**ANTHROPOLOGICAL PROFILE OF U16 BASKETBALL PLAYERS**

Iva Borović, Tomislav Rupčić, Branka R. Matković, Hrvoje Garafolić and Marin Đadić

Faculty of Kinesiology, University of Zagreb, Croatia

*Original scientific paper*

**Abstract**

The purpose of this study was to analyse the anthropological profile of top level U16 basketball players, members of the Croatia U16 men's national team, with the aim of defining model values that shall in the future serve the purpose of directing and developing basketball players in the chosen age group. Eleven (11) potential members of the U16 men's national basketball team participated in this research, with an average age of 15.72±0.44 years. The variable sample was composed of morphological characteristics and tests for evaluating motor and functional skills. Data processing was implemented by applying the statistical software package Statistica for Windows, ver. 12. Basic descriptive statistical parameters were calculated and demonstrated for each variable. On the basis of the obtained results for the measured morphological characteristics, the conclusion can be made that, already in the U16 age category, a difference can be noticed between the longitudinal and transverse dimensionality of the skeleton between the guard – forward – centre player positions, although a complete specialisation for each single player position is very often not final at that age. Likewise, results obtained for the percentage of body fat indicate that all players in this sample group of examinees have an optimal body composition. In almost all motor skill tests, the best results are achieved by guards, whereas the biggest differences between players in different positions are noticeable in tests for examining speed, agility and explosive strength. Aerobic and anaerobic capacities are well developed in all players and they meet the high demands of playing modern basketball.

**Key words:** basketball, morphological characteristics, motor and functional skills, U16.

**Introduction**

In terms of its structure as a game, basketball is a complex sports activity. During a basketball game, activities of very high intensity alternate with those of lower intensity so that it can easily be concluded that in order to be successful in playing basketball, in addition to primary technical and tactical skills, a player must also have his physical conditioning level and motor skills and abilities developed at a very high and enviable level.

Motor skills are often presented as the starting point of each motor action, and in basketball some of those motor skills have a high predictive value in a successful final performance of specific motor movement (knowledge). With regard to the complexity of motor movements (techniques) which players perform with and without the ball, it can be concluded that coordination is one of the more relevant motor abilities in basketball (Kamandulis et al., 2013). In addition to coordination, during various changes of direction, both when in defence (movement in the defensive stance or while avoiding a player's screen attempt), as well as when in offence (while opening up for a pass or changing direction while dribbling the ball), movement agility is also exceptionally significant. The aspect of basketball precision covers two important elements – passing precision and shooting precision.

Shooting precision by all means greatly determines a player’s efficiency, however nowadays the segment of passing precision also has a high predictive value (Matković, R.B., Matković, B., Knjaz, D., 2005; Matković, B., Knjaz, D., Rupčić, T., 2014). Along with the previously mentioned ones, certain other motor abilities also highly influence the level of playing efficiency, such as speed, particularly reaction time, strength (explosive strength of upper and lower extremities), as well as balance which is manifested during almost all specific movements during a basketball game (shooting, passing, moving in the defensive stance, landings, etc.). Upon observing basketball from the physiological viewpoint, the conclusion can be made that players require both a well-developed aerobic and anaerobic capacity.

The aerobic capacity is mostly represented in connection with fast organism recovery during short break periods (time out, free throw(s), etc.), whereas the anaerobic capacity is mostly represented during the game by way of continual accelerations, changes of direction, defensive and offensive rebounds, i.e. in all types of movements that are characterised by a high movement intensity. In the process of analysing morphological characteristics from the aspect of longitudinal and transverse dimensionality of the skeleton in basketball players, their emphasis is a long-known fact, as well as their impact on playing efficiency in basketball (Matković, B. and Matković, R.B., 1986). The aim of this study was to determine and analyse the anthropological profile of top level U16 basketball players according to player positions with the purpose of defining model values that shall in the future then serve as a means for directing, developing and correcting training plans and programmes for all basketball players in the mentioned age category (U16).
Methods

