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ORIGINAL RESEARCH

A COMPARATIVE STUDY RELATING PASS BETWEEN MALE AND FEMALE BASKETBALL PLAYERS

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ABSTRACT

The main goal of this research is to examine the importance of different kind of passes through their frequency of appearance and success that male and female basketball players execute in Greek championships. The sample consisted of male and female teams of Thessaloniki - Greece. The 1st group consisted of male teams (18 from different divisions) while the 2nd group consisted of female teams (10). Data collection was based on personal observation by a research team, who registries the kind of passes that took place either from the sample team or the opposite teams. The passes that were registered are: behind the back, chest, overhead, push, hand with hand, bounce and baseball pass. The analysis of variance (Anova) in types of passes was formed, based on the factor "sex" (male-female). Specifically the comparisons were made between: a) the total number of each pass b) their successful number c) their frequency of appearance d) and their total successful percentage. The results indicate that statistically significant differences exist between the two sexes, concerning the total number, the successful number and the percentages of success for the most used passes in Greek basketball. The analysis indicates that male and female basketball players tend to use different kind of passes during activity.

Key words: basketball, pass, male, female.

INTRODUCTION

Passing, dribbling and shooting are the fundamentals of basketball in offence. Proper execution is of great importance in a basketball game, and their practice should take place in a daily basis, in order players to be more effective. (Pitino,1994).

At present time coaches give less importance in dribble than they gave last years, since the game after the 24 sec regulation becomes faster. Dribble is not the best way to move the ball fast from defense to offence. Passing now is of major importance for basketball, because is the fastest way to run the fast break (Tsamourtzis et al., 2005) or to set a play in less time. (Colbeck,1985, Wissel,1994). For some successful coaches, pass is the most important element in offense (Cousy et al., 1970) because they think that even the shot is a kind of pass towards the basket (Wooden,1980), and for some others is the second most important element of technique after the right execution of shooting (Pim,1994, Cousy,1970).

Another aspect say (Leonov et al 1990) that it's allowed to the shooter to have at least a 50% field goal percentage, but for the pass he should have the absolute 100%. Therefore, it's a status for coaches to teach their players to reward their teammates that gave them the assist to achieve a great field goal (Wooden, 1980).

A basketball assist requires court intelligence, coordination, timing and especially exquisite execution of passing ability (Melnick, 2001). Seventy five percent of successful field goals comes from passes (Miller, 1994). According to Nickols (1994) “pass could be a lost art, since many players don’t make the right and proper pass per occasion”. But still, practicing the pass must be one off the most neglected element of basketball (Wissel, 1994)

Some types of passes undergo some changes, meaning that some types of them become more important and some tend to disappear. Pass is not only the fastest way to move the ball in the court, but also the main cause of loose games, because the superficiality and mostly the disability to move right the ball leads to mistakes. (Anastasiadis, 1979). Increased number of mistakes results to increased odds of loosing a game (Ibanez et al., 2003). Immediate improvement in technical execution of the pass means reduction of mistakes, and also leads to assists that strongly contribute to a win game (Melnick, 2001, Angel et al., 2006, Manley, 1989, Trupin & Cuzens, 1989, Calipary, 1996).

On the other hand, the change of the game with great emphasis to pressure defense has made the successful field goal a very difficult situation. The zone defense is rarely used, while the main type of defense is pressure man to man and some other more complicated types of it. The main forms of offence that most of the teams use during game (pick & roll, drive to the basket and pass outside-split out) have as an essential component the right pass in the right time. (Garefis et al, 2006).

All these tend to differentiate the kind of passes that can or should be used. At the present time since pass is one of the most important elements in offense, her right technical execution is of great importance.

Passes that are usually being made during a basketball game are:

Chest pass, bounce pass with one or two hands, overhead, push pass, baseball, hand with hand, hook pass, and behind the back (Bambakoudis et al 1989, Anastasiadis, 1979, Tsitskaris, et al 1992, Neumann, 1984, Hankinson, 1979, Goodrich et al 1976). There are of course some other passes referred literally, but these are the main ones. The researchers agreed that chest pass is the basic pass during the last decades, while bounce pass, overhead, baseball and hand with hand pass are the ones that follow in percentages of use during the game.

Nowadays basketball is more athletic. The increased man to man pressure renders push pass (with one hand), of great importance and significance (Newell et al 1962, Stavropoulos et al 2001). On the other hand, behind the back passes tend to vanish as being pretty dangerous named as the main reason for steals or mistakes that all trainers trying to avoid (Wooden, 1980). The same thing happens with baseball pass, which is avoided although it can offer great show since it is used for fast breaks. Bounce pass, which is a quite slow pass and can easy be stolen, if it’s not perfectly executed (Cousy, et al 1970) does not appear also so often. It’s being used mainly when passing the post man, at zone defenses, or by players that are being trapped. (Krause, 1994).

