NIH NORWEGIAN SCHOOL OF SPORT SCIENCES

Varja Røhmer

Attitudes towards nutritional supplements and medications in junior elite endurance athletes.

A qualitative study of Norwegian and Russian athletes

Master thesis in Sports Sciences
Department of Cultural and Social Studies
Norwegian School of Sport Sciences, 2020

Abstract

Research shows that the consumption of nutritional supplements (e.g. vitamins, proteins, iron supplements, sports drinks) in sports is widespread on all levels of competition – among youth and senior athletes, and on elite and amateur levels. Existing studies also indicate signs of increased use (and misuse) of pharmaceutical substances (e.g. painkillers, asthma medications), often for performance-enhancing purposes. The use of non-prohibited supplements and medications also raise several concerns related to health and the risk of inadvertent doping. Their widespread consumption can contribute to establishing a culture of chemically assisted performance enhancement, which is a risk factor for doping. Adolescents and young adults are a particularly important group in this respect, since they are in the process of developing their attitudes and habits. Moreover, ambitious young athletes often find themselves in a fragile transition phase, when it is particularly important to perform at one's best in order to enter the professional senior level. Existing research also underlines the significance of context for molding an athlete's supplement-related behaviors. It is also known that athletes competing in individual endurance sports consume more supplements as compared to other disciplines. Comparative research enquiry is a particularly apt way to study attitudes and to look into the reasons why attitudes might differ between groups. Building on such, and similar kinds of research, this study asks the following question: *How do junior elite Norwegian and Russian endurance athletes form attitudes to nutritional supplements and medications?*

This question was explored through a series of ten semi-structured interviews, with five participants from each nation. The interviews were conducted with elite junior athletes from Norway and Russia, all competing in the same individual endurance sport.

The question of attitude formation was approached with three main focus areas in mind: (1) experiences, (2) beliefs, and (3) subjective norms. These are theoretically derived factors in the formation of attitudes. *The ABC model of attitudes* will help to elucidate what factors are most important for molding an athlete's attitudes towards nutritional supplements and medications. Qualitative thematic analysis was utilized to analyze the interview data. The comparison of the two groups was guided by the three attitude formation elements – experiences, beliefs and subjective norms.

The study reveals striking differences between the two groups of athletes in terms of the three attitude formation elements. These differences are bright illustrations of the fact that the athletes' beliefs concerning nutritional supplements and medications are a major contributor to attitude formation – and consequently, that those beliefs are a significant factor in shaping the athletes' experiences with nutritional supplements and medications. The study also indicates that an athlete's beliefs are closely linked with the knowledge they possess. The team doctors, as well as educational courses, were found to be the athletes' primary sources of information. Team doctors were found to be significant actors in shaping the athletes' attitudes towards supplements, while coaches had minor influence. This contrasts with previous research in the field. Another critical factor in shaping the athletes' attitudes is the subjective norms of the team. The athletes' beliefs and behaviors related to nutritional supplements and medications were consistent with the "rules" established in the team and the views of important people within the team, primarily doctors and coaches. Finally, environmental influences like the structural organization of the sport and the athletes' social network were found to either contribute to or discourage the use of nutritional supplements and medications.

Table of contents

Abstract *4*

Table of contents *6*

Acknowledgements *10*

1. Introduction *12*

1.1 Purpose of the study and research question 15

1.2 Definitions 16

1.2.1 Junior elite endurance athletes 16

1.2.2 Attitudes: experiences, beliefs and subjective norms 16

1.2.3 Performance Enhancing Substances 17

1.2.4 Nutritional supplements 18

1.2.5 Medications 19

1.3 Structure of the thesis 20

2. Contextual background *21*

2.1 Medicalization 21

2.1.1 The history of the medicalization of sports 21

2.1.2 Medicalization of contemporary sports 22

2.2 Use of medications in sports 23

2.2.1 Prevalence and patterns of use 24

2.2.2 Common medications 25

2.3 Use of nutritional supplements in sports 26

2.3.1 Prevalence and patterns of use 26

2.3.2 Common nutritional supplements 28

2.4 Risks of nutritional supplements and medications 28

2.4.1 A gateway to doping 28

2.4.2 Risk of a positive doping test 29

2.4.3 Health risks 30

3. Social science research on PES *32*

3.1 Field overview 32

3.1.1 Individual choice versus environmental influences 33
3.1.2 Environmental influences 34
3.1.3 Network and socialization 35
3.1.4 The networked athlete 37

4. Theory 41

4.1 Attitudes 42

4.2 The ABC-model of attitudes 42

4.3 Subjective norms 44

5. Method 47

5.1 Qualitative method and scientific underpinnings 47

5.1.1 Qualitative versus quantitative research 48
5.1.2 Qualitative research design 48
5.1.3 Qualitative cross-language research 49

5.2 Sample and access to the field 50

5.3 Data collection 51

5.3.1 Semi-structured interviews 51
5.3.2 Interview guide 52
5.3.3 Interview process: pilot interviews, location, execution, interview technique and interviewer role 53

5.4 Data processing and analysis 56

5.4.1 Transcribing 57
5.4.2 Coding and categorizing 57

5.5 Trustworthiness 59

5.5.1 Reliability 59
5.5.2 Validity 59
5.5.3 Generalizability 61

5.6 Ethical considerations 61

5.6.1 Informed consent 62
5.6.2 Confidentiality 63
5.6.3 Consequences 64

6. Results 65

6.1 Norwegian athletes 65

6.1.1 NS & medications as unnecessary ... 66
6.1.2 NS & medications as positive ... 71
6.1.3 NS as negative ... 74

6.2 Russian athletes ... 75

6.2.1 NS and medications as essential ... 76
6.2.2 NS and medications for performance-enhancing purposes ... 83
6.2.3 Sacrifice for an elite career ... 87

7. Discussion ... 90

7.1 Comparison and discussion of the findings ... 90

7.1.1 Why different experiences? ... 93
7.1.2 Why different beliefs? ... 99
7.1.3 The role of the social environment and structural factors ... 103

7.2 Findings viewed through the ABC-model of attitudes ... 107

7.3 Findings viewed in relation to the context ... 109

8. Conclusion ... 112

8.1 Answering the research question ... 112

8.2 Research contribution and recommendations ... 113

8.3 Limitations and future research ... 115

References ... 117

Tables and figures ... 130

Abbreviations ... 131

Attachments ... 132

Attachment 1: Research permission from NSD ... 132

Attachment 2: Informed consent in Norwegian ... 137

Attachment 4: Informed consent in Russian ... 141

Attachment 5: Interview guide in Norwegian ... 144

Attachment 6: Interview guide in Russian ... 145

Acknowledgements

The process of writing this thesis has been long and demanding but also thoroughly educative and exciting. That said, the thesis would also never have been completed were it not for the wonderful cooperation and valuable assistance of the people I have worked with.

First of all, I would like to extend a warm thank you to my supervisor, Sigmund Loland, and my co-supervisor, Anette Skilbred. Sigmund – thank you for all your wise counseling, input, and guidance. Anette, thank you for always providing me with quick, detailed, and useful feedback, and for helping me put together the interview guide.

I would also like to thank the Russian and the Norwegian athletes who, despite busy schedules, took the time to participate in the interviews. I am also grateful to the coaches of both teams for their trust and cooperation.

I would like to thank the Norwegian School of Sport Sciences for five fantastic years of study and for giving me the opportunity to go for an exchange year during the first half of my master's degree. I am also grateful to the Department of Cultural and Social Studies at NIH for contributing part of my traveling expenses connected to data collection.

A special thanks goes to my fiancé, for supporting me throughout this long and demanding writing process. I am endlessly grateful the help you have given me to with this thesis, as well as for being my personal chauffeur when travelling for data collection.

Lastly, I would like to extend my thanks to you, the reader. I hope you will enjoy reading my thesis and that it will provide you with some novel and valuable insights.

1. Introduction

When elite athletes train to push the limits of their performance potential, they look for ways to improve their abilities. Even a marginal improvement can lead to radically different outcomes in performance and competition. The intense training and competition regimes of today's athletes encourage them to continually lookout for more efficient ways to manage training, restitution, injuries, sickness, sleeping schedules, and so on. For some athletes, the thirst for success may prove too strong, causing them to downplay and ignore the various ethical concerns regarding fair play and potential adverse health effects. In such cases, performance-enhancing substances (hence, PES) may appear to an athlete like a quick and seemingly efficient way to get ahead of competitors.

Some substances are banned and thus defined as doping. The true prevalence of doping in elite sports is often discussed. Doping control tests estimate 1-2% prevalence annually, while alternative studies suggest higher numbers of 14-39% (De Hon, Kuipers, & van Bottenburg, 2015). However, certain legal[1] substances also promise performance enhancement, and this group is still mostly unregulated. This legal group includes nutritional supplements (NS) and pharmacological agents (medications). Between 40% and 100% of athletes consume NS (Garthe & Maughan, 2018). Research has shown that high and often uncontrolled usage of pharmaceutical aids, like various painkilling agents and asthma medications, are prevalent among athletes (Aavikko, Helenius, Vasankari, & Alaranta, 2013; Tsitsimpikou et al., 2009).

This seemingly high consumption of various supplements and pharmacological agents in sport should be seen in the broader context of the increasing medicalization of society (Malcolm, 2016; Waddington, 1996; Waddington & Smith, 2009). Medicalization is a wide-ranging process seeing as various social arenas fall within the medical sphere. Society is becoming increasingly dependent upon and affected by medical science (Conrad, 2007). Furthermore, the increased competitiveness and commercialization of modern sport is also a factor that pushes athletes to experiment with various kinds of

[1] The terms “legal” and “illegal” are used throughout this thesis to define whether substances are allowed or prohibited under the World Anti-Doping Code. Meaning that the terms “legal” and “illegal” are not used in its traditional definition, relating to public judicial system of a society.

supplements (American Academy of Pediatrics, 2005; Beamish & Ritchie, 2006; Waddington & Smith, 2009).

There is a growing body of social science research that seeks to address the issue of both allowed and prohibited PES in sport. The majority of the studies in the field focus on the issue of prohibited performance-enhancing drugs (PED) – commonly referred to as doping. The amount of social science research focusing on NS in sport is smaller than those looking into prohibited drugs, and even fewer studies look into the use of pharmacological agents among athletes. Social science research on PES is predominantly quantitative, aiming to identify risk factors, prevalence, and attitudes regarding various substances (Backhouse, Whitaker, Patterson, Erickson, & McKenna, 2016; Sandvik, 2015). Experts acknowledge the need for more qualitative inquiries and emphasize the lack of knowledge about NS and medications in the sporting context (Diehl et al., 2012; Nieper, 2005; Tsitsimpikou et al., 2009). Hopefully, my research will contribute to minimizing this gap in the literature.

Some may find it odd even to consider the use of legal supplements and medications to be of any interest compared to the problems of doping. Since the usage of NS and medications is not prohibited by the World Anti-Doping Agency (WADA), why should it be an issue? As I will explain further in the ensuing pages, several reasons make the study of legal PES highly relevant. First of all, according to the gateway hypothesis, the usage of legal PES is problematic because it is associated with an openness towards doping and an increased probability of actual doping use (Backhouse et al., 2016; Vasileios Barkoukis, Lazuras, Lucidi, & Tsorbatzoudis, 2015; Ntoumanis, Ng, Barkoukis, & Backhouse, 2014; Papadopoulos, Skalkidis, Parkkari, & Petridou, 2006). Secondly, the consumption of NS entails a risk of inadvertent doping since NS might, unbeknownst to the athlete taking them, contain prohibited substances that are not necessarily listed on the label (Geyer, Braun, Burke, Stear, & Castell, 2011; Geyer et al., 2008; Ronald John Maughan, 2018; Van Thuyne, Van Eenoo, & Delbeke, 2006). Poorly labeled, contaminated supplements might thus lead to a positive doping test. Thirdly, consumption of NS and uncontrolled usage of pharmacological agents may entail serious health risks (Conca & Worthen, 2012; LaBotz & Griesemer, 2016; Lessenger & Feinberg, 2008).

Adolescents and young adults a particularly important group when studying PES. This is because adolescents often find themselves in a fragile transition phase between youth sport and an elite professional career (Lentillon-Kaestner & Carstairs, 2010). In this transition, the athletes have to deliver outstanding results to enter the senior elite level, which can be an additional pressure to turn to PES. Besides, young athletes tend to show overly positive attitudes to NS and the prevalence of supplement usage in this age group is astonishingly high (Diehl et al., 2012). Moreover, non-prescription misuse of medicines among adolescents and young adults is a significant health concern (LaBotz & Griesemer, 2016; Lessenger & Feinberg, 2008). It is also suggested that young people might misuse painkilling agents in connection with physical activity (Skarstein, Lagerløv, Kvarme, & Helseth, 2016).

In order to develop policies against risky and unhealthy behaviors connected to use of PES, it is vital to understand why these behaviors occur. Athletes' environment plays a major role in forming attitudes to PES (Backhouse et al., 2016; Smith et al., 2010); therefore, one may assume that athletes who exist in different environments will have different experiences and understandings concerning substance use. Based on this idea, I decided to compare individuals coming from two very different socio-cultural backgrounds: Norway and Russia. I hope that whatever contrasts discovered between these two groups will help shed light on how the athletes mold their attitudes towards PES.

Why Russia and Norway? Based on expectations about the information content of the cases, athletes from these two countries were selected following the information-oriented case selection strategy (Stake, 2005). Norway is a leading country in the global movement for clean sport and demonstrates a robust national anti-doping culture (Gilberg, Breivik, & Loland, 2006). While Russia, unfortunately, has been heavily involved in doping throughout the twentieth century, competing against other nations like the USA and Germany (Waddington, 1996). Russia has also been tainted by numerous doping scandals in recent years. But why, one may ask, does a country's doping-reputation matter, to a study looking into the use of legal PES? It matters because a general openness towards, and acceptance of legal PES is likely to be conducive to trying out more potent and illicit substances (Backhouse, Whitaker, & Petróczi, 2013). The choice is also determined by practical reasons: I am a Russian

citizen, living in Norway, who speak both languages and understand each culture. I also have experience with participating in sports in both countries.

Before delving into these and other related issues, I find it important to emphasize that I have no intention whatsoever to stigmatize either Russian or Norwegian sporting culture. My interest in this study is simply to investigate the similarities and differences between the two nations' supplementation practices, with the hope of unearthing some exciting and novel data.

1.1 Purpose of the study and research question

When attempting to understand substance use, a natural place to start is with the question: *Why* does the behavior occur? That is, what factors lie behind the decisions of individuals who either choose to engage in a particular behavior or to abstain from it? One of the key concepts required to answer this question is the concept of *attitudes*. Attitudes influence behavior and decision-making (Ajzen & Fishbein, 2005; Vogel & Wänke, 2016) and have been proved to be strongly associated with PES use in sport (Backhouse et al., 2016; Sandvik, 2015). Attitudes do not emerge in a vacuum (Vogel & Wänke, 2016); therefore, the social and cultural environment in which the athletes exist will also be of interest to the study.

The purpose of this study is to look into the origins of the attitudes towards non-prohibited PES harbored by two groups of athletes. With this as a foundation, the research question can be stated as follows:

How do junior elite Norwegian and Russian endurance athletes form attitudes to nutritional supplements and medications?

Here, it is important to clarify that the aim of the present thesis is not to study or measure the attitudes themselves. Instead, the research is focused on attitude *formation* – i.e., on the athletes' experience, beliefs and subjective norms concerning legal PES. These three elements – experience, beliefs, and subjective norms – are, according to the theory of attitudes and its surrounding literature, directly involved in the attitude formation process and are widely used in attitude studies (Fabrigar, MacDonald, & Wegener, 2005; Vogel & Wänke, 2016). Information about

these three elements is expected to provide insights into what influence athletes' attitudes towards NS and pharmacological agents.

It is also important to clarify that I am aware that attitude formation is a complex process. I acknowledge the complexity of the issue at hand. My aim in this study is not necessarily to give an ultimate and exact answer to why athletes hold certain attitudes. My aim is to gain more information about a set of factors that – according to theory – are believed to influence attitudes.

1.2 Definitions

In this section, I will clarify the key terms featured in the research question, as well as provide some further details about PES. More details on various supplements and attitude formation will be provided later in the text.

1.2.1 Junior elite endurance athletes

In the present project, the word "junior" refers to individuals between the age of 19 and 22 years old which is the international age group for junior athletes in a studied sport. This age group is often defined as "young adults" or "individuals in the phase of late adolescence". The term "elite athletes" refers to the nationally top-ranked athletes who are selected to compete in international competitions. “Endurance athletes” refer to athletes competing in an individual endurance sport.

1.2.2 Attitudes: experiences, beliefs and subjective norms

The attitude formation process is a result of *intra-* and *inter-personal* processes (Vogel & Wänke, 2016). I will look at both these lines of attitude development (intra- and inter-personal) in order to arrive at a more holistic understanding of attitude formation in athletes. *Experience* and *beliefs* stand for the intra-personal dimension of attitudes, while *subjective norms* stand for the social dimension of attitudes. This approach to studying attitudes will be described and justified in greater detail in the chapter on theory.

Attitudes

An attitude is a learned tendency to evaluate things in a certain way (Vogel & Wänke, 2016). The key term to understanding the concept of attitudes is "evaluation". What this refers to is the evaluation of an attitude object with some degree of favor or disfavor (Eagly & Chaiken, 1993). Attitudes are connected with intentions, which then influence our behavior and decisions (Ajzen & Fishbein, 2005).

Experiences

The term "experience" refers in this context to an athletes' past and present habits and practices with various NS and medications. I would like to know how the endurance athletes reason and act when facing situations and decisions involving various substances. I am aiming to gain information about the routines athletes have and had with various substances, and why they think they have these routines.

Beliefs

The term "belief" refers to thoughts and attributes that one associates with a given object (Eagly & Chaiken, 1993). Beliefs are based on information and knowledge (Eagly & Chaiken, 1993), and I am thus particularly interested in learning more about athletes' opinions about and their knowledge of artificially assisted performance enhancement, including where and how they acquire this knowledge.

Subjective norms

Finally, the term "subjective norms" is about an individual's perception of the particular behavior – whether the behavior will be approved or disapproved by the group or important people (Vogel & Wänke, 2016). In other words, subjective norms are perceived social pressures to behave distinctly. I am particularly interested in athletes' perceptions of what they think others usually do and think in terms of legal PES, and whether they are motivated to behave in the same way.

1.2.3 Performance Enhancing Substances

PES include NS, pharmaceutical agents, and illicit drugs that have the potential to improve performance (American Academy of Pediatrics, 2005). Traditionally, the

term *PES* is used to refer to doping – that is, *banned* substances that create an unfair competitive advantage. Because of this, I would like to highlight the crucial fact that this study follows a *broader* definition of what constitutes a PES than the traditional one. My use of the term PES differentiates between legal and illegal substances. The American Academy of Pediatrics suggests the following explanation of the term, and this is the definition that I will be taking as my guide throughout the thesis:

> A performance-enhancing substance is any substance taken in nonpharmacologic doses specifically for the purposes of improving sports performance. A substance should be considered performance-enhancing if it benefits sports performance by increasing strength, power, speed, or endurance (ergogenic) or by altering body weight or body composition. Furthermore, substances that improve performance by causing changes in behavior, arousal level, and/or perception of pain should be considered performance enhancing. (American Academy of Pediatrics, 2005, p. 2)

Below I will provide more detail on the legal types of PES that I will focus on in this thesis – NS and medications.

1.2.4 Nutritional supplements

A dietary/nutritional supplement is an orally administered product which is intended "to supplement the normal diet and provide concentrated sources of nutrients or other substances with a nutritional or physiological effect, alone or in combination…" (The European Parlament and the Council of the European Union, 2002, Article 2).
Some supplements, such as vitamins, minerals, herbal extracts, and omega 3, are broadly used in the general population (Garthe & Maughan, 2018) and are meant to support health. Even though these supplements are often shaped like pills or capsules and can be found in pharmacies, they are not over-the-counter medicines.

The second category of dietary supplements is more oriented towards sport; It is also known as sports nutrition supplements. These include a variety of drinks, powders, and pills designed to improve athletic performance and fill the gaps in the diet. Certain sport nutrition supplements like pre-workout mixes, energy and endurance boosters, and metabolism boosters (fat burners) often contain ingredients prohibited under WADA Code (Van Thuyne, Van Eenoo et al. 2006).

The third category of NS, which also substitutes a subject of inquiry is sports nutrition (also known as sports foods). Examples of sport nutrition products include energy gels[2], protein or energy bars[3], sport/isotonic drinks[4], recovery drinks[5], and protein powder[6]. Sport nutrition products are sometimes excluded from the definition of NS; however, I have decided to include sports nutrition in the present inquiry since this is not part of a normal, regular diet. Another argument for including sport nutrition products as a focus area is that they are highly popular among elite and recreational athletes (Garthe & Maughan, 2018; Parnell, Wiens, & Erdman, 2016). Studying this practice explicitly will hopefully allow me to acquire more vibrant and more interesting data, considering that it has not frequently been done before.

In addition to the present classification, my research is also open for athletes' own suggestions for what they consider to be a NS.

