



Home advantage in The Icelandic Basketball Association men's premier league

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**Home advantage in
The Icelandic Basketball Association
men's premier league**

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Abstract

Home advantage is well-established in the world of sports, but has not been studied in Iceland; previous studies have shown more so in team sports than individual sports. The focus of this study is the outcome of games on the home court.

The aim of this study is to find out if there is a home court advantage in The Icelandic Basketball men's premier league. Two methods of calculation are used. First one is to analyze if the teams won more games at home than away. The second is to analyze if they won more games at home than they lost at home.

The population of the study is all teams in the men's top league in Iceland, a total of 23 teams. Aggregated results of 6816 games, from 26 seasons, both at home and away with emphasis on home court wins were used for calculation of home court advantage. Three teams played all 26 seasons. These three are analyzed especially to see if there are any trends or variance during the 26 seasons.

Two methods are used to calculate home court advantage within the league and for individual teams for the 26 seasons, respectively. A Method 1 of calculation is number of games won at home of all games won for each team. Method 2 of calculation is number of games won at home of all games played at home for each team (phase 2). A review of the literature shows that these two methods have not been used before to calculate home court advantage. Together method 1 and 2 of calculation give reliable results ($p \geq 0,05$) when used in calculating home advantage in basketball for the whole league and each team expressed as average percentage.

The main result of this study is that there is an advantage in playing on home court in The Icelandic Basketball men's premier league (58%-61%, $p \geq 0,05$). Individual team results, expressed as average percentages show a great variability (43%-63%, $p \leq 0,05$), which may tell us more about the different quality or ability of the teams than about home court advantage. The ability of the teams also happens to be the major cause of problems in accurate measurements of home court advantage. The results of this study are in agreement with the available literature on home court advantage and show that the importance of team's ability for performance is greater than game location.

Ágrip

Í heimi íþróttta hafa áhrif heimavallar verið mikið rannsökuð og sýna almennt að heimavöllur hefur áhrif á niðurstöður leikja þó meira í liðs íþróttum en í einstaklings íþróttum. Margar fyrri rannsóknir sýna hvaða þættir hafa áhrif á heimavelli. Í þessari rannsókn skoðar rannsakandi úrslit leikja á heimavelli.

Tilgangurinn var annars vegar að skoða hvort lið vann fleiri leiki heima en að heiman og hins vegar hvort það vann fleiri leiki heima en það tapaði heima.

Þýðið eru öll lið í efstu deild karla á Íslandi, alls 23. Þrjú lið spiluðu öll 26 tímabilin. Þau eru skoðuð frekar til að sjá ef um er að ræða einhver sérstök tilhneiging eða breyting yfir þessi 26 tímabil. Skoðaðar eru niðurstöður leikja bæði heima og að heiman frá árunum 1986-2011, sem eru 26 leiktímabil, alls 6816 leikir með áherslu á sigurleiki á heimavelli.

Tvær aðferðir eru notaðar til að reikna út heimavallaráhrifin innan deildarinnar og fyrir einstök lið yfir þessi 26 tímabil, hvor fyrir sig. Aðferð 1: Fjöldi leikja unnið heima af öllum unnum leikjum fyrir hvert lið. Aðferð 2: Fjöldi leikja unnið heima af öllum heimaleikjum fyrir hvert lið. Þessar tvær aðferðir hafa ekki verið notaðar áður, til að kanna heimavallaráhrif í körfuknattleik. Útreikningar á aðferð 1 og aðferð 2 gefa skýrar niðurstöður ($p \geq 0,05$), hvor um sig, þegar þær eru notaðir til að reikna út annars vegar heimavallaráhrif í körfuknattleik fyrir deildina og hins vegar fyrir hvert lið.

Niðurstöður sýna að það eru heimavallaráhrif í efstu deild karla í körfuknattleik á Íslandi (58%-61%, $p \geq 0,05$). Þegar einstök lið eru skoðuð sýna niðurstöður mikinn breytileika (43%-63%, $p \leq 0,05$), sem gæti verið vísbending um mismunandi gæði og getu liðanna eða þjálfara, frekar en heimavallaráhrif. Þessi breytileiki er helsti vandinn við nákvæmar mælingar á heimavallaráhrifum. Þjálfarar og leikmönnum geta nýtt niðurstöður rannóknarinnar til undirbúningd fyrir tímabilið.

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1 Introduction

The dynamic and beautiful actions and the uncertain outcome of the competition attract millions of spectators and supporters which enjoy the thrill and excitement of not knowing who is going to win and therefore wants to watch and support his or her team or athlete. The team that is playing in its home court is thought to have an advantage over the visiting team. The visiting team comes from another town or a region therefore supposedly has a disadvantage when playing away from home. In team sports the teams normally play their home games in the court where they practice in or near it (Home advantage, 2007).

Home advantage is a well-known phenomenon in any sport not the least in team sports. A number of studies have been done dealing with the subject (Barsky and Schwartz, 1977; Carron, Loughhead and Bray, 2005; Carstens, 2009). Multiple factors are known to influence the performance of a team of players and many of them are difficult to measure or estimate. Sport scientists have become more and more interested in finding out what makes players in team sports, for example basketball, perform to their full potential, and home advantage has become one of the battlegrounds for their competing theories (Runciman, 2008). The literature on home court advantage obviously shows interest in finding out if there is an advantage in sports and what the major factors that influence it are and if there is a way to prepare teams and players better for the effect it seems to have on them. Courneya and Carron defined home advantage as “the consistent finding that home teams in sports competitions win over 50% of the games played in a balanced home and away schedule”. When a team plays a balanced schedule it plays the same number of games at home as it does away. Therefore in an unbalanced schedule it does not play the same number of games on home court as it does on away court or at a neutral court as is in basketball. The home advantage for the entire competition could be assessed as the number of games won by teams playing at home and expressed as a percentage of decided games (Carron, Loughhead and Bray, 2005).

Barsky and Schwartz (1977) were one of the first to study home advantage and game location and initiated a major increase in research in the area. They calculated the home advantage for different sports (baseball, football, ice hockey and basketball both college and professional) during one season except for basketball, where they looked at 14 seasons. Their outcome showed that in ice hockey home wins were around 64% and in basketball home wins were about 82% and 64% at a neutral ground. They also found that the advantage of playing at

home differs from one sport to another. Their data testified to the consistency of the home advantage and was consistent with their findings that the home advantage was most decisive in basketball and ice hockey. The advantages varied in most sports from 50% to 70%. In general the teams or individual athletes performed better when competing on their home ground.

1.1 Icelandic basketball

The Icelandic Basketball Association (KKÍ) was founded in 1961. In the early years there was no premier league; however there was a first division and second division. A premier division was organized in 1979. In those early years basketball was especially popular in colleges in the country. Many of the players on the best teams came from three of the four main colleges in Iceland in the fifties and sixties.

