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# Mentors Effect On Norwegian Footballers

A quantitative analysis on Norwegian footballers and their levels of passion, grit and mindset

Graduate thesis in Master in psychology, specialization in learning – brain, behavior, environment

Supervisor: Hermundur Sigmundsson

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Faculty of Social and Educational Sciences  
Department of Psychology



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## Preface

This master thesis is the ending station of a two-years master's degree in learning psychology, brain, behaviour, and surroundings at NTNU. I want to thank the participating clubs and players to take part in the questionnaire as it has been both necessary, but also inspiring and motivating.

A thank you goes out to my supervisor, Hermundur Sigmundsson. He is the source of inspiration and have guided the thesis in the right direction. His dedication to the field is inspiring and the experience I have gotten by working with him is valuable.

A special thanks to my partner Emilie, who has been there through out the whole process of writing and delivering the thesis. Also, thanks to my family and friends who have been there for me.

## Sammendrag

Hensikten med denne masterstudien er å videre utforske forholdet mellom lidenskap, pågangsmot og tankesett sammen med trener relasjon. Studien vil ha som mål å se på likheter og forskjeller mellom gruppene og finne eventuelle sammenhenger mellom variablene. Gruppen som deltar i studien, er norske fotballspillere fra tre ulike nivåer. Utvalget er på 40 spillere og de fire klubbene representert er Molde FK og Aalesund (sammen N=10), begge fra den Norske Eliteserien. Træff (N=16 fra andre divisjon, og til slutt Gossen (N=14) fra femte divisjon.

For å måle nivået av lidenskap ble The Passion scale brukt, skalaen har 8-items (Sigmundsson, 2019). Pågangsmot måles med Grit-S skalaen, som også har 8-items (Duckworth et al., 2007). For tankesett er Theories of Intelligence skalaen (TIS) brukt, den har også 8-items (Dweck, 1999). For å rangere spillernes oppfattelse av en viktig trener relasjon, ble en skala produsert for denne masteroppgaven fra inspirasjon av Jowetts 3+1C relasjonsmodell (Jowett, 2017). For å få svar på studiens mål ble det brukt Independent T-tests for å kunne sammenligne de tre ulike nivåene. Utvalget indikerte et generelt lavt-moderat nivå av forskjell, uten at de ble vist signifikante. I tillegg ser oppgaven på den totale skåren for viktigheten av trenerrelasjon og om det er en signifikant forskjell mellom lidenskap, pågangsmot og tankesett. Oppgavens hovedfunn var en signifikant korrelasjon mellom opplevd trenerrelasjon og lidenskap ( $r = .407$ ). Videre var pågangsmot og tankesett signifikant korrelerende ( $r = .383$ ), noe som forklarer den nokså store betydningen for pågangsmot når det gjelder utviklingen av et vekst tankesett, fremfor å ha en nær trenerrelasjon.

Samlet er det en mangel på betydelige resultater når det gjelder signifikansen, og mangelen på spesifisitet i skalaene rettet mot fotball gjør det vanskelig å rette faktiske konklusjoner.

*Nøkkelord: Lidenskap, pågangsmot, tankesett, ekspertise, trenere, fotball*





## Abstract

The purpose of this master study is to further explore the relationship between passion, grit, and mindset together with coach relation. The study will aim to look at similarities and differences between the groups and find correlations between the variables among them.

The studied group are Norwegian football players from three different levels. The sample size is 40 players and the four clubs represented are Molde FK and Aalesund (combined N=10) from the Norwegian Eliteserie, Træff (N=16) from second division, and at last Gossen (N=14) from fifth division. To obtain the levels of passion, grit, mindset there are used established scales. For the level of passion there were used the passion scale, the scale has eight items (Sigmundsson, 2019). Grit is measured by the Grit-S scale which has eight items (Duckworth et al., 2007). For mindset there are used Theories of Intelligence Scale (TIS), which also has eight items (Dweck, 1999). To rank a perceived importance for a good coach relation, a scale produced for this master thesis were inspired by Jowett 3+1C relationship model were used (Jowett, 2017).

To answer the aim of the study an independent t-tests were used to compare the three different levels. The sample indicated a generally low – moderate level of difference with no significant differences. Furthermore, looking at the total score at importance of coach relation for Norwegian footballers there were a significant correlation between coach relation and passion ( $r = .407$ ). Grit and mindset were also significantly correlating ( $r = .383$ ) which can explain the rather big importance for grit in the development for growth mindset rather than a good coach relationship. Overall, the lack of significant results and specificity towards football is needed to conclude the actual influence of coach relationship.

*Keywords:* Passion, Grit, Mindset, Expertise, Coaches, Football

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## Clarification of concepts

The main concepts of this study are passion, grit, and mindset. These concepts will be used frequently throughout the study and analysis. Passion is a concept which is described as how one receives motivational aspects by doing a skill, hobby, or activity (Vallerand et al., 2012). In this study football is described as a passion. Grit is a concept which is described by Duckworth et al., (2007) as the ability to pursue the passion without getting demotivated by setbacks and bad results. High levels of grit are recognised as the ability to achieve success (Duckworth et al., 2007). In this study the concept of grit will be defined as a creation from the environment of the individual on behalf of the theory of Probabilistic Epigenesis by Gilbert Gottlieb (Duckworth et al., 2007; Gottlieb, 2007). When looking at the environmental factors that affect football players. The environmental factors that affect football players are factors such as family, friends, but also important for this study, coaches. A good mentor is someone that can provide a good relation, have good communication skills, being open and honest and also provide useful knowledge and wisdom together including the individual they are mentoring (Jowett, 2017). Mindset is the ability one has to evaluate their own skills and attributes (Dweck C. S., 2009). The concept is divided into two subcategories: Fixed- and Growth mindset. A growth mindset being used in this study considering the expectations to have a growth mindset to pursue and continue playing football over a longer period (Ericsson, 2007; Dweck, 2009).

## Theoretical framework

This theoretical chapter is a review of scientific articles and theories which are used as evidence for the basis of the analysis. The basis is used as an inspiration for the study issue, discussion, and conclusion. To start off there are an introduction to football, together with how important psychology is to become an expert in a specific sport (Ericsson & Towne, 2010). The psychological factors which are included are passion, grit, and mindset, which all are declared as important to become exceptional in something (Ericsson, 2007; Sigmundsson, 2020). These factors together with the importance of a healthy environment, which contributes to development for individuals in all ages is also going to be presented (Gottlieb, 2006).

### Football

Football is one of the biggest sports in the world and is played by millions all around the world every day. It is not easy to become an elite football player. Côté & Hay (2002) explains how individuals encounter different stages on the road to become an elite football player. These stages are sampling, specialisation, and investment. The transition into these stages is critical (Côté & Hay, 2002). For many, the adolescence is a crucial “make it or break it period” and to overcome, and pursue an elite level there is needed a specific training regime and lifestyle (Ericsson & Lehmann, 1996). Elite footballers need to improve and combine different field of competence which include high level of tactical understanding, psychological levels, and top physical abilities (Sigmundsson, 2020). Coaches has been recognized in the literature to be the key factor to why some become experts in football (Côté & Hay, 2002). The influence a player perceives by expert coaches are positive of negative for their development, it all depends how one’s mindset interpret the coaching (Dweck 2009; Jowett, 2017). Influence by coaches is rather critical in the development of younger players considering it is a critical stage of their establishment and development both physically, and

mentally (Mills et al., 2012). The expert coaches in the study support the view that natural talent can remain a gift if it's not nurture through development (Mills et al., 2012; Gagné, 2009). Inspired by self-determination theory and Jowet 3+1 coach conceptualization this study will look at how coaches are a producer of autonomy, relatedness, and competence and how this is achieved through a passion, grit, and growth mindset (Duckworth, 2007; Dweck, 2009; Jowett, 2017; Ryan and Deci, 2002; Vallerand, 2015).

