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Attacking styles for Tromsø IL- A study of goals and how Tromsø IL score goals.

-An investigation for classifying goal scoring patterns and scoring efficiency.

A case study of Tromsø Idrettslag.

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Abstract

Attacking styles within Tromsø IL- A study of scored goals and how Tromsø IL score goals.

The purpose of this study is finding what attacking styles and formation were most effective regarding scoring goals for Tromsø IL (TIL) in the competitive seasons 2018, 2019 and 2020. In total TIL have scored 140 goals over the three seasons which averages 46,6 goals per season. Analyses of which style of attack and playing formation shown to be most effective for TIL in scoring goals over the three seasons will be investigated. The study will look at different variables that could affect the efficiency in attack prior to goals scored.

The aim of the research is to provide coaches with knowledge regarding goal scoring patterns in TIL and encourage the club to implement the findings in training and match strategy.

Material and methods

This study will use a quantitative method. Including (n=48) players and (n=140) goals.

The variables that will be emphasized are attacking styles, passes prior to goal, formation, and goal box runs. Video analysis of match from different video resources and match statistics have been made available by Wyscout. I will use cross tables and figures to present the findings. To test the selection a Chi-Square test is used to check the observed frequency in relation to the expected frequency between variables based on the selection. The significance level was set to $p<0.05$.

Findings:

Results show that the most effective attacking pattern was possession attack. 47,8 % of goals were scored after a possession attack. The study also show that the goals defined as a goal box run was lowest in the relegation season 2019 with only (3) goals scored from a box runs, compared to 2018 (25) goals and 2020 (28) goals. The number of passes prior to goal is most effective when executing 0-3 passes. The most effective formation was the 3-5-2 formation which gave a goal every 35th minute. When investigating time syntax, the most effective periods were between 31-45 and 46-60 minutes. When TIL score first they won 72,7% of the matches.

Key Words: Scoring patterns, Tromsø IL, efficiency, game model, style, passes, match analysis, performance, goals, and offensive indicator.

Preface

The year 2021 has been a busy and demanding year. I am a married man, have two kids, working 100% as a football development coach for a newly established woman's club TIL2020, and student. The world is still in a global pandemic that has made life and sport different.

As a former professional football player, I have routines and habits for getting the work done. However, with the start of a new job in January 2021 and working with a master thesis I must give many honors to my wife Camilla who have helped me thru the process.

I also must thank UIT- The Artic University of Norway for the help and guidance's. My fellow students are great people, and their knowledge and eagerness has given me motivation. I feel lucky to have gained friends for life after working with them in Tromsø and Alta.

In addition of courses my good friend mentor and professor Svein Arne Pettersen, who I have had the pleasure of working with for many years. His knowledge and humor have been important in the process. I also want to thank my friend professor of mathematics and statistics Martin Rypdal who has taken time to discuss football and statistics.

Tromsø, May 2021
Jonas Johansen

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1 Introduction

Overview

In this chapter, the thesis´ framework is introduced. Starting with the background and objective of my study. Then the thesis hypothesis will be introduced and finally the structure of the rest of the study will be presented.

1.1 Background and objective

I was born and raised in a football family; my father has both played and been head coach in TIL. The strong connection to football has always been there, and it has added a great value to my life. I was lucky to play as a professional player for 16 years and spent most of my playing career in my home club TIL. After finishing my playing career due to a knee injury in 2017, I went straight to the coaching profession.

Formations, tactics, and the many various playing styles makes football an open loop and very complex sport (Smith, 2016).

I find it interesting that teams can win matches with different approaches and styles. In football there properly is no “right way” or “wrong way to play”. It is up to the individual man or woman to judge what will be the “the right way”.

With a game rapidly evolving every year the style of play will change in cycles, what is effective now might not be effective next year. A vital aspect of a manager’s job is to choose a team formation. The team formation will determine player’s roles and how they interact on the field. Playing style is influenced by the selection of formation whether we want to admit it or not (Shaw, 2019).

A formation describes the number of defenders, midfielders, and forwards on the pitch. A modern football team will adapt and frequently change formation to meet the demands of the different phases in a game and the tactics of the opponent. A team must also change and adapt formation due to specific unknown circumstances. An example could be a red card in the fifth minute, or the opposite team going up 4-0 after ten minutes. You can never prepare a team to

know exactly how the game will be played. You must give them the tools and prepare for different game situations that might happen (Insider, 2020).

The trend of ball-possessing football came to Norway some years ago; the idea of a Norwegian Barcelona is something many clubs have been trying to copy (Solbakken, 2011). Barcelona dominated Europa with a style that Johan Cruijff influenced as a player and coach. He has been quoted saying,

"If you play on possession, you don't have to defend, because there's only one ball." (Cruijff, 2015).

The possession style is not easy to execute and to play football like this will demand a lot from the player´s individual skills and perception. Norwegian football is historically known for a direct style of play. This is a style Egil "Drillo" Olsen introduced in the 1990s. Rosenborg and the national team of Norway has been locomotives in the Norwegian football history. Both styles with a philosophy of a direct football (Olsen, 2011).

As a football player, the players job is to listen to the coach and adapt the way he demands a team to defend and attack. The influence a player can contribute to a coach on tactics is often limited. As a player, I often analyzed the games from an individual perspective. This could help me develop as a player but might not affect the team to much.

However, when you become a football coach, you must look at the game different and much wider perspective. A coach must be able to evaluate every session and adapt to the constant rapidly changing demands in modern football (Bradley, 2018).

In my thesis I will focus on Tromsø IL (TIL), a club located in the north on Norway. In fact, it is the world's Northernmost professional football club. The club was founded in 1920 and has a proud history. The club has won the Norwegian Cup two times, last time back in 1996. The club has also played over 50 matches in European Cup tournaments, some of them remarkable, against top clubs. In 1997, the club beat Chelsea 3-2 at Alfheim stadium. This was a game known around the world, a Norwegian team outplayed Chelsea on a snowy pitch. Unfortunately, after going to London and Stanford bridge the teams lost 7-3 on aggregates (Strøm, 2017).

Since the year 2000 TIL has completed some strong seasons finishing from 3 place in 2010, and a memorable 2 place in 2011.

Comparing one season to another using match analyses is complicated, the way goals are scored, efficiency, and trends could change from one season to the next. We often hear that formations are only numbers, and that the set up and formation does not mean much. But at the same time, we see teams that perform with consistency season after season often use the same formation and could vary within the selected formation. Also, studies investigated the influence of team formations in full-sized 11 vs. 11 is relatively low compared to other studies on football. The heated discussions among players, coaches, and fans regarding which tactical team formation is the most successful has been there for many years (Desmon, 2021).

Historically the successful clubs in Norway often use the same formation or numerical type of positions over time. Rosenborg, Odd and Bodø-Glimt have a clear idea of the way they want to play and attack. Their formation could be categorized as a standard 4-4-3 system with some different options in attack. Both teams have a clear identity and philosophy on how they want to play "their" football (J. Johansen, 2015).

The mindset of what is most effective way to attack will vary from clubs; the individual player's contribution and formation will influence how teams perform and score goals (Clarke, 2018).

TIL historically have changed formation depending on the coach in charge. In the 1990, they played 4-4-2 football with two strikers working together as a front pair. This formation gave the club their last cup title in 1996. The years after there have been numerous coaches and many changes of formations and playing styles.

The last few years after the arrival of Finish coach Simo Valakari, the club played variation with an idea of a three or five-man defensive line. The execution of the formation worked for a period and the "style of play" was recognizable. It was easy to observe that Valakari was influenced by Pep Guardiola's philosophy and wanted to implement the possession-oriented style in the foundation of the club. The focus on keeping a high number of possessions on the ball was now a number one priority. However, was there a correlation between keeping high possession on the ball and being effective in attack? (Rydland, 2017).

TIL has historically been known for an aggressive high pressure and direct football style, with progressive runs behind the line of the opposing team. With the new idea of keeping a high number of passes and possession would the team lose the focus on direct football and forward runs?

The idea of using research in this area will add knowledge to what will be the "right" approach regarding effectiveness in attack. Throughout the years, there has been many studies analyzing different parts of football. Now modern technology has changed how we look at a game behind the 90+ minutes of football played on the field. During the match and after the final whistle, a new world of facts and numbers emerges. If clubs and coaches do not use analysis before and after a game, you can now be looked at as a dinosaur in modern football era (Desmon, 2021).

Coaches' knowledge base and the way the game is seen could be different now, than 20 years ago. Research conducted before, during and after will widen the knowledge on how teams could or should train, and most important thru statistical analysis predict how goals are scored and use it to our advantage (Reep, 2002).

Many scientists have analyzed and registered a huge amount of football games.
(Reep, 2002) has been using a scientific approach to look at football since 1950.
In the 1990-ties, the national team of Norway qualified for 3 out of 4 championship tournaments. This with a clear approach that science and knowledge built up at Norwegian school of sport sciences would make a difference. The coaches had an idea of using theory to practice and by working systematical towards a common goal (Markussen, 2017).

Egil "Drillo" Olsen who was national head coach for the Norwegian national team for many years over two time periods are known for using a scientific approach to the game. This made Norway one of the best national teams in Europa (Markussen, 2017).
(Olsen, 2011) and scientists investigated the statistics for the Norwegian team, revealing that the direct style of play was the most effective. Norwegian football used this style for many years with great success (Markussen, 2017). This made other coaches in Norway inspired, and the use of a scientific approach to the game could make a team more effective in attack (Olsen, 2011). The knowledge base of the modern coaches could now make a direct impact on the results (Olsen, 2011). But when focusing and getting results there was a growing roar

of skepticism regarding the style (Sveen, 2018). Even today as well as ten years ago we can still hear a debate on how the direct style of play is not positive for developing individual skills of players. But if you ask the coaches from that era this was not the idea or the focus. The idea and philosophy were amazingly simple, what is the most effective way to win a football game. How you win a game is irrelevant, to win means everything (Smith, 2016). Nils Arne Eggen the former Rosenborg coach also used systematic knowledge and a direct style of play to get results (Eggen, 1999).

Eggen and "Drillo" both believed that patterns in the way of playing could be recreated and reproduced to achieve results (Olsen, 2011). Using their experience to be effective in the way of attacking made them pioneers in Norwegian football history.
In their eyes, it was all about winning the game, and to win games you must score one goal more than your opponent does. So, with this as a base, scientific approach could mean that you will win more games (Olsen, 2011).
However, we see it is not enough to get the stats; the challenge is how we interpret the numbers and edit it to useful data Therefore, the aim of the thesis is to investigate scoring patterns and see if there has been a change in how the goals are being scored by comparing the 2018, 2019 and 2020 season. Time syntax, and effect of scoring the first goal will also be investigated.

My hypothesis is that TIL will be more effective considering scoring goals with continuity in a selected formation and using few passes prior to goals scored.

1.2 Aim of the thesis

The specific aim of this thesis is to shed a light on the following questions:

P Will a counterattack or a possession attack be most effective regarding scoring goals?

P1 What type of formation is most effective regarding scoring goals in TIL?

P2 Has there been an increase in "goal box runs" from 2018 till 2020?

P3 In what periods of the game is TIL most effective?

1.3 Structure of the thesis

The purpose of this thesis is to analyze goals scored for TIL over the cores of three seasons from 2018 till 2020. Below is a short introduction on how it will be built up.
Chapter 1, *Football history, concepts and literature* will clarify concepts and look at the basis of what football is historically. Look at former scientific studies that have the same objective as my thesis. This part will give insight to former results, and the theoretical part is important to establish an understanding of some of the expressions that I will use in my study.
Chapter 2, *Methodology* will first describe the empirical choice, and then the selection of group. Further on there will be a presentation of data collection also including a discussion of validity and reliability.
Chapter 3, *Results* will be present. The analysis will be the first presented, in the second part the patterns shown based on how goals are scored for TIL.
Chapter 4, *Discussion and summary,* the results will be discussed in relation to former studies and analysis within the field.
Chapter 5, *Study limitation and conclusion,* the limitations of the study will be discussed and in the end the conclusion is presented.

1.4 Football

I will first look at some of the knowledge base needed to understand some concepts in scoring patterns. I will first short present the football history and then clarify some of the formations used in modern football. In the second part various studies on the topic are presented. It is important to emphasize that match analysis is observing and gathering of information, collecting, and using data objectively (Larsen, 1992).

The beautiful game of football has a long history. The game in its current form arose in England in the middle of the 19th century. But there were alternative versions of the game earlier. Variety of the game is known from Ancient Greece where the ball was made from shreds of leather filled with air. It is reported that the gall game had a low status in Ancient Rome. This is not the case in the 2000th century (Rollin, 2020). Football is undoubtedly the World's most popular sport, there are 1.4 million registered teams Worldwide. The game is played by over 250 million players (Rollin, 2020).