Now all the teams in the premier league play their home games in their own region or town and in the sport hall they practice in. The numbers of teams that have participated in the Icelandic men's premier basketball league have increased from six teams in 1986 to twelve teams in 2011. Of the 23 teams that have participated in the men's premier league, at any time during the 26 seasons, 18 of them are situated in the south-west corner of Iceland, not all of them in the same town, (appendix 3). The rest of the teams are situated all over the country. In Icelandic Basketball men's premier league 2011, 10 teams of 12 have one sport hall where they practice and play their home games. The sports halls in Iceland are small in comparison with stadiums in the USA and Europe. They have space for 300–700 people on the average. The number of home fans varies from town to town, but there is little information available on the number of home fans at each game. The former president of KKÍ and former president of FIBA Europe (Ólafur Rafnsson, 2004) wrote a article on the KKÍ web site (www.kki.is) and said that the teams not situated in or around the capital city of Iceland have become very good at creating great interest in basketball in their town. Since 1986 there have been many changes in the Icelandic Premier league, that is changes in number of teams that play in the league, coaches and the sports halls that the team's practice and play in. In 1986 and 1987 six teams played in the premier league, in those two years all teams played 20 games, four games against each team, two at home and two away. In the beginning the teams in the league all played in one or two sports halls until the year 1987 but after that the teams played at their own sports hall. In 1988 the number of teams was increased to 9 in the premier league, but the number of games that each team played decreased to 16, so each team played two games against another team, home and away. Again there were changes in 1989-1993, the number of teams increased to 10 and the number of games each team played increased to 26. Because each team played 26 games, the teams did not play the same number of games against all teams. The teams were divided into two heats and played four games against the four teams in the same heat and two games

against teams in the other heat. The reason for this was to increase the numbers of games each team would play. It was however considered too much to have the league in one heat where all teams would have to play 40 games. In 1994 the league changed again, 6 teams in each heat and in 1997 the last changes were made up to the year 2011. Twelve teams in the league and each team played 22 games, home and away against each team. None of these changes should influence the main results of this study.

1.2 Home advantage

Studies on home advantage support the assumption that there is an advantage in sport competitions in general, and that it differs between different types of sports. Ice hockey and basketball are for example likely to have greater home advantage than American football or baseball (Barsky and Schwartz, 1977). The home advantage is not only a factor in the outcome of games, it is also an important determinant of performance of the teams involved, at least in certain types of competition (Barsky and Schwartz, 1977; Carron, Loughhead and Bray; 2005; Carstens, 2009).

To understand the interactions of home court advantage and team quality or ability and the effects of various measurements of home court advantage, by the methods used in this study and in the literature in general, one has to realize that the measurements are not accurate or sensitive enough to separate these important factors (Berger and Pope, 2011; Clarke and Norman, 1995; Forrest, Baumont, Goddard and Simmons, 2005; Lago-Peñas and Lago-Ballesteros, 2011; Madrigal and James, 1999; Nevill, Balmer and Wolfson 2005; Thout, Kavouras and Kenefick, 1998). Game location and team quality are said to be equally important determinants of performance. Superior and inferior teams show a home advantage when playing opponents of similar abilities. Quality of a team though cannot be assumed or expected on the basis of their standing in the season. A team can have few bad games or lose a good player because of an injury during a season (Clarke and Norman, 1995; Madrigal and James, 1999).

One research from Europe looked at home advantage in basketball at different levels of competition (Pojskic, Šeparovic and Užicanin, 2011), and showed that it was more noticeable in qualitatively lower levels of basketball competition by win-lost record and game related statistics. But that was not found to be the case in teams of higher qualities. Taking into the account the dominance of the home team, in regard to aggressive and forceful defense and also fast and aggressive offence, the lessons for coaches of the visiting team would be to prepare better psychologically and tactically in order to prevent the dominance of the home team in the beginning of the game- “don’t get into the same rhythm as the opponent” (Pojskic, Šeparovic and Užicanin, 2011). For example, if teams are all equal in ability, then a small home advantage may result in most home teams winning. If teams are

wide apart in ability the home advantage would not often overcome the ability difference. "Furthermore even if the weaker teams did not win, the home advantage effect could still make the match closer than it otherwise would have been" (Clarke, 2005, p.376).

Most of the studies (Barsky and Schwartz, 1977; Bray and Widmeyer, 2000; Nevill and Holder, 1999) on home advantage cover one season and up to ten years in each sport and focus on factors that influence the outcome of a team sport or an individual sport at a certain time. Research on the history of home advantage in each sport is not common but a few of them have been done (Balmer, Nevill and Williams, 2001 and 2003; Clark, 2005; Pollard and Pollard, 2005; Pollard, 2006). A study on long term trends in home advantage in professional team sports in North America and England (1876-2003) attempted to interpret home advantage from a historical perspective. In the long term research on home advantage they studied the four major professional sports in North America, American football, baseball, basketball and ice hockey, and also soccer in England. They divided the sports into sports with balanced and unbalanced schedule. Where sports that had a balanced schedule they looked at outcome of games home and away (Pollard and Pollard, 2005). Their findings showed that there was a home advantage in basketball (NBA) from the years 1946-2002 and that basketball showed more variations over the years than other sports (Pollard and Pollard, 2005).

Two studies were done by Balmer, Nevill and Williams (2001, 2003) on home advantage. Their studies were on "Home advantage in the Winter Olympics (1908-1998)" published in 2001 and "Modeling home advantage in the Summer Olympic Games" (1896-1996) published in 2003. Both of these studies focused on finding if there was a home advantage in the Olympics over a period of time. In the winter Olympics they used the method of counting the medals the home country had won for all sports to find out if there was a home advantage. Findings showed that a home advantage existed. The methodology in the Summer Olympic study (1896-1996) was different. The significance of home advantage was assessed for five event groups and home advantage in team games was put in context with other sports. The five event groups were athletics, weightlifting (predominantly objectively judged), boxing, gymnastics (predominantly subjectively judged) and team games (involving subjective decisions). Home advantage was found to be highly significant in event groups that were either subjectively judged or subjective decisions were relied on. In contrast, little or no home advantage was observed for the two objectively judged groups. Officiating system was vital to both the existence and extent of home advantage. Other findings suggest that crowd noise had a greater influence upon official's decisions than player's performances, as events with greater officiating input enjoyed significantly greater home advantage. Referees were prone to give athletes from the home country a better score than

the athlete from other countries (Balmer, Nevill and Williams, 2003; Boyko, Boyko and Boyko, 2007).

By framing the results of 16 published and unpublished studies that represented over 260 seasons of competition, Courneya and Carron in 1992, found out, that the home advantage phenomenon was intensive and very different between sports. They conclude that each sport has its own set of rules and regulations that affect it. In their framework for home advantage they introduced four factors that could influence home advantage, crowd, familiarity, travel and rules. These factors could have psychological and/or behavioral effects on competitors, coaches and officials (Carron, Loughhead and Bray, 2005).

Research on the influence of game location and outcome on behavior and mood states among professional rugby league players found out that there were no major differences in the mood of the player the days before either a home or away game. However, playing away, resulted in players being more tired than when playing at home. The mood of the player had greater effect on their own performance than on the performance of the team. That is the advantage of playing in a group sport (Polmann, Nicholls, Cohen and Borkoles, 2007). If one player has a bad day the coach can take him out of the game and put a player that is ready and eager to participate in the game. So the mood changes for this one player do not affect the performance of the team.

Renovations, changing of floors, baskets, lighting and colors in the sports hall could have an effect on the game.

