# Analysis of the Perception of the Effort Between Players and Coaches in Minibasket Competition

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**Abstract**

This article analyzed the existing relationship between the subjective perception of effort (RPE) expressed by players and coaches during mini-basket competition and assess the perception of coaches based on the characteristics of the competition. One hundred and fifty players (67 boys and 83 girls) and 25 coaches (19 men and 6 women) participed in this study. For the record of the RPE, the pictorial scale (Eston and Parfitt, 2007) was used. The records were made individually to the players and coaches (at the end of each game period), and to the coaches (at the end of the game). A cross-sectional, descriptive, ex post-fact study was designed using a survey to collect information on the characteristics of training and competition. The results described that players expressed mean RPE = 4.41 ± 1.6 AU. On the other hand, coaches on the RPE of their players as moderate (M = 4.66 ± 1.82 AU), not observing significant differences in RPE according to the sex of the athletes (U = 5060.00; p = .060), the phase of the championship ($X^2$ = .535; p = .765) and the degree of equilibrium of the period ($X^2$ = 5.532; p = .063). However, significant differences were found in the coach's perception of victory (M±SD = 3.91 ± 1.46) or defeat (M±SD = 4.98 ± 1.59) in the match (U = 5265.00; p <.05; d =. 34). Therefore, we can conclude that the RPE expressed by the coaches agrees with the $RPE_{average}$ of the participants of the competition.

**Keywords:** Perception of the effort, coach, player, mini-basket

## Introducction

In the previous studies about the RPE in team sports, the knowledge about RPE on the part of the trainer and of the athletes, in order to the technical coaches may have an overview of the control of the competition load (Calahorro, Torres-Luque, Lara-Sánchez, 2014 ). In this sense, and in particular in basketball, Kraft Laurent, Green, Helm, Roberts, and Holt, in 2018, observed significant differences between the trainer evaluation and the players' perception of the intensity. However, in a later analysis, Peres and Del Campo in (2011) found no significant differences regarding the RPE expressed by players, strenght and conditionning coaches in a men's basketball team. This divergence, given the paucity of work and the existence of conflicting results, evidences the lack of knowledge of this tool, not only in team sports, but also in basketball. In particular with children, the specific training in Minibasket, the number of training and weekly sessions and the duration of the sessions are predictors of a minor RPE in the players (Fuentes, Feu, Jiménez, and Calleja-González, 2013). Now at days, there are no investigations to verify its effectiveness for the best of author's knowledge. Therefore, the objective of the study is to analyze the relationship between the RPE expressed by players and coaches in a mini-basket competition, and to assess the coaches' perception according to the sex of their athletes, the championship phase, and the degree of balance of the period and victory or defeat.

## Methodological procedures

### Design

A cross-sectional, descriptive, ex post-facto study was designed to analyze the RPE of players and coaches, using a survey to collect information on the general and training characteristics (Thomas, Nelson, Silverman, 2011).

### Participants

Participants included 150 athletes (67 boys and 83 girls), with a mean age of 11.34 ± 0.48 years, and 25 coaches (19 men and 6 women) adults> 18 years. The ethics protocol of the University of the Basque Country was followed, according to the declaration of Helsinki (Fortaleza, 2013), by means of a written consent to the families since they were minors.

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### Instruments

RPE records (230) were made to the coaches and players, using the pictorial scale of Eston and Parfitt (2007), and 227 registrations to the coaches.

### Procedure

Records were made individually to players and players at the end of each game period, to avoid influences (Muyor, Vaquero-Cristóbal, Alacid, and López-Miñarro, 2015). Strenght and conditionning coaches and coaches estimated the RPE at the end of the game for each player and player.

## Data Analysis

The data were analyzed through a descriptive, inferential and correlational analysis, using non-parametric tests as the normal distribution of data was not observed. We used SPSS, V21.0.

## Results

The players expressed an average RPE = 4.41 ± 1.6 U.A. (Table 1). Coaches rated their players' RPE as moderate (M±SD = 4.66 ± 1.82 U.A). Likewise, there were no significant differences in RPE indicated by coaches according to the sex of the athletes (U = 5060.00; p = .060), the championship phase ($X^2$ = .535; p = .765) and the degree of equilibrium of the party ($X^2$ = 5.532; p = .063). However, significant differences were found in the coach's perception of victory (M±SD = 3.91 ± 1.46 U.A) or defeat (M = 4.98 ± 1.59 U.A) in the match (U = 5265.00; p <.05; d =. 34). The results of the statistical analysis showed that there is a significant correlation between the $RPE_{average}$ of the players and the coaches in the four periods (RS = .374; p <.01) (Table 2).

