LOAD MONITORING SYSTEM IN TOP-LEVEL BASKETBALL TEAM: RELATIONSHIP BETWEEN EXTERNAL AND INTERNAL TRAINING LOAD

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Abstract:

The study aimed to describe and compare the external training load, monitored using microtechnology, with the internal training load, expressed as the session rating of perceived exertion (sRPE), in elite male basketball training sessions. Thirteen professional basketball players participated in this study (age=25.7±3.3 years; body height=199.2±10.7 cm; body mass=96.6±9.4 kg). All players belonged to the same team, competing in two leagues, ACB and the Euroleague, in the 2016/2017 season. The variables assessed within the external motion analysis included: player load (PL), acceleration and deceleration (ACC/DEC), jumps (JUMP), and changes of direction (CoD). The internal demands were registered using the sRPE method. Pearson product-moment correlations were used to determine relationships between the variables. A significant correlation was observed between the external load variables and sRPE (range r=0.71–0.93). Additionally, the sRPE variable showed a high correlation with the total PL, ACC, DEC, and CoD. The contrary was observed with respect to the relationship between sRPE and JUMP variables: the correlation was higher for the high band and lower for the total number of jumps. With respect to the external load variables, a stronger correlation was found between PL and the total number of ACC, DEC and CoD than the same variables within the high band. The only contrary finding was the correlation between PL and JUMP variables, which showed a stronger correlation for hJUMP. Tri-axial accelerometry technology and the sRPE method serve as valuable tools for monitoring the training load in basketball. Even though the two methods exhibit a strong correlation, some variation exists, likely due to frequent static movements (i.e., isometric muscle contractions) that accelerometers are not able to detect. Finally, it is suggested that both methods are to be used complementary, when possible, in order to design and control the training process as effectively as possible.

Key words: *team sport, training monitoring, accelerometry, sRPE, professional players*

Introduction

Over the past few decades, basketball has been one of the leading team sports in the world, especially in the USA and Europe. Currently, the NBA teams in the United States compete in a single league, while the Euroleague teams simultaneously compete in the Euroleague and in local national or regional championships. Therefore, Euroleague teams play at least two, sometimes even three games per week. During the regular season, between October and April/May, Spanish teams that participate in the Euroleague play between 62 and 65 games in total, including the games in the Spanish King's Cup (i.e., Copa del Rey). Such a game schedule demands strenuous physical conditioning during the preparatory phase so that every player would be able to withstand training and game activities during the competitive season. Therefore, detailed in-season strategies for controlling, maintaining and improving performance need to be established.

Apart from physical and mental recovery methods, adequate management of the training load (TL) is one of the most important tools for reducing injury risk (Soligard, Schwellnus, & Alonso, 2016). Successful training monitoring in team sports results in better performance (Akenhad & Nassis, 2015; Drew & Finch, 2016; Gabbett, 2004, 2016) and fewer injuries, especially non-contact and soft tissue injuries (Akenhad & Nassis, 2015; Drew & Finch, 2016; Gabbett, 2004, 2016; Halson, 2014). Furthermore, Coutts, Wallace and Slatery (2004) suggest that accurate monitoring of the training load gives the coach a better understanding of individual tolerance to training, as this is affected by many factors, such as player's fitness level, previous experience, age, nutrition and recovery practices, thus providing a solid basis for optimal training periodization. Lambert and Borresen (2010) explained the importance of training load monitoring by using the relationship between the training 'dose' and 'response'. In order to provide the best response (i.e., optimal improvement in performance), coaches need to find different methods to control and plan ideal psycho-physiological stress (i.e., training stimuli or the 'dose') for each athlete. In connection to this, external and internal training loads use different pathways and therefore need to be measured complementary. The external training load (eTL) represents the activities performed by athletes, that is, the dose performed (Impellizzeri, Rampinini, & Marcora, 2005), while the internal training load (iTL) represents the psycho-physiological response by the athlete that primarily takes the form of biochemical stress (Venrenterghem, Nedergaard, Robinson, & Drust, 2017). In team sports, the training load is mainly derived from team practices, whereas external load parameters are collectively defined. Consequently, internal responses to the external load could vary.

