



Anthropometric Profile of Players per Playing Position in Euroleague in the Decade 2010-2020

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Abstract: The profile of the anthropometric characteristics of basketball players has been subject of interest in recent years, although relatively little research has been carried out with data, mainly conducted by some domestic national championships. At the same time, we have no corresponding research regarding the top European intercollegiate organization of Euroleague. The aim of the present study is to identify and record the changes in the anthropometric characteristics of the height and weight of players per position in Euroleague, in the decade 2010-2020. The anthropometric variables of height and weight were collected from 2,847 players from the official rosters of the teams of the Euroleague in the decade 2010-2020 and were analyzed in terms of the competing position (PG, SG, SF, PF, C), and the year that the season took place due to the change in the way the Euroleague was conducted in the middle of the examined decade. For the statistical analysis a Two-sided (2 X 5) Multivariate Variance Analysis (MANOVA) was used. The results showed that there were differences in the height variable in the five positions during the considered decade, while significant reductions in the weight variable were detected at all five positions in the second format. In addition, the PG position players were the shortest and lightest followed by the SG, SF, and PF positions with the C position players being the tallest and heaviest. In conclusion it seems, that a decade is enough time to detect changes in the height of the players per position and it is also enough to cause reductions in the weight variable of the players. The aforementioned results can help coaches in the process of selecting and recruiting the appropriate players for their rosters, as well as in conducting better personalization of their training regimes according to the anthropometric characteristics of each playing position separately.

Keywords: Anthropometric characteristics, Euroleague, Decade 2010-2020

1. INTRODUCTION

One of the most modern and interesting topics to investigate in recent years in the field of team sports is the determination of anthropometric profiles for each sport separately. Although the training process in all team sports needs a multifactorial approach, more and more sports scientists and coaches are searching for findings that correlate athletic performance in different sports with anthropometric factors. As is well known, the sport of basketball is a dynamic team sport in which the winner is the one who scores the most points in a basket, which is at a distance of 3.05 meters from the ground. For this reason, the sport is often referred as "the sport of the tall people", given that it needs athletes with a fairly tall stature to reach the basket more easily. Thus, it becomes clear that individual anthropometric characteristics in general and that of height in particular are factors of success in the sport of basketball. In this light, research is constantly being carried out, which tries to define and construct models of basketball players that are positively correlated with certain variables of anthropometric profiles, as well as with increased success in the sport (Garcia-Gil et al., 2018; Nagar et al., 2012; Pion et al., 2018).

Traditionally, in basketball there are five different positions (PG, SG, SF, PF, C), while in recent years this categorization includes three positions (guards, forwards, centers). Usually, this differentiation is a

result of the anthropometric characteristics of each athlete, with the variable of height being the one that most often plays the dominant role (Altavilla et al., 2018; Ostojic et al., 2006). Each position is therefore characterized by specific anthropometric profiles in terms of height as well as weight, with PGs generally being the shortest and lightest followed in order by SGs, SFs, PFs and Cs, who are considerably taller and heavier than the remaining positions (Abdelkrim et al., 2010; Boone & Bourgois, 2013; Pojskic et al., 2014). Nevertheless, significant part of the research conducted to date, places athletes in more than one position, as mentioned above, but finds the same differences regarding the anthropometric characteristic of height and weight per competing position (Ferioli et al., 2018; Kökçü et al., 2011). In fact, the importance of the anthropometric variable of height per playing position becomes even more evident in the selection of players in the world's leading basketball league, the NBA (Cui et al., 2019) where the tallest players per playing position are selected with greater frequency than their counterparts shorter ones.

