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Original research article

THE DIFFERENCES IN AEROBIC CAPACITY OF BASKETBALL PLAYERS IN DIFFERENT PLAYING POSITIONS

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Dragan Marinković[1], Slobodan Pavlović[2]

[1]University of Novi Sad, Faculty of Sport and Physical Education, Serbia
[2]Faculty for Teaching in Užice, Užice, Serbia

Abstract. *Maximal oxygen consumption is one of the best indicators of aerobic power and the most widely used parameter of functional capacity of an athlete. The task of this study is to discover whether there is a statistically significant difference between university basketball players in different playing positions (guard, wing, center) in terms of aerobic capacity. The study sample consisted of 30 basketball players, who have been categorized as guards (n = 11), wings (n = 11) and centers (n = 8). The overall sample consisted of players of the basketball team of the Faculty of Sport and Physical Education in Novi Sad, aged 20-26. With a laboratory on-line, breath-by-breath (CPET) system their relatively maximal oxygen consumption – Vo2max (ml•kg-1•min-1) was diagnosed. The analysis of variance (ANOVA) was applied to the analysis of differences between participants in different playing positions. According to the results, it was determined that there was a difference (p <0.05) in the aerobic capacity of players in a relation to their playing position. Players in the guard positions had the largest value of Vo2 max while the centers had the lowest values.*

Key words: *College basketball, Vo2max, spiroergometry, ANOVA method.*

INTRODUCTION

Basketball represents a collective sport which is very popular both in Serbia and worldwide due to its attractiveness and dynamics. According to Roper (1996) 11% of people in the United States are engaged in some form of basketball activity.

It is a modern game which must be looked at as a high intensity sport. Players face different tasks which must be completed at short intervals in the best possible way. Basketball is one of the most dynamic games with a constant change of typical and atypical

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Corresponding author: Dragan Marinković, MSc
St. Lovćenska 16, 21000 Novi Sad, Serbia
Phone: +381 (0) 21 450188 • Fax: +381 (0) 21 450199 • E-mail: marinkovicdragan@hotmail.com

situations. The player must perceive them quickly, analyze and adequately respond to them (Karalejić & Jakovljević, 1998).

It is very difficult to define such a collective game as basketball in terms of the psychological space of player functioning and in a relation to the benefit of the result. In recent years, the number of studies which determined the physiology of basketball in different ways has increased (Gillam, 1985a; Hoffman, Fry, Howard, Maresh, & Kraemer, 1991; Bolonchuck, Lukaski, & Siders, 1991; Ciuti et al., 1996). The question that is asked of many people is whether basketball is mainly an aerobic or anaerobic sport? An activation of energy processes during a basketball game is mainly based on aerobic sources (McInnes, Carlson, Jones, & McKenna, 1995). However, it can be said that there are some differences between basketball being played in the U.S. and Europe. Basketball being played in Europe is mostly aerobic, while American basketball, which is different based on its rules and dynamics, is mostly anaerobic (Scheller & Raskm 1993; McKeag, 2003). It is assumed that anaerobic metabolism is crucial for a basketball game. Many studies point to the fact that the success of the basketball game to a large extent depends on the anaerobic capabilities of basketball players themselves and that they are the most important in the game (Parr, Wilmore, Hoover, Bachman, & Kerlan, 1978; Hoffman, Tenenbaum, Maresh, & Kraemer, 1996; Crisafulli, Melis, Tocco, Laconi, Lai, & Concu, 2002; Taylor, 2004). Basketball is a sport which relies on ATP-CP and the anaerobic-lactate system (Bergh et al., 1978; Douglas, McKeag, Hoffman, 2003). On the other hand, the aerobic system is indispensable in building anaerobic systems during the training process for basketball players.

Therefore, aerobic metabolism is significant, but more in terms of the process of recovery from intense anaerobic activity than the direct effects in the game (McKeag, 2003). Aerobic capacity is especially important in the stages of recovery. It represents the ability to perform work over a longer period of time in conditions of aerobic metabolism (Sudarov & Fratrić, 2010).