In a growing body of research, internal training load parameters have been measured using methods such as oxygen consumption (Castagna, Impellizzeri, Chaouachi, Abdelkrim, & Manzi, 2011), blood lactate measurement (Abdelkrim, et al., 2010; Castagna, et al., 2011; Marcelino, et al., 2016), heart rate monitoring (Aoki, et al., 2016; Conte, Favero, Niederhausen, Capranica, & Tessitore, 2015, 2016; Klusemann, Pyne, Hopkins, & Drinkwater, 2013; Puente, Abian-Vicen, Areces, Lopez, & Del Coso, 2016; Torres-Ronda, et al., 2015) and, the very simple method of rating of perceived exertion (RPE) (Arruda, et al., 2014; Leite, et al., 2012; Manzi, et al., 2010; Nunes, et al., 2014; Scanlan, Wen, Tucker, Borges, & Dalbo, 2014). Foster et al. (2001) stated that the use of the session-RPE (sRPE) method might help coaches and athletes achieve their goals while minimizing undesired training outcomes and overtraining. Finally, as it was suggested by Lau et al. (2009), sRPE data collection and analysis can provide additional valuable information, such as training monotony (i.e., the measure of day-to-day training variability) and training strain (i.e., the measure of weekly TL and monotony).

External training load monitoring does not refer to a single system, since it can be based on tracking various load parameters, such as jumps, collisions, covered distance or lifted weights (Coutts, et al. 2004; Impellizzeri, et al., 2005; Wallace, Slattery, & Coutts, 2014). In basketball, the majority of external load research has been based on video analyses (Abdelkrim, et al., 2010; Delextrat, et al., 2015; Klusemann, et al., 2013), while only several investigators used GPS with accelerometry technology in friendly matches (Montgomery, Pyne, & Minahan, 2010; Puente, et al., 2016) and training sessions (Aoki, et al., 2016; Montgomery, et al., 2010; Scanlan, et al., 2014). The microtechnology used in devices, such as accelerometers, magnetometers and gyroscopes, can provide information related to changes in velocity (accelerations, decelerations and changes of directions) and other inertial-based events such as jumps, impacts, stride variables, etc. (Buchheit & Simpson, 2016). Previous investigations that analysed eTL involved youth or semi-professional basketball players (Montgomery, et al., 2010; Scanlan, et al., 2014), or professionals in lower level leagues (National Brazilian League; Aoki, et al., 2016). Furthermore, the mentioned studies used only the PL variable to assess physical or external demands (i.e., eTL).

High numbers of physical variables used in micro-technology potentially make the analysis and application in practice difficult. Additionally, some of these variables are expected to present a high linear correlation (Casamichana, Castellano, Calleja-Gonzalez, San Roman, & Castagna, 2013), since they originate from similar or related dimension (e.g., acceleration-based variables). In order to provide a less complex scenario, practitioners should avoid redundancy and select only crucial variables in eTL monitoring.

Furthermore, to maintain an optimal connection between external and internal training load and to avoid players' maladaptations (i.e., over- or under-training), coaches need to be constantly aware of their relationship (Venrenterghem, et al., 2017). In connection to this, two studies examining team sports, conducted on Spanish (Casamichana, et al., 2013) and Australian footballers (Gallo, Cormack, Gannett, Williams, & Lorenzen, 2015), showed a very strong correlation ($r=0.74$ and $r=0.86$, respectively) between external (PL) and internal (sRPE) pathways. However, in basketball, only one paper investigated the relationship between the sRPE and the accelerometer-derived load. Scanlan et al. (2014) investigated training activity of eight semi-professional players with 44 observations and found a moderate correlation ($r=0.49$) between PL and sRPE. Maybe the sample consisting of semi-professional players used in the study can explain this result. Although Scanlan et al. (2014) provided novel findings regarding the comparison between internal and external TL in basketball, the relationships among different external TLs (such as PL in isolated planes, jumps, or changes of direction) are yet to be examined.