Differences in the anthropometric variables of height and weight in basketball are not only present between the different playing positions, but are also the result of other factors. Several studies in many European and non-European countries have reported differences in the height of basketball players, as well as in other physiological parameters between different categories and levels of athletes (Masanovic, 2019; Sallet et al., 2005). Most of these studies reported significant differences in favor of players in the higher professional categories, although there were some exceptions in countries such as Spain (Vaquera et al., 2015). In addition, as is reasonable, significant differences in the anthropometric variables of height and weight are also observed between basketball players of different ages. Male basketball players and especially professionals are significantly taller and heavier than their respective adolescent counterparts and even young "elite" basketball players Gryko et al 2018. An exception is the elite teams of teenagers and young basketball players of some countries, which have in their ranks athletes with similar anthropometric characteristics to those of men (Abdelkrim et al., 2010; Vaquera et al., 2015; Apostolidis et al., 2004). Furthermore, research has been carried out to determine the anthropometric profiles of younger U-16 basketball players (Borovi & Garafoli, 2016; Kostopoulos, 2015). According to new research data at both men's and women's levels, the anthropometric variable of height is positively related to performance when it is higher in teams, resulting in better placings in event rankings (Zarić et al., 2020; Zarić, Ivan et al., 2020) The above findings combined with the continuous evolution of the rules and basic technical and tactical skills in the sport of basketball have as a consequence the creation of increasing physiological and anthropometric differences between the specific positions of the sport (Ferioli et al., 2020; Svilar et al., 2018). Thus, in addition to carrying out tests to determine the physiological requirements of each position separately, it is necessary to study the anthropometric variable of height and weight as a result of the different positions that exist in basketball (Roni Gottlieb et al., 2021). Given that the data of the anthropometric variables of height and weight, as well as those of the position of the players, are most often published and easily accessible, the possibility of investigating the changes of the specific variables over time arises. Surprisingly, there are no studies that have examined the above issue in regards to changes in the anthropometric variables of height and weight in the leading European men's interclub competition of the last twenty years, the Euroleague. The purpose of the present research is to identify and record the changes in the anthropometric characteristics of height and weight per position in the Euroleague organization in the decade 2010-2020.

2. METHODS

2.1. Participants

The research sample consisted of a total of 2,847 male professional basketball players who took part in the Euroleague competition for 11 seasons, from the 2010-11 season to the 2020-21 season. The above athletes were further categorized, according to their positions, into the five basketball positions (PG, SG, SF, PF, C). Cumulatively athlete were ranked 657 PG, 530 SG, 508 SF, 572 PF, and 580 C across the 11 seasons. In more detail, 294 athletes were studied in the 10-11 season, 262 athletes in the 11-12 season, 272 athletes in the 12-13 season, 266 athletes in the 13-14 season, 286 athletes in the 14-15 season, 294 athletes in the 15- 16, 212 athletes in the 16-17 season, 217 athletes in the 17-18 season, 211 athletes in the 18-19 season, 261 athletes in the 19-20 season and 272 athletes in the 20-21 season. The teams from which athlete data was obtained totaled 214 over those 11 seasons. In the first six seasons of the decade (2010-11 to 2015-16), 24 teams participated in the Euroleague competition. In the following three seasons (2016–17 to 2018–19) the competition's teams were significantly reduced

to only 16, while in the following two seasons (2019–20 and 2020–21) the number increased slightly and now 18 teams participate in the competition. However, the data for the first six seasons (2010-11 to 2015-16) were not taken from all 24 teams in each season but from fewer teams. In the first six seasons (2010-11 to 2015-16), data was obtained from 22 of the 24 teams in the Euroleague competition. In the next three years 2016-2019, the data was drawn from all 16 teams of the competition, while the same happened with the last two seasons 2019-2021, of the 18 teams.

1.2. Procedures

The present study is experimental comparative research, as no similar research was found in the International Bibliography. Before recording the two anthropometric variables and the players on the rosters of the different teams, the names of the teams per season were recorded in the order in which they appear on the official website of the Euroleague competition. Then, the declared team rosters of each season were searched and recorded, one at a time, and only the height, weight, and position variables of each player were noted from the website www.eurobasket.com in correspondence with the Euroleague website. The player's name or any other information was not recorded. Only those athletes who were listed on the team rosters on the official website of the event were included in the research sample. The above procedure was carried out for the measurements of each Season. The data of the anthropometric variables of height and weight were obtained from two official websites, the Euroleague for the rosters of the different seasons ([www.euroleague.net/? geoip=disabled](http://www.euroleague.net/?geoip=disabled)) and the website www.eurobasket.com for the positions of players and height-weight. If there were disagreements between the two websites either about the height-weight of the players or about the position, then the profile of the specific player was searched on a third website (www.wikipedia.org) and the necessary data was obtained. In order to compile the rosters of the research teams, a match was made between the rosters per season listed on the official website of the Euroleague organization (www.euroleague.net), with the corresponding height, weight and position listed for the same roster of the same season on the website www.eurobasket.com. If, between the two websites, there was a mismatch for any of the examined variables of a player's height, weight or playing position, then the profile of the specific athlete was searched on a third website (www.wikipedia.org) and the first listed position was selected and the corresponding height-weight. The age and ethnicity of the players participating in the study was not recorded as it was not a variable that could influence the results given that the study was conducted on male adult professional athletes. The anthropometric variable of height, mainly during the career of the research players, is not affected by age. As mentioned above, to identify and investigate the changes in the anthropometric variables of height and weight per playing position between the two different formats into which the individual seasons were divided, the athletes were classified according to the five basketball positions in PG, SG, SF, PF, C and the average of each position was calculated.