The sample of examinees was composed of eleven (11) potential candidates for members of the Croatia U16 national team (average age of 15.72±0.44 years) who were preparing for the European Championship. The participants were informed in advance, both verbally and in written, on the manner of implementation, application and the purpose of each individual test. Prior to taking any of the tests, all the examinees filled out a questionnaire on their health status and signed an informed consent permitting the implementation of the tests. According to their playing positions, the participants were categorized as 1,2 – guards (n=5), 3,4 – forwards (n=4) or 5 – centres (n=2). The variable sample was composed of morphological characteristics and tests for evaluating motor and functional skills that contain validated metric characteristics (Metikoš et al., 1982; Blašković, Milanović and Matković, 1982; Jukić et al., 2008), while the battery of tests was standardized at the Diagnostics Centre of the Faculty of Kinesiology University of Zagreb. Out of the various morphological characteristics, body weight and height were measured, the percentage of body fat was estimated by using the bioelectric impedance method and the body mass index was calculated for all the examinees. For the purpose of evaluating agility, the 20-yard test (20Y), the Side-Step test (SSSTEP) and the 4x5 meter test (4x5M) were used, whereas for assessing explosive strength in sprint performance, the examinees were subjected to the 20-meter running test. The explosive strength in vertical jumps was estimated based on test results from the countermovement jump test (without arm swing) (CMJ) which was applied by using thekistler force platform. During the assessment of functional skills, the beep test (BEEP) was applied for calculating aerobic endurance, while the 300-meter sprint test (300M) was used for evaluation of the examinees’ anaerobic endurance capacity. Data processing was implemented by applying the statistical software package Statistica for Windows, ver. 12. The following parameters were calculated for each variable: arithmetic mean (AM), standarddeviation (SD), minimumvalue (MIN) and maximumvalue (MAX).

Results and discussion

Table 1. demonstrates descriptive statistical parameters of the measured morphological characteristics for basketball players in guard, forward and centre positions.

<table>
<thead>
<tr>
<th>GUARDS (n=5)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BH (cm)</td>
<td>188.34</td>
<td>2.92</td>
<td>192.2</td>
<td>184.3</td>
</tr>
<tr>
<td>BW (kg)</td>
<td>78.58</td>
<td>5.44</td>
<td>83.9</td>
<td>75.5</td>
</tr>
<tr>
<td>% body fat</td>
<td>12.76</td>
<td>2.31</td>
<td>15.4</td>
<td>10.4</td>
</tr>
<tr>
<td>BMI</td>
<td>22.26</td>
<td>1.89</td>
<td>23.8</td>
<td>19.2</td>
</tr>
<tr>
<td>FORWARDS (n=4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH (cm)</td>
<td>196.77</td>
<td>4.29</td>
<td>200.7</td>
<td>192.0</td>
</tr>
<tr>
<td>BW (kg)</td>
<td>83.3</td>
<td>8.32</td>
<td>92.0</td>
<td>74.9</td>
</tr>
<tr>
<td>% body fat</td>
<td>12.82</td>
<td>1.62</td>
<td>15.1</td>
<td>11.4</td>
</tr>
<tr>
<td>BMI</td>
<td>21.47</td>
<td>1.35</td>
<td>23.0</td>
<td>19.8</td>
</tr>
<tr>
<td>CENTRES (n=2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BH (cm)</td>
<td>205.05</td>
<td>0.21</td>
<td>205.20</td>
<td>204.90</td>
</tr>
<tr>
<td>BW (kg)</td>
<td>87.25</td>
<td>11.66</td>
<td>95.5</td>
<td>79.0</td>
</tr>
<tr>
<td>% body fat</td>
<td>13.2</td>
<td>0.28</td>
<td>13.4</td>
<td>13.0</td>
</tr>
<tr>
<td>BMI</td>
<td>20.75</td>
<td>2.75</td>
<td>22.7</td>
<td>18.8</td>
</tr>
</tbody>
</table>

AM – arithmetic mean; SD – standard deviation; MIN – minimum value; MAX – maximum value; BH – body height; BW – body weight; BMI – body mass index; % body fat – percentage of body fat

