

## **Face-Off Analysis in Men's Ice Hockey World Championships 2007**

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Bachelor's Thesis

Degree programme in sports and  
leisure management

2007-2011



Degree programme in Sports and Leisure Management

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<p><b>The title of your thesis</b> Face-Off Analysis in Men's Ice Hockey World Championships 2007</p>	<p><b>Number of pages and appendices</b> 41 + 0</p>
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<p>This study was made to find out how important face-offs really are in ice hockey. Study was designed to answer if face-offs have a meaningful role in the final result.</p> <p>The starting point was to find out what are the factors we need to study, and what will the results tell. The study had to answer who wins the face-off, how it is won, where it is won to, how the teams line up and what happens after the face-off. Also the study had to answer how much there are face-offs, when there are face-offs and where the face-off is taken.</p> <p>After deciding how the study is going to be made was to be decided from where the study is made. Options were SM-league, NHL or world championships. World championships were chosen due to two reasons – videos from most of the games were available and the amount of games was doable (51 games from 56 on official DVD's)</p> <p>Composing the stats was the third step and it took almost a year. Fourth step was to analyze the results and see if the questions rose before the study were answered.</p> <p>Analysis shows that face-offs do have a meaning, but the differences are small. Most often the team that wins the face-off gains possession of the puck, but rarely scores. Study also showed that there are differences when and where the face-offs are. There is average of 69 face-offs in one game. 21 goals were scored in 3509 face-offs in 51 games. Also a small but meaningful finding was that players are not taken away from the face-off so much in the end of the game than in the earlier stages.</p> <p>The study failed to answer how much teams have pre-planned tactics and how much coaches use certain players in certain situations and against certain opponents.</p>	
<p><b>Key words</b> Face-offs, ice hockey, tactics, statistics.</p>	

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# 1 Introduction

Face-off analysis in men's ice hockey world championships 2007. The study was started in December 2007. First, it was important to think what we want from the study, and what needs to be studied. The biggest work started after deciding all the categories. It took almost a year to watch all the face-offs from 2007 world championships. From each face-off there were multiple categories that had to be watched, for example who wins the face-off, how it is won and what happens after the face-off.

Each game took at least two hours of work, most often even three hours. Each face-off was replayed two to three times, even more if needed. Still all face-offs were watched by one human, so there were situations that someone else might have interpreted differently.

After analysing six to seven games one variable was added to offensive formations category. This also means that the categories and variables were well thought beforehand as only one variable had to be added later in the process.

After analysing all the games, started the most interesting part of the study – analysing the results. Most of the results were analysed with SPSS (Statistical Package for the Social Sciences) program and few results were counted manually. Analysing the result was rather quick, as it only took few months on spring 2009. Final results were supposed to be presented in the 2009 IIHF symposium, but for unknown reason it did not happen.

Thinking of the research problems was easy, main question was how much goals come from a face-off, and the amount was rather impressive. Amount of face-offs was also one of the key questions before the study and it was an average of 69. This means that there are 69 set plays in a game – how well does your team use those opportunities?

This study also gave a change to confirm or dismiss a myth that the team who wins the games first face-off will win the game, myth dismissed. Also often people discuss that referees change the players too much in the face-offs, so one could think that the

number of player changes in 3509 face-offs would be huge but only 216 times a player was changed. Everyone can think if an average of four changes in a game is a lot.

Most difficult part doing the study was to find data with what to correlate these results, as there is no other study on face-offs that would be as large as this study is. Actually there are almost no other studies done on the subject. Some studies have analysed few games and had face-offs included, but mostly for other reasons, like how a team gets the puck or in what part of the rink a team gets the possession. Also a same kind of a study has been made in China but it is in Chinese, so not much help from there either.

Importance of a face-off is dependent on the area where the face-off is taken, and after that if the face-off is won, and where it is won, and how well the players know what to do after the face-off. This study cannot show if the face-off is won where the winning team wants to win it to, or if what happened after the face-off was practiced or not. Well practiced face-off plans are important for a team, but how much teams practice them? After a team wins an offensive zone face-off it can create an immediate scoring change. According to numbers from this study there are 44 face-offs in the end zone in one game, offensive team wins 48% of those. This means that there are almost 21 changes to score from a face-off in one game, but only an average of 8 shots was produced per game.

I hope this study increases the appreciation of face-offs, as in my opinion the meaning of face-offs is underrated.

## 2 Theoretical framework

This section will quickly introduce ice hockey as a sport and thoroughly open up what face-offs are. What are the rules around face-offs, how experts see face-offs and what responsibilities the players taking the face-off has.

### 2.1 Basics of ice hockey

The game has not changed a lot from its basics, already back in 1955 Sports Illustrated had a column “You Should Know: If You're Going To An Ice Hockey Game” written by The Know-It All.

Ice hockey is one of the fastest of all games, and to many people it is exciting simply because of the speed and action involved. Basically, the purpose of the two opposing teams is to propel a black rubber disc (called a puck) with a flat-bladed, long-handled stick past a line running across the front of each other's goal cages. When crack professional or amateur teams play it nowadays, there is a lot more than just speed and violence involved; because it is so fast a game, its finer points are not easily spotted but they are well worth knowing and looking for.

Moving the puck in hockey is restricted by the blue lines marking the attacking zone for each side. Since hockey is, like football, an "on-side" game, the puck must precede the players into the attacking zone. If a player precedes the puck into the zone his team is off-side and a face off is called. This maneuver involves dropping the puck between two players on opposing sides. The players try to slap the puck to a teammate to organize an attack. Ice hockey is usually played in three periods of 20 minutes each, sometimes with an extra, or overtime, period to resolve tie scores. A victory counts two points in hockey standings and a tie one point.<sup>1</sup> Hockey at its peak demands marvelous skating ability. As you learn about the game you will also appreciate the importance of stick work. Watch the puck and try to follow the development of a scoring play. A cleanly executed attack set up with a series of passes is a marvel of cooperation and skill. Feinting to lure the opponent out of position for the change of direction that instantaneously follows is a highly developed art. And a good goalie at work in a mix-up provides one of the most exciting sights in sports.

An unusual feature of ice hockey is its penalty setup. Fouls are called for tripping, deliberate injury, fighting, high-sticking, cross-checking, molesting officials and slashing, to name the most common. In general, a player guilty of a foul must spend an allotted number of minutes in the penalty box. Usually, no substitute is permitted, which leaves his team shorthanded. (The Know-It All 1955, p.65)

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<sup>1</sup> Nowadays the division of points differs between leagues

That gives a good preview of what to expect from an ice hockey match, and even though it is back from 1955 it is really close to what the sport is about, even nowadays.

Skating is the most important part in hockey, it is the foundation of the game and good and poor hockey players can be sorted by this one specific skill. Most of hockey skills are more effective if the player is a good skater. (Walford 1971, 3.) Hockey players who cannot keep up with the games speed have a really small chance to make it to the big leagues. Skating is an art, the basic fundamental of ice hockey. Players who are agile and fast dominate the game. (Stamm 2009, VIII, XI.)

Other main skills in ice hockey are stick handling, passing and shooting. In stick handling the main things are the touch to the puck, rhythm of hands and legs and reaction to the game. (Laaksonen, 2011, 2) Passing is the most effective way to control the game. Passing is always a skill that needs two, with one player giving the pass and other player receiving the pass. Being able to pass and receive the pass while skating is really important in ice hockey. (Varmanen) In shooting there are four different styles to shoot, a player needs to master them all to be a good player, slap shot, snap shot, wrist shot and a backhand shot. In all situations you cannot use the style you want and that is the reason why you need to learn them all. (Cyr 2008)

## **2.2 What is a face-off**

The word itself makes the first complication to the matter as there is multiple ways to write it. It can be found mainly in three different ways:

1. Face-off
2. Faceoff
3. Face off

All three forms have their supporters, NHL.com uses all three forms, face-off, faceoff and face off, dictionary.com, Wikipedia and IIHF uses face-off. (IIHF Official Rule Book, 2010; NHL.com 2010; Wikipedia, 2012) Face off is also often used as the noun

for the action. In this study I am using the term face-off, only exceptions are when citing sources that use different way of writing. Also if you write faceoff to Word, its dictionary tries to change the word to either face-off or face off. There are also other terms for the action like “faces”, “a draw”, “a drop”, “puck offs” and “bullies”. Draw being the most commonly used after face-off.

In ice hockey every time the game is started or re-started comes a face-off. Both teams send their line for the face-off and send one player to take it. A referee drops the puck between the two players taking the face-off. Players try to win the puck to their team with their stick. All the players from both teams have to be on their own side, and only two players are allowed to take part into the face-off. Both players need to put their sticks on ice before the puck is dropped. (First Base Sports, 2002, 18-19)

If there is a violation during the face-off it is done again and other or both players taking the face-off can be changed or warned.

There are nine face-off spots in an ice hockey rink, and all face-offs happen from these nine spots. Four spots are in end zones (two in each) and five spots are in the neutral zone. End zone spots have a red ring around them and rings also have restraining lines (hash marks) which mark where the players not taking the face-off may stand. In the mid-spot there is a blue ring around it, but no restraining lines as the redline goes through from the half-way of the ring. Other neutral zone spots have only a red spot where the puck is dropped. End zone spots also have two “L”-like figures for both sides and the centers need to have their both skates in the figures.

### **2.3 Keys to a good face-off**

Face-off is a special tactical situation, as it is not sure before the face-off is your team defending or attacking. Face-off is the most specific situation in hockey, with all players being still and the referee dropping the puck between two players. From face-offs you have to think both the tactical and technical point of views. Importance of a face-off is influenced by many factors, like the zone of the face-off and the time of play. (Pavlis 2007, 143, 146) Neutral zone face-offs are not as important as offensive zone face-offs as it is not easy to gain possession and position. (Thomas 2006, 14) It does



not have significant meaning where the face-off is situated but the circumstances create the importance. With the new power play face-off rules it is really important who wins the face-off as in power play the control of the puck is the main key. (Davidson, Steinbreder 2003; Koivu, J, 12.11.2010.) During the last seconds of the game a player can try to surprise and take a shot straight from the face-off. (Pavlis 2007, 151) Tactically leagues differ pretty much as in AHL and Mestis teams might not have any planned set plays. In NHL the set plays are practiced daily. In SM-league there are set plays for all situations, especially for penalty kill situations. Also lines make more plans together in SM-league. Then again in AHL players use a lot of time after practice to train face-offs and in SM-league it is really rare. (Davidson, Steinbreder 2003; Hauhtonen, J, 08.04.2011; Virtala, M, 08.04.2011.)

