

Investigation of the Effect of Shooting Technique Teaching and Training on the Development of the Shot Hit Rate for Young Basketball Players

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Investigation of the Effect of Shooting Technique Teaching and Training on the Development of the Shot Hit Rate for Young Basketball Players¹

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Abstract

Aim: The aim of this study is to investigate the effect of shooting training for young basketball players and the development of shot accuracy rate of special shot training.

Methods: 30 male students-athletes participated in this study voluntarily participated in College Teams (age $14,82 \pm 1,0$; height $183,44 \pm 1,1$; body weight $68,06 \pm 5,38$). Subjects were divided into 2 groups, consisting of continuous shooting training (experiment) (n = 15) and general basketball training group (control) (n = 15). Both training groups were subjected to a training program for 10 weeks, 4 days in a week. 60 minutes of normal basketball training plus shot training and 100-110 minutes of normal basketball training were applied to the control group. During the 10-week period, 2000 jumping 2-point shots were shot in 2,000 3-point shots and 2,000 shots in the Zig-Zag run (1000 2-pointshots, 1000 3-point shots) and totally 6000 shots shot on move.

Findings: According to free shot pre-test results, there was a statistically significant difference ($P < 0.05$) between the control group and the experimental group, and the free shot accuracy rate was higher than the control group by the end of the study showed a statistically significant difference within increasing performance ($P < 0.01$).

Conclusions: As a result, general basketball training has shown little improvement in young basketball players' shooting performance, but it has been proven that the long shot training with accurate shot technique training has significantly improved shot performance.

Keywords: Basketball, Shoot Training, Performance, Shoot Technique Teaching

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8 **1.Introduction**

9 The main purpose of basketball is to provide a good shot to score and to take
10 countermeasures against the rival trying to produce numbers with a shot like himself (Karause,
11 2008). Shoot is the most important determinant in determining the result of a game, winning the
12 game and establishing superiority (Malone, 2002). Shoot is the most difficult skill to develop into
13 the physical skills applied in basketball games (Wisse, 2011). It was done in different studies to
14 increase the shot percentage. In some studies to increase the shot percentage, there are
15 investigations as to whether the size of the ball or the size of the backboard is an effect on the
16 shooting percentage (Chiappy, 1960). The development of basketball's shooting skill has created
17 a great deal of pressure on the athletes in the practice of shots and aims to develop work that will
18 improve the coach shooting skill. For these purposes, it is seen that sportsmen have been
19 working with thick gloves to improve their fingertip sensitivity and to improve the control of the
20 ball by finger tip (Coppedge, 1967). The percentage of shooting in the match is critical in terms of
21 winning a match (Mülazımoğlu 2009, Savucu 2004). There is an increase in the number of correct
22 shots per every year. In the NBA, the free-throw hit rate in the 1999-2000 season rose from
23 74.1% to 75.91% in the 2009-2010 season and the 3-point shot to 35.3% from 34.1% (Uzun and
24 Pular 2011). The percentage of shooting in the match is critical in terms of winning a match
25 (Mülazımoğlu 2009, Savucu 2004). In 2010 World Basketball Championship for the semi finalists
26 (United States, Turkey, from Serbia, Lithuania) shooting average free throw 70.33%, 2-point%
27 54.68 and 3-pointer, while 39.75% in the championship rankings in the last 4 teams (Canada,
28 Tunisia, Iran, Ivory), the shot average was 68.33% for free throw, 41.78% for 2 points and
29 28.58% for 3 points (Uzun and Pular 2011). Match statistics show that when shooting is vital to a
30 basketball team and basketball player, the player has to bring it to the best level as a needed of
31 basketball.