### Self Determination Theory

Described in social psychology, self-determination theory (STD) is the influence of social environment on attitudes, values, motivation, and behaviour (Deci and Ryan, 2012). This interactive perspective on development is found in football were, coaches are expected to lead, instruct, and provide support to provide development (Jowett, 2012). According to SDT there are three universal psychological needs: need for competence, autonomy, and relatedness (Deci and Ryan, 2012). Self-determination theory has develop its definition over time and the change indicates that SDT assumes humans as inherently active, intrinsically motivated, and oriented towards development (Deci and Ryan, 2012). According to Deci and Ryan (1985) there are three motivational factors that can influence ones behaviour: intrinsic, extrinsic motivation, and amotivation. Coaches wants to provide surroundings for their players which can lead to intrinsic motivation; Intrinsic motivation is wished for in sports because intrinsic motivation creates behaviour which is produced by participation in the activity because if the pleasure and satisfaction one gets from doing it (Jowett 2012; Vlachopoulos et al., 2000). Extrinsic motivation and amotivation are often associated with negative development considering sports and achievement, they are associated with being demotivated and participating to gain external rewards or to avoid negative consequences (Vlachopoulos et al., 2000).

Self-determination theory has also provided evidence for a theory considering the



dynamic interplay of autonomy and competence, this theory is called Cognitive Evaluation Theory (Deci and Ryan, 2012). The theory explains the importance for social-environmental events which includes rewards or feedback to develop an intrinsic motivation. People's competence are a direct provider of autonomy and having a "controlling" force which pressures the individual to think, feel or behave a certain way is important to create a motivational environment (Deci and Ryan, 2012).

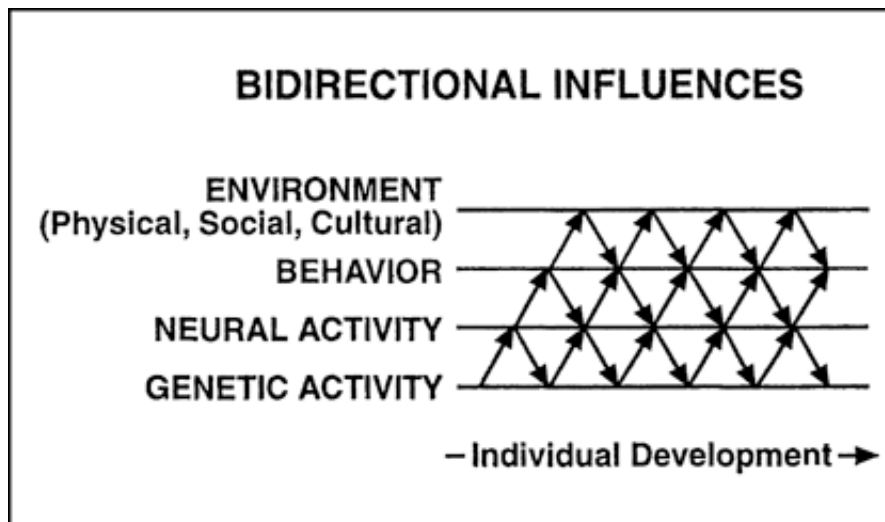
## Expertise

The definition of expertise varies in the field which it is discussed. Beliefs about general characteristics of an expert is the ability to differentiate them from novices and less experienced individuals (Chase and Simon, 1973). Theoretical framework of developmental psychology gives the representation that expertise is the ability to acquire a skill, then improving it by adding speed, smoother movements and reducing needed effort (Ericsson & Towne, 2010). An expert in their represented domains need to be superior in a specific task and the superiority needs to be a predictor for good results (Ericsson, 2007). Good results also need to be achieved over a longer period and as mentioned by Lord Kelvin: "*If you cannot measure it, you cannot improve it*" (Ericsson, 2007). It is difficult for non-experts to achieve good results when they compete against established experts. Often this is caused by the expert's experience and routine, rather than the skills being superior (Ericsson et al., 2018). Experience and routine are gathered through years and years of deliberate practice which get implemented in the neural system and can be reproduced easier and more often (Ericsson, 2007; Gottlieb, 2006). Many of these experiences and routines are also known to be shared by knowledge, which are verbally described which can benefit the student to facilitate their progress to become an expert (Ericsson et al., 2018).

## Probabilistic epigenesis

Experience is a key factor to why some can produce superior performances and differentiate an expert from novices (Ericsson et al., 2018). Gerald Edelman theory about Neural Darwinism is explaining this experience as the neural systems reaction to learning (Edelman, 1993). This theory is in many cases of psychology referred to as the basics of skill learning and development. An individual who is learning, are creating a process where networks of brain cells get strengthened by continuous and repeated stimuli (Edelman, 1993). A further theory of development is Gilbert Gottlieb's Probabilistic Epigenesis. Probabilistic Epigenesis explains how there are a continuous interaction between genes, the nervous system, behaviour, and the environmental surroundings of the individual (Gottlieb, 2006). These interactions are key factors for which individual who manages to adapt to changes and create a climate for themselves which can contribute to expertise (Ericsson et al., 2018). If an individual's environment is surrounded by factors that predict good values, routines, and behaviour, the greater possibility it is that the individual will stick to the activity they are pursuing (Dweck C. S., 2009). Studies suggests that the opposite set of experiences such as a difficult childhood and adolescent with bad results and little progress has a strong correlation with inadequate development (Dweck, 2007). If these social relations are provided for negative functions such as stress, burnout, or social burdens such as anxiety or depression, their development in sportingly term decline (Duckworth, 2020).

Figure 1 explains how Gottlieb (2006) theory shows how structures begin to function after being matured by activity in the genes. Gottlieb argued that these bidirectional influences are the most central part of human development. Stimulation, both internally and externally are very important for facilitating change of function and behaviour. The theory of probabilistic epigenesis leaves its mark on environmental perspectives considering the activation of genes are contributed by the environment and its stimulations (Gottlieb, 2006).



**Figure 1.** Gottliebs probabilistic epigenesis. Received from Gilbert Gottliebs article

“Probabilistic epigenesis”, 2006, *Developmental Science*, 10, p. 2:

<https://doi.org/10.1111/j.1467-7687.2007.00556.x>

### Deliberate practice

As the earlier theories this study has mentioned, expertise and exceptional performances does not come easy. A training regime and lifestyle with a climate that predicts improvement over time are as important as growing. Ericsson (1993) have calculated that the average individual highest level of performance comes after a decade or more of deliberate practice (Ericsson & Lehmann, 1996). This states the importance of starting deliberate practice in early adolescence considering the time perspective needed. Adolescence is also proven to be the most critical period for transitioning into adulthood considering the many establishments of neural connections (Gottlieb, 2006).

A decade can be calculated to an estimate of 10.000 hours, and it is doubtful that any experts producing exceptional performances over time has less than this estimate of deliberate practice. To be able to produce these numbers of deliberate training, there are a need for high levels of passion, grit, and mindset (Duckworth, 2016; Dweck; 2007; Sigmundsson, 2020).

Ericsson suggests that the practice one does needs to be specific and adjusted to the individual (Ericsson & Lehmann, 1996). One does not simply acquire this knowledge by themselves. That is why it is important to have well educated mentors which can show and explain knowledge, but also know how to learn it on (Gagné, 2009). The theories of physical movement are complex and broad, and an understanding of how to improve requires knowledge of different fields. Physical activity is divided into types of movement which are: asymmetric, symmetric, and mixed (Wilczyński, 2022). Different type of skills needs to have different type of specific training to be able to gain automation and replication. Ericsson et al. (1993) suggests that deliberate practice is activities especially designed by a coach or teacher that can improve the individual's performance by developing specific aspects (Ericsson & Lehmann, 1996).

### Passion

Passion is a feeling to overcome and pursue every element that comes in their way of what their passionate about. When an individual is passionate it is defined as a strong desire or enthusiasm for something (Oxford University Press, 2019). To reach expertise in any activity or theme you need to have this passion to be able to pursue the journey to become one. Individuals that reach expertise are always made, and not born (Ericsson, 2007). One can argue that training for a decade to become a top athlete is something a lot of people are pursuing, but to do it in the “correct” way is way harder than many can foresee. Training deliberately is very important and later in the theoretical chapter this will be discussed. Nevertheless, it is no secret that football players on elite level are highly popular in society. To reject friends, family and other tempting invitations that may obstruct with their regime as professional athletes are not always easy. This clearly shows that passion is a producer of motivation, the individual stays motivated and focused because their passion levels are so high that they won't fall for temptation (Ericsson & Charness, 1994). Vallerand (2015)

explains how there are two types of passion, harmonic and obsessive passion. The difference of the two are how the activity, theme or skill get internalized into the persons identity. Past research supports Vallerands definition of the two different types of passion. Research shows that both harmonic- and obsessive passionate individuals are contributing more time towards the activity or they are passionate about (Vallerand et al., 2012).