Figures 1-4. – Relation between morphological characteristics of guard, forward and centre players
After analysing the results obtained from the tests for assessing morphological characteristics, there are noticeable differences between each playing position. Table 1 clearly demonstrated that the average height of guards was 188.34±2.92 cm, while their body weight was 78.58±5.44 kg, which is considerably lower than in forwards with 196.77±4.29 cm and 83.3±8.32 kg, as well as in centres 205.05±0.21 cm and 87.25±11.66 kg. In 196.77±4.29 cm and 83.3±8.32 kg, as well as in forwards and centres 20.75±2.75 kg/m² classify this group, whereas the average body mass index does not vary significantly (22.2±2.5 kg/m²) when compared to examinees in this research. A similar analysis was also conducted by Kollos and Tache (2013) with Romanian U16 basketball players. Some greater differences can be noticed in results of measured body height (182.0±0.08 cm) and weight (72.3±10.88 kg), while the body mass index (21.97±3.70 kg/m²²) showed to be comparable with observed examinees. Another study of morphological characteristics according to playing positions during a basketball game was also implemented by Erol et al. (2014) on a sample of players aged 13 and 14, who were candidates for the Turkey U15 national team. Potential members of the Turkish national team had a somewhat lower body mass index, comparing guards (20.3±2.1 kg/m²²) and forwards (20.6±3.4 kg/m²²), excluding players on the center position (21.0±2.6 kg/m²²), however, it should be taken into account that these are all players only entering into the U16 age category so that the presumption can be made that their muscle mass is still somewhat less developed.

The percentage of body fat in guards (12.76±2.31%), forwards (12.82±1.62%) and centres (13.2±0.28) show standard values comparing them with other athletes, but not as low as in senior basketball players (Ostojić et al., 2010). This enables the players to perform a large number of fast and intensive movements, both in defence and in offence, as it has been demonstrated in numerous previously conducted research that excessive fat tissue can have a negative effect on speed, agility and endurance (Apostolidis et al., 2004; Osváth et al., 2009). In a study conducted by Gerodimus et al. (2005), the percentage of body fat was analysed for members of the Greece U16 national basketball team, and the measured results were on average 11.12±2.35 % of body fat, which is somewhat lower than the results measured among examinees in this research.

Table 2. – Descriptive statistical parameters of results obtained from tests for assessing motor skills – guards

<table>
<thead>
<tr>
<th>Var.</th>
<th>AM</th>
<th>SD</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>20Y</td>
<td>4.93</td>
<td>0.06</td>
<td>4.85</td>
<td>5.04</td>
</tr>
<tr>
<td>4x5M</td>
<td>4.74</td>
<td>0.07</td>
<td>4.64</td>
<td>4.86</td>
</tr>
<tr>
<td>SSTEP</td>
<td>7.34</td>
<td>0.20</td>
<td>6.98</td>
<td>7.55</td>
</tr>
<tr>
<td>20m</td>
<td>3.30</td>
<td>0.04</td>
<td>3.27</td>
<td>3.36</td>
</tr>
<tr>
<td>CMJ</td>
<td>46.72</td>
<td>6.72</td>
<td>39.63</td>
<td>58.60</td>
</tr>
</tbody>
</table>

Table 3. – Descriptive statistical parameters of results obtained from tests for assessing motor skills – forwards

<table>
<thead>
<tr>
<th>Var.</th>
<th>AM</th>
<th>SD</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>20Y</td>
<td>4.92</td>
<td>0.18</td>
<td>4.65</td>
<td>5.13</td>
</tr>
<tr>
<td>4x5M</td>
<td>4.75</td>
<td>0.08</td>
<td>4.68</td>
<td>4.88</td>
</tr>
<tr>
<td>SSTEP</td>
<td>7.28</td>
<td>0.36</td>
<td>6.70</td>
<td>7.61</td>
</tr>
<tr>
<td>20m</td>
<td>3.45</td>
<td>0.15</td>
<td>3.26</td>
<td>3.67</td>
</tr>
<tr>
<td>CMJ</td>
<td>44.39</td>
<td>6.71</td>
<td>36.93</td>
<td>53.00</td>
</tr>
</tbody>
</table>

Table 4. – Descriptive statistical parameters of results obtained from tests for assessing motor skills – centres

<table>
<thead>
<tr>
<th>Var.</th>
<th>AM</th>
<th>SD</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>20Y</td>
<td>5.17</td>
<td>0.00</td>
<td>5.17</td>
<td>5.18</td>
</tr>
<tr>
<td>4x5M</td>
<td>4.92</td>
<td>0.12</td>
<td>4.80</td>
<td>5.04</td>
</tr>
<tr>
<td>SSTEP</td>
<td>7.88</td>
<td>0.40</td>
<td>7.48</td>
<td>8.28</td>
</tr>
<tr>
<td>20m</td>
<td>3.54</td>
<td>0.04</td>
<td>3.50</td>
<td>3.57</td>
</tr>
<tr>
<td>CMJ</td>
<td>43.62</td>
<td>3.78</td>
<td>39.83</td>
<td>47.40</td>
</tr>
</tbody>
</table>
AM – arithmetic mean; SD – standard deviation; MIN – minimum value; MAX – maximum value; 20Y – 20-yard test; 4x5M – 4x5 meter test without the ball; SSTEP – Side-Step test; 20m – 20-meter running test; CMJ – countermovement jump test

Observing basketball from the aspect of complexity of performance of specific motor skills, which are quite often during high intensity periods in the game, the assumption can be made that players must possess a high level of development of the overall motor area. During the test for assessing the frontal-nimble agility (20Y), U16 basketball players achieved the following results: guards 4.93±0.06 sec, forwards 4.92±0.18 sec and centres 5.17±0.00 sec.

