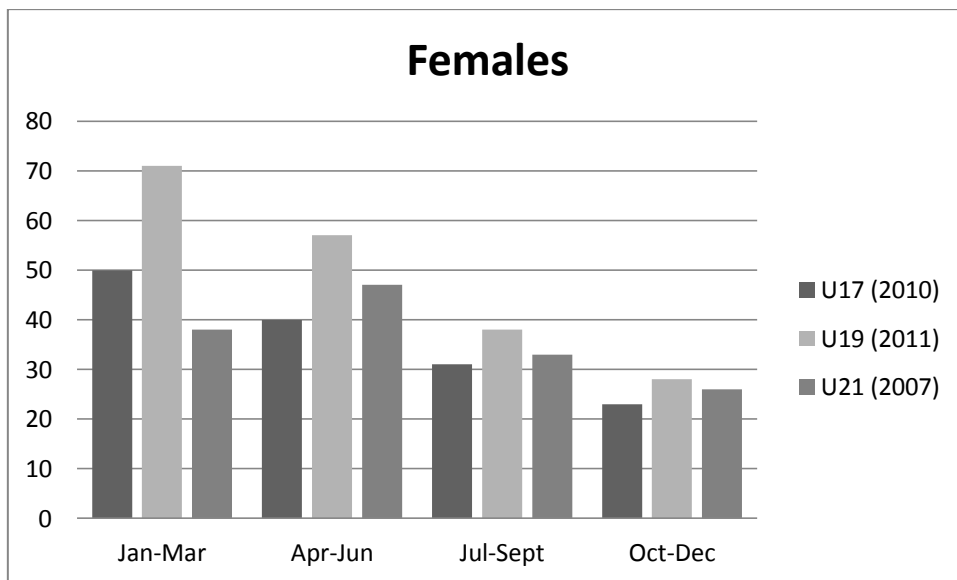


Figura 2.- Distribución de las fechas de nacimiento en función de la edad en categorías femeninas.

*Puestos específicos*

En el análisis por puestos específicos (tabla 2) se encontró que la distribución observada de los trimestres de nacimiento es diferente de la esperada en los bases, escoltas y aleros ( $p<0,05$ ).

Tabla 2.- Trimestre de nacimiento de los jugadores del C.M. de Baloncesto en función del puesto específico.

| Gender        |          | Point-Guard |       | Shooting-Guard |       | Small-Forward |       | Power-Forward |       | Center |      |
|---------------|----------|-------------|-------|----------------|-------|---------------|-------|---------------|-------|--------|------|
|               |          | Obs.        | Exp.  | Obs.           | Exp.  | Obs.          | Exp.  | Obs.          | Exp.  | Obs.   | Exp. |
| Females       | Q1       | 19          | 10    | 24             | 13,5  | 17            | 13,3  | 11            | 11,5  | 22     | 20,3 |
|               | Q2       | 11          | 10    | 9              | 13,5  | 21            | 13,3  | 13            | 11,5  | 23     | 20,3 |
|               | Q3       | 4           | 10    | 13             | 13,5  | 5             | 13,3  | 10            | 11,5  | 22     | 20,3 |
|               | Q4       | 6           | 10    | 8              | 13,5  | 10            | 13,3  | 12            | 11,5  | 14     | 20,3 |
|               | Total    | 40          |       | 54             |       | 53            |       | 46            |       | 81     |      |
|               | $\chi^2$ | 13,40       |       | 11,93          |       | 11,53         |       | 0,44          |       | 2,61   |      |
| Significación | 0,004    |             | 0,008 |                | 0,009 |               | 0,933 |               | 0,457 |        |      |

*Altura de los jugadores*

En categoría femenina no se encontraron diferencias significativas.



### *Rendimiento*

No se encontraron diferencias significativas en el rendimiento por trimestres en la categoría U17.

En la categoría U19 se encontraron diferencias en los porcentajes de tiros de campo ( $p < 0,005$ ), con porcentajes inferiores en el primer (33,1%) y segundo trimestre (34,8%) en relación a los trimestres tercero (41,7%) y cuarto (39,2%). En el porcentaje de dos puntos ( $p < 0,005$ ) presenta el mismo comportamiento y sus valores en los cuatro trimestres son 35,2%; 36,9%; 46,6% y 41,1% respectivamente. Las asistencias ( $p < 0,013$ ) presentan resultados medios de 8,9%; 4,7%; 7,1% y 7,1% respectivamente y presentan valores más bajos en el segundo trimestre que el resto del año. Las asistencias por partido ( $p < 0,013$ ) muestran valores de 1,17%; 0,64%; 0,95% y 0,94% para los cuatro trimestres, presentando igualmente los menores valores en el segundo trimestre.

Finalmente en la categoría U21 no se encontraron diferencias significativas de rendimiento en función del trimestre de nacimiento.

### **Discusión**

En el presente estudio se ha confirmado la existencia del efecto de la edad relativa en los Campeonatos del Mundo de Baloncesto U17 y U19. En el Campeonato U21 no se encontró dicho efecto como significativo. Además, los efectos de la edad relativa son significativos en los puestos que exigen menor altura. Sin embargo la estatura de los jugadores no presenta variaciones acordes a lo esperado si existiese un efecto de la edad relativa. Esto significa que la edad relativa es significativa en los puestos en los cuales se exigen mayor rendimiento físico.

No se encontraron diferencias significativas en las alturas de las jugadoras analizadas. Finalmente se han encontrado pequeñas variaciones en el rendimiento de las jugadoras en función del trimestre, sin embargo estas variaciones no son acordes con la existencia de un efecto de la edad relativa.

La existencia del efecto de la edad relativa en el baloncesto ha sido ya documentada por diversos autores (Delorme, y Raspaud, 2009; Delmore *et al.* 2010; Esteva *et al.* 2006) en categorías masculinas. La gran mayoría de las investigaciones realizadas son referidas al deporte masculino, siendo muy pocas las realizadas en categorías femeninas y aún menos las centradas en el baloncesto. Delorme *et al.* (2010) encuentran un efecto de la edad relativa en el baloncesto femenino y, Roman, y Fuchslocher (2011) la



encuentran en el fútbol en el año 2011. Estos estudios, al igual que el presente, contrastan con los realizados por Delorme, y Raspaud (2009) donde no encuentran un efecto de la edad relativa en el baloncesto femenino. Igualmente este efecto también ha sido constatado en deportistas jóvenes de otras modalidades deportivas (Ashworth, y Heyndels, 2007; Helsen *et al.* 1998; 2005).

Al igual que en el presente estudio, las investigaciones realizadas en el fútbol alemán por Schorer, Cobley, Büsch, Bräutigam, y Baker, (2009b) o en el balonmano (Gutiérrez, Saavedra, Contreras, y Fernández, (2012) encuentran una disminución del efecto de la edad relativa a medida que se incrementa la edad de los jugadores.

Schorer *et al.* (2009b) documentan un efecto de la edad relativa en los distintos puestos específicos en el fútbol alemán, siendo estos resultados acordes con los obtenidos en el presente estudio en las categorías masculinas, ya que las posiciones con mayores requerimientos físicos son ocupadas preferentemente por los deportistas nacidos en los primeros meses del año. Los resultados encontrados en categorías femeninas no sustentan la idea del efecto de la edad relativa ya que las jugadoras nacidas en los primeros meses del año tienden a ocupar los puestos relativos de base, escolta y alero, es decir, los menos dependientes de la maduración biológica. Sin embargo en el fútbol, Roman, y Fuchslocher (2011) encuentran un efecto de la edad relativa en las posiciones relativas de portero y defensas más fuerte que en los centrocampistas y en los delanteros.

En el presente estudio no se encontró un efecto de la edad relativa en relación a la altura, o en el rendimiento de los jugadores. De la misma manera Schorer *et al.* (2009a), documentan resultados similares en balonmano, que determinan que las causas de la RAE, no están relacionadas con la altura o peso ni con las habilidades técnicas, ya que no encontraron diferencias entre los jugadores relativamente mayores con los jugadores relativamente jóvenes. Tampoco se encuentra un efecto RAE en los factores antropométricos ni de rendimiento físico en futbolistas jóvenes (Carling, Gall, Reilly, y Williams, 2009; Hirose, 2009).

### **Conclusiones**

El efecto de la edad relativa existe y es significativo en los campeonatos del mundo U17 y U19. Este efecto se reduce al incrementarse la edad de los deportistas y desaparece en U21.





Por puestos específicos el efecto de la edad relativa no respaldan la existencia del efecto de la edad relativa.

No se han encontrado diferencias en la estatura en categoría femenina.

El rendimiento de las jugadoras en función del trimestre de nacimiento presenta diferencias mínimas, se encontraron algunas diferencias en U19 que no apoyan la existencia del RAE y no se encontraron diferencias ni en U17 ni en U21.

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### **PROCESO DE ENVÍO**

Unha vez elaborados ambos artigos por separado e tras sometelos a análise, viuse a posibilidade de refundir ambos traballos nun só, co fin de elaborar un artigo máis completo, que permitise comparar ambos xéneros e chegar a conclusións máis relevantes. Así mesmo, esta unificación foi levada a cabo por considerarse que a comparación entre ambos traballos permite coñecer un pouco máis as diferenzas que existen entre o baloncesto feminino e masculino. Por todo el, vimos a posibilidade de que unindo ambos traballos nun só, se incrementaban as posibilidades de que este fose valorado satisfactoriamente por algunha revista de prestixio internacional e de esta maneira saíse publicado.

Neste proceso analízase cómo e cándo se enviou o traballo, os comentarios que os revisores nos aportaron para mellorar a nosa propia investigación e as nosas seguintes modificacións con respecto a isto. Para ilo a información será detallada segundo a data en que ocorreu, cada caso:



✚ **4-Xullo-2012. Envío do traballo á revista "International Review of the Sociology Sport",**

Unha vez escrito e elaborado a investigación sobre a Relative Age foi mandado á revista "*International Review of the Sociology Sport*", a través do mecanismo do scholar one.

A continuación achégase o artigo:

**RELATIVE AGE EFFECT IN LOWER CATEGORIES OF INTERNATIONAL BASKETBALL**

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**Key words**

Relative age effect, basketball, performance analysis

**Abstract**

To be able to value the relative age effect in the male and female World Championships played between 2005 and 2010 in the U17 categories (athletes 17 years or younger), U19 (athletes 19 or younger) and U21 (athletes 21 years or younger) a sample of 954 players has been selected. The variables registered were their dates of birth, the category of the competition, gender, height and official statistics of each player obtained from the International Basketball Federation (FIBA).

A clear relative age effect was found (in both male and female categories) which lowers with age, being higher in the U17 category, slightly less but also significant in the U19, and no significant effect found in U21. This effect persists when the different specific positions were analyzed in the male categories, being clearer in the positions that require more physical strength. In female categories the results don't back the existence of the relative age effect.



Also differences were found in height in the male category in function of three months, but its interpretation isn't consistent with the relative age effect. In the female category no differences were found in height. Finally, the differences in the performance of the players in the male categories hardly varies in function of the three months that the players were born in, minimal differences were found in the U17 and U19 categories (they do not support the existence of RAE) and no differences were found in the U17 and U21 categories.

## **Introduction**

The term Relative Age Effect (RAE) has been used to determine the effect of the influence of the date of birth in the performance of the person. The first studies that investigated this effect were done in the education environment (Armstrong, 1966; Freyman, 1965).

Investigations made in the education area, by Russell, and Startup (1986) based their study in the relevance if being born at the start or at the end of the academic year, concluding that pupils born at the start had an academic advantage over the rest until 18 years of age, but after this age, the ones born at the end of the year gave better performance.

Grondin, Deshaies and Nault (1984) were the first to do a study of the RAE in sport, finding an unequal distribution in the dates of birth in the players in different levels of Canadian ice hockey and volleyball, concluding that many players were born near to the cut date. These studies have been revised, updated and confirmed (Nolan, & Howell, 2010; Gibbs, Jarvis, & Dufur, 2011).

Musch, and Hay (1999) investigated the age effect in an intercultural sample (Germany, Japan, Brazil and Australia) and concluded that the cut date in football is the main cause that effects the relative age in professional football.

Other studies that analysed the RAE in the formation ages of sport groups, such as the essays by Helsen, Starkes, and Van Winckel (1998), whose results indicated that youth football players born between August and October (the first part of the year for the selection) are more probable to be identified as talented and to be exposed to higher levels of training, whilst the players born at the end of the year tended to drop out at 12



years of age. Also an essay with young footballers by Ashworth, and Heyndels (2007), proved that players born after the cut-off date earned higher wages.

The results of the Helsen, Van Winckel, and Williams (2005) investigation show an excessive representation of players born in the first three months of the year (from January to March) for all youth National Teams in the under 15 years of age (U-15), U-16, U-17 and U-18, same being for the UEFA Sub-16 and the Meridian Cup. The players with a relatively older age are more probable of being identified as talents, because of the probable physical advantages that they have over the others. Continuing with football at professional level, Jullien, Turpin, and Carling (2008) concluded that coaches tend to select players born in the first four months of the year.

Carling, le Gall, Reilly, and Williams (2009) investigated whether the maturity, the anthropometric profile and the valuation of physical state varied in the distribution of the date of birth in the elite. This study suggested that the relative age of the athlete doesn't always relate to a significant advantage in physical components.

In basketball, the investigation by Esteva, Drobnic, Puigdellivol, Serratosa, and Chamorro (2006), determined a strong tendency to select players born in the first three months of the year compared to those born towards the end of the year. This tendency tends to lose its strength as the players go through the categories, until arriving to professional basketball. This is explained because in the first stages of the sport, the players are selected only because of their advanced maturity or other indicators such as height. This way, a great quantity of possible future talents are lost and other players have more opportunities of getting to become professional players only because they were born in the first three months of the year.

Delorme, and Raspaud (2009) found clear differences in the relative age effect in French athletes aged between 7 and 18 years, in both male and female categories. They also studied the height of the players, finding that the ones born in the first two terms of the year were taller. Also, Delorme, Chalabaev, and Raspaud (2011) investigated the relative age effect as a factor for abandoning sport in basketball players finding a higher index of leaves in players born at the end of the year.

Lidor, Côte, Arnon, Zeev, and Cohen-Maoz (2010) studied the effects in a small country (Israel) of the relative age and the place of birth of the players in various sports,



in which basketball was included. No significant relative age effect was found nor the effect of the place of birth.

Baker, Schorer, and Cobley (2010) revised the possible causes of the RAE and suggest some solutions. The most use explication for justifying the RAE is the process of maturation of the athletes: the athletes born nearer the cut-off date have higher values of performance than the younger ones (Barnsley, & Thompson, 1988; Malina, 1994; Malina, Bouchard, & Bar-Or, 2004). The solutions suggested tend to be related to the variation of the age, which means that the RAE changes but is persistent (Helsen, *et al.*, 2000; Musch, & Hay, 1999; Simmons, & Paull, 2001). Other solutions suggest an enormous administrative complex, such as the one by Barnsley and Thompson (1988) who say that the selection of participants should adjust to a certain distribution or control of the average age in all sorts of teams Helsen *et al.* (1998; 2000).

The objective of this present study is to check whether the relative age effect does exist in the World Basketball Championship U17, U19 and U21 male categories. Investigate if the relative age effect exists in the different specific positions and also try to find differences in height between players and in the performance depending on their date of birth.

## **Material and Methods**

### *Sample*

The athletes were selected from the last male and female edition of the Basketball World Championships U17 played in 2010, U19 played in 2011 and U21 played in 2005 in the male category and in 2007 in the female category. The total number of athletes of the sample is of 954, of which 472 are from the male category (143 player in the U17, 191 in U19 and 138 in U21) and 482 from the female category (144 players in the U17, 194 in U19 and 144 in U21).

The "International Basketball Amateur Federation" (FIBA) is the only organization responsible in basketball and known to the International Olympic Committee (COI), formed by 213 National Federations of this sport. This institution is responsible of controlling and regulating all international competitions. In the World Championship in the U17, U19 and U21 the participation of the athletes must be that age or younger. The criteria selection used indicates that at least 10 participating athletes are born in the



same year. Applying to this rule, in the analysis, in the male category a 15 year old athlete was excluded in the U17, another aged 16 in the U19 and eight athletes in the U21 (seven players were 18 years old and one were 17). In the female category five players aged 15 and two aged 17 were excluded in the U17, seven players aged 16 and two aged 15 in the U19 and four players aged 17 and two aged 16 in the U21.

### *Procedure*

The following variables were studied: gender, category, season, team, classification, position, and date of birth.

Also the height of the players was registered and the relative variables of the performance of the players (games played, minutes played, converted field goals, tries, and the percentage of effectiveness, two point field goals, tries, and the percentage of effectiveness, three point field goals, tries, and the percentage of effectiveness, free goals scored, tried, and the percentage of effectiveness, defensive rebounds, offensive and total of rebounds, assistances, personal faults, recuperations, stolen, blocked, points, points per game, rebounds per game and game assistance).

The information was collected from the FIBA website (<http://www.fiba.com/>). Afterwards the variable term was generated, dividing the date of births of the players into 4 terms (quarters) that start from the 1st of January and ends the 31st of December of the same year. This way the athletes born from the 1st of January until the 31st of March form the first term (Q1), the players born from the 1st of April until the 30th of June form the second term (Q2), the players born from the 1st of July until the 30th of September belong to the third quarter (Q3) and finally the players born from the 1st of October until the 31st of December make up the fourth term (Q4).

### *Analysis of information*

To determine the relative age effect (RAE) the Chi-squared test was used to determine if the distribution of the dates of birth differ significantly of the theory distribution that is hoped to be found (in which the probability of finding athletes born in whichever term of the year is the same).

To compare between the height of the players and the relative performance variables for each term of birth the ANOVA was used and the analysis post-hoc with Turkey,





previous guarantee of normality (Kolmogorov-Smirnov test) and the equality (Levene test). In the case that the requirements of application were not met the use of ANOVA is rejected and the Kruskal- Wallis test is used.

In this study the statistic tests are considered significant when  $p < 0.05$ .