To derive the results and research questions, the first six seasons of the decade (2010-11 to 2015-16) were compared to the next five (2016-17 to 2020-21), due to the change in format. Of the Euroleague organization. Therefore, the first six seasons in the statistical analysis were defined as Year 1 (Year 1) and the following five seasons as Year 2 (Year 2) in order to compare the examined differences between the two ways of conducting the specific competition. The five traditional classification positions in basketball (PG, SG, SF, PF, C), as well as the time of each season (Year 1-Year 2) were considered independent variables. The dependent variables of the research were the two anthropometric variables of height and weight from which the data were obtained for the search of the anthropometric profiles of the elite male players of the Euroleague competition.

1.3. Statistical Analyses

For the statistical analysis of the results, the Microsoft Excel statistical package was used, as well as SPSS, which is a program widely used in the social sciences (SPSS, version 27 2021). A two-way (2 x 5) multivariate Analysis of Variance (MANOVA) was performed, in order to examine the differences between the competing position and the time of each season, which were the two independent variables of the research. The choice of the specific analysis was made with the ultimate aim of determining the differences of the above independent variables in the linear combination of the two dependent variables of the research, which concern the height and body mass (weight) of professional male players in 11 seasons of the Euroleague competition. The level of significance was set at $p < 0.05$. In order to assess

that the data used follow a normal distribution, the Levene test was performed, which showed a normal sequence with $p < 0.001$.

3. RESULTS

In the descriptive statistics of the variables, a total of 2,847 male players were analyzed and examined during these 11 seasons. These were divided according to their competing position in 657 PG, 529 SG, 509 SF, 572 PF and 580 C. As for the separation in the two separate formats of the event, this was done according to the time of the event. In particular, in the first six-season format of 24 teams, 1,675 players were analyzed, while in the second format, that of five seasons of 16 or 18 teams, 1,172 players were analyzed. Table 1 below details the results of the descriptive statistics of the variables mean, standard deviation (SD) and sample number examined on the two dependent variables. Additionally, Table 2 presents the overall descriptive statistical results of the five positions, in which the categorization was carried out expressed as in the table above.

Table 1. Height/Weight results per year and format

Position	Year	Height	Weight	Mean ±SD	Number of players
PG	1	189,7 cm	86,7 kg	±4.8 cm/ ±5.7 kg	388
	2	189,8 cm	86,6 kg	±4.8cm/ ±6.0 kg	268
	Total	189,7 cm	86,7 kg	±4.8cm/ ± 5.8 kg	657
SG	1	194,7 cm	91,6 kg	±3.2cm/ ± 5.0 kg	311
	2	194,6 cm	90,9 kg	±3.0cm/ ± 5.1 kg	218
	Total	194,6 cm	91,3 kg	±3.1cm/ ± 5.0 kg	529
SF	1	200,6 cm	98,6 kg	±3.2cm/ ± 5.7 kg	287
	2	200,4 cm	96,8 kg	±2.4cm/ ± 6.2 kg	222
	Total	200,5 cm	97,8 kg	±2.9cm/ ± 6.0 kg	509
PF	1	205,6 cm	105,2 kg	±2.0cm/ ± 5.4 kg	346
	2	205,4 cm	103,5 kg	±2.6cm/ ± 5.8 kg	226
	Total	205,5 cm	104,5 kg	±2.5cm/ ± 5.6 kg	572
C	1	209,8 cm	113,8 kg	±4.6cm/ ± 9.4 kg	343
	2	209,2 cm	109,9 kg	±5.0cm/ ± 7.3 kg	237
	Total	209,5 cm	112,2 kg	±4.7cm/ ± 8.8 kg	580