The focus of the present study is on establishing the correlation among external TL variables, and external and internal TL parameters in players of a top-level Spanish basketball team. As there is no evidence of the correlation between these demands in elite basketball, the results of this study could help coaches to single out key variables for successful and effective load monitoring in professional basketball.

Methods

Participants

A total of 13 professional basketball players participated in this study (age: 25.7 ± 3.3 years; body height: 199.2 ± 10.7 cm; body mass: 96.6 ± 9.4 kg). All players belonged to the same team, competing in two basketball leagues, ACB (LigaEndesa, 1st Spanish Division) and the Euroleague, in the 2016/2017 season. The subjects were informed about the purpose, risks and benefits of the study and the types of tests that they would be submitted to, and they gave their informed consent in accordance with the Declaration of Helsinki.

Type of training session

As presented in Figure 1, training and game activities place a considerable load on basketball players. In order to approach load monitoring in basketball comprehensively and achieve a maximum effect, it is essential to consider the total load – a sum of all training and game activities. Game playing time can vastly vary during micro- and meso-cycles, having a strong impact on the total load, both in the acute and chronic time-frame. Furthermore, training activities are divided into four categories: basketball training, individual basketball training, strength training and recovery training.

The basketball training is team training where all players participate in different technical and tactical tasks on the court, with a common goal of improving team's offensive and defensive performance as well as specific endurance. Individual basketball training (IBT) is focused on the player's technical proficiency on the court: moving without the ball, ball handling, dribbling, passing, shooting, etc. Strength training (ST) is based on the individual need for strength and power in-season development and maintenance. Recovery training (RT) is a low-intensity training that is focused on muscle, fascial and neural recovery, typically one day after the game. The game load (GL) is the load that the player accumulates in an official competition.

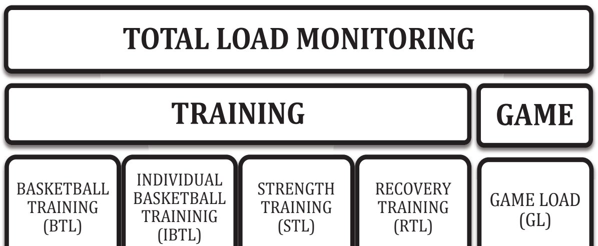


Figure 1. Total load monitoring system in basketball.

Internal load monitoring

The internal training load was monitored using the sRPE method, which researchers have shown to be a valid, reliable, inexpensive and very simple method for monitoring the training load in various exercise activities (Foster, et al., 2001; Singh, Foster, Tod, & McGuigan, 2007; Wallace et al., 2014; Williams, Trewartha, Cross, Kemp, & Stokes, 2016), as well as in team sport contexts (Coutts, et al., 2004; Impellizzeri, Rampinini, Coutts, Sassi, & Marcora, 2004; Lambert & Borresen, 2010). The RPE data were collected 15-30 minutes following each training or game, which was suggested to be the best time-frame by Singh et al. (2007). In order to obtain sRPE values, the RPE grade (1-10) was multiplied by the duration of a training session. The sRPE method was applied after all training sessions.

External load monitoring

The external load was monitored using accelerometer, gyroscope and magnetometer sensors included in S5 devices (Catapult Innovations, Melbourne, Australia). This sensor allows inertial movement analysis (IMA). The registered data included: player load, accelerations, decelerations, jumps and changes of direction.