The World Cup is the greatest title you can win in football and World Cup Winners are regarded to be remembered forever (Rollin, 2020).
Football is often talked about as a universal language. Former Arsenal coach Arsene Wenger has been quoted saying.

> "*People who cannot speak together can play together because you use your body and the way you understand the game to communicate, and you can share the same vision of the game."* (Wenger, 2012).

Goal scoring is determined to be the ultimate successes factor for football teams. Any team who wants success must have the ability to attack and score goals (Smith, 2016).

1.4.1 Football formations

There is always a debate on the validity and effectiveness of different formations. Trends will often occur, and teams could change formations several times during a season. Many clubs still use known historical formation such as 4-4-2 (Budack, 2019).
To decide a formation could be one of the most important tactical decisions made in football. In addition, by choosing a formation you can determine the different roles each player has. Below I will dissect some of the most popular formations in football and try to highlight the strength and weaknesses.

A "4-3-3" formation means 4 defenders, 3 midfielders and 3 forwards. "4-4-2" would mean 4 defenders, 4 midfielders and 2 forwards. The coach or team manager usually sets up the formation. When a formation functions well the player in the team knows his role and position on the field. When the team is "set-up right" the individual contributions could give the team a significant advantage. The strengths and weaknesses in a team will often determine the formation. The formation could also represent a "style" or idea (Roman, 2015).
4-4-2 is properly associated with English football, but many teams around the world dedicate themselves to playing this formation (Budack, 2019). The formation is easy to implement and having two dedicated strikers working together can make trouble against any teams and formations. The advantage of having two strikers gives the team a possibility to defend with eight players and the goalkeeper, attacking against a low block of 4-4 is not easy to penetrate. Due to the formation, it is often easy to defend with a 4-4-2 formation under pressure (Cox, 2019). Some reported weaknesses with the formation are that it is predictable and since it been around for so long teams and other formations find ways to overcome it (Budack, 2019).

Playing with only two players in the center of midfield holding the ball has been found difficult against teams that overload the center of the pitch with three or four players (Cox, 2019). Often teams in a 4-4-2 formation will then drop one of the forwards when not in possession to even the numbers (Cox, 2019).

The best teams with great success often use the **4-3-3** system (Cox, 2019). It emphasizes on skilled players who often are great passers of the ball. The formation gives individual players a chance to express themselves without too many "rules" (Cox, 2019). There are many strengths and opportunity when playing with wide forwards. In the midfield when playing with three, the numbers will often give an advantage when in possession. The superior number in midfield also gives the full backs opportunity to get forward (Cox, 2019). The offensive system could easily be altered to a defensive **4-1-4-1** formation with the deep midfield player dropping as a shield to protect the four defenders (Cox, 2019). Research has shown that success with the 4-3-3 formation requires players that are able to control the game and wingers need speed and ball control to get by the opponents and behind the line of defense (Cox, 2019). The central striker needs to have a nose for goal and be able to control the ball when the team is under pressure (Cox, 2019). In addition, the attribute of the central deep midfield is important. He needs a wide work range to cover distance and be comfortable with the ball in his feet. The 4-3-3 formation is often effective when playing against a 4-4-2 team, the extra man in midfield could give and offensive advantage.

The **4-2-3-1** formation is popular now days, and it seems like a lot of team has adopted it as their choice (Memmert, Raabe, Schwab, & Rein, 2019). Many teams in Germany, England and Spain are using the formation effectively (Memmert et al., 2019). There are many strengths, by using a variety of movement patterns teams could pass the ball quickly breaking down opponents. This will take more time than passing in straight lines but could be more effective (Memmert et al., 2019). The two holding midfielders will give the team balance when going forward; overrunning the midfield in a 4-2-3-1 formation is difficult. In this formation, the striker is often provided with a fair number of chances (Memmert et al., 2019). If we look at some of the weaknesses this formation has, it could be the high number of players used in the buildup play. Often the two central midfield players can get under a lot of pressure and the winger can be too wide in the buildup, which creates an underload in the central area of the pitch (Memmert et al., 2019). Another problem with top teams playing 4-2-3-1 is the individual work rate in defense; this might be a problem with star players working on the wings. Some of the star player like to be limited to only attacking, this could leave the team in trouble in the defensive phase (Cox, 2019).

The **4-5-1** and **4-1-4-1** formation is often used by teams, also teams switch between this during games (Cox, 2019). We can often see this formation when teams need a result, an example is if a cup tie is over two games, and the team has an 1-0 lead after the first leg. The defensive solidarity and number of players make them difficult to penetrate. The numbers of players in the central part of the pitch provides safety for the four defenders. Last minutes of a game when the team is up or happy with a draw they can easily adapt to the 4-6-0 making it almost impossible to play through (Cox, 2019).
The weakness could be that the team and high number of players low in the pitch makes it hard to create and score goals (Roman, 2015).
Nowadays we experience club teams and national teams play the **3-5-2** formation. The new wave of wingbacks could be looked at as a revolution compared to the normal back position (Memmert et al., 2019). The most important factor this formation uses is denying the opponent team to counterattack. The three defenders are often able to defend by themselves. The wingbacks high position gives the team a possibility to switch to high pressure within seconds (Cox, 2019). If the opponent team overloads the corridors to put pressure on the wingback, usually the central midfield player will cover up space and help (Memmert et al., 2019). While the formation is effective in stopping counterattack, it is also effective for offensive counterattack, the wingbacks is often offensive minded players with speed as their attributes (Memmert et al., 2019). If we look at some of the challenges playing this formation, the complexity and demands might not suit certain kind of players. In the back three, at least one of the players needs to be decent on the ball. Two of the three players must be comfortable with man-to-man marking. While this formation still is more popular in Italy, we see Scandinavian teams are adapting the way of play and playing with offensive wingbacks (Riisnaes, 2018).

1.4.2 Team strategy.

A team will often set up a formation that will suit their strategy and quality of the players. This is vital when deciding a game plan. For example, a team without players with speed or stamina will properly not be able to execute a strategy based on counter attacking football (Modric, 2019).

Below are some of today's best teams and an idea of how their strategy could look like.

Liverpool has the last few years been known for their high pressure. “The gegenpress”, this type of high pressure has worked well for the Premier League champions from 2020. Their strategy has been applying high pressure to create chances high up on the opposition’s half. There is always a risk with leaving space behind the back four, also between the midfield and forwards but this is a calculated risk that has paid off.

Atletico Madrid has a different strategy; their strategy is often sitting back and apply a low block with a pressure starting at their own half. By using the low block strategy, you invite your opposing team to attack with many players high up on the pitch (Manley, 2020).

Manchester United have had some success the last years with a counterattacking minded strategy. With fast players set up in a 4-2-3-1 formation the team can sit patiently and wait for the opponents to make mistakes. This formation will let you set up the top 3 players, giving them running space to outrun the opposing team (Manley, 2020).

Manchester City and Barcelona is two clubs known for having a philosophy and strategy wanting to dominate. And by dominating they want to do it with the ball. Their possession-oriented football intention is to create numerical advantage close to the ball. Players will create triangles to set up plays all over the pitch. The players quality, loyalty and understanding of the strategy is crucial. Both teams also have implemented a quick counter press when losing the ball. If the team loses the ball their strategy is to win it back after 5 seconds (Manley, 2020).

1.4.3 Football concepts and analyzing tools.

Football is a game of concepts that can be confusing and make it more complicated than it is (Smith, 2016). The main goal is to give the team the right tools to score more goals than the opposing team. In this segment, match preparation and post-match analysis is essential. This part of the game is in constant development and clubs around the world spend huge sums of money on analyzes of matches and the opposing team’s strength and weakness (Smith, 2016). Many international and national clubs have one or several employees working full time with analysis (Rein, 2016).

Analyzes must be able to create better performance on the field and provide the best possible conditions for the team to do well (Smith, 2016).

Modern analyzing tools can now provide solid facts and references to coaches and staff (Smith, 2016). If statistics are used correctly, they can make a big difference (Smith, 2016).

Team performance, individual player's stats, home/away games, team analyzes, and previous meetings could give the team a tactical advantage (Michailidis, 2012).
Still, some existing football analysis tools require that coaches and other member of the staff must do the analysis manually from a recorded video of a match or a training session filmed (Smith, 2016). This is time consuming and requires manpower. Football at top level requires fast analyzes so that you can learn, reflect and adapt and move on to the next challenge (Smith, 2016).

The most common analyzes in football is focusing on how goals are scored (Dinita, 2021). Now all teams at top level can analyze games, the challenge is to dissect and look what matters to enhance team performance (Dinita, 2021).
Match analyzes collects a quantity of data through observation where the collected data is processed objectively in order to then be able to present it in numbers (Markussen, 2017). Today there are hundreds of analysis systems (Smith, 2016). Tactical pad, XPS-Sideline, Wyscout, Interplay Sports, Instat and Longomatch provide data based on video coverage. While Statsport, Catapult, and others collect physical data (Smith, 2016). In the video-based systems, the matches are processed with manual analysis by employees of the companies.

The programs also have access to editing and drawing functions that can provide charts to the customers. Opta and Instat provides statistics to the media and clubs continuously in databases. These analysis companies use multiple cameras that collect analyzes converted into algorithms that provide factual figures that are seen as reliable and valid (Dinita, 2021).

In this assignment, I will use Wyscout, Instat and TV recordings from Discovery and Media bank to discover what type of attack and formation shown to be most effective regarding scoring goals. I also want to find out how much a match is influenced by scoring the first goal and see if there has been a change in what I have defined as an "Goal in box run". This metric will investigate goals scored from inside the 16-meter area while receiving a ball played from the outside of the 16-meter area.

1.4.4 Most effective formation.

There is always a discussion between players, coaches and fans regarding which team formation is most effective and will give success. The known common formations include 4-

3-3, 4-2-3-1, 4-4-2, 4-1-4-1 or the new modern 3-5-2. Few studies have unfortunately specifically studied the effects on different tactical formations and results or game performance (Smith, 2016).

(Baptista, Johansen, Figueiredo, Rebelo, & Pettersen, 2019) investigated match-physical demands between different tactical systems: 4-5-1 vs 3-5-2. The study's aim was to get a better understanding of the constraints correlated with sporting success. It is accepted among coaches and sport scientists that the match performance of a football team is, basically, based on four factors: physical, technical, tactical and mental factors (Baptista et al., 2019)
This study provides a new insight into the physical demands of two common tactical formations across different playing positions. The results suggest that general match physical demands do not differ considerably between the players position in the two compared formations (Baptista et al., 2019).

A study by (Memmert et al., 2019) investigated tactical formations and used an experimental approach to study the impact of different formations. His method was a positional data-controlled field-experiment using global Positioning System (GPS) as an indicator of formations used. When comparing the difference between 4-4-2 and 4-3-3 during 48 matches from the Brazilian national league. The results showed that players in a 4-3-3 formation covered greater distances plus increased the maximal running speed. There was also an increased frequency of high-intensity activities during play compared to 4-4-2 formations. This could mean that the 4-3-3 formation is more suited for fast and mobile players (Memmert et al., 2019).

1.4.5 How are goals scored

Football is described as an invasion game by (Rongland, 2008). Where you invade the opponent's half with a clear intention to score goals, while at the same time preventing the opponent from doing the same on your goal. One should not think of invading just to invade, but it should be a clear intention to put the ball in the opponent's goal. When two teams have the same intention, we get a conflict. The conflict is characterized by situations that constantly affect the game. A conflict of interest arises which causes the game situations to change continuously. This battle of conflicting interests gives the dimension an excitement that makes it the world's most popular sports (Rongland, 2008). In this battle we see goals scored

in many ways. However, what is the easiest way to score a goal? If you had asked this question a few years ago, you could have received many different and diffuse answers (Smith, 2016).

Statistics through analysis have allowed us to dissect the game and look at the numbers behind the goals scored. Most of the total goals are scored from inside the penalty area, and usually the goals are scored by foot (Smith, 2016). If you want to look at number of touches used prior to a goal, research shows that this number has not changed much over time (Smith, 2016) Goals scored with one touch have been between 54% to 78%, and if one and two touch goals are combined, the range is between 76% and 90% (Smith, 2016).

The percentage figures do not change much if a calculation is made for goals scored in open play because most goals from set pieces are scored with one touch. This in relation to the goalkeeper and distance from goal, that is, if the player is in a central position there may be more emphasis on accuracy and placement compared with an opportunity from side of the goal where the emphasis may be on power. Sigurd Rushfeldt former TIL player and leading Norwegian goal scorer with a total of 172 goals in the top league, examined the number of touches prior to goal. He analyzed Real Madrid, Barcelona, Manchester United and Manchester City. He found out that 65% of all team's total goals were scored after one touch. Also, the study showed that 18% came after two touch and 17% came after 3 touch. Giving a total of 83% of all goals scored after 2 touches or less (Rushfeldt, 2013).