32 The aim of this study is to investigate the effect of shots with learning the right
33 shooting training towards young basketball players and the development of shooting rate of
34 special shooting training

35 **Material and Method**

36 30 male students-athletes participating in this study voluntarily participated in the
37 College Teams (age $14,82 \pm 1,0$ - height $183,44 \pm 1,1$ - body weight $68,06 \pm 5,38$). Subjects were
38 divided into 2 groups, consisting of continuous smile training (experiment) (n = 15) and general
39 basketball training group (control) (n = 15).
40
41

42 ***Training Program***

43 Both training groups were subjected to a training program for 10 weeks. 4 days in a
44 week. 60 minutes of normal basketball training plus shot training was applied to the shots and
45 100-110 minutes of normal basketball training was applied to the control group. During the 10-
46 week period, 2000 jumping 2-point shots were shot in 2,000 3-point shots and 2,000 shots in
47 the Zig-Zag run (1000 2-point shots, 1000 3-point shots) and totally 6000 shots shot on
48 move. Before the practice the subjects were shown the correct shot technique for 1 week, and
49 every shot that was missed-nonmissed during all the training was taken. Depends to the hand
50 players used, shooting zones arranged up to 5 from 1. Any shot that can not be completed within
51 the time given to the subjects is considered a failed shot. During the training of the shots, the
52 athlete who uses the smash ball nourishment was made by 3 athletes waiting under the pot.
53

54 ***Two-Point Jump-Shot Practice***

55 The athlete was allowed to shoot 5 shots in 2 different shots area within the same
56 distance (4,225 m) from the middle point of the circle, consisting of 2 rounds in 5 different

57 regions. 25 shots in the first round and 25 in the second round, totaling 50 shots. The athletes
58 were given 3 minutes to complete two rounds.

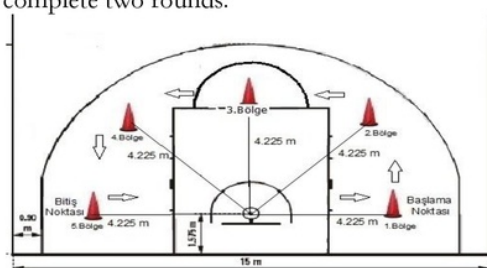


Figure 1. 2-Point-Shot Zones

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61 *Point Shot Practice*

62 The athlete is allowed to shoot 5 shots consisting of 2 rounds in 5 different regions at
63 equal distance (6.75 m) to the middle point of the circle within the 3-point shooting range. 25
64 shots in the first round and 25 in the second round, totaling 50 shots. Shooting distances were
65 6.75 m, the free throw line distance, and 3.30 minutes were given for sportsmen to complete two
66 rounds.

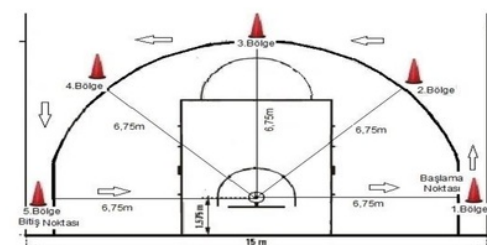


Figure 2. Three-Point-Shot Zones

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69 *Zig-Zag Drill Shot Practice*

70 The athlete was allowed to shoot 5 points in 3 and 2 point shooting areas consisting of
71 5 places in 5 different areas with a distance of 6,75 m and 2 points of 4,225 m equally spaced on
72 the middle point of the circle in a course consisting of 3 point and 2 point shooting points. Tours
73 start with a 3-point shot and ends with a 2-point shot. A total of 50 shots are made, including 10
74 shots in one round, 25 two-points and 25 three-points in five rounds. Athletes are given 4
75 minutes to complete 5 rounds.