Player load (PL) was measured by a tri-axial 100 Hz accelerometer based on the player's three-planar movement, using the well-known formula (Casamichana & Castellano, 2015; Castellano, Casamichana & Dellal, 2013). The reliability of this variable had been previously evaluated (Akenhead, Hayes, Thompson, & French, 2013; Varley, Fairweather, & Aughey, 2012). In addition to PL, the player load of the three dimensions was analysed separately: (1) PLf is the PL accumulated in the anterior/posterior plane; (2) PLs is the PL accumulated in the lateral plane; and (3) PLu is the PL accumulated in the vertical plane only. The PL dwell time was 1 second.

The acceleration/deceleration (acc/dec) variables involved total and high-intensity inertial movements: (1) tACC refers to total inertial movements registered in a forward acceleration vector; (2) hACC are total inertial movements registered in a forward acceleration vector within the high band (>3.5 m·s^{-2}); (3) tDEC are total inertial movements registered in a forward deceleration vector; and (4) hDEC are total inertial movements registered in a forward deceleration vector within the high band (<-3.5 m·s^{-2}).

Regarding jumps, total jumps (tJUMP) and jumps done within the high band (hJUMP, over 0.4 m) were registered. Finally, two variables involved a change of direction (CoD): (1) tCoD (total inertial movements registered in a rightward lateral vector), and (2) hCoD (total inertial movements registered in a rightward lateral vector within the high band). All these variables (acc/dec, jumps and CoD) were assessed with respect to their frequency.

Procedures

The study was conducted during the 2016/2017 season (December − April). In that period, the players participated in 5 to 10 different types of training sessions and played between two and three games per week. All of the players were monitored in each BTL session using S5 devices (Catapult Innovations, Melbourne, Australia). Individual RPE measured at each session was multiplied by the duration of a session. The warm-up and rests between tasks were included in the total session duration.

The resulting data sets consist of 300 observations, with the numbers of training sessions per player ranging between 4 and 29. The external load data were downloaded and processed with the Openfield v1.14.0 software (Build #21923, Catapult, Canberra). After that, the data were exported to a central database in Microsoft Excel, containing measured variables (external and internal) for each player in each session. Finally, all statistical analyses were performed using SPSS v22.0 (SPSS Inc., Chicago, Illinois, USA).

Data analysis

The data are presented as mean values and standard deviations (±SD). The normality and homogeneity of variances were tested using the Kolmogorov-Smirnov and Levene's tests, respectively. The relationships between various internal and external variables were assessed using the Pearson's correlation coefficient with 95% percentile bootstrap confidence intervals (95%CI). The magnitude of correlation coefficients, according to Hopkins (2002), was considered trivial ($r<.1$), small ($.1<r<.3$), moderate ($.3<r<.5$), large ($.5<r<.7$), very large ($.7<r<.9$), almost perfect ($r>.9$) or perfect ($r=1$). The statistical significance was set at $p<.01$.

Results

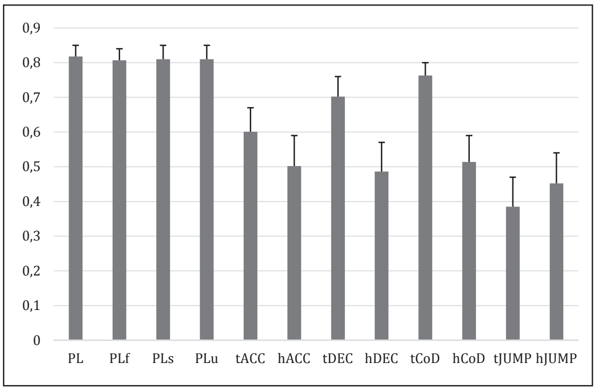
The mean and standard deviation values for each variable used for basketball training monitoring in this study are presented in Table 1. It can be seen that player load in the vertical plane (PLu) accumulated more arbitrary units than did the other two planes. Also, deceleration demands (total tDEC and high intensity hDEC) were higher than the acceleration.