1.2.5 Medications

A pharmacologic agent (or pharmaceutical drug; medication) is “a drug or a substance used to treat disease or injury” (Medication, 2007). In this thesis, both prescription and non-prescription (over-the-counter) medications constitute a subject of inquiry. Pharmacologic agents are considered as a PES if "taken in doses that exceed the recommended therapeutic dose or taken when the therapeutic indications are not present" (American Academy of Pediatrics, 2005, p. 1104). Some examples of using pharmacologic agents for performance-enhancement include using decongestants for the stimulant effect, using asthma medication for endurance when asthmatic conditions are not present, or taking paracetamol to improve endurance (American Academy of Pediatrics, 2005). In other words, any pharmacologic substance that is used for reasons other than to treat a documented disease state or deficiency is considered performance-enhancing.

[2] Carbohydrate and/or caffeine rich gels.
[3] Protein and/or carbohydrate rich bars.
[4] Sport/isotonic drinks usually containing electrolytes and simple carbohydrates.
[5] Recovery drinks usually contain protein, carbohydrates, and/or electrolytes.
[6] Protein supplement in powdered form coming from plants, eggs, or milk.

1.3 Structure of the thesis

Having stated the purpose of the study and presented the research question, I will spend the next chapter presenting a broader context for the research by discussing the phenomenon of medicalization and presenting existing statistics on NS and medication usage. Further on, in chapter 3, I will present the existing social-science research on attitudes and behaviors connected to PES. In chapter 4, I will present the theoretical approach for the study, followed by chapter 5, which deals with methodological and ethical considerations. Chapter 6 will present the results. Then chapter 7 will discuss the results in relation to existing research, theory and context. Finally, in the last chapter, I will summarize the findings and outline conclusions.

2. Contextual background

In this chapter I will clarify the contextual background of the present project by presenting the issue of PES in sport from a broader social science perspective in order to induce a richer understanding of the studied phenomenon and provide a glimpse of the bigger picture. Then, I will provide existing research on prevalence of NS and medications in athletes.

2.1 Medicalization

For a wider context for the problem of PES in sport, sociologists refer to the process of medicalization (Connor, 2009; Conrad, 2007; Waddington, 1996). Conrad (2007) defines this process as follows: “Medicalization describes a process by which nonmedical problems become defined and treated as medical problems, usually in terms of illness and disorders.” (p. 4). Medicalization is a wide-ranging process in a society when various social areas and phenomena fall within the medical sphere. The process of medicalization has escalated enormously within the last fifty years (Conrad 2007).

2.1.1 The history of the medicalization of sports

Sport is one of the social spheres that has been through and is still undergoing, significant changes as a consequence of a global medicalization process. By analyzing the development of sports medicine literature, Waddington (1996) illustrates how athletes have become viewed as a population in need of continuous medical support. Notably, an athlete does not necessarily have to suffer from an injury or have any other pathology in order to become a patient; just being a professional athlete automatically means that one requires medical supervision (Malcolm, 2016; Waddington, 1996). Since 1950, one can observe a trend towards the increased competitiveness and commercialization of elite sport which promotes a ‘winner takes all’ mentality which downgrades the traditional value of participation. This development led athletes to seek out anyone who is capable of improving their level of performance (Waddington, 1996).

After the Second World War, elite sport also became increasingly rationalized, focusing more and more on the excellence of athletic performance (Beamish & Ritchie, 2006; Waddington, 1996). At this point, sports medicine entered the field to facilitate the realization of what was considered athletes’ natural (and ‘unnatural’) capacity to deliver

the best performance. Waddington (1996) states that ‘sport medicine has actually been one of the major contexts within which performance-enhancing drugs have been developed and used.’ (p. 185). In pursuit of enhanced performance, powerful nations like the Union of Soviet Socialist Republics (USSR), the United States of America (USA), the German Democratic Republic (GDR) and the Federal Republic of Germany (FRG) initiated a state-sponsored medication of sport, encouraging the involvement of medical and health science professionals in their elite-sport systems (Beamish & Ritchie, 2006; Møller, Waddington, & Hoberman, 2015).

At this stage in history, people knew much less about the actual and long-term consequences of doping, as compared to what we know today (Waddington, 1996). The absence of anti-doping regulations and the openness towards experimentation with PES often resulted in an unrestrained usage of hormones, steroids, blood doping, and other performance-enhancing methods – all in the struggle for prestige on the international sporting arena (Møller et al., 2015; Waddington, 1996). The first substantial anti-doping measures in sports were taken in the 1960s with the creation of the International Olympic Committee (IOC) Medical Commission in 1961. However, the current legislation – which harmonizes anti-doping strategies across all sports, arrived much later. It was not until 1999, when WADA was jointly created by the IOC and the public authorities, that an organization became responsible for the prevention and detection of doping use in sports (Ljungqvist, 2017). To this day, WADA is still leading this fight, its authority deriving from the WADA Code, as well as the International Anti-Doping Convention established by UNESCO (Ljungqvist, 2017).

2.1.2 Medicalization of contemporary sports

It is important to clarify that the process of medicalization in sport is not limited to the use of illicit drugs. Malcolm (2016), in his book “Sport, Medicine and Health: The Medicalization of Sport”, argues that the medicalization of contemporary sports manifests itself in athletes’ increased dependency upon medicine for effective performance in sports. In this context, Malcolm (2016) writes about the crucial role of ‘the team behind the team’, referring to the medical professionals that support the everyday functioning of the elite sport. Modern sport is characterized by a high involvement of medical professionals like nutritionists, biomechanists, exercise physiologists, and sports psychologists, just to name a few (Beamish & Ritchie, 2006).

Another factor that increases medicalization of sport is the high prevalence of injuries among athletes. Existing research shows that elite athletes are very likely to suffer from injuries, even more than people in the most hazardous occupations (Malcolm, 2016). Therefore, athletes rely on extra medical support to be able to sustain and continue their careers; the same development is also present among amateur athletes.

The production of champions is not just about promoting human excellence. Instead, this enterprise has massive financial incentives like prize money, incomes from television rights, sponsorship contracts and endorsements. Therefore, it is not surprising why both athletes and their entourage are willing to go far in the pursuit of athletic success. In the highly commercialized sports world of today, it can be tempting to experiment with both allowed and prohibited substances which promise to improve the level of performance (Connor, 2009).

2.2 Use of medications in sports

Having explained how the process of medicalization has been occurring in sports over the years, let me now shift my attention towards the current reality and look at how the medicalization manifests itself in the life of modern athletes.

Non-medical usage of pharmacologic agents is an emerging social trend that is recognized as a growing global health challenge (American Academy of Pediatrics, 2005; Conca & Worthen, 2012). The non-prescription drug abuse, also referred to as the over-the-counter abuse, is when medications are consumed "for reasons other than those indicated on the label or in the prescribing literature or on the box label" (Lessenger & Feinberg, 2008, p. 45). Within the context of non-prescription medicine misuse, the prevalence among adolescents and young adults is a particular concern (Lessenger & Feinberg, 2008). Non-therapeutic use of medications often has multiple unexpected side effects. Even over-the-counter painkillers can provoke life-threatening risks (American Academy of Pediatrics, 2005). Therefore, it is vital to avoid non-therapeutic use of pharmacologic agents to protect athletes' health. Unfortunately, the research on medication usage among young athletes is especially scarce, even though some studies reported prevalence around 44% to 61% (Huang, Johnson, & Pipe, 2006; Tscholl, Junge, & Dvorak, 2008).

2.2.1 Prevalence and patterns of use

The fact that various medications are widely consumed among athletes is recognized by numerous researchers (Tsitsimpikou et al., 2009). Elite athletes have been shown to use more physician-prescribed medications than non-athletes (Aavikko et al., 2013). But even among the elite, it is common for medications to be taken without expert advice (Ciocca, 2005). All the existing evidence gives an idea of the high prevalence of anti-asthmatic medications, as well as analgesics and non-steroidal anti-inflammatory drugs (NSAIDs) (Aavikko et al., 2013; Hainline et al., 2017; Tscholl et al., 2008; Tsitsimpikou et al., 2009).

A recent study of young elite Italian cyclist reported that 75% of participants used minimum one pharmacologic agent, but even up to five in the past three months (Loraschi, Galli, & Cosentino, 2014). The mean use was of almost three drugs per athlete. Athletes in this study reported the following reasons for medication intake (beginning with the most popular): “vitamin deficiency”, “energy recovery”, “detox”, “fever/influence”, “unease”, “anemia”, “pain”, “to maintain hematocrit”, “allergy”, and “fitness maintenance”.

Tsitsimpikou et al. (2009) provide highly detailed information on Olympic athletes’ usage of supplements and medications three days prior to competition. The usage of NSAIDs and analgesics was common. The study also showed the increased use of asthma medications compared to the previous Games; with swimming, athletics, cycling, and rowing accounting for almost half of the total number of applications for therapeutic use exemption (TUE) for asthma. However, one of the overall conclusions of the study was that the usage of medications has become more moderate as compared to previous data.

Another recent study produced by Salter et al. (2018) investigated sources of medication information and supply behaviors of elite/developing Australian athletes. The study showed that athletes frequently utilize pharmacists for medication supply, medication information, and the treatment of minor ailments.

Below, I will provide further detail on analgesics and asthma medications since these are particularly widespread among athletes, and since they both can be used for performance-enhancing purposes, if taken without therapeutic indications. My research will also

explore whether athletes are familiar with these methods of performance enhancement in sport.

2.2.2 Common medications

Analgesics

According to Hainline et al. (2017) “the most common type of medication used by athletes is prescription and over-the-counter analgesic and/or NSAIDs” (p.1247). An analgesic is the same as what is usually referred to as a *painkiller*. According to a recent field review of pain management strategies by elite athletes, there is solid evidence of broad use and misuse of analgesics among elite athletes (Zideman et al., 2018). Another extensive review states that top athletes are likely to use multiple types of analgesics and often receive agents from multiple sources (Harle et al., 2018). Commonly, low-intensity chronic or persistent pain is being treated by the use of self-prescribed over-the counter medicines (Zideman et al., 2018).

Emerging evidence suggests a possible misuse analgesic medication for performance-enhancement purposes. One possible example of this is the ingestion of paracetamol, which according to some research shows signs of improving endurance (Lundberg & Howatson, 2018). However, the literature on the use of painkillers for increased performance is very scarce. Interestingly, according to a recent qualitative study, some Norwegian adolescents name participation in athletic training and competitions as one of the situations when they tend to take analgesics (Skarstein et al., 2016).

Asthma medications

Asthma is a condition that is listed as being among or the most common medical conditions in elite-level athletes. Recent studies indicate 25–75% of prevalence of asthma in susceptible populations of athletes (Allen, Backhouse, Hull, & Price, 2019). The WADA Code does place some restrictions on use of asthma medications; athletes who have asthma can apply for TUE. Importantly, the use of asthma inhalers can be seen as a dilemma because certain asthma medications can yield significant benefits to athletic performance if taken beyond therapeutic dosage (Hostrup, Kalsen, Auchenberg, Bangsbo, & Backer, 2016). This evidence gives grounds for more widespread speculation concerning whether or not this treatment is in line with the principle of fair

play. The dilemma gets even more complicated and controversial considering a certain degree of distrust to the TUE system (Overbye & Wagner, 2013). Therefore, asthma currently occupies a "grey zone", and critics often present asthma medication use as a justification for the use of prohibited substances for performance enhancement.

2.3 Use of nutritional supplements in sports

Nutritional supplements are, unlike medications, not meant to counteract or treat diseases. It is generally known that proper nutrition has a significant effect on an athletes' ability to sustain intense training routine, amplify training response, and achieve a desirable body composition for optimal performance. That said, athletes often overestimate their body's needs for vitamins, minerals, macronutrients, calories, etc. (ADNO, 2017) and turn to NS to fill in the gap. Moreover, the use of NS is often thought of as an easy, and legal, opportunity to achieve additional performance benefits. In reality, NS cannot be a substitute for a proper diet, neither is it a shortcut to improving athletic performance (ADNO, 2017). Normally, a balanced calorie-dense diet is sufficient, even for athletes practicing several hours per day; Therefore, dietary supplementation is – in the vast majority of cases – unnecessary (ADNO, 2017; Sundgot-Borgen, Berglund, & Torstveit, 2003).

2.3.1 Prevalence and patterns of use

The NS industry is one of the fastest growing in the world (Solheim et al., 2017). Despite limited and controversial evidence of health benefits, nutritional supplements are common among the general population (Garthe & Maughan, 2018). The existing data suggests an even higher popularity of NS use among athletes, with estimated prevalence ranging from 40% to 100% (Garthe & Maughan, 2018). It must be noted that comparing data from different prevalence studies is challenging due to various definitions of NS and methods of data collection.

The literature outlines that dietary supplement intake is widespread among young athletes (Braun et al., 2009; Diehl et al., 2012; Wiens, Erdman, Stadnyk, & Parnell, 2014) varying from 48% (Petróczi et al., 2008) to 91% (Diehl et al., 2012). A study of 14-18-year-old German elite athletes points out that 91% of respondents use dietary supplements at least once a month, which is similar to the prevalence of use among older athletes (Diehl et al., 2012). Athletes are also likely to consume several NS

simultaneously. Young elite athletes consume on average between 3 (Petróczi et al., 2008) and 3,6 (Slater, Tan, & Teh, 2003) types of supplements. A study of adolescent Canadian athletes by Wiens et al. (2014) pointed out that athletes used as many as 7 different supplements during the last 3 months prior to the survey.

Supplement intake is largely sport dependent. Athletes competing in individual disciplines, for instance, report much higher supplement use compared to team sport athletes (Tsitsimpikou et al., 2009), with endurance athletes using supplements to a greater extent as compared to other sport disciplines (Lun, Erdman, Fung, & Reimer, 2012; Shaw, Slater, & Burke, 2016). Endurance athletes prioritize carbohydrate rich supplements (e.g., gels, sport drinks), supplements to support optimal hydration status (e.g., sport/isotonic drinks) and iron supplements (Ronald J Maughan et al., 2018). While power and strength athletes prioritize amino acid supplements like creatine and beta-alanine, as well as protein supplements (Ronald J Maughan et al., 2018). An older Norwegian study by Ronsen, Sundgot-Borgen, and Maehlum (1999) likewise reported significant differences in supplementation preferences among endurance and power sport athletes. Endurance athletes like cross-country skiers reported consuming iron, vitamin C, and fish oil, while power sport athletes often took creatine, protein/amino acids, vitamins, and minerals. Findings like these show that studies looking into supplement prevalence only within a given sports discipline possess limited possibilities for generalization.

The amount of supplementation intake also depends on the level of an athlete's ranking, with the best athletes consuming less supplements as compared to the lower-ranked athletes (Sundgot-Borgen et al., 2003). However, in apparent contradiction with the Sundgot-Borgen et al. (2003) study – since top-ranked athletes can be assumed to be training the most – several studies also found a positive association between training load and the amount of supplements taken (Knapik et al., 2016; Lun et al., 2012).

When it comes to athletes' motivation for taking NS, the most common reasons are performance enhancement, sustaining health and immune system, or compensating for nutrition deficiencies (Garthe & Maughan, 2018; Jovanov et al., 2019; Sundgot-Borgen et al., 2003; Tscholl et al., 2008; Wiens et al., 2014). Notably, Sundgot-Borgen et al. (2003) note that athletes might take NS to compensate for nutrition real or imagined deficits even though those deficits are not proven by any tests.

Interestingly, there is evidence of inverse relationship between knowledge and use of NS (Massad, Shier, Koceja, & Ellis, 1995). The athletes' knowledge about NS was suggested to be an important factor for the decrease of NS use (Sundgot-Borgen et al., 2003). Studies also show that athletes that are aware of health risks of NS are more likely to abstain from supplement use of potential health risks of NS (Dascombe, Karunaratna, Cartoon, Fergie, & Goodman, 2010).

2.3.2 Common nutritional supplements

The list of nutritional supplements for sportsmen is long. The most popular nutritional supplements are multivitamins, minerals, proteins, and sport drinks (Heikkinen, Alaranta, Helenius, & Vasankari, 2011). Among the various NS mentioned above, vitamins and multivitamins are the most prevalent among senior elite and adolescent athletes. Existing studies report that 67% of younger elite and developing athletes consume multivitamins, 65% report intake of vitamin-enriched water, and the use of other vitamins varies from 25% to 66% (Wiens et al., 2014). Besides, caffeine is widely used among athletes, administrated either as an ingredient in energy drinks or pills (Hoffman, 2010). Caffeine is the only stimulant available that is not banned or heavily restricted by WADA.

2.4 Risks of nutritional supplements and medications

2.4.1 A gateway to doping

The use of legal PES among athletes is problematic owing to its association with increased openness towards doping and an increased probability of doping usage at a later stage (Backhouse et al., 2013; Vasileios Barkoukis et al., 2015; Hurst, Kavussanu, Boardley, & Ring, 2019; Ntoumanis et al., 2014; Papadopoulos et al., 2006)

According to the summary of the existing research provided by Backhouse et al. (2016) an athlete which already consumes legal supplements is up to 10 times more likely to use doping compared with an athlete who consumes no supplements. The association between NS use and doping behavior is often explained by what is known as "the gateway hypothesis". Petróczi (2013) suggest that a gateway logic is present for doping behaviors in athletes, in cases when NS and medication consumers transit to "heavier" illegal PES. Athletes who already take allowed supplements are more willing to try the prohibited ones not necessarily because they acquire a "taste for pills" or want to win at all costs,

but because taking pills simply becomes a “learned behavior” (Petróczi, 2013). In line with Petróczi (2013), Vasileios Barkoukis et al. (2015) suggest that there is an “underlying cognitive and behavioral component” in the association between use of legal NS and illegal doping. Meaning that taking supplements in the present may influence athletes’ reasoning patterns and motivations in favor of illegal substances in the future. Interestingly, a recent study by Hurst et al. (2019) provide novel evidence that an NS user with a strong belief in the effectiveness of supplements appears more likely to make use of doping. Such evidence form another part of the explanation behind the link between NS use and doping.

The majority of studies based on the gateway hypothesis makes use of a quantitative approach and lean towards a social-psychology approach. A qualitative study of eight young elite road cyclists by (Lentillon-Kaestner & Carstairs, 2010) is particularly relevant for the present paper. The interviewees in this study reported habitual use of various legal substances and methods, possible misuse of TUE, as well as a generally open-minded attitude towards doping. Many of the interviewed athletes indirectly expressed intentions to use doping in the future.

2.4.2 Risk of a positive doping test

Another risk connected to supplement use is the risk of contamination. Using NS entails a risk of inadvertent doping (Geyer et al., 2011); a fact that is especially relevant for those athletes liable for doping testing. In the past years, an increased number of dietary supplement products containing prohibited substances has been identified. Several studies have concluded that as much as one-fourth of the NS currently on the market may be contaminated with either prohibited substances or other injurious ingredients (Geyer et al., 2008; Kohler et al., 2010). The risk of contamination has been increasing due to market growth and availability of supplements on the internet. Notably, the quality control of the dietary supplements that enter the market is much less strict and regulated as compared to the quality standards of over-the-counter pharmaceutics (American Academy of Pediatrics, 2005).

NS can also be polluted with stimulants, prohibited anabolic agents or hormones. Due to unclear ingredient lists where prohibited substances can be easily camouflaged, it is often extremely difficult to detect contaminated products for the average supplement consumer

(Geyer et al., 2011). Supposed reasons for supplement contamination include improper cleaning of production facilities, where both legal and prohibited substances are often being produced on the same production line without proper cleaning. Another source of cross-contamination can be unclean transport containers from raw material suppliers (Geyer et al., 2011).

Similarly with NS, reckless consumption of pharmaceutical substances or their intake for performance enhancing purposes can also result in a positive doping test. In the case of pharmaceutics, as compared to NS, this is not due to contamination or unclear ingredient list. Unlike NS, medicines must meet much higher standards in order to make it to the market, a feature that obviously lowers the risk of contamination. Despite this, some medications are, or include substances that are, prohibited under WADA Code. Athletes should therefore be especially cautious when choosing which medicines to consume, and in what doses. The much-debated case of Therese Johaug in 2016 (Tingve & Skaug, 2016) is an example of how reckless medication consumption can lead to a positive doping test. The case of Martin Sundby (Hoel, 2016) also shows that an increased dosage of a certain medicine can just as effectively lead to a positive test.

2.4.3 Health risks

In contrast with medications, most dietary supplements tend to be self-prescribed. Medical professionals like doctors, nurses, or pharmacists are usually not consulted before their use (Heikkinen et al., 2011). Even though many athletes believe in the health benefits of NS, decades of high-quality research evaluating NS has yielded predominantly disappointing results about potential health benefits, especially in the long-term (Kuczmarski, 2008). In fact, some studies skew in the opposite direction, discovering numerous detrimental side effects of NS, and there is a growing accumulation of evidence to suggest that supplements generally cause more harm than good. An example of this is the exaggerated consumption of vitamins and minerals which can often result in negative health effects (ADNO, 2017). There are, however, some supplements that are backed up by sound evidence regarding their effectiveness. Examples of this include protein, caffeine, creatine, iron, and magnesium (Zourdos, Sanchez-Gonzalez, & Mahoney, 2015). That said, it is important to stress that many supplements, including iron or magnesium, are only effective in case of existing deficits and that all supplements should be consumed based on the results of laboratory tests (Zourdos et al., 2015).