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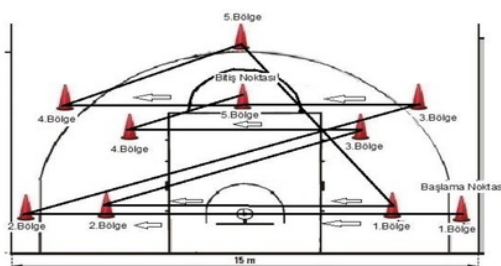


Figure 3. Zig-Zag Practice Shot Zones

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80 *Data Collection and Analysis*

81 The statistical difference between the control group and the experimental group
82 participating in the study was analyzed by two trial averages for the pre-test and post-test. In the
83 analysis of the development of 10-week training in the experimental group, averages of 1 week (1,

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84 2, 3 and 4 (training) for the pre-test and 10 weeks (37,38,39 and 40 training) were taken for the
 85 final test. Analysis of the data was made using the SPSS 18.0 package program. Descriptive
 86 statistics are given by calculating the arithmetic mean and standard deviations of the data. The
 87 Mann-Whitney U test was used for nonparametric tests and the Wilcoxon test for non-parametric
 88 tests was used to look at the difference between dependent groups. As the significance levels p
 89 <0.01 and $p <0.05$ were taken.

90 Results

91 The findings of the measurement results of the groups participating in the survey are
 92 summarized in the following tables.

93 **Table 1.** Physical properties and comparison of experimental (1) and control (2) groups
 94 participating in the study

Variables	Group (N:30)	Art. Ort	S.D	X1 - X2	Min.	Maks.	t.	P	Mann-Whit. U	P
Age (year)	1	14,78	,377	-1,000	1400	15,00	0,672	0,480	80,000	,415
	2	14,86	0,265		14,00	15,00				
Sports Age (year)	1	4,73	1,162	-1,123	3,00	6,00	1,897	,069	69,000	,109
	2	5,85	1,955		2,00	9,00				
Height (cm)	1	182,30	6,930	-2,27	168,00	188,00	1,272	,210	70,000	,311
	2	184,57	5,330		175,00	193,00				
Body Weight (kg)	1	65,36	7,100	-5,383	50,10	78,60	1,301	,049	63,500	,285
	2	70,75			56,00					

* P < 0.05

95 There was no statistically significant difference in age, sport age, height and body weight of the
 96 groups participating in the study ($P <0.05$).

97 **Table 2.** Results of Zig Zag Drill, 2 and 3 pre-test and post-test between Experimental and
 98 control groups

Variable s	Group (N:30)	Measu- re-ment	Shot Number	Average	S.D	X1-X2	Min.	Maks.	t.	P	Mann-Whit U	P
2-Points Shot	Exper.	Pre-Test	50	18,533	7,385	-2,180	8,00	34,00	-840	,408	78,000	,237
	Control		50	20,714	6,533		10,00	34,00				
	Exper.	Last-test	50	30,533	3,356	10,17	23,00	35,00	5,683	**0,000	23,500	**0,000
	Control		50	20,357	6,007		14,00	34,00				
3-Points Shot	Exper.	Pre-Test	50	11,333	5,407	-3,452	3,00	22,00	-1,670	,106	65,500	,082
	Control		50	14,785	5,726		8,00	26,00				
	Exper.	Last-test	50	21,333	3,221	8,404	17,00	29,00	5,028	**0,000	19,500	**0,028
	Control		50	12,928	5,553		7,00	24,00				
Zig Zag Drill 2-Points Shot	Exper.	Pre-Test	25	9,200	3,121	,985	4,00	17,00	,983	,335	85,500	,389
	Control		25	8,214	2,154		5,00	11,00				
	Exper.	Last-test	25	14,533	2,669	6,247	11,00	20,00	6,465	**0,000	7,500	**0,000
	Control		25	8,285	2,524		5,00	12,00				
Zig Zag Drill 3-Points Shot	Exper.	Pre-Test	25	5,266	2,153	-2,090	1,00	8,00	-2,026	,053	68,500	,107
	Control		25	7,285	3,383		1,00	12,00				
	Exper.	Last-test	25	11,933	2,120	6,290	10,00	17,00	6,126	**0,000	17,500	**0,000
	Control		25	5,642	3,319		2,00	12,00				

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102 There was no statistically significant difference in the pre-test results between the control and
 103 the experimental group in the study, and 2-point, 3-point and zig-zag between the control and the
 104 experimental group. However there is a statistically significant difference in all parameters in the
 105 final test. (Table 2)

106
 107 **Table 3** Zig Zag Drill at the end of the training of the control group, pre-test and post-test
 108 results of 2 and 3 development.