The aerobic capacity indicates the general magnitude of aerobic metabolic processes in the human body and an athlete, and represents larger part of the total energy capacity that he owns (Ponorac, Matavulj, Grujić, Rajkovača, & Kovačević, 2005). On the other hand, the term "maximal oxygen consumption" generally refers to the intensity of the aerobic process and represents the ability of a body to, at a certain point, consume the greatest amount of oxygen (Živanić, Životić-Vanović, Mijić, & Dragojević, 1999). Maximal oxygen consumption or maximal aerobic capacity is the best indicator of cardiorespiratory endurance and aerobic fitness (Stojiljković, Radovanović, & Savić, 2010).

Through the evolution of basketball over time three playing positions were defined: guard, wing and center; and each has its own characteristics and role in the game. The characteristics of each position are reflected in the anthropometric (Jeličić, Sekulić, & Marinković, 2002), situational (Marinković, 2010; Sindik & Jukić, 2011; Trninić, Jeličić, & Jelaska, 2011) and functional peculiarities of the players. The players in center positions move mostly near the basket, and with their body domination they perform jumps and movements in the area, while on the other hand, the guards have an important role in the organization of the game and activities in the external position (Krause, 1991). Wingers are tasked to support the guards in the offense and the centers in the defense, thereby their role is a little more complex (Jordan & Martin, 1995). Due to the different roles and tasks that must be manifested in the game, the players are also different according to their physiological aspect. The energy systems that are involved are different for each playing

position. Therefore their maximum aerobic capacity is different and according to different studies they showed a range of 40 ($ml \cdot kg^{-1} \cdot min^{-1}$) up to 75 ($ml \cdot kg^{-1} \cdot min^{-1}$) (Matković, Matković, & Knjaz, 2005). There is a smaller number of studies which specifically address maximal oxygen consumption in university basketball players. However, some that stand out indicate that American university players have a maximum oxygen consumption of 65.2 ± 6.2 ($ml \cdot kg^{-1} \cdot min^{-1}$) (Tavino, Bowers, & Archer, 1995) while other authors have collected data that they have Vo2max values of 53.0 ± 4.7 ($ml \cdot kg^{-1} \cdot min^{-1}$) (Caterisano, Patrick, Edenfield, & Batson, 1997). Latin, Berg, & Baechle (1994) investigated the aerobic capacities of a university basketball team and obtained data that guards have an average value of maximal oxygen consumption 56.0 ($ml \cdot kg^{-1} \cdot min^{-1}$), wings of 56.0 ($ml \cdot kg^{-1} \cdot min^{-1}$) and the centers of 55.0 ($ml \cdot kg^{-1} \cdot min^{-1}$). The maximum oxygen consumption varies from position to position, and the data indicates that the university guards also possessed 60.4 Vo2max ($ml \cdot kg^{-1} \cdot min^{-1}$), wing players -59.3 ($ml \cdot kg^{-1} \cdot min^{-1}$) while the centers had a minimum value of -56.2 ($ml \cdot kg^{-1} \cdot min^{-1}$) (Matković et al., 2005).

The aim of this study is to determine whether there is a difference between university basketball players in different playing positions (guard, wing and center) in terms of aerobic capacity and their maximum oxygen consumption.

THE METHOD

The sample of participants

The survey covered a total of 30 participants (age, height, weight) and was of a transversal character. The sample is composed of players from the basketball team members of the Faculty of Sport and Physical Education, University of Novi Sad. All of the participants have been active players for over 8 years, and registered in the clubs for different levels of competition in the Basketball Federation of Serbia. The study required the entire sample to be divided according to playing positions and three sub-groups were formed consisting of guards (N = 11), wings (N = 11) and centers (N = 8). Since players in the center position represent a smaller part of the team in relation to the backs and wings, the relationship was developed in this study to fit the above mentioned fact.