Other studies show that the passer often uses more touches than the goal scorer. But at the same time the most effective way to play the breakthrough pass is by using one touch. This is explained by the small window of opportunity to play the assist pass (Olsen, 2011). This emphasized this by showing 50% of all assists passes comes from using 1 touch (Olsen, 2011).

1.4.6 When are goals scored.

A study by (Armatas, Yiannakos, Papadopoulou, & K. Skoufas, 2009) evaluated goals scored in a season 2007/2008 from the Greek Super League, they found that 54,1% of the goals were scored in the second half.

A study by (Michailidis, 2012) presented a study investigating the factors associated with goal scoring from the European football Championship in Poland-Ukraine in 2012. They analyzed 76 goals in 31 matches. It shows that 57,9 % of the goals were scored in the second

half and most of the goals were scored between minute 76 and 90min + E.T (Michailidis, 2012)

Also, there was discovered a significantly higher frequency of goals scored in the second half, with the highest scoring rate in the final 15 minutes periods of the game during a study of major European football leagues.

A sample study of 32 games of the European Championship revealed that most of the goals were achieved in the second half with a (57,4%) of the total goals (Armatas et al., 2009). The same pattern is supported by similar studies in Spain, England, and Italy. Several studies have reported a decrease in physical performance in the second half of matches. Explained as a drop in physical fatigue that will affect the players choice (Smith, 2016).

A master thesis by (Markussen, 2017) looked at Manchester United, Real Madrid and TIL in attack and found TIL are most effective the last 15 minutes of the matches, with a total of 28.6 % of goal scored in the season of 2011/2012 (Markussen, 2017).

1.4.7 Where are goals scored from.

There have been many studies investigating factors associated with goal scoring positions. A study by (Mitrotasios & Armatas, 2014) analyzed 76 goals from 31 matches from the European football Championship in 2012. The results showed that most goals were scored after crosses (43.7%). Regarding goal scorer's location it shows that over 90% of goals were scored inside the penalty area and specifically from the area between penalty spot and goal zone with (42.1%). Studies like this discover that having players inside the opposition 16 meter is important to be effective in attack (Mitrotasios & Armatas, 2014).

A study by (Alliance & Toriola, 2019) did a retrospectively analyses on goal scoring patterns in five successive FIFA World Cup tournaments. The study found that goal scoring patterns were time dependent and goals from outside the penalty area were (14.6%), while most goals were scored from inside the goal area (23.8%) and penalty area (53.6%) (Alliance & Toriola, 2019).

(Markussen, 2017) looked at Manchester United, Real Madrid and TIL in attack and found that the location of the goal scorers position found that most goals are scored from 5-11 meters from the goal. And TIL in 2011 scored 4 out of 10 goals from inside the 5 meters (Markussen, 2017).

1.4.8 Effects of scoring the first goal.

A sample study's aim was to examine the importance of scoring the first goal in a football match to determine the influence on the final score. The sample consisted of all the matches played in German Bundesliga (n=306), English FA Premier League (n=380), Italian Serie A (n=380), French Ligue 1 (n=380) and Spanish La Liga (n=380) in the 2014/2015 season.
In this survey the results showed that home teams scored first in 57,8% of the games and average an 84,85% chance of points in these games. If the away team scores first they obtained 76,25% subsequent points. This factor is further influenced by match periods when the first goal was scored and the quality of the teams (Lago-Peñas, 2017).
Significant independent factors on the outcome were: the minute in which the first goal is scored ($p<0.01$), the quality of the opposition ($p<0.001$) and the team scoring first ($p<0.001$). Teams that get the first goal ended games with an average of 1.88 goals more than their opponents (Lago-Peñas, 2017).
(Armatas et al., 2009) evaluated goal scoring patterns in Greek "SuperLeague" soccer matches (2007-08). 558 goals were scored in 240 matches. The first's goal influence on the match's outcome revealed that the team that scores first won 74,2% of the games. Home advantage in Greece is shown to be slightly higher compared to other competitions (Armatas et al., 2009).

1.5 Clarification of attacking concepts.

The formations are said to be an indicator of how a team is set up. Still the way to attack can vary from formation to formation. All teams in Norway and the world have a "style of play", but how clear and defined it is will not always easy to see (Markussen, 2017). There is a lot that can affect how clearly teams are on "their" playing style, it can by choice be adaptable, which means that you set up the playing style based on the opposing team (Lago-Peñas, 2017). You can also play differently whether you play at home or away. Some teams also have their style of play enshrined in the board's regulations, an example "this club plays a type of 4-3-3 formation with a focus on fast play in the longitudinal direction" (Smith, 2016). This "club philosophy" can vary from team to team even if you play the same formation. A 4-3-3 team can be very direct in their style, while another 4-3-3 team could be possession-oriented and use the ball a lot through a good passing game (Smith, 2016).

1.5.1 Attacking concepts.

A team is attacking when in possession on the ball. The formation the team plays could often be said to be more important in a playing style concept (Cox, 2019).

The numbers that link the formations tells little about how the team plays, or which style the team has.

What is a direct attack style; there are several ways to explain. Egil “Drillo” Olsen, who introduced a direct football style in the 1990-ies, uses the term *"breakthrough fiery style"* to describe an attacking style in which one seeks breakthroughs early (Olsen, 2011). He explained that a long fitting pass was an important tool in his idea of the direct style. This pass could often be used against an established defense, which means that the opponent is numerically in balance. Some of the main ideas in the direct football style is: Many passes are long and vertical, many passes are played into space behind opponents’ back line and lots of fights for the ‘second ball’ (Daniel, 2012).

This strategy worked for the national team for many years, but it might not be suited for everyone. The long pass was highlighted describing Norway's success in the 1990s. Not many teams will succeed going all the way with this approach (Markussen, 2017).

The possession-oriented style uses passes in all directions. The ball is often switched from side-to-side multiple times in each possession. The passes often go to the feet and back again. Keeper throws ball to build up an attack from the back. Free kicks are also played to the feet to keep possession (Daniel, 2012).

1.5.2 Ways to score in football.

The three different known approach to scoring goals in football is breakdown, established attack and set pieces (Tenga & Ronglan, 2010).

The study addressed two types of attack "established attack" and "counterattacks" to measure the effectiveness of these two ways of attacking. As mentioned above counterattacks and “breakdowns” are often synonymous with a direct play and the other with a patient build-up, often called "possession play". The authors analyzed 203 goals scored after established attacks and counterattacks and found that 52% of the goals were scored after counterattacks, while 48% of the goals were scored after established attack (Tenga & Ronglan, 2010)

In established attacks, the opponent will often be in balance, both numerically and in terms of positional balance. This means that the defending teams have both first, second and third defenders in place (Olsen, 2011).

By having a numerical balance, it can be difficult to score goals, and therefore it is not surprising that counterattacks have been found to be the most prominent way to attack for some teams (Olsen, 2011).

(Olsen, 2011) claims that "The breakdown period", the game phase where the ball changes from one team to another, can be effective because the team that loses the ball is often out of balance. Favorable recovery near the opponent's goal will increases the chance of scoring (Olsen, 2011)

An attack that starts in your own defensive zone requires a great deal of accuracy, also in terms of coordinated movements on and off the ball. This way of attacking will require good technical and tactical skills. But there is often a calculated risk with playing a style like this, if the opposing team succeed in winning the ball high up on the opponent's half, it can create favorable conditions for them to score goals (Olsen, 2011).

1.5.3 Different moments of play.

There are different moments of play in a football game (Hewitt, 2016). They suggested there are four key repeating phases or ‘moments’ during a game: Established Attack, Defensive Transition, Established Defense and Offensive Transition. The teams or players reacting quick in transition in the different phases could be successful. The figure below shows the different phases of a game (Hewitt, 2016).

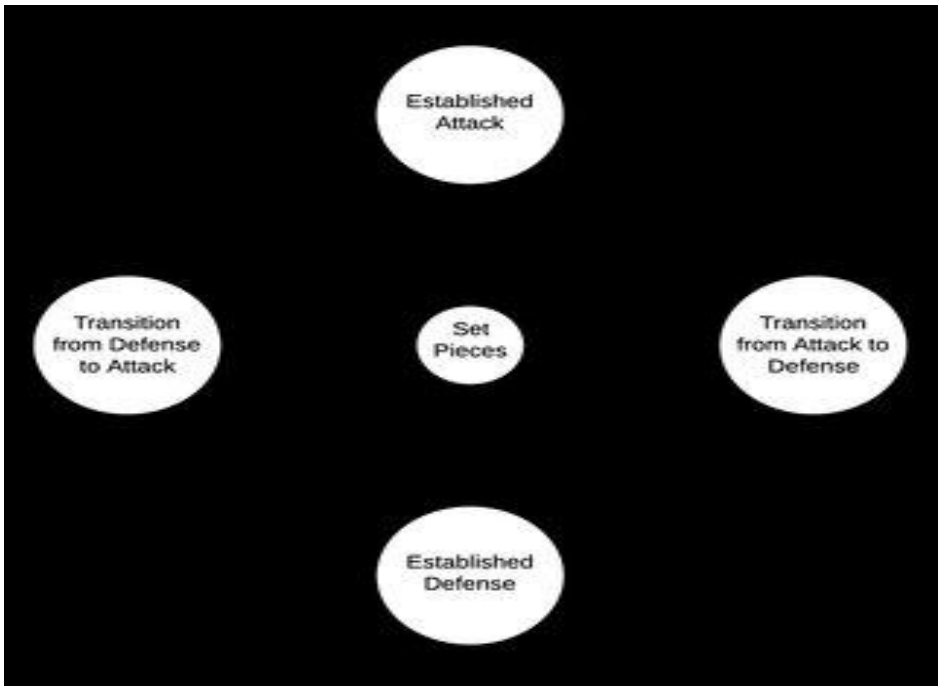


Figure 1. Five moments of play (Hewitt, 2016).

1.5.4 Counterattack.

This type of attack has several names, a type of counterattack or transition starts with winning the ball in open play. Teams that are good at using counterattacks takes advantage by using the imbalance of the opposition and move forward with high speed. Football is taking advantage of space (Cox, 2019).

A type of counterattack can be the ultimate way to utilize space. There are different factors regarding what will make a team successful in counterattack or not. The position of where the ball is won is important. The area where the ball is won will determines the distance to goal (Bergmann, 2019).

A team´s strengths and individual skills will also be an important factor. A team could base its strategy on high press or low press often referred to as a "low block".

This will be a coach or team choice that might be set up considering the quality of the players or the opponent. Liverpool, Manchester City and Barcelona often press high. In the figure below the area of winning the ball can be quantify by using the number 13/18 The teams want to win the ball high for proximity, the players can combine in tight spaces and do not need much space behind the back line after winning the ball (Bergmann, 2019).

Other teams will adapt the mid press shown on the figure 2 representing numbers 7-12 which will be a combination where the team can go high or low depending on the rhythm of the game.

Teams playing a low press or low block focus on winning the ball in the areas shown as number 1-6. Team with a low block will often see the positive effects of getting more space behind the line of the opposition team. You often need fast players on the wings or attack to be successful in a low block. The counterattack is a big part of football and whatever style of play a team plays the opportunities for a counterattack will occur (Bergmann, 2019).

"We use counter-attacks. It is a strong weapon. The biggest teams use all the weapons they can use." (Guardiola, 2015)

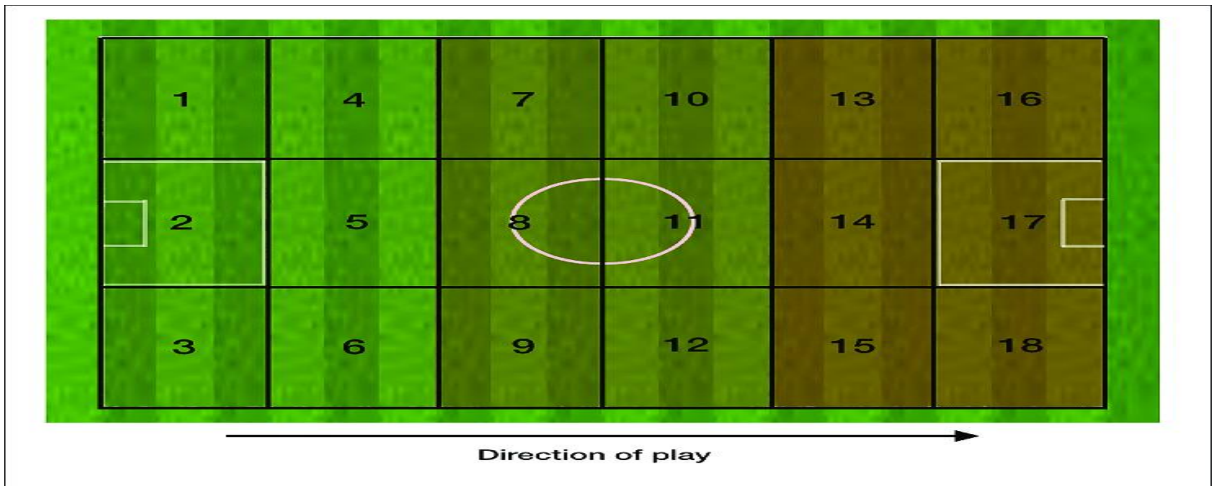


Figure 2. Showing the pitch divided into 18 zones (Jongwon, 2019).