Beyond these references (that are in relation to men’s activity) uninvestigated still remains, the attitude and relation of all these passes in correlation to women’s basketball, that presents during the last years an important quality evolution. In the past, some research have been made dealing with the differences between male and female athletes, concerning physical condition (Weesner, et al 1986, 1991, Hakkinen, 1991), or file goal percentages (White et al 1989, Elliot, 1992), or free throws (Looney, et al 1996). The control of possible relations or differences that can turn up between sexes in basketball for pass does not exist.

Therefore the purpose of this research is the multisided exploration of the use of the main passes in basketball, between male and female basketball players, in an effort to take knowledge to:

- which might be the role of each pass in nowadays basketball between the two sexes,
- which are the most used ones between them, and
- As a consequence due to their percentages of use to which coaches must give special attention in practice.

More specifically this research has the purpose to control:

- The total number of passes
- The total successful number of passes
- The successful percentage of each pass and finally
- The percentage of use of each pass.

METHODOLOGY DESCRIPTION

SAMPLE. The sample of this research composed by male and female basketball teams of Thessaloniki, Greece, divided in groups. The first one consisted of 18 male teams from different divisions, while the second group consisted of 10 female teams. A total number of 280 matches compose the sample data. (10 matches for each team).

The selection of these teams was randomly selected -cluster sampling- (Bountolos, 1990) with the aim to have as large sample as possible among the total number of Thessalonica’s teams. The discrimination of sexes in number of games was satisfactory (180 male and 100 female games).

DATA COLLECTION. This research was based on personal observation of a research group. During observation the kind of passes that took place from sample teams or from the adversary teams were registered. Registration was based on a steady protocol, quite simple, designed by the researchers and based on the kind of passes that frequently used in Greek basketball. In this protocol successful and unsuccessful passes were registered, their kind and of course the total number of them during the game. The passes in which the registration was based are: 1. behind the back pass, 2. chest pass, 3. over the head pass, 4. one hand pass, 5. hand with hand pass, 6. bounce pass and 7. baseball pass.

STATISTICAL ANALYSIS.

The elaboration of data was made with statistical package SPSS, formed by the one way analysis of variance (Anova) with a significance level of $p < .05$. Correlation's that took place were between: the total number of each pass, the successful number of each pass, the percentage of use of each pass, the total successful percentage of each pass.

RESULTS

The main descriptive elements of each pass in total are presented in tables 1 and 2.

TABLE 1. Means & St. deviations for the successful number, total number, successful percentages and percentages of use of passes for the total sample.

	Behind the back		Chess		Overhead		Push		Hand with hand		Bounce		Baseball	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
successful number	0,19	0,5	88,5	26,3	58,7	21,44	38	18,0	6,02	4,35	31,4	14,0	1,5	2,36
total number	0,25	0,58	90,2	26,7	61,4	21,79	39,7	18,5	6,11	4,34	32,6	14,4	1,8	2,62
successful percentages	73,6	33,3	97,3	1,22	95,5	1,03	95,9	1,58	98,5	1,96	96,1	1,22	84,	9,15
percentages of use	0,10	0,26	38,8	9,47	26,4	7,73	17,1	7,74	2,67	1,91	14,1	6,19	0,8	1,58

TABLE 2. Total values for the successful number, total number, successful percentages and percentages of use of passes for the total sample.

	Behind the back	Chess	Overhead	Push	Hand with hand	Bounce	Baseball	Total
successful number	109	51116	34082	22094	3499	18214	889	130003
total number	146	52325	35573	23319	3538	18961	1049	134911
Successful percentage	72%	97%	95%	94%	98%	96%	84%	96%
Percentages of use	0,01%	23,9%	26.36%	17,28%	2,62%	14%	0,77%	-

Variance analysis that was made between different kinds of passes in relation to «sex», are presented in tables 3 and 4.

TABLE 3. Means and statistical significance for passes concerning total number, and successful number of passes among sexes.