**Results**

Table 1 shows the term distribution of the birth dates of all players of the basketball world championships in lower categories.

The global distribution observed is different than expected in both male ( $\chi^2=52.41$ ; d.f.=3;  $p < 0.001$ ; Figure 1), and female categories ( $\chi^2=45.43$ ; d.f.=3;  $p < 0.001$ ; Figure 2).

Table 1.- Terms of the date of births of all players in the Basketball World championships U17, U19 y U21.

| Gender  |          | Overall         |                 | U17             |                 | U19             |                 | U21             |                 |
|---------|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|         |          | <i>Observed</i> | <i>Expected</i> | <i>Observed</i> | <i>Expected</i> | <i>Observed</i> | <i>Expected</i> | <i>Observed</i> | <i>Expected</i> |
| Males   | Q1       | 176             | 118             | 66              | 35.8            | 68              | 47.8            | 42              | 34.5            |
|         | Q2       | 126             | 118             | 38              | 35.8            | 49              | 47.8            | 39              | 34.5            |
|         | Q3       | 102             | 118             | 26              | 35.8            | 47              | 47.8            | 28              | 34.5            |
|         | Q4       | 68              | 118             | 12              | 35.8            | 27              | 47.8            | 29              | 34.5            |
|         | Total    | 472             |                 | 143             |                 | 191             |                 | 138             |                 |
|         | $\chi^2$ | 52.41           |                 | 43.66           |                 | 17.65           |                 | 4.32            |                 |
|         | Sig.     | <b>0.000</b>    |                 | <b>0.000</b>    |                 | <b>0.001</b>    |                 | 0.229           |                 |
|         | Gender   |                 | Overall         |                 | U17             |                 | U19             |                 | U21             |
|         |          | <i>Observed</i> | <i>Expected</i> | <i>Observed</i> | <i>Expected</i> | <i>Observed</i> | <i>Expected</i> | <i>Observed</i> | <i>Expected</i> |
| Females | Q1       | 159             | 120.5           | 50              | 36              | 71              | 48.5            | 38              | 36              |
|         | Q2       | 144             | 120.5           | 40              | 36              | 57              | 48.5            | 47              | 36              |
|         | Q3       | 102             | 120.5           | 31              | 36              | 38              | 48.5            | 33              | 36              |
|         | Q4       | 77              | 120.5           | 23              | 36              | 28              | 48.5            | 26              | 36              |
|         | Total    | 482             |                 | 144             |                 | 194             |                 | 144             |                 |
|         | $\chi^2$ | 35.43           |                 | 11.28           |                 | 22.87           |                 | 6.50            |                 |
|         | Sig.     | <b>0.000</b>    |                 | <b>0.010</b>    |                 | <b>0.000</b>    |                 | 0.090           |                 |



When analysing the categories in the U17 competition, the distribution observed is different than the uniform expected in the male ( $\chi^2=43.66$ ; d.f.=3;  $p<0.001$ ) and female categories ( $\chi^2=11.28$ ; d.f.=3;  $p<0.011$ ). The same happened in the U19 category in both the male ( $\chi^2=17.65$ ; d.f.=3;  $p<0.001$ ) and female categories ( $\chi^2=22.87$ ; d.f.=3;  $p<0.001$ ). Finally in the U21 category the distribution observed doesn't differ greatly from the statistic form expected in neither male ( $\chi^2=4.32$ ; d.f.=3;  $p<0.229$ ) nor female categories ( $\chi^2=6.50$ ; d.f.=3;  $p<0.091$ ).

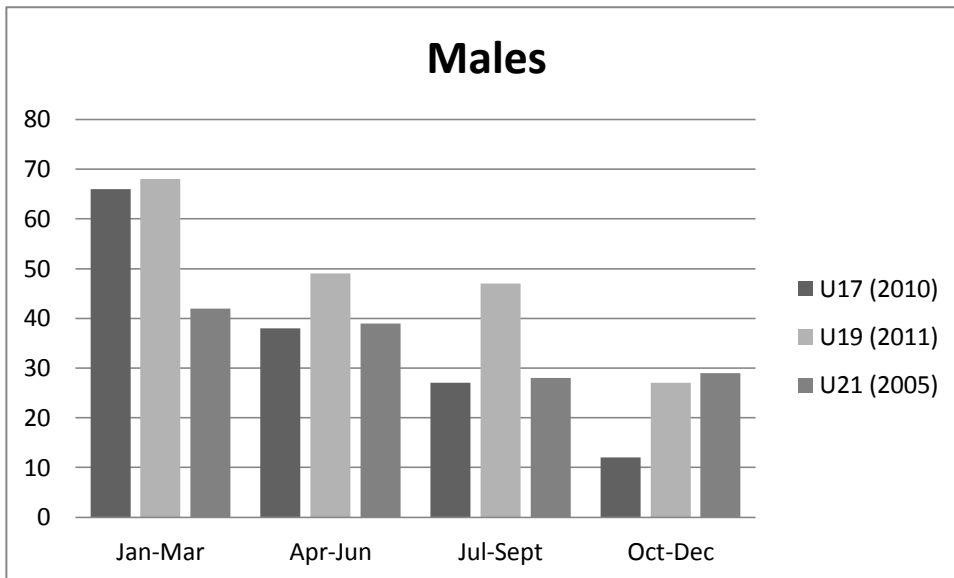


Figure 1.- Distribution of the dates of birth in function of age in the male categories.

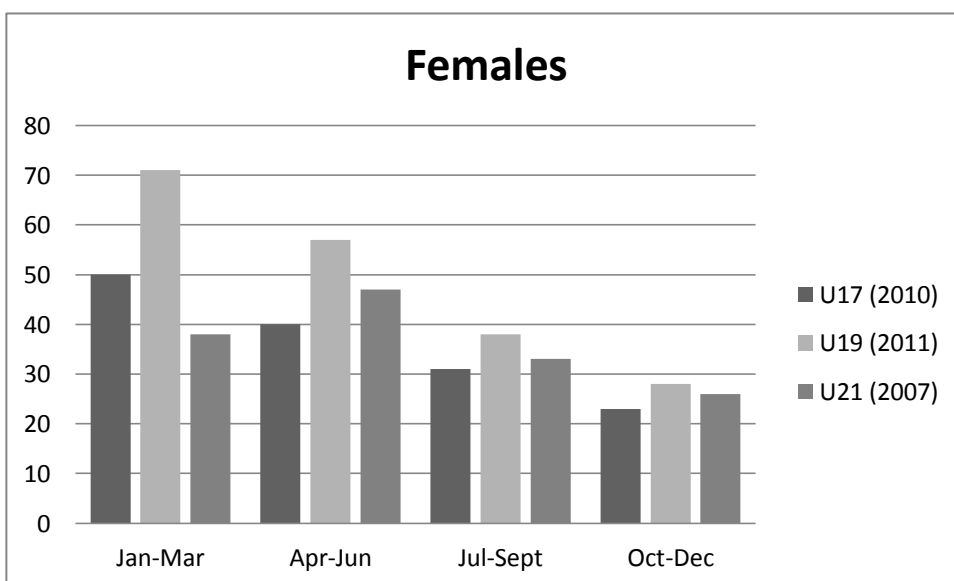


Figure 2.- Distribution of the dates of birth in function of age in the female categories.



*Specific positions*

In the analysis of the specific positions (table 2) a different distribution was found in the birth terms than the one expected in all of the positions ( $p < 0.05$ ) in the male category, being more distinct in the positions that require higher physical form (centre and power forward). In the female category the distribution in terms are different in the point guard, shooting guard and small forward ( $p < 0.05$ ).

Table 2.- Birth terms of players in the Basketball World Championships in function of specific positions.

| Gender  |                     | Point-Guard  |             | Shooting-Guard |             | Small-Forward |             | Power-Forward |             | Center       |             |
|---------|---------------------|--------------|-------------|----------------|-------------|---------------|-------------|---------------|-------------|--------------|-------------|
|         |                     | <i>Obs.</i>  | <i>Exp.</i> | <i>Obs.</i>    | <i>Exp.</i> | <i>Obs.</i>   | <i>Exp.</i> | <i>Obs.</i>   | <i>Exp.</i> | <i>Obs.</i>  | <i>Exp.</i> |
| Males   | Q1                  | 21           | 12.8        | 24             | 11.8        | 22            | 15.3        | 19            | 11.8        | 20           | 18          |
|         | Q2                  | 6            | 12.8        | 7              | 11.8        | 18            | 15.3        | 12            | 11.8        | 27           | 18          |
|         | Q3                  | 18           | 12.8        | 10             | 11.8        | 14            | 15.3        | 11            | 11.8        | 15           | 18          |
|         | Q4                  | 6            | 12.8        | 6              | 11.8        | 7             | 15.3        | 5             | 11.8        | 10           | 18          |
|         | <b>Total</b>        | 51           |             | 47             |             | 61            |             | 47            |             | 72           |             |
|         | $\chi^2$            | 14.65        |             | 17.77          |             | 8.05          |             | 8.40          |             | 8.78         |             |
|         | <b>Significance</b> | <b>0.002</b> |             | <b>0.000</b>   |             | <b>0.045</b>  |             | <b>0.038</b>  |             | <b>0.032</b> |             |
| Gender  |                     | Point-Guard  |             | Shooting-Guard |             | Small-Forward |             | Power-Forward |             | Center       |             |
|         |                     | <i>Obs.</i>  | <i>Exp.</i> | <i>Obs.</i>    | <i>Exp.</i> | <i>Obs.</i>   | <i>Exp.</i> | <i>Obs.</i>   | <i>Exp.</i> | <i>Obs.</i>  | <i>Exp.</i> |
| Females | Q1                  | 19           | 10          | 24             | 13.5        | 17            | 13.3        | 11            | 11.5        | 22           | 20.3        |
|         | Q2                  | 11           | 10          | 9              | 13.5        | 21            | 13.3        | 13            | 11.5        | 23           | 20.3        |
|         | Q3                  | 4            | 10          | 13             | 13.5        | 5             | 13.3        | 10            | 11.5        | 22           | 20.3        |
|         | Q4                  | 6            | 10          | 8              | 13.5        | 10            | 13.3        | 12            | 11.5        | 14           | 20.3        |
|         | <b>Total</b>        | 40           |             | 54             |             | 53            |             | 46            |             | 81           |             |
|         | $\chi^2$            | 13.40        |             | 11.93          |             | 11.53         |             | 0.44          |             | 2.61         |             |
|         | <b>Significance</b> | <b>0.004</b> |             | <b>0.008</b>   |             | <b>0.009</b>  |             | 0.933         |             | 0.457        |             |

*Height of Players*

When comparing height in the four terms, significant differences were found ( $p < 0.008$ ) in the male category, although no differences were found using the post-hoc analysis between the first and fourth term, two homogeneous subsets were defined, the first



formed by the heights of the first (195 cm), third (195.41cm) and fourth terms (197.86 cm); the second is formed by the second (198.45 cm) third (195.41 cm) and fourth terms (197.86 cm).

In the female categories no significant differences were found.

### *Performance*

#### Male category:

In the U17 category after the application of the Kruskal-Wallis test, significant differences were found ( $p < 0.017$ ) in the percentage of three point field throws, showing better percentages in players born in the first (22.5%) or in the second term (22.8%) of the year than players born in the third (20.0%) and fourth terms (21.4%).

In the U19 category significant differences were found ( $p < 0.036$ ) using the Kruskal-Wallis test in the points obtained per game with values of 6.7% for the first term, 7.3% for the second term, 5.2% for the third term and 6.8% for the last term.

In the U21 category no significant differences were found in neither of the variables studied.

#### Female category:

No significant differences were found in the performance by terms in the U17 category.

In the U19 category differences were found in the percentage of field throws ( $p < 0.005$ ) with lower percentages in the first (33.1%) and second terms (34.8%) in relation to the third (41.7%) and fourth terms (39.2%). In the percentage of the two points ( $p < 0.005$ ) the same performance and values were found in all four terms respectively, 35.2%; 36.9%; 46.6% & 41.1%. The assistances ( $p < 0.013$ ) show values of 8.9%, 4.7%, 7.1% & 7.1% for the four terms respectively, showing lower values in the second term. The assistances per game ( $p < 0.013$ ) show values of 1.17%, 0.64%, 0.95% & 0.94% for the four terms, also showing lower values in the second term.

Finally in the U21 category no significant values were found in the performance in function of the term born in.



## Discussion

In the present study the existence of the relative age effect has been confirmed in the Basketball World Championships in U17 and U19. In the U21 championship no significant differences were found. The same behaviour was found in the male and female category. Also, the effects in the relative age persist when talking about specific positions, proving to be more distinct in the positions that require more height in the male category. In the female category the effects of the relative age are more significant in the positions that require less height. However, the height of the players doesn't show expected values if the relative age effect exists. No significant differences were found in the height of the players analysed. Finally, small variations have been found in the performance of the players in function of the term birth in both male and female categories, although these variations do not coincide with the existence of the relative age effect.

The existence of the relative age effect in basketball has been documented by various authors (Delorme, & Raspaud, 2009; Delmore *et al.* 2010; Esteva *et al.* 2006) in male categories. Most investigations made refer to male sport and few have been done in female categories and even less in basketball. Delorme *et al.* (2010) found a relative age effect in female basketball and Roman, and Fuchslocher (2011) found it in football in 2011. These studies, the same as the present one, disagree with the ones done by Delorme, and Raspaud (2009) who found no relative age effect in female basketball. This effect may have been found in other young athletes in other sport disciplines (Ashworth, & Heyndels, 2007; Helsen *et al.* 1998; 2005).

The same as in this study, the investigations done in German football by Schorer, Cogley, Büsch, Bräutigam, and Baker, (2009) or in handball by Gutiérrez, Saavedra, Contreras, and Fernández, (2012) found a slight fall in the relative age effect as the age of the athlete's increments.

Schorer, Cogley *et al.* (2009) documented a relative age effect in different specific positions in German football, proving results that correspond with the obtained in the present study in the male categories, as the positions that require a higher physical form are taken preferably by athletes born in the first months of the year. The results found in female categories do not support the idea of the relative age effect as the players born in the first months of the year tend to take base point, shooting guard and small guard



positions, which are less dependent on biologic maturity. However, in football, Roman and Fuchslocher (2011) found a stronger relative age effect in goalkeeping and defence positions than in midfield and upfront positions.

In the present study no relative age effect was found in function of height or performance of the players. Schorer, Baker, Büsch, Wilhelm, and Pabst (2009) documented similar results in handball and determined that the cause of RAE isn't related to neither height, weight nor technical abilities, as no differences were found between relatively older and younger players. Neither anthropometric factors nor physical performance in young footballers found a RAE (Carling, Gall, Reilly, & Williams, 2009; Hirose, 2009).

### **Conclusions**

The relative age effect exists and is significant in the Basketball World Championships in both male and female U17 and U19. This effect reduces as the age of the athlete's increases and disappears in U21.

In specific positions the effect of the relative age is also significant, being in the male category clearer in the centres, power forwards and small forwards and less in point guards and shooting guards. In the female category the results do not support the existence of the relative age effect.

In the male category, differences were found in the height of the players in function of the term of birth, although these differences do not coincide with the expected if the relative age effect exists. However, no significant differences were found in height in the female categories.

The performance of the players in function of the birth term, show minimum differences in the male category in the U17, the players born in the first two terms obtained better percentages in the three point field throws than the ones born in the last terms of the year. In the U19, the points obtained are less in players that belong to the third term than the rest of the terms. In the female category some differences were found in the U19 but they do not support the existence of the RAE and no differences were found in neither U17 nor U21.

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 **27-Xullo-2012. Revisión maior.**

Vinte e tres días logo do envío do artigo á revista, chegounos a primeira resposta dos revisores, no cal nos puxeron os aspectos que se debería de modificar no documento, sendo estas de carácter considerábel. A continuación axúntase os comentarios dos revisores sobre as modificación e aclaracións que debemos de realizar.



**Decision Letter (IRSS-12-0082)**

**From:** irsseditor@gmail.com

**To:** miguel.saavedra@udc.es

**CC:**

**Subject:** International Review for the Sociology of Sport - Decision on Manuscript ID IRSS-12-0082

**Body:** @@date to be populated upon sending@@

Dear Dr. Saavedra Garcia:

Manuscript ID IRSS-12-0082 entitled "RELATIVE AGE EFFECT IN LOWER CATEGORIES OF INTERNATIONAL BASKETBALL" which you submitted to the International Review for the Sociology of Sport, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

Before it can be published in the IRSS the manuscript requires considerable revision prior to resubmission. The reviewer(s) find merit in your paper but there are substantial concerns that will need attention in revision. I encourage you to respond to the comments by reviewer(s) and revise your manuscript.

Let me comment briefly. Of the two reviewers, Reviewer 1 is most positive, with central concerns really only about findings and conclusions concerning "U-21." Here, the questions that Reviewer 1 raises are important, and I will look for you to speak to those in revision. In contrast, Reviewer 2 has advised me that the "paper needs a lot of work" but has much potential. Reviewer 2 finds the paper original and unique, but finds that the paper offers very little to the existing literature; in revision I will look for you to more clearly make the case where and how this study advances understanding concerning RAE. Reviewer 2 also makes a good point that your literature review needs to more clearly speak to the area of your concern and needs to bring context that will inform your findings; I will look for clear evidence that the literature review section has improved to achieve these goals. Reviewer 2 points to three pages where clarification and/or improvement in writing is needed; please address these in revision. Perhaps most importantly, Reviewer 2 raises questions about the importance of the conclusion; this is the most significant area where I think your study can improve: please speak to the issues that Reviewer 2 makes concerning the conclusions in clear ways as you revise your manuscript. Finally, I ask that you think about and speak to the issues concerning samples and their generalizability that Reviewer 2 raises as a "side note;" such issues are endemic in this kind of research and transparency and recognition of these issues will improve your report.

To revise your manuscript, log into <http://mc.manuscriptcentral.com/irss> and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

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Because we are trying to facilitate timely publication of manuscripts submitted to the International Review for the Sociology of Sport, your revised manuscript should be uploaded as soon as possible. If it is not possible for you to submit your revision in a reasonable amount of time, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to the International Review for the Sociology of Sport and I look forward to receiving your revision.