Some pharmaceutical substances also come with significant health risks for athletes, especially when self-prescribed or consumed for performance enhancement purposes. Like in the case of dietary supplements, many athletes are ignorant of the side effects of medications; and even in cases where the athlete is aware of them, these risks may well be ignored (American Academy of Pediatrics, 2005). In some cases, even apparently safe and tested over-the-counter painkillers can be potentially life-threatening to certain users (American Academy of Pediatrics, 2005). The consumption of various analgesics can also be problematic even in cases where the substance itself does not cause any direct harm. One way this can happen is when drugs are being used as a short-term pain relief to make it possible to train or compete with an injury. Camouflaging pain symptoms with analgesics is likely to exacerbate the injury, as happened in a recently discussed case with the Norwegian runner Ingvill Måkestad Bovim (Skjerdingstad & Jørnholt, 2020).

3. Social science research on PES

This chapter will present some relevant literature that will shed light on athletes' PES related behaviors. In the next pages, I will shortly present the main approaches within the field of social science research on PES, as well as provide existing evidence that gives insights into how and why PES behaviors occur. Before I delve deeper into this topic, I would like to clarify that much of the existing research presented in this chapter stems from social science research on doping. Even though the main topic of the present thesis is attitude formation towards non-prohibited medications and NS, the doping-related literature is seen to provide some valuable and complementing insights, in the absence of research on legal substances.

3.1 Field overview

The issue of doping in sports can be studied from various points of view. One can roughly differentiate these into the naturalistic approach of medical and physical sciences and the social science approach. Notably, the predominant part of research in the field of PES is conducted based on natural and medical science, while the social science research accounts for a significantly smaller part (Sandvik, 2015).

The medical and physical science researchers in the field of PES have accumulated a substantial amount of evidence that has matured into a detection-based deterrence strategy. The world anti-doping movement is often criticized for excessive focus on detection-based deterrence approach (Møller, 2016) and high reliance on biological testing (Waddington & Møller, 2019). Focus on punishment and biological testing have proved to be ineffective in many ways (Rushall & Jones, 2007; Waddington & Møller, 2019) and can often lead to what may seem like unjust, especially when combined with a principle of strict liability[7]. On the other hand, the social science approach to PES use in sport allows to move beyond detection-deterrence approaches, and instead, promotes

[7] WADA provides the following definition of the principle of strict liability: *"…each athlete is strictly liable for the substances found in his or her bodily specimen, and that an anti-doping rule violation occurs whenever a prohibited substance (or its metabolites or markers) is found in bodily specimen, whether or not the athlete intentionally or unintentionally used a prohibited substance or was negligent or otherwise at fault."* (WADA, n.d.)

the principle of education and prevention (Backhouse et al., 2016; Houlihan, 2002; Mazanov & McDermott, 2009). The development of social science research in the field of doping has been encouraged by WADA in the latest years (Backhouse et al., 2016). When applied to the field of anti-doping research, a social science approach helps researchers to examine *how* and *why* athletes doping behaviors occur (Backhouse et al., 2016); it also acknowledges the role of social and cultural environment, as well as athletes' network.

With its variety and versatility of disciplines, social science research has the potential to cover the issue of PES in sport holistically, from various perspectives. Nevertheless, even though the research landscape of PES is growing, the lack of social science-based research in the field has been emphasized by authors like Backhouse et al. (2016), Sandvik (2015), Mazanov (2009) and (Connor, 2009). Sociology, when applied to PES related research, questions the social structures that encourage or discourage athletes from taking PES. As it is put by Mazanov (2009), "sociology sees drug use as a social activity that occurs within a web of relationships rather than an athlete acting alone." (p. 424). This is the perspective I follow in this thesis.

3.1.1 Individual choice versus environmental influences

An important discussion in the field of social science research on PES behaviors is whether the use of substances is connected to individual choice, or whether it is a result of complex contextual influence. In the first case, athletes' behavior is seen as a product of individual morality and reasonable choice (Jedlicka, 2014; Mazanov & Huybers, 2010), where an athlete takes an independent and well-weighted decision of whether to use a substance or not. This approach is criticized as being overly reductionistic, since it often fails to grasp the complexity of PES use. In the second case, athletes' behaviors and attitudes towards PES are explained as a product of environmental influence, "social forces" and contextual factors (Backhouse et al., 2016). The second, context-oriented approach, has been gaining popularity in the latest years. A significant number of academics in the field (Aubel & Ohl, 2014; Connor, 2009; Johnson, 2012; Pappa & Kennedy, 2013; Smith et al., 2010) argue that the research should shift its focus from the athlete-centered approach and instead, focus on the bigger picture. Backhouse et al. (2016) notes that anti-doping rules regulations start to shift from the traditional individual-based approach, and turn towards a more holistic, socio-ecological approach

by acknowledging the role of athlete support personnel in athletes' doping attitudes and behaviors (WADA, 2016).

3.1.2 Environmental influences

As presented above, it is broadly acknowledged that the responsibility for cheating does not always lie squarely on the individual athlete but is to a high extent determined by the culture and environment in which that athlete is situated. Existing research provides evidence for the view that certain features of sporting environments can either increase or decrease the likelihood of doping use (Ntoumanis et al., 2014; Sandvik, 2015).

Johnson (2012) suggests that to understand athlete's behavior, one should combine both individual and environmental variables. The author emphasizes the importance of environmental forces for athletes' behavior. He suggests that individual mediates the relationship between environmental pressures and doping behavior. The stronger the individual is in his or her beliefs and knowledge (individual variables), the more pressure must be put by the environment for doping to occur. Examples of environmental forces include messages from perceived sources of authority, cultural norms, social expectations, endorsements and reinforcements.

Backhouse, Griffiths, and McKenna (2018) suggest shifting focus to environmental and social factors in fight for clean sport, instead of blaming the individual athletes' exclusively, and call to take action and change the present "dopogenic environment" of modern sport. The term "dopogenic environment" can be defined as 'the sum of influences produced by the surroundings, opportunities, and conditions that promote anti-doping rule violations' (Backhouse et al., 2018, pp. 1485-1486). Moreover, the authors emphasize that interactions between individuals, their social network, and supporting structures have a crucial role in directing athletes' behaviors.

Aubel and Ohl (2014), who studied doping culture in cycling using the "risk environment" approach, outline that team organization and employment conditions can push athletes towards use of prohibited substances. Authors claim that "employment and business models, as well as day-to-day working conditions, (are) structural drivers of doping practices in which individuals and teams engage." (Aubel & Ohl, 2014, p. 1094). Economy in cycling was seen as a risk factor since salaries are low, even for top class athletes, and teams are highly dependent on showing results to attract sponsors. If

the sponsor withdraws, this often means that the team is dismantled. Moreover, it was found that the most economically fragile teams impose a greater workload on their competitive riders because they have to compete more often, which also creates additional pressure. Another risk factor is that cyclists have a rather short period in their career when they can be at the top positions, and in hope for extending career, senior cyclists can turn to doping.

A study of athletes' perceptions of health risks connected to illegal supplements showed that athletes seldom concern themselves about negative health risks of doping (Lentillon-Kaestner, Hagger, & Hardcastle, 2012). In fact, athletes considered taking various substances, banned or not, as necessary to support their health. In this same study, the wider social environment was seen as an important factor in PES use and trivialization of health risks connected to it.

Another highly interesting and relevant study by Lentillon-Kaestner and Carstairs (2010) aim to understand doping behaviors of young cyclists. In this paper, great attention was paid to athletes' experiences with legal substances and methods. Athletes' environment was seen as important factor that prevents or encourages PES use. The study showed that athletes were opened for experiments with legal supplements and saw it as an alternative to doping while they are at junior level. All of the young cyclists interviewed took NS and believed that they improved their performance. Besides, athletes were using real and simulated altitude training to increase their physical condition. The young cyclists also demonstrated curiosity and acceptance for doping on elite level, which is a qualitative example of the gateway-logic which connects allowed and prohibited performance-enhancement.

3.1.3 Network and socialization

The term "environment" is understood as a broader context in which athletes exist. Naturally, this includes an athlete's social environment. There is growing evidence of the fact that the social network and socialization process have a significant role in forming athletes' PES-related attitudes and behaviors.

An athlete's social network – both inside and outside of their sport– has a significant role in preventing or encouraging PES use (Lentillon-Kaestner & Carstairs, 2010; Pappa & Kennedy, 2013; Smith et al., 2010). In this case, PES behaviors are understood by

"locating athletes within the network of relationships in which they are involved within sport, that is the web of interaction with other athletes, coaches, managers, team physicians and others, and also within broader social changes such as the increasing competitiveness and commercialization of sport" (Waddington, 2016, p. 1). A comprehensive study by Ohl, Fincoeur, Lentillon-Kaestner, Defrance, and Brissonneau (2015) applied a sociological perspective to understand how social norms are constructed in elite road-cycling. By identifying relations between the socialization process within teams and reported attitudes to doping, the study revealed that all the actors of athletes' social circle – coaches, leaders, support personnel, teammates, and competitors – are involved in the process of shaping social norms within the sporting environment – that is, the norms that guide young cyclists morality. The conclusion that an athlete's social network influences their attitudes toward illegal drugs is consistent with another research which showed that doping-related attitudes and subjective norms are to a high degree determined by personal appraisals of social interactions (Kirby, Guerin, Moran, & Matthews, 2016). Another recent qualitative study by Duncan, Hallward, and Alexander (2018) arrived at the same conclusion. According to the study, an athlete might even receive ambiguous signals from their coach. Some signals may be interpreted as pressure to dope.

The existence of social pressure to take PED was also reported in a study mentioned earlier, by Lentillon-Kaestner and Carstairs (2010). In it, the authors write that "cyclists who had recently become professional found that there was subtle pressure from team-mates or even team managers to start doping." (Lentillon-Kaestner & Carstairs, 2010, p. 340).

Both the study of Lentillon-Kaestner and Carstairs (2010) and the study of Ohl et al. (2015) demonstrate that doping culture can be passed from generation to generation between the athletes (cyclists). Cyclists differentiate between the new generation of cyclists, and the former, old-school generation. Younger cyclists were introduced to illegal substances and methods when they entered the elite level and begin to socialize with experienced athletes. "The more experienced cyclists, who doped or used to dope, transmitted the culture of doping to the young cyclists, teaching them doping methods and which substances to use." (Lentillon-Kaestner & Carstairs, 2010, p. 336).

The pressure to take up doping can also come from the outside of the sport context. Family members can have big hopes for an athlete and put a lot of pressure on him or her to perform, a factor that might as well encourage athletes to initiate doping use (Lentillon-Kaestner & Carstairs, 2010). A similar idea is suggested in a quantitative study by Zelli, Mallia, and Lucidi (2015) which argues that an athlete's understanding of interpersonal situations may lead them to feel pressured to dope.

Another significant quantitative finding is the association between witnessing doping usage in one's social circle and being a user oneself (Ntoumanis et al., 2014). In other words, having friends who use doping greatly increases one's risk of being a doper.

3.1.4 The networked athlete

Athletes operate in a complex environment, made up of a number of interconnected networks and relationships (Pappa & Kennedy, 2013; Thomas, Dunn, Swift, & Burns, 2011). Because of this, in order to undertake a systematic analysis of PES-related attitudes and behaviors, one should consider a large array of inter- and intra-personal, social, and environmental factors (Johnson, Sacks, & Edmonds, 2010).

In support of the idea that doping is a result of wider social forces acting upon an athlete, several authors underline the utility of the concept of "the networked athlete" (Connor, 2009; Pappa & Kennedy, 2013). This concept puts the athlete in the center of the socialization process, where different actors interact with the athlete and influence his or her understanding of what is accepted and what is normal. The important actors in the network around the athlete include coaches, medical experts, managers, physiotherapists, peers, and family. Examining how the athlete fits within a social web helps to understand their particular social world. Some relevant research on the most important actors of the athletes' network is presented below.

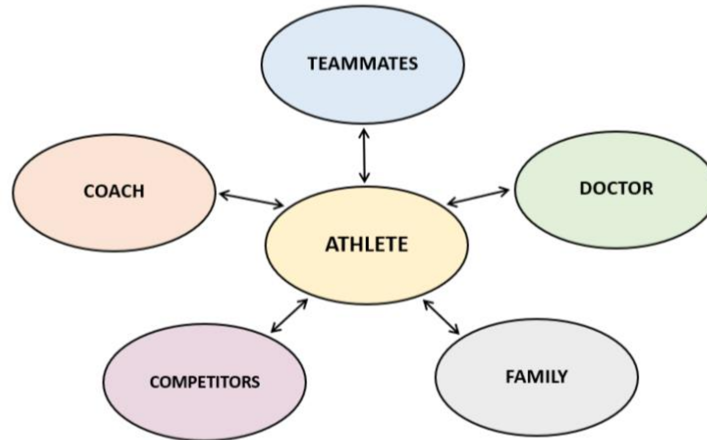

Figure 1. *The networked athlete.*

Coaches

Athletes have a high level of trust to their coaches in questions of legal and illegal performance enhancement. When it comes to legal substances, coaches are cited as a prime influence regarding NS use among young athletes (Jovanov et al., 2019; Nieper, 2005; Torres-McGehee et al., 2012). Data derived by earlier research suggests that from 36,5% (Diehl et al., 2012) to 67% (Nieper, 2005) of young athletes were recommended to use NS by their coach; and that 20,3% obtain supplements through the coach (Diehl et al., 2012). This finding is cause to some worry, since according to Salter et al. (2018) coaches have no compulsory nutritional education and often lack proper knowledge on NS.

Coaches usually play the most important role when it comes to shaping the phycological experiences and behaviors of their athletes (Bartholomew & Ntoumanis, 2009). Moreover, coaches inevitably become the communicators of team norms and values, directly or indirectly, including norms related to the use of supplements. Conceptual models of doping behavior point out the importance of coach-created motivational atmosphere for doping behaviors (Backhouse et al., 2016; Johnson, 2012). Evidence also shows that coaches, together with doctors, are often directly involved in doping actions (Pappa & Kennedy, 2013).

Sport medicine practitioners

Only a small number of studies have focused on the role of doctors (physicians, physiotherapists, and general practitioners) in relation to PES use (Backhouse et al., 2016). Still, existing evidence suggests that doctors are a second important source of information for both pharmaceutical substances and NS. Many athletes use doctors, physicians (29.3%) and nutritionists (13.9%), as an information source on medications and NS (Diehl et al., 2012; Tsitsimpikou et al., 2009). According to Nieper (2005) who studied national track and field athletes in the UK, most of the athletes in the study (58%) check with the medical team before taking any supplements. In the same study, (Nieper, 2005), the majority of athletes (75%) consulted dietician infrequently, even though they had access to this service. This supports the findings of Smith-Rockwell, Nickols-Richardson, and Thye (2001) who also reported that nutritional professionals were underused. Existing knowledge also shows that athletes frequently utilize pharmacists for medication supply, medication information, and treatment of minor ailments (Salter et al., 2018).

Additional research on this topic is required. However, it is commonly acknowledged that doctors can be an important influence, either by promoting an anti-doping culture or by somehow encouraging doping. Backhouse et al. (2018) stress doctors' ability to influence sporting culture through value-based communications and encourage sports physicians to forge coalitions to identify, challenge, and root out any practices that feed into a "dopogenic environment". In keeping with this, Waddington and Smith (2009) emphasize the influence coming from an athletes' entourage, especially from medical professionals, who – given a motive and an opportunity – can easily contribute to the spread and efficacy of doping use.

Teammates / peers

Team-mates have a significant influence on other peer members of their athletic circle (team-mates and opponents). Peers have been found to influence athletes' motivation, beliefs, and behavior in a sport setting. Existing research recognizes that peers who do sport together influence each other's attitudes towards health risk behaviors like consumption of alcohol and marijuana (Grossbard, Hummer, LaBrie, Pederson, & Neighbors, 2009). Moreover, young athletes are likely to be pressured by peer influence

in situations where they have to choose between correct and unsportsmanlike behavior (Bolter & Weiss, 2013). Doping and PES misuse can be considered as “health-risk behaviors” and something “unsportsmanlike”. Therefore, it is reasonable to assume that peer influence is also an important factor in decisions related to PES consumption. One of the ways peers can influence each other’s’ behavior with substances in sport is through role modeling. Athletes report that successful athletes within the team influence team culture either in favor of or against chemically assisted performance-enhancing approach (Vassilis Barkoukis, Lazuras, Ourda, & Tsorbatzoudis, 2020).

Family

Family is frequently cited as an important source of influence regarding NS, and parents are the most commonly named source of supplement supply among younger athletes (Diehl et al., 2012). Existing evidence suggests that from 29,7% (Diehl et al., 2012) to 44% (Nieper, 2005) of athletes receive information about NS from their family. Importantly, friends and family are becoming a less used source of information on supplements as athletes grow older (Wiens et al., 2014).

No evidence has been found on how families influence athletes concerning the usage of pharmaceutical substances. However, it has been reasonably suggested that the parent–athlete relationship, directly or indirectly, can both deter athletes from, and lead them towards, PES usage (Erickson, Backhouse, & Carless, 2017). This is because parents play a key role in forming and shaping their children’s ethical values, and thus in molding athletes’ general approach toward sports – including attitudes towards chemically assisted performance-enhancement.

To summarize, this chapter shows that there is a great number of factors that influence athletes’ PES related behaviors, especially environment, network and socialization. Even though many of the presented studies focus on the prohibited PES, it is hoped that it will be valuable knowledge for my inquiry as well.

4. Theory

This section presents theory in the present project. The use of theory in qualitative research is an ongoing debate. Some contend that theory enhances the quality of the research, while others suggest that qualitative inquiry should be purely inductive (Collins & Stockton, 2018).This master project is informed by the relevant theory, concepts and existing knowledge, meaning that this is not a squarely "theory-driven" study. In this paper, theory is used as a foundation for the research question and data collection. Theory is also applied to gain a better understanding of the data on the stage of analysis.

To remind the reader, the aim of this research is to gain insight into athletes' experiences, beliefs and subjective norms in order to better understand attitude formation in relation to legal PES. These three elements – experiences, beliefs and subjective norms – contribute to formation of individual attitudes (Vogel & Wänke, 2016). Seeing as there is a very large literature on the topic of attitudes, a choice is needed concerning which theoretical model to make use of. In this paper, I have opted for one of the most cited and well recognized models - *the ABC model of attitudes* (Eagly & Chaiken, 1993).

Attitudes are influenced by intra- and inter-personal processes (Vogel & Wänke, 2016). The ABC model focuses on intra-personal factors that contribute to attitude formation and refers to "experiences and beliefs" in the research question. Subjective norm is an inter-personal factor in attitude formation; evidently, it refers to "subjective norms" in the research question. The intra-personal approach is concerned with how individuals handle inputs from the environment in order to develop their own personal attitudes. The inter-personal view, on the other hand, is concerned with how our social environment molds attitudes (Vogel & Wänke, 2016). It is important to emphasize that the concept of subjective norms in not a part of the ABC model. I decided to use the two concepts to get a more holistic understanding for attitude formation, combining the intra-personal perspective (the ABC model) and the inter-personal (subjective norms).

4.1 Attitudes

The concept “attitude” is one that has been frequently studied in social science. To put it simply, attitudes are defined as an acquired habit to evaluate things in a certain way (Vogel & Wänke, 2016). Another common sociological definition is the view that an attitude is a “tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993, p. 1). It is important to study attitudes because of their ability to shed light on the actual intention to perform a certain behavior (Vogel & Wänke, 2016). The attitude-behavior association is a highly important and studied phenomenon; however, it is worth noting that attitudes and actual behavior are not always perfectly aligned (Chaiklin, 2011; Guyer & Fabrigar, 2015). According to existing literature, the major determinant of attitudes are beliefs, and the second is subjective norms (Guyer & Fabrigar, 2015). Experiences are also named as a component that influence attitudes, however it is unclear how much impact they actually have.

Attitudes cannot emerge in a vacuum. People form attitudes through personal experiences, interactions with the environment, and socializing with others (Vogel & Wänke, 2016). The concept of attitudes is an important and often used concept when it comes to research on PES. A significant part of social science inquiry on PES is concerned primarily with attitudes; attitudes are also incorporated in a number of theoretical frameworks and behavioral models commonly used in the field (Backhouse et al., 2016). When it comes to attitudinal research on doping in particular, attitudes have been found to be a strong predictor of intentions and the actual usage of illegal drugs (Backhouse et al., 2016; Lazuras, Barkoukis, Rodafinos, & Tzorbatzoudis, 2010; Ntoumanis et al., 2014).

4.2 The ABC-model of attitudes

As argued above, attitudes are an important influence on our behavior, and their ability to predict an athlete’s chances of doping use has been proven many times. But where do the attitudes come from?

