

STUDY OF SIDE FACTORS WITH NEGATIVE IMPACT ON THE ACCURACY OF SHOOTING IN BASKETBALL

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Introduction

As emotional as the basketball game is, it represents a complex array of different motor skills used throughout the game at different speed, strength, direction and duration.

The accuracy of shooting in the basket is an issue well-lit in the literature [3, 1, 6]. Most authors identify the level of technical skills as the most important factor [12, 2, 4, 8,], others- the psychological state of players [7, 11, 9, 10]. Ultimately, efficiency is determined by the result achieved in the game – the basket hits and the scores achieved [5, 12, 11].

The emotional state of the players, the noise in the hall, the presence of an adversary, all evoke negative changes in the athlete's sensomotrics, which in turn impacts shooting efficiency and scoring.

Aim of the study: We assume that interference of negative external factors has a different degree of influence on the accuracy of shooting, so we have focused on determining the importance of some of them in the training process.

Study design

A group of twelve players from the representative team of UNWE – Sofia was formed.

Eight factors were identified that negatively affect game accuracy (Table 1) and one non-interference shooting that served as a control test.

Ten shootings were performed from: a / in motion after dribbling with change of direction of movement and b / from standstill shooting – from the penalty line. As a baseline, the result of the same shootings was taken, but without interference.

The data was processed using variance analysis.

The following factors have been assumed to be negative:

1. Speed loads through 8 x 20 m test with high start at maximum speed.
2. Weight-lifting exercises causing disharmony of hand movement coordination – pushing weight 50% series of ten repetitions.
3. Shooting with limited central vision.
4. Shooting with limited peripheral vision. **Note:** *Factors 3 and 4 (with vision limitation) used eyeglasses, which limit the maximally central or peripheral vision.*

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5. Exercises that cause fatigue, such as run of 6 x 200 m with high (90%) Intensity.
6. Strong auditory irritant – music at very high decibels (100)
7. Reduced tactile sensitivity of fingers, for which we used synthetic household gloves, and,
8. The presence of defender accompanying the attacking basketball player throughout the time of shooting.

Results and discussion

The study showed that shooting from static position has higher accuracy as compared to that in motion (Table 1). The only exception was shooting from static position in the presence of defender, whose actions had higher negative impact (5.42 scores) compared to that of motion (5.62 scores).

In our opinion, this was due to offensive's opportunity to choose position freeing themselves from the defender.

Out of all eight negative factors studied, the greatest impact on shooting in motion has limited central vision (33,55%), tactile sensitivity of fingers (18,87%), fatigue (15,64%), etc. Shooting with limited central vision (9,46%), presence of defender (9,35%) and endurance practice (6,24%) have lesser influence. Here, we should point out that noise level which is typical of indoor games, have no significant negative effect (1,61%), which is routine for them. And that is because the subjective magnitude of sound is decreased. It is well known that permanently acting auditory stimuli cause the body to adapt to it, the irritant is localized in central core auditory centers so that its negative effect is diminished and often unnoticeable.

Shooting from a static position the influence of the negative factors is identical to that of shooting in motion. The highest value of interference shows the shooting with limited central vision (22,33%). The impact of defender's actions on the attacker is similar (19,94%), as well as strength practice (18,90%), reduced the tactile sensitivity of the fingers of the active hand (15,50%) and endurance drills (12,40%). Yet again, speed practice (1,03%) and auditory stress (4,43%) have the least impact on free shooting efficiency.

It is well-known that finger tips have the biggest number of sensory points. They relay the perceptions of touch, pressure and vibration. These features are particularly important, considering that the player would assess the magnitude of the power applied depending on the distance to the basket, and with finger movement – the direction, height and trajectory of the ball. These are extremely important skills which can be mastered during practice. It should be mentioned that immediate contact with opponent, touch of body parts is also reflected by the central nervous system which would adjust the magnitude, power, direction and amplitude of motoric response depending on the nature of received signals.