The diagnostic laboratory test on a treadmill was used to measure ventilation capacity. Scheller and Rask (1993) recommend testing the players on a treadmill, and not on a cycloergometer, because running is a natural moving action in a basketball game. The total sample of participants is tested laboratory *on-line, breath-by-breath* (CPET) where alongside many parameters the relative Vo2max ($ml \cdot kg^{-1} \cdot min^{-1}$) was recorded, as a value interesting for the research needs.

As a part of the statistical procedure, the values of arithmetic means and standard deviations for all the variables (age, height, body weight, Player Experience, Vo2max) were gathered. By using a univariate analysis of variance (ANOVA) it was determined whether there is a difference ($p \leq 0.05$) in the relative maximal oxygen consumption between players in different playing positions in the whole sample.

THE RESULTS

The research that was conducted aimed to determine the differences in the aerobic capacity of the players in relation to their playing position. Table 1 shows the data related to the research sample and values of their maximum oxygen consumption obtained using the laboratory measurements.

Table 1. Maximum oxygen consumption differences.

Variable	Age (y)	PE (y)	Height (cm)	Weight (kg)	Vo_2max ($ml \cdot kg^{-1} \cdot min^{-1}$)
Guards (n=11)	22.4±1.9	6.1±2.4	183.3±4.5	80.1±4.7	50.6±3
Forwards (n=11)	22.4±2	6.1±2.1	190.8±2.4	87.0±5	48.2±3.1
Centers (n=8)	23.1±2.5	7.0±3.2	196.3±2.3	92.8±10.1	46.1±2.2
Total (n=30)	22.6±2.1	6.6±2.5	189.5±6.2	86.0±8.2	48.5±3.3
					F= 5.640
					p= .009

Legend: n – the number of participants; Values shown as arithmetic mean ± SD; Vo2max – maximal oxygen consumption; F – univariate f-test value; p – statistical significance of ≤ 0,05.

According to the data from Table 1 it was seen that all the players are approximately the same age, given that the entire sample was taken from a university population and that the variations are small. Player Experience (PE) is also approximate for all the players and shows that young players had relatively little experience in competitive activities in their clubs. Some anthropometric characteristics indicate that the players in the center position possessed the highest weight at the same time they were the tallest in comparison to the other players. The guards are lower based on their body constitution and they weigh less.

The crucial data for this study in Table 1, Vo2max values show that the guards possessed the highest capacities while players in the center positions had the lowest. Such results point to the fact that the players show significant statistical difference based on this parameter in this sample according to the playing position.

DISCUSSION

This research supports many studies dealing with the anaerobic capacity of basketball players and differences between groups of players in this functional category based on its data. The aerobic capacity of the participants in this study (48.5 ± 3.3 $ml \cdot kg^{-1} \cdot min^{-1}$) can be compared to the values obtained in previous studies involving players (Hoffman & Maresh, 2000).

The guards showed the greatest results in aerobic capacity (50.6 ± 3 $ml \cdot kg^{-1} \cdot min^{-1}$). In modern basketball, they apply more running and aerobic activities that need to be on high aerobic levels. Players in guard positions must have high aerobic characteristics due to