Some times the unique attributes of a stadium create a home-field advantage. The parquet floor at the Boston Celtics home of TD Banknorth Garden (previous named Fleet Center), which was moved intact from the teams former home of Boston Garden, contains numerous defects, which are said to give the Celtics, who are more likely to be familiar with the playing surface, an advantage. During the 1985-1986 season, Larry Bird led the Boston Celtics to a posted home court record of 40-1; this record still stands in the NBA(Home advantage, 2007).

Research on basketball and other sports has shown a temporary decrease in home advantage in the first season in a new stadium. Second season in a new stadium home advantage became the same as it had been before the team moved (Pollard, 2002; Wilkinson and Pollard, 2006). The familiarity factor for the teams in home advantage is affected by knowing the local conditions, their sports hall, the lockers, the floor, the baskets and their supporting fans. All these factors can affect their performance and also the outcome of the game (Nevill and Holder, 1999; Polmann, Nicholls, Cohen and Borkoles, 2007).

It has been suggested that the travelling involved in away-games is partly responsible for part of the home advantage, especially if it involved crossing of time zones. In most divisions or leagues, teams have to travel to another city or a region

half of the games or more in one season (depending on whether they are playing a balanced or unbalanced schedule). The travelling could influence the player's psychological state and decrease their focus on the game, less rest between the games. There is not much research available that has just focused on the effect of travelling on the players and coaches. The distances teams may have to travel are very different between leagues and countries (Courneya and Carron, 1991; Entine and Small, 2007; Nevill and Holder, 1999). In Iceland, the distances could be considered too short to have an impact on the players and on the outcome of the game. But on the other hand those travels are often difficult, for example bus ride during wintertime and players are not professionals and have other obligations.

Fans are evidently a dominant cause of home advantage and many studies have shown (Bray and Widmeyer, 2000; Carron, Loughhead and Bray, 2005; Greer, 1983; Nevill and Holder, 1999; Smith, Ciacciarelli, Serzan and Lambert, 2002; Wallace, Baumeister and Vohs, 2005) strong evidence that home advantage is increased with a bigger crowd size (Nevill and Holder, 1999). A crowd can be divided into the home crowd and a visiting crowd and in general they come to a game to support their team which can magnify performance pressure and induce performing to avoid failure rather than seek success during the most critical moments of performance in a game (Wallace, Baumeister and Vohs, 2005). In baseball an increase of 48% to 57% is seen in performance by teams, depending on the size of audiences. The quality of the teams did not matter in this regard; stronger teams playing at home against weaker improved from 53% to 64% if the number of audience increased, and weaker team playing at home against stronger improved from 40% to 54% with growing number of audience. The percentage increase was different, higher with the weaker team than the strong, but there was always an increase in performance of the home team. Even though this shows that there is an increase in performance in the games they cannot generalize that there is always advantage for the home team, in relation to the crowd size. Even though it is said that bigger crowd has a positive effect on the home team there is no way of knowing if the crowd will be supporting the home team more than the visiting team (Barsky and Schwartz, 1977).

Studies of college basketball have revealed a widespread conviction among fans that they can have a considerable impact on the team's performance. When their team plays poorly the fans are convinced that it's their fault for not getting behind the team and not intimidating the opposition; when their teams play well the fans credit themselves for defending 'their turf' (Runciman, 2008). But even though this can affect the game there is no evidence that these actions of the fans have effect on the home advantage, or whether the team wins or loses on their home ground.

In most organized basketball competitions it is tried as much as possible to reduce the factors that can influence home advantage, for example the size of the court is the same, similarly long rest between games, well-educated and prepared

officials, and in that way increasing the uncertainty of the outcome of each game which can lead to basketball becoming more popular (Pojskic, Šeparovic and Užicanin, 2011). Usually in any team sports there are officials that see to it that the rules of the game are being followed and players/teams are penalized for not playing by the rules. Carron, Loughhead and Bray (2005) thought that the officials should be taken out of the conceptual framework because they state that officials did not have home or away status in a game, but were simply officiating. They did not present any evidence to support this opinion. Obviously, in the literature there are different opinions on the performance of the referee and how much, if at all, he influences the outcome of the game.

The general view in the studies that were reviewed for current study is that the home advantage exists and is influenced by factors which are crowd, familiarity, travel and rules. Some have mentioned other factors for example, referee bias, special tactics and psychological.

1.3 Purpose of the study

The hypothesis is that there is a home advantage in Icelandic basketball in general. This research may hopefully give some answers and lead to further interest and research in this subject in Iceland.

2 Method

Subject of this research was to find out if there was a home advantage in The Icelandic Basketball men's premier league. The data included all teams that had played from 1986 to 2011.

2.1 Source of data

The data for this study was collected from KKÍ web site (www.kki.is). Both numerical data on game results and soft data concerning organizational changes in the premier league and involving the teams themselves were collected, ranking and changes of coaches. Qualitative research interviews were taken on six individuals (players and coaches in the league) to gather further information for the numerical data.

Data from 26 seasons were collected. Data from 1993 were not available on the web for reasons unknown. The data from that year was obtained from the archives in the KKÍ office. The information on changes in the league structure, changes of coaches, ranking and on sport hall was also retrieved from KKÍ web site. Additional information that was needed and not available on the KKÍ web site was obtained verbally from the KKÍ official, in Reykjavík (20. July, 2007). The Data included results of 6816 games of 23 teams during 26 seasons in the Icelandic men's premier league in basketball. Interviews were taken in March 2014 with players and coaches that were currently coaching or playing in the league.

2.2 The Methodology

The data in this study will be quantified in two different ways to determine if there is a home advantage, called method 1 and 2 of calculation.

Method 1 of calculation: percentage of games won at home of all games won.

Method 2 of calculation: percentage of games won at home of all games played at home.

This study focuses on basketball; all games are either lost or won. The game constitutes of four 10 minutes periods. If a game is tied at the end of regular playing time the teams have to play as many 5 minutes half times as needed, until one team has won (Basketball, 2007). The schedule in the Icelandic league is balanced which means that equal number of games are played at home and away. This makes it likely that the total average percentage, of home game wins, in both methods of calculation will demonstrate whether there is a home game advantage or not. To explain this better the year by year total mean percentages of home wins

in both methods 1 and 2, are likely to be similar (table 1). Looking at each team over the whole period the results are likely to show fairly great differences in total mean percentages between the two methods (table 2). In the former instance (table 1) all teams are included so differences in ability of the teams will be evened out. It is unlikely that structural changes in the league, as far as number of teams or games each season, will have any effect on the calculations because we are looking at this particular sport with clear cut results of each game and equal number of games at home and away.

When all the data had been quantified, three teams that have participated in all 26 seasons were looked at separately to see if there were any long term trends or patterns in the results, in relation to changes in the league structure, changes of coaches, ranking and on sport hall.

2.3 Sample

The samples in this study were the 23 teams that played in the premier league in men's basketball for the last 26 seasons. The teams have played from one season up to all seasons during this period (a total of 26 seasons). The number of teams in the league ranges from six in 1986 up to 12 teams today (2011). Three teams have played all 26 seasons. Interviews were taken with 6 individuals, 4 players and 2 coaches.