Sincerely,  
Dr. Lawrence Wenner  
Editor in Chief, International Review for the Sociology of Sport  
irsseditor@gmail.com

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author

A significant contribution to the RAE discussion. My only question would be if you felt the U-21 insignificance was an outlier, or whether RAE actually does diminish from U-21 onward. Perhaps a study of FIBA professionals would be in order (perhaps using the World Championship or Olympic rosters?) This topic is also ripe for meta-analysis. The authors are to be commended for a strong, insightful paper.

Reviewer: 2

Comments to the Author

This paper is original. With the use of FIBA data, the author finds a fading RAE effect across ages, with some variation by position played and some difference by gender. This article is unique but offers very little to the existing literature. There may be some contribution by demonstrating the fading influence of the RAE over time but there is no real attempt to conceptualize this trend in the data.

The literature review is a list of relevant studies but does little to point towards a conclusion of the author. Does the fading effect square or diverge from existing literature? The fading effect seems to square with Wattie et al. 2007 and Gibbs et al. 2011 argument that RAE diminishes over time. In my view, this needs to be a central feature of the paper's framing.

Page 7.

Can 18 year olds play in U21. Clarify.

Is this a sample or the population?

"FIBA is the only organization responsible in basketball" What does this mean?

Page 9

post-hoc with Turkey? What does this mean?

Page 10

Rephrase "observed doesn't differ greatly from the statistic form" (line 26)

Page 13

Rephrase "most investigations made refer to male sport" (line 43)

What is the big conclusion? How does what the author finds help the literature think differently? Does this work seek to clarify, confuse, revise arguments in the literature? Need much more thought-provoking insights in the framing and conclusion of the paper.

**\*\*A side note\*\***

I will say that I do struggle to understand the use of significance testing in this literature more generally when full populations are used. It is simply misleading to say one number is not significantly different from another when they are indeed different numbers. Because a whole population is known, the numbers are what they are. I don't fault the author, given that this appears to be an industry standard, but I am somewhat confused why inferential statistics are used to infer what the whole population \*would\* be when the author (from best I can tell) is indeed examining the whole population.

**Date Sent:** 27-Jul-2012



#### ✚ 4-Setembro-2012. Resposta á Revisión Maior.

Unha vez lido as revisións que nos pide ámbolos dous avaliadores da revista, e logo de facer as aclaracións e modificacións pertinentes, volvemos a enviar o traballo á revista, para que eles comprobasen que se modificou o documento tal e como requirían. A continuación axúntase as aclaracións e cambios que se enviou aos revisores.

| Reviewer | Comments to the autor   | Our revision   |
|----------|---|--|
| 1.       | <p>A significant contribution to the RAE discussion. My only question would be if you felt the U-21 insignificance was an outlier, or whether RAE actually does diminish from U-21 onward.</p> <p>Perhaps a study of FIBA professionals would be in order (perhaps using the World Championship or Olympic rosters?) This topic is also ripe for meta-analysis. The authors are to be commended for a strong, insightful paper.</p>   | <p>We don't think the U-21 insignificance was an outlier, similar results are observed by other authors as Drobnic, Puigdellivol, Serratosa, &amp; Chamorro (2006) in basketball or Gibbs et al. (2011) in Canadian Ice Hockey.</p>  |
| 2.       | <p>This paper is original. With the use of FIBA data, the author finds a fading RAE effect across ages, with some variation by position played and some difference by gender. This article is unique but offers very little to the existing literature. There may be some contribution by demonstrating the fading influence of the RAE over time but there is no real attempt to conceptualize this trend in the data.</p> <p>The literature review is a list of relevant studies but does little to point towards a conclusion of the author. Does the fading effect square or diverge from existing literature? The fading effect seems to square with Wattie et al. 2007 and Gibbs et al. 2011 argument that RAE diminishes over time. In my view, this needs to be a central feature of the paper's framing.</p> | <p>We changed the introduction and we classified the studies into three classes:</p> <ol style="list-style-type: none"><li>1. Studies that found that age bias is not only prevalent in the minor leagues but also carries over into the professional leagues.</li><li>2. Another studies found that relative age effect is only prevalent in lower categories, diminishing over the time and being not present in professional sport (we explain the fading effect here).</li><li>3. Studies that don't find RAE.</li></ol> |



|                     |   |  |
|---------------------|---|--|
| 2.                  | Can 18 year olds play in U21. Clarify.  | In the World Championship in the U17, U19 and U21 the participation of the athletes must be that age or younger, this way a 18 year old player can play in U21 championship.   |
| 2.                  | Is this a sample or the population?   | Our paper analyze the population, we changed it in our paper.  |
| 2.                  | "FIBA is the only organization responsible in basketball" What does this mean?  | The "International Basketball Amateur Federation" (FIBA) defines the international rules of basketball and is responsible of controlling and regulating all international competitions.  |
| 2.                  | post-hoc with Turkey? What does this mean?  | It is an error, the correct phrase is this one: Post-hoc analysis using Tukey range test.  |
| 2.                  | Rephrase "observed doesn't differ greatly from the statistic form" (line 26)  | Finally in the U21 category the distribution observed doesn't differ from the expected   |
| 2.                  | Rephrase "most investigations made refer to male sport" (line 43)   | Most investigations analyze male sport.  |
| 2.                  | What is the big conclusion?   | The relative age effect exists and is significant in the Basketball World Championships in both male and female U17 and U19. This effect diminishes as the age of the athlete's increases and disappears in U21.                                     |
| 2.                  | How does what the author finds help the literature think differently?   | Relative age effect is not studied in lower FIBA Basketball categories, we found this fading effect in our paper.  |
| 2.                  | Does this work seek to clarify, confuse, revise arguments in the literature?  | We believe that the existence of RAE can be used by FIBA for changing the way of making groups and this way avoid this effect.   |
| 2.                  | Need much more thought-provoking insights in the framing and conclusion of the paper.   | Introduction and conclusions was changed.  |
| <b>A side note.</b> | I will say that I do struggle to understand the use of significance testing in this literature more generally when full populations are used. It is simply misleading to say one number is not significantly different from another when they are indeed different numbers. Because a whole population is known, the numbers are what they are. I don't fault the author, given that this appears to be an industry | We agree Reviewr 2. Anyway we are analyzing a population in a time point and, maybe the time question is the key. This championships was played in the past and will be played again in the future, this way the population concept is not absolute. |



standard, but I am somewhat confused why inferential statistics are used to infer what the whole population \*would\* be when the author (from best I can tell) is indeed examining the whole population.

#### **5-Setembro-2012. Revisión Menor.**

Logo de que se mandase o documento coas diferentes modificacións, os revisores mandaron outros comentarios que consideran necesarios para que o documento se publicase, para iso, fixéronse pequenos cambios de carácter máis formal, como por exemplo o estilo, sangrias, pór and en vez de &.

Ver anexo 1. (Guía de estilo)



**Decision Letter (IRSS-12-0082.R1)**

**From:** irsseditor@gmail.com

**To:** miguel.saavedra@udc.es

**CC:**

**Subject:** International Review for the Sociology of Sport - Decision on Manuscript ID IRSS-12-0082.R1

**Body:** @@date to be populated upon sending@@

Dear Dr. Saavedra García:

The revision of your Manuscript ID IRSS-12-0082.R1 entitled "RELATIVE AGE EFFECT IN LOWER CATEGORIES OF INTERNATIONAL BASKETBALL" which you submitted to the International Review for the Sociology of Sport, has been reviewed by our editorial team. I wish to commend you on the careful changes that were made based on the comments of reviewers on the original version.

I look forward to publishing this manuscript in the IRSS. However, I ask that some final minor changes to ready the manuscript for production. Here is what I ask be done. First, please review the attached SAGE Harvard Style Guide that is used by the IRSS to make sure that both your in-body citation styles and Reference list style fully conforms to the house style. In particular, I noted that some of your in-body citations used the "&" rather "and" conventions as required in our style. As well please change your section entitled Bibliography to read References and make sure that only those references that actually appear in the manuscript itself are included in the References section. Beyond these issues, I ask that some minor style issues be addressed. First, I ask that each new paragraph is indented and that there be no line spaces between paragraphs. Second, I noted that you had a number of one sentence paragraphs and that their brevity is odd. Please work to incorporate these one sentence paragraphs into adjacent paragraphs; I think the logic will be retained and the readability improved.

To revise your manuscript, log into <http://mc.manuscriptcentral.com/irss> and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.

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Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.

**IMPORTANT:** Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Once again, thank you for submitting your manuscript to the International Review for the Sociology of Sport and I look forward to receiving your revision.

Sincerely,  
Dr. Lawrence Wenner  
Editor in Chief, International Review for the Sociology of Sport  
irsseditor@gmail.com

**Date Sent:** 05-Sep-2012

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### ✚ 6- setembro-2012. Resposta á Revisión Menor.

Neste caso, fixéronse as últimas modificacións para que se poidese publicar o traballo na revista. Para iso, fíxose as modificacións e aclaracións pertinentes, que aparecen reflexadas nun documento a parte coas súas modificacións.

### ✚ 6-setembro-2012. Aceptación do artigo.

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Manuscript ID: IRSS-12-0082.R2

Title: RELATIVE AGE EFFECT IN LOWER CATEGORIES OF INTERNATIONAL BASKETBALL

Authors: Saavedra García, Miguel  
Gutiérrez Aguilar, Óscar  
Fernández Romero, Juan J  
Fernández Lastra, David  
Eiras Oliveira, Gabriel

Date Submitted: 06-Sep-2012

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### 4- Outubro-2012. Galeradas.

Unha vez que os revisores dan por boas as modificacións feitas, mándase a outro departamento, que se encarga de dar o último repaso ao documento. Estes mandaron, nesta feha, aspectos que se deben de revisar para que se comprobren e se acepten, e así, se poida publicar o artigo.





| No | Query   |
|----|---|
| 1  | Please check whether the author names are correct as inserted.]   |
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| 3  | Please confirm my addition of 'and female' to the paragraph beginning 'The objective of this present study...'  |
| 4  | Please confirm my positioning of semi-colons to indicate list items in the list relating to 'the relative variables of the performance of the players'.   |
| 5  | Please provide a reference in the reference list for the FIBA website.  |
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| 7  | Please confirm whether the given funding statement is accurate and correct.   |
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| 9  | Please provide full publication information for the reference Gibbs et al. (2011).  |
| 10 | Please note that 'a and b' have been added to references 'Schorer, Baker, Büsch, et al. (2009a)' and 'Schorer, Cobley, Büsch, et al. (2009b)' to avoid confusion between two references with identical year. Please confirm that this is correct. |
| 11 | Please confirm figures for male U17 in Table 1, as $66 + 38 + 26 + 12 = 142$ .  |

### 5-Outubro-2012. Resposta ás Galeradas.

Unha vez recibidas as galeradas, fíxose unha revisión do artigo con respecto a estas, e enviouse as confirmacións que se pedían, as cales eran de carácter formal, de mala escritura, ou engadir certos aspectos. Neste paso, só nos temos que encargar de mandarlle as correccións e confirmacións e é a propia revista a que se encarga de modificalas no documento que van a publicar.

A continuación, móstrase os cambios que se realizaron:

1. Please check whether the author names are correct as inserted.

In Spain we have two surnames, you use our second surname but only use the initial letter of our first surname. First surname is the main for us and is needed to type all the letters. This way, I would like you include the complete names as follow:

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University of A Coruña, Spain  
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University Miguel Hernández, Spain  
Juan J. Fernández Romero  
University of A Coruña, Spain  
David Fernández Lastra  
University of A Coruña, Spain  
Gabriel Eiras Oliveira  
University of A Coruña, Spain

2. Please check whether the corresponding author details are correct as given.

Please add first surname Saavedra instead S:  
Miguel Saavedra García, Department of Physical Education and Sports,  
University of A Coruña, Avd. Ernesto Che Guevara, 121, Pazos – Lians, 15179  
Oleiros, A Coruña, Spain. Email: [miguel.saavedra@udc.es](mailto:miguel.saavedra@udc.es)



3. Please confirm my addition of ‘and female’ to the paragraph beginning ‘The objective of this present study...’.

Confirmed, the female addition is necessary, thanks!

4. Please confirm my positioning of semi-colons to indicate list items in the list relating to ‘the relative variables of the performance of the players’.

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5. Please provide a reference in the reference list for the FIBA website.

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10. Please note that ‘a and b’ have been added to references ‘Schorer, Baker, Büsch, et al. (2009a)’ and ‘Schorer, Cogley, Büsch, et al. (2009b)’ to avoid confusion between two references with identical year. Please confirm that this is correct.

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## Relative age effect in lower categories of international basketball

Miguel Saavedra García, Óscar Gutiérrez Aguilar, Juan J. Fernández Romero, David  
Fernández Lastra and Gabriel Eiras Oliveira  
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### Abstract

To be able to value the relative age effect in the male and female World Championships played between 2005 and 2010 in the U17 categories (athletes 17 years or younger), U19 (athletes 19 or younger) and U21 (athletes 21 years or younger) a sample of 954 players has been selected. The variables registered were their dates of birth, the category of the competition, gender, height and official statistics of each player obtained from the International Basketball Federation (FIBA). A clear relative age effect was found (in both male and female categories) fading with age, being higher in the U17 category, slightly less but also significant in the U19, and no significant effect found in U21. This effect persists when the different specific positions were analysed in the male categories, being clearer in the positions that require more physical strength. In female categories the results do not back the existence of the relative age effect. Also, differences were found in height in the male category with regard to the players' year-quarter of birth, but its interpretation is not consistent with the relative age effect. In the female category no differences were found in height. Finally, the performance difference of the players in the male and female categories hardly varies with regard to the year-quarter of birth.

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**Introduction**

The term Relative Age Effect (RAE) has been used to determine the effect of the influence of the date of birth in the performance of the person. The first studies that investigated this effect were done in the education environment (Armstrong, 1966; Freyman, 1965).

Investigations made in the education area by Russell and Startup (1986) based their study in the relevance of being born at the start or at the end of the academic year, concluding that pupils born at the start had an academic advantage over the rest until 18 years of age, but after this age, the ones born at the end of the year gave better performance.

Grondin et al. (1984) were the first to do a study of the RAE in sport, finding an unequal distribution in the dates of birth in the players in different levels of Canadian ice hockey and volleyball, concluding that many players were born near to the cut date. These studies have been revised, updated and confirmed (Gibbs et al., 2011; Nolan and Howell, 2010).

Musch and Hay (1999) investigated the age effect in an intercultural sample (Germany, Japan, Brazil and Australia) and concluded that the cut date in football is the main factor that effects relative age in professional football.

Other studies that analyzed the RAE in the formation ages of sport groups included the essays by Helsen et al. (1998), whose results indicated that youth football players born between August and October (the first part of the year for the selection) are more probable to be identified as talented and to be exposed to higher levels of training, whilst the players born at the end of the year tended to drop out at 12 years of age. Also, an essay with young footballers by Ashworth and Heyndels (2007) proved that players born after the cut-off date earned higher wages.

There are studies that found that age bias is not only prevalent in the minor leagues but also carries over into the professional leagues. The results of the Helsen et al. (2005) investigation show an excessive representation of players born in the first three months of the year (from January to March) for all youth National Teams in the under 15 years of age (U15), U16, U17 and U18, and the same being true for the UEFA Sub-16 and the Meridian Cup. The players with a relatively older age are more likely to be identified as talents because of the probable physical advantages that they have over the other, younger players. Continuing with football at professional level, Jullien et al. (2008) concluded that coaches tend to select players born in the first four months of the year.

Carling et al. (2009) investigated whether the maturity, the anthropometric profile and the valuation of physical state varied in the distribution of the date of birth in the elite. This study suggested that the relative age of the athlete does not always relate to a significant advantage in physical components.

Delorme and Raspaud (2009) found clear differences in the relative age effect in French athletes aged between seven and 18 years, in both male and female categories. They also studied the height of the players, finding that the ones born in the first two terms of the year were taller. Also, Delorme et al. (2011) investigated the relative age effect as a factor for abandoning sport in basketball players, finding a higher index of



leavers in players born at the end of the year. Nolan and Howell (2010) found that age bias is not only prevalent in the minor leagues but also carries over into the National Hockey League (NHL).

Other studies found that relative age effect is only prevalent in lower categories, diminishing over time and not being present in professional sport. In basketball, the investigation by Esteva et al. (2006) determined a strong tendency to select players born in the first three months of the year compared to those born towards the end of the year. This tendency loses its strength as the players go through the categories, until arriving at professional basketball. This is explained because in the first stages of the sport, the players are selected only because of their advanced maturity or other indicators such as height. This way, a great quantity of possible future talents are lost and other players have more opportunities of getting to become professional players only because they were born in the first three months of the year. Gibbs et al. (2011) found that the relative age effect is moderate for the average Canadian National Hockey League player and reverses when examining the most elite professional players.

Lidor et al. (2010) studied the effects in a small country (Israel) of the relative age and the place of birth of the players in various sports, in which basketball was included. No significant relative age effect or the effect of the place of birth was found.

Baker et al. (2010) revised the possible causes of the RAE and suggested some solutions. The most used explanation for justifying the RAE is the process of maturation of the athletes: the athletes born nearer the cut-off date have higher levels of performance than the younger ones (Barnsley and Thompson, 1988; Malina, 1994; Malina et al., 2004). The solutions suggested tend to be related to the variation of the age, which means that the RAE changes but is persistent (Helsen et al., 2000; Musch and Hay, 1999; Simmons and Paull, 2001). Other solutions suggest an enormous administrative complex, such as the one by Barnsley and Thompson (1988) who say that the selection of participants should adjust to a certain distribution or control of the average age in all types of teams Helsen et al. (1998, 2000).

The objective of this present study is to check whether the relative age effect does exist in the World Basketball Championship U17, U19 and U21 male and female categories, to investigate if the relative age effect exists in the different specific positions and also try to find differences in height and in performance between players depending on their date of birth.