The ABC-model of attitudes was chosen due to its appropriateness to the research question, ease of application, and explanatory power. It is expected to provide an analytical perspective on the attitude formation process. Also known as the *tripartite*

model of attitudes (Fabrigar et al., 2005)*,* the ABC model suggests an intra-personal approach to attitude formation. It is called the *ABC model of attitudes* because it suggests the structure of an attitude can be described in terms of three components – A for affect (or feelings), B for behavior, and C for cognition (or beliefs). Tripartite theorists write that these three components combined form the so-called "anatomy" of an attitude (Fabrigar et al., 2005). Importantly, even though all the three components are present in the attitude, the strength of influence of each component can vary in different cases (Vogel & Wänke, 2016). For example, the affect component might outweigh the cognitive component, or the behavioral component might outweigh cognitive and affect component taken together (Fabrigar et al., 2005).

In the context of this thesis, the ABC model will give an added perspective on what influences athletes' intra-personal attitude formation towards NS and pharmaceutical agents.

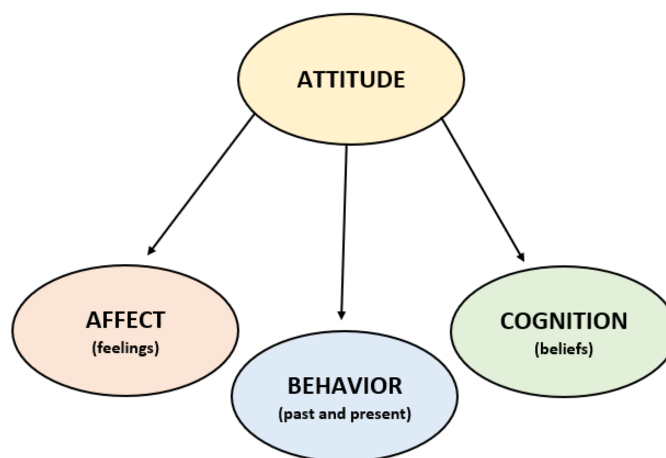

Figure 2. *The ABC model of attitudes.*

According to the model, three main factors are responsible for attitude formation. *Affect* describes the positive and the negative feelings that one holds towards an attitude object (Eagly & Chaiken, 1993). An affective component is based on emotional experiences, feelings or preferences. Affect is influenced both by what is known about the attitude object and by the experience one has with the object. Positive (e.g., joy) as well as negative (e.g., hatred) reactions can arise from experiences with the object of attitudes. With respect to attitudes toward PES, the affective component is likely related to the extent to which one likes or dislikes supplements or pharmaceutical agents (e.g., how much do I like or dislike X?).

Behavior is the tendency to perform a specific action when confronted with a specific object or a certain circumstance (Eagly & Chaiken, 1993). Behavioral component reflects how attitude affects the way we behave or make decisions. To approach the attitude object is generally tied to a person's having positive attitudes towards it, while the avoidance of the object is tied to negative attitudes towards it. Importantly, past behaviors are connected with individual attitudes in the present. In other words, people infer attitudes that are consistent with their prior behaviors. With respect to attitudes toward PES, the behavioral component is likely related to whether people approach or avoid a supplement or medication (e.g. How will I act in response to X? How did I react on X in the past?).

Cognition refers to beliefs, thoughts, attributes and ideas that one associates with an object (Fabrigar et al., 2005). Cognition is the perception and conceptualization of an attitude object, which is based on information processing and learning processes (Eagly & Chaiken, 1993). To put it simply, what is called "the cognitive component" is everything based on the information and knowledge a person has about the object (e.g., What do I *know* about nutritional supplements and medications? Is it healthy/unhealthy or safe/unsafe?)

The benefits to seeing attitudes as being made up of three components gives better and clear understanding of attitude structure. Th method also helps to identify possible relationships between attitudes and behavior (Eagly & Chaiken, 1993). The three components together form a scheme that helps an individual to evaluate the object and form a certain attitude. The ABC model is a recognized and widely used model in the attitudinal research.

As critics have pointed out, a potential downside of the model, is that it suggests a simplified view of attitudes (Fabrigar et al., 2005). Moreover, the model has been criticized for presupposing a necessary relation between the affect, behavior and cognition; while critics point out that the relationship between the three components can be debated (Fabrigar et al., 2005).

4.3 Subjective norms

As mentioned earlier, "attitudes do not emerge in a vacuum but in a social context" (Vogel & Wänke, 2016, p. 157) . Therefore, it is necessary to take a close look at the

social dimension of attitudes if we are to gain a more holistic understanding of the phenomenon. The social influence on attitudes can be studied from a variety of different perspectives (Vogel & Wänke, 2016). In this thesis, I have chosen to focus on what are called *subjective norms* seeing as these are widely studied in attitude related research and in research on PES specifically. Besides, the concept of subjective norms has a second major influence on attitudes (Ajzen & Fishbein, 2005).

Subjective norms relate to an individual's perception of the particular behavior – whether the behavior will be approved or disapproved by other people. They refer to an individual's beliefs and expectations concerning what kinds of behavior are tolerated or encouraged by one's social environment, and what kinds of behavior that are not (Guyer & Fabrigar, 2015). Guyer and Fabrigar (2015) define the concept of subjective norms as follows: " (subjective norms) are comprised of an individual's normative beliefs, which represent the belief that other people important to the individual concerned expect the individual to behave in a specific manner, and their motivation to comply with the expectations of others." (p.185).

Trying to understand the role of subjective norms on an individual, simply referring to "what others do" is insufficient. According to Vogel and Wänke (2016), subjective norms are connected to one or several specific groups. The more the group is important and relevant for the individual, the greater will be the influence of subjective norms. Consequently, it can be assumed that subjective norms established among individuals proxime to the athlete (e.g. coaches, teammates, support personnel) or relevant to the athlete (e.g. regional or national sport community) would have the strongest effect on athletes' attitudes and behavior.

The study of subjective norms is often utilized in PES related research as an element of *Theory of Planned Behavior*, because it is a likely predictor of an athletes' substance use (Backhouse et al., 2016). By summarizing a number of quantitative studies on doping, Sandvik (2015) states that the athletes' subjective understanding of the scope and the social tolerance of doping is one of the risk factors for doping use. This claim can be supported by a qualitative study of Kirby et al. (2016) in which athletes who decided to use doping were sure that it was a common practice in their sport – a perception that contributed to a justification of their own cheating. Similar tendency can be found in a qualitative study by Pappa and Kennedy (2013). Another factor to keep an

eye on is that the perception of the tolerance to doping varies depending on the competition level (Lentillon-Kaestner & Carstairs, 2010). Athletes report that they consider doping unacceptable while they are at the amateur level, but that once one is competing at the elite level, where doping is seen as a more frequent practice, it becomes more excusable.

One weakness when it comes to utilizing the notion of subjective norms is that, when it comes to the forming of a person's intentions, they have turned out to be a generally weaker predictor than simply looking at attitudes (Vogel & Wänke, 2016). The weakness for using subjective norms in the field of PES research was also documented in the study by Dunn et al. (2001), which suggests that positive or negative attitudes are a better predictor of NS use than subjective norms. Nevertheless, it must be noted that in this thesis, I am studying subjective norms as a factor that molds attitudes; I have no intention to utilize subjective norms for prediction of attitudes.

5. Method

Methods are the specific tools and procedures used to collect and analyze data — or in other words: how one goes about for answering the research question (Kvale & Brinkmann, 2009). I have chosen a qualitative research approach to answer the research question of the present study:

How do junior elite Norwegian and Russian endurance athletes form attitudes to nutritional supplements and medications?

The purpose of this chapter is to describe my way towards finding an answer to this question. I will explain the scope of methodological considerations which I have taken during the different stages of the research process: I will begin by explaining my choice of method. I will then elucidate some practical and methodological aspects of the data collection. Following this, I will describe what method of analysis I have used to process the data, before making a case for the study's trustworthiness. I will end the chapter by discussing some of the main ethical considerations and challenges raised by the study.

5.1 Qualitative method and scientific underpinnings

To begin with, I would like to elaborate on the epistemological and ontological dispositions of the study. Epistemological and ontological dispositions represent how the researcher understands the world and the production of knowledge. My study is premised on the assumptions associated with a constructivist paradigm (Lincoln, Lynham, & Guba, 2018). According to constructivists, knowledge is subjective because it is socially constructed and mind dependent. Reality is defined by context, space, time, and individuals (Lincoln et al., 2018). In other words, there is no universal fact about what the truth is – the truth or the reality can vary for individuals in different settings and cultures.

As the present project is executed within a constructivist paradigm, it will focus on athletes' subjectivity – how athletes experience usage of substances, as well as construct beliefs and perceptions about it. A constructivist paradigm typically utilizes qualitative methodologies, which is applied to answer the research question of the paper.

5.1.1 Qualitative versus quantitative research

As it is put by Bellenger, Bernhardt, and Goldstucker (2011):

> Qualitative Research…involves finding out what people think, and how they feel – or at any rate, what they say they think and how they say they feel. It is a method concerned with human experience. This kind of information is inherently subjective. It involves feelings and impressions, rather than numbers.' (p. 2).

Contrast this with what is known as the *quantitative approach*, whose focus is numbers – usually statistical data. This approach requires large datasets in order to deliver accurate and reliable results.

5.1.2 Qualitative research design

That said, the question then arises: which approach is more suitable? The answer to this depends on the research question. Considering that the purpose of this paper is to arrive at a better understanding of athletes' personal experiences, beliefs and perceptions of norms, the qualitative approach – i.e. the one focused on giving detailed accounts of subjective experiences – was chosen to be the most appropriate. The success of this approach, however, presupposes that I as a researcher am able to collect information from my subjects and analyse it in a proper way.

Since I am interested in what molds athletes' attitudes, I decided to incorporate a comparative perspective in the present study. Why the comparative approach? Comparison is a fundamental tool of analysis. A researcher can gain valuable insights into the data by investigating similarities and contrasts between the groups (Lindsay, 2019). Comparative approach is especially valuable in the context of attitude studies (Lindsay, 2019). It is expected that by comparing athletes from two different contexts will make it easier to capture factors that are shaping their attitudes towards chemically assisted performance enhancement. I am studying athletes competing in the same sport but within different cultural and social contexts. This will provide me with knowledge about the significance of an individual´s context.

On the negative side, carrying out a comparison in qualitative research might be problematic relating to the fluid and less structured nature of an interview. Another

disadvantage is that it can be difficult to compare, with such a comparatively small sample(Lindsay, 2019); something that constitutes a potential weaknesses of my project.

Comparative studies favour an information-oriented (not random) case selection (Stake, 2005). Therefore, this strategy was applied for selecting the cases, meaning that the cases were chosen on the basis of expectations about their information content. This type of selection maximizes the utility of information from small samples and single cases (Stake, 2005).

A comparative qualitative enquiry is a broad and general methodology, with no set course of action (Lindsay, 2019). Still, the comparison must follow a certain logic. In my case, the comparison is informed by theory – the ABC model of attitudes and the concept of subjective norms. Both groups of participants answered the same questions in the interview guide (the questions were informed by theory) and similarities and differences between the two groups were summarized in a table divided by experiences, beliefs and subjective norms.

5.1.3 Qualitative cross-language research

In this study, interviews were conducted in Russian and Norwegian, while the presentation of the findings and writing was done in English. Having to carry out research in three languages is a challenging task that increases the complexity of the study on all stages: At the planning stage (creating the interview guide, applying for research permission), data collection (carrying out the interviews), transcribing the data and presenting the results (transcribing in the original language then translating the quotes to present the results). As guidelines for cross-language research suggest (Fryer, 2019), the role of translator in the research should not be ignored. I myself am confident that I master Russian and Norwegian good enough to carry out the research and translate the findings. The fact that everything was done by a single researcher, who at the same time acted as a translator, increases the subjectivity in research, which decreases its trustworthiness. Therefore, I have been conscious of this fact, and consequently did my best to translate as neutrally as possible.

5.2 Sample and access to the field

The literature stresses that a student researcher should limit their sample to between five to ten interviews (Rubin & Rubin, 2005). Following this recommendation and by taking into consideration the scale of the project, it was decided to conduct a total of ten interviews: five with Norwegian and five with Russian athletes. Strategical/purposeful sampling strategy was applied, meaning that I actively tried to select participants whose personal profile suggested that they would provide the most valuable insights for answering the research question (Rubin & Rubin, 2005).

I had several selection criteria for the sample. The athletes were expected to be between the age of 18 and 23 (junior level). The age criterion is justified by the intention of studying athletes in the transition phase from developing junior to elite senior, when they are likely to face increasing pressure to deliver results and when PES could appear to present tempting advantages (Lentillon-Kaestner & Carstairs, 2010). Besides, interview objects were expected to be at the top national level and also compete internationally. Participants from both countries represented the same individual endurance sport. The high competition level means that the participants are eligible for doping testing and are likely to have solid support from medical personnel and other members of the entourage. The initial plan was to recruit both male and female participants; however, this criterion had to be changed since I only gained access to male athletes on both Norwegian and Russian side. Existing research suggests that there are no consistent gender differences in athletes' behaviors connected to legal supplements (Erdman, Fung, Doyle-Baker, & Verhoef, 2007). Even though male athletes are more likely to use doping (Sandvik, 2015), when it comes to non-prohibited substances, the differences are unclear.

Ten athletes were recruited for interviews from the both countries – five from Norway and five from Russia. Unfortunately, not all Russian athletes had an opportunity to attend the meet as planned. Therefore, I had to include one female junior athlete in the project, meaning that I interviewed four male and one female athlete from Russia.

I went two different ways in Russia and in Norway to recruit the interview objects. In Norway, I got access to the athletes by contacting an employee in the relevant sport federation, who then got me in touch with a junior coach. The junior coach has frequent

contact with the athletes I was interested in and was very kind to help me to organize the interviews. When it comes to recruiting Russian athletes, instead of going through the sport federation as I did in Norway, I decided to use my old contacts in the Russian sport community. I contacted a coach who works closely with elite junior athletes, whom I had a dialog with when planning the interviews. All in all, the recruiting process went smoothly for both Norwegian and Russian athletes, and I am grateful for coaches' cooperation and assistance in planning.

5.3 Data collection

5.3.1 Semi-structured interviews

Semi-structured interview was chosen as a method of data collection. Interviews present a unique and valuable source of information concerned with human experience and meaning (Rubin & Rubin, 2005), which fits especially well for my study of attitudes through experiences, beliefs and subjective norms. Interviews allow subjects to share information in natural and detailed ways, providing the researcher with access to perspectives and interpretations that are likely to go unnoticed by anyone concerned solely with statistical data.

An interview can take many forms and be structured in accordance with different objectives. The timing, place and the number of participants are factors that determine the type of a qualitative interview. For this study, I have chosen an individual semi-structured interview. What this means is that I was making use of a preplanned interview guide, asking individual participants relatively narrow, but nevertheless open-ended questions, each concerned with a specific topic (B. Smith & Sparkes, 2016). I chose this kind of interviewing because it is more focused and specific in nature – as compared to, for example, an *unstructured in-depth interview*, but still allows for flexibility and open-ended discussion (Rubin & Rubin, 2005). By conducting a series of semi-structured interviews, I was collecting data directly related to the research question, while at the same time remaining open to the possibility of needing to follow up on answers that provide unexpected but valuable information. Last but not least, semi-structured interviews can be carried out within one hour (Rubin & Rubin, 2005), which is convenient due to a relatively small scale of a master project.

On the negative side, however, face-to-face interviews require extensive resources (travelling) and are rather time consuming (interviewing, transcribing, analyzing). Moreover, conducting interviews is a highly subjective method of data collection and can cause biases – interviewees can be influenced by the researcher and the honesty of participants cannot be guaranteed (which, incidentally, is true for all self-reported data). Later in this chapter, I will explain what I did to minimize those biases.

5.3.2 Interview guide

The line of inquiry was followed by creating an interview guide (attachments 5 and 6). I am grateful for having received guidance and assistance in the creation of the guide from my co-supervisor. The guide was translated into Norwegian and Russian for the two groups of participants, but the structure of the guide and the questions remained the same. The guide was designed to provide a fluid rather than a rigid sequence of questions so that the interviews remained open-ended and assumed a conversational manner (Rubin & Rubin, 2005). Keeping the research problem in mind, the preplanned guide grouped questions around several themes in order to cover topics relevant to the research question. Following advice from the existing literature (Rubin & Rubin, 2005), I designed the query so that it began with question of a lighter and more neutral character, before turning to questions that might have come across as blunt or overly personal, had they been asked at the beginning of the interview. I began by asking simple questions of a very general nature, all concerned with the participant's background, personal motivation and ambitions. This encouraged and accustomed the interview subjects to talk freely and engage more earnestly in the conversation. Throughout this crucial opening phase of the interview, my focus was on developing a good rapport and trust with the participant

Once the introductory questions have all been answered, I moved on to questions related to the central topics of my thesis. These questions were also followed up by specifying sub-questions. Probing questions were used to follow up on participants' answers and find out more detail. Examples of probing questions were "Could you tell me more about that?" or "Please explain what you mean with X?". These questions were not included in the guide; however, I created a list of possible probing questions as a preparation for the interview.

The questions in the interview-guide were carefully worded in order to avoid leading questions. According to Rubin and Rubin (2005), the researcher can sometimes appear uninformed about the topic and ask open, neutral questions, so that an interviewee is encouraged to provide a new commentary. It is also worth to mention that I had to be extra cautious while wording questions regarding usage of various substances by athletes, since it might be a sensitive and stigmatized topic for some. So, instead of asking a participant directly about his or her usage of NS and pharmaceutical aids, I had to go around and pose more general questions about substance norms and attitudes in their sporting culture in general and among teammates and peers, before eventually asking the participant about his personal consumption and views on non-prohibited substances and medications.

5.3.3 Interview process: pilot interviews, location, execution, interview technique and interviewer role

Pilot interviews

Qualitative interviewing requires a set of social skills to establish trust with the participants, make subjects comfortable and encourage them to open up. These skills are mainly taught through practice (Rubin & Rubin, 2005). In order to get the necessary practice, two pilot interviews were carried out and recorded prior to the actual data collection: one pilot interview was conducted via Skype with a young and aspiring endurance athlete from Russia; the second one was in Norwegian with a study comrade as an interviewee. I asked both pilot interviewees for feedback on the questions in the interview guide itself, as well as on my role as an interviewer. Listening to the pilot-interview recordings and receiving feedback from pilot-participants led to several minor changes in the question formulation and, most importantly, it made me more aware of my conduct as an interviewer and increased my confidence in the role.

Location

The fact that many of the participants live with a tight and demanding schedule heightens the risk of treading on – or across – these limits considerably. I therefore sought to make it clear from the outset, that I was both able and willing to adjust the interview schedule and location to the demands and wishes of the coaches and the athletes. As the competition season for the athletes is rather hectic, I had to find time

when each team is gathered at the same place. The interviewing had to take place in between the competition periods. In dialog with the coaches, we agreed that the best alternative is to carry out interviews during one of the training camps. So, I had to travel first in Norway to interview the Norwegian athletes, and then in central Europe to interview Russians.

Another preparatory measure I took was to make sure all my interviews would take place in as neutral location as possible, so as to minimize unnecessary tension, interruption, distraction, nervousness, or discomfort. Norwegian athletes were interviewed in a quiet meeting room at a sport gymnasium (that was a convenient location for all the athletes). Russian athletes were interviewed in a private meeting room in the hotel where they stayed during one of their seasonal training camps. The schedule of interviews was organized in a way so that it did not collide with athletes' daily schedules and training routines.

Execution

All of the five Norwegian athletes were interviewed during the same day, with each interview lasting between 45 to 60 minutes. When it comes to the group of Russian athletes, each interview lasted from 50 to 90 minutes, owing largely to the fact that the Russian athletes seemed more open and had more experiences to talk about. The first interview was carried out in the evening at the day of my arrival to the site, the next three were spread during the day after, and the very last one was in the morning just before my departure. The interviews were taped on the recording device that each participant was aware of.

I began every interview with a handshake, followed by a few minutes of unscripted chatting. Then, to start each interview, I made a short presentation of the project and my role in it, explained the details of the informed consent and participants rights, and ensured participants of their confidentiality. A good start of the interview made me seem professional (hopefully) and contributed to establishing trust.

Interview technique

I was following the interview guide in order to cover all the themes and questions relevant to the research problem. At the same time, I was aware that it is important to

allow participants to speak freely in order to collect rich and detailed data. I was opened to unexpected themes emerging during the course of the interviews and was following up interesting information with additional questions to get more details (Rubin & Rubin, 2005).

Moreover, in order to get more detailed data on the relevant themes, I made sure I asked follow-up questions and probe questions. I had a liberal use of active listening probes such as silence, good eye contact, head nods, use of statements such as “OK I see…” and lots of “Mmm-hmms” (Rubin & Rubin, 2005). My own experience has been that all of the abovementioned techniques contributed towards the accumulation of data – data that both included, highlighted and sparked a number of valuable reflections and important nuances.

All in all, I am content with the quality and execution of the interviews. All the participants seemed content as well, reporting a highly positive impression of the procedure. What I personally found challenging is guiding the conversation so that we had time to go through all the questions.