In an interview about face-offs with Tapio Laakso, the assistant captain of HC TPS who is also known to be a good at taking face-offs, two main assets came up, the techniques and cheating (Laakso, T, 13.04.2012). There are plenty of face-off techniques but only few are used often, also the changes in rules have taken out some of the techniques, most notable being the technique where player spins around to block the opponent and then to kick the puck back, and even this technique is forbidden it is still sometimes used (Laakso, T, 13.04.2012). The grip is big factor affecting the technique as some techniques work better with the over grip (lower hand turned the other way than normally) and some techniques works better with the under grip (normal grip of stick). Over grip gives the players better leverage but leaves the player with fewer options on the face-off. Under grip opens a lot of options but is little slower and weaker. With under grip it is possible to shoot, pass forwards, pass sideways and win the puck backwards as with over grip you can mainly win it only backwards. Also both grips give the possibility to take the face-off with speed or with power. Also commonly used style is to slash the opponents stick away and then take the puck. (Laakso, T, 13.04.2012; Pavlis 2007, 149, 161) Laakso (13.04.2012) stated that “Best player at cheating wins most face-off”. Laakso also continued to say that “most often players cheat by rotating too early.” Too often players go into the face-off and cheat, and even if they will get changed the next player taking the face-off will get away of cheating because the referee does not want to give a penalty from that. (Rosen, (2010)

An important factor outside the techniques and tactics is the player's stick, or specified the blade. A wider blade gives the player a better chance to get a contact to the puck. This was also proven by Marko Virtala, a player of HC TPS. "When I am choosing blade type for next season I have been thinking of taking a higher blade so I could win a little more face-offs. [translated from the Finnish]" (Virtala, M, 08.04.2011). During the season 2010-2011 Marko Virtala had a face-off percentage around 40. For the season 2011-2012 he changed his blade to be higher (and also practiced and concentrated to face-offs more) and raised his face-off percentage to over 50. (TPS statistics 2010-2011, TPS Statistics 2011-2012)

## **2.4 Rules of face-off**

A player needs to know the rules and the procedures almost as well as the referee does, so he knows what to do and when to do. Also the knowledge of rules helps the players to find out ways how to cheat more, and cheating is an essential part of winning the face-off. Good knowledge of rules also helps players to understand what is happening. In the next part will be presented some of the most important rules regarding face-offs, the rules presented are from the IIHF.

Rules concerning face-offs can be found in three different manuals of IIHF:

1. IIHF Rule book
2. IIHF Official's procedure manual
3. IIHF Case book

In the rule book it is presented where the face-offs are taken from in each situation, in the rule 440. Rule 440 states also all the exceptions to the rules about where the face-offs should be taken. One important point in the rule 440 is the new part of face-off rules, that a team getting a power play will also most often get a face-off from their offensive zone (IIHF 2010.) Rule 442 is also about face-offs and it explains the procedures of a face-off, like that the attacking team shall place their stick on the ice first, with the exception of mid spot face-offs when the visiting team shall place their stick first (IIHF 2010.) There is one more rule concerning face-offs at the IIHF Rule book.

It is the rule 554g, and it covers the ways how you may get a penalty from a face-off. Penalty can be given by the referees in two different situations. One possibility is that if a player has already been changed from your team on that one face-off and the second player delays on setting up and taking the demanded stand even after a warning the team shall be given a two minute minor penalty. Other option is that if a player enters the circle before the puck is dropped and a player has already been changed from his team in that one face-off. (IIHF 2010, rule 554g)

On the IIHF official's procedure manual are presented the duties of all the referees. Matters concerning face-offs are found in the part that specifies linesmen's procedures. Linesmen are responsible of making sure that both teams are set up properly outside the face-off circle and as well that the players taking the face-off are on correct positions. Linesmen are also responsible that all players are stationary before he drops the puck. Linesmen control that players do not cheat and that no-one inserts the circle ahead of time. It is very important that the both linesmen keep the same style during the whole game and the same level of tolerance is kept. (IIHF 2009, 6-11)

In the IIHF Case book can be found the most important parts for the players. In the Case book is presented all the same rules as in the IIHF Rule book, but Case book gives examples on how different kind of situations are ruled in practice. Case book also makes correctives on the rules, like for example in the rule book it is not disallowed to rotate and kick the puck during a face-off, but the IIHF Case book has a section that denies is, with some exceptions off course. IIHF Case book also defines where the face-off is taken after the puck goes in to the stands. (IIHF 2011, rules 440 and 442)

#### **2.4.1 Rule testing**

2010 NHL tested some new modification to face-off rules in NHL Research, Development and Orientation Camp. Rule testing's concerning taking of face-offs were:

1. After both centermen take their appropriate positions, the puck will be placed on the face off dot and the face off will commence on the official's whistle.
2. If a player is deemed to have committed a face-off violation, he will be required to move back and keep his skates behind a "penalty line" (1' foot further back)

which will cause a loss of leverage and therefore loss of strength for the ensuing face off.

3. If a player is deemed to have committed a face-off violation he will be chased from the ensuing face off and the non-offending team gets to pick the next centerman.

(NHL.com, 2010)

Also other rules that were concerning the position of the face-off were tested by the NHL at the 2010 Research, Development and Orientation Camp.

1. Face Off Circles in Middle of Ice. Each zone will have only one face-off circle and it will be in the middle of that zone.
2. No Change after Off Side & Face off goes back to offending team's end. A team that has been ruled off side, shall not be permitted to make any player substitutions prior to the ensuing face-off which will now be in back their own end.

(NHL.com, 2010)

All these rules were tested for one day at the camp, and some of them raised a lot of talk among the NHL general managers, head coaches and the employees of NHL. NHL's Vice President of Hockey and Business Development Brendan Shanahan said to NHL.com that the idea of face-offs starting with a whistle instead of a referees drop was interesting and making the face-off a cleaner and fairer, but also lost a lot of the scrum and diving that is involved in face-offs. Buffalo Sabres General Manager Darcy Regier also thought that face-offs are one of the biggest pieces of the game that players manipulate. Older players are best at knowing how to bend the rules and how to cheat said Regier. Washington Capitals Head Coach Bruce Boudreau was also excited and at the same time worried about the possible rule change. Boudreau, a former centerman himself, thought that the new ideas tested made the game quicker, but also created a lot more scoring chances due to the clean wins that occurred more with the newly tested rules. (Morreale, 2010a)

Second rule tested concerning face-offs got the attention of Phoenix Assistant General Manager Dave King, who saw the rule as a positive option, as it made more clean face-off wins and less scrum, creating a better face-off situation. (Rosen, 2010) On the other

hand former centermen Joe Nieuwendyk, present General Manager of Dallas Stars, was not too impressed with any of the new face-off implications, as he thought it takes away part of the battle that has been part of hockey for a long time. (Morreale, 2010b)

## **2.5 Importance and meaning of face-offs according to experts**

To get an expert's point of view, I interviewed two persons who have worked with hockey for many years, but in different levels. Both of the interviews were made in Finnish so some phrases might have lost some “colour” in the translation process;

1. Jukka Koivu – Experienced professional coach. He has coached eight seasons in SM-league, four as an assistant coach and four as a head coach. Jukka is also the father of Saku and Mikko Koivu, who both are top centers.
2. Juuso Nieminen – Young coach who has coached for many years in TPS junior organisation. (He also later got selected to coach the TPS A-Junior team for season 2011-2012 and the 1997 born National team. Juuso was also selected as the best coach in the B-junior SM-league during the season 2010-2011.)

### **2.5.1 Jukka Koivu**

Jukka Koivu, do face-offs have a significant meaning in ice hockey?

”Significant and significant, face-offs do have a huge importance on certain situations – end of periods and games, situations after power plays and penalty kills, after goals and off course also power play and penalty kill face-offs are important – solely with face-offs you cant win or lose a game. [translated from the Finnish]” (Koivu, J, 12.11.2010)

What is the most important face-off zone?

“I think that it does not have significant meaning where the face-off is situated but the circumstances create the importance. With the new power play face-off rules it is really important who wins the face-off. [translated from the Finnish]” (Koivu, J, 12.11.2010)

How much time have you used for practising face-offs with your teams earlier?

“My teams have been using absolutely too little time to practice face-offs, European hockey should learn from example in North America, where they practice face-offs daily. Somehow I always feel that I did not give enough weight for face-offs and the amount of face-off practices was too low. I dare to say that I am not the only coach who thinks the same way. [translated from the Finnish]” (Koivu, J, 12.11.2010)

Did you have any set plays for face-offs, and if you did, what was the most common?

“I always had a clear set play on penalty kill face-offs (for a won face-off), and it worked well. On the set play our weak side forward offered into the weak side corner and from there we could cleanly dump the puck and release the pressure [translated from the Finnish]” (Koivu, J, 12.11.2010)

How much did you think about opponents center or lines?

“The longer the season goes, more we were thinking which line will take face-offs against which, also certain centermen were paired up as often as possible. Off course it is difficult if opponent has a top class center on the face-offs. [translated from the Finnish]” (Koivu, J, 12.11.2010)

How do you see the home advantage if we are thinking about the face-offs?

“Home teams possibility to choose who is playing against who has a big importance, it is also partly psychology – how will the opponent react when you will all the time put certain line to play against their certain line. [translated from the Finnish]” (Koivu, J, 12.11.2010)

How would you teach face-offs?

“For tactical teaching I would use a lot of videos, for technical teaching I would use experienced players who have taken thousands and thousands of face-offs – I am sure

they know more about taking face-offs than I do. [translated from the Finnish]" (Koivu, J, 12.11.2010)

On 23.01.2011 Jukka Koivu got hired to coach TPS once again, TPS was at the last place on the league and fearfully close of heading to the relegation series. Jukka had only seven weeks of time to turn the ship, and get out of the last place. TPS finally secured the second to last position on the last games shoot-out competition and Pelicans fell to the relegation series. This also gave me a good opportunity to make a follow up interview with Jukka after the season was over. I only wanted to ask if he now used enough time for face-offs, or did he even have time to think such a small detail.

Did you use enough time to work with face-offs during the seven week span with TPS?

"No I did not use enough time. We chose for the seven weeks, where we all the time had a small conflagration on, only two to three things where we were concentrating on. Because of that the small but really important things like face-offs were oversight. And it was our meaning, not to break spots. The reality was that we had a first line where no-one could take face-offs. There you concretely noticed how important face-offs are, especially on your own zone and on the power play. With today's rules that you cannot change after an icing the importance of defensive zone face-off gets even bigger. So yes, face-offs were still oversight. [translated from the Finnish]" (Koivu, J, 7.4.2011)

Would you use more time for face-offs if you could get backwards?

"Absolutely I would, and especially if I think of the preparation period, there you have to include two to three practices only for face-offs. Not only for the centers, but also for the whole line, so they know how to react and what to do after a face-off. [translated from the Finnish]" (Koivu, J, 7.4.2011)

## **2.5.2 Juuso Nieminen**

Does face-offs have a big importance in junior hockey, and why?