Table 2. Pooled descriptive results of the two formats

Year	Height	Weight	Mean±SD	Number of players
1	200,1 cm	99,2 kg	±0.3 cm / ± 0.4 kg	1675
2	199,9 cm	97,5 kg	±0.6 cm/ ± 0.7 kg	1172
Total	199,8 cm	98,3 kg	± 0.2 cm/ ± 1.8 kg	2847

Then, based on Wilks' Lambda, it emerged that there were statistically significant differences both in terms of playing positions in the linear combination of the above two variables Wilks' Lambda = 0.173, $F(8.5672) = 995.6$ and $p < 0.001$, and in terms of format of the Euroleague competition, Wilks' Lambda=0.983, $F(2.2836) = 23.833$ and $p < 0.001$. A statistically significant interaction was also found between the playing positions and the format of the Championship in the linear combination of the above two variables (height and weight of the competing athletes), with Wilks' Lambda=0.99, $F(8.5672) = 3.71$ and $p < 0.001$.

Then, separate analyzes of variance were performed which revealed that there were statistically significant differences of the playing positions in the variable of height $F(4.2837) = 2506.9$, $p < 0.001$, $\eta^2 = 0.779$ and weight $F(1.2837) = 1439.6$, $p < 0.001$, $\eta^2 = 0.670$ and also statistically significant differences were found for the format variable in regards with the weight variable $F(1.2837) = 47.68$ $p < 0.001$, $\eta^2 = 0.017$, while the effect on height was not significant $F(4,2837) = 1.89$, $p = 0.170$, $\eta^2 = 0.001$. Also the interaction of the competing position and the format of the event on the weight of the athletes $F(4.2837) = 7.39$ $p < 0.001$ was significant, Partial eta squared=0.01, while no statistically significant differences were observed in the height variable $F(1.2837) = 0.597$ $p = 0.665$, Partial eta squared=0.001.

Then, post Hoc analysis was performed and subsequent Duncan tests revealed that PGs had the lowest height and body mass (weight) compared to the other four positions over the 11 seasons ($p < 0.05$). Subsequently, SGs had the next lowest height and the next lowest body mass (weight) in relation to the

other three positions (SF, PF, C) ($p < 0.05$), while respectively the third in order height and the athletes of the SF position had body mass ($p < 0.05$). This was followed by the PFs, who were significantly taller and heavier compared to the three previous positions but not compared to the Cs, who had the highest height and the most kilograms compared to the remaining four positions ($p < 0.05$). Tables 3 and 4 present the Duncan test for the differences according to the competing position in the two dependent variables of the research during the total of the 11 examined seasons, expressed in averages.

Table 3. Means of athletes' height per position in the decade

	Position	Number					
			1	2	3	4	5
Duncan	PG	657	189,7 cm				
	SG	529		194,6 cm			
	SF	509			200,5 cm		
	PF	572				205,5 cm	
	C	580					209,5 cm

Table 4. Means of athletes' weight per position in the decade

	Position	Number					
			1	2	3	4	5
Duncan	PG	657	86,7 kg				
	SG	529		91,3 kg			
	SF	509			97,8 kg		
	PF	572				104,5 kg	
	C	580					112,2 kg

A high positive correlation was observed between the variables of height and weight of competing athletes $r=0.780$ and statistically significant with a significance level of $P=0.01$. More specifically, as the height of the athletes grew, so did their weight.

The player model of each position of the elite men's basketball players over the entire 11 seasons, in terms of the two dependent variables of height and weight, was analyzed descriptively, and the range of values is presented in quartiles (25, 50, 75).

Tables 7 and 8 present the descriptive statistics of player model height and body mass expressed as means, standard deviation (SD), minimum (min), maximum (max) and quartiles.