1.5.5 Possession attack.

Possession plays also known as established attack is when you attack against an established defense. Often, we can classify a ball possession attack when the team has the ball in the back four or middle of the pitch. In the figure below an established attack often starts in the *D Zone = Defensive Zone or N Zone = Neutral Zone* (Bergmann, 2019).

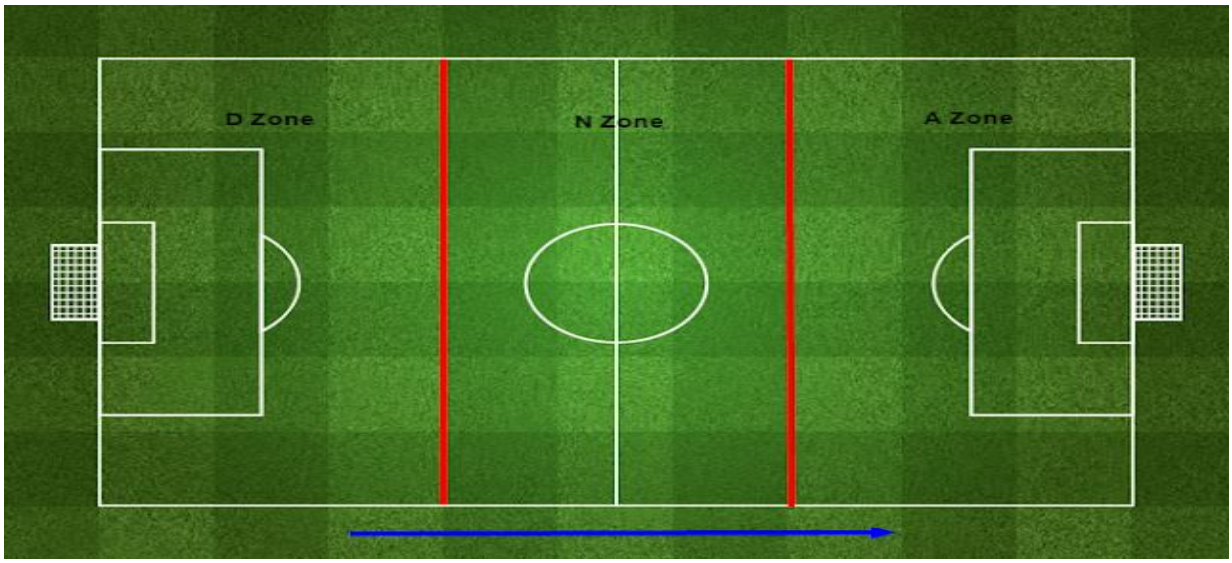


Figure 3. Showing zones where the start of the attack could be from (Football, 2015).

As mentioned earlier the possession starts with a ball won and the attacking team has control of possession. The possession can also start when you have a set piece in the n-zone or d-zone. The possession attack style is the ability to keep control of the ball thru passing and movement (Bergmann, 2019).

"People say that ball possession might not be the most important thing but for me, it is the most important thing," (Guardiola, 2015).

Not all coaches evaluate the necessity of possession the way Guardiola does. If a team wants to play effective possession, the team shape is important. Many teams build their strategy on the idea of possession-oriented football (Smith, 2016).
A team that understands possession and is willing to use the attacking opportunities could be effective in attack (Smith, 2016).

1.5.6 Set pieces.

A set piece defined as a corner, free kick, penalty kick, five meters, kick-off, and throw-ins. When a team gets a set piece, you can without pressure put the ball down and send players up in positions where you can score goals. According to the rule book, the opponent must be 9.15 meters away when the set piece is taken. Most teams at a relatively high level often use some pre-defined set pieces. These can be a simple blocking move, or more complicated runs were players run in different directions making it hard for the defenders to mark. You can also see that teams often set up their most physical players on set pieces (Cerrah, 2016). These could create goal scoring situations; the physical size of a player could draw attention that can give other players more space. Often teams have one or more free kick specialists who can win matches with free kicks from shooting areas (Cerrah, 2016).

A study calculated that the probability of a team scoring a goal after a corner kick to be 2.2 percent (Casal, 2015). In the 2018 World Cup, England crushed all set pieces trends with 9 out of 12 goals on set pieces. This included four goals on a corner, one goal on a free kick and three on penalties. Before the World Cup in 2018, England had not scored on a set piece in a championship since 2010. They had taken 72 corners in a row without putting the ball in goal (Higginbotham, 2019).

A survey of goals from the World Cup finals 1966 to 1986 discovered that out of 28 goals, 14 came after a set piece (Olsen, 2011). In the World Cup in Italy 1990, 34% of all goals scored came from set pieces. With free kick as the highest percent's (14.7%) while penalty kicks were (10.1%) (Olsen, 2011). Egil "Drillo" Olsen explained that you can take advantage of set pieces by hitting the ball unpressurized in an area that can create a chance. In addition, a set

piece gives the team the possibility to move many plyers in favorable positions. This is probably the only occasion in a game you can do this (Olsen, 2011).

1.6 The Football dimension

We have structural, individual, relational, and complimenting skills in football. A player's task is to make the right choices based on the current situation and the requirement required (Smith, 2016). This is not easy but what often separate football players is the ability to adapt to different situations with the appropriate skills in each situation. To be able to perform, it requires that the players to have a large repertoire of many sub-skills that the game requires. Such as passing skills, dribbling skills, tackle skills, etc. Not all players are equally competent at all these different attributes, but one can specialize in some areas. The skills are maintained through a lot of training and all the skills are affected by the mental toughness (Smith, 2016).

1.6.1 Individual football skills

In the complex game of football, you need different attributes. Ball control, passing accuracy, body control and dribbling skills is technical skills required. The tactical knowledge, awareness and risk assessment is game intelligence. Speed, strength, power balance, coordination and endurance are the physical fitness (Powel, 2019). If you want to reach the top you need the proper mindset and mental strength. The self-motivation and compassion is needed to have the proper mindset (Powel, 2019). Match results depend on the player's football skills, understood as the tactical-technical overall context of a game situation: First you must perceive what is happening - then you consider possible choices you can make - then decide what to do - and finally act (Powel, 2019).

Whether the individual player masters a specific situation depends, among other things, on the individual's ability to choose and implement an appropriate solution. A good football player who has required a solid base of individual football skills will also choose and perform actions over time despite different external conditions (Powel, 2019).

A good player should possess good passing, dribbling, tackling and finishing skills to be a complete player (Powel, 2019).

Egil Olsen has previously said that you make approximately 1000 choices during a football match (Olsen, 2011). Therefore, it is important to make the right decisions in the crucial parts of the match. One single action could mean getting involved in dictating the match in your

team's favor. The higher level you play, the less time you have for decision making because the game goes much faster (Ajmol, 2011).
However, it is not only the individual dimension of the football skills that will be decisive for whether one succeeds in creating and utilizing a game situation, for the football game contains a relational skill dimension that could be categorized as more important (Ajmol, 2011).

1.6.2 Scoring patterns

The last four decades research on scoring patterns has been well documented. Charles Reep is a well-known pioneer in the field; his analysis contains many variables and different models. Data collected by (Reep, 2002) is gathered in a fashion that is characteristic for scoring pattern literature, presented as symbols and/or numbers.
In the early years, the analyses often focused on touches and number of totals passes a team completed (Smith, 2016). New technology and tracking systems will detect, interpret, and widen the knowledge of how goals are scored (Smith, 2016).

A study analyzing the World Cup in 2018 quantified the incidence of goal. They verified which periods and halves of the games the goals were scored. The study also looked at what was the critical period of the game with highest incidence of goals. The goals scored were divided into 15-minutes periods (Werlayne, 2013). The study sampled 772 games; it showed that a greater number of goals occurred in the second half of the game (54,44%). 19,61% of the goals were scored in the final 15 minutes of the matches between the 76^{th} and 90^{th} plus extra time They explained the high number of goals by the decrease in physical performance, fatigue and the need for a positive result (Werlayne, 2013).

1.6.3 Passes prior to goal.

(Hughes, 2005) reviewed the World Cup in Italy in 1990 and the World Cup in the USA in 1994. In Italy 90, 84% of goals were scored after four passes or less. In 1994 the same passing syntax was 80%. The statistics show that efficiency decreases as more passes are used. There is predominance of goals after 0 to 5 passes, and that the efficiency after 5 passes goes down markedly (Hughes, 2005).

1.6.4 Successful area for the final pass

Location of identifying successful area of the final pass could be important in investigating effectiveness in attack. A survey analyzed 3,175 goals in open play from FIFA World Cup, UEFA European Championship, English Premier League, Australian `A` league. The results showed that 90% of goals association scored within 21.03 meter of the goal. In addition, it discovered that most of the goals scored had less than five passes prior to goal (Smith, 2016). Passing are the most common event preceding goals, followed by crossing. Other events do precede goals and include individual play, tackles or interceptions, rebounds and defensive errors but they are in a minority (Tenga, 2009).

1.6.5 The opposing team

When talking about attacking patterns and scoring goals it is easy to forget the quality of the opponent. This could be an important factor that will influence attacking performance. It is difficult to measure how much the formation and quality in defense of the opponent will influence effectiveness in attack (Miyazawa, 2017).

A study by (Miyazawa, 2017) determined the effect of opponent quality. The study looked at the league table for the top league in Japan measure the influence of league ranking position. The study divided all goals from open play in two categories: Goals scored against inferior position teams, and superior teams (Miyazawa, 2017). The results show that scored goal from superior ranking at the end of the season was significantly lower than goals scored from the teams with an inferior rank (Miyazawa, 2017).

2 Methodology

The aim of the thesis is to make an objective analysis of scoring patterns for TIL and in which game period goals are scored. Methodos is the Greek word for method. It means following a specific path towards goals (Jacobsen, 2005). I found this sentence very appropriate as I will analyze and interpret data that deals with how goal scoring situations are created and executed by Tromsø IL.

In empirical research, systematics, thoroughness, and openness are the most important characteristics. The aim of this project was establishing a research methodology that would give high validity and accuracy in the data required to achieve a high degree of reliability. In my study I have used registrations plotted into an Excel-sheet (Microsoft 365 USA) and then further analyses using SPSS (The Statistical Package for Social Sciences, Version 26.00; IBM Corporation, New York, NY, USA). According to Larsen (1992), it is central in this type of study that a thorough job is done with the operationalization of the various variables and values. This is a necessity for the observer to be able to observe and annotate correctly. In the following, my variables values to be studied in this study are presented.

2.1 Quantitative method

Quantitative methods aim to transform the information into measurable units which in turn provide opportunities to perform arithmetic operations, such as finding averages and percentages of a larger amount. In this study, the researcher aims to accurately show for how TIL scores goals. The quantitative method chosen means that the units must be placed in predefined categories. This can also be said to be a strength but also a weakness.

In this assignment, all registration been entered in an Excel form; and processed further in SPSS version 26.

This thesis has a comparative design that is most often used in quantitative research work. There are relatively few cases or units in the study (Jacobsen, 2005).

Comprehensive quantitative analysis of team's formation and effectiveness has been limited due to the low availability access to large samples of data (Rein, 2016).

Previous studies have mostly investigated the performance indicators of the whole team, while there has been limited research investigating the position-specific performances in relation to game outcome, even though technical indicators have been considered good predictors of soccer match success (Modric, 2019).

The collection of all data is done through the analysis company WyScout, Instat and my own observation. Effects of observer subjectivity regarding own data collection have been checked by two of the coaching staff of TIL2020. The results showed an agreement in data classification of formation used.
The main steps in my methodology for studying formation is by looking at the full matches and detecting patterns in formation. In this segment I will first look at the complete matches 90 plus extra time, then try do detect the formation while taking one screenshots every minute in control of the ball. And one screenshot per minute without the ball.
After I will look at the statistics the from companies and newspapers which present the formation before the games.

The data analyzed in this thesis arose as a condition of routinely player monitoring over the course of the competitive season. Therefore, usual appropriate ethics committee clearance was not required (Winther & Maughan, 2009). Nevertheless, players have signed a written consent saying we can collect and use data for research purposes.
With approval written informed consent from the (n = 48) players that took part in the study. Also, an approval was given by Wyscout to use their data in the research.

2.2 Primary sources

The data used are pre collected, but neither published nor processed.
Wyscout is used as a primary source but simultaneously I have registered and plotted in variables in Excel-sheets from my own observations using television recordings of the matches. A similar method has been used before by (Budack, 2019). The study made an analytics approach for the visualization and classification of tactical formations in single situations of football matches. The authors suggest a novel measurement to quantify the results for formation classification and visualization based on the similarity to pre-defined formation templates. The results of the study demonstrated that a visual formation summary already provides valuable information and is capable to summarize individual scenes in football matches (Budack, 2019).