Variables (N:30)	Measurement	Shots		S.D	Min.	Maks.	Z. Number	P
		Number	Average					
2-Points Shot	Pre-Test	50	20,71	6,533	10,00	34,00	-,314	,753
	Final-Test	50	20,35	6,007	14,00	34,00		
3-Points Shot	Pre-Test	50	14,78	5,726	8,00	26,00	-2,053	*,040
	Final-Test	50	12,92	5,553	7,00	24,00		
Zig Zag Drill	Pre-Test	25	8,21	2,154	5,00	11,00	-,036	,972
2-Points Shot	Final-Test	25	8,28	2,524	5,00	12,00		
Zig Zag Drill	Pre-Test	25	7,28	3,383	1,00	12,00	-2,257	,144
3-Points Shot	Final-Test	25	5,64	3,319	2,00	12,00		

110 **3**
 111 It was determined that there was no statistically significant difference in the 2-point, 3-point and
 112 zig-zag 2-and 3-point pre-test post test results in the study control group (Table 3).

113
 114 **Table 4.** Pre-test and post-test results of the Zig Zag Drill, 2 and 3 development of the
 115 experimental group at the end of the training.

Variables (N:30)	Group	Measurements	Shots		S.D	Min.	Maks.	Z. Number	P
			Number	Average.					
2-Points Shot	Exper.	Pre-Test	50	13,9	7,35	4,00	37,00	-5,845	,000**
		Final-Test	50	31,2	3,46	23,00	40,00		
3-Points Shot	Exper.	Pre-Test	50	8,15	4,77	3,00	21,00	-5,847	**,000
		Final-Test	50	21,3	3,47	16,00	32,00		
Zig Zag Drill	Exper.	Pre-Test	25	7,00	3,21	3,00	19,00	-5,855	,000**
2-Points Shot		Final-Test	25	15,1	2,38	10,00	20,00		
Zig Zag Drill	Exper.	Pre-Test	25	4,33	2,57	1,00	13,00	-5,855	**,000
3-Points Shot		Final-Test	25	11,8	2,00	8,00	17,00		

116
 117 In the study, 2-point, 3-point and zig-zag drills 2 and 3-point shots pre-test and post-test
 118 results were found to be statistically significant in the experimental group (Table 4).

119 Discussion

120
 121 Basketball players are making great efforts to reach the targeted shot percentage.
 122 These goals are considered to be successful in the numbers of professional athletes in turnout
 123 shots of 99%, free throws of 70%, 2-point shots of 50% and 3-point shots of 33% and above.
 124 These results may be considered lower for young basketball players (Waters, 2006). There
 125 was no statistically significant difference in age, sport age, height and body weight among the
 126 experimental and control groups formed by young basketball players participating in the
 127 research (Table 1). These results suggest that the research groups have a homogeneous
 128 numbers and that the developmental periods are similar when the age groups are considered. It
 129 was determined that there was no statistically significant difference between the groups,
 130 although the control group had a better shot number when the pre-test measurement results