In a study which was conducted by Sporiš et al. (2010), on a sample of players who were part of the Croatia U16 national team (born in 1993 or younger), players reached better results comparing to this research.

The average results in the 4x5 meter test (4x5M) were 4.74±0.07 sec. (guards), 4.75±0.08 sec. (forwards) and 4.92±0.12 (centres). In the Side-step test (SSTEP) that was applied for evaluating the players lateral agility, forwards demonstrated to be the most agile (7.28±0.36 sec) then followed the guards (7.34±0.20 sec), and centres (7.88±0.40 sec).

The mentioned results indicate that forwards and guards have similar results and they are more agile and nimble than centres.

For the purpose of evaluating explosive strength during sprint performance, the 20-meter running test (20M) was applied. Guards took on average 3.30±0.04 sec in order to run the 20 meters, forwards players took 3.45±0.15 sec, while centre players took 3.54±0.04 sec, which clearly demonstrates that guards and forwards are faster than centre players.

It was precisely the explosive strength during sprint performance in U18 national team players that was analysed by Gardasević et al., (2011), also by using the 20-meter running test; the average result was 3.31±1.43 sec, which is a faster result than the one measured among forwards and centres, and similar with guards in this research.

It should be taken into account that these were U18 players, which means that they are up to two years older, and research indicate that sprint speed increases in basketball players over the years (Kamandulis et al., 2013).

The success rate during the realisation of high jumps both in defence and in offence, sudden movements with or without the ball, fast passes and short sprints greatly depends on a player’s explosive strength. In the countermovement jump test (CMJ) for evaluating explosive strength during vertical jumps, results for guard players were on average 46.72±6.72 cm, forwards 44.39±6.71 cm and centre players 43.62±3.78 cm.
Upon comparing the obtained results with the ones achieved in other research, it can be noticed that the examinees in this study demonstrated better results with respect to basketball players and athletes from other sports (football, handball) with the identical chronological age (Singh, B., Kumar, A. and Ranga, M. D., 2014; Gerodimos, V. Manou, V., Ioakimidis, P., Perkos, S. and Kellis, S., 2006).

Table 5. – Descriptive statistical parameters of aerobic functional abilities – beep test

<table>
<thead>
<tr>
<th>GUARDS</th>
<th>AM</th>
<th>SD</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRmax</td>
<td>184.20</td>
<td>4.43</td>
<td>179.00</td>
<td>190.00</td>
</tr>
<tr>
<td>Distance</td>
<td>12.05</td>
<td>0.87</td>
<td>11.03</td>
<td>13.03</td>
</tr>
<tr>
<td>VO₂ max rel</td>
<td>55.52</td>
<td>3.13</td>
<td>51.10</td>
<td>59.90</td>
</tr>
<tr>
<td>FORWARDS</td>
<td>AM</td>
<td>SD</td>
<td>MIN</td>
<td>MAX</td>
</tr>
<tr>
<td>HRmax</td>
<td>192.50</td>
<td>4.82</td>
<td>185.00</td>
<td>198.00</td>
</tr>
<tr>
<td>Distance</td>
<td>11.36</td>
<td>0.44</td>
<td>11.01</td>
<td>11.36</td>
</tr>
<tr>
<td>VO₂ max rel</td>
<td>53.05</td>
<td>0.53</td>
<td>11.03</td>
<td>12.11</td>
</tr>
<tr>
<td>CENTRES</td>
<td>AM</td>
<td>SD</td>
<td>MIN</td>
<td>MAX</td>
</tr>
<tr>
<td>HRmax</td>
<td>187.5</td>
<td>2.12</td>
<td>186.00</td>
<td>189.00</td>
</tr>
<tr>
<td>Distance</td>
<td>11.03</td>
<td>0.15</td>
<td>11.03</td>
<td>11.04</td>
</tr>
<tr>
<td>VO₂ max rel</td>
<td>51.25</td>
<td>0.18</td>
<td>51.10</td>
<td>51.40</td>
</tr>
</tbody>
</table>