Table 2 shows Pearson correlation values between the external load variables. All the combinations showed a statistically significant relationship (p<.01). Interestingly, PL showed a higher correlation with tCoD and tDEC than with tACC and tJUMP. Moreover, PL showed a higher correlation with all total variables (tACC, tDEC, tCoC) as compared to high-band variables (hACC, hDEC and hCoD), with the exception of the JUMP variable.

Table 1. Mean and standard deviation (±SD) of the values for each physical variable and sRPE

Variables (units)	Mean	SD
PL (AU)	314.9	±90.0
PLf (AU)	132.0	±37.3
PLs (AU)	127.4	±37.4
PLu (AU)	206.1	±59.9
tACC (n)	49.1	±24.2
hACC (n)	6.5	±4.6
tDEC (n)	89.1	±32.2
hDEC (n)	10.2	±6.8
tCoD (n)	324.1	±116.0
hCoD (n)	21.4	±12.5
tJUMP (n)	49.8	±20.0
hJUMP (n)	13.1	±6.8
RPE (AU)	6.6	±1.5
Duration (h:min:s)	1:07:42	±0:15:24
sRPE (AU)	390.2	±135.6

Note: PL is player load, PLf is PL in the anterior/posterior plane, PLs is PL in the lateral plane, and PLu is PL in the vertical plane; tACC is total forward acceleration, hACC is total forward acceleration within the high band (>3.5 m·s^{-2}), tDEC is total deceleration, hDEC is total deceleration within the high band (<-3.5 m·s^{-2}), tJUMP is total of jumps, hJUMP is jumps done within the high band (above 0.4 m), tCoD is total rightward lateral movements, and hCoD is total movements registered in a rightward lateral vector within the high band.



Note: PL is player load, PLf is PL in the anterior/posterior plane, PLs is PL in the lateral plane, PLu is PL in the vertical plane; tACC is total forward acceleration, hACC is total forward acceleration within the high band (>3.5 m·s^{-2}), tDEC is total deceleration, hDEC is total deceleration within the high band (<-3.5 m·s^{-2}), tJUMP is total of jumps, hJUMP is jumps done within the high band (above 0.4 m), tCoD is total rightward lateral movements, hCoD is total movements registered in a rightward lateral vector within the high band. In all cases, Pearson values were p<.01 (bilateral).

Figure 2. Pearson correlation (±95% confidence intervals) values between sRPE and the external load variables.

Table 2. Correlations (±95% confidence intervals) for the external and internal training load variable

	PLf	PLs	PLu	tACC	hACC	tDEC	hDEC	tCoD	hCoD	tJUMP	hJUMP
PL	0.98 (0.97-0.99)	0.99 (0.98-0.99)	0.99 (0.98-0.99)	0.65 (0.58-0.70)	0.53 (0.44-0.61)	0.83 (0.79-0.86)	0.65 (0.58-0.70)	0.84 (0.80-0.87)	0.67 (0.60-0.73)	0.49 (0.40-0.57)	0.55 (0.47-0.63)
PLf		0.97 (0.96-0.98)	0.96 (0.95-0.97)	0.67 (0.61-0.73)	0.56 (0.47-0.64)	0.81 (0.77-0.85)	0.60 (0.52-0.67)	0.81 (0.77-0.85)	0.64 (0.57-0.69)	0.50 (0.42-0.58)	0.55 (0.48-0.62)
PLs			0.97 (0.96-0.98)	0.69 (0.64-0.74)	0.58 (0.50-0.65)	0.83 (0.80-0.86)	0.66 (0.59-0.72)	0.86 (0.83-0.89)	0.69 (0.64-0.75)	0.50 (0.43-0.58)	0.56 (0.49-0.64)
PLu				0.60 (0.53-0.63)	0.49 (0.46-0.56)	0.81 (0.77-0.85)	0.65 (0.59-0.71)	0.83 (0.79-0.86)	0.65 (0.59-0.71)	0.46 (0.37-0.54)	0.54 (0.45-0.61)
tACC					0.72 (0.66-0.78)	0.69 (0.62-0.74)	0.29 (0.20-0.37)	0.66 (0.59-0.72)	0.52 (0.47-0.57)	0.49 (0.39-0.58)	0.43 (0.32-0.53)
hACE						0.47 (0.37-0.56)	0.28 (0.17-0.38)	0.62 (0.54-0.68)	0.49 (0.40-0.58)	0.43 (0.33-0.52)	0.29 (0.18-0.40)
tDEC							0.69 (0.63-0.75)	0.78 (0.72-0.83)	0.65 (0.57-0.70)	0.56 (0.48-0.62)	0.60 (0.52-0.67)
hDEC								0.63 (0.55-0.71)	0.65 (0.56-0.73)	0.28 (0.20-0.37)	0.38 (0.29-0.48)
tCoD									0.74 (0.69-0.79)	0.50 (0.41-0.59)	0.47 (0.38-0.56)
hCod										0.41 (0.31-0.51)	0.34 (0.24-0.44)
tJUMP											0.56 (0.48-0.64)