In these 26 seasons, 6816 games have been played and 3408 of them have been played on home court. With the changes in number of teams in the league through the years the number of games that have been played each season range from 20 games in 1986 to 132 in the league today (2011).

2.4 Data Analysis

The home advantage is calculated for the 26 seasons, each season and for each team. The data is presented in tables.

After analyzing the data according to methods 1 and 2 the results are used to find out if there were any long-term trends in home advantage within the league or teams over the 26 seasons. After looking at the data they showed that three teams had played all 26 seasons. The three teams were then looked at more closely to see if there were any long term trends over the 26 seasons. One of those three teams came from the Reykjavík area and two of them from Reykjanesbæ, an hour drive from Reykjavík. The data are presented in the same format as method 1 and 2, tables, to give clearer picture of any long term trends within each team and the difference in results between method 1 and 2.

Where the research is to some extent explorative, where the objective is to gather informative information that will help define problems and support or dismisses hypotheses. This subject has not been researched in Iceland before and

the information from the interviews will be used in the discussion chapter of this work to shed further light on the outcome of the quantitative data on home advantage in Icelandic Basketball. The interviews are not used in researching purpose. Rather to deepen the discussion for further research.

2.5 Statistics

Microsoft Office Excel 2007 was used to analyze the data and descriptive statistics were used. Averages and standard deviation were calculated. The correlation between the two different methods and between the three teams was done with Excel. Analyzing the data between the two phases the T-test for independent groups was used (independent sampled T-test) in table 1 and 2. For analyzing the data concerning the three teams (tables 3 and 4), ANOVA (single factor and Two-Factor without Replication) was used. It provides a statistical test of whether or not the means of several groups are significantly different between them, and is useful in comparing three, or more groups or variables for statistical significance. Significance was based on 95% level ($p \leq 0,05$)

3 Results

The Methodology of this study is partly influenced by a previous research on the “Long-term trends in home advantage in professional team sports in North America and England (1876-2003)” by Pollard and Pollard (2005). Long term trends in possible home advantage will be looked at. There are however important differences regarding calculation of home advantage in this study versus the study of Pollard and Pollard (2005). Because Pollard and Pollard (2005) stated in their section on calculation that “For sports in which the outcome of a game is either a win or loss, home advantage can be quantified as the number of games won by the home team expressed as a percentage of all games played” (Pollard and Pollard, 2005, p.338). This is done differently in this study. If you quantify home advantage as the number of games won of all games played the result will be that no team can win more than 50% at home of their games played, especially if played in a balanced schedule like is done in basketball (Balanced schedule: equal number of games played at home and away). Similarly to Pollard and Pollard the research will cover long period of time (26 seasons) and try to find if there are any long time trends that occur over that period of time.

No data were found in the literature on home advantage using this method. In fact most authors in the available literature are rather vague on explaining their methods. In most of the articles on the subject the results are expressed as a percentage of home games won of games played.

The results of the study are presented by two methods of calculating home game advantage for the league and individual teams.

3.1 The league

Table 1 shows the season by season home win percentage in the league for both calculating methods of this study. It shows that the average percentage of wins by two different methods, for each season, for all teams combined, are very similar in both instances (method 1 had 61%, and method 2 had 58%) and there is a tendency towards home advantage. The correlation is strong between, the two methods in table 1, $r(46) = 2,01$, $p < 0,05$, those years that there was home advantage in method 1 were more likely to have home advantage in method 2. The total number of games each season is different but that should not affect the results.

In 1986, the first season of this study there was no advantage of playing at home, wins only 47% ($p \leq 0,05$) in method 1 and 48% ($p \leq 0,05$) in method 2 in the league (table 1). The variance (0,5) tells us that all teams in that season were

situated close to the mean and had similar home advantage percentage. That could be explained partly by the fact that most of the teams played their games in the same sport hall.

Table 1: Season by season, average home win percentage, method 1 and method 2.

Year	n	Method 1	Method 2
		Mean (standard deviation)	Mean (standard deviation)
1986	60	47 (10)*	48 (7,2)*
1987	60	48 (9,3)*	58 (0,1)*
1988	72	65 (2,7)*	49 (6,5)*
1989	130	63 (1,3)*	57 (0,8)*
1990	130	59 (1,6)*	55 (2,3)*
1991	130	64 (2)*	60 (1,3)*
1992	130	65 (2,7)*	59 (0,6)*
1993	130	66 (3,4)*	62 (2,7)*
1994	130	66 (3,4)*	62 (2,7)*
1995	192	61 (0,1)	56 (1,6)
1996	192	65 (2,7)	63 (3,4)
1997	132	63 (2,6)	57 (0,8)
1998	132	58 (2,3)	55 (2,3)
1999	132	59 (1,6)	57 (0,8)
2000	132	60 (0,8)	58 (0,1)
2001	132	67 (4,1)	64 (4,1)
2002	132	57 (3)	58 (0,1)
2003	132	62 (0,6)	58 (0,1)
2004	132	65 (2,7)	64 (4,1)
2005	132	66 (6,8)	62 (2,7)
2006	132	58 (4,5)	58 (0,1)
2007	132	68 (4,8)	62 (2,7)
2008	132	61 (0,1)	61 (2)
2009	132	55 (4,4)	51 (5,1)
2010	132	51 (14,4)	55 (2,3)
2011	132	72 (7,6)	64 (4,1)
Mean		61	58

Value: n= number games played, *p≤0,05

In 1988 the percentage of games that were won at home of all won games played in the league that year reached 65 % (p≤0,05) but the teams only won 49% (p≤0,05) of the games that were played at home. The teams won more games at home than they won away but they did not win more games at home than they lost

at home. Table 1 shows small changes over the years, climbs and falls, but demonstrate that there is a general home advantage over the 26 seasons. In 2011 the percentage of games won at home was highest during the 26 seasons, phase 1 (table 1). It increases from 51 % ($p \geq 0,05$) in 2010 to 72% ($p \geq 0,05$) in 2011. In phase 2 the increase was lower, or 55 % ($p \geq 0,05$) in 2010 to 64% ($p \geq 0,05$) in 2011). When looking closer at the data in the year 2011 all teams in the league won more games at home than away and they won more games at home than they lost at home so that that year the home court for all teams was very strong.

The general trend from the results in phases, 1 and 2, shows that there is a home court advantage (average of 60%) in Icelandic premier league.

3.2 The teams

Table 2 shows each team's average home wins percentage in both methods of calculation, 26 seasons.

The numbers of teams included in the data collection in this study were 23.

The focus though was on the mean for the teams over the 26 seasons. The total mean of both methods of calculation, did differ 20%, 63% in method 1 and 43% in method 2 (table 2). The calculations tell us that there is significant statistical difference between the two different methods (method 1 and method 2) There is no correlation (-0.05) between the two methods in table 2. There is significant statistical difference between the methods, $r(46)=2,01$, $p < 0,05$, showing that there is a difference between the teams using these two methods of calculation. In method 1 all teams except for one showed a home advantage, that one team played just one season and did not win any game home or away.