their higher and constant mobility, agility and speed both in the defense and in attack phase (Stapff, 1998; Carda & Looney, 1994; McKeag, 2003). The high level of durability gives the guards a better base for performing on the field in terms of intensity required by a basketball game (Ostojić, Mazić, & Dikić, 2006). Cardiovascular capacity and heart rate as indicators of workload also show that the guards are the ones who are most involved in the game itself and that their needs require a high aerobic capacity of all the systems of s involved in this process (Rodriguez-Alonso, Fernandez-Garcia, Perez-Landaluce, & Terrados, 2003). Their activity in the defense requires constant movement in the defensive position, guarding players in the external position as well as in various more aggressive versions of man to man defense. As for their activities under attack, guards showed great efficiency in the execution of a shot from an outside position, they perform a number of assists (Marinković, 2010; Sindik & Jukić, 2011) and their movement in offense is largely based in the field out of the line 6.75 (Erčulj, Dežman, Vučković, Perš, Perše, & Kristan, 2007). In all these technical and tactical activities from time to time they use their anaerobic capacities (sprints, penetration**,** faking and cutting) while in periods of smaller activities in the form of recovery, with functional aerobic capabilities they make up the consumed oxygen and eliminate the lactates formed by oxidative (Tomlin & Wenger, 2001). Although aerobic abilities by themselves do not have a significant contribution to the basketball performance of guards (Gillam, 1985b), they have a role in the recovery and regeneration capacity process from high-intense anaerobic activity (Hoffman, Tenenbaum, Maresh, & Kraemer, 1996).

The players in the wing position, according to the Vo2max values (48.2 ± 3.1 $ml \cdot kg^{-1} \cdot min^{-1}$) are between the shooting guards and centers, and their values do not differ greatly from the data obtained in previous studies (Caterisano, Patrick, Edenfield, & Batson, 1997; Hoffman & Maresh, 2000; Ostojić et al., 2006). Modern basketball requires greater flexibility in terms of applying the activity to the conditions of the game itself. As a position that will advance a lot in the future, it is based on the activities behind the three-point line but also near the basket during offense, which puts great pressure on the players. The anthropometric and motor activity depends on their abilities. The players in the wing position that are more accurate, more agile, faster, often find their place in external positions. They are slightly more powerful, their technical and tactical units are directed from the immediate vicinity of the basket. By analyzing basketball games (Erčulj et al., 2008; Marinković, 2010; Sindik & Jukić, 2011) it was concluded that players in wing positions also have the characteristics of guards and centers, therefore their movements are from the front line to the front line; in addition they often participate in counter attacks. According to Miller (as cited in Matković, Matković, & Knjaz, 2005) wing players spend most of their time in actions running (60% of max.). In such movements the aerobic energy production system is important for them because according to the average heart rate, their zone is mainly aerobic with frequent but short trips to the anaerobic phase (Rodriguez-Alonso, Fernandez-Garcia, Perez-Landaluce, & Terrados, 2003). Therefore, similar to the guards, aerobic ability is probably associated with recovery intervals and the lactate removal process during the match and after it, with regard to the relationship between oxygen intake and the recovery of skeletal muscle (Piiper & Spiller, 1970; Idström, Harihara Subramanian, Chance, Schersten, & Bylund-Fellenius, 1985). Aerobic metabolism of the wing players can be the primary energy system that is involved in walking and low intensity running during a basketball game (Narazaki, Berg, Stergiou, & Chen, 2009).

Centers show the lowest values of RVo2Max (46.1 ± 2.2 $ml \cdot kg^{-1} \cdot min^{-1}$), according to their actions in the game. This information was obtained in previous studies (Parr, Wilmore, Hoover, Bachman, & Kerlan, 1978; Latin, Berg, & Baechle, 1994; Miller & Bartlett, 1996; Matković et al., 2005; Sallet, Perrier, Ferret, Vitelli, & Baverel, 2005) and indicates that the players in center positions are the least aerobically fit compared to the players in the wing and guard positions. Centers have a lot of jumping, pushing and boxing out, and it is assumed that they should have a more pronounced anaerobic performance, explosiveness and strength (Carda & Looney, 1994). Their game involves the use of physical contact with opposing players in order to provide the best possible position. Thus, the physiological characteristics are such as to allow positioning of the low post to perform various numbers of jumps, and activities close to the basket (Ostojić et al., 2006; Sindik & Jukić, 2011). According to the same research, centers possessed significantly better anaerobic abilities because of the specific role as well as in offensive and defensive actions by players.