Harmonic passion is defined as a personality trait which has been integrated by behaviour. The harmonic passion is created when the individuals behaviour complies with the individuals own values and goals. This is seen as the consequence of autonomous supporting surroundings that makes the individual able to experience and choose own activities and goals without being forced and unwilling (Vallerand, 2015). This makes it easier for the individual to pursue a regime towards being an expert, considering the amount of time and social sacrifices the individual has to commit. An individual with a harmonic passion will feel a connection with the activity and by practicing it is because of the individuals identity and happiness (Vallerand, 2015)

On the other hand there is obsessive passion. This is a form of passion which in many areas conflicts against the individual own values, wishes and behaviour (Vallerand, 2015). The reasoning for practicing an activity while having an obsessive passion can be because of created social or cultural standards which both the individual and people around expect and decide. We can connect the explanation with Deci and Ryans self-determination theory. The individual practices an activity because they want to feel accepted or to boost their own self-esteem (Deci & Ryan, 2002).

## Grit

Grit is described as a tolerance towards your passion while working towards a long-term goal (Duckworth, 2016). To be able to pursue your passion you need to have a high level of grit. It will often be times where being an athlete will make it hard to continue practicing

your passion. Injuries, setbacks, and bad results will test your grit and these factors can reduce motivation. It takes a long time to become an expert and to not give up when facing these contradictory stages is difficult for many. Duckworth (2016) explains how “grittier” individuals with qualities like cognitive ability, physical activity, emotional intelligence, confidence, charisma, and power of action, has a bigger chance at reaching their long-term goals (Duckworth, 2016).

Grit is divided into two subcategories which are included in this study. These are Consistency of Interest and Perseverance of Effort. Duckworth suggested these subscales because grit essentially is the capacity and ability to sustain both effort and interest in long term projects (Duckworth & Quinn, 2009). Grit is the fuel to passion and the interest needs to be kept continuing pursuing your passion. One thing is keeping this interest intact, but putting in the work, both specifically and consistently is the important parts in becoming an expert (Ericsson, 2007). Therefore, it is important with a continuous cooperation between the Consistency of Interest and the Perseverance of Effort. The effort is the factor that is essential for development and self-realisation by doing the interest in mind (Duckworth & Quinn, 2009).

## Mindset

How one evaluates their own skills and attributes is based on an individual’s mindset. Mindset, which also in some cases are called mentality, is understood as an individual’s own understanding of how humans’ abilities work, which includes intelligence and personality (Dweck, 2009). To evaluate own abilities while practicing is a key factor in improving, and later the importance of coaching and mentoring will be discussed in the light of this. To fail on the way to expertise is the greatest way to adapt, overcome and learn, and the ones with the “correct” mentality will use failure to become better. In theory there are two types of mentality, fixed and growth (Dweck, 2009). Individuals with a fixed mentality has an

understanding that human attributes are permanent qualities and cannot be improved or lost. On the other hand, there are individuals with a growth mindset who are constantly searching for methods to reach and improve their potential by working hard (Dweck, 2009).

The importance of support and coaching is as important for children as for adults at high level of expertise. Dweck and colleagues explains how to boast purposeless towards a child's talent at a young age will most often contribute to developing a fixed mindset. An individual which has a fixed mindset will not use constructive criticism and feedback to produce improvement, but rather be demotivated and without bother. Dweck described how one should encourage a child's use of methods, efforts, and strategies in the work they put in and how this will develop a growth mindset (Dweck, 2009).

### Coach-athlete relationship

In sports there are often a dyad between a coach and their athlete. This connection is a way for a coach to lead, instruct and provide support, so the athlete can focus on execution, learning and receiving support (Jowett, 2011). A theory explaining the importance of a good coach – athlete relationship is Interdependence Theory (IT), which provides a understanding of personal and social relationships (Kelly et al., 2003). A coach has demands, the same as a athlete has towards their coach, they are concerned about how their relation influence their outcomes. An athlete are looking for a coach which can provide outcomes like learning certain skills, techniques and tattics which will contribute to devleopment of good results. A coach will aim to train a athlete which are dedicated, motivated and interested in achieving their potential (Deci & Ryan, 2012; Jowett, 2011)

Jowett (2011) explains how athletes and coaches on a higher level will be more motivated to establish a interdependent realtionship considering the greater risks involded then athletes on a lower level. A closer relationship with their coach can contribute to a less chance of getting burnout, lack motivation and not developing. The theory of Interpendence

also suggests that a dissatisfied athlete at a lower level have a greater possibility to switch teams / quit the sport to change their coach – athlete relationship. A athlete which are satisfied and are achieving great results will have no reason to change their dyad (Jowett, 2011).

The 3C model is a description of what is needed to make a interdependent relationship between a coach and athlete. A coach – athlete relationship are defined by these three constructs: Closeness, commitment and complementarity (Jowett, 2011). Closeness is a tie that is created between the coach and the athlete. A close relationship is based on a mutual trust, respect, appreciation and interpersonal attraction from both parts. The commitment contract are how motivated the individuals in the relationship are to dedicate time and effort to follow their visions and goals over a long periode of time. Complementary which also can be reffered to as communication are a co-operative interaction that happends between the athlete and the coach. This includes responsivness and readiness which can inform one another about feelings, knowledge and meanings.



## Aim of the study

On behalf of the theoretical chapter and topic of interest the aim of study is to look at how mentors and their relationship with the players effect the levels of passion, grit, and mindset. The study will look at an issue on two levels which are separated into one main issue and connected part issues. The main issue of the study is **“How does mentors effect players levels of passion, grit and mindset”**. This main aim of the study has created these part issues that also will be looked at:

1. Are there differences between the different levels of expertise and their levels of passion, grit, mindset, and coach relation?
2. How is the levels of passion, grit, and mindset for the whole group correlating with importance of coach relation?

## Method

This chapter is for methodical measurements done in the research. This is an explanation for choice of method and design. It will also be taken assessments for what's been done in the case of the examination.

### Research design

This part of the method chapter will list up the three main occurring types of research design and then explain why one was chosen in this study. The three types of research design a scientist chose between are: descriptive research, causal research, and exploratory research (Langridge, 2017). It is important to choose a design with the reason being the approach on how the scientist should use their experiences, knowledge, and theoretical familiarity in their study. All research designs have different strengths and can often overlap one another where it may be appropriate and depends on what the researcher are looking for.

Descriptive research is a method where the researcher has some knowledge of the field where the study takes place. The study is mostly structured with a clear hypothesis where the researcher wants to look at well-established theories. The purpose of a descriptive research is to present the details on why these theories explain how some groups or phenomena's associate or differ from one another. Causal research is a method where the researcher wants to find a correlation between variables. The study will show why X are affected by Y and are studies in an experiment which scenarios are given by certain specific conditions. The last method is exploratory research which are a field of research where the researcher has little to zero knowledge about. This is a qualitative approach where interviews with individuals or group are a tool to create a stream of information. The information gathered are used to change and create the study and the study is unstructured which makes the researcher in change to go back and forth while doing the study.

## Choice of research design

After considering these three methods of research I found it most relevant to use a descriptive research design in this certain study, considering there are no manipulated data. As a researcher myself, have already a broad field of established theoretical views and experience in the field. A descriptive study has a goal to provide information about a behaviour or attitude conjuring in a certain group in society (Langridge, 2017). These conjuring behaviour and attitudes are also being looked at within different groups to demonstrate possible associations or relationships between them so they can explain how they occur. The hypothesis of this study is built upon already established studies and theoretical terms which will be used to explain correlations found.

## Methodical approach

This choice of methodical approach is taken on behalf of what the research wants to find out; the issue of the study, which in this case: **“How does mentors effect players levels of passion, grit and mindset”**. A quantitative method is deductive, which means that this hypothesis is made based on theories. The theories of passion, grit and mindset are the base of this hypothesis, and the study aim to look at these theories and how the importance of professionalism and coaching can explain changes and similarities between the participating groups. This theoretical basis and approach together with my own experience and assumptions will be used to connect the results of the study. These together will provide evidence of how the study’s selection can explain the reason and state of the rest of the population.