	TOTAL NUMBER		SUCCESSFUL NUMBER	
	MALE	FEMALE	MALE	FEMALE
	M	M	M	M
behind the back	0,2 ^a	0,1 ^a	0,2	0,1
chest	91,9 ^b	85,9 ^b	89,8 ^a	83,3 ^a
Overhead	59,9 ^c	65,4 ^c	57,2 ^b	62,5 ^b
push	39,4	40,4	37,7	38,7
hand with hand	6,9 ^d	3,8 ^d	6,8 ^c	3,7 ^c
bounce	36,5 ^e	22,4 ^e	35,2 ^d	21,4 ^d
baseball	1,6 ^f	2,3 ^f	1,3 ^e	1,9 ^e

a, b, c, d, e, f: statistically significant difference.

TABLE.4 Means and statistical significant for passes concerning percentages of use and successful percentages of passes among sexes.

	PERCENTAGES OF USE		SUCCESSFUL PERC. OF USE	
	MALE	FEMALE	MALE	FEMALE
	M	M	M	M
behind the back	0,1 ^a	0,06 ^a	65,7 ^a	93,7 ^a
chest	38,9	38,7	97,7 ^b	96,9 ^b
Overhead	24,9 ^b	29,1 ^b	95,3	94,8
push	16,8 ^c	17,8 ^c	95,8	95,1
hand with hand	3,0 ^d	1,7 ^d	98,2	97,8
bounce	15,7 ^e	9,9 ^e	96,1	95,5
baseball	0,7 ^f	1,1 ^f	79,3	80,5

a,b,c,d,e,f: statistically significant difference.

RESULTS – DISCUSSION

Based on the data (table 1 & 2) this research confirms previous bibliography or initial thoughts referring to the differentiation in the use of various passes regardless of sex. It proved that chest passes are athletes' favorite (Wooden, 1990, Babouskin, 1991) with 38,8% percentage of use and an additional high successful percentage (97,68%). Second in preference with 26,4% percentage of use are overhead passes, with a successful percentage of 95,8%. The increasing role of push pass in today's basketball is confirmed by 17,3% percentage of use and a rather high percentage of success (94,74%). The bounce pass follows with 14% percentages of use and success 96,06%. The passes mentioned above are at the top of the list in use for the basketball players. The results confirm Stavropoulos et al, (2001), referring almost the same order of passes' importance in men teams.

The second group consists of passes that play a restricted role and tend to vanish : a) hand with hand passes with a high successful percentage 98,89% but low percentage of use (2,6%) b) baseball passes with 0,7% percentage of use and c) behind the back with 0,1% percentage of use. It is worth noting, that the success percentages are low too, with 84,74% and 74,65% respectively, showing also a weakness in the execution of these specific passes.

Maybe this is the reason for the continuous reduction of their appearance.

The interpretation of the results of the statistical analysis that came out of the discrimination of passes based on sex lead to some interesting thoughts.

As far as it concerns the total number, the total successful number and the percentages of use in most of the passes among male and female statistical significant differences are present.

Concerning the total number of passes, it is interesting to mention that female teams have bigger values for overhead and baseball passes in relation to male teams where statistically significant difference appear ($p=0.001<.05$ & $p=0.006<.05$ respectively). A certain predisposition of the female athletes to use quite often the overhead pass can be assumed. According to Wissel (1994), overhead pass is usually used by starting a fast break, or at zone press defenses at full court. This pass is quite easy in technical execution but has the weakness that the athlete who makes it, isn't in the right position to shot to the basket. This probably means that either not all the female athletes are good in offense, or they use the zone defense a lot during their games, that is the most likely to happen.

Baseball passes appear in high percentages too, assuming that females teams don't return quickly enough to their defense area, since only in certain occasions that pass can happen (fast break). That can also prove in a way, the difference in physical condition that surely exists among male and female teams.

On the other hand men proved to be more spectacular during their game because they appear to have higher values at behind the back passes ($p=0.009<.05$). A pass that can be used mainly in fast break situations and it is enormously hazardous, because of its difficulty in execution.

Men are using also in greater numbers chest ($p=0.016<.05$) and bounce pass ($p=0.000<.05$). As far as it concerns chest pass (that is the main form of passing), it seems that male players are more patient in offence and consequently to passing activity. It's being said (Hurley, 1994, Colbeck, 1985, Wissel, 1994), that a team that makes up to four passes before it makes a shot, has better probabilities in having a good offence.

In addition bounce passes are good for show time (preferably in men's game), but present difficulty in execution because it's a quite slow pass and bad execution can be the cause for mistakes. It's more reasonable to be used by male teams, since they use this pass for their main offensive moves (pick and roll or low post passing), and they have the technical ability to execute it without mistakes. According to Brown (1995) and

Papadimitriou et al.,(2000) “good things can happen to your offence if you have good passers that can pass the ball to the post”.