“I think that face-offs are evenly important in junior hockey and in pro hockey. The matter is that if you win the face-off you also win 15 seconds of time comparing of losing the face-off and fore-checking the puck back [translated from the Finnish]” (Nieminen, J, 12.11.2010)

Which do you keep more important, defensive zone or offensive zone face-offs?

“Offensive zone and defensive zone face-offs are equally important [translated from the Finnish]” (Nieminen, J, 12.11.2010)

How much does your team use time for face-offs in practices?

“Very little, my team does not practise face-offs a lot, but the amount of practice should be increased. 5 minutes in a week is enough for the centers to develop and the lines to practice set plays [translated from the Finnish]” (Nieminen, J, 12.11.2010)

Does your team have practiced set plays for face-offs?

“My team has practiced face-off set plays for penalty kill, offensive zone and defensive zone. Also my team has just now practised a new set play for mid spot face-offs. [translated from the Finnish]” (Nieminen, J, 12.11.2010)

## **2.6 Face-off strategies and center responsibilities**

Center is one of the most important positions in a hockey team, and they have a lot of responsibilities that others do not have. Center can be loosely compared to footballs quarter back as they both carry a lot of responsibilities on strategies. (Davidson, Steinbreder 2003.)

First when a center goes into a face-off he needs to observe how the opponent has placed themselves, says Darby Hendrickson (Gophers live, FSN North). Hendrickson (Gophers live, FSN North) also notes that a center needs to communicate with his wingers and defenseman before the face-off about what he is going to do.

Patrick Burke (PlaySportsTV.com, Hockey tactics – face-offs) says that winning face-offs can be the difference in winning and losing. Burke (PlaysSportsTV.com, Hockey tactics –face-offs) also says that there are three responsibilities for a center before a face-off, first read the opponent so you know what they are going to do, second have a plan on what you are going to do and third is simple - get low.

Writer Hockeynut also gave a good answer about face-off strategies on Yahoo Answers, as he pointed out the same things as Henderson and Burke, and also added that



watching the opponents stick can already tell you what he is going to do. (Hockeynut, Yahoo Answers, 2009)

After reading the opponent comes the important part for strategies, placing your own players. “Every face-off should end up with a goal (Mcsorley, IIHF coaching symposium 2009, Tactical applications in today’s game).”

Also the position of the face-off is very important; according to Andrew C. Thomas neutral zone face-offs are not as important as offensive zone face-offs, because from the neutral zone face-offs (a-points) team rarely gains both possession and location (Thomas 2006, 14).

## **2.7 Other studies and statistics about face-offs**

There are not many studies about face-offs done before, and those that have been done are not as inclusive as this is, but still there are same kinds of results. In 2000 Mattila & Saarinen made a study from four games and they got a result of 69.5 face-offs in a game. (Mattila & Saarinen, 2000) In 2002 Kevin Allen stated in his article at USA Today that in NHL there were 67 face-offs in a game. Allen also wrote that if a team wins more that 55% of face-offs in a game the team has a 71% chance of earning points. Allen was also writing about one of the biggest moments of face-off history. In the last Stanley Cup final in 1993 Montreal tied the game in a six-on-four situation by a face-off win from Kirk Muller. Montreal ended up winning the championship. Allen also wrote that Tampa Bay coach John Tortorella told his two rising stars Vincent Lecavalier and Brad Richards to start focusing more on face-offs if they want to get more ice time. (Allen, 2002)

When looking at the top ten individuals in face-offs at NHL during season 2006-2007 (ranked by face-off percentage) eight out of ten has a better percentage at home. All ten had better percentage on power play than on penalty kill. Interesting fact is that only three players from the top ten were in the top ten when ranked by amount of face-offs. Rod Brind’Amour was the second best on face-offs by percentage, had the most face-offs (2047) with a difference of 257 face-offs comparing to the second Mats Sundin (1790). When looking at the top players by the amount, there are two players that were mentioned in Allen’s article, Lecavalier and Richards. Lecavalier was fifth by

amount, but had the lowest percentage of all players inside top 25, with 46.6%. His team mate Richards had done a little bit better by being seventh on the amount and having a face-off percentage 51.2% (NHL.com, 2006) For comparison Lecavalier and Richards had a really low percentages during the season 2001-2002 after which Tortorella told them to start improving. Lecavalier had a face-off percentage of 41.5% and Richards had a percentage of 41.2%. (NHL.com 2002)

2011-2012 season TPS kept an unofficial face-off statistic in SM-League, and found out that the number of face-offs for their team is rather small. The results are not statistically valid, but from 38 random selected games (and from witch some games lack a few face-offs) the total number was 1730 face-offs, meaning 45 face-offs in a game. That is significantly less than what was stated earlier by Allen or Mattila & Saarinen. (TPS statistics, 2011-2012)

### 3 Research Problem

It is often questioned what is the meaning of face-offs, some say that face-offs are comparable for footballs set plays and some say that face-offs meaning is minimal. How to measure if a face-off is meaningful? Is it only meaningful when you can score right after it, or is it also meaningful when you win it in your own end and can start your attack from it? Do neutral zone face-offs have a meaning? A lot of questions rose before doing the study - here are specified the most important research problems that arise before starting the study.

- 1) How often goals are scored from face-offs?
- 2) How many face-offs there are in a game?
- 3) Does the home team have an advantage because they can change later?
- 4) Does the defensive team or the offensive team win more face-offs?
- 5) What happens in the game after the face-off?
- 6) Is there a difference of face-off amounts between the sides of the ice?
- 7) Where are the face-offs won to, and how do the techniques correlate that?
- 8) What is the most common way to take face-offs?
- 9) When does an ice hockey game have most face-offs
- 10) How often do players get changed from a face-off?
- 11) What are the most common formations?
- 12) Does the power play team win more face-offs or the team on penalty kill?
- 13) What is the importance of Face-offs for the result of an ice hockey game?

After having the questions ready it was important to create a system with what we could find an answer for all of these questions. With the help of Mika Saarinen and few of my classmates I tried to think what can and needs to be measured or categorised.

## 4 Research Methods

Research was made of official game DVD's from 2007 world championships in Russia. All face-offs that were on DVD's were analysed. 19 variables were chosen to be taken from face-offs, and most of the variables were broken into smaller pieces. All the variables were thought through, so that they would give the answers that are wanted. All these variables were watched from each face-off and the result was filled into an excel sheet. If something could not be seen at first look the play was reversed and slowed. Even still there were face-offs that could not be totally analysed. Most often it was either the technique used or the formation used that was not seen on the video. There were also face-offs that happened outside the picture, so nothing was analysed from those. Next is presented all the variables and their subcategories.

- 1) Date
- 2) Home team (all teams had their own number)
- 3) Away team (all teams had their own number)
- 4) Time (divided into five minute sections)
- 5) Strength of home team
  1. Full strength
  2. Power play (also 4-3)
  3. Power play +2
  4. Power play +2 + pulled goalie
  5. Short handed
  6. Short handed -2
  7. Short handed -2 + opponent goalie pulled
  8. 6-5
  9. 4-4
  10. 3-3
- 6) Area
  1. Neutral zone offensive team left side
  2. Neutral zone offensive team right side
  3. Middle

4. Offensive zone offensive team left side
5. Offensive zone offensive team right side
- 7) Handed offensive team
  1. Right
  2. Left
- 8) Handed defensive team
  1. Right
  2. Left
- 9) Face-off won by
  1. Offensive team
  2. Defensive team
  3. Draw
- 10) Face-off won by
  1. Home team
  2. Away team
  3. Draw
- 11) Puck got by
  1. Home
  2. Away
- 12) Face-off won with
  1. Forehand
  2. Backhand
  3. Other
- 13) Face-off won to
  1. Backwards left
  2. Backwards right
  3. Backwards straight
  4. Front left
  5. Front right
  6. Side left
  7. Side right
  8. Shot
  9. Other

14) Technique used by the winner

1. Forehand speed (Face-off won only with stick speed)
2. Forehand force (face-off won by turning with force)
3. Backhand speed
4. Backhand force
5. Draw (Face-off was draw if the puck was left between the face-offers for more than 3 seconds)
6. Backhand stick (Player takes opponent stick away first and then takes the puck)
7. Forehand stick
8. Other

15) Change of the player taking the face-off

1. no
2. yes, offensive team
3. yes, defensive team
4. yes, both

16) What happens after winning the face-off

1. Goal
2. Shot
3. Dump
4. Keeping possession
5. Losing possession
6. Other

17) Formation of offensive team (17 different formations were chosen before the study, and one was added later, option “other” was also included)

18) Formation of defensive team (17 different formations were chosen before the study, and one was added later, option “other” was also included)

19) Trick play

1. Yes
2. No

Trick plays were impossible to spot without knowing them beforehand. Teams can have multiple plays for multiple lines and they might be used only once in a game. It is

difficult to see if the play after a face-off was pre-planned or if it was random. Category 19 was dropped out in the half way of the research.

Formations were also very difficult to observe, because players movement of only a meter can make it totally different for the opposition team to play against. It was also easy to note after the study that formations are not so important, but what happens from the formation is important. Same formation can be used in multiple ways, like in football - basic formations can be split into multiple plays.

After collecting all possible data into excel, it was transferred to SPSS (Statistical Package for the Social Sciences) and with the SPSS program most of the results were founded. Small parts of the results were taken manually, for example comparing each games statistics to results. After the numbers were analysed with SPSS they were taken out as tables and then turned in to the figures that are used in the results. There were also many face-offs that were not seen on game DVD's but still happened, so from those face-offs there are no other data than that the face-off happened. Also few minutes from one game was missing completely. All the presented percentages are the valid percentages that SPSS have counted. For an example the formation D2 was used 1276 times, which means 57.58% from all 3509 face-offs. From 3509 face-offs 169 were seen in a video so that the formation could not been analysed so the valid percentage for the formation D2 is 62.33%.

## 5 Results

With these results I show everything that was possible to find out with the categories and variables I had in use. Some of the results are not as important as others, and some results ended up being even more surprising than thought before starting the study.

### 5.1 Actions after face-offs and the efficiency of face-offs

The study was made from 51 games in 2007 world championships and in those games 21 goals were scored from face-offs. The number of goals is rather big, but still could be a lot higher, as the teams also managed to get 389 shots right after face-offs. (Figure 1) A missing detail on the study was to follow up the shot, did it create a scoring chance or not. There were a total of 3509 face-offs in the 51 games that were analysed. Even though a part of one game was missing from the DVD's the result is statistically valid. This gives an average of 68.8 face-offs in a game. I rounded the number up, so 69 is the number I'm going to use in this study.