## Questionnaire design

Considering the chosen research design, the method of data collection is based on which method will be most effective and appropriate. To be able to collect data from football players on different levels there were most efficient to send a questionnaire via email to the clubs’

representatives. To be prepared to deliver a questionnaire, the points created by Darren Langridge were made clear pre-questionnaire to make sure that participants take part, finish and are precise and consistent with their answers (Langdridge, 2006). Langridge describes the process in four stages:

- The questionnaire should be as short as possible.
- Give out information beforehand.
- Send out reminders after one to two weeks.
- The participants should get a form of rewarding service.

It is important to follow these steps considering a misinterpretation or the respondents missing ability to give correct answers will decide the concept of validity of the study. Before handing out the questionnaire there were given out information about the study and thesis to a talk's person within the organisations that the questionnaire was anonymous and that there is no compulsion to take part. Also, for the chance for a larger participation, the length of time and purpose of the questionnaire were informed. The questionnaire uses already established scales which includes precise questions with no need for leading questions. Two of the scales used are reversed which has the purpose to make the participants more likely to answer honest and to think more through what they are answering. One reason for this being the study wanting to decrease the possibilities for social desirability. Considering the method which are questionnaire it can produce social desirability that the participants aim to answer what they think the study "wants" to hear. Especially considering there are different levels of expertise participating and the levels they are at can make them aim for the higher levels.

## Selection

A selection is the group of people the study has as purpose to be studying. It is not justified to study all members of a populations, only the few participating individuals which

are representative for the remaining ones. In this study the aim is to find out differences and similarities based on a population of football players in three different divisions of the Norwegian leagues. This selection of individuals will give a broad number of empirical data that can be used to produce an analysis that will tell something about the level of passion, grit, mindset, and coach relation of football players in the Norwegian Leagues. The recruitment of participants was chosen because the research was supposed to find three clubs that operated with different level of professionalism, but at the same time had peers in the mean of age and gender.

### Ethical points

This study follows the rules that consists in ethical research. There are no sensitive or individual identifying questions which denies the need for acceptance by REK to pursue the questionnaire (ntnu.no, 2022).

To follow ethical guidelines participants were informed that their contribution is voluntary and totally anonymous. There was an explanation that there was needed honesty in answering the questionnaire and that there are no right or wrong answers. It was also informed which institution I am a part of and who is going to analyse and produce their responses. In this information there are also given relevant contact information and the projects intention. With this information there are also an acceptance that the results of the study may be posted online and used for other purposes later. In this case all this information is given to the contact person of the clubs that are participating in the study.

### Demographics

The participants gave information about their age and education level. Hence the aim of the study is to find correlation between similar groups at different levels the geographic demands the club to all be a part of the same region. All clubs are in More and Romsdal, a state in Norway. 40 subjects took part in the questionnaire. The subjects are football players in

different ages who is split up in their different level of divisions. The three participating groups are Molde Fotballklubb and Aalesund Fotballklubb (topflight division), with a mean age of 25.2, Sportsklubben Træff (second division), with a mean age of 22.6, and at last Gossen Idrettslag (Fifth division), with a mean age of 22.1.

## Instruments

To measure the levels of passion, grit, and mindset together with levels and importance of coaching there were used five different scales. Passion was measured by using The Passion scale (Sigmundsson, 2019). To measure Grit, the Grit-S; short grit scale was used (Duckworth, 2009). This has been translated into Norwegian by Sending (2014). Mindset was measured by a Norwegian version of Dwecks (1999) scale called Theories of intelligence (TIS), and the The Norwegian version were used (Bråten & Strømsø, 2004). For this study there are also created questions inspired by the study of Jowett theory 3+1C, which measures the important factors of a good and healthy coach – athlete relationship. Lastly there are a scale which investigates the athlete's opinion on important factors for their careers, the involved factors are self, coaches and family.

## Passion

Passion is defined as a strong desire or enthusiasm for something (Oxford University Press, 2019). To read the participants level of passion there were used a Norwegian version of The Passion scale. This scale is a way for the participants to rate eight items, by rating themselves of 1= not like me at all to 5 = very much like me. The maximum score is 5 (extremely passionate) and the lowest scoring is 1 (not passionate at all). The 5-point Likert scale is a technique used to measure attitudes and it can also compare passion to its related factors (Likert, 1932). Table 1 will show the 8-items included in the questionnaire.

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**Table 1. The eight questions in the Passion scale.**

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- 1. I have an area/theme/skill I am really passionate for**
  - 2. I would like to use much time to become good in that area/theme/skill**
  - 3. I think I could be an expert in one area/theme/skill**
  - 4. I have a passion enough to become very good in the area/theme/skill**
  - 5. I work hard enough to fulfil my goals**
  - 6. I have burning passion for some areas/theme/skills**
  - 7. I use a lot of time on the projects I like**
  - 8. My passion is important for me**
- 

### Grit

Grit is defined by Duckworth as the power and tolerance one put into their passion while they work towards a long-term goal (Duckworth, 2016). The Grit-S scale used in this study is the short version of Duckworth's Grit scale translated to Norwegian. Grit-S includes measurements which contains two sub scales which includes consistency of interest (COI) and perseverance of effort (POE) (Duckworth & Quinn, 2009). These two sub scales investigate two different aspects of the concept of grit. CI is the tendency for someone to work towards a single goal their whole life, and not pursue subgoals and other activities meanwhile. PE, on the other hand, is a representation of all the work that needs to be put in to be able to pursue a long-term goal. One's passion and how their interests' levels are, is often represented by ones CI, while PE is the amount of effort that needs to be put in to work for the passion and the long-term goals. The scale has eight items which use a 5-point Likert scale. All eight items are for comparison and combines CI and PE. The item is rated by how much the respondent feels is genuine for their beliefs. The lowest score is 1 = not like me at all and the highest is 5 = very much like me.

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**Table 2. The eight questions in the grit scale.**

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- 1. New ideas and projects sometimes distract me from previous ones**

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- 2. Setbacks don't discourage me**

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- 3. I have been obsessed with a certain idea or project for a short time but later lost interest**

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- 4. I am a hard worker**

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- 5. I often set goals but later choose to pursue a different one**

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- 6. I have difficulty maintaining my focus on projects that take more than a few months to complete**

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- 7. I finish whatever I begin**

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- 8. I am diligent**

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### Mindset

Dweck describes mindset as how one individual evaluates their own skills and attributes (Dweck C. S., 2009). To measure these beliefs it is used a Norwegian version of Dweck's (1999) Theories of intelligence scale (TIS) (Norwegian version by Bråten & Strømsø, 2004). The questions are created to make the players answer on behalf of their belief of own intelligence rather than their ideas about the rest of the population. The Norwegian mindset scale is made from several sub scales which the items are rated on a 6-point Likert-type scale, where 1 is the lowest (Strongly Agree) to 6 (Strongly disagree). In the field of mindset there are most often used 8-items which has the purpose to differ between the two types of mindsets. The items are both associated with either entity theory (fixed mindset) and incremental theory (growth mindset). One question used for entity theory can be "You have a certain amount of intelligence, and you really cannot do much to change it", and for one item by the incremental theory there are "You can always substantially change how intelligent you



are”. The incremental scale items are reversed with the purpose to create a more meaningful score. In the statistical analysis it will show the higher average score as an indicator for a greater incremental belief about their own intelligence and a growth mindset. The Norwegian version of TIS is shown reliable with a Cronbach’s alpha = 0.86 for the entity items and for the incremental items  $\alpha = 0.88$  (Bråten & Stromsø, 2004). In the original scale by Dweck, Chiu, and Hong (1995) the 8-items scale shows good internal consistency ( $\alpha = 0.85$ ) and a test-retest reliability at 2-weeks ( $r = 0.80$ ). Dweck et al. (1995) also shows to a good construct validity by scores that predicts meaningful relationships with several variables.