**Table 1**
Players RPE in each period

| | N | Min | Max | Average | Tip. Desv. |
|---|---|---|---|---|---|
| RPE 1ºT | 118 | 1 | 10 | **4.50** | 1.88 |
| RPE 2ºT | 120 | 1 | 9 | **4.39** | 1.74 |
| RPE 3ºT | 121 | 1 | 10 | **4.50** | 1.95 |
| RPE 4ºT | 178 | 1 | 10 | **4.21** | 1.82 |
| $RPE_{average}$ | 230 | 1 | 9 | **4.41** | 1.61 |

**Table 2**
Spearman correlation of the RPE between coaches and players

| | | Coach |
|---|---|---|
| **RPE1ºT** | Coeficiente de correlación | **.293**** |
| | Sig. (bilateral) | .001 |
| | N | 118 |
| **RPE2ºT** | Coeficiente de correlación | **.381**** |
| | Sig. (bilateral) | .000 |
| | N | 120 |
| **RPE3ºT** | Coeficiente de correlación | **.303**** |
| | Sig. (bilateral) | .001 |
| | N | 121 |
| **RPE4ºT** | Coeficiente de correlación | **.246**** |
| | Sig. (bilateral) | .001 |
| | N | 177 |
| **MEDIA_RPE** | Coeficiente de correlación | **.347**** |
| | Sig. (bilateral) | .000 |
| | N | 227 |

## Discussion

For the best of our knowledge, this is the first study analyzing the difference between coaches and mini-basket players and it can conclude that the RPE expressed by the coaches agrees with the $RPE_{average}$ of the participants of the competition. Predominantly a moderate intensity RPE that characterizes the competition (Fuentes, Feu, Jiménez, and Calleja-González, 2013) with respect to intensity of play, with an alternation of intense, medium and low actions (Refoyo, 2001). Investigations carried out in swimming show significant differences between the RPE of the athletes and the estimates made by the trainers (p <.003) in low (RPE ≤ 2) and high intensity (RPE ≥ 5) training, indicating as cause of this difference, lack of communication between swimmers and coaches and poor assesment of training load control variables (Wallace, Coutts, Gordon, Simpson, and Slattery, 2008). In that way, data obtained in athletics indicate that there are significant differences (p <.05) between the RPE expressed by the coaches and data of the athletes in low intensity sessions (RPE = 1.8 ± 0.5 U.A vs. $RPE_{player}$ = 2.4 ± 1.4 U.A; p <.05), and high intensity (RPE = 7.1 ± 1.2 vs. $RPE_{player}$ = 6.2 ± 2.5). No significant differences were observed for those intermediate intensity sessions. These data are consistent with the concept that one of the usual mistakes is the tendency to return the training load to the middle levels, rather than maintaining polarity (Foster, Heimann,

Esten, Brice, and Porcari, 2009). However, in basketball or other team sports, there are not many previous references with which we can collate our data. Having expressed that the RPE (4.41 ± 1.61) of the mini-basket competition (Fuentes, Jiménez, Feu, and Calleja-González, 2017) is in a range of moderate intensity activity, the data expressed by the coaches correlate with those that reflect the players and players and, therefore, would not disagree with the studies previously mentioned. In mini-basket, in training, carrying out small play tasks, using as one of the variables the playing time, the participants expressed an average of RPE = 6.87 ± 1.76 (Feu, Carrillo, Fuentes, Refoyo and Calleja-González, 2015). In basketball, in training, there are significant differences ($p < .05$) between the coaches 'assessment and the players' perception; however, these differences are not observed in physical training sessions (Del Campo, 2004). On the contrary, in technical trainings of basketball, results have been obtained in which the RPE of the players matches the one of the trainer ($RPE_{coach}$ = 12.37 U.A and $RPE_{jug}$ = 12.71 U.A), (Peres and Del campo, 2011). At this point, it is necessary to remember that there are two methods to measure the RPE: production and estimation. In this research, we used the passive method, or estimation, in which the subject expresses the RPE to indicate the level of hardness of the activity at each moment (Eston and Parfitt, 2007). We consider that this may be an important limitation, since studies confirming the relationships between physiological variables, in adults and in children, when the effort is presented incrementally, have used the estimation paradigm (Lamb, Parfitt, and Eston, 2008; Lambrick, 2010).