Interviewer role

According to B. Smith and Sparkes (2016), a research interview can be variously affected by how the interviewer and the interviewee experience each other. I therefore put much effort into presenting myself in a way conducive to inspire trust and openness, while at the same time maintaining a professional and impartial tone. Trust, as has been hinted at several times already, is the key word in this context. The trust and confidence built up throughout an interview is what provides – or, in failing cases, undermines – the basis for a meaningful and worthwhile interaction (Rubin & Rubin, 2005). It is the main prerequisite for open and honest conversation. It also must be noted that even though I am Russian, I speak Norwegian fluently, though with a slight accent. It is possible that this had some influence on the participant’s perceptions of me.

It was also important for me to minimize interviewer bias[8] and to create a natural and relaxed atmosphere for conversation. Qualitative interview is by no means a neutral and

[8] The interviewer bias relates to perceptions of the interviewer’s identity and the way in which he or she asks questions and responds to answers. It is when the interviewer unintentionally influences the

objective tool for data collection. Instead, it is a method that is always and inescapably shaped by a number of social factors (Smaith & Sparks, 2016). Still, as a researcher and interviewer, I was reflecting on the ways of how to reduce interviewer bias and avoid influencing participant's responses. Therefore, prior to the interviews, I was thinking thoroughly through my appearance, behavior, body language, voice and, most importantly, my reactions to interviewees' responds. I was also conscious of not asking any leading questions or share my own opinions on any of the topics discussed.

5.4 Data processing and analysis

I chose to carry out a thematic analysis in order to analyze the interviews because it is an accessible and theoretically flexible approach for working with qualitative data. In fact, thematic analysis is one of the fundamental types of analysis in qualitative research (Braun, Clarke, & Weate, 2016).

There is a great number of advantages of thematic analysis (Braun et al., 2016). Some of these include its ability to identify similarities and differences across data set, which is particularly relevant for this project, since I am carrying out a comparison of the two groups of athletes. Last but not least, thematic analysis is a comparatively easy and quick method to learn (Braun et al., 2016), which also makes it a good match for this project, since I, as a master student have little experience with conducting qualitative research.

As to the negative features of thematic analysis, it is often seen as having weak interpretative power – that it reveals very little beyond a mere description, especially if used without theoretical framework. However, I compensate for this disadvantage by anchoring my analysis with the relevant theoretical framework. Besides, thematic analysis has little value if done poorly (for example, if it only describes the data instead of analyzing it) (Braun et al., 2016). In order to produce rich and reliable findings, I was aware of avoiding common methodological pitfalls, a fact that I will argue for in the ensuing pages.

respondent in some way. It may include asking question in the wrong order, applying wrong wording or inappropriate (not neutral) tone of voice (Rubin & Rubin, 2005).

5.4.1 Transcribing

Transcribing an interview simply consists of translating it from oral speech to written text. This is the first vital step when conducting thematic analysis. In this process, the interviews are structured to be better suited for analysis. One of the 'problems' of qualitative interviewing is the sheer amount of data it can generate – transcribing all the accumulated verbal data into text is rather time consuming. On the other hand, since I transcribed the interviews manually, it was a great opportunity to familiarize myself with the data. By the end of the transcription process, I accumulated over one hundred and thirty pages of text.

5.4.2 Coding and categorizing

Qualitative text analysis is often criticized for lacking rigor, especially when performed by a single researcher (Macnamara, 2003). In order to increase the rigor of the analysis, I chose to carry out the process in a more deliberate way by, firstly, following an acknowledged step-by-step 'recipe' for thematic analysis created by Braun et al. (2016) which consists of six steps that will be presented below. Secondly, I utilized a hybrid approach to data analysis which combines both an inductive (data-driven) and a deductive (theory-driven) approach (Fereday & Muir-Cochrane, 2006).

The decision to include deductive analysis is explained by a desire to increase the trustworthiness of the study. The advantage of the deductive approach to qualitative text analysis is that it constrains the degree to which the researcher's views can influence the interpretation of data (Fereday & Muir-Cochrane, 2006). At the same time, following the inductive approach, I was opened for themes and categories to emerge from the data, which allowed me to make the analysis less rigid and capture the valuable information and findings emerging from the data.

Following the deductive line of analysis, I made a list of a priori-designed codes based on the relevant theory, before even reading through the transcripts. The codes were based on the ABC-model of attitudes and concept of subjective norms. It resulted in the following codes: (1) experiences NS, (2) experiences medications, (3) past behaviors NS, (4) past behaviors medications, (5) present behaviors NS, (6) present behaviors medications, (7) beliefs NS, (8) beliefs medications, (9) subjective norms in the team,

(10) subjective norms in sport community, (11) subjective norms of important people. Having this done, I started the analysis suggested by Braun et al. (2016).

The first step was to familiarize myself with the data. I read and reared through the data in an *active* way after it was transcribed, trying to find meanings and patterns relevant for the research question. Already at this stage, I started making notes and earmarking ideas for coding in my code book.

The second step was to generate initial codes. Coding is the process of identifying interesting passages of the data that are related to the research question. At this stage, I was aware of working through the entire text, equal attention to each passage (Braun et al., 2016). Coding was done on the computer using Microsoft Word.

The third step was to sort the different codes into potential themes by grouping, interlinking and organizing the codes. At this point, it is important to clarify what constitutes a theme and how I searched for themes. A theme 'captures something important in relation to the research question, and represents some level of *patterned* response or meaning within the data set' (Braun & Clarke, 2006, p. 82). I was searching for themes by tracking repetitions across the data set and capturing important messages in relation to the overall research question (Braun & Clarke, 2006).

The fourth step was to doublecheck the potential themes generated at the previous stage. I started reviewing the themes by reading the relevant extracts and codes relevant to each theme and checking whether these constitute a coherent pattern. Then, as Braun et al. (2016) recommend, I considered the validity of the themes in relation to the whole text. This process of reevaluating, interlinking and organizing the potential themes and sub-themes helped me to develop and assess the interpretations and reach a profound understanding of the data.

The fifth step is to define and further refine each theme by describing the essence of each theme and clarifying which part of the data the theme stands for, the 'story' it tells about the data. This continuous refinement of themes resulted in the two final thematic networks (also known as *thematic map*).

The sixth and final step is to present the final analysis of the data in the report. The results of this last stage will be revealed in the next chapter.

5.5 Trustworthiness

Because of the subjective nature of qualitative methods, researchers have looked to develop ways in which trustworthiness can be applied to this type of inquiry. Therefore, both during the planning stages and throughout the research, I was reflecting on how to increase the trustworthiness of the findings.

5.5.1 Reliability

Reliability comes up often in relation to quantitative studies – a hallmark of which is the repeatability of the study by other researchers, with the same or similar results. Whereas reliability in connection with *qualitative* studies is primarily a question of "being thorough, careful and honest in carrying out the research" (Robson, 2002, p. 176). When conducting qualitative interviews, reliability relates to the practical aspects of data collection like creating the interview guide, wording the questions and establishing trust with participants. It requires that the researcher is aware of his role in data collection, analysis and choice of methods. These are aspects with which I have maintained a conscious awareness throughout the entire research process.

5.5.2 Validity

What is more relevant to a qualitative study is a question of its 'quality' or *validity*. In order to increase validity of qualitative interviews, the researcher should focus on (1) the quality of interview interactions, and (2) the quality of the research design, analysis, interpretation and representation of findings (Roulston, 2010). I will now explain how I sought to address the validity issues in relation to these two parts of the research process. Usually, the validity of a qualitative study is determined by how well it has coped with three major validity threats, these being: *respondent bias*, *reactivity* and *researcher bias* (Guba & Lincoln, 1989).

(1) Quality of interview interactions

The first validity threat is the respondent bias, which refers to a situation when the participants, for any reason, are not giving honest responses. Some participants might have considered questions about supplements intimidating and therefore were unwilling to reveal their actual thoughts and opinions on the subject. Or possibly, they wanted to 'please' me as an interviewer and come up with what they think are 'correct' and

desirable answers. Respondent bias is a typical validity threat in PES related research (Backhouse et al., 2016); evidently, because the issue of substances in sport is stigmatized. In order to reduce the respondent bias, I put efforts in establishing a good rapport with the participants, which is especially important in interviews about personal experiences, perceptions and attitudes (Roulston, 2010). I also assured the participants of their confidentiality and that their participation in the research will not bear any negative consequences for them, something that hopefully contributed to reduce the respondent bias. Besides, following the methodological guidelines for effective interviewing also contributes to its quality (Roulston, 2010). More detail on how I followed these guidelines are provided above in the section 5.3 on *interview technique*.

Reactivity is the second validity threat which occurs when the subject is affected either by the instrument of data collection (e.g. questions in the interview guide) or by the researcher himself (Guba & Lincoln, 1989). As was explained in the section 5.3.3 on *researcher role*, I was conscious of my role as an interviewer and did my best to come across as neutral both in my appearance, behavior and especially in my reactions to the interviewees' answers.

(2) Quality of the research design, analysis, interpretation and representation of findings

In accordance with Roulston (2010), when trying to understand participants' beliefs, experiences and attitudes, reflexivity and transparency are vital to produce valid findings. Reflexivity reduces the researcher bias, which is the third threat to validity in qualitative research. Researcher bias refers to my pre-existing knowledge and assumptions of the study, as well as my assumptions of the research design, analysis and sampling strategy. During the whole process, I sought to be a reflexive researcher by being conscious of my views in relation to the research topic and participants. *Peer debriefing* (Guba & Lincoln, 1989) was used as a way of addressing the researcher bias. During the course of the project, I was followed up by two supervisors who provided me with outside evaluation throughout the research process – something which again provided me with an increased awareness of many of my pre-existing assumptions and personal biases.

5.5.3 Generalizability

Generalizability is the extent to which the findings of a study can be applicable to other settings. It is essential to clarify that in terms of qualitative research, I am not talking about *statistical-probabilistic generalizability*, since this is not what a qualitative enquiry aims at. There are different ways of understanding generalisation in qualitative research, also in the field of sport science (Smith, 2018).

This master project seeks to display the so-called *naturalistic generalizability* (Smith, 2018). To put it simply, the study is naturalistically generalizable when it echoes the readers' own experiences and context. In other words, the research should resonate with the reader's personal engagement in everyday life. In order to enable naturalistic generalizability, I make an effort to provide the reader with sufficient details about the participants' lives to make the reader capable of reflecting on these, and then become aware of connections to his or her own life (Smith, 2018).

5.6 Ethical considerations

According to Creswell and Creswell (2017), ethical considerations must be addressed through all the stages of the qualitative project – from the planning stage and then after the project is over. Obtaining research approval from the faculty is one of the significant first steps prior to conducting the study, which I did by delivering a mock research proposal in spring 2019. Later on, since the study processes personal data, I sent a disclaimer to the Norwegian Center for Research Data[9] with interview guide and informed consent as attachments. After some minor adjustments, the application was approved in autumn 2019 (attachement 1).

Ethical considerations and commitments to the persons taking part in the study is a crucial part of qualitative research since it usually involves direct contact with participants. In the case of my master project, certain factors stand out as requiring me as a researcher to be especially conscious of my own ethical responsibilities. First of all, I had a direct involvement with participants to conduct the face-to-face interviews, meaning that the research was not anonymous. Besides, the topic of PES is a sensitive topic for elite athletes, something that makes it especially important to secure

[9] In Norwegian: Norsk samfunnsvitenskapelig datatjeneste (NSD)

participants' confidentiality. Finally, my sample is chosen from a small group of elite endurance athletes, meaning that the risk of participant recognition is high. To strengthen confidentiality, I decided not to specify what sport the interviewed athletes participate in, and to not include any biographical details in the presentation of my data. All the abovementioned factors increase the requirements to my ethical responsibilities as a researcher.

Kvale and Brinkmann (2009) define three central aspects when dealing with questions related to ethical guidelines in qualitative interview inquiry. These are, (1) informed consent, (2) confidentiality and (3) consequences. I will now present my project in light of these three key considerations.

5.6.1 Informed consent

The informed consent form (attachments 2 and 3) was designed using the NSD guidelines as a template. It provided participants with information about the research, Personal Data Act, as well as their protected status as study participants. It was strongly emphasized that participation in the study is voluntary and that participants had a right to withdraw their consent at any time. This would then immediately result in the erasing of all the participant's personal data. The main points related to informed consent were also clarified and reiterated by me at the start of every interview so that all participants could take an informed, rational and voluntary decision of whether to participate or not. Only after making sure that everything was clear and that the participant had no additional questions, the two exemplars of consent were signed by both parties (one form was kept by me for archival purposes, and the other exemplar for the participant with info about the project and contact information). The detailed clarification of participants' rights is a part of 'respect for persons' ethical principles in research (Creswell & Creswell, 2017).

It is also important that participants do not feel pressured to participate in the project; this moment is especially relevant during the recruiting stage. As it was mentioned earlier, I did not contact the participants directly; it was their coaches who put me in contact with the athletes. Therefore, since coaches have a great deal of authority and respect in the eyes of their 'students', one can suppose that the participants might have experienced subtle pressure to participate since they were asked by the coach – a person

they trust and who has their authority. In order to reduce this pressure, I have sent the informed consent and NSD permission to the coaches in advance and clearly communicated that the participation is voluntary, so that they do not pressure athletes to take part.

5.6.2 Confidentiality

Confidentiality consists of restricting information to only those authorized to access it (De nasjonale forskningsetiske komiteene, 2016). Securing confidentiality and preserving the integrity of the research-subjects is an important ethical aspect in the present study. To make sure that all my ethical commitments towards the informants are constantly upheld, the regulations concerning confidentiality have worked as an essential guide. Following the advice of my supervisor, I decided at a later stage in the project *not* to specify what kind of endurance sport the interviewed athletes compete in. Securing confidentiality in this research is particularly important owing to the potential burden that may be placed on the informants, should they be recognized. This is of particular concern to the Russian participants, who already find themselves the subject of intense scrutiny, suspicion and stigmatization in relation to prohibited performance enhancement. The integrity of the participants was preserved both when conducting the interviews as well as afterward – that is, throughout the process of storing, transcribing, analyzing the data and presenting findings (Creswell & Creswell, 2017). As a researcher, I have been meticulous about both gathering and storing my information in a way that would protect the privacy of my research subjects. When transcribing the interviews, I used numbers instead of real names. Additionally, other recognizable details about the subjects like age, place of origin, and other biographical details were all stored at a physically different location, separate from the other data, so it would impossible to link the transcribes to the participants if the storage device was lost. As mentioned above, all the participants in the study stem from an easily identifiable group, raising the demands on confidentiality even further.

It was also important to secure a safe physical location to store my data. All interview recordings and transcribes were encrypted and stored on portable storage-disks which were then locked away safely. All personal information was similarly stored on an encrypted memory stick, which was locked away in like manner but at the different

location. Written and signed consent forms were stored privately in a locker. As soon as the master project is delivered, all the data will be permanently deleted.

5.6.3 Consequences

Another important ethical consideration for a researcher is to reflect on the study's consequences – both positive and negative ones (De nasjonale forskningsetiske komiteene, 2016). I concluded that the participants would not experience any direct negative consequences of taking part in a project as long as their identity is kept strictly confidential. However, there is a real possibility that the study can have consequences for the larger group which the participants of the study all represent, namely their own nationality or field of sports – individual endurance sports. The interviewees are the top junior athletes in Russia and Norway, and it is possible that their expressed experiences and attitudes concerning PES could be seen as reflecting badly on the wider athletic culture and philosophy in their respective nations.

6. Results

This chapter lays out the results of the thematic analysis of the ten semi-structured interviews conducted with five Norwegian and five Russian athletes. I will begin by reminding the reader of the research question:

How do junior elite Norwegian and Russian endurance athletes form attitudes to nutritional supplements and medications?

As stated earlier, this thesis studies athletes' attitude formation through the prism of experiences, beliefs, and subjective norms. To better visualize the results of the analysis, I will present the final thematic networks for both groups of athletes separately. Similarities and differences between the two groups, as well as the possible interpretations of these, will be discussed in the next chapter.

The final thematic networks are the result of continuous refinement of initial themes and sub-themes. I only present the most trustworthy and consistent themes in the final thematic networks. Themes that were insufficiently highlighted during the interviews will not be presented. I chose to make ample use of quotations in this chapter in order to let the data speak for itself.

Interestingly, the Norwegian athletes were much more consistent in their replies – their answers were almost invariably the same. On the Russian side, however, even though many similarities and patterns were identified, the participants reported more varied beliefs and experiences. It would therefore probably have been better to carry out more interviews with Russian athletes to achieve better saturation of data.

6.1 Norwegian athletes

Three main themes discovered among the Norwegian athletes are (1) NS and medications as unnecessary, (2) NS and medications as positive, and (3) NS and medications as negative.

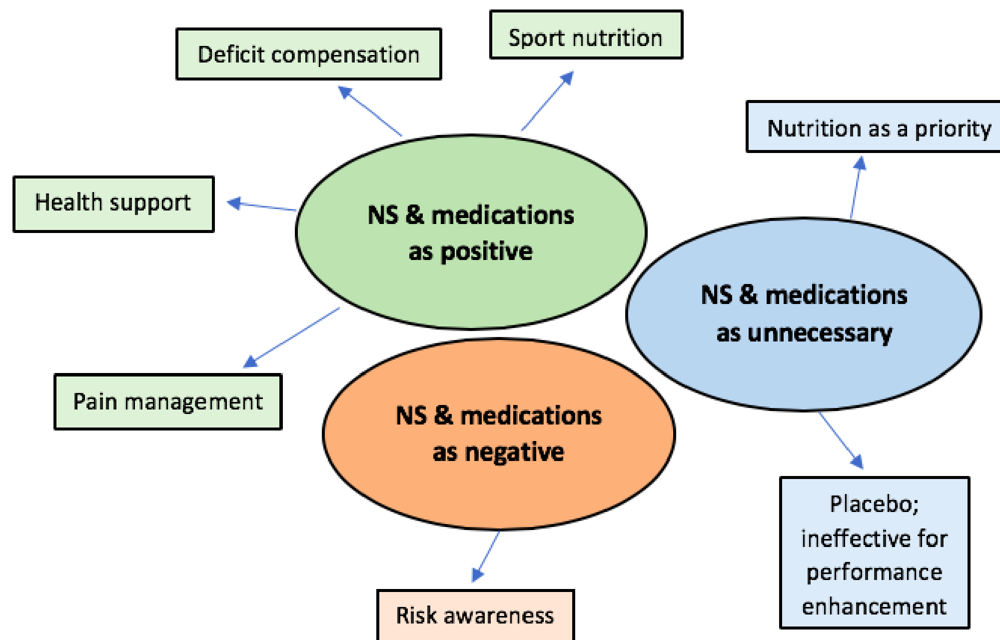

***Figure 3**. Thematic network based on interviews with the Norwegian athletes.*

Before I get to the results, I should clarify that the Norwegian athletes did not consider sport nutrition products to be NS, meaning that when the athletes state that, for example, they do not use NS, they do not mean that they do not use sport nutrition. Also, even though participants were asked questions about both NS and medications, their replies focused mainly on NS, since they only related to medications as something one consumes to cure a disease and did not have much experience or knowledge about medication use.

6.1.1 NS & medications as unnecessary

The first theme identified in the interviews with the Norwegian group is that NS is considered unimportant for athletes in their sport. All the participants clearly stated that NS is an insignificant, optional addition to a healthy diet. In line with this view, the participants reported that they either do not consume NS at all (except for sport nutrition products) or that they consume it occasionally, without having a systematic approach to it. The interviews show that participants prefer "natural" ways of providing the body with nutrition. The most apparent and persistent pattern in the Norwegian responses was the view that having a "proper, varied diet" is, as a rule, enough for covering all the body's needs for vitamins, minerals and other nutrients. Importantly, none of the participants had any experience with a specific diet or a nutrition plan, and instead

demonstrated a relaxed attitude towards food. In fact, what they generally understood by the word *diet* was simply the task of making sure they were getting enough healthy calories from various products. Several participants called their food habits a "proper, varied diet" or "varied, healthy Norwegian diet", stating that their food and NS preferences are unregimented and "unsystematic". All the participants refer to *Healthy Sport*[10], which offers educational courses on nutrition. These courses were a trusted source when it came to their knowledge about NS. Together with their team doctor, Healthy Sport was their primary source of knowledge and information about healthy nutrition strategies and supplements. The athletes' families were also mentioned as a source of advice about nutritional supplements by three participants. However, this advice was mostly ignored by the athletes, since they are already receiving professional advice from the team doctor and Healthy Sport. According to the participants, Healthy Sport advocates against the consumption of NS and promotes the idea that a varied and healthy diet is enough to provide the body with everything that it needs, even for elite athletes who practice several times a day. The participants also state that, as a part of their education on NS, they had participated in a cooking course together with Healthy Sport.