2.3 Error sources

The challenge with the use of video is to distinguish what has been a game against established defense after ball conquest or whether there has been a transition / counterattack. This is done as objectively as possible and crosschecked with the definition in Wyscout.

2.4 Video resources

Available for this project I had both the highlights recording of the games and the whole match. Complete data sets were collected from Eliteserien in 2018, 2019 and OBOS League 2020. I did focus watching and repeating the goals patterns in the different seasons to make comparisons from season to season. The data is collected from the 2018, 2019 and 2020 season.

Table below shows the number of matches, and the total of goals from each season of competition and the number of games covered.

Table 1. Shows total number of games analyzed.

	2018/	*2019/*	*2020*
Total games	30	30	30
Games covered.	30	30	30
No. Games Covered%	*100*	*100*	*100*
Total goals scored.	41	39	60
Goals Analyzed No.	41	39	60
No. Goals Analyzed %	100	100	100

2.5 Essential extra data

When searching for the right answer for my project it was important to establish a method to detect what was classified as an “counterattack” or “possession attack”

Each passage of play leading up to goal had to be included in every goal event. The starting point of each event starts when the team regained possession of the ball. Tv broadcast did sometimes go to a highlight at the starting point of a regained possession, to overcome this another tv company “media bank” were utilized to sample information which was not available in Discovery broadcast.

In addition, I have watched all the games (n 90) a total of 8100 minutes plus additional time.

2.6 Operational definitions of variables

In this project I will use standardized data so I can analyze the three seasons as one or separated. In this type of projects, it is important to be thorough in the operational definitions when considering the variables and values measured to minimize the possibility of coincidence. In the following, I will present the variables in this study. Before the definitions and operational categories are explained, some of the definitions will be discussed, like the definition of possession, which is a term many people talk about (Manley, 2020).

Variables	*Values*
Type of attack	(1) Possession attack: Defined as the opposing team is in positional and numerical balance. Time limit over 8 Seconds. (2) Counterattack: The phase from defense to possession on the ball without losing the ball. Time limit 0-8 seconds. (3) Set pieces: Goals from a freekick, corner, penalty or throw in.
Time syntax	(1) 0-15, (2) 16-30, (3) 31-45, (4) 45-60, (5) 61-75, (6) 76-90. Register when goals scored, the goals are in 15 minutes time frames.
Formation	(1) 4-2-1-2 (2) 3-5-2 (3) 5-4-1 (4)5-3-2 (5)3-4-1-2 (6)3-5-1-1 (7) 4-1-4-1 (8) 3-5-1-1 (9)3-4-3 (10)4-4-2 (11) 4-2-3-1 (12) 4-3-1-2 (12) 3-4-2-1
Passes prior go goal	(1)0-3 (2) 3-6 (3) 6-9 <)
Box runs	1- <)

2.7 Detection of formations.

Often most football matches are accompanied with a team sheet with player names, numbers, and formation. The information could seem basic but can be imperative and highly useful when analyzing a formation for the very first time. Still, it is important to remember that this

may not be entirely correct. That is why in this project I will analyze the formation by looking at a full match perspective. While taking one screenshots every minute when in possession of the ball and one screenshot without possession of the ball.

In this segment I was looking for the defense to hold an offside line to get a fair idea and estimate of who is playing in defense. When the ball is controlled in the defensive half see how many players are holding positions near the midfield and how many is in the offensive half of the pitch. When watching and analyzing a game I also tried to detect who is passing the ball to who. When in possession of the ball you can detect who is passing. If a player (A) often passes laterally passes to player (B) or (C) it is often to a player in the same line of defense. And when a pass is played forward or backward, we can try to detect if the ball is played from a player in defense to a player in the midfield. Or a player in midfield to an attacking player. Again, not 100% accurate, but can give you an idea. In the picture below we see player (A) in possession of the ball passing a lateral pass to player (B), while player (C) is holding a position close to player (A). This could indicate that there are three players in defense.

Figure 4. Showing player (A) with a lateral pass to player (B).

When detecting the lateral, forward and back pass I have made a model below to categorize the different passes.

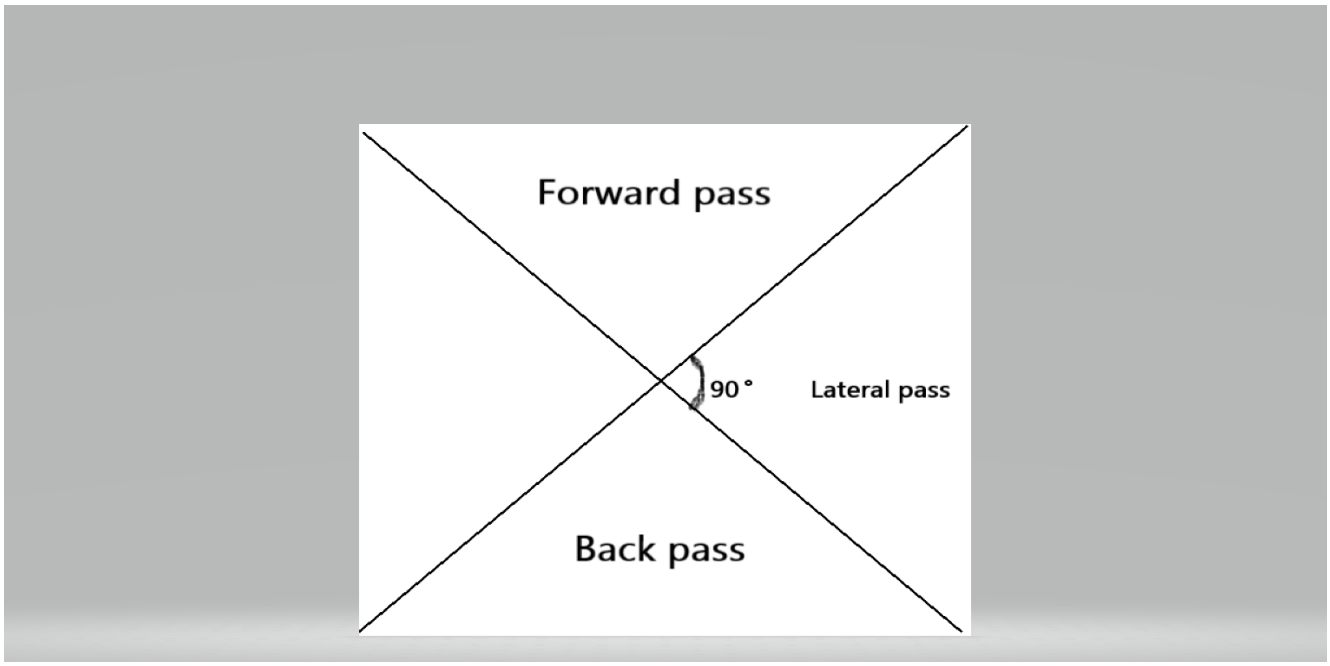


Figure 5. Showing definitions of passes when detecting formations.

The example below of a pass being detected as a forward pass from a player (A) in the defensive line to a player (B) in the midfield.

Figure 6. Showing a forward pass from player (A) to player (B).

Screenshot below showing a screenshot when in possession with the ball against Viking. Formation detected by observation is 5-3-1-1

Figure 7. Showing a detected 5-3-1-1 formation in possession on the ball.

Below is one minute later in the match, a screenshot detecting the formation as 5-3-1-1 without possession on the ball.

Figure 8. Showing a detected 5-3-1-1 formation without possession of the ball.

Also, a good indicator of a team's formation is at the start of the match, players are often in their designated positions before the referee whistle for kick off. As shown in the screenshot below. In this match against Rosenborg the indicated screenshot shows a 3-4-3, which later was detected as an 5-3-2 formation after several screenshots.

Figure 9. Showing TIL vs Rosenborg lining up in a 3-4-3 formation.

Tv companies also have information regarding formation and before every match the formation is presented. Below is a screenshot from a tv broadcast Discovery with the lineup and the most likely formation. The lineups have often been accurate and reliable in the study of TIL from the 2018 and 2019 season. In 2020 there was sometimes small errors in the tv broadcast line up regarding formation.

Figure 10. Showing a 4-3-2-1 formation set up by Discovery.

In addition, looking at the stats above it would be safe to say that the number from Instat and Wyscout are more accurate and gives a better understanding on how to spot differences in detecting formation compared to the TV- broadcast. A survey by (Modric, 2019) found significant correlation between the InStat index and match formation detected. The method

was checked using GPS measurement for comparison. GPS-based devices are becoming prevalent even in competitive sports (Modric, 2019).

The results of the previously cited studies show that GPS technology as a measurement tool were generally consistent with those from investigations where authors used different video-based computerized match analysis systems in the evaluation of players' running performances (Modric, 2019).

Sometimes Wyscout and Instat can detect players "out of position" when detecting formations in matches. By looking at the graphic below, the left-wingback back is detected being higher than the right wing back. This could be an individual choice, or a coaches team decision.

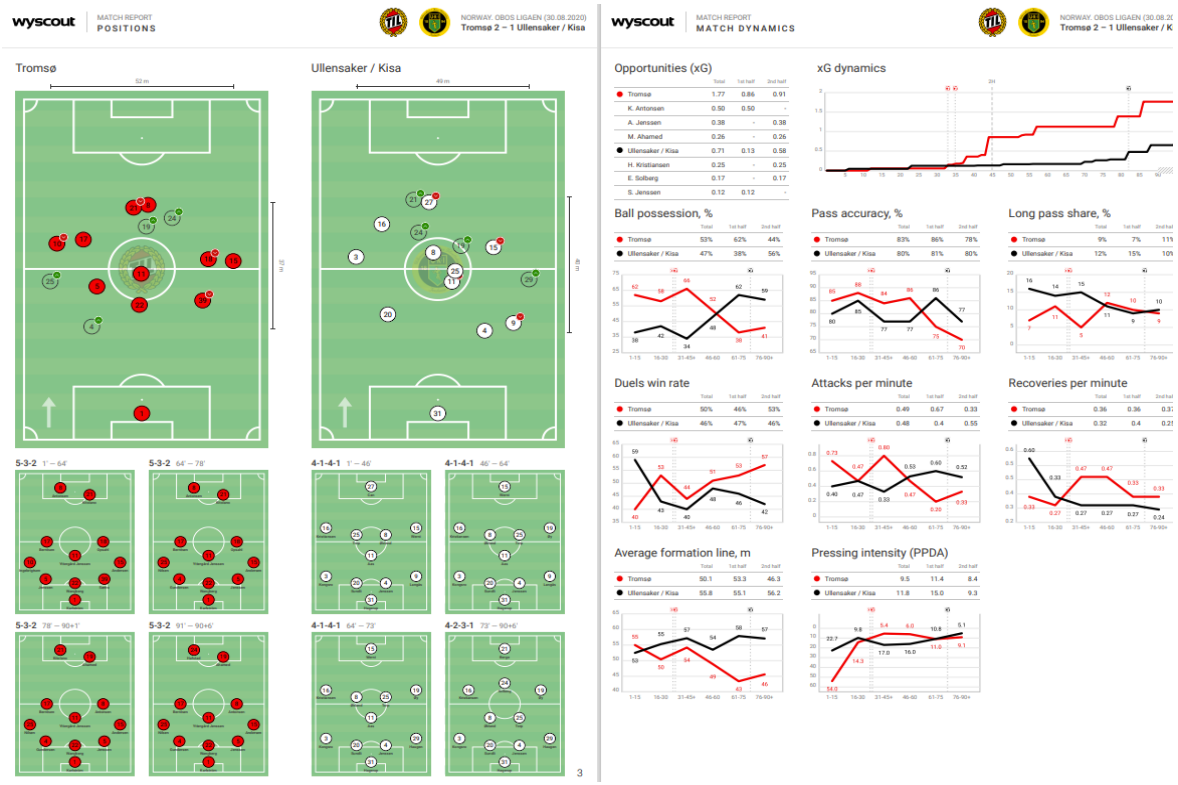


Figure 11. Showing detected 5-3-2 formation by Wyscout from TIL vs Ullsaker/Kisa in 2020 (Wyscout, 2020).

2.7.1 Goal box runs.

Defined as a pass from outside of the 16-meter “box”, only completed with a progressive forward run from the outside to the inside of the 16-meter “box”. The ball must be received inside the 16-meter box and either shot first time or controlled before being scored.