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**Table 3. The eight questions in the mindset scale**

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- 1. You have a certain amount of intelligence, and you can’t really do much to change it.**

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- 2. Your intelligence is something about you that you can’t change very much.**

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- 3. Who ever you are, you can still change your intelligence level significantly**

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- 4. To be honest, you can not really change how intelligent you are.**

---

- 5. How intelligent you are is something you always can change considerably**

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- 6. You can learn new things but cannot really change your basic intelligence.**

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- 7. Regardless of how much intelligence you have, you can always change a whole lot**

---

- 8. Even your basic intelligence level can change considerably.**

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#### Coach-athlete relationship

It is also included a question where the participants answer a claim and rates their agreement. There are 4 items which includes questions on some things that are found important in a coach-athlete relationship. These are based on Jowetts (2007) 3+1C conceptualization which consists of the factor’s closeness, commitment, complementarity, and

co-orientation. (Rhind & Jowett, 2010). The answers consist of a 5-point Likert scale which the maximum score is 5 (means everything) and the lowest score is 1 (means nothing).

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**Table 4. The four questions in the Jowet 3+1C conceptualization questions**

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**1. I have a close relationship with my coach**

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**2. It is important to me that the coach shows commitment.**

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**3. It is important to me that the coach is helpful both in sports but also in life.**

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**4. It is important to me that the coach is good at communicating both parts ideas and meanings.**

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### Pre-test

A pre-test was organized by contacting a friend that plays for Kvik on the 4<sup>th</sup> of September 2022. This was a quick and easy approach and way to communicate the goals and aim of the questionnaire. I sent over a more formal script which included my contact information and information about the study. The test was taken by some of the players 4 days later the 8<sup>th</sup> of September. Directly after participation I asked for feedback and eventual problems they might have encountered. Considering the passion, grit and mindset scale have already been tested in earlier research I expected no common issues or misunderstandings, which also was proven in my pre-test. It does have to be included that the organised pre-test was done without my presence and the surroundings were on an end of season meeting they had. Nevertheless, the feedback received after done pre-test were that the questions were easy, and that the questionnaires time frame were short and doable for everyone. On the other hand, it was questioned on the way the questions were presented. The passion, grit and mindset

scale are generally spoken, it is not specific for football, more of a general life perspective. This could have been taken into action and worded the questions differently but considering the time of a master's degree it will only be discussed as a tip for future research purposes.

# Results

## Data reduction and analysis

In this project, the statistical analysis SPSS Version 29 for Windows were used for the analysis (SPSS Inc., Chicago, IL. USA). The statistical significance was set at  $p < .05$ . The magnitude of correlation size was mapped by these thresholds: 0.0-0.1, trivial; 0.1-0.3, small; 0.3-0.5, moderate; 0.5-0.7, large; 0.7-0.9, very large; and  $>0.9$  nearly perfect.. The effect sizes was calculated with Cohen's d. The magnitude of effect sized followed these thresholds: 0.0-0.2, trivial; 0.2-0.6, small; 0.6-1.2, moderate;  $>1.2$ , large.

## Differences passion, grit, mindset, and coach relation between the three levels

The first part problem question was to find differences in passion, grit, mindset, and coach relation. To research these differences there were done three independent T-tests where all three groups were compared to each other. The T-test looks at the significance level and effect size in the differences in mean score presented in *Table 5*.

**Table 5.** Mean scores of Passion, Grit, Mindset and Coach relation for the whole group ( $N = 40$ ), Molde and Aalesund ( $N = 10$ ), Træff ( $N = 16$ ), and Gossen ( $N = 14$ )

	The whole group (N=40)	Molde and Aalesund FK (N = 10)	Træff (N = 16)	Gossen (N =14)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
<b>Passion</b>	4.25 (.795)	4.61 (.369)	4.14 (.753)	4.11 (1.004)
<b>Grit</b>	3.42 (.512)	3.28 (.527)	3.43 (.459)	3.52 (.571)
<b>Mindset</b>	3.74 (.598)	3.50 (.289)	3.60 (.083)	4.05 (.847)
<b>Coach Relation</b>	4.03 (.576)	4.18 (.688)	3.97 (.421)	3.98 (.576)

## Elite and 2. Division

There were found no significant differences in passion,  $t(24) = 1.865, p = .075$ ; Grit,  $t(24) = -.745, p = .464$ ; mindset,  $t(24) = -.820, p = .420$ ; Coach relation,  $t(23) = .943, p = .356$ . The mean difference on the other hand is big regarding passion (MD = .48), then coach relation (MD = .21), followed by the higher mean difference for Træff and Grit (MD = -.15), and a small difference in Mindset (MD = -.10). Calculated using Cohen's  $d$ , the effect sizes for passion as the only moderate effect size ( $d = .64$ ); with the remaining variables grit ( $d = .49$ ); mindset ( $d = .32$ ); and coach relation ( $d = .54$ ) shows that difference between Elite and 2. Division has what Cohen (1988) defines as a small effect size.

## Elite and 5. Division

As for the previous group there are no significant differences regarding passion,  $t(22) = 1.502, p = .15$ ; Grit,  $t(22) = 1.020, p = .319$ ; Mindset,  $t(22) = -1.975, p = .06$ ; Coach relation,  $t(22) = .747, p = .436$  between Elite and 5. Division. The mean difference for passion were (MD = 0.50), with grit being (MD = -.23); mindset (MD = -.55); coach relation (MD = .19). The effect sizes for Elite and 5. Division are calculated as large for passion ( $d = .81$ ); grit as ( $d = .55$ ); and for mindset ( $d = .68$ ); and for coach relation ( $d = .62$ ), there were a moderate effect.

## 2.Division and 5. Division

There are no significant differences between 2. division and 5. Division level of Passion,  $t(28) = .072, p = .943$ ; Grit,  $t(28) = -.469, p = .643$ ; Mindset,  $t(28) = -1.962, p = .06$ ; Coach relation,  $t(27) = -.083, p = .934$  between Elite and 5. Division. When looking at the mean difference there are very similar results for passion (MD = .02); and Grit (MD = -.09); then looking at Mindset (MD = -.45); Coach relation (MD = -.02). Cohen's  $d$  shows the effect size as large for passion ( $d = .88$ ); moderate effect size in mindset ( $d = .63$ ); and small effect for grit ( $d = .51$ ); and coach relation ( $d = .50$ ).

## Important factors for coaching for the three levels

Furthermore, the first problem question aims to explain which attributes the players from each level wants their coach to have. The need for this to be analysed is because “coach relation” in this study is based on 4 different factors described in the theory chapter about Coach-athlete dyads.

To look at these differences three different independent t-testes was done on each club. The T-tests purpose is to look at the significance and effect size of the mean scores presented in *Table 6*.

**Table 6.** Mean scores of importance of coach relation for the whole group ( $N = 39$ ), Molde and Aalesund ( $N = 10$ ), Træff ( $N = 15$ ), and Gossen ( $N = 14$ )

	The whole group (N=39)	Molde and Aalesund (N=10)	Træff (N=15)	Gossen (N=14)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
<b>Coach relationship</b>				
<b>Coach</b>	3.67 (.838)	4.00 (.667)	3.80 (.862)	3.29 (.825)
<b>Coach commitment</b>				
<b>Coach</b>	4,13 (.615)	4.10 (.876)	4.07 (.258)	4.21 (.699)
<b>Coach helpfulness</b>				
<b>Coach</b>	3.95 (.793)	4.20 (.789)	3.73 (.594)	4.00 (.961)
<b>Coach communication</b>				
<b>Coach</b>	4.36 (.628)	4.40 (.699)	4.27 (.458)	4.43 (.756)

## Elite and 2. Division

The results showed no significant differences between Elite and 2. Division regarding coach relationship  $t(23) = .619, p = .542$ ; Coach commitment  $t(23) = .140, p = .890$ ; Coach helpfulness  $t(23) = 1.689, p = .105$ ; Coach communication  $t(23) = .578, p = .569$ . It is worth nothing that the Elite teams mean difference is higher than 2. division on all four factors. Mean Differences in coach relationship (MD = .200); coach commitment (MD = .033); coach helpfulness (MD = .467); and coach communication (MD = .133). The effect size for the relations is ( $d = .79, .58, .68, .57$ ) which consider coach helpfulness and coach communication to have a small effect size, while coach relationship and coach helpfulness to have a moderate effect size.