## Material and methods

### Sample

The athlete populations were selected from the last male and female editions of the Basketball World Championships U17 played in 2010, U19 played in 2011 and U21 played in 2005 in the male category, and in 2007 in the female category. The total number of athletes in the sample is 954, of which 472 are from the male category (143 player in the U17, 191 in U19 and 138 in U21) and 482 from the female category (144 players in the U17, 194 in U19 and 144 in U21).



The International Basketball Amateur Federation (FIBA) defines the international rules of basketball and is responsible for controlling and regulating all international competitions. In the World Championship in the U17, U19 and U21 categories, the participation of the athletes must be that age or younger. The criteria selection used indicates that at least 10 participating athletes are born in the same year. Applying this rule, in the analysis, in the male category a 15-year-old athlete was excluded in the U17, another aged 16 in the U19 and eight athletes in the U21 (seven players were 18 years old and one was 17). In the female category five players aged 15 and two aged 17 were excluded in the U17, seven players aged 16 and two aged 15 in the U19 and four players aged 17 and two aged 16 in the U21.

### *Procedure*

The following variables were studied: gender, category, season, team, classification, position and date of birth. Also the height of the players was registered and the relative variables of the performance of the players (games played; minutes played; converted field goals, tries, and the percentage of effectiveness; two point field goals, tries, and the percentage of effectiveness; three point field goals, tries, and the percentage of effectiveness; free goals scored, tried, and the percentage of effectiveness; defensive rebounds; offensive and total of rebounds; assistances; personal faults; recuperations; stolen; blocked; points; points per game; rebounds per game and game assistance).

The information was collected from the FIBA website (<http://www.fiba.com/>). Afterwards the variable term was generated, dividing the dates of birth of the players into four terms (quarters) that start on the 1st of January and end on the 31st of December of the same year. This way the athletes born from the 1st of January until the 31st of March form the first term (Q1), the players born from the 1st of April until the 30th of June form the second term (Q2), the players born from the 1st of July until the 30th of September belong to the third quarter (Q3) and finally the players born from the 1st of October until the 31st of December make up the fourth term (Q4).

### *Analysis of information*

To determine the RAE, the Chi-squared test was used to determine if the distribution of the dates of birth differ significantly from the theory distribution that is hoped to be found (in which the probability of finding athletes born in whichever term of the year is the same).

To compare between the height of the players and the relative performance variables for each term of birth, an ANOVA was used and the post-hoc analysis used the Tukey range test, a previous guarantee of normality (Kolmogorov–Smirnov test) and an equality (Levene test). In the case that the requirements of application were not met, the use of ANOVA is rejected and the Kruskal–Wallis test is used. In this study the statistic tests are considered significant when  $p < 0.05$ .

## **Results**

Table 1 shows the term distribution of the birth dates of all players of the basketball world championships in lower categories.



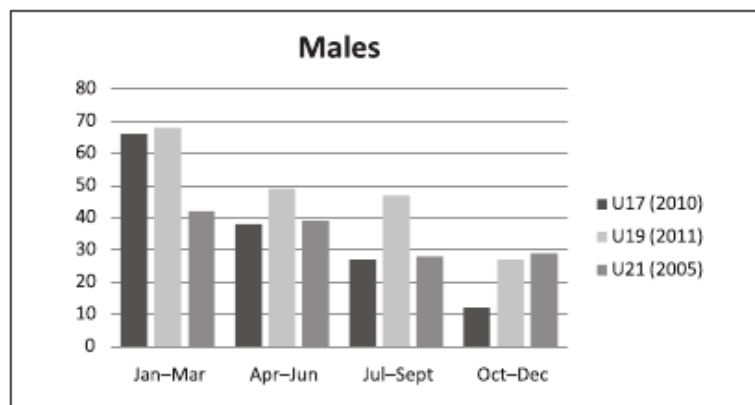


The global distribution observed is different than expected in both male ( $\chi^2=52.41$ ; d.f.=3;  $p<0.001$ ; Figure 1), and female categories ( $\chi^2=45.43$ ; d.f.=3;  $p<0.001$ ; Figure 2).

When analyzing the categories in the U17 competition, the distribution observed is different than the uniform expected in the male ( $\chi^2=43.66$ ; d.f.=3;  $p<0.001$ ) and female categories ( $\chi^2=11.28$ ; d.f.=3;  $p<0.011$ ). The same happened in the U19 category in both the male ( $\chi^2=17.65$ ; d.f.=3;  $p<0.001$ ) and female categories ( $\chi^2=22.87$ ; d.f.=3;  $p<0.001$ ). Finally in the U21 category the distribution observed does not differ from the expected in either male ( $\chi^2=4.32$ ; d.f.=3;  $p<0.229$ ) or female categories ( $\chi^2=6.50$ ; d.f.=3;  $p<0.091$ ).

**Table 1.** Terms of the date of births of all players in the Basketball World Championships U17, U19 and U21

| Gender         |              | Overall      |          | U17          |          | U19          |          | U21          |          |
|----------------|--------------|--------------|----------|--------------|----------|--------------|----------|--------------|----------|
|                |              | Observed     | Expected | Observed     | Expected | Observed     | Expected | Observed     | Expected |
| <b>Males</b>   | <b>Q1</b>    | 176          | 118      | 66           | 35.8     | 68           | 47.8     | 42           | 34.5     |
|                | <b>Q2</b>    | 126          | 118      | 38           | 35.8     | 49           | 47.8     | 39           | 34.5     |
|                | <b>Q3</b>    | 102          | 118      | 26           | 35.8     | 47           | 47.8     | 28           | 34.5     |
|                | <b>Q4</b>    | 68           | 118      | 12           | 35.8     | 27           | 47.8     | 29           | 34.5     |
|                | <b>Total</b> | 472          |          | 142          |          | 191          |          | 138          |          |
|                | $\chi^2$     | 52.41        |          | 43.66        |          | 17.65        |          | 4.32         |          |
|                | <b>Sig.</b>  | <b>0.000</b> |          | <b>0.000</b> |          | <b>0.001</b> |          | <b>0.229</b> |          |
| <b>Females</b> | <b>Q1</b>    | 159          | 120.5    | 50           | 36       | 71           | 48.5     | 38           | 36       |
|                | <b>Q2</b>    | 144          | 120.5    | 40           | 36       | 57           | 48.5     | 47           | 36       |
|                | <b>Q3</b>    | 102          | 120.5    | 31           | 36       | 38           | 48.5     | 33           | 36       |
|                | <b>Q4</b>    | 77           | 120.5    | 23           | 36       | 28           | 48.5     | 26           | 36       |
|                | <b>Total</b> | 482          |          | 144          |          | 194          |          | 144          |          |
|                | $\chi^2$     | 35.43        |          | 11.28        |          | 22.87        |          | 6.50         |          |
|                | <b>Sig.</b>  | 0.000        |          | 0.010        |          | 0.000        |          | 0.090        |          |



**Figure 1.** Distribution of the dates of birth in function of age in the male categories.

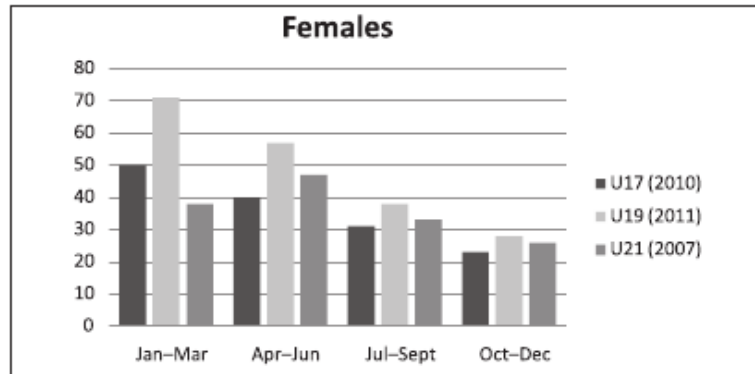


Figure 2. Distribution of the dates of birth in function of age in the female categories.

### Specific positions

In the analysis of the specific positions (Table 2) a different distribution was found in the birth terms than the one expected in all of the positions ( $p < 0.05$ ) in the male category, being more distinct in the positions that require higher physical form (centre and power forward). In the female category the distribution in terms are different in the point guard, shooting guard and small forward ( $p < 0.05$ ).

### Height of players

When comparing height in the four terms, significant differences were found ( $p < 0.008$ ) in the male category, although no differences were found using the post-hoc analysis between the first and fourth term. Two homogeneous subsets were defined, the first formed by the heights of the first (195 cm), third (195.41 cm) and fourth terms (197.86 cm); the second is formed by the second (198.45 cm) third (195.41 cm) and fourth terms (197.86 cm). In the female categories no significant differences were found.

### Performance

**Male category.** In the U17 category after the application of the Kruskal–Wallis test, significant differences were found ( $p < 0.017$ ) in the percentage of three point field throws, showing better percentages in players born in the first (22.5%) or in the second term (22.8%) of the year than players born in the third (20.0%) and fourth terms (21.4%).

In the U19 category significant differences were found ( $p < 0.036$ ) using the Kruskal–Wallis test in the points obtained per game with values of 6.7% for the first term, 7.3% for the second term, 5.2% for the third term and 6.8% for the last term. In the U21 category no significant differences were found in either of the variables studied.

**Table 2.** Birth terms of players in the Basketball World Championships in predicting performance in specific positions

| Gender         |          | Point-Guard |       | Shooting-Guard |       | Small-Forward |       | Power-Forward |       | Centre |      |
|----------------|----------|-------------|-------|----------------|-------|---------------|-------|---------------|-------|--------|------|
|                |          | Obs.        | Exp.  | Obs.           | Exp.  | Obs.          | Exp.  | Obs.          | Exp.  | Obs.   | Exp. |
| <b>Males</b>   | Q1       | 21          | 12.8  | 24             | 11.8  | 22            | 15.3  | 19            | 11.8  | 20     | 18   |
|                | Q2       | 6           | 12.8  | 7              | 11.8  | 18            | 15.3  | 12            | 11.8  | 27     | 18   |
|                | Q3       | 18          | 12.8  | 10             | 11.8  | 14            | 15.3  | 11            | 11.8  | 15     | 18   |
|                | Q4       | 6           | 12.8  | 6              | 11.8  | 7             | 15.3  | 5             | 11.8  | 10     | 18   |
|                | Total    | 51          |       | 47             |       | 61            |       | 47            |       | 72     |      |
|                | $\chi^2$ | 14.65       |       | 17.77          |       | 8.05          |       | 8.40          |       | 8.78   |      |
| Significance   | 0.002    |             | 0.000 |                | 0.045 |               | 0.038 |               | 0.032 |        |      |
| <b>Females</b> | Q1       | 19          | 10    | 24             | 13.5  | 17            | 13.3  | 11            | 11.5  | 22     | 20.3 |
|                | Q2       | 11          | 10    | 9              | 13.5  | 21            | 13.3  | 13            | 11.5  | 23     | 20.3 |
|                | Q3       | 4           | 10    | 13             | 13.5  | 5             | 13.3  | 10            | 11.5  | 22     | 20.3 |
|                | Q4       | 6           | 10    | 8              | 13.5  | 10            | 13.3  | 12            | 11.5  | 14     | 20.3 |
|                | Total    | 40          |       | 54             |       | 53            |       | 46            |       | 81     |      |
|                | $\chi^2$ | 13.40       |       | 11.93          |       | 11.53         |       | 0.44          |       | 2.61   |      |
| Significance   | 0.004    |             | 0.008 |                | 0.009 |               | 0.933 |               | 0.457 |        |      |

*Female category.* No significant differences were found in the performance by terms in the U17 category. In the U19 category differences were found in the percentage of field throws ( $p < 0.005$ ) with lower percentages in the first (33.1%) and second terms (34.8%) in relation to the third (41.7%) and fourth terms (39.2%). In the percentage of the two points ( $p < 0.005$ ), the same performance and values were found in all four terms respectively, 35.2%; 36.9%; 46.6% and 41.1%. The assistances ( $p < 0.013$ ) show values of 8.9%, 4.7%, 7.1% and 7.1% for the four terms respectively, showing lower values in the second term. The assistances per game ( $p < 0.013$ ) show values of 1.17%, 0.64%, 0.95% and 0.94% for the four terms, and also show lower values in the second term. Finally, in the U21 category no significant values were found in the performance with regard to the term of birth.

## Discussion

In the present study, the existence of the relative age effect has been confirmed in the Basketball World Championships in U17 and U19. In the U21 championship no significant differences were found. The same behaviour was found in the male and female categories. Also, the effects of relative age persist when talking about specific positions, proving to be more distinct in the positions that require more height in the male category. In the female category the effects of the relative age are more significant in the positions that require less height. However, the height of the players does not show expected values if the relative age effect exists. No significant differences were found in the height of the players analysed. Finally, small variations have been found in the performance of the



players with regard to the effect of the term of birth in both male and female categories, although these variations do not coincide with the existence of the relative age effect.

The existence of the relative age effect in basketball has been documented by various authors (Delorme and Raspaud, 2009; Delorme et al., 2010; Esteva et al., 2006) in male categories. Most investigations analyse male sport and few have been done in female categories and even fewer in basketball. Delorme et al. (2010) found a relative age effect in female basketball and Roman and Fuchslocher (2011) found it in football in 2011. These studies, as with the present one, disagree with the ones done by Delorme and Raspaud (2009) who found no relative age effect in female basketball. This effect may have been found in other young athletes in other sport disciplines (Ashworth and Heyndels, 2007; Helsen et al., 1998, 2005).

As in this study, the investigations done in German football by Schorer et al. (2009b) or in handball by Gutiérrez et al. (2012) found a slight fall in the relative age effect as the age of the athletes increases.

Schorer et al. (2009b) documented a relative age effect in different specific positions in German football, proving results that correspond with those obtained in the present study in the male categories, as the positions that require a higher physical form are taken more often by athletes born in the first months of the year. The results found in female categories do not support the idea of the relative age effect as the players born in the first months of the year tend to take base point, shooting guard and small guard positions, which are less dependent on biologic maturity. However, in football, Roman and Fuchslocher (2011) found a stronger relative age effect in goalkeeping and defence positions than in midfield and upfront positions.

In the present study no relative age effect was found in function of height or performance of the players. Schorer et al. (2009a) documented similar results in handball and determined that the cause of RAE is not related to either height, weight or technical abilities, as no differences were found between relatively older and younger players. Neither anthropometric factors nor physical performance in young footballers found a RAE (Carling et al., 2009; Hirose, 2009).

## Conclusions

The relative age effect exists and is significant in the Basketball World Championships in both male and female U17 and U19 players. This effect diminishes as the age of the athletes increases, and disappears in U21.

In specific positions the effect of relative age is also significant, being in the male category clearer in the centres, power forwards and small forwards and less in point guards and shooting guards. In the female category the results do not support the existence of the relative age effect.

In the male category, differences were found in the height of the players with regard to the term of birth, although these differences do not coincide with those expected if the relative age effect exists. However, no significant differences were found in height in the female categories.

The performance of the players with regard to the birth term shows minimal differences in the male category in the U17, as the players born in the first two terms obtained



better percentages in the three point field throws than the ones born in the last terms of the year. In the U19, the points obtained are fewer in players that belong to the third term than the rest of the terms. In the female category some differences were found in the U19 but they do not support the existence of the RAE and no differences were found in either U17 or U21.

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## COMPETENCIAS

### CONCEPTO:

A combinación dun conxunto de coñecementos, habilidades, actitudes e valores que a persoa activa pon en marcha para dar unha resposta adecuada e satisfactoria a unha situación persoal e/ou profesional complexa.

*Grup Interuniversitari de Formació Docent*



## ANÁLISE DAS COMPETENCIAS QUE USEI PARA A ELABORACIÓN DO TFG:

|          |                |               |         |
|----------|----------------|---------------|---------|
| 1. Baixa | 2. Medio baixa | 3. Medio alta | 4. Alta |
|----------|----------------|---------------|---------|

### COMPETENCIAS ESPECÍFICAS:

|   |  |                               |   |
|---|--|-------------------------------|---|
| <b>A1</b>   | <i>Comprender os procesos históricos das actividades físico- deportivas e a súa influencia na sociedade contemporánea, estudando o caso de España e Galicia, e a presenza diferenciada dos homes e das mulleres.</i> |                               |   |
| Debido a adquisición desta competencia permitíume coñecer a evolución que sufriron as actividades físico- deportivas ao longo da historia até chegar aos nosos tempos.<br>Un dos rascos máis importantes que se transmitiu con esta competencia foi o combate que se tivo ao longo da historia entre a presenza ou non das mulleres nas diferentes actividades deportivas, pois estas eran consideradas como actividades propias do home. Na actualidade séguese vendo que hai diferenzas entre ámbolos dous xéneros, pois no ámbito da investigación, podemos observar que as grandes publicacións son do deporte masculino, excluindo en moitas ocasións ó ámbito feminino. |  |                               |   |
| Materias que abordaron esta competencia   |  |                               |   |
| De forma principal:   | Teoría e historia da actividade física e do deporte<br>Socioloxía da actividade física e do deporte  | De forma secundaria:          | Materias específicas de deportes,<br>Xogos e recreación deportiva,<br>Teoría e práctica do exercicio. |
| Comentario:<br>Estas materias fixeron fincapé en como ditas actividades físico- deportivas evolucionaron a través do contexto social que atravesaba tanto Galiza como España. Así como a influencia que tivo isto na sociedade actual.<br>Destaco que os mestres que traballaron de forma principal sobre esta competencia utilizaron un paradigma sociolóxico que busca cambiar o pensamento machista, que aínda hai na sociedade, para un pensamento de igualdade de oportunidades entre xéneros.   |  |                               |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |  |                               |   |
| Realizadas a través da facultade:   |  | Realizadas fora da facultade: | Educación dos pais,<br>Mestres de escola e instituto.   |
| Comentario:<br>Fora da facultade non tiven ningunha formación referida á evolución histórica das actividades deportivas, nin tampouco de cómo se ve isto na sociedade actual. É certo, que si tiven algunha información máis de cómo se vía e como se ve á muller no deporte, tanto na escola e instituto, como por conversas mantidas cos meus pais, pero de unha maneira moi xeral.   |  |                               |   |
| Aportes do traballo fin de grado  |  |                               |   |
| Coa revisión bibliográfica feita ao comezo, xa me decatei que é moi limitada a información que hai do deporte feminino con respecto ó masculino, polo tanto, o TFG, demostroume que isto era así e que aínda queda un longo camiño para que haxa igualdade no caso do deporte.  |  |                               |   |





|                                     |   |   |   |   |
|-------------------------------------|---|---|---|---|
| Grado de adquisición da competencia | 1 | 2 | 3 | 4 |
|-------------------------------------|---|---|---|---|

**A3**

Coñecer e analizar a cultura deportiva e propoñer os cambios necesarios, na propia e na das persoas coas que traballa, desde a ética e o xogo limpo, as diferenzas de xénero e a visibilidade dos discapacitados.