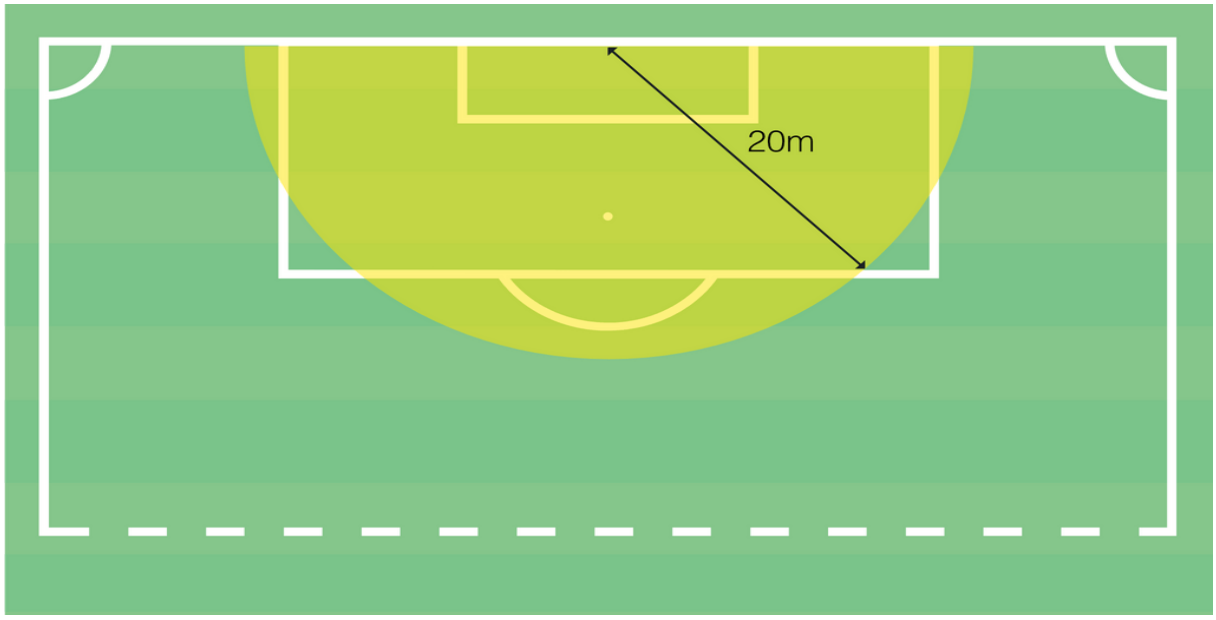


Figure 12. Showing area of a goal box (Wyscout, 2020).

Figure 13. Showing a 16-meter goal box run pass from player (A) to player (B).

2.7.2 Definition of a “possession attack”.

A definition by (Reep, 2002) “a team possession starts when a player gains possession of the ball by anyone except you teamates.

In my study a attack defined as a “possession attack” will start after regaining the ball. The team possession may continue with a series of passes between players, and possession ends when (A) The ball goes out of play, (B) the ball is won by players from the opposite team. A touch from the opposite team will not be detected as a failed possession as long as the ball still is in play and recived by a teammate. Except when the ball significantly changes direction, for example when the ball is played out of the field. Then the “possession attack” will start again. Therefor the possession attack can also start with a set piece defined as (throw in, free kick or 5 meter,) The possession attack is defined to be over 8 seconds after reciving the ball. And have to involve passes between at least 3 players. Figure 14 and 15 show shreenshots of an defined “possession-attack” with time limit over 8 seconds and 5 players involved in a passing secuenze before a goal. Duration of the example below is shown by Tv broadcast to be an 20 seconds long attack (16,37-16,57).

Figure 14. Showing the start of the possession.

Figure 15. Showing a goal from a possession attack.

2.7.3 Definition of a “counter-attack”..

Often this type of attack is reffered to as an transition og breakdown. I will use the term “countre-attack”. The attack starts when winning the ball in open play. As mentioned earlier Football and a countreattack is taking advantage of space (Cox, 2019).

In this study I will detect the phase from defense to possession on the ball without losing the ball. There is no limit to how many players need to be innvolved. The time limit of a countreattack is set to 0-8 seconds. Below an example of

Figure 16. Showing a regain of the ball.

Figure 17. Showing a box run goal pass.

Figure 18. Showing a goal from a countreattack.

2.7.4 Set pieces definition

Goals is defined as scored from a corner, freekick, penalty or a throw in.
In this study a set piece goal is defined as being scored from a corner, freekick, penalty or a throw in within a time limit of 0-5 seconds. And a maximum of 4 players can be innvolved. (Bangsbo, 2000) have emphasized the importance of set-piece goals in modern soccer and indicated that each team has, on average, 20set pieces in a match (Bangsbo, 2000).
It has been emphasized that 29% of all scored goals for the 2010-2011 in Turkish Superleague was scored from a set piece (Cerrah, 2016).

2.8 How to analyse the quantative data

In my analyses of the quantitative data it is important to classify the varables. When I categorize the type of formation or attack it is called nominal value. So if I calssify a type of attack and goal it shows what type of goal was scored and by dooing so exclude the other types of attack. This will not mean it is the best way to attack regarding efficiancy but rule out the other types of attacks. In my thesis I will look at the goals scored in the 90 min timeline, spilt in 15 minutes sequences. In this way I will fint out which goals are scored. This is the ordinal level used for analyses in SPSS. Here I will use the crosstables to provide the data visible and simple. The crosstable will analyse the context with the vaiables (y) and one or more independent varables (x). In the crosstables the statictics is measured in percent. When testing the context I will use a chi-square to test the statistical connection with a hypotesis. The significance level in this study was set at $p < 0.05$

2.8.1 Validity

When it comes to the validity of the thesis which is the validity and relevance, it is very important to measure what is intended and relevant to measure according to my thesis questions. Work in football research there can be cases of conflict created between the validity and reliability of the survey. The definition of the variables is established but still there can be discussions on the operational definitions. A researcher will still do everything to stick to the operational definitions.
If I wanted, I could have compared more seasons and looked at other variables linked to goal scoring patterns, but it would probably give me an insurmountable amount of analysis work.

2.8.2 The reliability

Reliability and credibility are as important as the validity of the thesis. The word reliability means that the survey must be reliable. This clearly means that the task must not be encumbered with obvious measurement errors that affect the result in the wrong direction (Jacobsen, 2005).

In my thesis there are clear operational definitions of the variables which I believe meets the requirements for reliability. The variables will be presented with equal value that is independent of the situation. However, some of the variables must use a certain degree of subjectivity. For example, a formation could be decided by the coach and 10 of the players could be loyal and follow the tactics. However, one player can be more out of position then in the actual designated position. Wyscout and Instat will detect this but it might not be 100% accurate.

2.8.3 Research on effectiveness of various playing formations

The football and science are in rapid development, the collaboration has created a new knowledge of the game. In great contrast to Gary Lineker famous quote

«football is a simple game. Twenty-two men chase a ball for 90 minutes and at the end, Germany always win" (Lineker, 2018).

Now days football it all about technology and analysis, arguably Norwegian coach Egil "Drillo" Olsen was one of the pioneers in the field of using theory to practice. As mentioned earlier the Norwegian national team got results by using game analysis and detecting patters in defense and attack. (Olsen, 2011) had a theory focusing the most important thing in football, how to create and score goals. The scorings patterns can be recreated and will give a team an advantage regarding scoring goals (Olsen, 2011). In the literature review we have seen many studies investigating effectiveness in attack. Most of the goals are scored from 0-3 passes. Attacking types shows that counterattack or breakdown is most effective regarding scoring goals.

When it comes to formation and effectiveness there was a lack of theory-based knowledge on the subject and no formation is regarded more effective than the other (Cox, 2019).

3 Results

This section will present the results from the video analysis of TIL`s attacking pattern and goal scoring effectiveness in three seasons.

To make it clear and visible the results will be presented as figures or cross tables. This to make the results and all the variables easy to read and comprehend. The results will create a basis of comparison from former studies within the field. The description of selected variables is the selected goals (n = 140). The goals scored by TIL is collected from 90 games during the 2018, 2019 and 2020 seasons. The average goal per season is (41), (39), and (60) goals per season, respectively. Which gives an average of 1, 53 (+- 0,39) goals per game.
If we look at the average goals, it shows that in the season 2019 TIL scored (39) goals and were relegated. This was the lowest number of goals and the lowest season in collecting points (30). In addition, the highest number of goals (60) were scored in OBOS league, which is the second league in Norway.

3.1 What type of formation is most often detected and what formation is most effective regarding scoring goals for TIL?

Table 2. Showing total games and minutes in each formation over three seasons.

Formation	**3-5-2**	**5-3-2**	**3-5-1-1**	**4-1-4-1**	**3-5-1-1**	**3-4-3**	**4-4-2**	**4-2-3-1**	**4-3-1-2**
Total games played 90min	27	32	10	3	1	5	5	5	2
Total minutes in formation	2430	2880	900	270	90	450	450	450	180

A total of 9 different formations were detected over the course of three seasons. When it comes to the selection of formations and number of games, we see that the 3-5-2 and 5-3-2 formation is the formation most frequently used. A total of 5310 minutes played is divided between these two formations. The 5-3-2 formation is frequently detected and used when

facing a superior or equal opponent, often the (top 6 teams) in the league. And the 3-5-2 formation is most frequently used in the OBOS League 2020.

3.2 Most effective formation regarding scoring goals.

Table 3. Showing detected formation and effectiveness season 2018.

FORMATION	**3-5-2**	**5-3-2**	**3-5-1-1**	**4-1-4-1**	**3-5-1-1**	**3-4-3**	**4-4-2**	**4-2-3-1**	**4-3-1-2**
DETECTED FORMATION	5	11	9	1	1	1	0	0	2
TOTAL MINUTES IN FORMATION	450	990	810	90	90	90	0	0	180
GOALS	**8**	**15**	**8**	**1**	**1**	**5**	**0**	**0**	**3**
GOALS EVERY MINUTE	**56**	**66**	**101**	**90**	**90**	**15**	**0**	**0**	**60**

Chi^2=11.6, df=6, p=0.07

In the 2018 season 7 different formations were detected, and the goals scored are spread between the formations. Most goals were scored in the 5-3-2 formation with an average of goals every 66th minute. Surprisingly, the 4-2-3-1 formation was not used in a single match even though it was the most frequently used formation the year before (2017). The most effective formation was the 3-5-2 with a goal every 56th minute.

Table 4. Formation and effectiveness season 2019.

FORMATION	**3-5-2**	**5-3-2**	**3-5-1-1**	**4-1-4-1**	**3-5-1-1**	**3-4-3**	**4-4-2**	**4-2-3-1**	**4-3-1-2**
DETECTED FORMATION	7	8	0	2	0	4	4	5	1
TOTAL MINUTES IN FORMATION	630	720	0	180	0	360	360	450	90
GOALS	**13**	**4**	**0**	**2**	**0**	**6**	**10**	**3**	**1**
GOAL EVEY MINUTE	**48**	**180**	**0**	**90**	**0**	**60**	**36**	**150**	**90**

Chi^2=12.3, df=6, p=0.06.

In the season 2019 7 different formations were detected, and the goals scored are spread between the formations. This season the 3-5-2 formation was regularly used and had an average of goal every 48th minute. The 2019 season TIL also played a more historical 4-4-2 formation with 2 strikers showing an effectiveness of a goal scored every 36th minute. The high number of goals scored from the 4-4-2 formation mainly comes from one match against Kristiansund were TIL won 5-0.

Table 5. Formation and effectiveness season 2020.

Formation	**3-5-2**	**5-3-2**	**3-5-1-1**	**4-1-4-1**	**3-5-1-1**	**3-4-3**	**4-4-2**	**4-2-3-1**	**4-3-1-2**
Detected formation	15	13	1	0	0	0	1	0	0
Total minutes in formation	1350	1170	90	0	0	0	90	0	0
Goals	**38**	**21**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Goal every minute	**35**	**56**	**90**	**0**	**0**	**0**	**0**	**0**	**0**

Chi^2=5.6, df=3, p=0.13.

When looking at the season 2020 we see only 3 different formations detected. The most used detected formation is the 3-5-2. A total of 38 goal were scored in this formation giving a goal every 35th minute.

Table 6. Showing formation, number of detected formations, total minutes in formation, goals, and time between goals in 2018,2019 and 2020.

Formation	**3-5-2**	**5-3-2**	**3-5-1-1**	**4-1-4-1**	**3-5-1-1**	**3-4-3**	**4-4-2**	**4-2-3-1**	**4-3-1-2**
Detected formation	27	32	10	3	1	5	5	5	2
Total minutes in formation	2430	2880	900	270	90	450	450	450	180
Goals	**59**	**40**	**9**	**3**	**1**	**11**	**10**	**3**	**4**
Time between goals	**41**	**72**	**100**	**90**	**90**	**41**	**45**	**150**	**45**

Chi^2=17.5, df=8, p=0.03.

The most effective formation regarding scoring goals is the 3-5-2 and the 3-4-3 formation, both formations delivered 1 goal every 41 minute of playing time. It shows that the 3-5-2 and 5-3-2 is significantly more effective formation then the other formations (p=0.03)

3.3 What type of attack is most effective regarding scoring goals.

Table 7. Showing attacking styles and effectiveness season 2018, 2019 and 2020.