In method 2, 11 teams had won more than 50% and 12 teams less than 50% of games and no home advantage demonstrated. The mean for each team is between 0 % ($p \leq 0,05$) and 77% ($p \leq 0,05$) in method 2 (Table 2). By looking at the ranking of the teams over the 26 seasons the teams that were ranked higher in the league are the teams that have home advantage in method 2. Method 2 seems to give clearer view of where the teams stand in the league over the 26 seasons, not all teams played all seasons but while they were in the league they were ranked high or low.

Table 2: Each team's average home wins percentage in both methods, 26 seasons.

Team	n	Method 1	Method 2
		Mean (standard deviation)	Mean(standard deviation)
Haukar	540	58 (3,4)*	60 (11,9)*
UMFN	606	54 (6,3)*	77 (23,9)*
Valur	364	60 (2)*	38 (3,7)*
Keflavík	606	58 (3,4)*	74 (21,8)*
KR	606	56 (4,9)*	60 (11,9)*
ÍR	464	64 (0,8)*	43 (0,1)*
Fram	20	0 (44,5)*	0 (30,5)*
UMFG	566	56 (4,9)*	66 (16,1)*
Þór Akureyri	382	69 (4,3)*	38 (3,7)*
Breiðablik	196	61 (1,3)*	28 (10,7)*
Tindastóll	528	60 (2)*	50 (4,8)*
ÍS	48	100 (26,3)*	4 (27,7)*
Reynir S.	26	100 (26,3)*	8 (24,9)*
Snæfell	356	60 (2)*	59 (11,2)*
Skallagrímur	396	69 (4,3)*	55 (69,9)*
ÍA	194	68 (3,6)*	50 (4,8)*
Hamar	242	67 (2,9)*	52 (6,2)*
KFÍ	132	66 (2,2)*	44 (0,6)*
Þór Þ.	44	82 (13,5)*	46 (2,0)*
Fjölnir	132	60 (2)	41 (1,5)
Höttur	22	67 (2,9)	18 (17,8)
Stjarnan	110	61 (1,3)	64 (14,7)
Fsu	44	50 (9,1)	18 (17,8)
Mean		63*	43*

Value: n= number games played, * $p \leq 0,05$

3.3 The teams that participated all 26 seasons

UMFN, Keflavík and KR deviate similarly over the 26 seasons looking at average percentage of games won at home of all won games (method 1, table 3). They deviate from 35% to 73% over the 26 seasons, with some increase and decreases. The three teams show in average home advantage for all the 26 seasons (method 1). In table 3 the ANOVAs calculations show that there is no statistical significant difference between the teams, $F(2,75)=2,3$, $p > 0,05$,. But UMFN mean over the 26 season is little lower than the others. Could that be explained by the ability or quality of the team or did UMFN just have few bad years over the 26 seasons.

In method 1 (table 3) KR is the team that shows home advantage in the year 1986 (71%) while the other two teams have little or no home advantage. KR was the only team during that year that practiced in the same sports hall they played their games.

Table 3: The three teams that have participated all 26 season (method 1).

Year	UMFN	Keflavík	KR
	Mean(standard deviation)	Mean(standard deviation)	Mean(standard deviation)
1986	44 (8,5)	50 (0)	71 (30)
1987	59 (13,0)	64 (20)	60 (14)
1988	57 (9,9)	54 (5,7)	50 (0)
1989	59 (12,7)	55 (7,1)	56 (8,5)
1990	50 (0,0)	65 (21)	52 (2,8)
1991	57 (9,9)	45 (7,1)	53 (4,2)
1992	57 (9,9)	50 (0)	55 (7,1)
1993	60 (14)	58 (11)	54 (5,7)
1994	55 (7,1)	61 (15,6)	67 (24)
1995	52 (2,8)	65 (21,1)	50 (0)
1996	50 (0)	64 (20)	59 (13)
1997	46 (5,7)	53 (4,2)	64 (20)
1998	50 (0)	62 (17)	57 (9,9)
1999	55 (7,1)	55 (7,1)	50 (0)
2000	50 (0)	45 (7,1)	57 (9,9)
2001	63 (18)	63 (18)	47 (4,2)
2002	47 (4,2)	61 (16)	35 (21)
2003	46 (5,7)	53 (4,2)	60 (14,1)
2004	57 (9,9)	73 (32,5)	73 (31,1)
2005	47 (4,2)	61 (16)	72 (31)
2006	59 (13)	55 (7,1)	60 (14)
2007	55 (7,1)	67 (24)	53 (4,2)
2008	57 (9,9)	55 (7,1)	64 (19,8)
2009	42 (11,9)	43 (9,9)	52 (2,8)
2010	53 (4,2)	59 (12,7)	50 (0)
2011	60 (14,1)	63 (18,4)	63 (18,4)
Mean	53	58	57

Table 4 shows that UMFN, Keflavík and KR deviate over the 26 seasons looking at average percentage of games won at home of all won games at home (method

2). The statistical significance shows that there is a real difference between these three teams, $F(2,75)=4,55, p<0,05$.

Table 4: The three teams that participated all 26 seasons(method 2).

Year	UMFN	Keflavík	KR
	Mean(standard deviation)	Mean(standard deviation)	Mean(standard deviation)
1986	70 (28,0)	40 (14,0)	50 (0,0)
1987	100 (71,0)	90 (57,0)	60 (14,0)
1988	100 (14,0)	88 (42,0)	50 (0,0)
1989	100 (71,0)	85 (49,0)	77 (38,0)
1990	85 (49,0)	100 (71,0)	92 (59,0)
1991	92 (59,0)	69 (27,0)	69 (27,0)
1992	92 (59,0)	85 (49,0)	77 (38,0)
1993	92 (59,0)	85 (49,0)	54 (6,0)
1994	85 (49,0)	85 (49,0)	62 (17,0)
1995	100 (71,0)	81 (44,0)	50 (0,0)
1996	88 (54,0)	88 (54,0)	63 (18,0)
1997	55 (7,0)	91 (58,0)	55 (13,0)
1998	64 (20,0)	73 (33,0)	73 (33,0)
1999	91 (58,0)	100 (71,0)	64 (20,0)
2000	82 (45,0)	46 (7,0)	73 (33,0)
2001	82 (52,0)	91 (58,0)	64 (20,0)
2002	73 (33,0)	100 (71,0)	55 (7,0)
2003	55 (7,0)	82 (45,0)	82 (45,0)
2004	73 (33,0)	100 (71,0)	73 (33,0)
2005	64 (20,0)	100 (71,0)	73 (33,0)
2006	91 (58,0)	91 (58,0)	82 (45,0)
2007	100 (71,0)	73 (33,0)	82 (45,0)
2008	72 (33,0)	90 (58,0)	100 (71,0)
2009	45 (7,0)	55 (7,0)	100 (71,0)
2010	73 (33,0)	90 (58,0)	82 (45,0)
2011	55 (7,0)	90 (58,0)	90 (58,0)
Mean	80	83	71

These are all teams that are ranked in the top part of the league over the 26 seasons. KR is the team that has never in the 26 seasons won less than 50 % of the games in method 2 (table 4) but it had no home advantage for 2 seasons (2001, 2002) in method 1(table 3).

In average those three teams have all won more than 50% of their games at home of all games played at home (Table 3 and 4). Comparing the results from both tables shows that these are teams that win most of the games that they play each season, independent of the situation of the game, home or away. Correlation in both table 3 and 4 is negative or very weak positive so the causal relationship between those tree teams is negative or very low. The outcome from one team cannot explain the outcome of the other team or teams.