AM – arithmetic mean; SD – standard deviation; MIN – minimum value; MAX – maximum value; HRmax – maximum heart rate; VO₂ max rel – estimated relative maximum of oxygen consumption

Figure 9. – Relation between obtained test results for assessing aerobic endurance (VO₂ max) of guard, forward and centre players

Table 6. – Descriptive statistical parameters of anaerobic functional abilities – 300-meter sprint test

<table>
<thead>
<tr>
<th>GUARDS</th>
<th>AM</th>
<th>SD</th>
<th>MIN</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRmax</td>
<td>181.20</td>
<td>3.34</td>
<td>179.00</td>
<td>187.00</td>
</tr>
<tr>
<td>Time</td>
<td>65.88</td>
<td>2.98</td>
<td>62.71</td>
<td>70.55</td>
</tr>
<tr>
<td>FORWARDS</td>
<td>AM</td>
<td>SD</td>
<td>MIN</td>
<td>MAX</td>
</tr>
<tr>
<td>HRmax</td>
<td>179.50</td>
<td>3.69</td>
<td>175</td>
<td>183</td>
</tr>
<tr>
<td>Time</td>
<td>69.43</td>
<td>2.43</td>
<td>66.95</td>
<td>72.73</td>
</tr>
<tr>
<td>CENTRES</td>
<td>AM</td>
<td>SD</td>
<td>MIN</td>
<td>MAX</td>
</tr>
<tr>
<td>HRmax</td>
<td>181.50</td>
<td>7.77</td>
<td>176</td>
<td>187</td>
</tr>
<tr>
<td>Time</td>
<td>70.73</td>
<td>4.68</td>
<td>67.42</td>
<td>74.04</td>
</tr>
</tbody>
</table>

AM – arithmetic mean; SD – standard deviation; MIN – minimum value; MAX – maximum value; HRmax – maximum heart rate

Figure 10. – Relation between obtained test results for assessing anaerobic endurance of guard, forward and centre players

"Basketball is a sport composed of high intensity activities, such as sprints or rebounds, and they are interrupted by low intensity activities, which makes basketball a so-called intermittent activity, or in other words, during a basketball game both anaerobic and aerobic energy sources are used" (Matković et al., 2010). In relation to different playing positions, roles and assignments, players can also differ in terms of their physiological aspects so that their aerobic capacity demonstrates

75
a wide range of variations. In sports games, the 
expected relative maximum oxygen consumption is 
somewhere between 55-65 ml/kg/min (Matković 
and Ružić, 2009). The assessment of aerobic 
abilities in U16 basketball players was conducted 
solely on the basis of their results in the beep test 
(FTBEEP). Table 5. demonstrates descriptive 
statistical parameters of aerobic functional abilities 
of players according to their playing position. The 
highest results of the estimated maximum relative 
oxgen consumption can be noted in guards 
(55.52±3.13 ml/kg/min), then forward players 
(53.05±0.53 ml/kg/min) and centres (51.25±0.15 
ml/kg/min). The obtained results clearly reflect the 
assignments of each particular playing position 
during a basketball game. Guards are players who 
move the most, whereas centre players are the 
most static, despite the tendency of modern 
basketball in which some players can play in 
several positions. This is a good comparison with 
the results obtained in a research by Sporiš et al., 
(2010) in which the same test was applied in order 
to evaluate the aerobic capacity on a sample of a 
U16 national basketball team, however, during 
which the changes were monitored during a 
preparation period for the U16 European 
Championship. During the initial measurement, the 
average VO2max was 54.00±3.94 ml/kg/min, while 
the final result was 59.79±6.98 ml/kg/min. 
Therefore, despite the fact that the initial results are 
almost identical, a significant improvement of 
the results was achieved during the preparation 
period, which was most likely the goal of the 
preparation period. The increase of aerobic capacity 
is beneficial for players, not only from the aspect of 
fast recovery during short break intervals in the 
game (time out, intervals of play, half-time), but 
also due to the fact that physical fatigue can 
considerably disturb a player’s efficiency while 
performing elements of technique related to his 
defensive and offensive assignments (Rupčić et al., 
2015). In the course of a basketball game, a 
player’s anaerobic capacity is manifested during 
activities of high intensity, such as frequent sprints, 
defensive and offensive rebounds, consecutive 
changes of direction, etc. Unlike the aerobic 
capacity which is clearly defined by the maximum 
oxgen consumption, there is no such clearly 
defined parameter when it comes to the anaerobic 
capacity. For the purpose of this study, the results 
of the 300-meter sprint test (15x20m) were applied 
for assessing the anaerobic capacity of basketball 
players. Upon comparing the results of each 
individual playing position, it can be noticed that 
guards demonstrate the highest level of 
development in anaerobic capacity (65.88±2.98), 
and then next come forwards (69.43±2.43) and 
centres (70.73±4.68). The results obtained in this 
study suit to the requirements of each playing 
positions in modern basketball.