Esta competencia foi unha das claves pola que se desenrolou este traballo. O feito de haber tomado conciencia ao longo dos cursos do grado, sobre os criterios de selección de mozos talentos que se están levando a cabo, foi a principal motivación para analizar ditas variábeis e desta forma pñer de manifesto que tales criterios non son premonitorios de rendemento.

## Materias que abordaron esta competencia

|                     |  |                      |   |
|---------------------|--|----------------------|---|
| De forma principal: | Bases da educación física e deportiva,<br>Pedagogía da actividade física e do deporte,<br>Xogos e recreación deportiva,<br>Teoría e historia da actividade física e do deporte,<br>Socioloxía da actividade física e o deporte,<br>Actividade física e deporte adaptado,<br>Metodoloxía de investigación en actividade física e deporte,<br>Prácticum. | De forma secundaria: | Habilidades acuáticas e a súa didáctica,<br>Voleibol e a súa didáctica,<br>Balonmán e a súa didáctica,<br>Fútbol e a súa didáctica, |
|---------------------|--|----------------------|---|

## Comentario:

Esta competencia foise desenrolando grazas ás materias citadas, cobrando especial importancia a materia de Bases da Educación Física e Deportiva, na cal a través dos casos prácticos e contidos teóricos íanse mostrando características que afectan á motricidade de nenos e adolescentes. As materias relacionadas cos deportes, informaron sobre os factores de rendemento asociados a ditas especialidades. O Prácticum contribuíu en gran medida, xa que se afondou sobre as variábeis que afectan ao rendemento dos futbolista mozos.

## Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:

|                                   |  |                               |  |
|-----------------------------------|--|-------------------------------|--|
| Realizadas a través da facultade: | Seminario de Rugby praia e balonmán I. | Realizadas fora da facultade: |  |
|-----------------------------------|--|-------------------------------|--|

## Comentario:

Con seminario de Balonmán I podo afondar máis na cultura propia deste deporte, pois xa o iniciara coa propia materia e xa tiña uns mínimos. O feito de realizar isto, servíume para coñecer esta cultura de forma máis vivencial pois a súa metodoloxía era facer que experimentásemos todos os roles que hai no balonmán: deportista, árbitro e seareiro. Co seminario de Rugby praia puiden coñecer mellor a súa cultura. A cultura deste deporte xa a tiña coñecida, pois é un deporte que me atrae dende xa hai anos, pero nunca a chegara a experimentar. O feito de vivencia cos compañeiros e, pola forma de realizar este seminario (sempre práctica), permitiume afondar en certos valores que non se dan noutro deporte e que nun futuro me gustaría poder transmitir.



| Aportes do traballo fin de grado  |   |   |   |   |
|---|---|---|---|---|
| Esta competencia xa fora adquirida ao longo das materias cursadas, polo que me permitiu orientar de forma precisa o estudo. Unha vez finalizado o traballo, podó dicir que o seu desenrolo contribuíu a afianzar máis si cabe esta competencia. |   |   |   |   |
| Grado de adquisición da competencia   | 1 | 2 | 3 | 4 |

|   |  |                               |   |   |
|---|--|-------------------------------|---|---|
| <b>A19</b>  | Planificar, desenvolver, controlar e avaliar técnica e cientificamente o proceso de adestramento deportivo nos seus distintos niveis e nas diferentes etapas da vida deportiva, de equipos con miras á competición, tendo en conta as diferenzas biolóxicas entre homes e mulleres e a influencia da cultura de xénero na actuación do adestrador e nos deportistas. |                               |   |   |
| Esta competencia no foi precisa para a elaborar o TFG, pero coa realización disto conseguimos un paso anterior desta competencia, pois realizamos a investigación de si a idade relativa (unha variábel biolóxica que xera diferenzas nos nenos e nenas) afectaba ao rendemento do baloncesto de competición e en diferentes etapas da vida. Polo que o seguinte paso sería planificar, desenrolar, controlar e avaliar o proceso de adestramento segundo isto.   |  |                               |   |   |
| Materias que abordaron esta competencia   |  |                               |   |   |
| De forma principal:   | Teoría e práctica do exercicio, Metodoloxía de investigación en actividade física e deporte, Metodoloxía do Rendemento Deportivo, Teoría e práctica do adestramento deportiva.   | De forma secundaria:          | Biomecánica do movemento humano, Fisioloxía do exercicio I, |   |
| Comentario:<br>As materias de “Teoría e Práctica do Adestramento Deportivo” así como a “Metodoloxía do Rendemento Deportivo”, a través dos seus contidos teóricos e prácticos, son as dúas que máis contribuíron a que alcanzara a citada competencia. A materia de investigación e a de exercicio aportáronme ferramentas para conseguir esta competencia.<br>De forma secundaria está a biomecánica e a fisioloxía pois refírese máis ao estudo do corpo en movemento, e non está tan orientado ao proceso de adestramento en si. |  |                               |   |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |  |                               |   |   |
| Realizadas a través da facultade:   | Seminario de control abdómino- pélvico.  | Realizadas fora da facultade: |   |   |
| Comentario:<br>Este seminario foi a miña única fonte de adquisición para lograr esta competencia. Que me deu coñecementos de cómo traballar tendo en conta as diferenzas biolóxicas (pero só dunha determinada zona) e sobre todo, referido á muller.   |  |                               |   |   |
| Aportes do traballo fin de grado  |  |                               |   |   |
| O desenrolo do TFG non me permitiu desenrolar a competencia utilizada, polo tanto, o aporte do TFG nesta competencia foi nula.  |  |                               |   |   |
| Grado de adquisición da competencia   | 1  | 2                             | 3   | 4 |



|  |   |  |  |
|--|---|--|--|
| <b>A25</b>   |   | Identificar e comprender os requisitos psicomotores e sociomotores das habilidades deportivas, executando basicamente as habilidades motrices específicas dun conxunto de deportes, considerando as diferenzas por xénero. |  |
| O feito de coñecer os requisitos psicomotores e sociomotores das habilidades relacionadas co baloncesto, permitiume seleccionar que variábeis do rendemento dos xogadores utilizar para estudar o efecto da “Idade Relativa”   |   |  |  |
| Materias que abordaron esta competencia  |   |  |  |
| De forma principal:  | Materias específicas de cada deporte.<br>Bases da educación física e deportiva,<br>Teoría e práctica do exercicio,<br>Actividade física no medio natural, | De forma secundaria:   |  |
| Comentario:<br>O desenrolo desta competencia logrouse cos contidos teóricos das materias citadas e potenciouse coa experiencia vivida durante as clases prácticas que permite integrar esta competencia de forma máis profunda.  |   |  |  |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |   |  |  |
| Realizadas a través da facultade:  | Seminario de Rugby e seminario de Balonmán.   | Realizadas fora da facultade:  | Experiencia como alumno na escola e instituto. |
| Comentario:<br>Nos seminarios realizados nesta facultade, sobre deportes permitiume seguir afondando sobre estes contidos que nos ensinaron nas materias ofertadas no grado.<br>No caso da experiencia como alumno, tiven un pequeno contacto cos requisitos sociomotores das habilidades deportivas e non tanto dos requisitos psicomotores.<br>En ningún momento houbo unha consideración do xénero. |   |  |  |
| Aportes do traballo fin de grado   |   |  |  |
| Comentario:<br>Esta competencia no foi desenrolada coa realización do Traballo Fin de Grado.   |   |  |  |
| Grado de adquisición da competencia  | 1   | 2  | 3  |
|  |   |  | 4  |



|   |   |   |   |
|---|---|---|---|
| <b>A35</b>  |   | Coñecer e saber aplicar o método científico nos diferentes ámbitos da actividade física e o deporte, así como saber deseñar e executar as técnicas de investigación precisas, e a elección e aplicación dos estatísticos adecuados. |   |
| Sen ter adquirido esta competencia sería imposible levar a cabo este estudio. O coñecemento de diferentes probas estatísticas foi fundamental para poder analizar as variábeis obtidas, así como o saber interpretar os resultados obtidos tras a aplicación das diferentes probas estatísticas. Nesta mesma liña, o dominio dos diferentes deseños de investigación e tratamento de mostras, permitíume enfocar o traballo dunha maneira correcta. |   |   |   |
| Materias que abordaron esta competencia   |   |   |   |
| De forma principal:   | Metodoloxía de investigación en actividade física e deporte,      | De forma secundaria:  | Biomecánica do movemento humano, Aprendizaxe e control motor, Psicoloxía da actividade física e do deporte, |
| <p>Comentario:</p> <p>A partires da materia de Investigación fun capaz de adquirir dita competencia. Os contidos teóricos impartidos na aula e, sobre todo, no traballo proposto polo mestre relacionado co estudo da “Home Advantage”, foron claves ara alcanzar os coñecementos precisos.</p> <p>Outras materias permitíronme coñecer diferentes técnicas de investigación, pero ningunha delas de forma estatística.</p>                         |   |   |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |   |   |   |
| Realizadas a través da facultade:   | Colaboración con Miguel Saavedra Postgrado de adestrador analista | Realizadas fora da facultade:   |   |
| <p>Comentario:</p> <p>O desenrolo desta competencia viuse favorecido grazas ás diferentes colaboracións realizadas co mestre Miguel Saavedra, en relación a diferentes artigos que foron publicados.</p> <p>Ademais o curso de postgrado de adestrador analista, tivo un apartado que tiña relación co programa SPSS, pero impartido cun nivel baixo, polo que só permitiu repasar algúns conceptos.</p>  |   |   |   |
| Aportes do traballo fin de grado  |   |   |   |
| <p>Comentario:</p> <p>Grazas á realización do TFG coñecín diferentes probas (non vistas na aula de “Metodoloxía de investigación en actividade física e deporte” que se poden utilizar para analizar e comparar os datos da mostra.</p>   |   |   |   |
| Grado de adquisición da competencia   | 1   | 2   | 3   |
|   |   |   | 4   |



|   |  |   |   |
|---|--|---|---|
| <b>A36</b>  |  | Coñecer e saber aplicar as novas tecnoloxías da información e a imaxe, tanto nas ciencias da actividade física e do deporte, como no exercicio profesional. |   |
| Esta competencia foi necesaria para realizar a recensión bibliográfica. Esta competencia permitíume facer realizar unha busca máis rigorosa e completa de todos aqueles artigos que puidesen conter información relevante para a elaborar el TFG. Tamén me permitiu realizar a presentación de Power Point para presentar o traballo.   |  |   |   |
| Materias que abordaron esta competencia   |  |   |   |
| De forma principal:   | Biomecánica do movemento humano, Teoría e práctica do exercicio, Habilidades de loita e a súa didáctica, Tecnoloxía en actividade física e deporte, Prácticum, | De forma secundaria:  | Bases da educación física e deportiva, Xogos e recreación deportiva, Metodoloxía de investigación en actividade física e deporte, |
| Comentario:<br>A través destas materias son capaz de buscar de forma máis eficaz a información precisa en diferentes ámbitos. Ademais o feito de que mandasen facer traballos de presentacións de contidos tanto audiovisuais, como de información provocou que mellorase esta competencia até adquirila.   |  |   |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |  |   |   |
| Realizadas a través da facultade:   | Postgrado de adestrador analista.  | Realizadas fora da facultade:   |   |
| Comentario:<br>Este postgrado tiña un traballo consistente en realizar unha presentación de 2 páxinas web, polo que me permitiu facer buscas máis eficientes para adquirir información de fútbol (tanto estatísticas como de vídeos). Ademais, había ponencias de presentacións de informes que me permite mellorar o manexo da tecnoloxía á hora de buscar transmitir eu información a outra persoa. |  |   |   |
| Aportes do traballo fin de grado  |  |   |   |
| Comentario:<br>Esta materia, máis que desenrolar esta competencia, usa esta para que o traballo sexa posíbel debido a que me permite obter información de forma máis eficaz e de presentar o traballo o mellor posíbel.   |  |   |   |
| Grado de adquisición da competencia   | 1  | 2   | 3   |
|   |  |   | 4   |



## COMPETENCIAS TRANSVERSAIS:

|  |  |                               |   |
|--|--|-------------------------------|---|
| <b>B1</b>  | Coñecer e posuír a metodoloxía e estratexia necesaria para a aprendizaxe nas ciencias da actividade física e do deporte. |                               |   |
| Necesaria para poder entender e interpretar os contidos a desenrolar no Traballo Fin de Grado  |  |                               |   |
| Materias que abordaron esta competencia  |  |                               |   |
| De forma principal:  | Todas as materias cursadas   | De forma secundaria:          |   |
| Comentario:<br>Todas as materias do plan de estudos contribuíron a alcanzar esta competencia, xa que non só se centraron en que se alcanzasen os seus propios contidos, senón que se fomentou o traballo autónomo por parte do alumno, o que favoreceu ó desenrolo desta competencia.  |  |                               |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |  |                               |   |
| Realizadas a través da facultade:  | Seminarios realizados  | Realizadas fora da facultade: |   |
| Comentario:<br>Todos os seminarios nos que participei a través da facultade aportáronme diferentes metodoloxías e estratexias ara seguir formándome sobre eses aspectos, debido a que todos foron impartidos ou por mestres ou por xente de confianza destes.<br>Ademais, o feito de ser deportista tamén me permitiu adquirir esta competencia. |  |                               |   |
| Aportes do traballo fin de grado   |  |                               |   |
| Comentario:<br>Contribuíu a reforzar esta competencia, xa que me obrigou a utilizar as metodoloxías e estratexias adquiridas ao longo da carreira, para poder elaboralo.   |  |                               |   |
| Grado de adquisición da competencia  | 1  | 2                             | 3 |
|  |  |                               | 4 |



|   |                             |  |                              |   |
|---|-----------------------------|--|------------------------------|---|
| <b>B2</b>   |                             | Resolver problemas de forma eficaz e eficiente no ámbito das ciencias da actividade física e do deporte. |                              |   |
| Sen a utilización desta competencia non seria capaz de dar resposta a este traballo, posto que, non deixa de ser un conxunto de problema que van aparecendo continuamente e os cales hai que enfrontarse para sacar a diante a investigación.   |                             |  |                              |   |
| Materias que abordaron esta competencia   |                             |  |                              |   |
| De forma principal:   | Todas as materias cursadas. | De forma secundaria:   |                              |   |
| Comentario:<br>Igual que ocorre coa anterior, todas as materias do plan de estudos contribuíron en conxunto a alcanzar esta competencia, a través dos diferentes contidos impartidos na aula e dos diferentes traballos (problemas) que se debían elaborar de forma autónoma (tanto individual como en colectivo), o que permitiu levar á práctica os contidos adquiridos.  |                             |  |                              |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |                             |  |                              |   |
| Realizadas a través da facultade:   | Seminarios                  | Realizadas fora da facultade:  | Club,<br>Escola ou instituto |   |
| Comentario:<br>Os seminarios realizados potenciaron o adquirido dentro da aula da facultade, pois o feito de ser docentes deste organismo, a metodoloxía a utilizar son sempre a mesma, polo que, contribuíron a que seguise adquirindo estes problemas.<br>Fora do entorno da facultade, tanto no club como na formación preuniversitaria, esta competencia foi menor, pois sempre nos deron as cousas feitas e tan só tiñamos que poñelas en práctica. A medida que avancei na idade, ían delegándome máis problemas pero sempre de forma moi guiada. |                             |  |                              |   |
| Aportes do traballo fin de grado  |                             |  |                              |   |
| Comentario:<br>O feito de ter que facer algo que non tiña experiencia, que era novo para min, (agás o traballo da materia de investigación, pero a un nivel inferior), contribuíu a desenrolar esta competencia aínda máis da que a tiña, posto que tiven que enfrontarme a situacións descoñecidas cada vez que daba un paso. Para que a publicación se puidera realizar necesitamos que todos os aspectos os resolvésemos de forma eficaz.  |                             |  |                              |   |
| Grado de adquisición da competencia   | 1                           | 2  | 3                            | 4 |



|   |   |   |                             |
|---|---|---|-----------------------------|
| <b>B3</b>   |   | Traballar nos diferentes contextos da actividade física e o deporte, de forma autónoma e con iniciativa, aplicando o pensamento crítico, lóxico e creativo. |                             |
| Esta competencia foi utilizada dende o primeiro intre que comecei co traballo de fin de grado, pois, tivemos que analizar, de forma crítica e lóxica, todos os traballos existentes na bibliografía, co fin de recoller todos os artigos de interese e eliminar aqueles irrelevantes.   |   |   |                             |
| Materias que abordaron esta competencia   |   |   |                             |
| De forma principal:   | Prácticum, Metodoloxía de investigación en actividade física e deporte, Habilidades acuáticas e a súa didáctica Dirección e xestión deportiva, Tecnoloxía en actividade física e deporte, | De forma secundaria:  | O resto das materias.       |
| <p>Comentario:</p> <p>Dende o meu punto de vista, tanto o prácticum (debido a súa natureza de traballar de forma titorizada con profesionais), metodoloxía de investigación en actividade física e deporte (posto que facemos unha investigación real como traballo, aínda que de forma resumida), habilidades acuáticas e a súa didáctica (posto que fixemos unhas prácticas fora do centro con nenos reais durante 7 sesións), tecnoloxía (posto que as bases de datos que temos que facer na aula son uns exemplos das que teriamos que facer no mundo laboral) e Dirección e xestión deportiva (no que participei como colaborador na organización dunha competición: Mera 100) que foron as materias que máis me axudaron a desenrolar esta competencia.</p> <p>As demais materias tamén me serviron para adquirir esta competencia, pero de unha forma máis secundaria, posto que non levei a práctica real as situacións formuladas, pois, ou o solucionabamos de forma escrita, en papel, ou considerando que os alumnos ou usuarios eran os nosos compañeiros (persoas que non tiñan o perfil que buscabamos). De todas as formas, todas as materias nos deron casos reais, en contextos determinados, a resolver nos que tiñamos que tomar decisións para lograr o obxectivo.</p> |   |   |                             |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |   |   |                             |
| Realizadas a través da facultade:   | Seminarios.   | Realizadas fora da facultade:   | Voluntariado con Aspronaga. |
| <p>Comentario:</p> <p>O que máis me axudou para adquirir esta competencia fora do horario académico foi a xornada que realicei como voluntariado nos “Xogos Minoritarios de Galicia”, posto que tiven que facer un traballo autónomo (dentro do que se me pedía) e con iniciativa (para tomar certas decisións). Aínda que non tiven que facer moita reflexión das miñas actuacións, pois tiña bastante marcadas as pautas a seguir.</p>  |   |   |                             |
| Aportes do traballo fin de grado  |   |   |                             |
| <p>Comentario:</p> <p>No TFG tiven que facer un traballo máis exhaustivo que o que se propuxo na materia de “Metodoloxía en investigación da actividade física e deporte” polo simple feito de ser unha publicación nunha revista internacional- Debido a isto, o artigo desenrolado dotoume d certa autonomía neste contexto.</p>  |   |   |                             |
| Grado de adquisición da competencia   | 1   | 2   | 3                           |





