THE EFFECT OF PROGRAMME WITH SHOOTING STRAP ON THE ACCURACY OF BASKETBALL SHOOTING

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ABSTRACT

Basketball shooting is one of the most important individual skills in basketball. This study empirically assesses the effects of shooting programmes on accuracy of basketball shooting in two groups. The aim of the study is to increase % of shooting accuracy of young players. We expected significant increase % of shooting accuracy in the experimental group. Significantly greater differences were expected in the experimental group compared to the control group. Two basketball teams underwent on 10 weeks shooting programme. The experimental group (n=11 boys, 12.23±0.49 years), used shooting strap, control group (n=12 boys, 12.10±0.49 years) did not use shooting strap. All shooting attempts were notified during the training programme. The pre-post changes of shooting accuracy in experimental group and control group were assessed by non-parametric Wilcoxon T-test. Differences of experimental and control group were assessed by non-parametric Mann-Whitney U-test. We noticed increase of shooting % between pre-post test of experimental and control group. Result showed that experimental group gained greater differences. We recommend applying shooting programme with shooting strap to young players.

Keywords: basketball, shooting programme, shooting strap, youth

INTRODUCTION

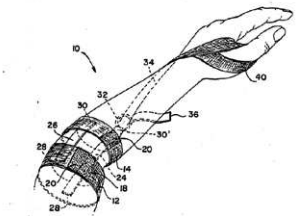
The basketball shooting is one of the most important individual skills in basketball. The most attention during basketball matches is focused on the player with highest shots made. Part of training should be dedicated to shooting drills. According Rose (2013) shooting should be general part of the every offensive drill. Players must use proper shooting technique on every shot they take in practice. Basketball shooting can be divided into one hand set shot, jump shot, hook shot and lay-up Wissel (1994). Rehák et al. (1999), Mačura (2010), Tománek (2010) indicate further distributions. The most frequent shots are one hand jump shot and free throw shot (Mačura, 2010). The accuracy of basketball shooting is known in statistics as the 2 point field goal %, the 3 point field goal %, the free throw %. The % is counted from shots attempted and shots made. There are differences between shooting accuracy in training and match. Krause et al. (2008) showed lower difference during match in comparison of training by 5 %s of set shot (elementary school 35% in practice and 30% in match) and free throw (elementary school 55% - 50%). Each statement aims attention on shooting technique. Coaches use various ways to learn proper technique of their players. One way is to apply training aids. Lower basket and smaller balls can positively influence children's shooting performance and self-efficacy (Chase et al. 1994). Penjin (1976) confirmed increment of shooting accuracy by 20.29 % by different sizes and weights of balls. Semikop - Barkov (1976) used didactic aid, an oval metal extension fastened to the standard rim. Experimental group of 12 years basketball players increased shooting % by 6.3 - 9.1 %. Djačkov (1972) applied V band weight. He gained increment 16 % of shooting accuracy. Austin (2010) presented Noah System to build perfect arc, is able to identify shooting angle, arch and distance. Arias (2013) proved that the highest shooting accuracy among 9-11 years old players occurred when ball had mass was 440 g in comparison to ball mass 385 g, and 540 g.

METHODS

The experiment was conducted to quantify the effects of shooting programme. Experimental group and control group underwent baseline testing, followed by 10-week training shooting programme, and finally post testing. Type of research design: qualitative research, quasi – experimental (Williams - Wragg, 2004).