TYPE OF ATTACK	**SEASON 2018**	**SEASON 2019**	**SEASON 2020**	**TOTAL**
POSSESSION ATTACK	23	20	24	67
COUNTER ATTACK	10	10	23	43
SET PIECES	8	9	13	30

Chi^2=3.6, df=4, p=0.46.

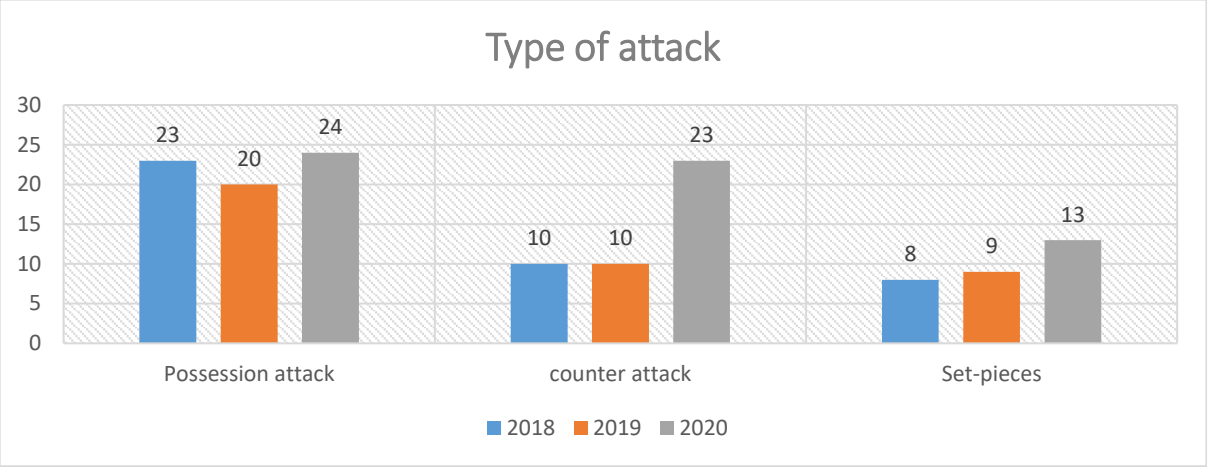


Figure 19. Showing attacking styles and effectiveness season 2018, 2019 and 2020.

It shows that the 2020 season delivered more goals scored from a counterattack compared to the two previous.

3.4 How many passes is most effective prior to goal.

Table 8 shows number of passes used prior to goals in the season 2018/2019, 2019/2020 and season 2020/2021.

Passes	***Season 2018***	***Season 2019***	***Season 2020***	***Total***
0-3	26	25	42	93
3-6	7	9	6	22
6-9<	8	5	12	25

Chi^2=3.6, df=4, p=0.46.

When looking at the total amount of goal, it shows that 0-3 passes is most effective. A total of 66,42% of all goals are scored from 0-3 passes.

We can still find some variations from season to season. The number from the 2018 and 2019 season is even. We see an increase in goals in the 2020 season. Below is a table form presenting the results.

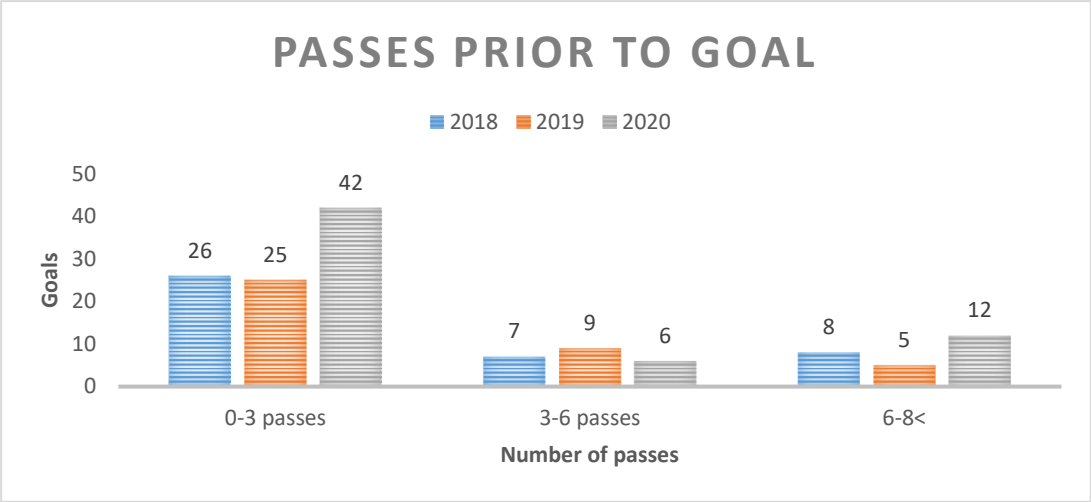


Figure 20. Showing goals divided passes prior to goal over three seasons.

3.5 Set pieces.

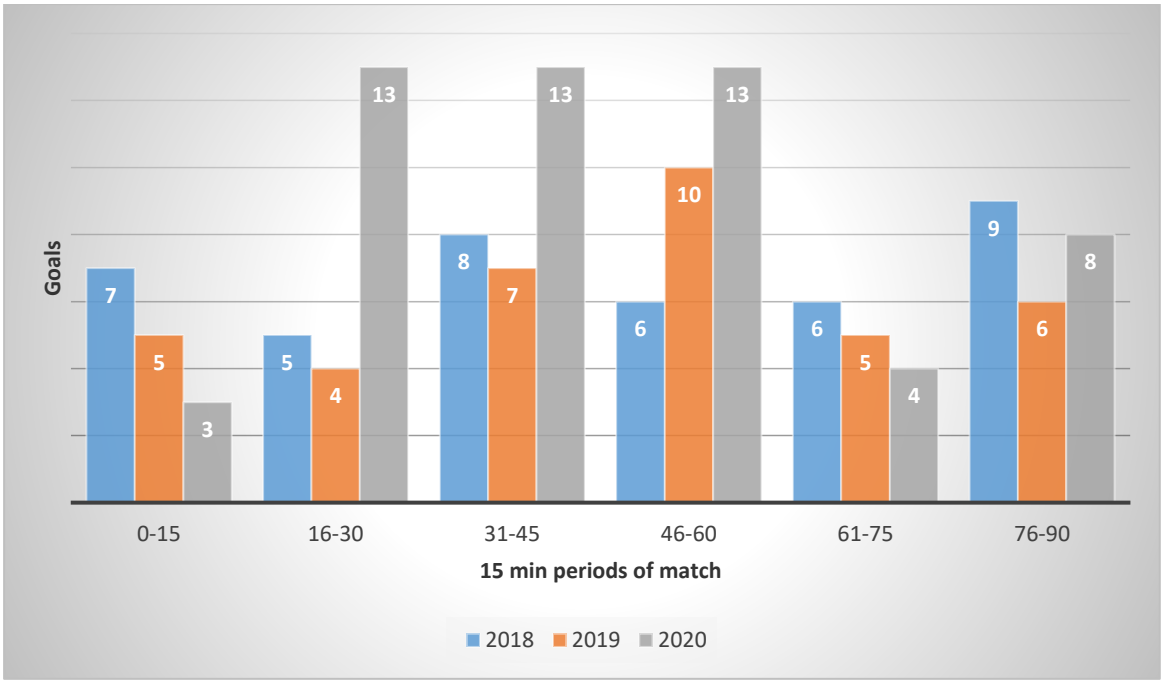
Table 9 Shows goals distributed on set pieces season 2018/2019, 2019/2020 and season 2020/2021.

Set pieces	***2018***	***2019***	***2020***
Free kick	0	4	4
Corner	5	3	6
Throw in	1	0	1
Penalty	1	2	3
Total	7	9	14

Chi^2=2.5, df=2, p=0.0001. For total goals only.

The total amount of goals scored from a set pieces piece is 30. Which is 21,4% of the total goal TIL scores. The most effective way to score on set pieces is from a corner kick (p=0.0005, $Chi^{2=}$18.5, df=3) with 14 goals in total over the course of three seasons. One thing to notice is the low overall amount of goal from free kicks.

3.6 In which periods are TIL most effective.



Chi^2=9.9, df=10, p=0.45. (E.T excluded)

Figure 21. Showing goals divided in 15 minutes periods from three seasons.

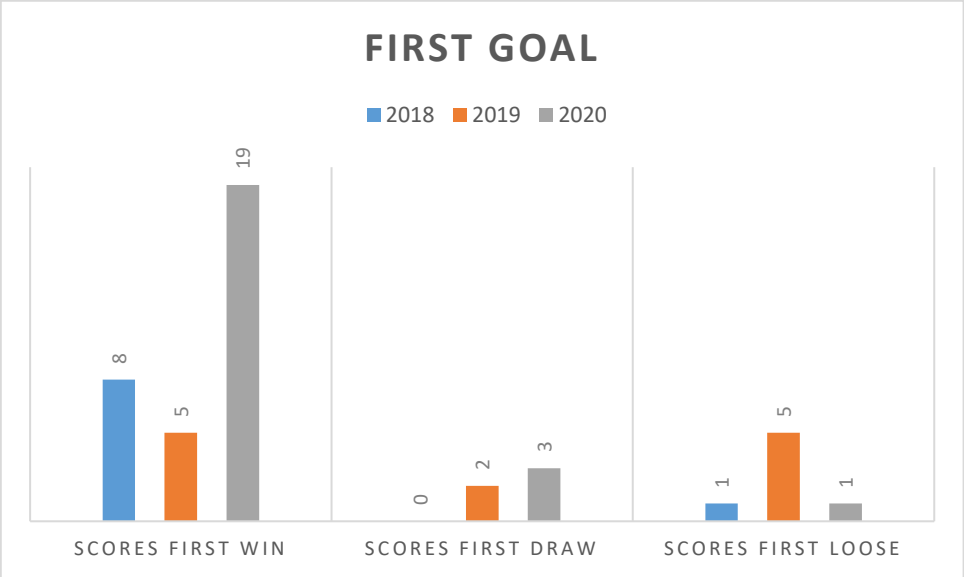
When studying the time syntax, we find that TIL is most effective between 31-45 and 46-60 minutes of the match (p=0.02, *Chi^2=5.8, df=2)*

Most goals are scored in the second half with (74) goals including E.T.

The lowest time syntax period is between 0-15 and 61-75 minutes. By conventional criteria, this difference is not quite statistically significant.

3.7 Effects of scoring the first goal.

Looking at what happens when TIL scores the first goal, we see that 72,7 % of the time the first goal gave a high overall win rate when looking at the three seasons. However, in the relegation season of 2019 the drop is remarkable showing only 41.6 %-win rate when scoring the first goal. In addition, there is also a 41.6% loose rate when scoring the first goal. In 2020 TIL won 19 games when scoring the first goal, a total of 82,6%. And only loosing 1 game giving low 4,3% lose rate.



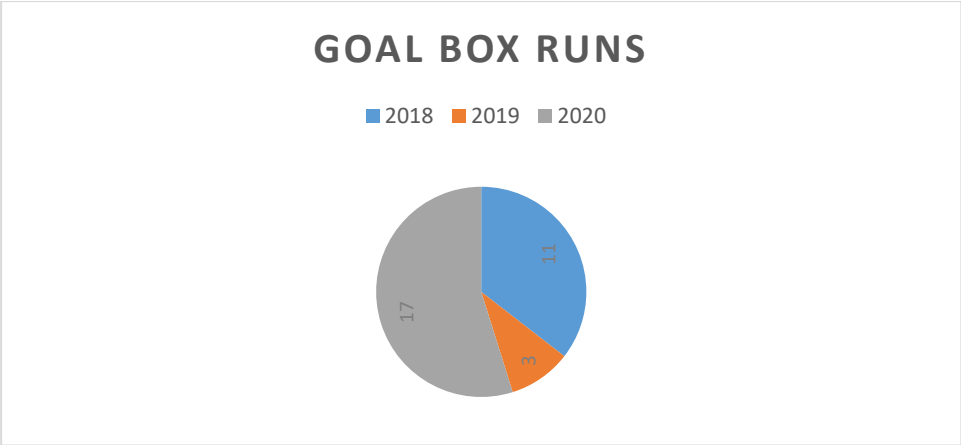
Chi^2=9.5, df=2, p=0.008 (Draws excluded)

Figure 22. Showing the effect of scoring the first goal.

Looking at what happens when TIL scores the first goal, total we see 72,7 % of the time the first goal gave a high overall win rate when looking at the three seasons. However, in the relegation season of 2019 the drop is remarkable showing only 41.6 %-win rate when scoring the first goal. In addition, there is also a 41.6% loose rate when scoring the first goal. In 2020 TIL won 19 games when scoring the first goal, a total of 82,6%. And only loosing 1 game giving low 4,3% lose rate.