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|--|--|-------------------------------|---|
| <b>B4</b>  | Traballar de forma colaboradora, desenvolvendo habilidades, de liderado, relación interpersoal e traballo en equipo. |                               |   |
| Durante o desenrolo do artigo, foi fundamental o traballo de colaboración que realicei cos outros autores, por iso, desenvolvín habilidades de relación interpersoal e traballo en equipo.   |  |                               |   |
| Materias que abordaron esta competencia  |  |                               |   |
| De forma principal:  | Todas as materias cursadas.  | De forma secundaria:          |   |
| <p>Comentario:</p> <p>Todas as materias ofrecen ao alumno a posibilidade de realizar polo menos un traballo en grupo, polo que leva consigo un desenrolo desta competencia, xa que nalgúns momentos tes que tomar decisións máis de liderado e noutras non tanto, tendo que respectar en todo momento as decisións e ideas dos compañeiros. Ademais, nas materias prácticas como son as vinculadas ao deporte, esta competencia desenrolase grazas ás propias características de este ámbito.</p> <p>A pesares disto, non conseguín en gran medida esta competencia, posto que, non atopei compañeiros de traballo que se quixeran implicar tanto como eu quería en certos traballos e facelos de forma máis conxunta. A excepción deste son certos compañeiros como, por exemplo, Javier Cotarelo ou David Fernández Lastra, este último foi compañeiro do Prácticum co cal pasei moitas horas e puidemos traballar de forma moi boa durante o transcurso deste e, extrapolalo a outras materias.</p> |  |                               |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |  |                               |   |
| Realizadas a través da facultade:  | Seminarios realizados.   | Realizadas fora da facultade: | Pertenza dun club deportivo,<br>Convivencia con amigos e familiares<br>Formación en escola e instituto. |
| <p>Comentario:</p> <p>En todos os seminarios que realicei na facultade seguiron a dinámica presentada anteriormente entre os compañeiros. Nestes desenrolei relacións interpersoais con outros compañeiros da facultade que non pertencen ao meu grupo de aula.</p> <p>Tamén desenrolei esta competencia noutros campos, como é o feito de realizar, dende moi neno, un deporte colectivo, que me fixo traballar e colaborar con outras persoas co fin de lograr o ben común.</p>  |  |                               |   |
| Aportes do traballo fin de grado   |  |                               |   |
| <p>Comentario:</p> <p>O feito de ter contacto cos outros autores permitíume seguir desenrolando esta competencia, ademais nun entorno diferente que no caso anterior, pois a gran maioría eran mestres que tiñan experiencia e, polo tanto, o grupo de traballo era totalmente diferente ao atopado noutro intre.</p>  |  |                               |   |
| Grado de adquisición da competencia  | 1  | 2                             | 3   |
|  |  |                               | 4   |



|   |                                 |   |                               |                            |
|---|---------------------------------|---|-------------------------------|----------------------------|
| <b>B5</b>   |                                 | Comportarse con ética e responsabilidade social como cidadán. |                               |                            |
| Esta é unha competencia que utilizaría tanto en todos os traballos fin de grado, como en todos os meus actos do día a día, posto que considero que son comportamentos que nunca nos podemos esquecer de realizar. Máis aínda, no nosos caso, que traballemos onde traballemos seremos educadores e isto é o primeiro que temos que transmitir, por riba do coñecemento. |                                 |   |                               |                            |
| Materias que abordaron esta competencia   |                                 |   |                               |                            |
| De forma principal:   | Todas as materias.              |   | De forma secundaria:          |                            |
| Comentario:<br>Todos os mestres, durante o desenvolvemento da súa materia transmitiron esta competencia, facendo fincapé en que nos temos que comportarnos así e que nos temos que provocar que os nosos usuarios, deportistas e alumnado desenvolvan no día a día un comportamento ético e responsábel, sendo consecuentes cos nosos actos.                            |                                 |   |                               |                            |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |                                 |   |                               |                            |
| Realizadas a través da facultade:   | Todas as actividades realizadas |   | Realizadas fora da facultade: | Todos os actos realizados. |
| Comentario:<br>Tanto a educación dos meus pais e familiares, dos mestres que tiveron ao longo da miña vida como de todo o contacto que tiveron co todas as persoas (tanto as que teñen esta competencia como algo primordial, como aquelas que consideran que por riba disto hai moitas cousas) conseguín desenvolver esta competencia.                                 |                                 |   |                               |                            |
| Aportes do traballo fin de grado  |                                 |   |                               |                            |
| Comentario:<br>Co traballo fin de grado non conseguín adquirir nada novo nesta competencia, pois penso que a educación recibida anteriormente provocou que teña nun nivel moi alto de adquisición.  |                                 |   |                               |                            |
| Grado de adquisición da competencia   | 1                               | 2   | 3                             | 4                          |



|   |   |                               |  |
|---|---|-------------------------------|--|
| <b>B7</b>   |   | Xestionar a información.      |  |
| Debido á gran cantidade de información existente sobre a Idade Relativa na bibliografía foi de especial interese utilizar esta competencia, co obxectivo de recoller aquela que fose relevante para o noso estudo e apartar aquela que non fose precisa.  |   |                               |  |
| Materias que abordaron esta competencia   |   |                               |  |
| De forma principal:   | Todas as materias.  | De forma secundaria:          |  |
| <p>Comentario:</p> <p>En maior ou menor cantidade, en todas as materias tiven a necesidade de xestionar certa información, para sacar o máis importante, tanto para estudar como para a realización de un traballo.</p> <p>Incluso en algunhas materias, como é o caso de “ Actividade física saudábel e calidade de vida II”, “Voleibol e a súa didáctica” ou na optativa de atletismo tiñan como un dos traballos a recensións bibliográficas, co obxectivo de que coñecésemos fontes de información específicas para os seus ámbitos.</p>  |   |                               |  |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |   |                               |  |
| Realizadas a través da facultade:   | Seminario de control abdómino- pélvico.<br>Seminario de Socorrismo. | Realizadas fora da facultade: | Realización de artigos en Fútbol-táctico.com |
| <p>Comentario:</p> <p>O feito de realizar estes seminarios tiveron como traballo final un traballo no cal requiría, en baixa medida, buscar certa información para levar a cabo este.</p> <p>Co fin de facer os artigos de forma óptima vinme na necesidade de buscar certa información, e de maneira crítica (apoiando en coñecementos anteriores) aceptar ou rexeitar aquela información precisa, para realizar o traballo o mellor posíbel.</p> <p>Tamén me sirve para lograr esta información, en aquelas ocasións nas que quero coñecer un tema da realidade que me preocupa, (filtrando a información segundo en penso, posto que entre diferentes fontes de información aparecen puntos de vista diferentes)</p> |   |                               |  |
| Aportes do traballo fin de grado  |   |                               |  |
| <p>Comentario:</p> <p>Para o primeiro paso da investigación foi moi importante esta competencia. Tiven a necesidade de ler o gran número de traballos que hai sobre o tema e logo decidir cal sería preciso e cal non.</p> <p>Antes deste traballo tiven que xestionar varias veces información (sobre todo nos últimos 4 anos) pero en ningún intre tiven que analizar a gran cantidade de artigos que precisei desta vez, e de tal complexidade (polo feito de estar nunha lingua estranxeira).</p>   |   |                               |  |
| Grado de adquisición da competencia   | 1   | 2                             | 3  |
|   |   |                               | 4  |



|   |                    |   |     |
|---|--------------------|---|-----|
| <b>B8</b>   |                    | Desenvolver hábitos de excelencia e calidade nos diferentes ámbitos do exercicio profesional. |     |
| O feito de que este traballo fin de grado fose unha publicación JCR provoca que o grado de calidade tivese que ser moi grande, polo que tiven que facer todos os pasos o mellor que podía.  |                    |   |     |
| Materias que abordaron esta competencia   |                    |   |     |
| De forma principal:   | Todas as materias. | De forma secundaria:  |     |
| Comentario:<br>Todas as materias cursadas buscan que sexamos uns grandes profesionais, e que se note a diferenza entre a nosa labor e aqueles profesionais sen formación, buscando que todos os alumnos que salgan desta facultade teñan todas as competencias para mellor o que se está facendo actualmente neste ámbito e para que sexa recoñecida a nosa profesión.          |                    |   |     |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |                    |   |     |
| Realizadas a través da facultade:   | Seminarios         | Realizadas fora da facultade:   |     |
| Comentario:<br>Fortalecen o que se vai transmitindo nas propias materias da facultade. O problema disto, ao igual que nas materias do grado é que non se leva á práctica os coñecementos, e polo tanto, non coñezo até que punto teño desenrolada esta competencia. A miña sensación é que aínda me queda un longo camiño por percorrer para conseguir lograr esta competencia. |                    |   |     |
| Aportes do traballo fin de grado  |                    |   |     |
| Comentario:<br>No ámbito da investigación teño máis desenrolada esta competencia polo feito de que conseguín realizar un artigo de forma oficial, é dicir, levei a práctica os coñecementos deste ámbito, ademais aprendín os pasos para que isto ocorra.   |                    |   |     |
| Grado de adquisición da competencia   | 1                  | 2   | 3 4 |



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|---|--|-------------------------------|--|
| <b>B9</b>   | Comprender a literatura científica do ámbito da actividade física e o deporte en lingua inglesa e en outras linguas de presenza significativa no ámbito científico.                      |                               |  |
| Debido a ter que revisar toda a bibliografía existen sobre a “Relative Age Effect” tiven a necesidade de botar man a esta competencia, posto que as grandes revistas de impacto están na lingua inglesa, polo que o coñecemento desta lingua foi de total importancia.  |  |                               |  |
| Materias que abordaron esta competencia   |  |                               |  |
| De forma principal:   | Aprendizaxe e control motor, Metodoloxía de investigación en actividade física e deporte, Teoría e práctica do adestramento deportiva, Actividade física saudábel e calidade de vida II, | De forma secundaria:          | Habilidades acuáticas e a súa didáctica, Metodoloxía do Rendemento Deportivo, Biomecánica do movemento humano, |
| Comentario:<br>As materias citadas permitiron o desenvolvemento desta competencia grazas as lecturas que me mandaron os mestres sobre algún tema de interese para a materia, tanto obrigatorias como optativas. A gran maioría foron en inglés, aínda que tamén tiven que ler algún artigo en portugués e en italiano. A pesares disto, o desenvolvemento desta competencia é moi limitado posto que non tiña unha gran base anteriormente. |  |                               |  |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |  |                               |  |
| Realizadas a través da facultade:   |  | Realizadas fora da facultade: | Clases en academia, Artigos publicados.  |
| Comentario:<br>Para a realización de algún artigo publicado en futbol-táctico.com, tiven a necesidade de ler algún artigo, de feito, unha destas publicacións foi unha tradución do portugués ao castelán.<br>Tamén tentei sacar o B1, a través dunha academia de inglés, polo que me permitiu seguir adquirindo esta competencia, pero ao ser tan xeral en ningún momento se utilizou un vocabulario moi específico deste ámbito.          |  |                               |  |
| Aportes do traballo fin de grado  |  |                               |  |
| Comentario:<br>O TFG axudoume moito a realizar esta competencia pois tiven a necesidade de ler un gran número de artigos e todos eles en inglés. O feito de ser todos os artigos sobre o mesmo tema, fun capaz de adquirir algún vocabulario específico sobre o tema, pois repetíanse continuamente certas palabras. A pesar disto, para ter adquirida esta competencia preciso dun maior número de horas de traballo.                      |  |                               |  |
| Grado de adquisición da competencia   | 1  | 2                             | 3  |
|   |  |                               | 4  |



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|--|--|-------------------------------|-----------------------------------|
| <b>B10</b>   | Saber aplicar as tecnoloxías da información e comunicación (TIC) ao ámbito das Ciencias da Actividade Física e do Deporte. |                               |                                   |
| Esta competencia foi precisa para realizar a revisión bibliográfica dos artigos que hai publicados na internet, así como, para realizar unha presentación na que se exporá o contido do traballo fin de grado aos mestres que o avalían.   |  |                               |                                   |
| Materias que abordaron esta competencia  |  |                               |                                   |
| De forma principal:  | Todas as materias.   | De forma secundaria:          |                                   |
| <p>Comentario:</p> <p>Todas as materias buscan, a través de diferentes métodos desenrolar esta competencia. O caso máis claro é o de Tecnoloxía na actividade física e deporte, por motivos claros, xa que Antonio Rivas danos a coñecer como facer bases de datos e como traballar con un editor de vídeo. Outros mestres, para desenrolar esta competencia, mandan como traballo analizar xogadas (baloncesto), analizar certos movementos filmados (biomecánica, optativa de atletismo), filmar a túa propia execución (exercicio e loita), utilización de programa estatístico (investigación) ou os máis comúns como son facer presentación en Power Point ou buscar información en internet.</p> |  |                               |                                   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |  |                               |                                   |
| Realizadas a través da facultade:  |  | Realizadas fora da facultade: | Postgrado de adestrador analista. |
| <p>Comentario:</p> <p>O postgrado de adestrador analista doume moitas formas de cómo utilizar esta competencia, xa non só en aplicar ou non o coñecemento, senón de que forma presentar a información para que o receptor poida adquirir cun maior grado o que intentamos transmitir (a través do relatorio de Xulio Torrado da USC e do mestre da ULeon, Juan Carlos Morante. Ademais tiven aceso a un programa informático (VAExpress) que me permite analizar e observar mellor toda o que ocorre nun campo de fútbol.</p>  |  |                               |                                   |
| Aportes do traballo fin de grado   |  |                               |                                   |
| <p>Comentario:</p> <p>O feito de utilizar o SPSS foi o maior aporte do TFG a lograr esta competencia. É certo que xa tiña coñecementos sobre este programa, pero a súa utilización neste traballo permitíume coñecer algunhas probas que non coñecía con anterioridade así como, repasar outras que xa utilizara. En definitiva, o aporte non foi moito pero si o suficiente como para seguir progresando no desenrolo desta competencia.</p>  |  |                               |                                   |
| Grado de adquisición da competencia  | 1  | 2                             | 3                                 |
|  |  |                               | 4                                 |



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| <b>B11</b>   |                             | Desenvolver competencias para a adaptación a novas situacións e resolución de problemas, e para a aprendizaxe autónoma. |   |
| Utilicei esta competencia polo simple feito de que, ao realizar un traballo fin de grado, xa te estás poñendo en unha situación nova, que debes solucionar para acadar o resultado final de forma eficaz.  |                             |   |   |
| Materias que abordaron esta competencia  |                             |   |   |
| De forma principal:  | Todas as materias cursadas. | De forma secundaria:  |   |
| Comentario:<br>Este plan de estudos que iniciamos os da miña promoción, verba que o alumnado debe ter un gran número de horas para o aprendizaxe autónomo, é dicir, o mestre formula un problema e o alumno é o que debe buscar a solución. Durante toda a carreira a dinámica foi esa, os mestres mandaban traballos e o alumno, con máis ou menos indicacións, tiñan que atopar a solución. Debido a isto, penso que si son adquirín esta competencia.                       |                             |   |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |                             |   |   |
| Realizadas a través da facultade:  |                             | Realizadas fora da facultade:   |   |
| Comentario:<br>É difícil pensar en cales foron as actividades fora da facultade que me permitiron desenvolver esta competencia. Adaptarme a novas situacións non me é complicado, pois estiven en un gran número de colexios polo que o cambio de contexto non me supón un problema.<br>En canto ao aprendizaxe autónomo penso que tan só o adquirín con esta carreira, pois anos anteriores sempre que tiven que resolver un problema o mestre dábame os parámetros a seguir. |                             |   |   |
| Aportes do traballo fin de grado   |                             |   |   |
| Comentario:<br>O aporte máis grande do traballo fin de grado será enfrontarme á presentación do traballo fin de grado fronte a uns mestres, pola miña fobia a falar e, sobre todo, a expor os traballos en público.  |                             |   |   |
| Grado de adquisición da competencia  | 1                           | 2   | 3 |
|  |                             |   | 4 |