Table 7. Player height model by playing position

Position	Height	SD	MIN	MAX	QUARTILES		
					25 th	50 th	75 th
PG	189,7 cm	±4.8 cm	175 cm	201 cm	188 cm	190 cm	193 cm
SG	194,5 cm	±3.1 cm	186 cm	205 cm	193 cm	195 cm	197 cm
SF	200,5 cm	±2.9 cm	194 cm	209 cm	200 cm	202 cm	204 cm
PF	205,3 cm	±2.5 cm	198 cm	213 cm	203 cm	206 cm	207 cm
C	209,5 cm	±4.7 cm	198 cm	222 cm	206 cm	209 cm	212 cm

Table 8. Player weight model by playing position

Position	Mass	SD	MIN	MAX	QUARTILES		
					25 th	50 th	75 th
PG	86,7 kg	±5.8 kg	71 kg	104 kg	83 kg	87 kg	90 kg
SG	90,3 kg	±5.0 kg	74 kg	104 kg	88 kg	91 kg	95 kg
SF	97,3 kg	±6.0 kg	81 kg	111 kg	94 kg	98 kg	102 kg
PF	104 kg	±5.6 kg	82 kg	122 kg	100 kg	104 kg	108 kg
C	112,2 kg	±8.8 kg	198 cm	222 cm	107 kg	111 kg	117 kg

4. DISCUSSION

The present study is the first one attempting to identify and record the differences in anthropometric characteristics of height and weight per position, in the premier basketball competition of Europe, the Euroleague, in the decade 2010-2020. The main findings suggest that there are statistically significant differences in the anthropometric variable of height in the five playing positions, between the two different formats of the competition during the examined decade. Significant differences were observed in the second analyzed anthropometric variable, that of weight, both between the two competition

formats and in the interaction of the competing position with the tournament format. More specifically, the kilos increased per position and there was a decrease in kilos in the second five years examined. Still, of all the examined positions, the position of Center was found to have the most important discrepancies between the two different competition formats in relation to the four other positions under review. In addition, differences were also seen in the mean values of the weight variable between the two different formats. It is proven by the results of the present study, that the time period of 10 years and the 11 examined seasons were enough to record changes in the height of the players per position. On the other hand, the significant differences observed in the weight variable in general between the two formats and in particular in some of the positions (with the main reduction in weight observed in the C position) can be attributed to the change that has taken place in recent years in the way of playing the sport of basketball with the increase in the pace of the games and the introduction of much faster "actions" at the tactical side of the game.

Each competing position has specific responsibilities in a basketball game that rarely change and largely determine the height and weight of the players (Ferioli et al., 2020). Traditionally, PG position players spend more time with the ball in their hands, they set up plays and are chased more often by opponents, while SG-SF position players run the court without possession of the ball to provide better spacing and to take advantage of any open shot opportunities. The PF and C positions usually have the tallest and strongest athletes, with responsibilities to play either a little further (PF) or closer to the basket (C). In recent years, however, as mentioned above, the way basketball is played has changed significantly, especially with respect to the PF and C positions with the increasing introduction of 5-out & 4 out 1 in offensive actions. Thus, it is now required that the athletes of specific positions be much faster and more agile, as well as be able to "go out" to the perimeter and do actions that in previous years were not common for them.

Furthermore, it was found that the athletes in the present study were on average taller and heavier at almost all five positions (PG, SG, SF, PF, C) than the corresponding athletes selected on an annual basis in the world's premier basketball league, the NBA (Cui et al., 2019). Thus, it is noted that the athletes competing at the top men's intercollegiate basketball level of the European Continent are at the same or even better level in terms of the anthropometric characteristics of height and weight per position than athletes selected to compete in the NBA. Also, the results of the study in all five positions were directly related to the results of similar surveys on the variable of height in national basketball teams. In particular, the averages of height per position were similar to the corresponding averages of the national teams of three consecutive Basketball World Cups (Zarić et al., 2020), revealing that elite male basketball athletes from different Continents compete in the Euroleague competition. However, this cannot be said for the athletes who make up the Tunisian national basketball teams, since the Tunisian male athletes of the respective national team had significantly lower values for both height and weight in each of the five examined positions compared to the athletes of the present study (Abdelkrim et al., 2010).