> *(NOR, Participant 1) I think the body takes good care of itself as long as you eat healthy and varied food. So, I don't think it's necessary to stuff oneself with a bunch of other stuff ... Healthy Sports says that, with a normal diet, nutritional supplements are unnecessary – that if you're good at eating enough fat-rich fish, and enjoy an otherwise diverse diet, then that is more than enough. You do not need to consume loads of supplements on top.*

The view that NS are unnecessary, and that nutrition is key, also manifests itself in cases when the athletes have a deficit of certain elements in their blood samples. In such cases, NS are rarely recommended as the first step towards making up for this deficit. Sometimes, the participants are advised to cover the deficit by eating more of a specific product. The citation below shows that the athletes' support personnel, in this case, the doctor, is an important source of information and advice that supports the same view

[10] In Norwegian – Sunn Idrett. The initiative of the Norwegian Confedetaion of Sports (NIF) which works to spread knowledge about nutrition, and to encourage healthy training environments, with good attitudes and values related to food, body, health and performance.

that proper nutrition is superior to supplements. All the athletes reported that the doctor would not suggest taking NS as the first step towards curing a deficit. The doctor would rather avoid prescribing someone an NS, thus acting in accordance with the advice of Healthy Sport. In other words, data shows that the Norwegian athletes receive a clear and consistent message from both Healthy Sport and their team doctor.

> *(NOR, Participant 1) My impression is that it [taking NS] is highly unusual [in my sport]. In my environment this would only happen if one gets told by the team doctor that 'perhaps you should consider taking this or that' – vitamins or iron or something. But that too is fairly unusual. I have had some deficits myself – based on blood tests – but in that case they'd rather I added some new or different food to my diet, to ensure that I get what I need. It would take a lot before we would be recommended to take a nutritional supplement in the form of tablets, or anything similar.*

Another interesting sub-theme here is the belief that NS do not have any significant effects on health or performance. Participants often refer to NS as a "placebo" and say that it "works in your head". This was especially true with reference to supplements meant to improve performance. A typical comment was that if a supplement actually has some real effect on performance, then it is most likely prohibited under anti-doping rules. (This view appears to stem from Healthy Sport). Importantly, the athletes acknowledge the effectiveness and necessity of medications for athletes with specific medical conditions, but do not see medications as useful for performance enhancement for healthy athletes.

> *(NOR, Participant 2) Nutritional supplements – I think that they've got quite a bit to do with a person's head. If you firmly believe that they work, then they probably do. It's probably only got a small effect on the body, but if you really believe in the stuff, then you might get some kind of boost from it.*

> *(NOR, Participant 3) Nutritional supplements are possibly more of a placebo, whereas vitamins probably have some kind of effect on one's ability to stay healthy. ... But extra supplements meant to provide one with an energy-boost – I'm really doubtful of those. In cases where they have any effect, they may include some prohibited substances.*

To remind the reader, the athletes' understanding of subjective norms – typical behaviors of others around and their approval or disapproval of certain types of behavior – is one of the topics of inquiry in this thesis, since subjective norms influence

intentions and personal attitudes. The participants did not consider the consumption of NS or pharmaceutical agents for performance enhancement purposes to be a common practice within their team, or indeed among any Norwegian athletes competing in their sport. Besides, when describing their own past and present experiences with NS and medications, the athletes reported low use of NS (apart from when they have a deficit, and apart from sport nutrition). The athletes say they do not use any NS meant for performance enhancement and only use medications in case of sickness and only when prescribed by a doctor. The interviews also revealed that they consider their habits with NS and medications to be generally accepted and consistent with what others do. Still, they name "health support" supplements to be common and name cod liver oil[11], multivitamins, and vitamin C in particular, as common supplements in their sport, and report their personal experiences with these supplements. Two participants said they do not use NS or any medications (except for sport nutrition), while others admitted to occasional usage of vitamin C, cod liver oil or vitamin D. However, it was evident in the replies that using sport nutrition like protein or energy bars, isotonic drinks or carbohydrate gels was a common and accepted practice inside the team and a common perceived practice among athletes in their sport in general. The participants themselves reported the intake of sport nutrition products during training or competitions, (a topic that will be discussed further under a subsequent heading).

> *(NOR, Participant 3) I see that it's quite common to take cod liver oil, vitamin D or C. ... I don't know about anyone using nutritional supplements that are meant to increase one's energy. ... We usually just buy «Yt» [an after-workout sports drink] or one of those restitution bars after training. We don't really use anything else. We do drink sports drinks – but that's perhaps not really a supplement (?)*

As to pharmaceutical agents, the athletes believed that trying to use medications for performance-enhancing purposes is either useless (since it would not influence the performance), or impossible since truly effective agents or high dosages of these are banned under WADA code. As related to the topic of subjective norms, the athletes could not imagine others taking medications for performance-enhancement purposes, nor were they familiar with the use of painkillers to increase endurance. Medications

[11] In Norwegian – tran.

were considered to be used only by athletes with a medical condition (like asthma). Athletes also reported using medications themselves only when prescribed by a doctor.

> *[Question about the use of medications]*
> *(NOR, Participant 5) No, I don't really know about anything. If so, it would be asthma-medications, but we don't use that. I don't see the use for it. ... I know about a few people, outside our team, who uses it [asthma medications]. But that's only when they have proof that they really do have asthma, and in that case I think it's fine that they get their medications so that they can compete on the same conditions as the rest of us. I don't think asthma-medications have any use unless one has asthma. Except perhaps if one takes too much – but that's illegal, is it not?*

Stimulating supplements were considered uncommon in the studied endurance sport; however, several participants pointed out the widespread use of caffeine, either in the form of regular coffee or as an ingredient in a sports drink or gel. Two of the participants reported their own experiences with caffeine in the past. None of the participants were familiar with the use of caffeine pills in their sport. Even though the athletes acknowledge that caffeine might have some effect on performance, they still saw this supplement as unnecessary and even harmful in their sport owing to the sport's technical features. The citations below illustrate athletes' thoughts on stimulating substances in their sport.

> *(NOR, Participant 4) The only thing I can speak of is caffeine – as in coffee or energy drinks. Red Bull and that kind of stuff. Not many people take it. I've tried it myself to see if there's anything in it, but I don't think the effect is that great. ... I rarely see people drinking energy drinks. Then there are those caffeine-pills too, but I've seen little of that too.*

> *(NOR, Participant 5). Many people drink coffee. I don't do that myself, but many do. I'm not sure it has any effect [in my sport]. ... Personally, I don't feel like it's necessary. I view it as entirely unnecessary.*

To summarize this theme, both NS and medications were mostly seen as unnecessary for athletes who do not have health conditions of acute deficits. Instead, the athletes were more preoccupied with healthy nutrition. Moreover, stimulating substances for

performance enhancement were considered to have either little or no effect, and to be a rare thing in their team and in their sport.

6.1.2 NS & medications as positive

The second theme that was uncovered in the interviews was that NS and medications are considered positive in some cases. Interviewees seem to hold a positive attitude towards sport nutrition products and report experiences of consuming carbohydrate gels, bars and isotonic drinks. As of subjective norms, the athletes view the consumption of sport nutrition as a common and accepted practice in the team and in their sport in general. Answers show that, as a rule, the sport federation (through the coach) is the main supplier of sport nutrition products for athletes. Sometimes however, the athletes do buy sport nutrition themselves, but in such cases, they are cautious about what they buy and where.

Isotonic drinks are a normal part of their training routine, carbohydrate gels are consumed before competitions or during long workouts, and protein/energy bars are often consumed after training or competition. It is important to clarify that sport nutrition is not thought of as essential and that it is often replaced with "normal" food. For example, instead of isotonic drinks, some mentioned drinking squash[12] (particularly in winter), instead of consuming a gel one could eat a banana, and instead of eating after-training bar they could drink chocolate milk, eat a sandwich or a banana.

> *(NOR, Participant 1) Gel is used a lot. Gel, bars, and those protein bars meant for restitution are all common. Gels for long, intensive workouts – for long runs, this is an effective way to get nutrition. Then there's mostly carbohydrates and proteins, but no powder to build muscles. There's very little of that.*

NS was also seen as beneficial when compensating for a deficit. Deficits are identified through blood sample analyses that are carried out several times in a year. If a deficit is present, the doctor might give a prescription to take a supplement. But as was mentioned in the discussion of the first theme, deficits can sometimes be offset with

[12] In Norwegian – saft.

food products, without using NS. The quotes below show that athletes consider a deficit to be a sufficient reason for consuming NS.

> *(NOR, Participant 5) It takes a lot to be recommended to take something [a supplement]. Perhaps after taking a blood test which shows that one's levels are low, then the team doctor might recommend something. Besides that, if there's no good reason for us to take something, then they [the team doctor/coach?] would not recommend it. ... It [supplements] are effective only when you have a special need for them. If you're low on iron, then it might help to take something. But I think it would be quicker to get it through a normal diet.*

An interesting and relevant topic is how the athletes experience managing injuries and sickness. The interviews show that taking medications is not the first thing they do if they get sick. Instead, they report using the more "natural" ways of restitution by taking rest (not training for several days), and using so-called "folk medicine" (tea, lemon, ginger, garlic, etc.) hoping that it will help their immune system and allow the body to "cure itself" (even though some interviewees ironically comment that this might be a placebo as well). Still, NS were seen as useful in this context because it was thought to improve one's immune system response. Three of the athletes report getting more particular about taking vitamin C and fish oil when they are getting sick or are already sick in order to boost the immune system.

> *(NOR, Participant 1) I have faith in ginger-tea with honey and lemon. I drink a lot of that when I'm sick to get a vitamin C boost – despite having read a few articles saying that it doesn't really have any effect, I still feel like it works for a sore throat. One feels the burning [in the throat]. Perhaps it helps mostly in the head [placebo]. ... No other supplements than that. Maybe I'll start taking cod liver oil. I get more into that stuff whenever I'm recovering from a period of ill-health. Besides this – nothing.*

If the cold gets worse or persists, the athletes report that they would see a doctor and then possibly get a prescription.

> *(NOR, Participant 2) If you're sick for a long time – go see a doctor to have it checked out. In cases where it's something serious they might put you on antibiotics. But usually it's just: rest until you're healthy. ... It all depends on*

how bad it is. If you've got a cold, which worsens into a virus, then it would take about 4-5 days until one goes to see a doctor.

The topic of injury and sickness is especially interesting when athletes have to take part in a competition and have to decide whether to participate or not, and whether to try to alleviate symptoms or pain with medications. The interviews consistently show that the Norwegian athletes have a low tolerance for competing or training when sick and that to alleviate symptoms with medications in order to participate is never an alternative. Participants were sure that this type of behavior was very common for other athletes in their sport as well. This is due to a belief that when competing with sickness in the body, it will have negative consequences for athletic shape, both in the short and long term. The coach was viewed as an important advisor in this context. Still, it was evident from the answers that the athletes never experience any pressure to compete with an injury or when they are sick, and that they all felt that the final decision of whether to participate in a race or not always lay with them. When athletes have light symptoms of a cold, they still might consider participating in a competition, depending on its significance. If the symptoms are more serious, the answer is always no.

(NOR, Participant 5) If you feel sick, the first thing to do is to let the coach know. I would do that no matter what – regardless of whether I wish to compete or not. Also, if it's just a minor thing, and I'm set to compete in something like the World Cup, then I might consider trying to participate. ... But if it had been the Norwegian Cup, I would have gone home at once. ... I think that we [my coach and I] would come to an agreement pretty quickly. Still, I think it would be sensible to make that decision myself.

Interestingly, two participants said that tolerance is generally higher for competing with an injury as compared to competing with a cold. In case of minor injury, athletes would use a tape or pain relief balm. Otherwise, they outline that use of painkilling agents is rather uncommon in their sport.

(NOR, Participant 1) One can go with an injury. Like last year, before I had an operation – I had to have surgery on my foot. I took part in a competition a little before that, despite feeling pains and having problems. I participated because I already knew I was going to get the thing fixed. Injuries are more tolerable than sickness when it comes to competitions ... because then you can feel yourself,

and decide whether to go through with it or not. One can take some pain reliever, or tape it up for support, to try to make sure it doesn't get any worse. ... Usually, if it's a minor injury, and one has a little bit of pain, in a knee or a foot, one usually gives it a shot.

6.1.3 NS as negative

The next theme discovered over the course of analysis was that NS can also be considered to be negative. The negative sides of NS that participants referred to were that substances could be contaminated with prohibited ingredients and that unnecessary or excessive consumption of NS is bad for one's health. *All* the interviewees demonstrated an awareness of the fact that NS might be contaminated with prohibited substances and that certain medications are themselves prohibited by the WADA Code. Athletes refer to Healthy Sport and ADNO (Antidoping Norway) courses as a primary source of information about the potential risks of NS and pharmaceutical aids. Also, it was clear that all the participants are wary about purchasing NS through insecure sources like the internet or from abroad and consider supplements bought in Norway as safer and cleaner.

(NOR, Participant 5) We have to complete this 'Clean Athlete' course[13] *through Antidoping Norway. I have completed it two times now. There they teach you what's illegal and where to find out about medicines and such. ... They do not recommend nutritional supplements; I guess, because with all supplements – one can never be sure if they're safe. You can never know for sure what's inside them. If one has to take a few medications, I usually look them up myself, even if the doctor has told me it's OK. After all, there's been some cases, like with Therese Johaug and such ... It can't be fun consuming something like that inadvertently. ... And, yes, there are some Norwegian supplements, like cod liver oil, which I'm sure is safe. But if one goes to Sweden and buys, for example, some vitamin C, one can never really know what's inside it. I can – I mean, it's supposed to be safe, but one never knows.*

A present but less persistent pattern in the interview responses was that excessive consumption of NS might have either neutral or adverse health effects (when one does not have a proven deficit).

[13] In Norwegian - Ren Utøver. This is an online learning-tool for athletes and athlete support personnel.

(NOR, Participant 3) It depends on what it is [what kind of supplement] ... Personally, I would think it's not all that healthy, but I have little experience with it. When you add a lot of a certain substance to your body then perhaps, you'll see some odd reactions.

To summarize, the athletes reported little experience with NS and medications, and expressed beliefs that NS are generally unnecessary, especially for performance enhancement. Still, NS and medications were seen as positive in certain situations (like the use of sport nutrition, and to compensate for deficits), while medicines were seen as useful to cure a disease.

6.2 Russian athletes

Three main themes discovered in the interviews of Russian athletes are (1) NS and medications as essential, (2) NS and medications for performance-enhancing purposes, (3) NS and medication intake as a sacrifice for elite career.

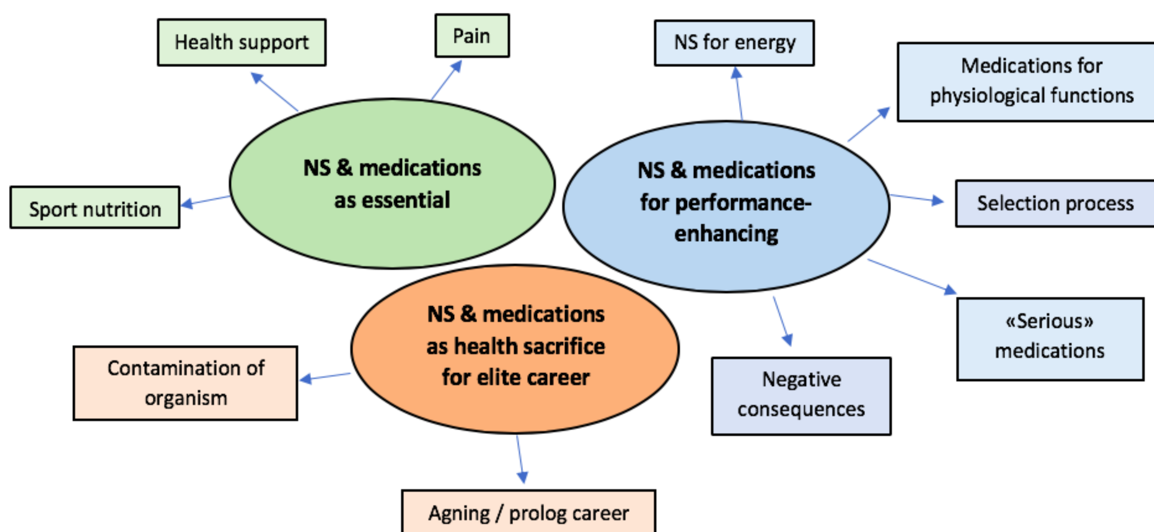

Figure 4. *Thematic network based on interviews with the Russian athletes.*

The answers from the Russian athletes were more diverse than the Norwegians. Four out of five participants expressed mostly positive views on NS and medications, while one participant stood out by stating that he does not take any NS or medications because his regional coach disapproves of it. The Russian athletes often refer to their regional coach as a source of info on medications and supplements.

A short note before presenting the results. Athletes often refer to “the regions”, meaning the regions of the Russian Federation. The national team is formed out of the best athletes from all the regions. The athletes interviewed do most of their training together with this team, while the rest is done in their home region together with their regional coach.

Also, it is essential to explain that Russian athletes do not always differentiate between NS and medications and that the line between what is a supplement and what is a medication is sometimes blurred. They might use these terms interchangeably.

6.2.1 NS and medications as essential

The first theme discovered in the interviews with the Russian athletes was the view that NS and medications are an essential part of being an athlete. Athletes report frequent use of NS and medications and explain this by pointing out that it is a normal and accepted practice in their team and their sport community in general. The primary motivation for using NS and medications was to support health, compensate for nutritional deficits and enhance performance. As the quotes show, the topic of health support is an important topic for all the athletes since “you run on your health”. Therefore, supporting health with NS and medications is seen as an essential ingredient for assuring optimal performance. Athletes viewed the consumption of supplements and medications as especially important before and during altitude training.

A common belief was that being an elite athlete puts additional stress and demands on the body and makes the body consume more nutritional elements than it is possible to get from eating food in normal quantities. Athletes explained that supplements were essential since their nutrition was often not sufficient both in terms of quality and quantity. As to the quality of food, the participants reported experiencing difficulties with maintaining a healthy diet owing to the poor quality of food in Russian grocery stores. Besides, the athletes reported that when traveling for competitions both in Russia and abroad, they often do not get the right food or sufficient food to support their bodies, which leads to them consuming supplements to compensate for what they lack in their diet. This is particularly true in the case of compensating for lack of meat with proteins and a lack of fresh fruits and vegetables with vitamins. By looking at the quotes describing the Russian athletes’ experiences and habits in terms of NS and medications, the reader can understand that the team’s doctor is the primary source of supply,

information, and advice for the athletes, and that the doctor sends a clear signal to the athletes that NS and medications are essential.

> *(RUS, Participant 2) After I got into the team, they started to give me different vitamins, like more vitamins and different types of them. In the beginning, I was like: "What for? I can run on my own health; I don't need it." But then the doctor explained that I will run and run, and that my organism will get worn out, so it is vital to support it. You can't absorb everything from food. She said I am not an average person, I am an athlete, so that is why I have to take it. They [doctor and coach?] explained it all to me. I understood it and started taking supplements and pills. ... They say it all is necessary. They know how the body works; they are not dumb. They say I have to take it because otherwise I would not be able to compete for a long time – I will just get tired, worn out. Old-school Soviet coaches say that you get everything from food. Like: "Eat oats and you'll be healthy". But this is not how it works in reality. ... BCAA, proteins and other things – you take it all so that your body won't get worn out.*

> *(RUS, Participant 3) Isotonic, BCAA*[14]*, 'recovery'*[15] *– it is all important for restitution, you need it all and it helps you, it nourishes your heart. It wasn't invented for nothing – it is all healthy and essential. Everybody takes it. There is nothing special in it. ... Then for heart you take Panangin*[16] *and Riboxin*[17] *pills; this is all legal and we all take it because it is healthy. All sport nutrition like isotonic, proteins – you should take it all. Especially during training camps band at the altitude; it is also good at competitions.*

As the quotes below demonstrate, two of the participants seem to, on occasion, consume sport nutrition excessively.

> *(RUS, Participant 2) When I was at this training camp, I was eating energy gels for a couple of days. I almost didn't eat any normal food. I don't know why, just for fun, I guess. But then my stomach got completely ruined. I mean, I had*

14 BCAA – Branch-chained amino acids. Body uses BCAAs to build muscle protein and produce energy.

15 Recovery is a product consumed immediately after exercise. It usuallycontains a blend of carbohydrate, protein and electrolytes with vitamins and minerals.

16 Panangin is used to fulfill of potassium and magnesium deficiency. Commonly used for treatment of congestive heart failure disorders of cardiac rhythm. (Hello Doctor, n.d.)

17 Riboxin is a cardiac drug used to increase metabolism and hypoxia resistance of myocardia (Belmedpreparaty, n.d.). normalizes metabolism of myocardium, decreases hypoxia

diarrhea because my stomach seemed to stop digesting it. The gel just basically went right through me.