CONCLUSION

A statistically significant difference in maximal oxygen consumption in relation to the playing position indicates that each position requires different capacities according to their functional characteristics. Coaches and sport and physical education experts should use this kind of research to realize what functional characteristics and abilities their players should possess. Compared to such data it is necessary to construct the training process with the goal of raising those abilities that are required from the players, but with the goal of advancing their efficiency in tournament games as a basic parameter of success..

REFERENCES

Bergh, U., Thorstensson, A., Sjodin, B., Hulten, B., Piehl, K., & J. Karlsson, J. (1978). Maximal oxygen uptake and muscle fiber types in trained and untrained humans. *Medicine & Science in Sports & Exercise,* 10, 151-154.

Bolonchuck, W.W., Lukaski, H.C., & Siders, W.A. (1991). The structural, functional, and nutritional adaptations of college basket- ball players over a season. *Journal of Sports Medicine and Physical Fitness,* 31 (2), 165-172.

Carda, R.D., & Looney, M.A. (1994). Differences in physical characteristics in collegiate baseball players. A descriptive position by position analysis. *Journal of Sports Medicine and physical Fitness*, 34 (4), 370-376.

Caterisano, A., Patrick, B., Edenfield, W., & Batson, M. (1997). The effects of a basketball season on aerobic and strength parameters among college men: Starters vs. reserves. *Journal of Strength and Conditioning Research*, 1 (11), 21-24.

Ciuti, C., Marcello, C., Macis, A., Onnis, E., Solinas, R., Lai, C., & Concu, A. (1996). Improved aerobic power by detraining in basketball players mainly trained for strength. *Sports Medicine Training and Rehabilitation,* 6, 325-335.

Crisafulli, A., Melis, F., Tocco, F., Laconi, P., Lai, C., & Concu, A. (2002) External mechanical work versus oxidative energy consumption ratio during a basketball field test. *Journal of Sports Medicine and Physical Fitness,* 442, 409-417.

Douglas, B., McKeag, M.D., & Hoffman, J.R. (2003). *Handbook of Sports Medicine and Science: Basketball*. Oxford: Blackwell Science.

Erčulj, F., Dežman, B., Vučković, G., Perš, J., Perše, M., & Kristan, M. (2008). An analysis of basketball players' movements in the Slovenian basketball league play-offs using the SAGIT tracking system. *Facta Universitatis series Physical Education and Sport,* 6 (1), 75-84.

Gillam, G. (1985a). Identification of anthropometric and physiological characteristics relative to participation in college basketball. *National Strength & Conditioning Association Journal*, 7, 34-36.

Gillam, G. (1985b) Physiological basis of basketball bioenergetics. *National Strength & Conditioning Association Journal*, 6, 44-71.

Hoffman, J.R., & Maresh, C.M. (2000). Physiology of basketball. In: Garrett, W.E., & Kirkendall, D.T. (Eds). *Exercise: Basic and Applied Science.* Baltimore, MD: Lippincott Williams & Wilkins, pp. 733–744.

Hoffman, J.R., Fry, A.C., Howard, R., Maresh, C.M., & Kraemer, W.J. (1991). Strength, speed, and endurance changes during the course of a division I basketball season. *Journal of Applied Sport Science Research,* 5, 144-149.

Hoffman, J.R., Tenenbaum, G., Maresh, C.M. & Kraemer, W.J. (1996). Relationship between athletic performance tests and playing time in elite college basketball players. *Journal of Strength and Conditioning Research,* 10, 67-71.

Idström, J.P, Harihara Subramanian, V., Chance, B., Schersten, T., & Bylund-Fellenius, A.C. (1985). Oxygen dependence of energy metabolism in contracting and recovering rat skeletal muscle. *American Journal of Physiology,* 248, 40-48

Jeličić, M., Sekulić, D., & Marinković, M. (2002). Anthropometric characteristics of high level European junior basketball players. *Collegium Antropologicum,* 26, 69-76.