For the last 20 years, the Euroleague has been the leading men's club competition in Europe. For this reason, it attracts the elite basketball athletes of each country, who choose to compete in teams that continuously participate in it. Thus, it makes sense that the researched athletes were taller and heavier in all five playing positions (PG, SG, SF, PF, C), compared to corresponding athletes who participate in teams in the top domestic divisions of the Belgian or French leagues (Boone & Bourgois, 2013; Pion et al., 2018; Sallet et al., 2005). However, it appears that athletes from the top divisions of some domestic basketball leagues of various European countries are shorter and lighter per position compared to the Euroleague athletes (Gryko et al., 2018; Köklü et al., 2011; Ostojic et al., 2006; Pojskic et al., 2014). The same also applies to teams belonging to lower European or South American domestic leagues (Altavilla et al., 2018; Gantois et al., 2017). More generally, the values of the players in this study, in both anthropometric variables examined (height-weight), did not show any correspondence with similar studies in the international literature, perhaps because the present study is the first to examine and define these figures at the Euroleague level.

Accordingly, regarding the overall averages from the total 11 examined seasons in the two anthropometric variables of height and weight, they were found to be very close to the averages of basketball players in the Italian A1 league and superior to other lower leagues of the same country (Ferioli et al., 2018). In addition, although the Spanish National Basketball team in the last 20 years has

had very important successes in World and Pan-European competitions, the averages of height and weight in the corresponding league of the top division of Spain (ACB) were inferior to those recorded in athletes of the Euroleague. Surprisingly, however, the averages of the present study were closer to those of the second division of the Spanish league and the U-18 National Team of the corresponding country, at least in terms of player height (Vaquera et al., 2015). The above findings, may also be due to the fact that most of the Spanish athletes who make up the National Men's Basketball team do not compete in the top domestic league, but in other leagues and mainly in the NBA.

The descriptive statistics for Euroleague athletes did not reveal anything new. The PG position was the one with the shortest and lightest athletes, followed in order by those of SG, SF, PF with the C position containing the tallest and heaviest athletes. The specific results agree with all previous international literature regarding the categorization of players in the five traditional basketball positions (PG, SG, SF, PF, C) and not in the three (Guards, Forwards, Centers) (Abdelkrim et al., 2010; Boone & Bourgois, 2013; Cui et al., 2019; Pion et al., 2018). Based on the findings from the descriptive statistics, it may be suggested that when conducting research on athletes at the top level of basketball regarding the anthropometric characteristics of each position, is better to use the categorization in the five playing positions. The reason for that is that all five positions present significant differences in both anthropometric variables examined (height-weight) and therefore the merging of the two positions of guards and the two forwards into one, do not fully reflect the requirements of each position separately at the top level.

Through the statistical analysis of the quartiles of the two examined anthropometric variables, it is possible to define a potential player model, based on the height and weight of each of the five positions and divide them into three subcategories per variable (short-average-tall athletes by position and lighter-average-heavier respectively). More specifically:

PG position: short PG (<188 cm), average height PG (188-192 cm), tall PG (≥ 193 cm), lighter PG (<83 kg), average weight PG (83-89 kg), heavier PG (≥ 90 kg).

SG position: short SG (<193 cm), SG of average height (193-196 cm), tall SG (≥ 197 cm), lighter SG (<88 kg), SG of average weight (88-94 kg), heavier SG (≥ 95 kg).

SF position: short SF (<200 cm), SF of average height (200-203 cm), tall SF (≥ 204 cm), lighter SF (<94 kg), SF of average weight (94-101 kg), heavier SF (≥ 102 kg).

PF position: short PFs (<203 cm), PFs of average height (203-206 cm), tall PFs (≥ 207 cm), lighter PFs (<100 kg), PFs of average weight (100-107 kg), heavier PF (≥ 108 kg).

Position C: short C (<206 cm), C of average height (206-211 cm), tall C (≥ 212 cm), lighter C (<107 kg), C of average weight (107-116 kg), heavier C (≥ 117 kg).

The values extracted from the player model of each position, in addition to being a useful tool in the player selection process, can also be used as a tool for a coach to place players from different positions in other positions, if there is a tactical or other need. In particular, short SGs or tall PGs can switch positions with each other when required. Likewise, tall PFs or short Cs can be alternated if the team's style of play also favors such changes.

Taking into consideration the above, it seems that the factor that plays the most decisive role for the values recorded in the various surveys for the two dependent variables (height - weight), regardless of each position and competition format, is the level of the respective event. The Euroleague has been the second-best interclub competition on the planet, behind only the NBA for several years, so it manages to attract every season elite basketball players from countries all over the world. Therefore, the high values of the players both in height and weight per playing position recorded in this study is probably a consequence of the high level and the requirements of each competition, since among other things it has been proven that teams with a higher height manage to achieve higher positions in the rankings (Zarić et al., 2020).