Before the study I was thinking that what happens after the face-off is the most important result that will be gained. Most of the time, 61%, the team that wins the face-off, will gain and keep possession of the puck. Though it fails to prove what the team does with the possession. With today's trend of possession hockey it has to be a good thing though. Also often the defensive team or the team that is on penalty kill uses a dump<sup>2</sup> right after the face-off. Another situation for a dump is in offensive part of the neutral zone face-offs. 439 (13%) face-offs out of 3509 ended up in a dump. 389 shots came from 1518 face-offs won by the offensive team, so 25% of all face-offs that the offensive team wins ends up in a shot. All those offensive team face-off wins are not in the offensive zone, so that even increases the procentual amount of shots taken right after the face-off. Smallest number, with the biggest meaning is goals. 21 (1%) goals from 3509 face-offs does not sound like much, but 21 goals in 51 matches already

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<sup>2</sup> Dump = Team having the possession of the puck shoots the puck away from their zone to release the pressure on their zone, or shoot the puck from neutral zone to be able to give pressure to the opponent.



sounds a lot more. Also as seen in Figure 1, 277 times after winning the face-off a team will lose the possession after a steal from the opponent. Also the part “other” had a big part, as in 5% of all the face-offs something happened that was not categorized, for example the puck went over the glass to create a new stoppage or a penalty was rewarded, also few times the period ended right after the face-off resulting one more “other” to the study.

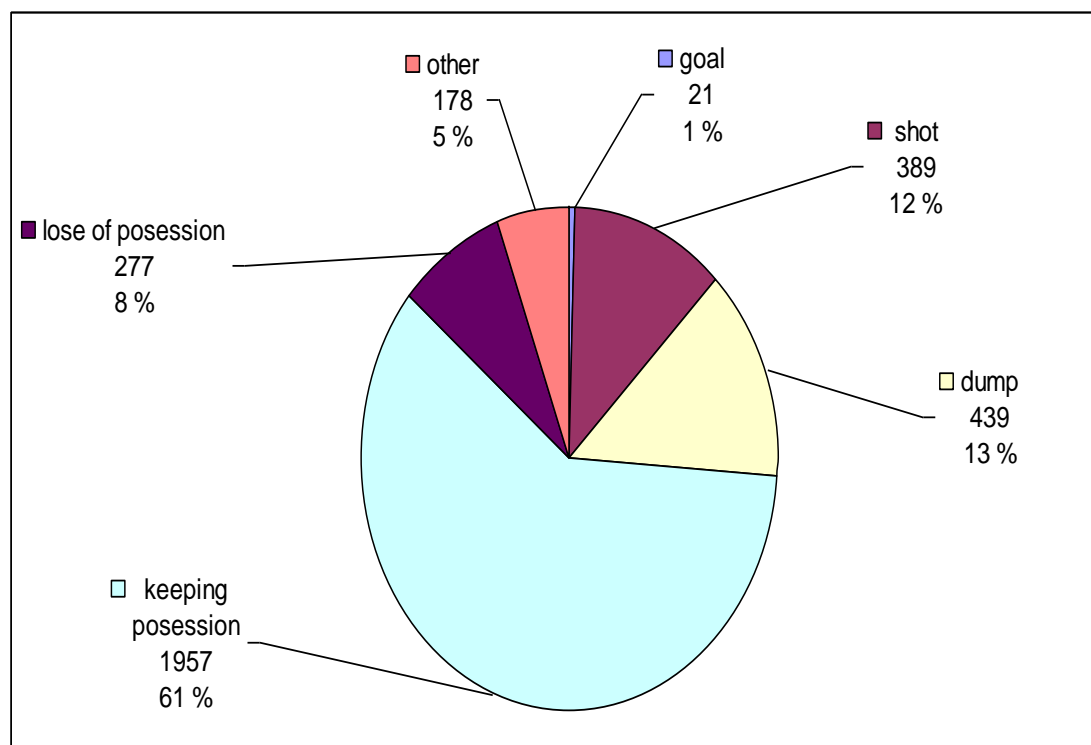


Figure 1. Actions after face-offs

## 5.2 Advantages of the home team and offensive team

Does the home team have an advantage due to the option of changing last? This question we cannot get a sure answer from the data collected, but the data gives some guidance towards the truth. Home team wins 4% more face-offs than away team does (Figure 2). This fact is hinting that because of the last option to change, home teams have a slight advantage as they can choose who is taking the face-off.

209 face-offs out of 3509 were draws<sup>3</sup> (Figures 2&3). In figure 2 the part of draws is not so meaningful, but at the figure 3 that is comparing offensive against defensive face-offs, draws already do have a meaning. Statistically it looks like offensive team would be better at face-offs as they have a winning percentage of 48 but I disagree. A draw is better for the defensive team than for the offensive team as the offensive team does not get an immediate scoring chance. Defensive team wins 46% of face-offs and 6% are draws, so in 52% of all face-offs the defending team gets an edge. Other factor that cannot be seen in here is that 8% of the face-offs end up in a situation that the winning team loses the puck (figure 1), most of these situations happened in the end zone face-offs when defensive team won the face-off, but offensive team got the puck. Off course those actions happened in other zones as well, and also the other way around. Short answer to the research problem cannot be given and we can all twist the numbers the way we like to, but still the only sure thing we have is the answer from the facts, offensive team wins 48% and defensive team only 46%.

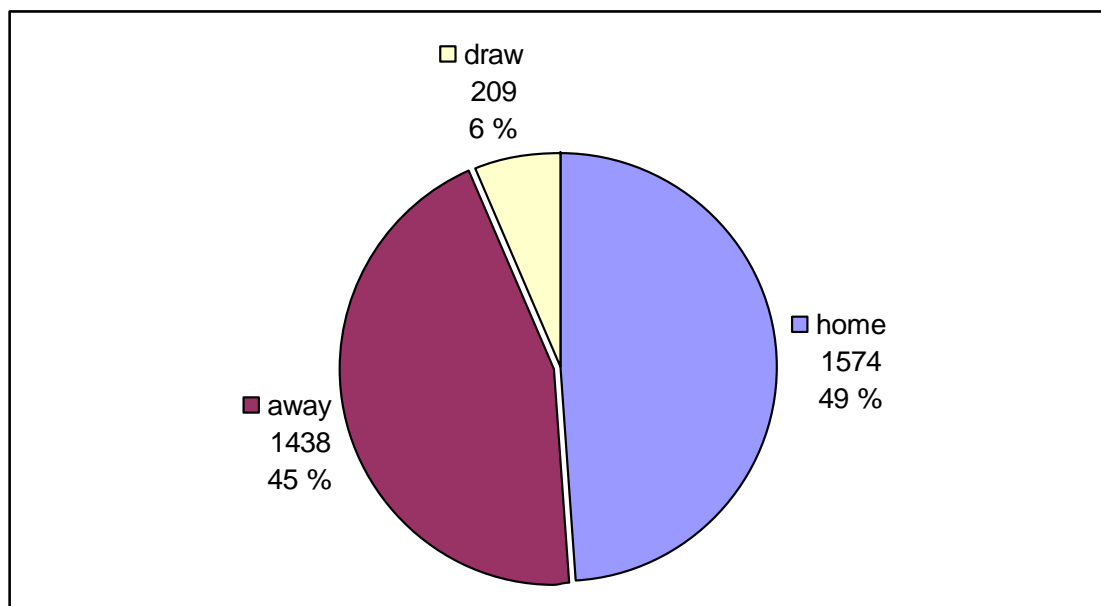


Figure 2. Home teams and away teams winning percentages in face-offs.

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<sup>3</sup> In NHL draws are not counted while doing face-off stats, neither are they in Finland. In this study the definition for the draw was that if the puck was left between the face-offs for more than 3 seconds the face-off was marked as a draw.

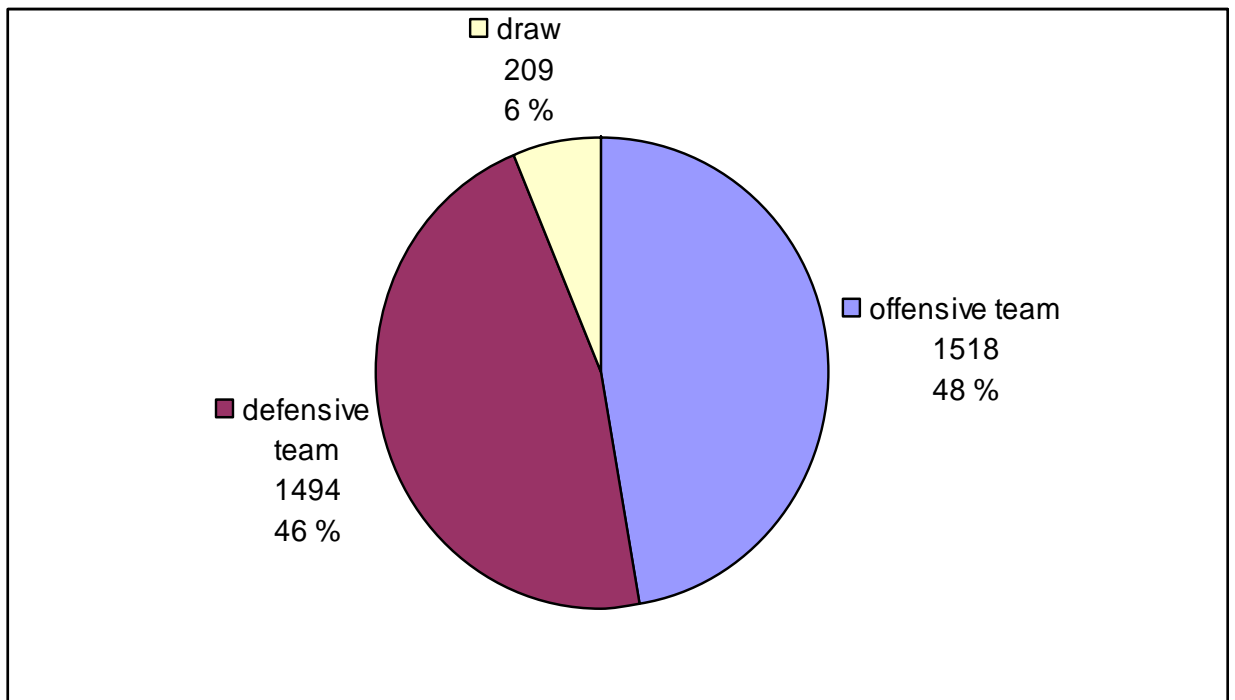


Figure 3. Face-off percentages of the defensive team and the offensive team.