The experimental group was 11 boys. The age of players were 12.23±0.49 years, body mass = 51.55±11.78 kg, body height = 161.9±9.19 m. The mean years of basketball training experience was 19.64 ± 16.36 months (1.64 years).The control group was 12 boys. The age of players were 12.10±0.49 years, body mass = 59±13.2 kg, body height = 1.64±0.11 m. The mean years of basketball training experience was 17.5 ± 6.47 months (1.46 years). Players of both groups were players in junior basketball teams. Subjects were tested before and after 10 weeks lasting shooting programme. We used 2 shooting tests according Brace (1966), Test Side shot 2 positions. The shooting programme was organized 3 times per week. During this time experimental group had total 38 practices (57 hours), 30 practices contained shooting programme. Team had 8 league and 1 preparation matches during experimental period (total 9 matches - 9.25 hours). Control group, had 34 practices (54 hours) totally, 30 practices contained shooting programme. Team had 10 league and 3 preparation matches during experimental period, total 13 matches (8.34 hours). Players of experimental group shoot with shooting strap fixed non-shooting hand from determined distances from 5 points of 3 different angles 0°, 45° and 90° (Figure 2). Player shots 15 attempts from all 5 points that means 75 shots totally (Table 1). There were differences between 2 periods in shooting distance. Shooting distance was 2.70 m first 3 weeks, than shooting distance increased on 3.65 m for next 7 weeks. Players worked in pairs. While one player shot from shooting point, another rebounded the ball and passed ball by bounce pass. After these 15 attempts they switched roles. The shooting programme took 20 minutes per practice. Programme was executed with proper technique instruction of shooting. Players of control group did not use shooting strap. Shooting programme of control group was similar to shooting programme of experimental one except of using the shooting strap. The shooting strap was fixed the non-shooting arm and hand of experimental group (Figure 1). This aid prevents from delivering unwanted force o non-shooting hand. Shooting arm and hand begin to improve technique. Shooting hand and arm are automatically re-trained. Shooting strap helps to stabilize shooting technique. Players use non- shooting hand, usually the thumb to help provide force to the shot. Shooting strap stop all thumbing and interference of the non-shooting hand.

Figure 1 Shooting strap



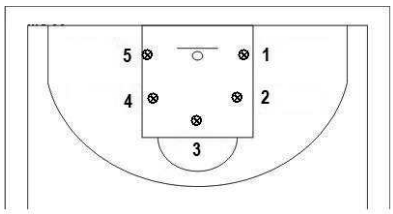


Figure 2 Shooting positions

Table 1 Shooting programme schedule

	Weeks [number]	Practices [number]	Distance [m]	Shoots [number]
Period 1	3	9	2.70	675
Period 2	7	21	3.65	1575
∑	**10**	**30**		**2250**

The statistical significance of differences between pre-test and post-tests shooting results in experimental and control group was made. The statistical significance of gains between experimental and control group was made. Means and standard deviation (SD) were used to describe data. All statistical analyses were conducted using SPSS for Windows (SPSS, 2010). The pre-test and post-test data were compared. The pre-post changes of shooting accuracy were assessed by non-parametric Wilcoxon T-test. The level of significance was defined as $p<0.05$ and $p<0.01$. Gains of experimental and control group were assessed by non-parametric Mann-Whitney U-test. Levels of significance were defined as $p<0.05$, $p<0.01$.

RESULTS

Wilcoxon T-test results indicated non-significant increase in Test Side shot 2 positions 11.81 % of shooting accuracy in experimental group (EG) (Figure 3). Pre-test showed 33.64±22.71 percentage and post-test showed 45.45±17.10 %. Wilcoxon T-test results indicated significant increase in Test Side shot 2 positions 15.42 percentage of shooting accuracy in control group (CG) (Figure 4). Pre-test showed 22.92±14.53 % of shooting accuracy and post-test showed 38.34±16.00 % of shooting accuracy. Significant level was defined as $p<0.05$.