## Elite and 5. Division

There were a significant find in the relation between Elite and 5. Division considering coach relationship  $t(22) = 2.257, p = .034$ . The mean difference for this variable were .714 and the effect size were  $d = .76$ .

The remaining variables showed no significance; coach commitment  $t(22) = -.356, p = .726$ ; coach helpfulness  $t(22) = .540, p = .595$ ; coach communication  $t(22) = -.094, p = .926$ . The Mean Differences in coach commitment (MD = -.114) is a notable find for this study considering the small difference in favour of the 5. Division team. Furthermore, we look at coach helpfulness (MD = .200); coach communication (MD = -.029). All relations had moderate effect sizes ( $d = .76, .78, .89, .73$ ).

## 2.Division and 5. Division

For the last t-test between 2. Division and 5. Division there were no significant differences. Coach relationship  $t(27) = 1.639, p = .113$ ; coach commitment  $t(27) = -.764, p = .451$ ; coach helpfulness  $t(27) = -.906, p = .373$ ; coach communication  $t(27) = .488$ .

The mean differences for the factors were: coach relationship (MD = .514), coach commitment (MD = -.148); coach helpfulness (MD = -.267); coach communication (MD = -.162). Coach commitment had a small effect size ( $d = .52$ ), while coach relationship, helpfulness and communication had moderate effect sizes ( $d = .85, .79, .62$ ).

## Correlation for the whole group

The second problem question of the study is to look at how the levels of passion, grit, mindset, and coach relation correlating for the whole group (total scores), and how is the correlations separately. To explore these associations there are conducted a correlation analysis for the group presented in Table 2.

The results indicate a significant correlation between the variables; passion-coach relation ( $r = .407, p < 0.05$ ; small correlation), and Grit-mindset ( $r = .383, p < 0.05$ ; small correlation). For the remaining correlation there were shown no significance: passion-grit ( $r = .307$ ; small correlation), passion-mindset ( $r = -.223$ ; small correlation), grit-coach relation ( $r = 0.134$ ; trivial), and mindset-coach relation ( $r = -.158$ ; trivial).

**Table 7.** Correlations (Pearsons) between passion, grit, mindset, and coach relation (N=40).

	Passion	Grit	Mindset	Coach Relation
Passion	1	.307	-.223	.407*
Grit		1	.383*	.134
Mindset			1	-.158
Coach Relation				1

\*. Correlation is significant at the 0.05 level (2-tailed)



## Correlations of variables for each level

After looking at the correlations between the variables for the whole group the analysis will now provide a chart which shows the correlations on each level. One correlation was significant at 0.05 level and were between grit and coach relation with a large correlation.

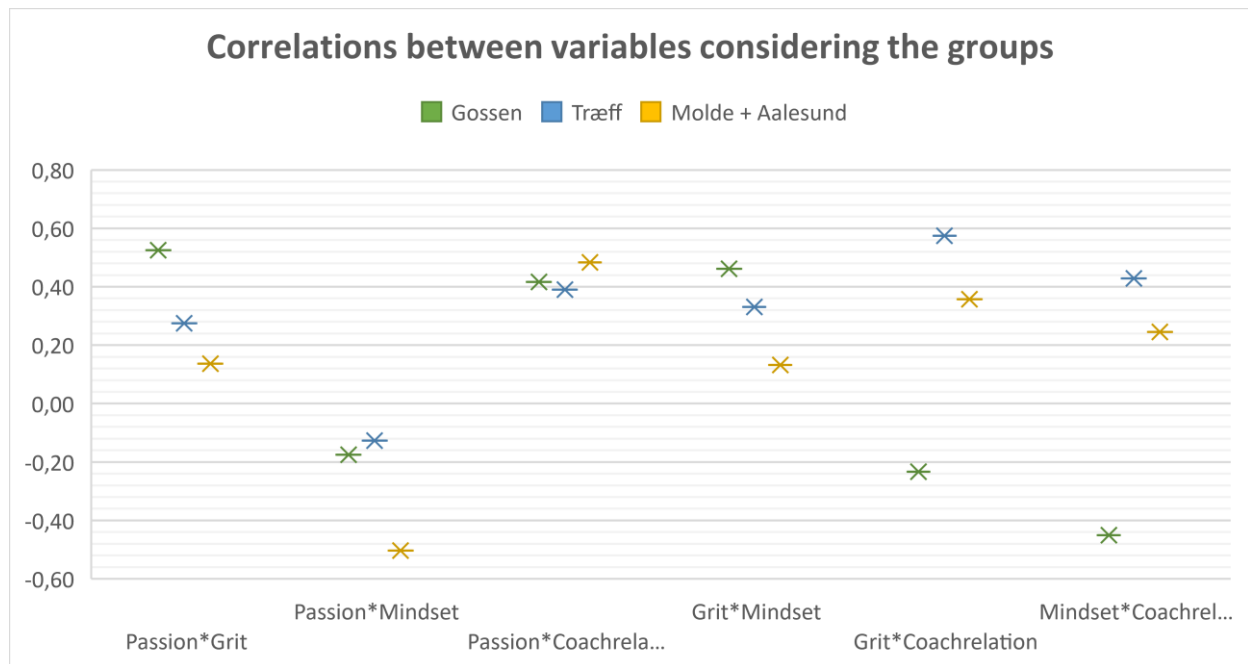


Fig. 2. Correlations between variables considering the groups.

**Molde and Aalesund:** The results indicate no significant correlations between the variables for the group at elite level. The correlation between passion-grit ( $r = .137$ ; small correlation); passion-mindset ( $r = -.503$ ; large correlation); passion-coach relation ( $r = .483$ ; moderate correlation); Grit-mindset ( $r = .132$ ; small correlation); Grit-coach relation ( $r = .357$ ; moderate correlation) for the elite players. The correlation for the elite players mindset and coach relation ( $r = .245$ ; small correlation)

**Træff:** The second division team in Norway had a significant correlation between Grit and Coach relation ( $r = .575$ ; large correlation,  $p = 0,05$ ). For the remaining correlations none of the findings were significant. The correlations between passion-grit ( $r = .275$ ; small correlation); Passion-mindset ( $r = -.127$ ; small correlation); Passion-coach relation ( $r = .390$ ;

moderate correlation). For grit and mindset ( $r = .210$ ; small correlation). For Mindset and coach relation Træff scored ( $r = .429$ , moderate correlation)

**Gossen:** Results for correlation analysis for Gossen in Norwegian fifth division had no significant correlations. For Passion and grit ( $r = .525$ ; large correlation); Passion-mindset ( $r = -.175$ ; small correlation); passion and coach relation ( $r = .417$ ; moderate correlation); grit-mindset ( $r = .525$ ; large correlation); grit and coach relation ( $r = -.233$ ; small correlation). For the fifth division team the correlation between mindset and coach relation ( $r = -.451$ ; moderate correlation).

## Discussion

The aim of the study was to study how passion, grit, mindset, and coach relation differentiate by level of expertise. To research the differences, there are done an analysis on three Norwegian football teams which participate in three different levels in the Norwegian league system. This discussion will interpret and review the results of the analysis, and it will use the theories presented earlier to conclude the problem questions of the study. To end the thesis there will be presented limitations, implications, and inspirations for further research on the theme.

### **Part problem question 1: Are there differences between the different levels of expertise and their levels of passion, grit, mindset, and coach relation?**

In this part of the discussion, the first part problem issue will be discussed. There will be separate segments discussing the variables; passion, grit, mindset, and coach relation and comparing the different groups to one another. The discussion will essentially look at the correlations and look at the significance and tendencies in mean difference. The discussion will also look at the differences in coach relation and watch which factors the players from each level value regarding their coach.

#### Passion

The differences were non-significant regarding passion for the three groups. Elite and 2. Division ( $t = 1.865, p = .0.75$ ); Elite and 5. Division ( $t = 1.502, p = .15$ ); 2. Division and 5. Division ( $t = .072, p = .943$ ). But the results indicate higher level of mean scores passion for the Elite players 4.61 compares to Træff with 4.14 and Gossen with 4.11. These results indicate a support towards Ericssons theory of expertise which requires high levels of passion (Ericsson, 1996). This can indicate the need for passion to reach the top level of Norwegian football.