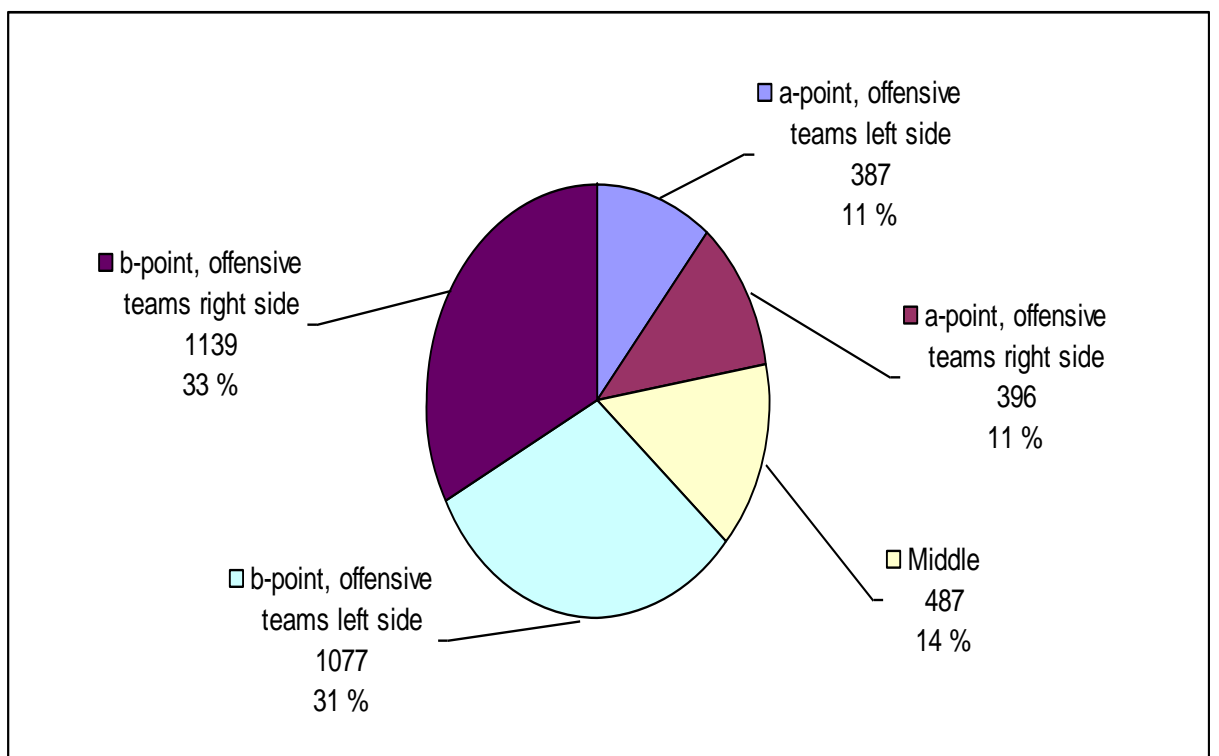


Figure 4. Location of the face-offs

### **5.3 Locations of the face-offs**

As seen in figure 4, there is only a slight difference on what side the face-offs are taken from. Neutral zone face-offs have a difference of 9 face-offs (0%) and end zone face-offs have a difference of 2% and 62 face-offs. Also a fact that can be seen from figure 4 is how the face-offs are split between neutral zone and end-zone. 64% of all the face-offs are taken in the end zone. This again proves the importance of face-offs, as a lot larger part of face-offs are taken from an area that the team has the possibility to gain possession and position. Also the mid-spot face-off is more common than the left or the right neutral zone points. 156 of the 487 mid-spot face-offs were the start of the period face-offs.

### **5.4 Techniques correlation to where the face-offs are won**

During the study it seemed that almost all of the face-offs are won with backhand. Well at least 58 percentages of the face-offs are won with backhand as seen in figure 5. We can see the same trend in figure 6, where most of the face-offs (37%) are won back left and back right (29%). Left players who win with backhand did most often win the puck back left and right players did the opposite. Still this does not tell us the whole truth as left players can win back right with their forehand, and the other way around. So only a conclusion can be made, but nothing can be statistically proven with these results. Only if all the players taking the face-off would play from the same side figures 5 and 6 could be used as the real truth how the direction of the win correlates with the side of the blade used and the technique used. Also as seen in the figure 5, 8% of the face-offs are not won with backhand or forehand, those face-offs are either won by foot (even though it is not accepted by the rules) or end up in a draw. Also on average at least once in a game the face-off is won forwards, this happens most often in the neutral zone, as by this way the offensive team has the possibility to gain possession and position. Winning face-offs to side was also very common way to win face-offs as 14% of all face-offs were won to sides. This seemed to happen most often at the offensive zone power play face-offs as the teams won the face-offs on the board's side so they could start building up their power play from there.