Table 1. Impact of negative side factors on shooting accuracy

№	Negative factors	Shooting in motion			Negativity%			Stationary shooting			Negativity%	dx_1/x_2	t
		Out of 10 shots – number of scores			X_1	S	V	X_2	S	V			
		X_1	S	V									
1.	Free shooting	6,20	0,66	10,64	0,00	6,77	0,54	8,42	0,00	0,57	9,19	2,706	
2.	After sprinting 8x20 m	6,02	0,21	3,48	2,90	6,70	0,19	2,83	1,03	0,68	11,29	3,780	
3.	After pushing weights from lying position: 3x10 series with 50%	5,23	0,17	3,25	15,64	5,49	0,29	5,28	18,90	0,26	4,97	2,746	
4.	Shooting with limited central vision	4,12	0,39	9,46	33,55	5,19	0,53	10,21	22,33	1,07	25,97	2,296	
5.	Shooting with limited peripheral vision	6,19	0,48	7,77	0,16	6,33	0,36	5,68	6,50	0,14	2,26	2,388	
6.	After running a 6x200 m, with 90% intensity	5,77	0,36	6,24	6,93	5,93	0,20	3,33	12,40	0,16	2,77	2,380	
7.	Powerful auditory stimulus	6,10	0,59	9,67	1,61	6,47	0,46	7,10	4,43	0,37	6,06	2,494	
8.	Reduced tactile sensitivity of fingers	5,03	0,46	8,14	18,87	5,72	0,53	9,26	15,50	0,69	13,71	2,619	
9.	Presence of defender	5,62	0,60	10,67	9,35	5,42	0,53	9,77	19,94	0,20	3,55	2,250	

The importance of analyzers and the entire receptor-motoric apparatus is to ensure the exact perception, processing and reception of "instructions" so as to yield the best possible accurate and efficient response to the changing situation.

These complex interactions between afferent and efferent links can be improved successfully through appropriate practice, in this case – the use of confounding factors that cause the necessary adaptation of the body.

The negative impact of studied factors on shooting efficiency is presented on Fig. 1.

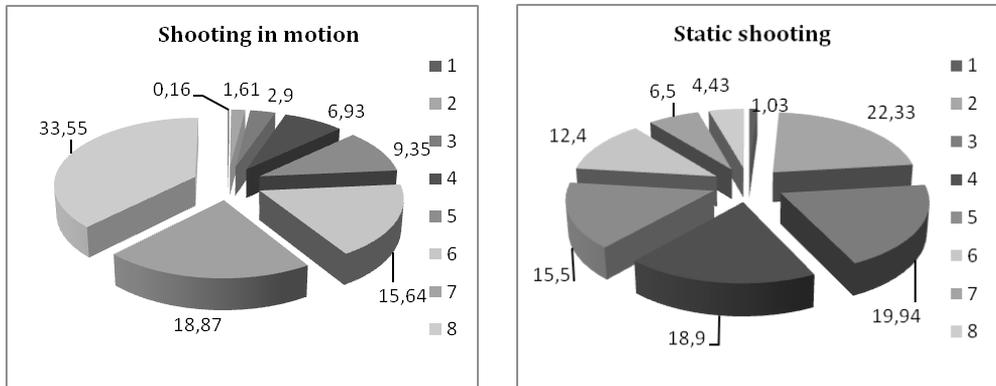


Fig. 1. Share of negative impact of different factors on shooting accuracy

Note: Factors: 1. Limitation of central vision; 2. Tactical factor; 3. Power training; 4. Presence of defender; 5. Endurance training; 6. Speed training; 7. Hearing factor; 8. Limitation of peripheral vision

There is a marked shift of the significance of the inputs between jump and standstill shooting. Shooting with limited peripheral vision of the player in motion has very low impact on the accuracy of shots (0.16%). The same indicator for spot shooting is 6, 50% negativity. Another factor, endurance training, is negative for shooting on the move with change of direction of movement in the first case (6.93%) and has significantly better effect on standstill shots (12.40%).

Speed workout in both types of shooting has no significant impact on accuracy.

Conclusion

First, the accuracy of shots is mostly influenced by limiting central vision, presence of defender and strength drill. Second, the restriction of peripheral vision and speed workouts have no material impact on the accuracy of shooting. Third, the impact of sensomotrics and quality of analyzers are crucial, it is therefore necessary to continuously practice and improve in order to acquire anticipation and automation of individual motor actions. Fourth, the use of disturbing, negative stimuli during practice stimulates the development of muscle – receptor sensitivity

and increases successful performance during the game. Fifth, the results obtained from the study can be used as an indicator of the positive or negative processes occurring in the trainees, and the training process can be corrected accordingly.