Jordan, F., & Martin, J. (1995). *Basket performance.* Paris: Edition Amphora.

Karalejić, M., & Jakovljević, S. (1998). *Testiranje i merenje u košarci* (*Testing and measurement in basketball*). Belgrade: Basketball Federation of Serbia. In Serbian

Krause, J. (1991). *Basketball skills and drills*. Champaign, IL: Human kinetics.

Latin, R.W., Berg, K., & Baechle, T. (1994). Physical and perfor- mance characteristics of NCAA division I male basketball players. *The Journal of Strength & Conditioning Research,* 8, 214–218.

Marinković, D. (2010). *Tehničko-taktička aktivnost igrača neposredno pre postizanja koša, na Evropskom prvenstvu „Poljska 2009" (Technical-tactical activity of the player just before the scoring, on the European Championship „Poland 2009".* Bachelor's Thesis, Novi Sad: Faculty of Sport and Physical Education, University of Novi Sad. In Serbian

Matković, R.B., Matković, B., & Knjaz, D. (2005). Fiziologija košarkaške igre (Physiology of the basketball game). *Hrvatski športskomedicinski vjesnik*, 2, 113-124. In Croatian

McInnes, S.E., Carlson, J.S., Jones, C.J., & McKenna, M.J. (1995). The physiological load imposed on basketball players during competition. *Journal of Sports Sciences*, 13, 387-397.

McKeag, D. (2003). *Basketball - Olympic handbook of sports medicine.* Oxford: Blackwell Publishing.

Miller, S., & Bartlett, R. (1996). The relationship between basketball shooting kinematics, distance and playing position. *Journal of Sports Sciences,* 14, 243-253.

Narazaki, K., Berg, K., Stergiou, N., & Chen, B. (2009). Physiological demands of competitive basketball. *Scandinavian Journal of Medicine & Science in Sports*, 19 (3), 425-432.

Ostojić, S.M., Mazić, S., & Dikić, N. (2006). Profiling in basketball: Physical and physiological characteristics of elite players. *Journal of Strength and Conditioning Research*, 20 (4), 740– 744.

Parr, R.B., Wilmore, J.H., Hoover, R., Bachman, D., & Kerlan, R. (1978). Professional basketball players: Athletic profiles. *Physician and Sportsmedicine*, 6, 77-84.

Piiper, J., & Spiller, P. (1970). Repayment of O2 debt and resynthesis of high-energy phosphates in gastrocnemius muscle of the dog. *Journal of Applied Physiology*, 28, 657–662.

Ponorac, N., Matavulj, A., Grujić, N., Rajkovača, Z., & Kovačević, P. (2005). Maksimalna potrošnja kiseonika (VO2max) kao pokazatelj fizičke sposobnosti sportiste. *Acta Medica Medianae,* 44 (4), 17-20.

Rodriguez-Alonso, M., Fernandez-Garcia, B., Perez- Landaluce, J., & Terrados, N. (2003). Blood lactate and heart rate during national and international women's basketball. *Journal of Sports Medicine and Physical Fitness*, 43, 432-436.

Roper, S.. (1996). *Outdoor recreation in America – executive sumary*. Washington, D.C: Recreation Roundtable/ USDI publication. Available at: http://www.funoutdoors.com/node/view/1110

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. *The Journal of Sports Medicine and Physical Fitness,* 45 (3), 291-294.

Scheller, A. Jr., & Rask, B. (1993). A protocol for the health and fitness assessment of NBA players. *Clinical Journal of Sport Medicine*, 12 (2), 193-205.

Sindik, J., & Jukić, I. (2011). Differences in situation efficacy indicators at the elite basketball players that play on different positions in the team. *Collegium Antropologicum,* 35 (4), 1095-1104.