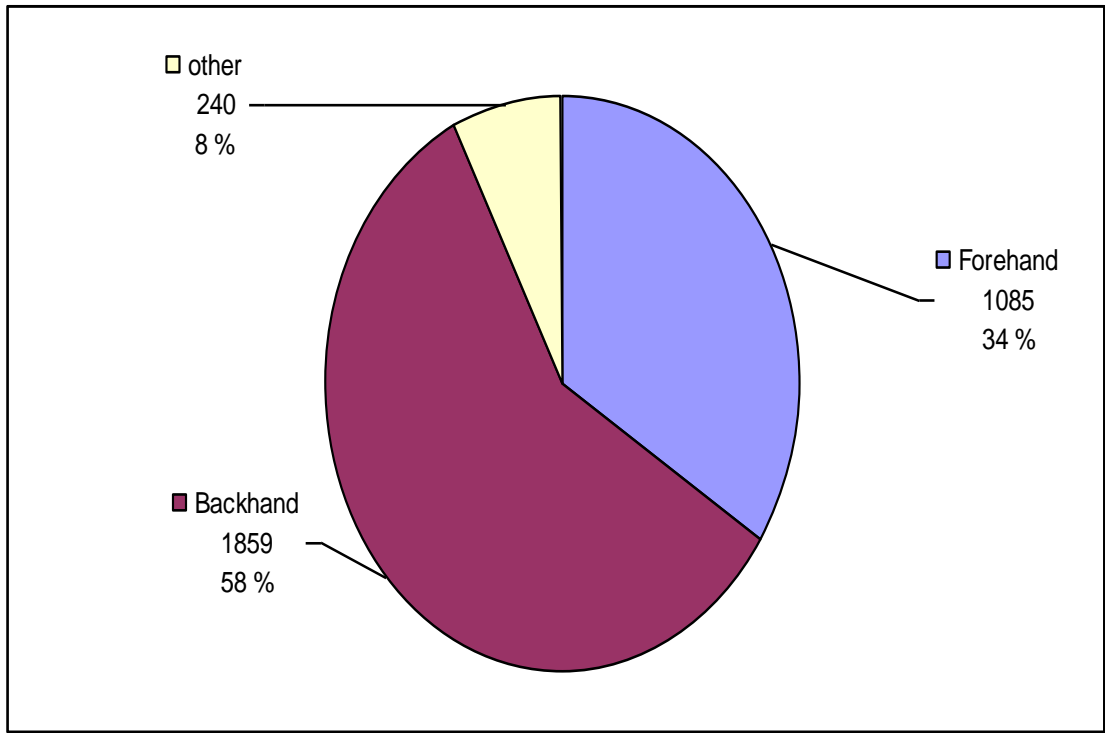


Figure 5. Backhand / Forehand percentages

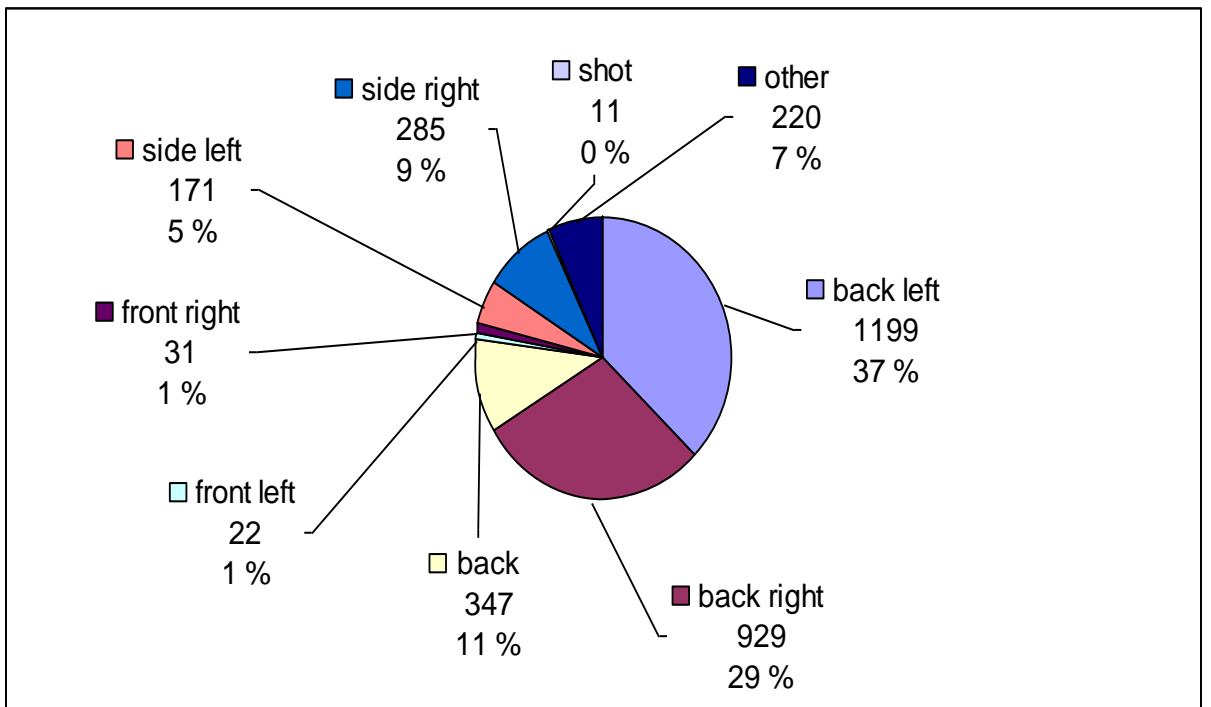


Figure 6. Directions to where face-offs are won to

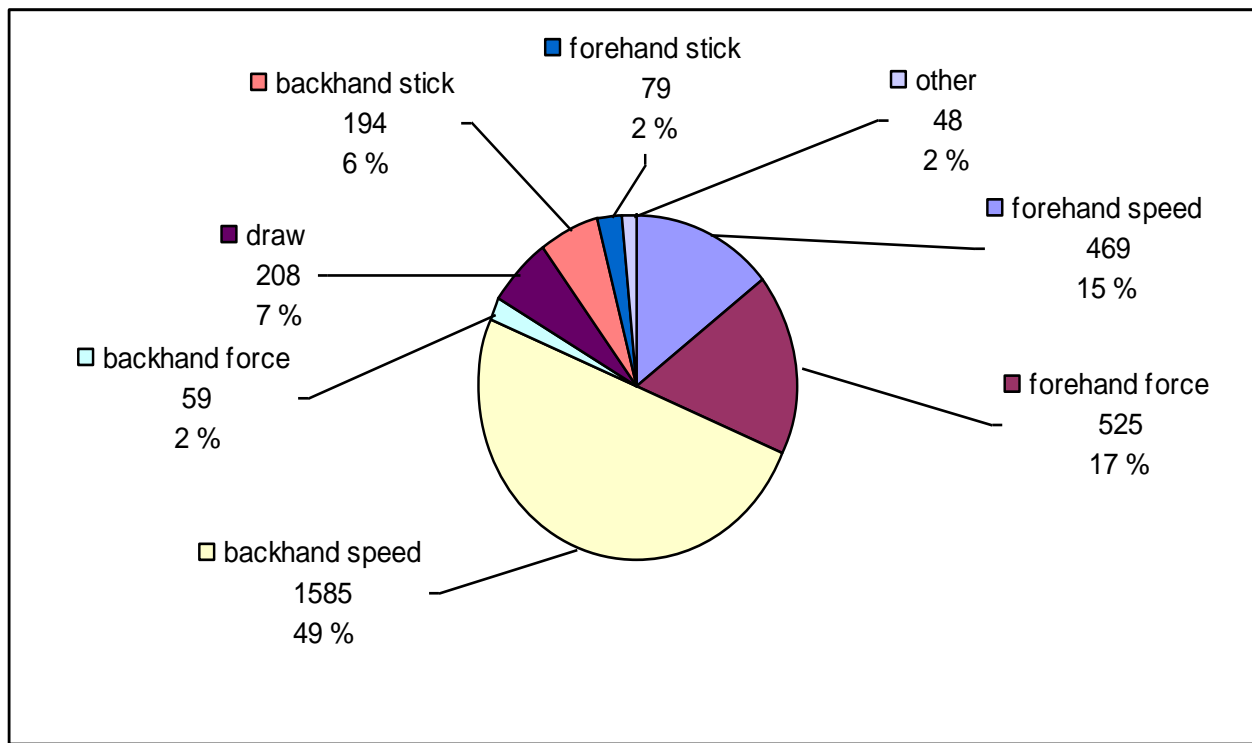


Figure 7. How the face-offs are won

### 5.5 How the face-offs are won

Most common way to take face-offs was to win it with backhand using the backhand speed technique. Figure 7 confirms that backhand was almost only used to win face-offs backwards, as it is really hard, almost impossible, to win a face-off forwards with backhand speed technique. Figure 7 also tells us that forehand technique gives you a lot more options to choose from, and makes you less readable. The change of rules that spinning during the face-off is denied can also be figured out in these results as the force technique ended up having a far less smaller part than expected before the study. One more data that could have been collected in the study is how many times a player succeeds in what he is trying to do.

### 5.6 Player changes and time distributions in face-offs

The amount of player changes was one of the most surprising results on this study. Before the study I was almost sure that the amount of player changes in face-offs

would be far greater. As we see in figure 8, the number is rather small, only seven percentages. This demolishes the illusion that referees change players too easily and too often. There is also a noticeable difference in defensive teams and offensive team changes, as defensive team got changed 39 more than offensive team.

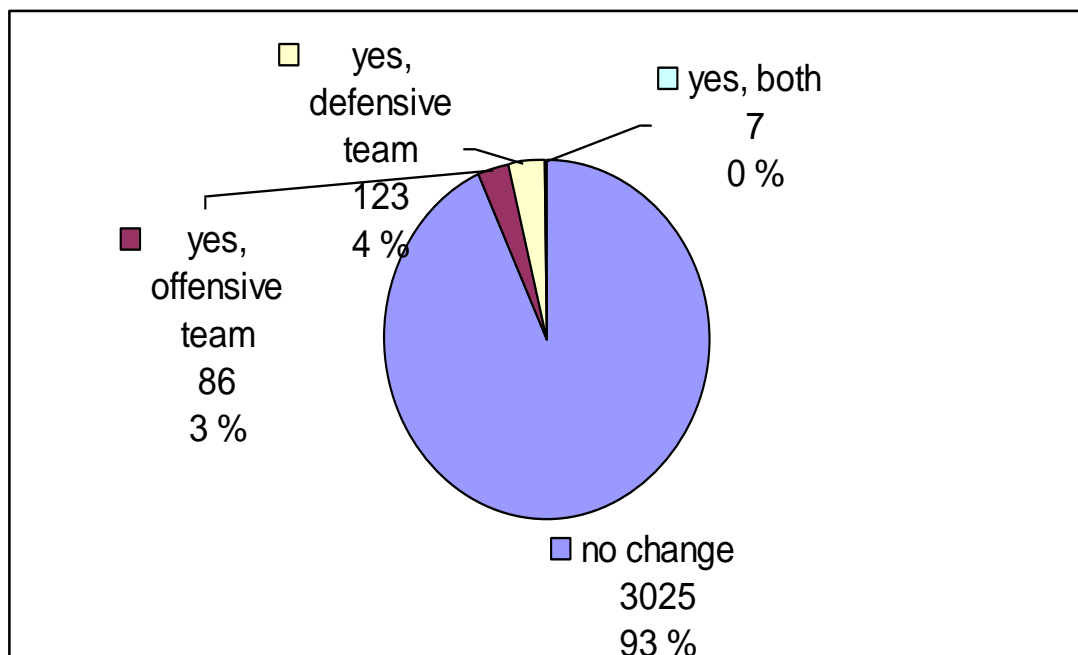


Figure 8. Percentages of player changes in face-offs

Also a surprising result was that players are not taken out of the face-off so easily in the end as seen in figure 9. Mostly players are changed in the half way of the game between 25 minute to 30 minute and 30 minute to 35 minute time zones, 21 times both zones. In the last five minutes of regular time only 8 times players were changed. Does this tell us that the referees hesitate to take a player out or do players act differently? Also interesting is that there are only two time zones when offensive team gets changed more often, from 10-15 minutes and from 20-25 minutes. Change of a player in a face-off also gives a huge advantage for the team whose player has not been changed. When offensive player was changed the defensive team won 64% of the face-offs and 6% ended up in a draw. Other way around when defensive player was changed the offensive team won 51% of the face-offs and 12% ended up in a draw. This tells that defensive team second players did better than the offensive team players. This can also show that players and coaches keep defensive zone face-offs more important, often having two players who are able to take the face-off in play.

Time distribution of face-offs was also studied, but there were no significant changes. Only noticeable factor is that number of face-offs decrease when closing to the end of a period and increase in the first 5 minutes of a period. This can also be a small reason behind the lower number of player changes in the last five minutes as there are less face-offs.

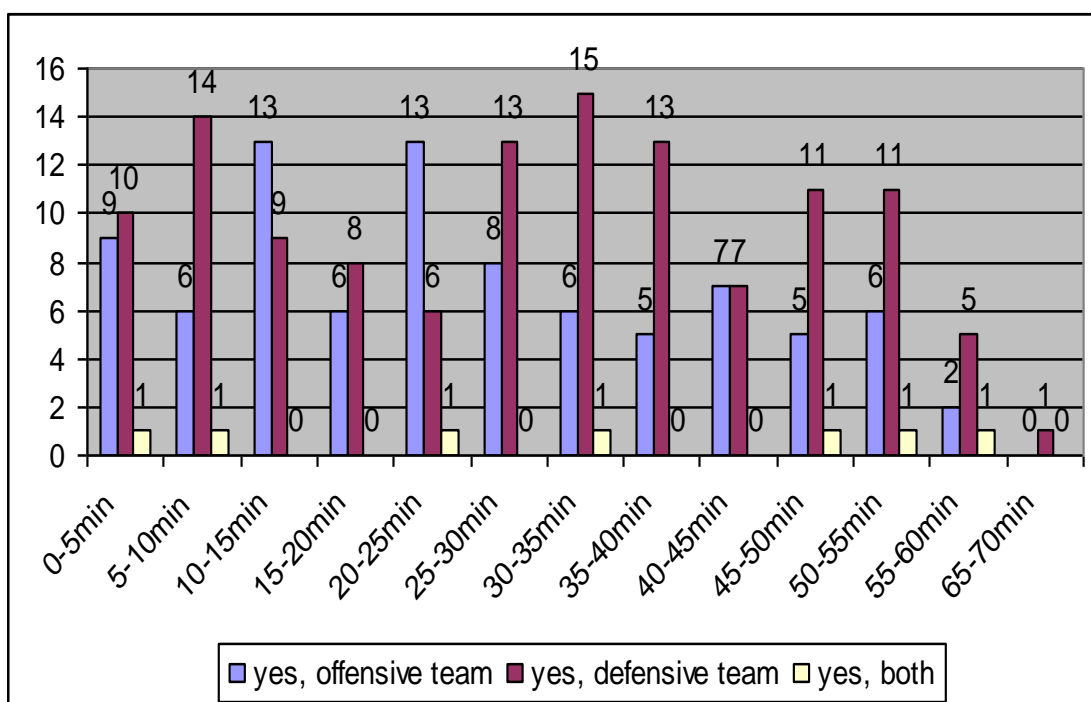


Figure 9. Numbers of player changes in face-offs with five minute time zones

### 5.7 Most common formations

Formations were thought to be one of the biggest key of the puzzle before the study. During the study I noticed that even a small change in the formation created a totally different set of possibilities, and those changes I could not categorize. The meaning of formations ended up being rather small in this kind of a study. Both in defence and in offence there were few formations that were the most used. Not many teams used special formations. Also it seemed to be that the formation it self was not that important, but what happened from the formation after the face-off was the more important part. Also the slight differences in the same formations ended up having a bigger role than thought before the study. This decreased the meaning of this part of the study.



O1 (Figure 10) was the most used offensive formation with 81% of all offensive zone face-offs. 47% of face-offs taken with O1 were won. Second most used offensive formation was O5 with only 3% and the most successful offensive formation was O2 with success rate of 55%, but it was only used 38 times. Offensive zone face-off formations were used both in power play and full strength.

In defence formation D2 (Figure 11) was the mostly used formation with 63% and it had a success rate of 46%. D3 was the most successful defensive formation as 60% it ended up with a win, but it was only used 45 times. PK3 (Figure 12) was the second most used defensive formation with 29% and had a success rate of 43%.