3.8 Goal box runs

When investigating goal box runs findings show the number of goals went down from 2018 to 2019, a total decrease of 8 goals in the same competition Eliteserien. In 2020 we see the highest number of goals scored (17), compared to 2018 (11) goals, 2019 (3) goals. In addition, the highest number was scored in the OBOS league.



Chi²=9.2, df=2, p=0.008.

Figure 23. Showing goal box runs.

Looking at goal box run we see a high the highest number of goals scored in 2020 with (17) goals. If we compare goals scored in 2018 and 2020 to 2019 it shows a significant decrease in goals scored from a goal box runs.

4 Discussion

The main findings of this study are:

The most effective attack is the possession attack.

The most effective formation is the 3-5-2.

Most of TIL´s goals are scored after 0-3 passes.

The most effective time to score a goal is between 31-45 and 46-60 minutes.

The goal box runs were highest in 2020 (17) goals. And lowest in 2019 (3) goals.

When TIL scores the first goal, they won 72,7% of the matches.

Every football game is different; there will always be unknown circumstances in the "inner life of each" game that might affect the result and outcome. By watching every game and touch on the ball, you might get a real feel of why things turned out the way it did. The problem is that this will be and subjective judgement on the game and not valid (Armatas et al., 2009).

Nevertheless, I have analyzed and investigate attacking patterns ending up with goals for TIL during three competitive seasons.

When it comes to the most effective type of attack, table 7 shows that possession attacks are the most effective with 48% of the total goals. In the 2020 season TIL scored 38% of the goals from a counterattack. If we compare the goals from a counterattack from the season 2018 (10) goals and 2019 (10) goals we see an increase of (13) goals in the 2020 season. This could indicate that TIL had players with speed that could catch teams out of balance. The total increase of goals is also a consequence of a lower competition level.

In addition, TIL would often score the first goal making the opposition to chase a goal leaving space and making themself vulnerable to counterattacks. The number of goals scored from a possession attack also shows that TIL can be regarded as a possession minded team with high number of passes in every season. When looking isolated at the 2018 and 2019 season it is easy to see the goal scoring patterns and way of attack is correlated showing possession attack 2018 (23) goals and 2019 (20) goals. Goals from a counterattack shows 2018 (10) goals and 2019 the same number (10) goals. It will indicate that the style of play and execution was the same. In 2020 the goals were divided more equal with possession attack (24) goals and counterattack (23) goals. The close to equal divided goals between the attacks will tell us that TIL is comfortable with delivering goals from both types of attack. TIL scored (30) goals from set pieces in three seasons. A total of 21,4% of all total goals, this is a lower number

then studies uncover. It has been emphasized that 29% of all scored goals scored in 2010-2011 in Turkish "Superleague" was scored from a set piece (Cerrah, 2016).
Based on this information, goals scored from set pieces have a remarkable effect on competition results so that the importance of set-piece goals should be more emphasized.

What is regarded the most effective formation is a question which cannot be concluded from the present study. The low number of studies on tactical formations and results makes it difficult to argue what will be the most effective formation. The lack of theory-based knowledge on the area also makes the thesis interesting. Earlier studies found that no formation has significant advantages over the others (Roman, 2015). It will depend on how the team is set up and the players individual quality. In this segment it will not be wise to play the 3-5-2 formation unless you have wingbacks with both attacking and defensive qualities, and stamina as an individual attribute. The formation 3-5-2 and 5-3-2 can arguably be categorized as the same formation. But after analyzing a total of 59 games and over 5300 minutes divided between the two formations, it was clear there was a difference in the way of attacking and defend between the formations. The 5-3-2 was in most of the matches detected when facing top 6 teams in Eliteserien and OBOS league. The tactical dilemma of choosing formation can be challenged if a team puts high pressure on you. The wingbacks are often detected to be drawn back, and this will affect the detection of formation even if the intended formation was 3-5-2. While observing and analyzing the performance over the past three seasons under two different coaches' regimen, frequent change of formation and changes of style from a "possession oriented" style in 2018 and 2019 to a more dynamic style in 2020. Meaning the team will attack with speed if they can, but also play be able to change to a possession-oriented style with a more patience. But mainly I see TIL as looking more forward minded. The average passes per game in 2018 was 483 passes, in 2020 there was 466 passes per game (T. D. Johansen, 2019). The lower number of passes can be a sign that TIL wants to be adaptable and more progressive in their style. It can also mean the lower quality of the opposing teams in OBOS league makes the average passes for both teams go down. The tempo of the game is lower and could mean fewer passes. In 2019 it would be fair to ask why TIL did not use the formation 4-4-2 more often when considering the formation delivered a goal every 36th minute. But with only 4 detected matches in this formation, we can argue that the formation is not considered valid when the number of matches is low. In addition, 5 goals came from one game against Kristiansund which is a high number when counting average goals from only four matches.

When trying to conclude the most effective formation the 2020 season showed that the preferred formation was 3-5-2. The formation delivered 38 goals, which is a goal every 35th minutes of match time. We must address the fact that lower opponent quality in the 2020 season could explain the high number of goals. And the fact that over 1350 minutes was devoted to this formation. One valid point is only 3 different formations were detected in 2020 which is regarded as continuity in one selected formation and can be regarded as a success factor. In 2018 and 2019 TIL often were detected going from 3-5-2 to a flatter 5-3-2 formation, this could also mean the level in OBOS league is lower giving TIL a chance to be more offensive.

When looking at the number of passes prior to goals it shows that there is a clear overweight of goals after 0-3 passes with a total of 90 goals out of 140 over the three seasons.
(Hughes, 2005) studied World Cup in Italy 1990, showing 84% of the goals scored were after four passes or less. The predominance of goals from 0-3 passes in TIL is in line with results from other studies (Mitrotasios & Armatas, 2014), and (Markussen, 2017). Highest number of goals from 0-3 passes with 42 goals was registered in the 2020 season, but considering the team played in OBOS League it was expected to be higher than 2018 and 2019. Still, it is an impressive number. When discussing passes prior to goal it raises the question about the possession-oriented style. If the results from every study show a predominance of goals after 0-3 passes, why do teams keep the ball after 5 passes? The answer is of course complex, and a possession-based idea can be a tactical move to prevent receiving goals, it could be seen as a way to defend with the ball (Cruijff, 2015). There will always be a discussion if we consider the individual player´s contribution and effort in various seasons when analyzing team performance and passes prior to goal. The individual skills can make a huge impact on how a team perform. Let us say the team has a player with speed, dribbling and finishing skills. The player can be passed the ball from 1 or 2 passes and score a goal without needing players to pass to.
Injuries and other factors may also affect the passes attacking styles, formation, passes prior to goal and interactions on the field.

When studying the time syntax, we find that TIL is most effective from minutes 46-60. This is regarded rear when considering studies often find the minutes 75-90 to be the most effective period (Markussen, 2017), (Mitrotasios & Armatas, 2014) and (Smith, 2016). Some of this study does not exclude extra time. But there is still a predominance of goals in the last

period of the matches. The accumulation of fatigue towards the end of the game could be a reason for more goals in the period. The fatigue could make the consecration level drop and players start making mistakes. In my study (8) goals were taken out of the time syntax. This (8) goals were scored in E.T either from minute 45+ or 90+ minutes. If I wanted to use E.T as a part of the study, it would not be valid to find the most effective time for goals divided in 15 minutes periods. It would be regarded as unfair with two periods with more minutes. Also, the findings show that the minutes between 31-45 minutes delivers a high total (28) goals, this is only one less than the most effective period 46-60 (29) goals scored. This might be surprising when considering teams often tend to "shut down" matches before the half time break. The lowest goal time syntax is between 61-75 minutes. This could be explained as a phase of the game where teams do not take the highest risk. The study also found that most goals are scored in the second half with 53% of the total goals. This is in correlation with other studies (Smith, 2016), (Markussen, 2017) and (Alliance & Toriola, 2019).

The investigating of goal box runs showed a low number in 2019 (3) goals compared to 2018 (11) goals and 2020 (17) goals. The 2019 season also shows a lower number of goals compared to 2018 and 2020, this indicates that TIL played static football in 2019 making fewer forward runs. When investigating goal box runs it will fair to talk about the individual players contribution. In 2018 Gjermund Åsen was a creative force setting up players in goal scoring positions. The lack of goals from box runs in 2019 can also be a consequence of the lack of "the assist player". In the literature review I looked at location of the successful area of the final pass. The results from FIFA World Cup, UEFA European Championship, English Premier League, Australian `A` league showed that 90% of goals association scored within 21.03 meter of the goal (Smith, 2016). This means that it will be important to set up assists and forward runs from 21 meter from goal with forward runs.
The study by (Markussen, 2017) investigating scoring patterns for TIL in 2011 season and found that most goals were scored 5-11 meters from the goal. With 4 out of 10 goals from inside the 5 meters. The studies show most goals are scored from inside the penalty area, a plausible reason for this finding could be that it is easier to score goals from this location. The reason for fewer goals scored from outside the penalty area may be because of the oppositions defense structures. This can also be reflected by team's ability to defending the area outside the 16-meter. But still, it would be fair to emphasize the importance of getting the ball and players in the 16-meter area.

The effect of scoring first is shown to be a success factor, during the three seasons TIL won 72,7 % of the games after scoring first. In line with other studies it constitutes a clear advantage (Smith, 2016) and (Lago-Peñas, 2017). The boost a team gets when scoring first can be massive, and the blow of conceding can be a negative psychological factor (Vergonis, 2019). The mental aspect of this might be underestimated. In the relegation season 2019 the win rate went remarkably down showing 41.6 %-win rate when scoring the first goal. In this season when TIL scored first, they lost 41,6% of the games meaning there were no advantage for TIL scoring the first goal in the competitive season 2019. Often bad luck and other circumstances have been reported to affect results (Lago-Peñas, 2017). But in this case, I find it hard to argue that bad luck had anything to do with the overall results. The tactical risk is associated with a team's actions after scoring the first goal, when a team is failing from preventing the oppositions team from scoring many factors will come in to play. I think the attacking risk of playing possession-oriented football made the team less focused on the defensive phases. I think we can discuss the players suitability in performing in such a system. The suitability will refer to how suitable a player is for a particular tactic. The quality of the players did not match the tactical aspect and ambitions the style demands.
In the 2020 season we see an increase showing 82,6% win rate when scoring first. Only 1 time TIL lost after scoring the first goal. Again, we can discuss the lower level of the opposing team in OBOS league 2020. My hypothesis was that TIL will be more effective considering scoring goals with continuity in a selected formation and using few passes prior to goals. The 2020 season showed that continuity in a selected formation and few passes prior go goal will enhance the efficiency in attack.

4.1 Summary:

Looking at the results of the study comparing the three seasons we can find similarities and differences. The results and summary show that:

• *Looking at the three seasons, the most effective formation was the 3-5-2, with a total amount of 58 goals. Which is 41% of all the goals scored during three seasons.*

• *When TIL scores the first goal, they won 72,7% of the games.*

•*The most effective way to attack shows that TIL score more goals from possession attack than counterattack.*

• *The most effective way to score on set pieces is from a corner kick with an average of 4,66 goals per season.*

• *The most effective passing number prior to goal is 0-3 passes.*

• *Over the cores of the three seasons, we see that most goals were scored in the second half 53%.*

• *The most effective time to score a goal is between minute 46-60.*

• *The results also showed that TIL was almost as effective between minute 36-45.*

5 Study limitation.

Although the variables in this study are defined according to Wyscout´s definitions and the fact that there are different operationalizations method in this thesis is also apparent in other studies in the football taxonomy, there may be various ways of interpreting situations. It can create questions about registrations and counts giving a correct picture of the game.
Despite strict definitions of variables there will be a certain degree of subjectivity used to classify occurrences and in which category to be counted.
Another possible weakness in the study is not considering the effects of playing home and away regarding type of attack and formation leading to goal. Both factors could possibly affect the results and are worth future investigating.
Also, a possible weakness in the study is not using E.T (extra time) in the time syntax. This was something I considered but on the other hand comparing when goals are scored would have been impossible with uneven timeframes within periods. The fact that one season was played in a lower competitive league might be seen as a limitation when investigating goals. I could have analyzed the 2017 season instead of 2020, but since I was a member of the squad in 2017, I felt it would not be right to analyze a season were I played. Also, a limitation can be the low number of selections. I could have studied more teams to find out more about scoring patterns. The findings cannot be generalized in football, since the result only deals with data collected from TIL.

5.1 Conclusion

This study has showed that identification of a team’s playing pattern is likely to be beneficial to coaches as this would impact training methodologies because of understanding what teams need to do to score goals and win. Match analysis is the outcome of a football match determined by multidimensional factors such as tactical awareness, psychological preparation, fitness etc. An important factor to be successful will be to include the results of match analyses as part of the training program.

6 Literature

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