Note: PL is player load, PLf is PL in the anterior/posterior plane, PLs is PL in the lateral plane, PLu is PL in the vertical plane; tACC is total forward acceleration, hACC is total forward acceleration within the high band (>3.5 $m \cdot s^{-2}$), tDEC is total deceleration, hDEC is total deceleration within the high band (<-3.5 $m \cdot s^{-2}$), tJUMP is total of jumps, hJUMP is jumps done within the high band (above 0.4 m), tCoD is total rightward lateral movements, hCoD is total movements registered in a rightward lateral vector within the high band. In all cases Pearson values were p<.01 (bilateral).

Finally, Figure 2 shows Pearson correlations between sRPE (internal load) and the external load variables used. Although all of the presented relationships were statistically significant (p<.01), the strengths of correlations varied between variables. Very strong correlations were found between sRPE and all PL variables (PL, PLf, PLs and PLu), with values of r>.8. Finally, higher correlations were found between sRPE and tDEC and tCoD than tACC and tJUMP. Likewise, the total number of ACC, DEC and CoD displayed a higher correlation than high-band activities for the same variables.

Discussion and conclusions

This is the first study that examined the relationship between indicators of external and internal load in elite male basketball. The main finding of this study was a very high and significant association between sRPE and external load variables – that is, the entire motor activity of players during basketball training sessions – particularly when the total load was considered. Furthermore, strong correlations among external load variables suggest that coaches could be more selective in choosing variables for training monitoring in basketball to avoid redundancy.

The results of the current study support previous research findings in running-based team sports (Casamichana, et al., 2013; Gallo, et al., 2015; Scott, Lockie, Knight, Clark, & Janse de Jonge, 2013). To date, only one study (Scanlan, et al., 2014) investigated the relationship between accelerometer-derived load and sRPE in basketball, but with eight semi-professional male players. Unlike the current study (r>.8), the Scanlan's study showed a moderate correlation between PL and sRPE (r=.49).

It was therefore suggested that professional basketball coaching and conditioning should not assume a linear dose and response relationship between the accelerometer and the internal training load models during training and that a combination of internal and external approaches should be used in monitoring training load in players. The difference in the results could be explained by the number of training observations in the two studies (44 in the Scanlan's study, compared to 300 in the current study) and the standard level of players (semi-professional vs. elite players). Moreover, the differences could be explained by the training design: the current study investigated in-seasonal training sessions, while the Scanlan's study focused on the pre-season general and specific preparatory phase.

With respect to external variables, PL showed very strong correlations with tCoD and tDEC, but only a strong correlation with tACC and a moderate one with tJUMP. These findings could be explained by physical demands of basketball game, which involve a more frequent stress caused by decelerations and changes of direction than by accelerations and jumps, as it was presented in Table 1. Therefore, the total number of deceleration and changes of direction could be a valuable variable in describing the training load. However, it is important to realize that the number of high-intensity DEC and CoD accounted only for a small percentage of the total number of DEC and CoD: 8.7% and 15.1%, respectively.