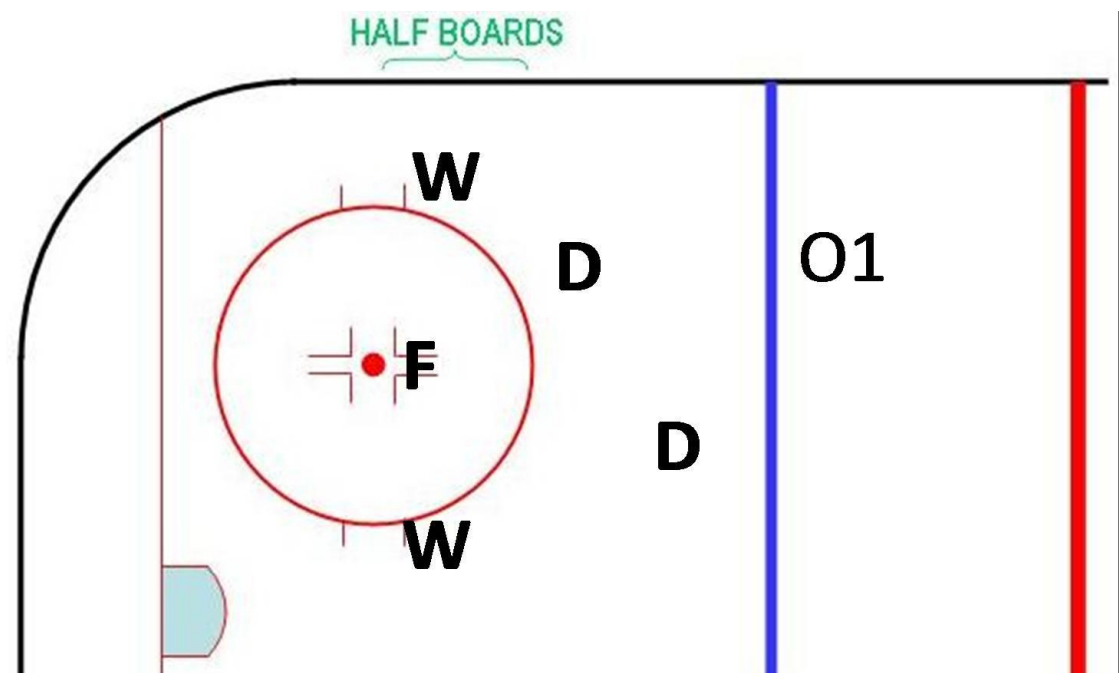


Figure 10. Formation O1

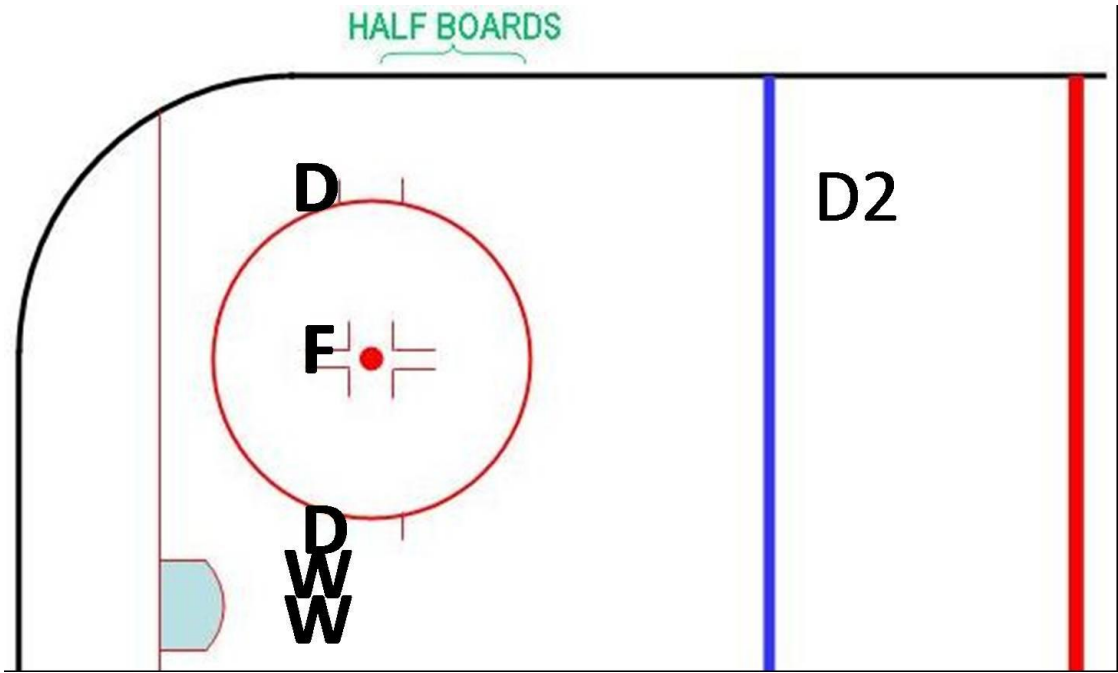


Figure 11. Formation D2

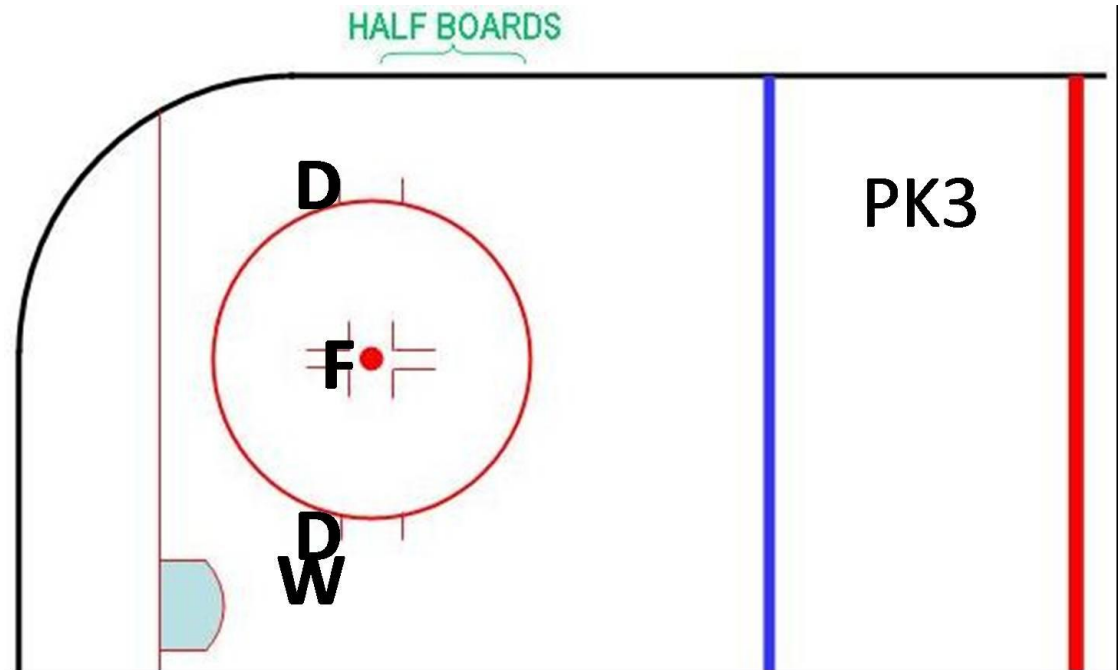


Figure 12. Formation PK3

## 5.8 Power play team has an edge

Table 1. Special situation face-offs by home team

<b>(Dis)Advantage</b>	<b>Won</b>	<b>Lost</b>	<b>Draw</b>	<b>Total</b>
'+1	250	210	40	500
'+2	31	17	2	50
'+3	1	0	0	1
'-1	190	207	15	412
'-2	15	27	6	48
4on4	75	68	5	148
3on3	0	1	1	2
<b>Total</b>	<b>562</b>	<b>530</b>	<b>69</b>	<b>1161</b>

Table 2. Power play face-offs by power play team

<b>Advantage</b>	<b>Won</b>	<b>Lost</b>	<b>Draw</b>	<b>Total</b>
'+1	457	400	35	892
'+2	58	32	8	98
<b>Total</b>	<b>515</b>	<b>432</b>	<b>43</b>	<b>990</b>

During power play the meaning of face-offs increase, even though the new rule that after a penalty the power play team gets to start with offensive zone face-off (with few exceptions, presented in the rules section) was not yet used in 2007 world championships. As shown in Figure 1, most often the team that wins a face-off gains the possession of the puck, and it is really important for the power play team. When the team playing short handed gains the puck they are able to clear out pressure, and spend time out of the clock by dumping the puck. For some reason the team that is playing power play wins a lot more face-offs than the team playing shorthanded, as Table 2 shows, power play team wins 457 face-offs when playing five against four and the shorthanded team wins only 400. Table 2 also shows that on five against three power play team wins 58 face-offs and shorthanded team only 32. Again the draws can a little bit even up the results as specially during power play a draw can be counted in favour of the short-handed team.

Also it is interesting to notice that home teams have a lot more five-on-four power play face-offs than the away teams do as home team has 500 power play face-offs and away team has only 412 as seen in Table 1. Can this result hint that the referees favour the home teams? Five-on-three power play face-offs were pretty even as home teams had 50 and away teams had 48 five-on-three face-offs as seen in Table 1.. Other inter-

esting fact is that one third (1161 out of 3509) of all face-offs are special situation face-offs.

## **5.9 Face-offs Meaning for the Result**

Face-offs sure do have a meaning for the result of a game, many of the facts presented before do back that up, but there were also other findings that prove it. It is often said that winning the first face-off is important, it shows the team is ready for the game, but the stats do not back that up, as only 23 times (out of 50) the team that won the first face-off won the game. When looking the same thing from each period, nothing changes, as team that won the periods first face-off won 57 periods, tied 39 and lost 53.

Team that won more face-offs during the whole game won 31 times (out of 51), so there we can already see that winning face-offs helps you to win. Biggest difference was seen when a team won at least twice as many face-offs than the opponent, with 6 wins out of 7. The only team losing with such a big margin was Finland who lost to Russia in the preliminary round 4-5, even they won 40 face-offs out of 53.

Home advantage gives teams an upper hand in the face-off circle too, as 12 teams out of 16 had better face-off percentage at home, six teams had more than five percentage better success rate with home advantage as seen in Table 3. Table 3 also shows that home advantage was seen in the results as 39 times home team won the game and only 17 times the away team won.

Biggest meaning of the game is to score goals, and well trained face-off plan can create a scoring change. 21 goals and 389 shots from face-offs in 51 games is a lot. It means an average of eight shots in each game, but still not enough if compared to chances. There were an average of 44 end zone face-offs in a game, and the offensive team won 48% of those. This means there are 21 won offensive zone face-offs in a game, so only 38% of those end up in a shot or a goal.