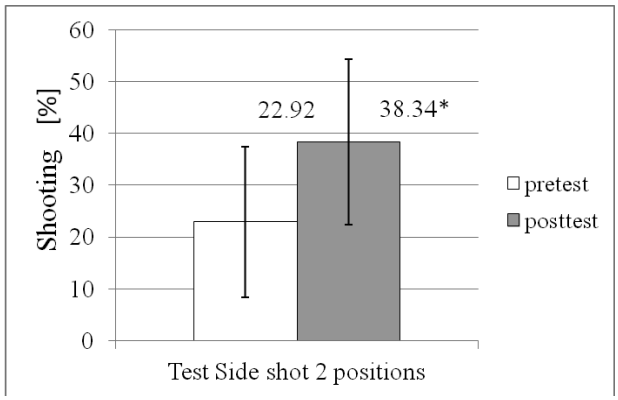


Figure 3 Test Side shot 2 positions in EG

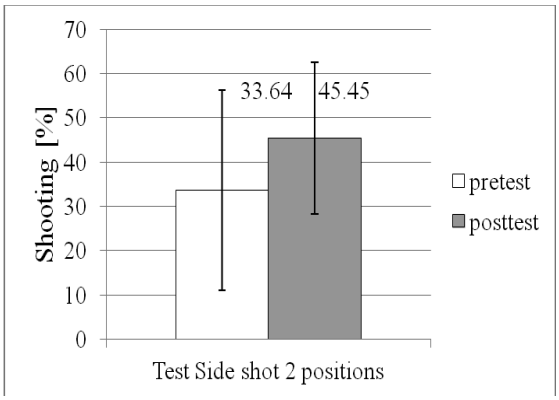


Figure 4 The test Side shot 2 positions in CG ($p<0.05$)

Figure 5 presents result between pre-test and post-test in Test Free throw in experimental group (EG). Wilcoxon T-test result indicated significant increase 7.27 % of shooting accuracy. Shooting accuracy in pre-test was 44.55±16.20 in post-test was 51.82±15.40 % of shooting accuracy. Significant level was defined as $p<0.05$. Figure 6 presents result between pre-test and post-test in Test Free throw in control group (CG). Wilcoxon T-test result indicated significant increase 18.70 % of shooting accuracy. The shooting accuracy in pre-test was 15.84±8.75, in post-test it was 34.54±19.48 %. Significant level was defined as $p<0.01$.

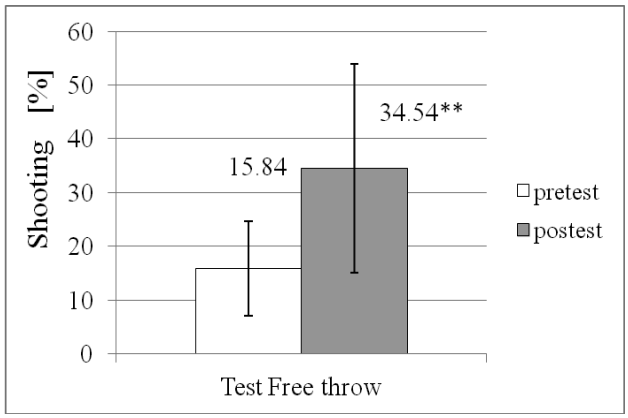


Figure 5 Test Free throw in EG ($p<0.05$)

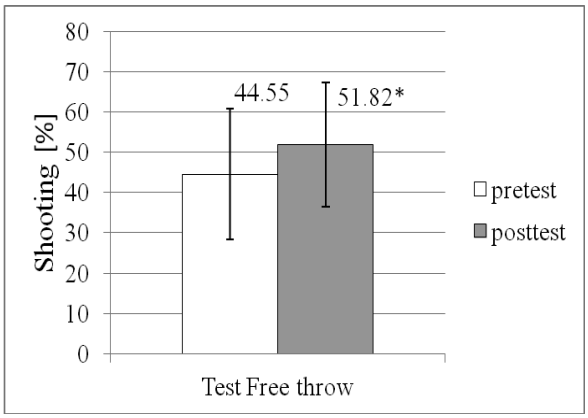


Figure 6 The test Free throw in CG ($p< 0.01$)

The gains in shooting accuracy in Test side shot 2 positions (Figure 7) were lower in the experimental group - shooting with shooting strap, compared to the control group - shooting without shooting strap after 10 weeks shooting programme.

The gains in shooting accuracy in Test free throw (Figure 8) were significantly lower ($p<0.028$) in the experimental group, shooting with shooting strap, compared to the control group, shooting without shooting strap after 10 weeks shooting programme.

DISCUSSION

The experimental group increased % of shooting accuracy in Test Side shot 2 positions by 11.82 %. Players recorded in post-test 45.45±17.10 shooting accuracy, it is 26.25 points in recounted norms of Brace (1966) evaluated above 95 % norm. The control group increased % of shooting accuracy in Test Side shot 2 positions by 15.42 %. Players recorded in post-test 38.34±16.00 shooting accuracy, it is 22.92 points in recounted norms of Brace (1966) evaluated as 95%. According the norm of Brace (1966) the best result of Test Side shot 2 positions till 32 points of norm indicates as the best score (100%), 14 points for (70%) and 11 points as average (50%). Gains of shooting accuracy in Test Side shot 2 positions after 10 weeks were surprisingly lower in experimental group. This result could be explained

by different level of shooting accuracy in pretesting. In generally, improvement from lower level to medium one is easier to achieve (CG) (Figure 4) than from medium level to higher level (EG) (Figure 3).