Stapff, A. (1998). Basketball Players. In: Gore, C.J. (Ed.) *Test methods manual (3rd ed)*. Canberra: Australian Sports Commission.

Stojiljković, N., Radovanović, D., & Savić, Z. (2010). Istorijski razvoj metoda za praćenje maksimalne potrošnje kiseonika (Historical development of methods for monitoring maximal oxygen consumption). In: Simović, S. (Ed.): *2nd International Scientific Conferenece Anthropological Aspect of Sport, Physical Education and Recreation,* Banja Luka: Faculty of Physical Education and Sports, University Banja Luka, Proceedings, pp. 143-151.

Sudarov, N., & Fratrić, F. (2010). *Dijagnostika treniranosti sportista* (Diagnostics of athletes' form). Novi Sad: Pokrajinski zavod za sport. In Serbian

Tavino, L., Bowers, C., & Archer, C. (1995). Effects of basketball on aerobic capacity, anaerobic capacity, and body composition of male college players. *The Journal of Strength & Condition*, 9 (2), 75-77.

Taylor J. (2004). A tactical metabolic training model for collegiate basketball. *Strength & Conditioning Journal,* 26 (5), 22-29.

Tomlin, D.L., & Wenger, H.A. (2001). The relationship between aerobic fitness and recovery from high intensity intermittent exercise. *Sports Medicine,* 31 (1), 1-11

Trninić, M., Jeličić, M., & Jelaska, I. (2011). Utvrđivanje razlika između juniorskih igrača na pojedinim pozicijama u košarkaškoj igri na temelju pokazatelja situacione efikasnosti (Determination of the differences between junior players on certain playing positions of the basketball game based on the indicators of situational efficiency). *Fizička kultura*, 65 (1), 24-33.

Živanić, S., Životić-Vanović, M., Mijić, R., & Dragojević, R. (1999). Aerobna sposobnost i njena procena Astrandovim testom opterećenja na bicikl-ergometru (Aerobic capacity and its estimation by Astrand evaluation test on bicycle ergometer). Beograd: Udruženje za medicinu sporta Srbije. In Serbian.

RAZLIKE U AEROBNOM KAPACITETU KOŠARKAŠA NA RAZLIČITIM IGRAČKIM POZICIJAMA

Dragan Marinković, Slobodan Pavlović

Maksimalna potrošnja kiseonika predstavlja jedan od najboljih pokazatelje aerobne moći, i najrasprostranjeniji parametar funkcionalne moći sportiste. Suprotnosti u vidu funkcionalnih sposobnosti igrača upućuju nas na to da trenažnim procesima unapređujemo one sposobnosti koje su od značaja za tu igračku poziciju. Zadatak ovog istraživanja jeste da se otkrije da li postoji statistički značajna razlika između univerzitetskih košarkaša različitih igračkih pozicija (bek, krilo, centar) u pogledu aerobnih kapaciteta. Istraživanjem je obuhvaćen uzorak od 30 košarkaša, koji su kategorisani kao bekovi (n=11), krila (n=11), i centri (n=8). Celokupni uzorak su činili igrači članovi košarkaške selekcije Fakulteta sporta i fizičkog vaspitanja u Novom Sadu, uzrasta 20-26 godina. Laboratorijskim on-line, breath-by-breath (CPET) sistemom je dijagnostikovan njihova relativna maksimalna potrošnja kiseonika - Vo2max (ml•kg-1•min-1). Za analizu razlika između ispitanika različitih igračkih pozicija primenjivana je univarijatna analiza varijanse (ANOVA). Prema dobijenim rezultatima, utvrđeno je da postoji razlika ($p < 0.05$) u aerobnom kapacitetu košarkaša u odnosu na njihovu igračku poziciju. Igrači na pozicijama beka su posedovali najveći vrednost Vo2 max dok su centri imali najmanje vrednosti.

Ključne reči: *univerzitetska košarka, Vo2max, spiroergonometrija, ANOVA metoda.*