References:

Андреев, В. И. (1988), Факторы определяющие эффективность техники дистанционного броска в баскетболе. Автореферат диссертация, Омский государственный институт физической культуры, Омск, с.14-20.

(Andreev, V.I. 1988, Faktori opredelyaushchie effektivnost tekhniki distantsionnogo broska v basketbole. Avtoreferat-Disertatsiya, Omskii gosudarstvennii institut fizicheskoi kulturi, Omsk, 14-20.)

Бондерь, А., В. (1960), Никель, Ошибки технике бросков баскетболистов. Естония, Талин, № 4, с.43-46.

Бондерь, А. (1989), Особенности двигательной структуры техники бросков в баскетболе. Сборник Научно-практическая конференция-70-лет образование СССР", Минск, с. 240-248.

Морозова, Н., С. (2009), Повышение точности бросков с отражением мяча от щита. Автореферат диссертация, дпн, КФК, Омской государственной мед. Академии, с.15-20.

(Morozova, N.S., 2009, Povichenie tochnosti broskov s otrazheniem myatcha ot schtita. Avtoreferat disertatsia, dpn, KFK, Omskoi gosudarstvennoi med. akademii. 15-20.)

Наумовски, Ал., учебник, (2009), Теоретските основи на кошарката. Университет "Св. Кирил и Методи", Скопие.

(Naumovski, Al., 2009, uchebnik, Teoretskite osnovi na koscharkata. Universitet "Sv.Cyril i Metodi", Skopie.)

Пельменев, В. К., (2000), Методика совершенствования точности бросков у баскетболистов. Учебное пособие. Калининградский государственный университет, Изд. Калининград, 118-147.

(Pelmenev, V., 2000, Metodika sovershenstvovaniya tochnosti broskov u basketbolistov. Uscebnoe posobie, Kaliningradskii gosudarstvennii universitet, Kaliningrad, 118-147.)

Преображенский, И.Н., (1984), О путях и критериях совершенствования техники броска в прыжке в баскетболе., Проблемы высшего спортивного мастерства, Труды ВНИИФК. Москва, 34-39.

(Preobragenskii, I.N., 1984, O putyach i kriteryach sovershenstvovaniya tekhniki broska v prijke v basketbole. Problemii vishego sportivnogo masterstva, Trudi VNIIFK, Moskva, 34-39)

Полиевский С.А., В.А. Данилов, (1971), Изменение точности восприятия усилий пальцев баскетболистов при броске. Теория и практика физической культуры, №10, Москва, 22-23.

(Polievskii, S.A., V.A.Danilov, 1971, Izmenenie tochnosti vospriyatia usilii palzev basketbolistov pri broske. Teoriya i praktika fizisheskoi kulturi, №10, Moskva, 22-23.)

Скворцов, А. (1977), Влияние специфичных и неспецифичных нагрузок на точности броске в баскетболе. Тезиси докладов МГАФК, Малахова, Москва (Skvorzov, A., 1977, Vlyanie spetsifitscnih i nespetsifitscnih nagruzok na tochnosti broske v basketbole. Tezisi dokladov, MGAFK, Malahova, Moskva)

Цветков, В. (2006), Баскетбол, Учебник за студентите от НСА. Тип-Топ-прес, С.

(Tzvetkov, V., 2006, Basketbol, uchebnik za studentite ot NSA, Tip- Top- pres, Sofia)

Hainal, L, (1999), Structura Tehnicko tactickoi aktivnosti kosarkasa na tacmicenja. Avtoref. Doktorska disertacija, Facultet fisticke kulture. Novi Sad.

Tsarouchas, E.et all (1990), A biomechanical analysis by skill level of free shouting in basketball. Hellenic sport research institute, Athens, Greece.p.551-560

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Abstract

The negative impact of eight factors have been studied, including psycho-motoric skills and strength, speed and endurance workouts in the basketball training of students at the UNWE. The aim of the study is to identify the factors with the greatest impact on the shooting. It is established that the highest magnitude of impact has the central vision factor which tends to reduce shooting accuracy both from static position and in change of movement direction. Other factors that have a strong negative impact are the tactile sensitivity of fingers and the presence of defender. The study may be used for improvement of sensomotorics and physical skills of athletes as well as for control and adjustment of drill process.

Keywords: training, basketball, shooting, accuracy, interference, students.

JEL: I29, Y8.