Conclusion

Based on the obtained results of the observed 
morphological characteristics, the conclusion can be 
made that, already in the U16 age category, there 
are noticeable differences in the longitudinal and 
transverse dimensionality of the skeleton between 
the guard – forward – centre player positions, even 
though their final process of specialisation for one 
particular playing position is often not yet complete 
in the mentioned age. The data which was collected 
on the percentage of body fat indicate that all 
players in this specific sample of examinees have 
an optimal body composition with regard to the 
demands of the game. In all motor tests the best 
results were achieved by guards and forwards. The 
biggest differences between players in terms of the 
position that they play were noticed in tests for 
assessing speed, agility and explosive strength. The 
aerobic capacity is well developed in all players, 
and guards demonstrate the highest results. 
Basketball players in the U16 category achieved 
lower results in motor and functional tests when 
compared to senior and U18 players, which can be 
accounted for by the fact that these players are still 
in the process of intensive functional and motor 
development. With regard to the selected sample of 
examinees and their results in tests for assessing 
and evaluating their anthropological profile, the 
conclusion was made that the obtained results can 
be utilised as model values that can in the future 
serve as a means of directing and developing 
basketball players in all age categories. However, 
differences in the biological development which are 
surely still present must not be forgotten.

References


Blašković, M., Milanović, D., & Matković, B. (1982.). Analiza pouzdanosti i faktorske valjanosti situacionomotori 
kvadrata u košarci [Reliability analysis and factor validity of situational motor tests in basketball. In Serbian.]. Kineziologija, 14(5), 131-149.

Basketball Players According to Position on the Court of Players. Journal of Athletic Performance and Nutrition, 
1(1), 1-9.

Gardasević, B., Jakovljević, S., Pajić, Z., & Prelijević, A., (2011). Some anthropometric and power characteristics of 
estate junior handball and basketball players. APES, 39(1),5-9.


**ANTROPOLOŠKI PROFIL KOŠARKAŠA OD 16 GODINA**

**Sažetak**

Cilj ovog istraživanja bio je analizirati antropološki profil vrhunskih mladih košarkaša, kadetkih (U16) reprezentativaca Hrvatske radi definiranja modelnih vrijednosti koje će u budućnosti poslužiti u svrhu usmjeravanja i razvoja košarkaša odabranih uzrasta. U ovom istraživanju sudjelovalo je jedanaest (11) potencijalnih kadetskih reprezentativaca, prosječne dobi 15.72±0.44 godina. Uzorak varijabli bio je sastavljen od morfoloških karakteristika te testova za procjenu motoričkih i funkcionalnih sposobnosti. Obrada podataka izvršena je primjenom programskog paketa Statistica for Windows, ver. 12. Za svaku varijablu izračunati su i prikazani osnovni deskriptivni statistički parametri. Na temelju dobivenih rezultata u mjerenim morfološkim karakteristikama može se zaključiti da je već u kadetskom uzrastu uočljiva razlika u longitudinalnoj i transverzalnoj dimenzionalnosti skeleta između igračkih pozicija bek - krilo - centar, iako potpuna specijalizacija za pojedinu igračku poziciju vidljive su u testovima brzine, agilnosti i eksplozivne snage. Aerobni i anaerobni kapacitet dobro su razvijeni kod svih igrača i zadovoljavaju visoke zahtjeve moderne, košarkaške igre.

**Ključne riječi:** košarka, morfološke karakteristike, motoričke i funkcionalne sposobnosti, U16

Received: August 17, 2016
Accepted: September 5, 2016
Correspondence to:
Prof. Branka R. Matković
Horvačanski zavoj 15
10000 Zagreb, Hrvatska
Phone: +385 01/3658-666
E-mail: branka.matkovic@kif.hr