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|---|---|--|--|
| <b>B12</b>  |   | Coñecer os principios éticos necesarios para o correcto exercicio profesional e actuar de acordo con eles. |  |
| <p>Todo o que se intente facer, sexa no exercicio profesional como noutro calquera, debe ser respectando os principios éticos, é dicir, que para facer o TFG tiven que utilizar esta competencia.</p>   |   |  |  |
| Materias que abordaron esta competencia   |   |  |  |
| De forma principal:   | Todas as materias realiza durante a carreira. | De forma secundaria:   |  |
| <p>Comentario:<br/>         Todos os mestres, en maior ou menor medida buscaron que sexamos uns profesionais que teñamos en mente sempre os principios éticos. Isto non se traballou de forma explícita, pero os mestres buscaron implantárnolo de diversas maneiras. Temos que ser respectuosos con todos aqueles que estean ao noso arredor e ser responsábeis dos nosos actos.</p> |   |  |  |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |   |  |  |
| Realizadas a través da facultade:   | Todas as actividades realizadas na facultade  | Realizadas fora da facultade:  | Educación dos pais, Educación dos mestres Convivencia cos semellantes. |
| <p>Comentario:<br/>         A educación que recibín dos meus pais foi sempre que ante todo, debemos de respectar estes principios. O feito de que miña nai sexa mestra, axuda a ver como ela leva estes principios á escola, pois a forma de dirixirse aos alumnos e a forma de traballo sérveme de exemplo para saber como debo de actuar correctamente.</p>                         |   |  |  |
| Aportes do traballo fin de grado  |   |  |  |
| <p>Comentario:<br/>         Segue a mesma dinámica que as demais materias, é dicir, os mestres cos que tiven contacto, así como o compañeiro desta publicación contribuíron a que este traballo se elaborase con estes principios.</p>  |   |  |  |
| Grado de adquisición da competencia   | 1   | 2  | 3  |
|   |   |  | 4  |





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|--|--|--|--|
| <b>B13</b>   |  | Coñecer e aplicar metodoloxías de investigación que faciliten a análise, a reflexión e cambio da súa práctica profesional, posibilitando a súa formación permanente. |  |
| Este traballo é unha investigación propiamente dita, polo tanto, é lóxico pensar que utilicei estas competencia para o desenrolo do traballo fin de grado. Grazas a ter esta competencia, puíden levar a cabo esta análise de datos sobre a idade relativa, así como reflexionar sobre estes.  |  |  |  |
| Materias que abordaron esta competencia  |  |  |  |
| De forma principal:  | Metodoloxía de investigación en actividade física e deporte, | De forma secundaria:   | Pedagogía da actividade física e do deporte, Biomecánica do movemento humano, Psicoloxía da actividade física e do deporte, Aprendizaxe e control motor, Metodoloxía do Rendemento Deportivo, Prácticum, |
| Comentario:<br>As metodoloxías de investigación adquiridas foron por parte dos dous mestres que imparten a materia de “Metodoloxía de investigación en actividade física e deporte”. Outras materias fan referencia a estas metodoloxía ou dannos a coñecer técnicas propias para a investigación que poden ter efectos no traballo.<br>A parte das mencionadas, hai en materias nas que adquirín a aplicación de metodoloxías, sendo a máis predominante a observacional. O caso máis claro deste é a materia de baloncesto co seu traballo optativo de observar accións de xogo dun partido. |  |  |  |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |  |  |  |
| Realizadas a través da facultade:  | Colaboración con Miguel Saavedra.                            | Realizadas fora da facultade:  | Curso de postgrado de adestrador analista.   |
| Comentario:<br>O curso de adestrador analista permitíume, nun nivel moi alto, adquirir esta competencia en canto á metodoloxía observacional se refire. É certo que tamén fai fincapé na de metodoloxía descritiva (sobre todo no análise estatístico) pero nunha medida menor.<br>O feito de colaborar con Miguel Saavedra, tamén provocou que esta competencia a adquirise nun nivel superior.   |  |  |  |
| Aportes do traballo fin de grado   |  |  |  |
| Comentario:<br>Permitíume coñecer en máis profundidade a metodoloxía descritiva, levándoa a práctica nun caso real. Ademais, coñecín outro tipo de probas para que o estudo fose moito maior, é dicir, aportoume en canto a parte máis de aplicación das metodoloxías de investigación.  |  |  |  |
| Grado de adquisición da competencia  | 1  | 2  | 3  |
|  |  |  | 4  |



|  |                             |  |   |
|--|-----------------------------|--|---|
| <b>B16</b>   |                             | Dominar habilidades de comunicación verbal e non verbal necesarias no contexto da actividade física e o deporte. |   |
| Moi utilizada, sobre todo a referente á comunicación escrita, para poder redactar correctamente o artigo publicado e os apartados correspondentes aos aspectos formais do traballo fin de grado. Ademais utilizarei a comunicación verbal para transmitir o traballo realizado aos revisores deste traballo.   |                             |  |   |
| Materias que abordaron esta competencia  |                             |  |   |
| De forma principal:  | Expresión corporal e danza. | De forma secundaria:   | O resto das materias.                                     |
| <p>Comentario:</p> <p>Doulle un chanzo maior a materia de Marta Bobo, pois considero que nesta, a parte de traballar a comunicación oral e escrita, tamén se le deu moita importancia á linguaxe do corpo.</p> <p>Ademais desta materia, houbo moitas que traballaron coa comunicación oral en gran medida, posto que mandaron presentar os traballos oralmente, como é o caso de Historia, Tecnoloxía, Teoría e Práctica do Adestramento Deportivo, Bases da educación física e deportiva, Metodoloxía do Rendemento Deportivo ou Dirección e Xestión Deportiva entre outros. O resto das materias, axudáronme a adquirir esta competencia, pero máis con respecto ao carácter escrito e non tanto ao nivel verbal.</p> |                             |  |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |                             |  |   |
| Realizadas a través da facultade:  |                             | Realizadas fora da facultade:  | Postgrado de adestrador analista, Publicacións realizadas |
| <p>Comentario:</p> <p>O feito de realizar o postgrado de adestrador analista, permitíume seguir mellorando esta competencia, posto que tiven que presentar algún traballo ao resto de compañeiros. Ademais, as publicacións que realicei permitíronme mellorar esta competencia, grazas a que preciso dunha linguaxe máis formal para transmitir o que eu creo necesario. De todos os xeitos, estas xunto coas materias da facultade non me serviron para desenrolar correctamente esta competencia, pois non son capaz de transmitir correctamente o que eu desexo ante o público e menos si me sinto examinado.</p>  |                             |  |   |
| Aportes do traballo fin de grado   |                             |  |   |
| <p>Comentario:</p> <p>Este traballo, só polo simple feito de ter que publicalo nunha revista de prestixio internacional, provocou que eu mellorase a miña expresión escrita, posto que tiven que ser moito máis preciso nas palabras que eu escollía. Posibelmente, o feito de que a publicación fose nesta revista xerou en min unha maior contribución para desenrolar esta competencia que nas publicacións que mencionei antes, polo simple feito de que a linguaxe utilizada na outra revista é máis cómoda para min, pois é unha linguaxe máis específica de fútbol.</p>   |                             |  |   |
| Grado de adquisición da competencia  | 1                           | 2  | 3   |
|  |                             |  | 4   |



|   |  |                               |  |
|---|--|-------------------------------|--|
| <b>B18</b>  | Comprometerse e involucrarse socialmente coa súa profesión e en concreto, coa situación actual da actividade física e o deporte na educación formal; coa xestión do centro educativo; cos seus compañeiros (traballo cooperativo) e con aqueles aos que educa. |                               |  |
| Para a realización de este traballo foi moi necesaria esta competencia, posto que para realizar unha publicación tes que estar moi involucrado coa túa profesión. Desta competencia non tiven que usala toda, xa que, non tiven que participar en ningunha xestión de centro, nin tiven contacto con alumnos ou usuarios. Pero o que si tiven foi que comprometerme cos meus compañeiros para que isto saíse adiante.   |  |                               |  |
| <b>Materias que abordaron esta competencia</b>  |  |                               |  |
| De forma principal:   | Tódalas materias realizadas.   | De forma secundaria:          |  |
| Comentario:<br>A forma que teñen de transmitir a meirande parte dos mestres os contidos das súas materias, vese como buscan que os alumnos da facultade salgan ao mundo laboral con certos valores importantes, os cales deben usar para levar a cabo a súa futura profesión. Entre eles están o comprometerse co que se está facendo, e é por iso que adquiero esta competencia neste ámbito.  |  |                               |  |
| <b>Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:</b>  |  |                               |  |
| Realizadas a través da facultade:   | Seminarios   | Realizadas fora da facultade: | Postgrado de adestrador analista.<br>Voluntariado con Aspronaga<br>Convivencia cos compañeiros<br>Educación familiar |
| Comentario:<br>Todos os seminarios realizados, así como o postgrado de adestrador analista, seguen a mesma dinámica que as materias da facultade, pois estes son impartidos e xestionados por docentes da facultade.<br>O único contacto que tiven con persoal que se pode considerar “usuarios ou alumnos” foi cando fixen a colaboración con Aspronaga, nos Xogos Minoritarios de Galicia, aquí vin a importancia real de involucrarse coas persoas que educas, non só pola propia experiencia, senón tamén pola dos profesionais que alí estaban concentrados.<br>Ademais, o feito de convivir continuamente con compañeiros de intereses comúns, faime reflexionar de que ideas poden sacar proveito e cales non con respecto a como enfocar a educación dos meus futuros alumnos.<br>Por último, un dos valores que me inculcaron meus pais dende neno, foi o feito de comprometerse a todo o que realizo. |  |                               |  |
| <b>Aportes do traballo fin de grado</b>   |  |                               |  |
| Comentario:<br>Non me aportou nada novo, pois todo o que me debería aportar xa o tiña adquirido nas actividades realizadas en anos anteriores (tanto dentro como fora da facultade), por iso si que botei man desta competencia pero o aporte foi mínimo.   |  |                               |  |
| Grado de adquisición da competencia   | 1  | 2                             | 3  |
|   |  |                               | 4  |



|  |                   |  |                      |   |
|--|-------------------|--|----------------------|---|
| <b>B19</b>   |                   | Exercer a profesión con responsabilidade, respecto e compromiso. |                      |   |
| Sempre que me comprometo a facer unha cousa inténtoa facer o mellor posíbel, respectando aos demais e asumindo as miñas responsabilidades. Miña decisión fai anos foi realizar un traballo que tivese que ver con este ámbito, polo tanto, calquera traballo que realice vouno a facer de forma comprometida, pois foi a decisión que tomei. |                   |  |                      |   |
| Materias que abordaron esta competencia  |                   |  |                      |   |
| De forma principal:  | Todas as materias |  | De forma secundaria: |   |
| Comentario:<br>Como mencionei anteriormente, os mestres transmiten a través dun currículo encuberto ou oculto unha serie de valores, e entre estes están aqueles que permiten adquirir esta competencia.   |                   |  |                      |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |                   |  |                      |   |
| Realizadas a través da facultade:  |                   | Realizadas fora da facultade:                                    |                      |   |
| Comentario:<br>Todas as actividades que realizo as intento facer con estes valores, isto é debido a educación paternal percibida, por iso, as bases de esta competencia foron desenroladas dende os primeiros anos da infancia até a actualidade, e seguirán cementándose continuamente.   |                   |  |                      |   |
| Aportes do traballo fin de grado   |                   |  |                      |   |
| Comentario:<br>Ao igual que comentei nas anteriores competencias, o TFG non me influíu decisivamente na adquisición de esta competencia, posto que xa a tiña adquirida pero si me permitiu poñela en práctica.   |                   |  |                      |   |
| Grado de adquisición da competencia  | 1                 | 2  | 3                    | 4 |



|   |   |   |                            |   |
|---|---|---|----------------------------|---|
| <b>B20</b>  |   | Coñecer, reflexionar e adquirir hábitos e destrezas para a aprendizaxe autónoma e o traballo en equipo a partir das prácticas externas en algún dos principais ámbitos de integración laboral, en relación ás competencias adquiridas no grao que se verán reflectidas no traballo fin de grao. |                            |   |
| Esta competencia pódese dicir que a utilicei, polo mero feito de que este traballo foi publicada nunha revista profesional. Por iso, co traballo fin de grao utilicei esta competencia aínda que só no ámbito da investigación.   |   |   |                            |   |
| <b>Materias que abordaron esta competencia</b>  |   |   |                            |   |
| De forma principal:   | Habilidades acuáticas e a súa didáctica<br>Prácticum. | De forma secundaria:  |                            |   |
| Comentario:<br>Só foron estas materias as que me permitiron lograr a adquisición de estas competencia, polo que considero que son poucas para que puidera adquirir esta competencia de forma correcta. A pesares diso, considero que todas as materias fan alusión a esta pero dende supostos casos, que nunca se levan á practica externa, da vida real. |   |   |                            |   |
| <b>Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grao:</b>   |   |   |                            |   |
| Realizadas a través da facultade:   |   | Realizadas fora da facultade:   | Voluntariado con Aspronaga |   |
| Comentario:<br>Dentro das actividades formativas que tiven tan só fixen prácticas externas no intre que decidín axudar ao colexio Aspronaga na realización dos “Xogos Minoritarios de Galicia”. No resto das actividades formativas foi levado a cabo con supostos casos e nunca na vida real.  |   |   |                            |   |
| <b>Aportes do traballo fin de grao</b>  |   |   |                            |   |
| Comentario:<br>Quizais foi no ámbito que máis desenrolei esta competencia, xunto co Prácticum, posto que foron as actividades nas que máis tempo invertín e que me permitiron utilizar esta competencia. Neste caso, tiven que facer moito traballo autónomo de carácter reflexivo e crítico, e de forma colaborativa, con outras persoas.                |   |   |                            |   |
| <b>Grado de adquisición da competencia</b>  | 1   | 2   | 3                          | 4 |

**COMPETENCIAS NUCLEARES:**

|   |   |                               |              |
|---|---|-------------------------------|--------------|
| <b>C1</b>   | <b>Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.</b> |                               |              |
| Para a elaboración deste traballo fin de grado tiven que utilizar tanto o galego como o castelán, así como o inglés. Por iso, considero que utilicei ámbalas dúas linguas oficias da Galiza.  |   |                               |              |
| Materias que abordaron esta competencia   |   |                               |              |
| De forma principal:   | Todas as materias   | De forma secundaria:          |              |
| Comentario:<br>En todas as materias realicei o meu traballo día a día en galego, posto que é a lingua coa que mellor me sinto, aínda que utilicei o castelán en certos momentos. O feito de ter que facer traballos formais, permite pensar en como redactar mellor o que pretendo transmitir, polo tanto, a través disto melloro esta competencia. A pesares disto, ningunha materia en si me aportou nada novo con respecto a expresión, pois a mellora foi obtida polo feito de realizar traballos e comunicarme cos demais, ó igual que fago día a día. |   |                               |              |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |   |                               |              |
| Realizadas a través da facultade:   | Todas.  | Realizadas fora da facultade: | O día a día. |
| Comentario:<br>Utilizo o galego continuamente no meu día a día, polo que considero que a miña expresión é boa. Pola contra, tan só utilizo o castelán cando falo con algún compañeiro de fora, e utilizábao nalgunha aula de castelán do instituto. A pesares de que non uso moito o castelán, penso que a miña expresión é a correcta.   |   |                               |              |
| Aportes do traballo fin de grado  |   |                               |              |
| Comentario:<br>No traballo fin de grado ocorre un pouco o mesmo que no resto de materias, é dicir, as melloras que obteño na expresión é debido a buscar a mellor forma posíbel de expresión, para redactar o que eu pretendo transmitir.   |   |                               |              |
| Grado de adquisición da competencia   | 1   | 2                             | 4            |



|  |   |  |   |
|--|---|--|---|
| <b>C2</b>  |   | <b>Dominar a expresión e a comprensión de forma oral e escrita dun idioma estranxeiro.</b> |   |
| Para o desenrolo do traballo fin de grado foi preciso a comprensión escrita, para poder analizar a bibliografía existente sobre a idade relativa, pero en ningún momento utilicei a comprensión oral.  |   |  |   |
| Materias que abordaron esta competencia  |   |  |   |
| De forma principal:  | Aprendizaxe e control motor,<br>Actividade física saudábel e calidade de vida II,<br>Teoría e práctica do adestramento deportivo,<br>Metodoloxía de investigación en actividade física e deporte, | De forma secundaria:   | Bases da educación física e deporte,<br>Expresión corporal e danza. |
| Comentario:<br>O feito de ter que ler certos artigos en inglés permitiu desenrolar esta competencia, pero, a pesares diso, non foi suficiente para que eu dominase a expresión escrita. En canto á comprensión oral tan só se desenrolou en algún vídeo posto polo mestre Miguel del Olmo ou por algunha frase que Marta Bobo dixo en clase. |   |  |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |   |  |   |
| Realizadas a través da facultade:  |   | Realizadas fora da facultade:  | Cursos de inglés  |
| Comentario:<br>O feito de asistir a algunha academia de inglés, tanto co obxectivo de sacar o B1, como de mellorar esta lingua, permitíume mellorar a comprensión da lingua británica, máis non foi o suficiente como para que eu teña adquirida esta competencia.   |   |  |   |
| Aportes do traballo fin de grado   |   |  |   |
| Comentario:<br>Ao ter que realizar una revisión completa da literatura en inglés, provoca que adquirira certas expresións e certo vocabulario sobre o tema, pero non foi o suficiente para ter un bo desenrolo da competencia.   |   |  |   |
| Grado de adquisición da competencia  | 1   | 2  | 3   |
|  |   | 4  |   |