(RUS, Participant 5) All the basic supplements are essential. We have a very wise doctor here, and before I got in the team, I would never drink isotonic, I just don't like it. But she explained to us a lot about nutrition, had different presentations and webinars … and I started to understand. So now I drink isotonic before a start, eat gels, eat bars after competitions and workouts even if I don't feel like it. I try to drink at least a liter of isotonic before start. During workouts, you have to push it into yourself even if you don't want to drink it or eat it, and I actually notice that I feel better while training. … Before coming to altitude, we have to have a course of iron supplements, and during altitude training camps as well. Iron is just essential here in the mountains. We also get Cytoflavin[18] *and Riboksin for the heart.*

As mentioned earlier, there was a participant who does not consume any NS and medications. The participant reports that the decision to abstain from taking supplements was taken together with his regional coach. This is what he says about his perceptions of others:

(RUS, Participant 4) I do not take anything – no omega 3, neither vitamins nor any of the other things. And everybody is so surprised! They are like: 'How is it possible?' And I say: 'Well, that's possible.' This is the way I like it. … It is very uncommon in Russia if an athlete does not take anything. Everybody usually has some medication graphics, schedules and plans. … My coach in X region does not support this idea [of taking supplements and medications]. … I talked to him and we decided that I don't have to take anything.

Here are some quotes that demonstrate the athletes' views on supplementation of their diet. It seems like the regional coaches express opinions on NS that are contrasting with the opinions of the doctor in the national team. Athletes also often differentiate between the "old school views" or "Soviet views" when talking about their approach to supplements and medicines, meaning that the view of getting all the vitamins from food is outdated.

18 Cytoflavin improves coronary and cerebral blood flow and activates metabolic processes in the central nervous system.

(RUS, Participant 1) Coaches in the region are sometimes against it [supplements], they say it's bad for your liver, and that we should get vitamins from nature, from berries, for instance. But I have to take supplements because fruits and berries are so bad in the stores. So, coaches often have conflicting opinions with the doctor.

(RUS, Participant 3) But when you are with your regional team somewhere in Russia, it is very difficult to eat well. The canteen is usually average, so we often have to go out to cafes [outside of the hotel] in the evenings to eat more, and we should also take more supplements in addition.

Also, NS were seen as essential for health support when compensating for deficits of iron, vitamins and minerals. Interestingly, several participants reported that they are not delivering blood test anymore in order to identify deficiencies, since they no longer have professionals who do that. Therefore, all athletes receive the same NS and medications from the doctor, even though the deficit is not proven by any test. It seems like supplements are given "just in case" – since "it will not hurt". Athletes report that it depends on the time in the season which type of supplements and medications they are being given. For example, different medications need to be taken before and after high-altitude training camps.

When it comes to sources of supply, athletes usually receive NS and medications through the team doctor or from their regional team. Sometimes, however, they have to purchase NS and medications themselves, either because they travel back to their home regions and do not have access to the team doctor, or they would like to try out new products that the team doctor does not supply them with, or when the federation is attempting to save money. Medications are purchased in pharmacies, while NS are purchased either in physical stores in Russia or abroad or through the internet. Athletes do not seem to be much concerned with where they buy their supplements or with what, in fact, they are purchasing. They appear very open to testing out new things.

(RUS, Participant 2) No, we all get the same supplements and medications. Before, they used to take blood samples pretty often in the mornings, but now all the biochemists got fired, and it is only the senior team who has biochemists, not us. ... Now we don't have biochemists, so we are not being tested.
Interviewer: So, the doctor gives the same to everybody?
Yes, the same. ... I take what the doctor gives me. ... Sometimes the main team

takes all the medications and vitamins, so there is nothing left for us. Then the doctor tells us what we have to buy, so we go and buy it ourselves.

(RUS, Participant 3) Well, sometimes, when you are in somebody's room at the hotel, you see some new supplement and ask what it is. Maybe you read more about it on the internet. If you want to try – just go and buy the same, that's it. … There are so many stores with sport nutrition everywhere, and it is all legal, of course. You chose what you know or what you are interested in trying, and you buy it – as easy as that. You can also shop in a pharmacy, or order online, or pay online and then pick it up in a store or at a pharmacy.

An interesting topic here is that athletes preferred buying nutritional supplements abroad since they did not trust the quality of supplements and medications produced in Russia, due to problems with fake medicines and with the generally poor quality of the products.

(RUS, Participant 2) Russian pharmaceuticals are very bad, so it is better to order from the USA or Japan. It is all superior to ours; ours are often just empty, just a placebo. … I often order supplements through iHerb [online store]. There they sell good foreign vitamins.

(RUS, Participant 5) I don't trust Russian products. … My mom is a pharmacist and she knows how much fake medications there are on the market. So, I believe that foreign preparations are the best and the most "magical". … You can buy Vitamin C in a Spar store when abroad for just one hundred rubles[19]*. … We [Russians] are far behind in this sphere. … I also order from NL international [online store]; I recently bought some collagen there since my friend advised me this store. … Vitamin D, omega3, collagen and magnesium I usually buy online. … A friend of mine who is a senior athlete recommended me some very good, high-quality vitamins, but you can only buy those in Switzerland … but it is very expensive, around 6 000*[20] *rubles for 30 pills. But I think it must be worth it because there is everything you need for a day in one pill.*

Similar to the Norwegians, the Russian athletes reported that they would not compete when they are sick or seriously injured and that they would not try to alleviate symptoms or pain with medications or painkillers in order to be able to participate in a

[19] Approximately 15 NOK.
[20] Approximately 900 NOK.

race. The athletes also said they do not experience any pressure from their team coach to take part in competitions if they are sick; "coaches will just get disappointed" but not more than that. The interviews also revealed that not all athletes chose to refrain from competing when sick or injured. Several participants report that the fact of their being part of their team gives them the privilege to skip a race when sick or injured while those competing at a lower level might experience pressure from their regional coach to take part, either to score points or to ensure a salary. Participants report that their friends from the regions who are not in the team were sometimes pressured to compete despite sickness. In such cases, it is not uncommon to take medications to alleviate symptoms.

> *(RUS, Participant 2) I don't run the race if I am sick. I would not drink fever-reducing medications since there are many prohibited ones … Some take those fever medications, but I would never do that myself. It will just ruin your organism. But some athletes must do it. They just have to. Somebody has to do it to get salary; somebody has to earn points. Your region can easily force you to run.*

> *(RUS, Participant 5) We have coaches in the region, they have this idiotic view, an old Soviet view, and they treat us like machines, not like humans. … My friends [from this region] were forced to run races when they had a fever. So, they drink those fever-reducing medications like Nurofen*[21] *or a simple Theraflu*[22] *and that's it; and they run with fever. I think it is terrible. It happens a lot at a lower level in the regions. A wise coach will never make you run when you are sick. But this is how we had it in our region.*

Otherwise, participants demonstrate a liberal use of medications when sick, in order to get well as soon as possible. The athletes report usage of antiviral medications, giving off the impression that it is a common, accepted and even encouraged practice both in the team and in their sporting community in general. Medications can be supplied by the team doctor or be bought either following team doctor's advice, or independently in a pharmacy. Athletes seem to have good routines on checking whether medications are on the doping list or not. Some note that it is often difficult to find an effective remedy against a regular cold that is not listed on the doping list.

21 Nurofen is a painkiller often used against headache and backpain.

22 Theraflu is over-the-counter cold and flu treatment product which reliefs cold and flu symptoms.

> *(RUS, Participant 3) When I get sick, I have to take poly-vitamins and various antiviral medications. ... You either get advice from the [team] doctor, or you can buy it yourself. When you travel with your regional team, you can call the main team's doctor and ask for advice. She will tell you to buy a whole bunch of stuff in the pharmacy, but I know of experience that I do not need much to get myself going again. It is enough with Polyoxidonium[23], Antigrippin[24] and Kagotsel[25]. And I am not the only one who does it.*

> *(RUS, Participant 4) People say you have to take those antiviral medications sometimes, but in the past couple of years, I didn't take anything of that. The doctor was worried about me and said I have to drink antivirals, and I took some. But I didn't do this in a while. I just don't see the point.*

Athletes were also asked about their use of various analgesics. Interviews show that painkillers in forms of pills are used rather seldom, and mostly in cases of injuries. None of the athletes were familiar with the use of painkillers for performance enhancement purposes. Analgesic injections are also used seldom and only in "emergency" situations. Interestingly, as responses show it is more common that athletes take painkillers when training, and more seldom when they have to compete.

> *(RUS, Participant 2) "I was using painkillers when I had problems with my back. ... Sometimes it happens that I bend, and I can't straighten up again. Then they give me some kind of pills and I take it. Creams and balms don't help in this case. ... It is seldom that [athletes in my sport] compete on painkillers. It makes your muscles relax and you can't run with full power. ... Nobody takes it in our team, maybe only in summer because there are many injuries during summer trainings.*

> *(RUS, Participant 4) It is possible to use painkillers when injured. I had an injury this year and I had to do some workouts on painkillers. Or I might take it if it is really necessary. Not that long ago, I had to run a race, but I twisted my ankle just before the start and it all got swollen. So, the doctor had to freeze it with some spray so that I didn't feel it, and I also took a painkilling pill in addition.*

23 Polyoxidonium has immunomodulating, detoxifying, and antioxidative action. Used in treatment of acute and chronic infectious diseases of bacterial, viral, or fungal origin.

24 Antigrippin is an analgesic-antipyretic.

25 Antiviral drug.

Another highly interesting topic is the seemingly widespread use of painkillers among women in connection with menstruation pain.

> *(RUS, Participant 2) Usually, it is the girls who use painkillers. This is because of menstruation. I don't know what they do exactly, but I know it's common.*

> *(RUS, Participant 5, female) Girls usually take a simple Spasmalgon[26], or a NoSpa[27] together with Nurafen[28]. It is a typical question from other girls during competitions and training camps: 'Do you have liners? Do you have painkilling pills?' I know that those who have painful periods all compete and train with painkillers during those days. ... I personally know that it is impossible to work out when you have this pain in your lower belly. Sometimes it hurts so much I have to take an injection of Ketarol[29].*

6.2.2 NS and medications for performance-enhancing purposes

Apart from health support and pain management, the Russian athletes believed that NS and medications can also be used for performance-enhancing purposes. In this context, the Russian athletes mostly spoke about preparations that either improve body functions (increasing the blood's ability to transport oxygen and glucose or increase cell metabolism) or provide an additional boost of energy before a competition. Another highly interesting topic was the use of "serious" medications for performance enhancement, administrated in the form of injections or drips[30].

When it comes to improving bodily functions for performance enhancement purposes, the following medications/medical supplements were said to be particularly common: Riboxin, Hypoxen[31], Stimol[32] and iron supplements. The athletes point out that it is particularly important, and common to take these supplements before and after high

26 Spasmalgon is a painkiller used for spasm relief.

27 NoSpa is a painkiller used for spasm relief.

28 Nurafen is a painkiller (NSAID) that relieves pain and reduces inflammation, temperature, headaches and other types of pain.

29 Ketarol is a NSAID used for short-term relief of acute pain.

30 A drip is used for administration of fluids intravenously. A small plastic tube is put into the vein (using a needle). The fluids and medicines go directly into the blood through the inserted tube.

31 Hypoxen improves resistance to hypoxia.

32 Stimol decreases muscle soreness and enhances athletic anaerobic performance.

altitude training in order to get additional advantage from it when one is back to compete at a normal altitude.

> *(RUS, Participant 5) You can just come to a pharmacy and buy it all without recipe. Hypoxen is a good medication. It increases your resistance to hypoxia. So, you take it before you get to the mountains. ... Also, during competitions which are at a normal altitude, it is very effective because you are not in the mountains and you have enough oxygen in the air already. Then Hypoxen gives you an additional advantage. ... Stimol is also a good medication, and Rehydron[33]. When your muscles are full of lactic acid, you drink Stimol, it dissolves everything and helps you to restitute better and faster.*

> *(RUS, Participant 4) I know it is common to drink iron supplements before and during high-altitude workouts. Some people just have weaker organisms, and I guess they have to take some [non-prohibited] drugs because their bodies just need it.*

Like the Norwegian group, the Russians use isotonic drinks and energy gels to fill up their carbohydrate reserves before competitions. To get an additional boost before a competition, some athletes also reported that they occasionally consume other stimulating supplements like l-carnitine[34] or guarana[35]. These supplements were said to be common in their sport. One participant also mentioned his use of an anti-stress supplement (which I was unable to find any information about) to boost energy before competitions.

> *(RUS, Participant 1) Before a race it is usually gel and isotonic. ... I also know people take l-carnitine in small tubes and anti-stress. I think it is both guarana and l-carnitine [in anti-stress]. It kind of shakes you up and gives you energy. It tastes just like l-carnitine. It is easily available to buy. ... I also drink tincture of eleuterococcus in the mornings during training camps, not during competitions.*

> *(RUS, Participant 3) I used to drink l-carnitine before; it helped me sometimes, but other times I felt worse, I do not know why. It kind of gives you an additional reserve of energy. If you drink it before a race, it works like an energy drink. ...*

33 Rehydron replaces water and salts in conection with loss of liquids in the body.
34 L-carnitine is an amino-acid which transports fatty acids into cells to be processed into energy.
35 Guarana is a stimulating supplement meant to improve athletic performance by increasing energy.

Caffeine is also everywhere and l-carnitine as well. People just buy it and consume it.

One of the most curious findings of the research relates to the topic of “serious” legal medicines. Three out of five interviewees brought up this topic, stating that this type of performance enhancement is present in their sporting culture, especially among senior athletes. Participants described that this type of medication is usually administrated either intravenously as a drip, or as muscle injections. Interviewees were not familiar with the exact names of the medications used. Still, they claimed that they are used for faster restitution, improving athletic performance or bringing one back into shape after a decline.

It was also evident from the interviews that the use of “serious” medications is often connected with the new selection system in Russia. The new selection rules were severely criticized by all the athletes in the team. They claimed that it brings a lot of insecurity, stress, and difficulty since you never know whether you will be selected or not, even if you are in the team. The selection system works in the following way. If there are just five spots open for the World Championship, and that the best athletes from all over Russia (over a hundred competitors) compete for four of these five places (one place is secured by a coach decision). Being a member of the national team gives an athlete a small advantage against others when there is a minor difference in scores. Still, athletes from the national team have to compete with all of Russia several times during the season to prove they are worth going to international competitions. Athletes that are not in the team, but wants to be chosen to international competitions, then try to reach peak athletic form just in time for the selection competitions. If they manage to be selected, then what often happens that their form drops before the World Championship is held, and they perform badly. Interviewees say that at the senior level, some athletes would peak their shape by using drips and injections in order to do their best to pass the selection.

Interestingly, even though it was claimed that this type of chemically assisted performance enhancement is legal, those who use it would never take the equipment to competitions and training camps abroad. The reason for this is that injections and drips can attract unwanted attention and trigger suspicion of doping use. This practice was seen as somewhat controversial by the interviewed athletes, even though they said it

was legal, and that it was “no secret” in the Russian sport community. As the quotes show, interviewees associated the use of “serious” medications with health risks and addiction. They also reported that this kind of medication is supposed to be administrated only by a doctor (i.e. that the doctor installs the drip and makes injections), but that some athletes do it themselves in the hotel rooms without any medical supervision. I have decided to include some more extended quotes relating to this topic since it is of particular relevance for the research question.

> *(RUS, Participant 3) I know some people do that; I think they use simple saline drips. They do it all by themselves, but you actually can't do it without a doctor. It is not like it is illegal or anything. Our team doctor does not do that [to us] because there is no point. We are young and we are in the team, which means we can run ourselves [without medications]. ... It is only needed when an athlete has lost his shape, when it gets hard, and when they [doctor and coach] see that an athlete is not reaching the right level, even though it is only the middle of the season. Then they can put him under a drip so that the shape comes back.*

> *(RUS, Participant 2) When senior men had a selection for the World Cup, they did the selection very well, but when they come here to Europe [for competitions], they perform really badly. This is obvious – they were dripping and dripping, they were peaking their shape for the selection. ... I think it is better to run on your own health when you are still young, and when you get older and it gets hard, you should either finish your career or go over to this type of serious medications. ... This is legal, but this is harmful for your organism. You just ruin yourself this way. You can run like this for 2-3 years and after that you are finished. ... I know many people who do that, but I never used it myself, I don't know what it is and how it is called. These are drips with saline together with this thing [medication]. And they do drips before competitions. I also know they often clean blood first, and then get the medication.*
> *Interviewer: “What do you mean by ‘clean blood’?”*
> *They put a drip with [inaudible word] and it cleans your blood from toxins, so that the medication they take afterward will get into the clean blood.*
> *... They [the men that were selected] were old guys, almost thirty years old. ... They were pretty average athletes, but then they suddenly outcompete everybody in Russia. That is very strange. ... But everybody knows about it, it is no secret that they use drips. If you were in the Russian sport community, you would know it as well. ... Nobody is hiding it; this is a usual thing. But I don't know anybody among junior athletes who would do the same.*
> *Interviewer: “Why can't they take the equipment abroad if it's legal?”*
> *Because of all the recent scandals. It is better not to take anything of yours abroad. The team doctor usually has everything.*

(RUS, Participant 5) Seniors are using more serious medications, but I don't know exactly which ones. I know they get muscle injections of Actovegin[36]*, and Mexidol*[37] *as well. ... I think it is for better recovery and for better oxygen transport in muscles and brains. ...*
I think I will have to do the same when I become a senior, and I have to start to take something more seriously soon because every year the training and competition load increases. ... I have acquaintances among senior men, and they are pretty wise in this area. They know what works for them and they know what they should take as injections and what is better as drips. They say: 'You are still so little, when you grow up you will understand what you have to take…' ... What they take is all legal. Some people say: 'Look, they are junkies! Can you imagine?' But I think this is normal because this is not doping, it isn't even close to doping. ... You really need this when you are a senior.
... They say when you get intravenous injections – you do it ones and then you get hooked. And with each race your output is not as good as it used to be. This is just like drugs I think – every time you want more and more. But you can't take more because you can't increase the allowed dosage. I think one should really be wise when using it and be careful not to increase the dose.
... When I was studying in a sports gymnasium, there were some 17-year-old boys, and once they were taken red-handed in the room when they were lying there on the beds with a drip. They just fixed this bag with liquid on the window, and this tube went down with a needle in the vein. ... They were just young idiots experimenting.

To summarize, even though the "serious" medications are claimed to be legal, they seem to be connected with an aura of secret, cheating and shame. The usage of certain drips and injections is also associated with addiction and adverse health effects.

6.2.3 Sacrifice for an elite career

The final theme discovered in the interview analysis was the view that even though supplements and medications are considered essential for health support, they at the same time seen as bad for health since they are unnatural, "chemical" and "contaminate" the body. Therefore, several participants reported that it is crucial with a "detox" at the end of the season and that they often take a complete break from taking supplements at the end of the season in spring. Participants were especially worried

[36] Actovegin increases the absorption and utilization of oxygen and glucose and decrease the production of lactate.
[37] Mexidol is an antioxidant which antihypoxic and stress-protective, nootropic, anticonvulsant and anxiolytic action.

about the health of their liver and the long-term effect of consuming supplements. This all gives one the impression that participants perceive the use of NS and medications as a sacrifice of their health in the long term, made so that they can pursue the career as elite athletes in the present.

Moreover, as many of the abovementioned quotes show, athletes are very conscious of their age, and express the view that they run "on their own health" when young. But gradually, when they get older and when training load increases, their body needs additional support, and on the senior level this support is absolutely essential. Interestingly, it once again becomes evident that the doctor is the athletes' primary source of information and advice, and that the athletes even experience slight pressure to take supplements and medications. The doctor's advice makes athletes change their views and habits about supplements and medications.

> *(RUS, Participant 3) I think it will affect me in the future, when I am done with my career. But right now, it's, on the contrary, supports my body. ... Sometimes when I jog, I get a sharp pain in my liver. The doctor does not know why it happens, but this is most likely because of the pills. ... When you take many different things during the season ... it is very important to give yourself a break at the end. And I am often just tired of taking pills, it is just annoying, dull. In spring I would usually not take anything for 1-1,5 months.*

> *(RUS, Participant 4) It is common, especially on senior level. You really need to support your body after 25. I am young now, and my body is growing, and I don't support it at all – it should manage by itself ... So, I will not start contaminating my body with supplements until I am 25 or so. ... Now I started drinking isotonic in the mountains, but it is seldom that I drink a whole bottle. They [coach and doctor?] scold me and say I should drink more, but I just prefer drinking water before and after training. ... We just got a whole bag of it [supplements and medications] from the team doctor. The coach does not know that I don't take the pills; I just have them hidden in the bag and it will just travel home with me untouched. ... Coaches are not that worried about what supplements we take, it is mostly the doctor. We have a mutual chat on WhatsApp; all the athletes, coaches and doctors are in this chat. And the doctor would always remind us "Don't forget to take your pills, guys!". And we are usually reminded several times during one training camp.*

To summarize this theme: All athletes agree on the fact that NS and medications will have adverse long-term effects on their health. But they also believe they have to take it to be able to continue their career and perform on the highest level.

7. Discussion

I will now discuss the results of the thematic analysis presented in the previous chapter. First, in section 7.1, I will deal with similarities and differences in the interview findings and suggest interpretations of the findings based on the existing literature. In 7.2 I will discuss the findings in relation to theory. In 7.3 I will tackle the findings in relation to their context and suggest a few alternative explanations.