The present study faced some limitations. Initially, the study did not take into account which athletes from each year's rosters actually competed and which did not. The study included all the athletes who were listed on the rosters of each team, regardless of their participation time. Secondly, the research did not take into account any changes of players by transfer period or release in the rosters of the teams during the seasons, but included the declared rosters of the website www.euroleague.net. Lastly, no

information was provided on either website about other variables of players' anthropometric characteristics other than height and weight, so a more thorough investigation with more variables could be done.

5. CONCLUSION

The study recorded differences in the anthropometric variable of height in the five examined positions (PG, SG, SF, PF, C) between the two formats while it also recorded significant reductions in the anthropometric variable of weight, in all positions (with more significant in that of C), in the second format of conducting the Euroleague with its last five seasons (2016-2021). These differences may be attributed to the change in the way the game is been played in recent years, which requires faster actions from all positions, often quite far from the basket. Furthermore, descriptive statistics recorded that the PG position had the shortest and lightest athletes, followed in order by the SG, SF, PF position with the C position having the tallest and heaviest athletes. Generally, the study recognized that as the anthropometric variable of height increases, so does the corresponding variable of weight. The overall data of each of the five examined positions revealed that the Euroleague organization has a very high level of athletes, in terms of the anthropometric variables of height and weight that are compared only with the averages of the top national teams that participated in Basketball World Cups.

5.1. Conflict of Interest

All the authors state that there is no conflict of interest.

REFERENCES

- [1] Abdelkrim, N. B., Chaouachi, A., Chamari, K., Chtara, M., & Castagna, C. (2010). Positional Role and Competitive-Level Differences in Elite-Level Men's Basketball Players. 10.
- [2] Altavilla, G., D'Isanto, T., & Di Tore, P. A. (2018). Anthropometrics characteristics and jumping ability in basketball. *Journal of Human Sport and Exercise - 2018 - Spring Conferences of Sports Science. Journal of Human Sport and Exercise - 2018 - Spring Conferences of Sports Science.* <https://doi.org/10.14198/jhse.2018.13.Proc2.22>
- [3] Boone, J., & Bourgois, J. (2013). Morphological and Physiological Profile of Elite Basketball Players in Belgium. *International Journal of Sports Physiology and Performance*, 8(6), 630–638. <https://doi.org/10.1123/ijspp.8.6.630>
- [4] Borovi, I., & Garafoli, H. (2016). Anthropological Profile of U16 Basketball Players. 7.
- [5] Cui, Y., Liu, F., Bao, D., Liu, H., Zhang, S., & Gómez, M.-Á. (2019). Key Anthropometric and Physical Determinants for Different Playing Positions During National Basketball Association Draft Combine Test. *Frontiers in Psychology*, 10, 2359. <https://doi.org/10.3389/fpsyg.2019.02359>
- [6] Ferioli, D., Rampinini, E., Bosio, A., La Torre, A., Azzolini, M., & Coutts, A. J. (2018). The physical profile of adult male basketball players: Differences between competitive levels and playing positions. *Journal of Sports Sciences*, 36(22), 2567–2574. <https://doi.org/10.1080/02640414.2018.1469241>
- [7] Ferioli, D., Rampinini, E., Martin, M., Rucco, D., La Torre, A., Petway, A., & Scanlan, A. (2020). Influence of ball possession and playing position on the physical demands encountered during professional basketball games. *Biology of Sport*, 37(3), 269–276. <https://doi.org/10.5114/biolSport.2020.95638>
- [8] Garcia-Gil, M., Torres-Unda, J., Esain, I., Duñabeitia, I., Gil, S. M., Gil, J., & Irazusta, J. (2018). Anthropometric Parameters, Age, and Agility as Performance Predictors in Elite Female Basketball Players: *Journal of Strength and Conditioning Research*, 32(6), 1723–1730. <https://doi.org/10.1519/JSC.0000000002043>
- [9] Gryko, K., Kopiczko, A., Mikołajec, K., Stasny, P., & Musalek, M. (2018). Anthropometric Variables and Somatotype of Young and Professional Male Basketball Players. *Sports*, 6(1), 9. <https://doi.org/10.3390/sports6010009>
- [10] Köklü, Y., Alemdaroğlu, U., Koçak, F., Erol, A., & Fındıkoğlu, G. (2011). Comparison of Chosen Physical Fitness Characteristics of Turkish Professional Basketball Players by Division and Playing Position. *Journal of Human Kinetics*, 30(1). <https://doi.org/10.2478/v10078-011-0077-y>
- [11] Kostopoulos, N. (2015). Anthropometric and fitness profiles of young basketball players according to their playing position and time. 6.
- [12] Masanovic, B. (2019). Comparative Study of Morphological Characteristics and Body Composition between Different Team Players from Serbian Junior National League: Soccer, Handball, Basketball and Volleyball. *International Journal of Morphology*, 37(2), 612–619. <https://doi.org/10.4067/S0717-95022019000200612>