|   |  |   |                                   |
|---|--|---|-----------------------------------|
| C3  |  | Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida. |                                   |
| Esta competencia foi necesaria para realizar a recensión bibliográfica. Esta competencia permitíume facer realizar unha busca máis rigorosa e completa de todos aqueles artigos que puidesen conter información relevante para a elaborar el TFG. Tamén me permitiu realizar a presentación de Power Point para presentar o traballo.   |  |   |                                   |
| Materias que abordaron esta competencia   |  |   |                                   |
| De forma principal:   | As mesmas que para as competencias A36 e B10 | De forma secundaria:  |                                   |
| Comentario:<br>Todas as materias buscan, a través de diferentes métodos desenrolar esta competencia. O caso máis claro é o de Tecnoloxía na actividade física e deporte, por motivos claros, xa que Antonio Rivas danos a coñecer como facer bases de datos e como traballar con un editor de vídeo. Outros mestres, para desenrolar esta competencia, mandan como traballo analizar xogadas (baloncesto), analizar certos movementos filmados (biomecánica, optativa de atletismo), filmar a túa propia execución (exercicio e loita), utilización de programa estatístico (investigación) ou os máis comúns como son facer presentación en Power Point ou buscar información en internet. |  |   |                                   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |  |   |                                   |
| Realizadas a través da facultade:   |  | Realizadas fora da facultade:   | Postgrado de adestrador analista. |
| Comentario:<br>O postgrado de adestrador analista doume moitas formas de cómo utilizar esta competencia, xa non só en aplicar ou non o coñecemento, senón de que forma presentar a información para que o receptor poida adquirir cun maior grado o que intentamos transmitir (a través do relatorio de Xulio Torrado da USC e do mestre da ULeon, Juan Carlos Morante. Ademais tiveron acceso a un programa informático (VAExpress) que me permite analizar e observar mellor toda o que ocorre nun campo de fútbol.   |  |   |                                   |
| Aportes do traballo fin de grado  |  |   |                                   |
| Comentario:<br>O feito de utilizar o SPSS foi o maior aporte do TFG a lograr esta competencia. É certo que xa tiña coñecementos sobre este programa, pero a súa utilización neste traballo permitíume coñecer algunhas probas que non coñecía con anterioridade así como, repasar outras que xa utilizara. En definitiva, o aporte non foi moito pero si o suficiente como para seguir progresando no desenrolo desta competencia.  |  |   |                                   |
| Grado de adquisición da competencia   | 1  | 2   | 3                                 |
|   |  |   | 4                                 |





|   |                    |   |                                   |
|---|--------------------|---|-----------------------------------|
| <b>C4</b>   |                    | <b>Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.</b> |                                   |
| Ter que facer un traballo de investigación provoca ter que analizar a realidade, diagnosticar problemas e formular solucións para lograr mellorar a realidade. Por iso, utilizo esta competencia, posto que para levar a cabo o traballo fin de grado tiven que facer isto.   |                    |   |                                   |
| Materias que abordaron esta competencia   |                    |   |                                   |
| De forma principal:   | Todas as materias. | De forma secundaria:  |                                   |
| Comentario:<br>Todas as materias buscan unha sociedade crítica, que saiban analizar a realidade e, a partir de atopar os seus erros buscar solucións. Ningunha materia nos di o que temos que facer nun futuro profesional, senón que nos da ferramentas para atopar as solucións o mellor posíbel, por iso, considero que todas as materias aporta avances adquirir para esta competencia. |                    |   |                                   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |                    |   |                                   |
| Realizadas a través da facultade:   | Seminarios         | Realizadas fora da facultade:   | Postgrado de adestrador analista. |
| Comentario:<br>Seguindo coa dinámica das materias abordadas na facultade, estas actividades permitíronme adquirir esta competencia.   |                    |   |                                   |
| Aportes do traballo fin de grado  |                    |   |                                   |
| Comentario:<br>Tiven que levar á practica o coñecemento adquirido no resto de materias, analizando de forma crítica datos reais. Ademais estes datos analizados foron dunha gran dimensión polo que considero que isto me beneficiou para realizar o TFG.   |                    |   |                                   |
| Grado de adquisición da competencia   | 1                  | 2   | 3                                 |
|   |                    |   | 4                                 |



|  |                             |  |                      |   |
|--|-----------------------------|--|----------------------|---|
| <b>C6</b>  |                             | <b>Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.</b> |                      |   |
| Utilicei esta competencia para seleccionar aquela información que me resultou máis útil para a realización do traballo sobre a idade relativa e prescindir daquela que non me facía falta.   |                             |  |                      |   |
| Materias que abordaron esta competencia  |                             |  |                      |   |
| De forma principal:  | Todas as materias cursadas. |  | De forma secundaria: |   |
| Comentario:<br>Nas materias deixan quedar claro que estamos ante unha ciencia que non ten solución única, é dicir, que non ante un problema hai varias solucións e que ante o mesmo problema pode ocorrer que a un suxeito lle valga unha solución e a outro non. Isto provoca que teñamos que ser críticos coas nosas decisións, e coa información que temos e, polo tanto, as materias permítenme adquirir esta competencia.<br>O feito de que haxa materias que se contradín tamén fai que teñamos que tomar unha decisión de que aspectos cremos que son os válidos dentro de cada punto de vista. |                             |  |                      |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |                             |  |                      |   |
| Realizadas a través da facultade:  |                             | Realizadas fora da facultade:  |                      |   |
| Comentario:<br>Fora do horario lectivo, non tiveron tanto aporte desta competencia, pois os seminarios e cursos que realicei eran máis de tipo receitario. Por exemplo, no seminario de control abdómino-pélvico, a relatora comentounos a súa experiencia sobre isto, e o que a ela lle funcionaba.<br>Os meus pais fixeron fincapé en que non creira todo o que se dicía en certos medios, e que tivese coidado con certa información, o cal tamén permitiu que desenrolase esta competencia.  |                             |  |                      |   |
| Aportes do traballo fin de grado   |                             |  |                      |   |
| Comentario:<br>Debido a revisión bibliográfica feita nun comezo permitíume analizar a información que había e ver cales eran os artigos que aportaban a información de interese, e dentro dun artigo cales eran os aspectos que nos interesaba e cales non.  |                             |  |                      |   |
| Grado de adquisición da competencia  | 1                           | 2  | 3                    | 4 |



|  |                                  |  |   |
|--|----------------------------------|--|---|
| C7   |                                  | Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida. |   |
| Realizar este traballo provocou que mellorase os meus coñecementos no ámbito científico das ciencias da actividade física e o deporte, pero demostroume que teño moitas lagoas por cubrir e que aínda teño moito que aprender, que canto máis saiba, máis necesito por coñecer, por iso, esta competencia utilizareina en todas as miñas actividades.  |                                  |  |   |
| Materias que abordaron esta competencia  |                                  |  |   |
| De forma principal:  | Todas as materias                | De forma secundaria:   |   |
| Comentario:<br>Cando entrei na facultade pensei que cando rematase a carreira ía saber tanto sobre a ensinanza e o adestramento que me ía servir para o meu futuro laboral. O meu cambio de mentalidade e debido a imprecisión científica dos contidos que se imparten na nosa carreira demostráronme que nunca saberei o suficiente como para deixar de formarme.   |                                  |  |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:  |                                  |  |   |
| Realizadas a través da facultade:  | Todas as actividades realizadas. | Realizadas fora da facultade:  | Todas as actividades realizadas e experiencias vividas. |
| Comentario:<br>Todo o que me rodea demóstrame que aínda non sei nada sobre ningún tema en concreto, polo que tento facer o maior número de cursos e seminarios posíbeis co fin de coñecer día a día máis cousas e poder ser un bo profesional con recursos.  |                                  |  |   |
| Aportes do traballo fin de grado   |                                  |  |   |
| Comentario:<br>Comecei con este traballo pouco despois de rematar a materia de investigación, no cal consideraba que coñecía bastante, e ao ir facendo este traballo decateime que aínda me faltaba moito por coñecer sobre o tema. Logo de que rematase o traballo tamén me decatei de que moitas cousas xa as esquecera, por iso este traballo afírmame o que xa sospeitaba antes, que sempre terei que formarme e repasar as cousa para seguir aprendendo e consolidando o aprendido. |                                  |  |   |
| Grado de adquisición da competencia  | 1                                | 2  | 4   |



|   |   |  |   |   |
|---|---|--|---|---|
| <b>C8</b>   |   | <b>Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.</b> |   |   |
| Sen esta competencia sería moi difícil que eu me decantase por facer o traballo fin de grado sobre isto, pois considero que a evolución da sociedade está neste ámbito. Quizais este sexa unha investigación que aporte pouco a sociedade pero a min aportoume coñecemento, experiencia e moi boas sensacións.  |   |  |   |   |
| Materias que abordaron esta competencia   |   |  |   |   |
| De forma principal:   | Metodoloxía de investigación en actividade física e deporte, Biomecánica do movemento humano, Aprendizaxe e control motor, Teoría e práctica do adestramento deportiva, | De forma secundaria:   | Metodoloxía do Rendemento Deportivo, Tecnoloxía en actividade física e deporte, |   |
| Comentario:<br>Ver a continua dinámica cambiante que hai nas ciencias da activade física e deportiva nos artigos e as lagoas científicas que hai, así como a falta de certo material tecnolóxico para mellor a avaliación de probas, provoca que o alumnado se dea conta da necesidade de realizar máis investigacións co fin de mellorar o coñecemento.  |   |  |   |   |
| Actividades formativas que me permitiron a adquisición desta competencia ademais do propio grado:   |   |  |   |   |
| Realizadas a través da facultade:   | Seminario de Socorrismo, Experimentos realizados,   | Realizadas fora da facultade:  | Lectura de novas en prensa,   |   |
| Comentario:<br>A nivel experimental, esta competencia adquirina no Seminario de Socorrismo, pois mostraron certas materias que se inventaron e a necesidade de que se faga algunha investigación máis necesaria.<br>As lecturas que aparecen na prensa con respecto as innovación que se están a facer polo mundo a diante, e mentres ver como no noso país redúcese o presuposto para isto e se inventa cada vez menos tamén me fai entender que a investigación e innovación é moi precisa. |   |  |   |   |
| Aportes do traballo fin de grado  |   |  |   |   |
| Comentario:<br>Pouco me aportou o TFG con respecto a adquirir esta competencia, pois considero que xa o valoraba a importancia da investigación anteriormente, e tan só me serviu para fortalecer esta competencia pero non para adquirila.   |   |  |   |   |
| Grado de adquisición da competencia   | 1   | 2  | 3   | 4 |

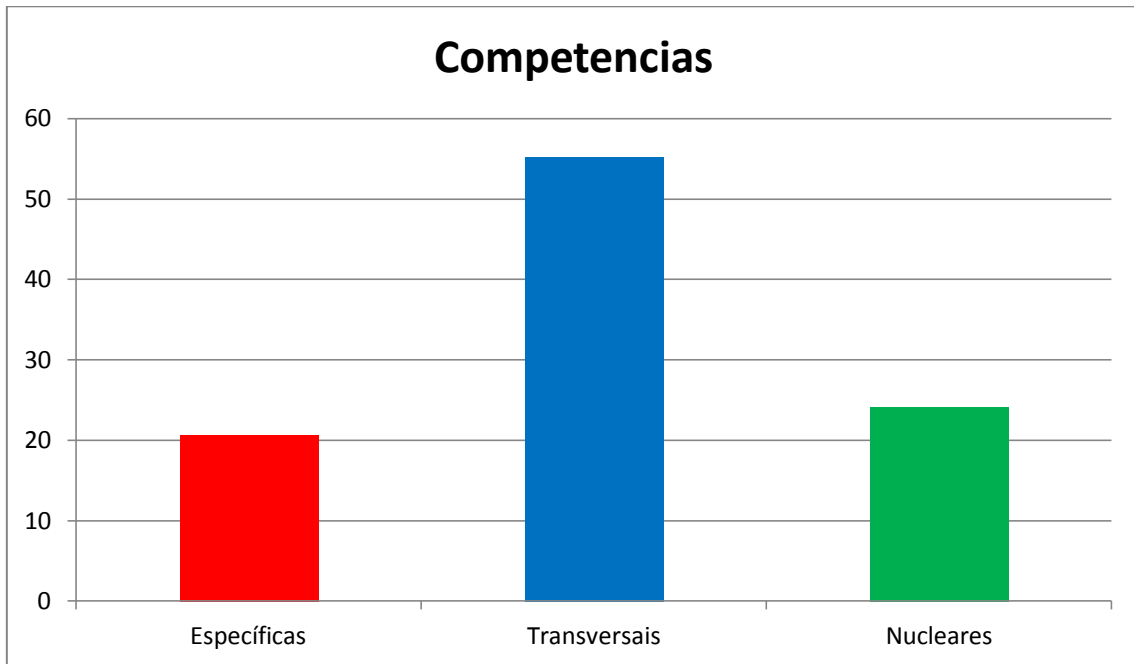
**RESULTADO DE COMPETENCIAS****+ Datos**

| Grado de adquisición | Específicas |     | Transversais |       | Nucleares |      | Total |
|----------------------|-------------|-----|--------------|-------|-----------|------|-------|
|                      | Nº          | %   | Nº           | %     | N         | %    |       |
| Alto                 | 5           | 83  | 10           | 62.5  | 5         | 71.4 | 20    |
| Medio-alto           | 1           | 17  | 3            | 18.75 | 1         | 14.3 | 5     |
| Medio-baixo          |             |     | 3            | 18.75 |           |      | 3     |
| Baixo                |             |     |              |       | 1         | 14.3 | 1     |
| Total                | 6           | 100 | 16           | 100   | 7         | 100  | 29    |

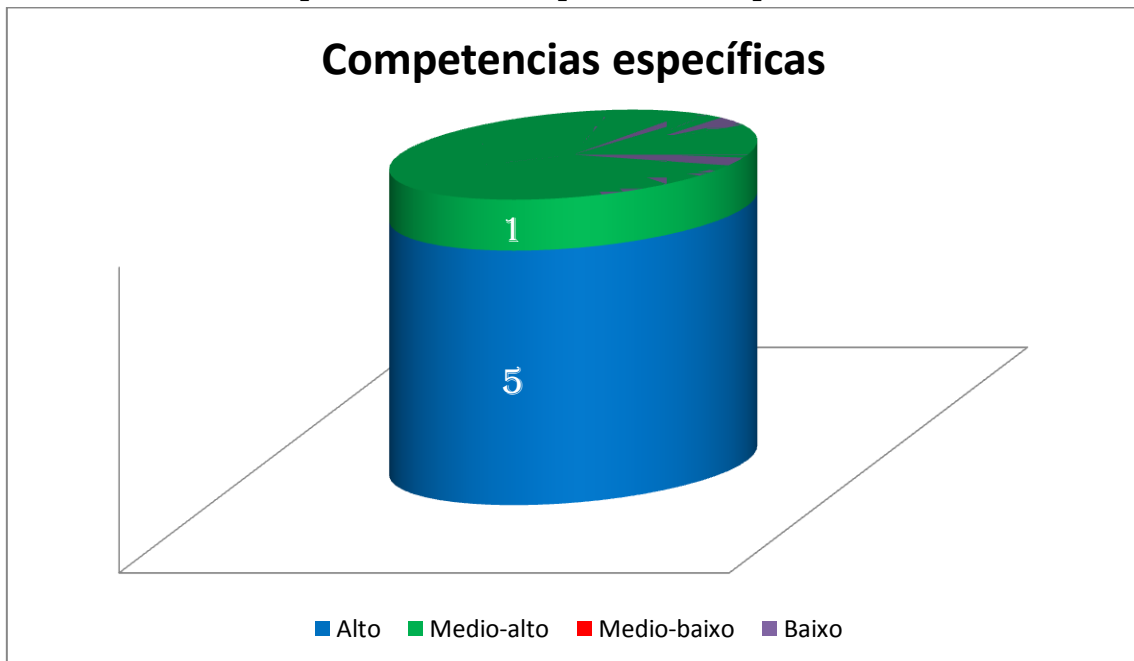
**+ % de competencias utilizadas para o desenrolo do traballo.**



✚ % de competencias específicas, transversais e nucleares utilizadas.

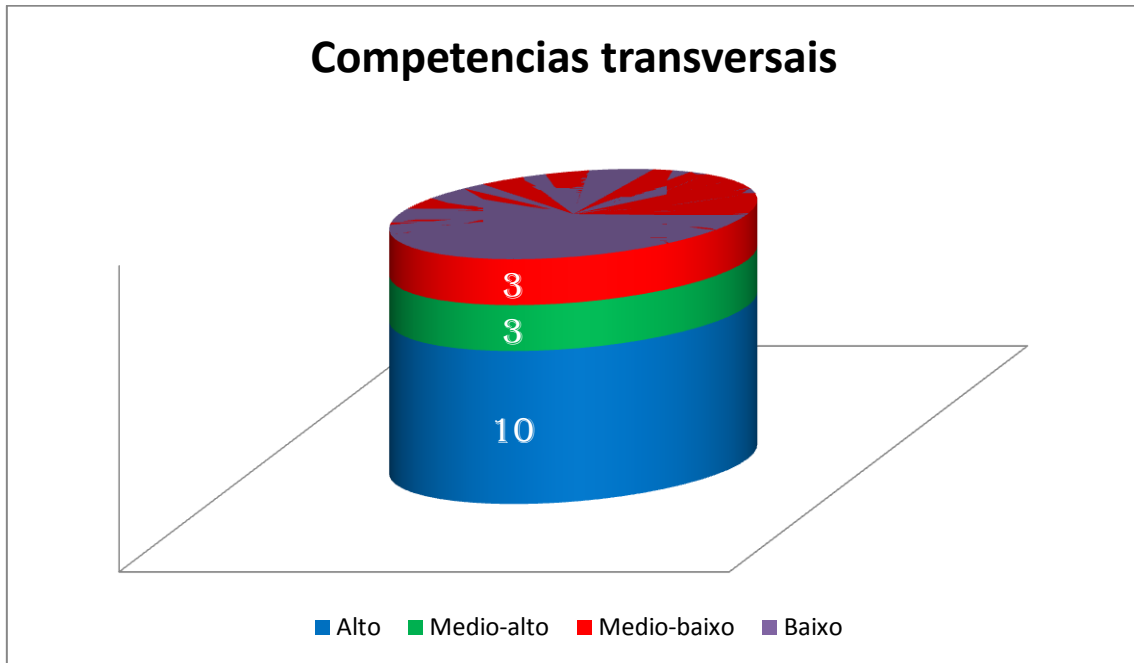


✚ Grado de adquisición de competencias específicas utilizadas.





**Grado de adquisición de competencias transversais utilizadas.**



**Grado de adquisición de competencias nucleares utilizadas.**