4 Discussion

The data indicates that home advantage in the Icelandic premier league has been increasing slowly for the last 26 seasons. During that period there were very little deviations, highs and lows, as demonstrated in table 1.

In current research results differ between method 1 and 2 of calculations, when individual teams were analyzed. The interaction of home ground advantage and team's quality or ability is revealed. Method 1 shows the results that are similar to previous studies, where the quality or ability of the team cannot be assumed or expected on the basis of the findings (Clark and Norman, 1995; Madrigal and James, 1999). The weaker teams seem to win more games at home than away (method 1) and lose more games at home than they win at home (method 2) Actually the percentage in method 2 for the weaker teams was so low that it suggested home disadvantage in some instances. Analyzing the data further on the basis of the ranking of all the teams it is quite obvious that these low percentages in method 2 are a sign of weakness or lack of ability of the team, players or coaches. This of course only happens when looking at individual teams (Pojskic , Šeparovic and Užicanin, 2011). This speculation is reinforced by the fact that the higher ranking teams all have high or very high percentages in method 2 calculations (table 2). The weakness in this argumentation is that the weaker teams (table 2) have only played a very few games in the league and two of them have no wins at all. On the other hand the stronger teams, those with higher win percentages (table 2), most of them have played in the league more than half of the 26 seasons. This may indicate that method 2 calculations for each individual team could be used to evaluate strengths or abilities in relation to calculation of possible home advantage.

It is well known and described in many articles referred to in this study that team quality or ability plays a very great part in determination of existence of home advantage (Barsky and Schwarz, 1977; Madrigal and James, 1999). If there is a small difference in abilities among two teams home advantage can result in a win for the home team. On the other hand home advantage is usually not enough to give a weaker team a win over a strong one but it might help the weak team to get better results against a strong team at home (Clarke, 2005). The general view from the interviews is that if the team is playing against a team of a similar quality and ranked close or higher in the league, the psychological and tactical preparation for that game should be good and be focused both on the play strategies of the opponents and their own play. But if they are playing against a team that ranked lower or of less quality the team has the tendency to focus more on their own game.

In this study three teams participated in the league during all 26 seasons. All of them were highly ranked and successful. When method 2 calculations are analyzed for these three teams (table 4) their averages are a lot higher than in method 1 (table 3) calculations which suggests that they are strong teams with great abilities. The study of Madrigal and James (1999) on team quality and the home advantage shows that high quality teams perform better at home than on the road when matched against opponent of the same ability. The data in this study seems to support this statement. From the information that was gathered in this research it could be said that changes of coaches had some effect of the season outcome for the teams. There is some evidence (tables 3 and 4) that fluctuations from season to season may indicate local problems regarding the teams or changes in ability. There were some changes in the ranking in relation to changes of coaches but that did differ between teams, if they ranked higher or lower the season after the change. Keflavík and KR had in method 1 higher home advantage in average, but Keflavík changed coaches only 9 times and KR changed the most, 17 times over the 26 seasons. Pollard and Pollard (2005) got similar findings were there was no clear reason for changing patterns of home advantage in the NBA, although a steady rise in home advantage did coincide with a split into regional division. They conclude that their data set lend themselves well for more specific investigations. This may be valid for the three teams in this study if they are looked at separately and more closely.

There is very little correlation in performance between the three teams (method 1 and 2) as is shown in table 3 and 4. When both methods are analyzed concerning these three teams, the results show that they are situated at the top in the rankings in the league. They win almost all games at home of all games played at home and more than half of the games that they win each season are at home, there are not many games that are lost each season by these three teams. The reason why they have been doing so well cannot be explained with the data aggregated for this study. Further research needs to be done to try to find what factor or combinations of factors within the teams and the league contribute to their excellence compared to the other teams in the league.

Courneya and Carron in 1992 set up a conceptual framework for factors that affected home advantage. The main factors in their framework were crowd effect, familiarity, travel and rules (Carron, Loughhead and Bray, 2005). Other previous researches also indicate that there are factors that can influence the outcome of a game; they are believed to be crowd effects, travel and familiarity. To set up a framework with only those factors affecting home advantage may underestimate the complexity of multiple factors involved. Other factors have also been studied; referee bias, territoriality, special tactics, rules and psychological (Barsky and Schwarts, 1977; Carron, Loughhead and Bray, 2005; Pollard and Pollard, 2005).

In recent years the psychological effect on the team or individual player has been more researched. The level of performance among the players has increased and the competition to stay on a team is greater, resulting in greater psychological stress. The general view from the data gathered from the interviews is that the factors that have the most effect on the outcome of a game independent of location are tactical preparation, doing the same routine for all games home and away, the days form of the player, experience and psychological effect.

Psychological stress is a complex issue. Many of the most frequent factors considered in relation to home advantage are influenced by psychological stress. This can be considered common knowledge as individual performance in a team sport is dependent on the confidence of every member of the team and how they interact during the game. Knowledge of the ability of the opponent and expectations regarding the outcome of the game is a significant variable regarding pregame psychological stress (Thout, Kavouras and Kenefick, 1998). Psychological stress affecting the players may have a significant effect on their performance during the game. Thout, Kavouras and Kenefick (1998) have categorized precompetitive anxiety state into cognitive anxiety (characterized by negative expectations and disrupted attention), somatic anxiety (characterized by physical symptoms and increased autonomic arousal) and self-confidence (characterized by the individual's belief to perform well). Thout, Kavouras and Kenefick (1998) concluded after statistically evaluating the data that cognitive anxiety levels did not significantly differ according to game location; however, self-confidence was significantly higher at home, while somatic anxiety was higher away than at home. The conclusion is that somatic anxiety and self-confidence are strongly related to the perception of home court advantage (Thout, Kavouras and Kenefick, 1998). Especially, if we think the teams are of similar quality or ability.

It is a well-known fact that the crowd has a great effect in any team sport, and has been considered among the main factors responsible for home advantage (Bray and Widmayer, 2000; Carron, Loughhead and Bray, 2005; Greer, 1983; Nevill and Holder, 1999; Wallace, Baumeister and Vohs, 2005). It may reflect the social support that home teams get from their local fans. The numerical results of this study do not give us any definite information about its effect on the outcome of the games. But the general view from the interviews that were taken with coaches and players is that the crowd has a great effect on how the players play the game and then the outcome of the game. Few stated that they think that the crowd has a greater effect than the home ground itself. There is however an uncertainty whether it is the density of the crowd, the proximity of the spectators to the game or the noise, that has the most significant effect on the players (Smith, Ciacchiarelli, Serzan and Lambert, 2002). But if it has a negative or positive effect on the players is not known and how big the crowd has to be to have an effect is not known. Thus assumptions regarding influence of the crowd at games are not possible. If the

teams are of similar ability, the crowd can have more effect on the outcome of the game than the location.