- [13] Nagar, L., Meena, D. S., & Singh, B. (2012). Correlation of Selected Anthropometric and Physical Fitness Variables to Basketball Performance. 5.
- [14] Ostojic, S. M., Mazic, S., & Dikic, N. (2006). Profiling In Basketball: Physical and Physiological Characteristics of Elite Players. 6.
- [15] Pion, J., Segers, V., Stautemas, J., Boone, J., Lenoir, M., & Bourgois, J. G. (2018). Position-specific performance profiles, using predictive classification models in senior basketball. *International Journal of Sports Science & Coaching*, 13(6), 1072–1080. <https://doi.org/10.1177/1747954118765054>
- [16] Pojskic, H., Separovic, V., Muratovic, M., & Uzicanin, E. (2014). Morphological Differences of Elite Bosnian Basketball Players According to Team Position. *International Journal of Morphology*, 32(2), 690–694. <https://doi.org/10.4067/S0717-95022014000200051>
- [17] Roni Gottlieb, Shalom, A., & Calleja-Gonzalez, J. (2021). Physiology of basketball – field tests. Review article. 9.
- [18] Sallet, P., Perrier, D., Ferret, J. M., Vitelli, V., & Baverel, G. (2005). Physiological Differences in Professional Basketball Players as a Function of Playing Position and Level of Play. 14.
- [19] Svilar, L., Castellano, J., Jukic, I., & Casamichana, D. (2018). Positional Differences in Elite Basketball: Selecting Appropriate Training-Load Measures. *International Journal of Sports Physiology and Performance*, 13(7), 947–952. <https://doi.org/10.1123/ijsp.2017-0534>
- [20] Vaquera, A., Santos, S., Villa, J. G., Morante, J. C., & García-Tormo, V. (2015). Anthropometric Characteristics of Spanish Professional Basketball Players. *Journal of Human Kinetics*, 46(1), 99–106. <https://doi.org/10.1515/hukin-2015-0038>
- [21] Zarić, I., Kukić, F., Jovičević, N., Zarić, M., Marković, M., Toskić, L., & Dopsaj, M. (2020). Body Height of Elite Basketball Players: Do Taller Basketball Teams Rank Better at the FIBA World Cup? *International Journal of Environmental Research and Public Health*, 17(9), 3141. <https://doi.org/10.3390/ijerph17093141>
- [22] Zarić, Ivan, Kukić, Filip, Jovičević, Nemanja, Zarić, Milan, Toskić, Lazar, Đurić, Saša, Marković, Milan, & Dopsaj, Milivoj. (2020). Body height of female basketball players: Association with ranking at the Women's World Basketball Cup. <https://doi.org/10.5281/ZENODO.4401645>
- [23] Gantois, P., de Amorim Oliveira, G. T., Cabral, B. G. D. A. T., do Nascimento, P. H. D., Aidar, F. J., & Batista, G. R. (2017). Anthropometric profile of basketball athletes by game position, competition level and competition ranking: a cross-sectional study. *Motricidade*, 13, 119-126.
- [24] Apostolidis, N., Nassis, G. P., Bolatoglou, T., & Geladas, N. D. (2004). Physiological and technical characteristics of elite young basketball players. *Journal of Sports Medicine and Physical Fitness*, 44(2), 157.

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