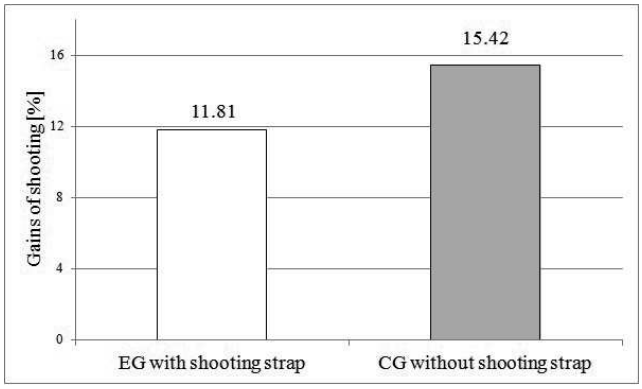


Figure 7
Gains of shooting accuracy in Test side shot 2 positions in experimental (EG) and control group (CG)

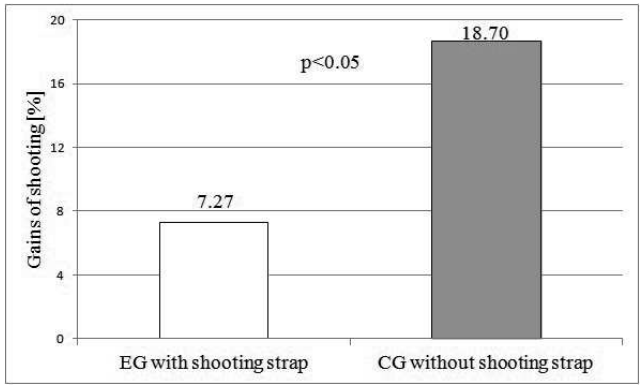


Figure 8
Gains of shooting accuracy in Free throw Test in experimental (EG) and control group (CG)

The experimental group achieved increase in Test Free throw between pre-test and post-test 7.27 % of shooting accuracy (i.e. 1.42 successful attempts). Average successful attempts in post-test were 10.17. The control group achieved increase in Test Free throw between pre-test and post-test 18.70 % of shooting accuracy (3.74 successful attempts). Average successful attempts in post-test were 6.91. Even experimental group got higher average successful attempts in Free throw test, gains between pre and post tests were lower in experimental group. Schnürmacher (2001) explains norm of Test Free throw for 12 years old players 15 successful attempts as an excellent result, 13 successful attempts as a well done result, and 11 successful attempts as a good result. According evaluation of Schnürmacher (2001) it was only good result in experimental and control group. Brace (1966) indicates according the norm the best result of Test Free throw 17 successful attempts, 6 successful attempt for (70%) and 4 for (50%). Players of experimental group recorded in post-test 10.17 successful shooting attempts, which Brace (1966) evaluates above 95 % norm. Players of control group recorded in post-test 6.91 successful shooting attempts, which Brace (1966) evaluates on 70%. Kreivyté - Stonkus (2009) applied shooting strap. Results showed significant increase ($p<0.05$) 20.50 % shooting accuracy during free throw test. Duration of experiment was 4 weeks. Players (14-15 years old) shot 1200 experimental attempts. Our experimental group increased shooting accuracy 7.27 % ($p<0.05$) in Test Free throw and it was applied on the players of younger category. There is no information about the level of accuracy in pre-test.

CONCLUSION

Designed shooting programme with shooting strap was applied on young basketball players. Players of experimental group had fixed shooting strap on non-shooting hand during shooting programme. Players of control group did not use shooting strap. According results shooting strap did not get significantly higher gains of shooting accuracy in experimental group compared control group. We cannot confirm efficiency of shooting strap. However, it is necessary to consider level of shooting accuracy in pre-test of both groups, the gender, the age, the distance from the basket.

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