Table 3. Face-off and game statistics by team

World ranking	Team	% @ H	Won @ H	% @ A	Won @ A	Ranked in tournament
1	Swe	49,8	4 / 5	43,8	2 / 4	4
2	Can	54,6	6 / 6	48,9	2 / 2	1
3	Fin	58,2	2 / 3	50,3	4 / 6	2
4	Cze	43,2	1 / 3	51,3	1 / 3	7
5	Rus	46,7	6 / 7	32	2 / 2	3
6	Svk	50,4	2 / 2	46,9	1 / 4	6
7	Usa	51,6	4 / 5	48,5	0 / 1	5
8	Sui	43,8	3 / 4	46,1	0 / 3	8
9	Blr	37,1	0 / 2	38,6	0 / 3	11
10	Lat	44,9	2 / 3	42,8	0 / 2	13
11	Ger	44	1 / 2	45	2 / 3	9
12	Den	50	0 / 1	45,6	1 / 4	10
13	Ita	49,2	0 / 1	44,2	0 / 4	12
14	Nor	55,1	1 / 2	44,6	1 / 4	14
15	Ukr	41,4	1 / 2	35,7	0 / 3	16
17	Aut	51,1	1 / 2	47,1	0 / 3	15

## 6 Conclusion

This study was made to find out how big part of the game face-off really is, and can you see the importance of face-offs in the results. Are there other benefits on winning a face-off than scoring straight from it? Some issues can be proven with these statistics, but mostly this study, being the first of its kind, raised more questions than answered. Hopefully this research will work as an eye-opener for the people around ice hockey. Face-offs should be thought as an important part of the game, not just as an obligatory evil. Face-offs are part of the game that could be studied more and practised better.

The research was able to prove that an average of 40% of the games have a goal scored straight from a face-off, also eight shots come right after a face-off in each game. The study also proved that home teams do have an upper hand on face-offs. Interesting fact also is that the power play team has significantly better face-off percentage. Also the importance of face-offs can be seen in the result as well. The team winning more face-offs in a match won the game in 61% of the games studied. Still the main part behind all the done statistics is the player taking the face-off, as this study proves that the formations do not give huge advantages. With all the styles and all the formations you are able to win so only three persons have a true impact for the result of the face-off – two players taking the face-off and the referee dropping the puck. The players have the greatest impact, what kind of a pose they take, how they place their stick, how well they read what their opponent is trying, how much they can cheat, how their timing succeeds and also what kind of a blade they are using. Referees main job in the face-off is to create a fair drop, with both players situated correctly, and see that there is no cheating involved.

Face-offs do have a great meaning for the game. I believe this study proves it, but still all the questions are not answered. Is there a difference with club teams and international teams? Club teams have more time to practice, and they know their opponent better so they might know how to get an advantage in the face-off circle. Or does the better level of knowledge lead in to the fact that the advantages disappear? Also a great deal affecting on face-offs is the team's style of play, as teams playing puck possession

hockey have less face-offs in a game, I assume. New study is needed, so a comparison can be done. It also would be nice to see a comparison between leagues. Maybe even if there is a difference between juniors and men. Perfect study to see face-offs importance could work like this;

Find two even teams that would play three games. In the first game team A would get the puck after every face-off. In the second game team B would get the puck after every face-off. In the third game face-offs would be played normally.

One big problem in a study like that would be the mental side and other problem would be that the players would not react naturally to the face-off as they know how it will go. On the other hand this kind of a study could show the real importance of face-offs.

A lot of specialities or tricks happened when watching the face-offs, but those I could not analyse with the categories I had, and that could also be a base for a new study.

One trick that stood up was interesting;

Team puts two players who normally take face-offs on ice. First one taking the face-off tries to cheat and the same time tries to get the opposition player changed from the face-off. If he gets changed out the other player takes the face-off and nothing is lost. If he wins with a little cheating they get the puck and if he gets the opponent changed he again has an upper hand to the opponent. This trick could be used also in a different way with the new rule on icing, no change after icing, by having the first player taking the face-off intentionally be switched out and win more time for the players on ice to catch a breath.

Biggest thing this analysis is missing about face-offs is how to improve team performances on a face-off circle. This study was not able to answer any questions concerning formations, as even the slightest change of position makes the formation different. In this study the formations were in some ways over looked, as the little changes were not analysed. These results do not give any winning formula, and maybe even proves that there is no winning formula.

With all this being said, it is not easy to make a short sum up. The game of hockey is never going to be simple, and even face-offs are called as “the set-plays of hockey” you

can never control all the variables in it. Hopefully these findings help on controlling some of the variables, and at least raises more conversation about face-offs.



## Bibliography

Allen, K. 2002. Reputations made, games won, lost in the faceoff circle. USA Today 19.11.2002

Cyr, D. 2008. Ice hockey skills. URL:  
<http://sportales.com/hockey/ice-hockey-skills/> Quoted: 15.04.2012

Davidson, J, Steinbreder, J. 2003. Hockey for dummies. 2. Wiley publishing inc. New Jersey. URL:  
<http://books.google.fi/books?id=qTGzfhIQMIIC&pg=PT139&dq=face-offs+power+play&hl=fi&sa=X&ei=ZWYyJT6DhG4nR4Qs9oXSCQ&ved=0CDkQ6AEwAQ#v=onepage&q=face-offs%20power%20play&f=false> Quoted: 14.04.2012

First Base Sports. 2002. Ice Hockey Made Simple, A Spectator's guide. 4, First Base Sports Inc., Los Angeles. URL:  
<http://books.google.ca/books?id=XrhMDHrpAa4C&lpq=PP1&dq=Ice%20hockey&pg=PP1#v=onepage&q&f=true> Quoted: 02.04.2011

FSN North. 2008. Woog and Hendrickson on hockey faceoffs. URL:  
<http://www.youtube.com/watch?v=2YHAEz08u7U> Quoted: 25.07.2009

Hauhtonen, J. 08.04.2011. Player of HC TPS. Interview. Turku.

Hockeynut. 2007. What is the strategy on a face off?. URL:  
<http://answers.yahoo.com/question/index?qid=20071203094856AAEXsBR> Quoted: 20.07.2009

IIHF. 2009. The IIHF Officiating Procedures Manual. Section 5. Pages 6-11. URL:  
<http://www.iihf.com/iihf-home/sport/officials.html> Quoted: 08.08.2010

IIHF. 2010. The Official IIHF Rule Book 2010-2014. Rules 440, 442 and 552. URL:  
<http://www.iihf.com/iihf-home/sport/iihf-rule-book.html> Quoted: 10.11.2010

IIHF. 2011. The IIHF Case Book 2011-2012. Rule 442. URL:  
[http://www.iihf.com/fileadmin/user\\_upload/PDF/Sport/Case\\_Book\\_-\\_2011\\_-\\_12.pdf](http://www.iihf.com/fileadmin/user_upload/PDF/Sport/Case_Book_-_2011_-_12.pdf) Quoted 12.04.2012

Koivu, J. 12.11.2010. Executive manager. TPS Junior ice hockey. Interview. Turku.

Koivu, J. 07.04.2011. Head coach. HC TPS. Interview. Turku.

Laakso, T. 13.04.2012. Player. HC TPS. Interview. Turku

Laaksonen, A. 2011, Jääkiekon lajiansalyysi ja valmennuksen ohjelmointi. [Ice hockey's sport analysis and programming of coaching], VTEA008. URL:  
<http://urn.fi/URN:NBN:fi:ju-2011041510651> Quoted: 15.04.2012

Mattila, P & Saarinen M. 2000. Jääkiekon Lajitekniikan Opettaminen [Teaching Ice Hockey's Playing Skills], AMVT. Page 18.

Mcsorley, C, 2009. IIHF coaching symposium, Tactical applications in today's game. Zurich. Video of symposium available for registered users. URL;  
<http://www.iihce.fi>

Modern Language Association (MLA), 2011, "faceoff." Dictionary.com Unabridged. Random House, Inc. URL:  
<http://dictionary.reference.com/browse/faceoff> Quoted: 02.04.2011

Morreale, M. 2010(a). Changes on faceoffs drawing differing opinions. URL:  
<http://www.nhl.com/ice/news.htm?id=536128> Quoted: 28.03.2012

Morreale, M. 2010(b). NHL.com's Camp Research Blog. URL:  
<http://www.nhl.com/ice/news.htm?id=536011> Quoted 29.03.2012

NHL.com. 2002. Player stats. Season 2001-2001. Face-offs. URL;  
<http://www.nhl.com/ice/playerstats.htm?season=20012002&gameType=2&team=TB&position=S&country=&status=&viewName=faceOffPercentage> Quoted:  
03.04.2012

NHL.com. 2006. Player stats. Season 2006-2007. Face-offs. URL:  
<http://www.nhl.com/ice/playerstats.htm?gameType=2&position=S&season=20062007&sort=totalFaceOffs&status=A&viewName=faceOffPercentageAll> Quoted:  
03.04.2012

NHL.com. 2010. 2010 NHL Research, Development and Orientation Camp. URL:  
<http://www.nhl.com/ice/page.htm?id=63841> Quoted 24.03.2012

Nieminen, J. 12.11.2010. Coach and member of the clubs head of coaching staff. TPS Junior ice hockey. Interview. Turku.

Pavlis, Z. 2007. Hockey training for kids. Meyer & Meyer spot ltd. UK.

PlaySportsTV. 2010. Hockey Tactics: Face-offs, URL:  
<http://www.youtube.com/watch?v=gG0FzLh18Ik> Quoted: 12.11.2011

Rosen, D. 2010. NHL.com's Camp Research Blog. URL:  
<http://www.nhl.com/ice/news.htm?id=536011> Quoted: 24.03.2012

Stamm, L. 2009. Laura Stamm's power skating. 4. Human kinetics.

The Know-It All. 1955. You Should Know: If You're Going To An Hockey Game. Sports Illustrated, 2, 4, 65.

Thomas, A. 2006. The Impact of Puck Possession and Location on Ice Hockey Strategy. Journal of Quantitative Analysis in Sports, 2006, 2, 1, article 6.

Unofficial TPS Statistics. 2010-2011 season. 24.03.2012. Unpublished

Unofficial TPS Statistics. 2011-2012 season. 24.03.2012. Unpublished

Virtala, M. 08.04.2011. Player. HC TPS. Interview. Turku.

Varmanen, J. Syöttäminen luistelusta luisteluun.[Passing from skating to skating]  
Available for registered users at URL: [www.iihce.com](http://www.iihce.com) Quoted: 15.04.2012

Walford, G. 1971. Ice hockey: an illustrated guide for coaches. Ronald press co.

Wikipedia. 2012. Face-off. URL:

<http://en.wikipedia.org/wiki/Face-off> Quoted: 31.03.2012