Therefore, it consider that the RPE, using a paradigm of estimation, is a method to reference the intensity of the mini-basket competition, presenting a positive and a significant correlation between the perception of the players and that of the coach in competition being a novel data that we contribute, which we still cannot contrast, since there are no other studies to collate the data, noting the lack of information that exists in this field.

## Conclusions

The RPE expressed by the coaches coincides with the $RPE_{average}$ of the participants of the competition, which indicates that the use of this index could be valid for the coach in order to know the intensity of the effort, and to assess the coaches' perception according to the sex of their athletes, the championship phase, and the degree of balance of the period and victory or defeat. Practicioners must consider these data in order to control the trainning load during basketball practice.

**Análisis de la percepción de esfuerzo entre jugador y entrenador en competición de minibasket**

**Resumen**

El presente trabajo ha analizado la relación existente entre la percepción subjetiva del esfuerzo (RPE) que expresan los jugadores y los entrenadores en una competición de minibasket. Los participantes fueron 150 jugadores (67 niños y 83 niñas) y 25 entrenadores (19 hombres y 6 mujeres). Para el registro de la RPE se utilizó la escala pictórica de Eston y Parfitt (2007). Los registros se realizaron de forma individual a los jugadores y jugadoras al final de cada periodo de juego, y a los entrenadores y entrenadoras al final del partido. Se diseñó un estudio transversal, descriptivo, ex post-facto, para el análisis de la RPE de los jugadores y jugadoras, utilizando una encuesta para la recogida de información sobre las características generales y las características del entrenamiento (Thomas, Nelson, Silverman, 2011). Los datos fueron analizados a través de un análisis descriptivo, inferencial y correlacional. Los resultados describen que los jugadores expresaron una media de RPE= 4.41±1.6. Por su parte, los entrenadores valoraron la RPE de sus jugadores como moderada (M= 4.66±1.82 U.A), no observando diferencias significativas en RPE en función del sexo de los y las deportistas (U= 5060.00; p=.060), la fase del campeonato ($X^2$=.535; p=.765) y el grado de equilibrio del partido ($X^2$= 5.532; p=.063). Sin embargo, si se encontraron diferencias significativas en la percepción del entrenador en función de la victoria (M= 3.91±1.46) o derrota (M= 4.98±1.59) en el partido (U= 5265.00; p<.05; d=.34). Por tanto, podemos concluir que la RPE expresada por los entrenadores coincide con la $RPE_{media}$ expresada por los participantes de la competición.

**Palabras clave:** percepción subjetiva de esfuerzo; entrenador y jugador; minibasket.

**Análise da percepção do esforço entre jogador e treinador em competição de minibasket**

**Resumo**

O presente trabalho analisou a relação existente entre a percepção subjetiva do esforço (RPE) que expressam os jogadores e os treinadores numa competição de minibasket e avaliar a percepção dos treinadores em função das características da competição. Os participantes foram 150 jogadores (67 meninos e 83 meninas) e 25 treinadores (19 homens e 6 mulheres). Para o registro do RPE foi utilizada a escala pictórica de Eston Parfitt (2007). Os registros foram realizados de forma individual aos jogadores e jogadoras no final de cada período de jogo, e aos treinadores e treinadoras no final do jogo. Desenvolveu-se um estudo transversal, descritivo, ex post facto, utilizando uma pesquisa para coletar informações sobre as características do treino e da competição. Foi realizada uma análise descritiva, inferencial e correlacional. Os resultados

descrevem que os jogadores expressaram uma média de RPE= 4.41±1.6. Por sua vez, os treinadores valorizaram a RPE dos seus jogadores como moderada (M= 4.66±1.82 U.A), não observando diferenças significativas no RPE em função do sexo dos e das deportistas (U= 5060.00; p=.060), a fase do campeonato ($X^2$=.535; p=.765) e o grau de equilíbrio do jogo ($X^2$= 5.532; p=.063). No entanto, foram encontradas diferenças significativas na percepção do treinador em função da vitória (M= 3.91±1.46) ou derrota (M= 4.98±1.59) no jogo (U= 5265.00; p<.05; d=.34). Portanto, podemos concluir que a RPE expressada pelos treinadores coincide com a $RPE_{media}$ dos participantes da competição.

**Palavras chave:** percepção subjetiva do esforço; treinador e jogador; minibasket

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