Pollard (2002) mentions the familiarity with the sport hall that the teams play in, is a plausible contributory cause of home advantage. This study showed an increase of around 19% in 1988 of home game wins in method 1 calculation (Table 1) compared to previous seasons. This rise in home advantage in method 1 and decline in method 2 that year cannot be explained without further research. During the two prior seasons home games were not always played on the home court, but from 1988 all teams played their home games on their home court. Moore and Brylinsky (1995) said that their results indicated that familiarity with home facility is not as important as other variables that accompany the concept of home territory rather than home court. In their research the teams, both home and away, had similar exposure to the facilities where the home games were played, but strong home advantage still materialized for the team playing in home territory. This can suggest that the home advantage may be influenced more by mental states of players, coaches, officials and the crowd, than by familiarity with the facilities. Thus resulting in game performance behavior, that is generally more favorable for the home teams than the visiting teams. The general view from the interviews with the coaches is that if they are playing at their home court the players are more familiar with their surroundings and they are more likely to play their best game. The sports halls are very different between teams in size and equipment and in some the crowd is always big and is situated very close to the court. The sports halls are many very small. One player commented on this issue and stated that he always feels better when playing on court that he knows and is used to.

The changes in the data collected for this study reflected changes that had been made in the structure of the premier league. The structural changes involved changes of coaches, number of teams and games played each season. It seems that there have been some small deviations in home advantage related to those changes. The data shows changes in the home advantage findings in relation to changes in home ground, in 1988. That year all teams except for one started to play their home games on their home court or the court that they practiced in. Pryor to that all games were held in the same sports hall which was the home court for one of the teams after 1988.

In relation to the travel factor there is no numerical evidence in this study to show that teams travelling a lot are at disadvantage regarding the results of their games away from home. However it is well known (Courney and Carron, 1992; Entine and Small, 2007; Nevill and Holder, 1999) that travel in certain circumstances can be very difficult and can influence the player's condition and ability significantly. This may be a factor in the Icelandic Basketball Association premier league, if we consider the distances traveled and weather conditions during the basketball season. Most of the interviewees in the study confirmed that travel had

some effect on the game of the players but they also said that the traveling had to take longer than one and half hour. They said that the thing that set them of was that they had to go to the game earlier and that made them have to eat earlier or differently than when they played at home, they had to change their routine. This was not a part of the study and needs to be studied further.

Rules of the game are always the same in the same league each season. However looking at different sports in general it has been shown that in sports judged subjectively home advantage is greater than in those judged objectively (Balmer, Nevill and Williams, 2001, 2003). It has been suggested and documented (Carron, Laughead and Bray, 2005) that increased subjective decisions are made by officials in favor of home teams and players. This is not the general view in the Icelandic league today but it could have been in the past. Like so many other factors involved in home court advantage this is a controversial issue and has therefore not been definitely confirmed. This factor was not looked at separately in this study.

All the data for this study was collected from the [www.kki](http://www.kki.is) website and in interviews taken by the researcher. The data was analyzed by the researcher using excel. The literature shows that these two different methods have not been used before to study the effect of home advantage in basketball. The literature did not describe the methods used adequately; most of them define the home advantage as the number of games won by the home team expressed as a percentage of all games played (Pollard and Pollard, 2005). In this study it was decided to use different methods. Home advantage was calculated using two methods: method 1: number of games won at home of all games won, method 2: number of games won of all games played at home. Using these two methods, retrospectively, it was expected that they would describe both the magnitude of home advantage and difference in quality of the teams involved. Using these two different methods retrospectively gave a clearer view of the home advantage in basketball in Iceland. The aggregation of the amount of data, results of 6816 games, strengthens the study and thus the results.

A literature review shows that home advantage in basketball had been studied extensively internationally but no literature exists regarding home advantage in basketball in Iceland. The main findings of this study, using quantitative and qualitative methods is that there is a home advantage in Icelandic Basketball Premier League for the 26 seasons that were analyzed.

All the studies done in the literature available and this study are retrospective studies dealing with events that have already happened. It seems that individual teams are affected by different factors in a different way. If the teams could be studied more closely they might have to be split into groups based on their rank and their location in Iceland. The possibilities for further research in the field of home advantage in Iceland are numerous.

It seems to be quite easy by simple statistical methods to demonstrate home advantage in any sport anywhere. This is especially true regarding basketball, simply looking at the outcome of games in either a balanced or unbalanced schedule. In order to obtain further knowledge on home advantage it may be necessary to do prospective studies, using mathematical models to predict future results and compare them with actual results.

Even though this study shows clearly that differences in team abilities have greater effect than game location on home advantage more extensive data aggregation on game statistics would have given more accurate information regarding some of the factors involved.

5 Summary

Data from KKI with results of all games played in the men's premier league during the last 26 seasons (1986-2011) was aggregated and analyzed using quantitative methods to determine if there was evidence of home game advantage.

The hypothesis is that there is and has been a home advantage in Icelandic Basketball Premier League. The results of the study confirmed the hypothesis ($p \leq 0,05$). Definitions of who has a home game is clear but the reason for the advantage of playing at home and methods used to calculate home advantage are rather unclear and need to be improved. Methods of calculation vary from one research to another. In this study two new methods were used producing the same results seen in the literature, confirming the existence of home advantage. In all the articles reviewed the calculations used showed consistency, especially in situation where a team sport used a balanced schedule and clear cut results of games. On the other hand when the data is analyzed for each individual team the results showed variations in home advantage, expressed as an average percentage, between the two methods. This study shows that the importance of team's ability for performance is greater than game location.

In sport the analysis of game related statistics and indicators, that can affect the game; have become very popular and useful. Coaches have become very interested in using them, to enhance their team's performance.

In order to obtain further knowledge on home advantage it may be necessary to do prospective studies, using mathematical models to predict future results and compare with actual results. Various models have been tried in the literature to determine the importance of certain factors involved in home advantage. To accomplish this more sensitive methods of measurements are needed. Especially, how to determine the effect of variations in team quality and game related statistics on home advantage.

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Apendix

Appendix 1: method 1(%) results for all the teams in the study.

Teams*																									
year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	G.P.**	
1986	44	44	50	50	71	25																		60	
1987	50	59	54	64	60												0								60
1988	70	57	60	54	50	67	75	50	100																72
1989	57	59	47	55	56	58	56	67		71								100							130
1990	50	50	63	65	52	55	56	50		45									100						130
1991	75	57	57	45	53	83	55	86		60	71														130
1992	58	57	50	50	55		69	100		65	60	83													130
1993	47	60	86	58	54		52			71	78	86	73												130
1994	53	55	86	61	67		48			71	55	86	82												130
1995	54	52	67	65	50	67	54	61		64	50	55	88												192
1996	55	50	50	64	59	79	61	78	70	69		69	71												192
1997	60	46		53	64	55	53	100	100	43		60	53	67											132
1998	50	50	60	62	57	67	53	75		46		67	64		46										132
1999	50	55	75	55	50		64	60		64	60	80	50		47										132
2000	59	50		45	57		59	60		53	80	63	67	56	71										132
2001	69	63	50	63	47	75	64	67		69		70		69	100										132
2002	60	47		61	35	75	54	88	60	54		86		64				0							132
2003	47	46	80	53	60	55	59		57	42	75	100		75											132
2004	69	57		73	73	83	50		25	50	55			80	83					80					132
2005	78	47		61	72	50	50			67	63	75		63	100	62									132
2006	40	59		55	60	64	71	60			50	60		43		63					67				132
2007	100	55		67	53	70	50			67	59	56		63		80				100					132
2008		57		55	64	70	53	60		63	62	60		75		50								67	132
2009		42		42	52	40	53	67	55	43	40	100										70	57		132
2010		53		59	50	63	50		40	78	57			71		43						47	0		132
2011	67	60		63	63	80	60			86	65			86	100	63								67	132
avera	59	53	62	58	57	64	57	71	63	61	61	74	69	68	78	60	0	50	100	90	67	59	48		

*1.Haukar, 2.UMFN, 3.Valur, 4.Keflavik, 5.KR, 6.ÍR, 7.UMFG, 8.Þór A., 9.Breiðablik, 10.Tindastóll, 11.Snaefell, 12.Skallagrímur, 13.ÍA, 14.Hamar, 15.KFÍ, 16.Fjölnir, 17.Fram, 18.ÍS, 19.Reynir, 20.Þór Þ., 21.Höttur, 22.Fsu, 23.Stjarnan, **Games Played

Appendix 2: Method 2(%) results for all the teams in study.