The 1st group (male) also present statistical difference in relation to the 2nd group (female) in hand with hand passes($p=0.000<.05$) The high values of this particular pass are mainly the result of the “hand-of” move as a form of play especially the last few years. Despite the fact that this move can cause trap troubles, the high ability level of athletes minimize such a probability, but it can be used by both sexes.

And of course it’s an interesting result that push pass, doesn’t present statistically significant difference among the two different groups. That probably means that coaches of both sexes, give great credibility in the right execution of this particular pass at all levels (divisions), with a simultaneously reduction of mistakes.

As far as it concerns the variable “successful number of passes”, the results support even more the above mentioned. Behind the back passes and push passes present no statistical significant difference. Even though men look like they prefer to make behind the back passes in their game more than females, almost equal number of successful passes is registered for both sexes. The statistical significant difference for chest, bounce and hand with hand passes are in favour to men revealing the general picture of the way they play. That means that they are very patient in offence in relation to women, they pass the ball to the post even more and they use the hand off movement a lot more in relation to women.

Women use a lot more the zone defences and their game is characterized by more fast break situations, that is why they use more the overhead and the baseball passes.

Concerning the variable of “percentages of use”, all registered passes present statistically significant difference, except chest pass. Push passes ($p=0.000<.05$), hand with hand passes ($p=0.013<.05$) and behind the back passes ($p=0.007<.05$) present higher values for the male teams confirming previous thoughts. Overhead pass ($p=0.001<.05$), as it has already mentioned for total number, present high percentage for female teams, while proportionally high values for the same group present for baseball passes too ($p=0.003<.05$).

Of special interest in this specific analysis, is the statistically significant difference that exists for push pass ($p=0.000<.05$) with higher values for the female teams. Despite the fact that this difference isn’t big enough, the high defensive pressure of the male teams (theoretically bigger than in women’s basketball) would lead to the thought that this kind of pass, should be used in bigger number by males. But it appears that this specific pass has the same importance-perhaps bigger- for women’s basketball and so we must reevaluate the thought concerning low tension in female activity. In the past (5 to 6 years ago), ball size could be a restricted factor for the use of push pass at women’s basketball, since they use in Greece the same ball as men did. Female players tend to avoid that kind of pass, because they didn’t feel safe about its technical execution. Since this rule changed and women use now balls no 6, push pass is being used from both sexes with same frequency.

Based on the analysis of variance for successful percentages, appeared that only behind the back passes ($p=0.000<.05$) and chest passes ($p=0.000<.05$) present statistically significant difference.

Great interest presents the big difference among the two groups, were behind the back pass presents values in favour of women, confirming previous thought that men despite the fact that they are font of making spectacular actions in their game, they are not effective enough. Controversial is the situation with chest pass, where higher successful percentages present for male teams. This result is very important since this pass is the most frequent one in basketball. Therefore, male basketball players are more reliable to their passes, even though the differences at mean values are minor. In addition successful percentages of chest passes for both sexes considered to be high (over 95%).

Either through general values for both sexes or through statistical analysis, new elements arise concerning the pass in basketball. Surely chest pass still keeps the main part in activity, concerning sexes. Overhead pass is also very important, with greater popularity at female activity.

But the new tendency in today’s basketball appears along with the high levels of appearance for push pass with 17,3% percentage of use. The use of this specific pass is almost equal at both sexes.

Bounce pass still remains popular, especially for men despite the fact that it is characterized slow and can easily be stolen by intelligent players. But surely its appearance is a «must» in specific cases of offence. Special attention must be given, based on the low levels of appearance and success at hand with hand pass (we can see them especially from men), baseball pass (we can see them mainly in female basketball because of their physical condition) and behind the back pass (appeared almost exclusively in male athletes).

They are passes with low levels of appearance and success and here comes the question, if and how much training time must be spent for their practice.

CONCLUSION

As a proposal based on the above, coaches should keep on giving great importance in practicing chest and overhead pass, because basketball players used them a lot and with high successful percentages. Special attention should be given to push pass that constitutes a new important solution for pressure defence, while limited must be the practice time spent for bounce and hand with hand passes.

A question still remain, about which must be coaches' attitude towards baseball and behind the back passes because, even though they offer great show, they set victory at risk, something that every coach is trying to avoid.

Perhaps it should be better, that these kinds of passes are allowed to be executed only by players with extensive ability, limiting the mistake probabilities.

Based on the fact that the number of surveys dealing with the importance that each pass can play for the game is extremely small, indispensable and very important is further investigation of this sector, if coaches are willing to follow scientifically the evolution of basketball.

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