Furthermore, a comparison of decelerations and accelerations shows that, in basketball training, there are almost twice as many decelerations as accelerations, both in the total and the high-intensity spectrums. Conversely, in football, where the size of the pitch is much greater, the players experience a different relationship between the total ACC and DEC. Akenhead, Harley, and Tweddle (2016) found that the total distance covered in accelerations in male football training was 1,826 m, as compared to 1,598 m covered in decelerations, while Mara, Thompson, Pumpa, and Morgan (2017) studied female matches and found a total of 423 accelerations and 430 decelerations. These results could be explained by the smaller size of the basketball court and, like in small-sided football games (Castellano & Casamichana, 2013), the players need to constantly decelerate and change direction, especially when anticipating and reacting to the actions of the opposing team during live games. Finally, it is also important to state that JUMP variable was poorly correlated with other external variables. This finding could be explained by the selection of different shooting drills, involving a high number of low- and high-intensity jumps. However, the number of spot-up shots made by each player notably varies from training to training, as it is not specified for each type of basketball training, or for the selection of small-sided games that represent a major part of the in-seasonal basketball practices.

Regarding the correlations between the internal load and external load variables, interesting results were found: sRPE showed a very strong correlation with tDEC and tCoD, a strong correlation with tACC, and only a moderate one with tJUMPS. A very similar pattern was observed between PL and the mentioned external variables, since they belonged to the same representative natural group (after the application of the cluster analysis), as suggested by Fernandez, Medina, Gomez, Arias, and Gavalda (2016). Like in other team sports (Casamichana, et al., 2013; Gallo, et al., 2015), this further confirms a strong correlation between PL and sRPE in elite basketball, expressed as mechanical and biochemical stress (Vanrenterghem, et al., 2017), respectively. Regardless of this high correlation between the two groups of variables, it seems that recording of both could provide a better understanding of players' adaptation or increased states of fatigue.

Even though the sample in the current study could be considered a potential limitation factor, it should be noted that this number represents a full-team roaster in basketball and it is therefore common that studies on professional teams are conducted on smaller samples. Moreover, future investigations should include the measures of internal load (such as HR) that were not available in the current study. Considering that the current rules of the game forbid the use of devices and sensors in official matches, it would be very interesting to know if this relationship between internal and external loads remains at a similar level, since other non-mechanical stressors could potentially affect the general relationship between PL and sRPE. A complementary use of both the internal and external parameters will greatly contribute to the process of training load monitoring. Additionally, it is important to acknowledge the statement made by Schelling and Torres (2016) on the limitations of measuring the external load using accelerometers, since these devices are not able to collect information on isometric muscle contractions, which occur, for instance, in screens and low-post situations, where static movements have a very low acceleration, but potentially very high energy expenditure.

To sum up, it is important to state that the internal and external training loads are derived from inherently different constructs and a complementary use of the two types of loads is therefore advised. However, the strong correlation between them found in this study supports the argument in favour of using the sRPE as a global indicator of load in intermittent collision sports, such as basketball. Moreover, certain variables, such as the total number of changes of direction and decelerations, show strong correlations with PL and sRPE and could therefore be potentially used in prescribing individual and team training loads.

Practical application

When considering the training load only, using both external and internal load monitoring methods provides the most valuable data for training analysis and training design. However, there are still many teams in professional basketball that do not use accelerometry technology in training nor in official matches, as it is currently not allowed. Therefore, based on the findings in this study, it is evident that the sRPE method alone could be sufficient to provide a general insight into load monitoring in professional basketball teams. However, even though both sRPE and accelerometry methods provide reliable training load values, it is important to know that the latter provides additional inertial-motion data with respect to individual movement patterns. For that reason, an individualized approach to external load monitoring in basketball is a complementary tool that could help coaches and teams minimize the number of injuries while achieving the best performance.

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