When we compare the results with earlier research there are some interesting similarities. The Elite players from Molde and Aalesund scored the highest with 4.61 and compared with earlier research by Sigmundsson (2020) on passion and Elite footballers, they scored 4.65 which are highly similar scores as in this study. In the same study they also included students from Iceland, and their passion scores were a mean of 4.16 which is fairly like the lower league teams in this study with mean scores; Træff 4.14 and Gossen 4.11. These results and comparisons indicate that elite players do have higher level of passion than players from 2. and 5. Division. These results are explained by the theory of expertise by Ericsson, to reach expertise there are needed a great level of passion to become an expert (Ericsson et al., 2007). One can argue that both Træff and Gossen also has relatively high scores of passion. High levels of passion are needed as they play football regularly, as passion is a strong desire or enthusiasm for something (Oxford University Press, 2019).

The relatively high scores in passion can also be explained by Deci and Ryans self-determination theory where an individual participates because they want to feel accepted or to boost their own self-esteem which is equal to the description of an obsessive (Deci & Ryan, 2002; Vallerand, 2015). So, the different level of expertise can all have high levels of passion regarding if it is obsessive or harmonious.

## Grit

The grit scale scores were relatively moderate-high considering the three groups from 3.28 to 3.52. The differences were not significant for any of the divisions: Elite and 2. Division ( $t = -.745$ ,  $p = .464$ ); Elite and 5. Division ( $t = 1.020$ ,  $p = .319$ ); 2. Division and 5. Division ( $t = .469$ ,  $p = .643$ ). The Elite team scoring lowest does not follow Angela Duckworth's theory about grit that says that grittier individuals are more likely to reach their long-term goals (Duckworth, 2016). The Elite players scores the lowest with a mean score of 3.28; followed by Træff in second division with 3.43; and at last, Gossen with 3.52. Their

moderate score of grit is thought to be expected considering previous research by Sigmundsson (2020) who found grit scores in Elite footballers to be 3.99. The fairly similar moderate scores of grit can also be explained by their assumed achievement of not losing interest in their passion. Duckworth and Quinn (2009) explain how grit essentially the capacity and ability is to sustain both effort and interest in long term projects.

A critique to the concept of grit is the unclear nature of obstacles one has met in their long-term achievements (DiNapoli, 2023). DiNapoli (2013) explains how the Grit scale lacks details which tells what kind of challenges an individual has overcome to achieve their long-term goal. Considering the relatively moderate level of similar scores of grit by both Molde and Aalesund and the lower league teams this can be explained by this critique. A high score of grit is certainly important for achievement because of their ability to maintain consistency of interest and effort over a longer period (Duckworth, 2016). But as an assumption for this study's results, it is difficult to know if the players have met any difficult challenges which has challenged their grit and long-term goals.

## Mindset

There were no significant differences between the groups and Mindset: Between Elite and 2. Division ( $t = .820$ ,  $p = .42$ ); Elite and 5. Division ( $t = -1.975$ ,  $p = .06$ ); 2. Division and 5. Division ( $t = 1.962$ ,  $p = .06$ ). Mindset mean scores ranged from 3.50 to 4.05. Considering the differences between the groups were non-significant, but the results are still interesting considering the Elite team are scoring the lowest Mindset (3.50). The 2. Division team scored close to Elite with 3.60 while 5. Division scores relatively higher with 4.05. These results can be seen as a contradiction to Dweck's theory about Growth mindset. High level of growth mindset gives the ability to evaluate own abilities to improve, adapt and learn to reach expertise (Dweck, 2009). Looking at Sigmundsson's study (2020) on Elite footballers and levels mindset we can see scores ranging from 4.26 to 4.58 in the same scale. Following

Dweck's theory one should assume that all groups should have high levels of Growth mindset for their separate achievements (Dweck, 2017). This is not the case in this sample. The football clubs are participating at different levels, but all levels require a growth mindset friendly environment where all clubs aim to develop in range of their own potential and ability.

#### Coach relation

There were no significant differences regarding coach relation and level: Elite and 2. Division ( $t = .943, p = .36$ ); Elite and 5. Division ( $t = .747, p = .436$ ); 2. Division and 5. Division ( $t = -.083, p = .934$ ). The non-significant differences can be explained by Jowett and Don Carolis (2003) research on athletes' positive relationship with their coaches to be related to performance, training, instructions, and treatment by the coach. Considering all groups of expertise have their own level as for ability, which reflects level of performance and training. All levels have their own expectations, and these can be fulfilled by having a positive coach – athlete relationship, as these results explain: The players and their perceived coach relation had a mean score of 3.97 to 4.18. These scores are an indication that football players value their coach highly. Inspired by Jowett's 3+1C the results indicate these four constructs as important for football players: relationship, commitment, communication, and complementarity (Jowett 2005; Jowett, 2011).

When looking at each separate score for each construct there were some interesting findings. The first factor, relationship, did have a significant difference between the levels; Elite and 5. Division ( $t = .2257, p = 0.34$ ). The significant difference between Elite and 5. Division ( $p = 0.34$ ) are an interesting find. Research by Jowett has collectively found indications that coaches and athletes depend on each other to produce exceptional achievements because a good relationship satisfies important needs (Jowett, 2011). The

significant findings support this by the Elite team experiencing it more important to have a close relationship with their coaches.

### Conclusion part problem question 1

There were no significant differences regarding passion, grit, mindset, and coach relation between the three clubs. Many of the indications are on behalf of the mean difference which are both contradicting and supported by earlier research. A conclusion to the difference between levels of expertise are non-existing considering significance. There are only tendencies in the results which can explain the importance of all variables, but they need to be researched further.

### Part problem question 2: How is the levels of passion, grit, and mindset for the whole group correlating with importance of coach relation?

In this part of the discussion there will be provided correlations scores for the whole groups considering, passion, grit, mindset, and coach relation. These correlations will discuss the factors importance with each other. Passion, grit, and mindset is already fairly researched considering their correlations. So, for this study the interesting findings will be regarding coach relation and its correlation with passion, grit, and mindset.

### Passion and coach relation

One of the main findings of the study is the significant correlation between passion and coach relation ( $r = .407$ ,  $p < 0.05$ ; small correlation). Being passionate is associated with commitment towards a theme/skill/area, which makes a coach relation very important to reduce the chances to experience burnout, setbacks, or injuries (Jowett, 2017). Considering passionate individuals will reach higher level of expertise it also makes sense that they want to establish a good coach relationship. To maintain a healthy relationship, one can argue that

high levels of passion are needed considering maintaining there is needed discussion on areas of conflict management (Weigel & Ballard-Reisch, 1999). The high relationship between Passion and coach relation is important considering a Harmonic passion is based on the individual's behaviour compliance with their value and goals (Vallerand, 2015)

A suggestion by Jowett is that athletes that proceeds competitive scores are motivates to establish interdependent relationships because the risk are much greater than for athletes at lower levels (Jowett, 2017). One can also assume that higher level of passion as an athlete reduces the chances of finding equal passionate coaches, so when they find a passionate like-minded individual, the relationship is more valued. This is also reflected in the results for the whole group were the mean for importance of a close relationship were 3.67 which is a moderate score. A close relationship is important for the whole group considering closeness are based on mutual trust, appreciation and interpersonal attraction which is important for autonomy represented by Deci and Ryan in Self-determination theory (Deci & Ryan, 2000; Jowett, 2007).

#### Grit and coach relation

The correlation analysis could not report a significant correlation between grit and coach relation ( $r = 0.134$ ; trivial). A trivial correlation is anyway to be noted considering grit is the fuel one must pursue their passion (Duckworth, 2016). The expectation comes from grit being a factor that requires an intrinsic motivation as an interaction between Consistency of Interest and Perseverance of Effort which in many cases are provided by a good coach relationship (Duckworth & Quinn, 2009; Jowett, 2017). In a study by Jowett, it was suggested that an athlete's perceived levels of relationship interdependence were directly associated with how the athlete felt about the relationship with their coach (Jowett 2017). Considering this past research, one could assume more than a trivial correlation between grit and coach



relation, since a bad coach relation directly effects the athlete's instinct motivation which could reduce the level of grit.