Teams*																									
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	G.P.H.*	
1986	70	70	50	40	50	10																			10
1987	40	100	60	90	60												0								10
1988	88	100	75	88	50	50	75	13	13																8
1989	62	100	62	85	77	54	69	15		39								8							13
1990	54	85	39	100	92	39	69	23		39									8						13
1991	69	92	31	69	69	39	77	46		69	39														13
1992	54	92	54	85	77		69	15		85	23	39													13
1993	62	92	46	85	54		84			39	54	46	62												13
1994	69	85	46	85	62		77			39	39	46	69												13
1995	38	100	38	81	50	100	81	69		44	6	63	44												16
1996	94	88	19	88	63	69	88	44	44	56		69	31												16
1997	82	55		91	55	46	82	55	9	27		55	73	55											11
1998	64	64	27	73	73	18	91	2		55		55	64		55										11
1999	36	91	27	100	64		82	27		64	55	36	36												11
2000	91	82		46	73		91	55		73		46	18		46										11
2001	82	82	18	91	64	55	64	36		100		64		82	36										11
2002	55	73		100	55	55	64	64	55	64		55		64				0							11
2003	64	55	36	82	82	55	91		36	46	55	36		55											11
2004	82	73		100	73	46	82		9	55	91			73	46					36					11
2005	64	64		100	73	55	46			36	91	82		46	18	73									11
2006	18	91		91	82	64	91	27			64	82		27		46					18				11
2007	36	100		73	82	64	55			36	91	82		46		36				46					11
2008		72		90	100	64	73	55		45	73	55		27		18							55		11
2009		45		55	100	36	90	36	45	27	55	18										36	64		11
2010		73		90	82	45	73		18	64	73			45		27						64	0		11
2011	55	55		90	90	73	82			55	100			55	45	45							73		11
Av.%	62	80	42	83	71	52	77	36	29	53	61	55	50	52	41	41	0	4	8	41	18	50	48		

*1.Haukar, 2.UMFN, 3.Valur, 4.Keflavik, 5.KR, 6.ÍR, 7.UMFG, 8.Pór A., 9.Breiðablik, 10.Tindastóll, 11.Snæfell, 12.Skallagrímur, 13.ÍA, 14.Hamar, 15.KFÍ, 16.Fjölnir, 17.Fram, 18.ÍS, 19.Reynir, 20.Pór Þ., 21.Höttur, 22.Fsu, 23.Stjarnan, **Games Played at home, ***Average of percentage.

Appendix 3: General information on the teams in the study.

Number	Team	Played number of seasons	Town/city that team play in
1	Haukar	23	Reykjavík-Hafnafjörður
2	UMFN	26	Njarðvík
3	Valur	15	Reykjavík
4	Keflavík	26	Keflavík
5	KR	26	Reykjavík
6	ÍR	20	Reykjavík
7	UMFG	24	Grindavík
8	Þór Akureyri	16	Akureyri
9	Breiðablik	8	Reykjavík-Kópavogur
10	Tindastóll	22	Sauðakrúkur
11	Snæfell	15	Stykkishólmur
12	Skallagrímur	17	Borgarnesi
13	ÍA	8	Akranesi
14	Hamar	11	Hveragerði/Selfoss
15	KFÍ	7	Ísafjörður
16	Fjölnir	6	Reykjavík-Grafarvogur
17	Fram	1	Reykjavík
18	ÍS	2	Reykjavík
19	Reynir Sandgerði	1	Sandgerði
20	Þór Þorlákshöfn	2	Þorlákshöfn
21	Höttur	1	Egilsstaðir
22	FSU	2	Selfoss
23	Stjarnan	4	Reykjavík-Garðabær

Apendix 4: Ranking information on the teams in the study.

Years	Haukar	UMFN	Valur	Keflavík	KR	ÍR	Fram	UMFG	Þór Ak.	Breiðablik	Tindastóll	IS	Reynir S.	Snæfell	Skallagrímur	ÍA	Hamar	KFÍ	Þór Þ.	Fjölnir	Höttur	Stjarnan	Fsu	number of teams
1986	1	2	3	4	5	6																		6
1987	5	1	3	2	4		6																	6
1988	3	1	4	2	5	7		6	8	9														9
1989	6	1	4	2	3	7		5	9		8	10												10
1990	5	2	8	3	1	7		4	9		6		10											10
1991	6	1	8	2	4	10		3	7		5			9										10
1992	7	2	5	1	3			6	10		4			9	8									10
1993	2	6	7	1	9			3		10	8			5	4									10
1994	4	2	9	3	5			1			10			7	8	6								10
1995	8	1	10	4	7	3		2	6		9			12	5	11								12
1996	2	1	12	4	5	7		3	10	9	8				6	11								12
1997	4	5		1	6	8		2	11	12	10				7	3		9						12
1998	3	4	10	6	2	12		1	11		7				9	8		5						12
1999	8	2	12	1	5			4	10		6			7	11	9		3						12
2000	2	1		6	5			3	7		4			11	9	12	8	10						12
2001	5	1	11	3	4	9		7	10		2				8		6	12						12
2002	8	2		1	3	10		5	9	7	4				11		6					12		12
2003	3	5	11	2	4	7		1		10	6			9	12		8							12
2004	5	4		3	7	9		2		12	6			1			8	10	11					12
2005	9	3		1	7	6		8			11			2	5	10	12			4				12
2006	10	2		1	3	7		5	11					6	4	9				8	12			12
2007	12	1		6	2	7		5			9			3	4	8			11	10				12
2008		4		1	2	7		3	8		10			5	6	11				12		9		12
2009		5		4	1	7		2	11	8	9			3	12							6	10	12
2010		5		2	1	8		3		11	7			6			10			9		4	12	12
2011	8	7		3	2	6		4			10			1			11	12		9		5		12
median	5	2	8	2	4	7	6	3	9,5	10	7,5	10	10	6	8	9	8	10	11	9	12	6	11	
mean	5	3	8	3	4	8	6	4	9	10	7	10	10	6	8	9	9	9	11	9	12	7	11	
seasons	23	26	15	26	26	20	1	24	16	9	22	1	1	16	17	7	11	8	2	6	1	5	2	