131 were compared between the experimental group and the control group in 2-point, 3-point and
132 zig zag drill 2 and 3-point shoots. However, in the final test results between the experimental
133 group and the control group after 40 training, it was found that all the categories (2-point, 3-
134 point and zig-zag drill 2 and 3-point) from the control group of the experimental group
135 performing the shot training had a very high meaningful (Table 2). In the NBA (male, female,
136 and college), about 65 000 points were recorded from the free throw in the 2005-2006 season,
137 and about 37000 of these numbers were obtained in the second shot (28,000 in the first shot)
138 (Gorski, 2010). In America, the average level of free throws in the last five years (2005-2010)
139 is 65% for High School, 68% for College (18-21 years), and 72% for professional players
140 (Palubinkas, 2009). There is evidence that the correct shooting technique improves
141 performance. In the study of the effect of the right shooting form on 3 female basketball
142 players (guards in 3 sports) playing in the same team in NCAA, 10 free throws were made
143 from the foul line for 7 days to the athletes and every shooting shot was recorded. Video and
144 graphical analysis of accurate and missed shots were made. During the study, no encouraging
145 words were used in the shoots that are right for the athletes, but the correct shot form is
146 explained after every shot that has been missed. As a result of the video and graphical
147 analyzes of the shoots, it was determined that the first and third athletes shot 100% of the
148 correct shot and the second player shot 90% of the correct shot. In the previous season 3
149 athletes had a free throw average of 40% while team averages were 54.5% below a team
150 percentage, while the athletes' free throws were 60.4% while the average of their teams
151 remained at 59%. According to the study, working athletes with correct shooting technique
152 showed higher performance than working athletes in the form of wrong shots (Kladopoulos
153 2001). This results supports our study work and is an important indication that the correct
154 shooting technique improves performance. In the study **control group, pre-test post-test results**
155 showed a decrease in the 3-point shot accuracy rate, while no other parameters showed any
156 improvement (Table 3). However, as a result of the training performed by teaching the right
157 shooting technique, it is seen that the experimental group achieved a great improvement in all
158 the study types of 2-point, 3-point, 2-point, 2-point and 3-point according to pre-test post-test
159 results (Table 4). There is an increase in the number of correct shots per year. For big college
160 teams (NBA) it increased from 29.3 percent in 1948 to 43.9 in 1967 (Coppedge, 1967). The
161 NBA's free-throw hit rate in the 1999-2000 season is reported to have risen from 74% to
162 75.91% in the 2009-2010 season (NBA 2010). In the 2000-2001 NBA team Los Angeles
163 Lakers was the champion, Los Angeles' player Shaquille O'Neal had a free-throw training
164 and his free throw success got to 69.4% from 38.3% (Palubinkas, 2008). In the NBA, the 3-
165 point shooting rate in the 1999-2000 season was 34.1%, it was 35.3% in the 2009-2010
166 season (NBA, 2011). In November 2006 Toronto changed their shooting coach and Dave
167 Hope came to club as the shooting coach because of the low percentage of the team's
168 shooting, and in February 2007 the team's 2-point shooting percentage was 44.2% that
169 increased to 47%, While the percentage of 3-point shots percentage increased from 30% to
170 40% (Haefner 2011). Hanes did a similar study in literature (2006). 12 female basketball
171 players aged 13-14 participated in the study of the effect of the star drill shooting on the
172 development of the shooting performance. Female basketball players were divided into 2
173 groups and both had a general basketball training session for 6 days in a week for 1 month.
174 The experimental group also had a star shooting practice consisting of 100 shots every day. At
175 the beginning of the training sessions and at the end of the training, three preliminary tests and
176 final tests were conducted and the correct shots of both were calculated. As a result of 1-
177 month training in the study, the control group increased the number of correct shots by only 6
178 in the average of the last 3 games, while the training group increased the number of shots by

179 59. The study of Hanes is similar to our study, both in terms of the method of study and the
180 results of the study, and that supports our study results.

181

182 **Conclusions**

183 As the result; it is seen that general basketball training has slightly improved the
184 shooting performance of young basketball players, but long shot training sessions with
185 accurate shot technique training has significantly increased shooting performance. At the end
186 of this study, it can be said that it is a necessity to regularly perform the shooting training with
187 the right shooting technique before the young basketball players become professional.

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