In the correlation analysis grit were significantly correlating with mindset ( $r = .383$ ,  $p < 0.05$ ; small correlation). This finding is interesting because it can explain that considering grit, a growth mindset is more important than a good relationship with their coach. A significant correlation between grit and mindset is also to find in Sigmundsson earlier research on levels of passion, grit, and mindset in a group of football players in Norway (Sigmundsson, 2020). The significant correlation he found was ( $r = .271$ ) which as these study's result shows a small correlation between the variables. Considering these results and past research one can assume that one's growth mindset is more important for grit then influence from a coach relationship which is interesting.

#### Mindset and coach relation

There were not found a significant difference between mindset and coach relation for the whole group ( $r = -.158$ ; trivial). These results are interesting considering the theoretical stand should assume a strong significant correlation between mindset and coach relation. Research on mindset has shown that individuals with a growth mindset looks to be challenged because they see it as an opportunity to learn and develop (Dweck, 2009). Found in Jowett's coach-athlete interdependence and satisfaction it is stated that athletes want their coaches to provide training, instructions and constructive treatment based of experiences and knowledge (Jowett, 2017). Based on this trivial correlation it can explain that individuals does not depend on their coaches to develop a growth mindset.

One can assume based on Dweck's generalised theory about mindset that also coaches have either a growth- or fixed mindset. Players with a growth mindset that wants to develop can feel the importance of coaches as non existing if the coach has a fixed mindset and values

natural talent. A coach with a growth mindset will work together with the player to develop and see sided other would not, even not the athlete.

### Conclusion part problem question 2

The correlation analysis shows some different results. It is clear by the results that for Norwegian footballers a coach relationship is important to develop and maintain a passion. A passion starts when people are young and if one look at probabilistic epigenesis an explanation of establishing a passion is the first coach relationship. This can also explain why individual still pursue their passion at later stages because they have a good relationship with their coach. With the findings it is also indicated further that grit and mindset is significantly correlated with each other. The results further indicate that grit is more important for growth mindset rather than a coach relationship, this is interesting and needs to be studied further.

Considering all variables were positive correlating with each other one can assume that a coach relationship is important for the level's passion, grit, and mindset, but there is needed further development of the theme coach relation to emphasize the importance.

## Limitations, implications and future research

As in all scientific research there will always be ways to improve and change the study. This chapter will present some of the complications, implications and limitations that this study met and how the research had to overcome or pursue these difficulties.

### Sample size

The results of this study must be taken into consideration that the sample size was relatively small ( $N = 40$ ). A wish for sample size were estimated to be 60, which approxantley would be 20 from each club. There are also a consideration to take note of that the representatives from each club varies from  $N = 10$ ,  $N = 14$ ,  $N = 16$ . A small sample size can make it difficult to find significant relations between the clubs and the variables, which is reflected in the results of this study.

The explanation for this low sample size is the difficulty of being a student and being taken seriously towards professional football clubs. A lot of messages were sendt and reminders were needed in many occassions. This reasoning is also taken in consideration with clubs tight schedual, many individuals, and general interest in the project. I did not my self meet with the participants, which mean the introduction to the study was out of my control.

All these arguments contributiute to a limitation considering that the sample size contributes to a uncertain and non statistical representative or generalizable for the remaining norwegian footballers.

### Questionnaire design

Considering the questionnaire design is self-reporting based there are no guarantee that the participants are completely honest or precise. When a sample is participating you must have a common trust and believe their answers are genuine, but still responses are often considered to be “manipulated” (Langdrigde,2017). How the participating individuals decide to answers are nearly impossible to control. One description that explain why this is hard is social desirability bias. Social

desirability bias is the tendency to choose responses that are more socially desirable to provide, rather than being honest and reflective of their actual thoughts or feelings (Grimm, 2010). Considering the theme of this study there are reasons to believe social desirability bias could be represented in this study as well.

### Language barrier

Early in the empirical collection it was important to create a questionnaire that both could involve Norwegian and foreign talking players. A lot of work was put in to create an English version of the scales used and these were sent out together with the Norwegian versions. In the top flight division of Norway there are a lot of players that don't or could misunderstand a Norwegian questionnaire so for the sake of diversity and participation there were included a translated version. In spite of this decision only one player answered the English version of the questionnaire, while 39 players answered the Norwegian one. This is a weakness for the study because larger participation and a wider range of nationalities and cultures could have shown differences in sake of results. This is clearly something that can further be discussed and researched. Norway is known for their limitations and laws in competitive sports which make the cultural difference a clear variable to affect how individuals from different cultures score in passion, grit and mindset.

### Variables

This study lacks control variables which could explain the differences in results. It was interesting to see the variation in education level and how this is different between the three divisions. Other variables such as relationship status, how long they have been playing in their division, how many clubs they have played for and how big percentage of matches they started last season. These are examples of control variables that could be interesting to look into. The feedback after the pre-test about specifying the questions more towards a footballer's point of view and not generalise the questions is definitely something to look more into. This

way the variables of passion can be specified in a matter were they can divide footballers passion into harmonious and obsessive. For example questions about harmonious passion can be “Football is harmonious with other activities in my life”, “Football reflects my good abilities I like about my self”. These types of questions could make it easier to look into variables that could be more explanatory in why some players reach the top and why some “choose” to continue playing football on lower levels.

It would be interesting to ask more qualitative questions in regards of the thoughts and goals of each players. Goal orientation are important for getting answers how which type of mindset one possesses. A player which goes into one game and aims for the win, and focuses mainly of results rather than how they perform are aiming towards a fixed mindset. If one look into the interviews of elite tier football players they most often say they don't worry about a loss because they took the good parts from the match and aim to improve and develop to reach a long term goal, which are a growth mindset. To look into this in a future study would be interesting to see if players on a lower level are aiming for recognition of skills rather than players on a higher level which also are looking to improve their abilities further.

### Method of study

As a cross-sectional study, the data was gathered from the time period of October 2022 to February 2023, which can influence the study in different ways. November is typically the time were the season end and february are the time for preseason and preparation for the league to start again. Both Træff and Gossen took part of the questionnaire in October which were at the end of the season for both clubs. The norwegian league system operates from April to November. One can assume that the feelings towards the sport, team and coach varies from the beginning to the end of the season, this is affected by results, injuries, play time and if they are staying or leaving the club after the season. This study's aim to look at the importance of passion, grit and mindset is not affected by this considering it is a part of the

research to see if the players are able to keep their passion regardless of these negative happenings, but it needs to be pointed out that answers can vary considering the mental place of the individual during a season. It could be interesting to do a longitudinal study which took place in the start of the season and then again after the season to both measure and see changes affected by results, injury or change of coach / teammates.

### Future studies

As mentioned as limitations and implications there are specially important to continue doing this type of research, but with a larger selection. This study has proven evidence that a good coach-athlete relation is valuable for improving psychological factors, but to develop the empirical evidence, more clubs and players need to be involved. In this study there are results which indicate the importance of passion, grit and mindset regarding coach relation, but to conclude differences in level of expertise there needs to be done more research.

As mentioned the study also lacks specificity towards football players, so a good coach-athlete relationship in this study is generally spoken, and further research examining similarities and differences between football players, other sports and “regular” individuals would also be interesting. Considering the possibility of social desirability bias there could be interesting to also have future research which combines questionnaires with in-depth interviews to fill in eventual missing sensory impressions. Also to add reports from coaches and other surrounding individuals would be interesting together with the empirical data from self-reporting.

## Conclusion

This study wanted to research the differences in passion, grit, mindset, and perceived coach relation in Norwegian footballers on different levels. Both differences, similarities and correlations between the variables has been presented. This presentation has furthered developed the relationships between passion, grit, and mindset, but also added the perspective of a coach relationship. The importance of the contribution of coach relationship is made clear by the significant correlation to passion. There were also trivial correlations to mindset and grit, which by these results could be interesting to further study. All in all, the results indicate a non-significant difference between the levels of expertise regarding passion, grit, mindset, and coach relation. But when looking at total scores for Norwegian footballers in general there are created furthered importance of the psychological factors together with a good coach relationship.

The study has also discussed the findings together with implications, which makes the results to be seen in the lights of possible limitations which can be controlled for in future studies.

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