7.1 Comparison and discussion of the findings

The use of comparison groups when working under the rubric of qualitative design have a potential to increase the researcher's insight into the subjects' ways of thinking. It is also a useful method to highlight the variation between different groups – how and why they differ in their understandings and experiences (Lindsay, 2019). In this context, Lindsay (2019) suggests useful methodological guidelines for carrying out a comparison of qualitative data. I decided to apply the "comparison of multiple perspectives of the same phenomenon"- approach in order to compare different experiences, beliefs, and subjective norms connected to the same phenomenon, namely the usage of medications and NS. This type of comparison works especially well when comparing the results of the thematic analysis. I chose to analyze the groups separately before starting the analysis, and the three elements in the research question (experiences, beliefs and subjective norms) were used as a framework to guide the comparison.

The interviews generated a plentiful amount of data, which means that it was possible to identify many commonalities and differences between the two groups. I decided to summarize all the comparison points in a table to make it more lucid. This table draws out parallels between the responses of the two groups. The comparison points presented in the table are based on the research question and discovered through the thematic analysis. Due to considerations related to the length of the paper, only the most interesting and significant findings will be discussed in the text form below the table.

Table 1: *Summary of comparison points based on interviews with the Norwegian and the Russian athletes.*

Nationality	**Norwegian athletes**	**Russian athletes**
Comparison points	**Experiences**	
Use of NS	- Ample use of sport nutrition: bars, gels and isotonic. - Sporadic intake of vitamins C and D, and fish oil. - Use of food and supplements to compensate for proven deficits. - No use of energy boosting supplements; some have experiences with caffeine.	- Ample use of sport nutrition: bars, gels, isotonic, protein shakes. - Frequent use of multivitamins, vitamins C and D, fish oil, iron, magnesium and occasional use of other products. - Use of supplements to compensate for poor diet and to prevent deficits/compensate for unproven deficits. - Occasional use of energy boosting supplements: l-carnitine, guarana and caffeine.
Use of medications	- Seldom use of medications, only in case of sickness when prescribed by doctor. - No medication use for performance enhancement. - Good routines with medication check for prohibited substances.	- Liberal use of medications when sick, both with and without doctor prescription. - Systematic use of medications for performance enhancement. - Good routines with medication check for prohibited substances.
Use of painkillers	- Seldom use of painkillers in form om pills or balms. Mostly during training.	- Seldom use of painkillers in form om pills or balms. Mostly during training. - Deep freeze spray in case of “emergency”.
Supply sources/buying	- Sport nutrition mainly supplied by federation, sometimes purchased privately. - Other NS like vitamins and fish oil are purchased privately. - Athletes buy NS from secure sources only in Norway. - Medications are purchased privately in pharmacies.	- Sport nutrition and other NS mainly supplied by federation or regional team, but often purchased privately. - NS are purchased online or in specialized stores, both in Russia and abroad. Supply sources are not considered by safety criterion. - Medications are supplied by federation or purchased privately in pharmacies.
Education/information sources	- Organized anti-doping course - Organized course on nutrition and supplements - Information and advice from team doctor	- Organized anti-doping course - Information and advice on use of NS and medications from team doctor and regional coach
Sickness	-Do not participate in competitions when sick and experience no pressure to compete.	-Do not participate in competitions when sick and experience no pressure to compete.

Injuries	-Can train or participate in a competition with a minor injury; possibly with a tape or pain relief balm.	- Can train or participate in a competition with a minor injury. Use of pain relief balm, freeze spray and/or painkillers in pills.
	Beliefs	
Positive beliefs NS	- Sport nutrition is a convenient source of proteins (bars) and carbohydrates (bars, isotonic, gels). - NS can compensate for deficits. - Supplements like fish oil, vitamin C and D are generally good, especially when immune system needs support.	- Sport nutrition is a convenient source of proteins (bars, shakes) and carbohydrates (bars, isotonic, gels). - NS are essential to support health and muscles - NS give energy boost before competition - NS compensate insufficient diet - NS compensate for deficits - NS help for recovery
Negative beliefs NS	- NS can be contaminated with prohibited substances. - Ineffective, a placebo. - Negative health consequences when used excessively	- Contaminates the body with “chemicals” - Low quality supplements on the Russian market -Negative health consequences in the long term
Positive beliefs medications	- Medications help to heal when sick if prescribed by a doctor - Medications are necessary for athletes with health conditions (e.g. asthma medications)	- Medications help to heal when sick - Medications support organ functions (e. g. heart, liver) - Medications can improve physiological functions and give performance advantage (e.g. increased capacity to transport oxygen and nutrients; increased cell metabolism, improved resistance to hypoxia)
Negative beliefs medications	- Might be prohibited under WADA code; risk of a positive doping test - Cannot be used for performance enhancement; prohibited or ineffective for healthy athletes	- Might be prohibited under WADA code; risk of a positive doping test - Contaminate body with “chemicals”, negative health consequences in the long run - “Serious” medications cause addiction, negative health consequences and decrease performance in the long run - “Serious” medications are controversial – connected to cheating and shame, even though they are legal.
	Subjective norms	
Use of NS	Similar to personal experiences; accepted behavior in the team and in sport community in general.	Similar to personal experiences. Accepted behavior in the team and in sport community in general.

Use of medications	Not identified.	Subjective norms in the team – similar to personal experiences, accepted behavior in the team. Subjective norms in sport community (outside of the team) – different to personal experiences. Perceived higher usage and accept of medications among senior athletes, as well as more unrestrained usage at lower levels of competitions.
Use of painkillers	Similar to personal experiences.	Similar to personal experiences.
Education/information sources	Not identified.	Not identified.
Sickness	Similar to personal experiences.	In the team – similar to personal experiences. In the sport community (outside of the team) – different from personal experiences. Athletes at lower levels might compete when sick.
Injuries	Similar to personal experiences.	Not identified.

In the following sections I will present the main findings of the research. To remind the reader, this paper aims to understand *how the athletes form attitudes toward legal supplements.* Athletes' experiences, beliefs and subjective norms were chosen as the primary focus-points when trying to develop an accurate picture of the athletes' attitude-formation process, based on theory. By comparing the thematic networks for the two groups, I will explain what factors seem to influence athletes' attitude formation in this study.

7.1.1 Why different experiences?

I will begin by discussing the athletes' experiences. In the context of this paper, experiences are defined as past and present habits in connection with NS and medications. The data indicate that both groups, Norwegians and Russians, have NS and medications as a part of their training and competition routines, but to a very different degree. The data gives a strong impression that the Russian athletes have a more systematic, planned, and performance-enhancement-oriented approach to the

consumption of legal substances. (It should be stressed that not all the substances consumed by the Russian team are taken with a view of performance-enhancement). However, since this is a qualitative study, it would be irresponsible to conclude definitively that Russians in general use supplements more than Norwegians. That said, the interviews give a strong impression that Russian athletes have a far lower threshold when it comes to the consumption of various types of legal supplements and medications for both health support and performance enhancement purposes, as compared to the Norwegian group. The Norwegians report consuming supplements only occasionally to support health.

What can be a reason for this dramatic difference in the experiences of the two groups? Based on the views espoused in the interviews, the following factors stand out as having a significant influence on athletes' routines: (1) Beliefs about effectiveness of NS and medications; (2) subjective norms in the team; (3) supply and availability of supplements and food.

(1) Beliefs about the effectiveness of NS and medications

Beliefs showed to have a strong influence on athletes' experiences with NS and medications. Beliefs seem to shape how the athletes make choices and build habits of supplementation. As the thematic analysis shows, the Russian athletes consider supplements and medications to be an essential part of their sporting life. In keeping with this belief, the athletes are both willing and motivated to take various substances. This willingness seems to result in a positive, open-minded attitude towards NS and medications, which is responsible for their evidently rich experience with NS and medication use. In short, their beliefs can be summed up in the following statement: "NS are essential for athletes and cannot be replaced by food products (belief); therefore, I make habitual use of NS (experience/habit)."

The Norwegian athletes also reported using supplements (mainly sport nutrition) and medications, but it was their firm belief that supplements are not always necessary – that sport nutrition products can be replaced with "normal" food, and that medications are only needed to cure sickness and make up for severe deficits. The Norwegian athletes communicated their belief that the use of NS is usually unnecessary very clearly, and they all appeared to be reasoning and acting in accordance with this belief.

This belief seems to result in a modest use of NS and a heavy focus on a healthy diet. In short, their beliefs can be reflected by the following statement: "NS are optional, not essential and can be replaced by food products (belief); therefore I take NS occasionally if necessary (experience/habit)".

Both of these study groups are good illustrations of the fact that beliefs influence attitudes and behavior (Ajzen & Fishbein, 2005). This echoes earlier work done in the field, like quantitative studies done by Diehl et al. (2012) and Wiens et al. (2014) which show how athletes with positive beliefs to supplements also demonstrated higher supplement intake. In line with the belief that supplements are unnecessary, the Norwegian athletes consume "normal" food products instead of sport nutrition. The belief that medications are only necessary when one is sick manifests itself through the athletes' willingness to take medications only when prescribed by a doctor, following a sickness that does not go over by itself. The same pattern of belief-experience connection was evident among the Russian athletes. In line with the belief that NS are essential and cannot be substituted with food, these athletes viewed NS as the only viable route, both as nutrition and for compensating for deficits.

Another example that can shed light on the "belief-experience connection" has to do with the athletes' experiences when they want to compensate for deficits. When the Norwegian athletes have deficits, they would either eat more of a particular *natural* product or, if advised to do so by a team doctor, take the necessary supplements. This behavior reflects their belief in the utility of maintaining a natural diet and their belief that supplements are not often the best or only option.

The Russian athletes, on the other hand, tend to consume various supplements simultaneously, even if they do not have any proven deficits. That said, the Russian athletes do not have the same access to medical personnel, like that required to conduct blood tests. Worry about this possible blind spot may cause them to overcompensate by taking more than what is really needed. One may indeed get the impression that many are taking supplements "just in case". Interestingly, the fact that the athletes might misuse NS when a dietary evaluation is not possible has already been pointed out in a study conducted by Sundgot-Borgen et al. (2003). Here, the authors state that when access to skilled personnel is limited, the likelihood of unrestricted use of NS increases.

In sum, this first factor (beliefs) appears to influence the athletes' experiences with legal substances in a very real and potent way. Different beliefs seem to produce different supplementation and medication behaviors.

Based on the existing research, the fact that Russian athletes believe in the effectiveness of non-prohibited substances appears suggestive of Russian doping susceptibility. A quantitative study by Hurst et al. (2019) suggests that if athletes believe in the effectiveness of legal performance enhancement, then they are more likely to be susceptible to doping. Beliefs and experiences among the Russian athletes are also similar to the findings of Lentillon-Kaestner and Carstairs (2010), where elite young cyclists were convinced about the necessity of NS and had a strong belief in their effectiveness, which resulted in ample use of legal performance-enhancing substances and methods as well as increased openness towards doping in the future. The positive opinions concerning NS harbored by the Russian athletes can thus be read as a potential risk factor for doping. The fact that the Norwegian athletes do not believe in the effectiveness of legal performance-enhancement gives grounds to conclude that Norwegian athletes are not at risk of transferring to illegal substances in the future.

As to the motivation behind supplement use, existing studies indicate that performance-enhancement, compensating for deficits, and sustaining health together make up the most prominent reasons (Garthe & Maughan, 2018; Wiens et al., 2014). This corresponds well with the findings of this study and the responses of the two groups. However, the Russian athletes also mention "prolonging their athletic career" as a reason for taking supplements. This motive has not been mentioned in the existing literature on the use of NS and medications and can therefore be considered as a novel finding.

(2) Subjective norms in the team

My study also reveals how the subjective norms in the team influence the athletes' experiences with NS and medications. The term "subjective norms" refers to perceptions of typical behaviors among others and the power of social influence to result in certain types of behavior. The more intimately these "others" are related to the athlete, the more impact the subjective norms appear to have on the athletes' experiences with supplements and medications. As the interview findings show, many

athletes explain or justify their own behaviors in terms of NS by pointing to the behavior of others in the team and their expectations.

As the interview findings show, athletes often talk about norms in "*our* team", saying "*we* think…", "this is *normal*…", "I don't think anyone does it *in our team* does this", etc. For example, the Norwegian athletes said that taking sport nutrition is a normal and acceptable practice in their team, and they all reported the same or very similar personal experiences with this type of supplement. The Russian athletes consistently said that taking supplements and medications is an accepted and encouraged practice in their team and that everybody receives the same supplements and medications from the doctor and follow the same supplementation plan. Following this understanding of subjective norms in the team, athletes were willing to take supplements (– with the notable exception of one athlete).

Athletes from both groups also made comments about the subjective norms in their general sporting community, which is a bigger group, including less proximate participants. The Norwegian athletes perceived that their norms surrounding NS and medications were similar to those of others in the Norwegian sporting community. The Russian athletes, on the other hand, outlined different norms outside of the team – in the different regions of the country and at different levels of competition. In other words, the Russian athletes mostly stick to the norms of the team, but not to the norms of their broader social environment when it comes to medication and NS use. This finding seems to reflect the theory that the more proximate the group is to the athlete, the greater the influence of its subjective norms (Vogel & Wänke, 2016). This finding is also in line with a study by Lentillon-Kaestner & Carstairs (2010), which suggests that an athlete's perception of subjective norms in the team is an important factor that can both encourage or deter athletes from doping. My study shows that the same logic appears to be relevant for the use of NS and medications.

In sum: The athletes in this study tend to identify themselves with the group in which they find themselves. Therefore, they tend to conform to the habits and norms of the other members of the team and act accordingly.

(3) Supply/availability of NS, medications and healthy food

Another factor that, according to data, seems to have some impact on the athletes' experiences with NS and medications, is how and which NS/medications are being supplied by the athletes' respective federations through coaches and doctors.

The Norwegian athletes all consume sport nutrition products, and these products are generally supplied by their sport federation. This means that if athletes want to buy more supplements, they must do so privately. One participant commented that it is rather expensive to buy sport nutrition privately, which was one of the reasons why he would rather substitute it with food products when he practices alone (away from the team). Besides, many medications in Norway cannot be purchased without a prescription, which limits athletes' opportunities to misuse medications.

The Russian athletes report receiving both sport nutrition, supplements, and medications from their team doctor, declaring that they receive a new bag containing such substances at the start of each training camp. Athletes say that they "take what the doctor gives them", and state that sometimes they have to stop consuming supplements because the team/federation has run out of them. Also, unlike in Norway, Russian pharmacies sell a large part of medications without a prescription, which makes them very easy to obtain.

It is obvious that being given NS and medications by one's team increases one's likelihood of use. This type of practice is clearly responsible for a large part of the Russian athletes' experiences with, and view of, medications and supplements. A similar case is true with the Norwegian team. When the Norwegians are given sport nutrition – they take it. Just as when the Russians are given sport nutrition, other NS and medications – they take it. Viewed through this lens, a large part of the responsibility for the use of supplements seems to lie with the doctors, the coaches, and the sport federations. This reflects the finding of the study of young elite German athletes by Diehl et al. (2012) which suggested that athletes who are required to use NS by their sporting federations report higher usage of NS.

Another interesting topic present in the data is the simple availability of healthy products. This topic was less evident in interviews with Norwegian athletes – who seem mostly unaware of any unavailability problem at all since they repeatedly state that a

healthy "Norwegian diet" is enough to provide their bodies with the necessary vitamins and nutrients. The topic did arise, however, and in several instances, during the Russian interviews. These athletes often perceived their nutritional options as insufficient, and they saw this as yet another reason to add supplements to their diet.

The availability of supplements and healthy food is not mentioned in the existing literature as a potential risk factor for the use of NS and can therefore be seen as a novel finding. If athletes do not have healthy food available to them, but are supplied with NS instead, they seem to justify the use NS to compensate for real or imagined deficits. In keeping with this, if athletes have high-quality food available, it seems that they are less inclined to consider supplement use.

7.1.2 Why different beliefs?

The next finding that I would like to discuss concerns the influence of educational and information sources for athletes' beliefs about NS and medications. The definition of the word "belief" in the context of this thesis is *a representation based on past experiences and present knowledge*. As the results of the thematic analysis demonstrate, the Russian and Norwegian athletes have very different beliefs about supplements and medications. Both groups possess positive and negative beliefs about legal substances in sport. Still, due to the detailed nature of a qualitative inquiry, it has become evident that those beliefs can be rather complicated, seemingly contradictory, and both positive and negative at the same time.

Since beliefs are based, in large part, on *knowledge* (Fabrigar et al., 2005), it is reasonable to assume that the athletes' sources of knowledge on medications and NS will influence their beliefs. The data shows that the primary sources of knowledge about NS and medications are (1) educational courses on nutrition (for Norwegian athletes), (2) educational courses on anti-doping (for both groups), (3) the team doctor (for both groups), and (4) regional coaches (for Russian athletes). It was a persistent pattern in the data that the athletes' beliefs about supplements and medications coincide with the information they receive from these primary information sources.

(1) Educational courses on nutrition and (2) anti-doping

The responses given by the Norwegian athletes demonstrate that this group receives clear and consistent signals from the team doctor, initiatives like Healthy Sport, and ADNO courses about the consumption of supplements and medications. As mentioned above, these all communicate that NS are unnecessary in the vast majority of cases and that medications must always be checked before use. The athletes appear to agree with this advice and to act in accordance with it.

An important fact to highlight is that the Russian athletes do not participate in any specific or nationwide nutritional courses (they only reported having a webinar with their team doctor). In the absence of other qualified sources of information, doctor's and coaches' opinions seem to gain increased influence and authority (as opposed to the Norwegians).

That said, both groups reported taking part in numerous anti-doping courses, and both groups seemed to have good routines for checking medications for prohibited ingredients. This is a clear illustration of the value of education for establishing healthy habits.

The importance of education for substance use supported in the existing literature, which shows an inverse relationship between knowledge and use of NS (Dascombe et al., 2010; Massad et al., 1995). In other words, the more knowledge they possess, the less NS athletes use.

(3) The team doctor and (4) regional coaches

The team doctor was an important source of advice on NS and medications for the Norwegian group. The Norwegians all said they would not consume supplements and medications without receiving instructions to do so by their doctor (apart from fish oil and vitamin C). The Norwegian participants also reported that their team's coach did not say much about NS and medications, which suggests that he is not the most relevant source of information in this context – being, as he is, more or less neutral on the topic of NS. That said, the Norwegians were all convinced that their coach supports the views and advice promulgated by Healthy Sport and the team doctor. The coach's role was more relevant on the topic of sport nutrition since he is the person distributing the sport

nutrition, and since the intake of sport nutrition is often incorporated in the training process. In sum, the Norwegian athletes appear to receive unambiguous and consistent signals from all their primary sources of information regarding the use of NS. This helps explain why the Norwegian participants all express very similar beliefs about supplements, and why their responses are so consistent.

A more complex network of informational sources was present on the Russian side. The main source of information about NS for athletes is the team doctor, who, as was demonstrated in the quotes in the previous chapter, actively promotes the intake of NS. The team's doctor is the foremost authority in this context, according to the participants. Other actors that influence the athletes are their regional coaches. Importantly, as with the Norwegians, the head coach came across as being rather neutral on the topic of NS and medications, being instead mostly concerned with the use and distribution of sport nutrition. One of the athletes reported that "[the team's] coach does his job, and the doctor does hers". That said, it is evident from several responses that the regional coaches give advice on NS and medications use as well, and that these views may come in conflict with what the team doctor says. The core contradiction thus arises between the regional coach and the national team's doctor. These seem to be two important sources of information and advice for the Russian athletes that do not concur. Consequently, it is not surprising that the Russian group harbors contradicting beliefs about NS and medications. These two actors (the regional coaches and the team doctor) seem to symbolize two very different approaches to supplement use. The regional doctors represent "the old school," saying that one should eat healthy food instead of supplements. In contrast, the team's doctor represents the "modern," highly medicalized approach to supplements and medicines. This contradiction is likely to form part of the reason why the responses of the Russian athletes vary as much as they do.

The decision-making process surrounding the question whether to use medications and supplements when sick was also different in the two groups. In both groups, the athletes reportedly would not train or compete when sick. But the Norwegian athletes demonstrated a higher threshold for taking medications when sick. They would only take medications unless the normal restitution process does not help, and not unless the medications are prescribed by a doctor. On the Russian side, this threshold seemed to be significantly lower. For both teams, again, the team's doctor acts as the chief source of

information and advice. The Russian interviews show that the doctor was open to suggesting medications to the athletes to get healthy faster, either by being an active supplier of the medications herself or by giving advice on which medications the athletes should buy privately.

According to existing quantitative studies, coaches are the primary influence on athletes in terms of NS (Diehl et al., 2012; Torres-McGehee et al., 2012). In the literature, the doctor is frequently identified as having only a secondary role (Slater et al., 2003). This, however, is clearly not what has been shown by this study, since both teams gave very clear indications that the team doctor is a primary source of information and advice on supplements, and that the coach has a much less significant role (except in relation to sport nutrition). A possible explanation for this is that the athletes that were interviewed represent the highest level of competition in their countries on the junior level and are therefore have access to qualified professionals to get advice on NS. This suggestion would be coherent with the studies of Lentillon-Kaestner and Carstairs (2010) and Sundgot-Borgen et al. (2003) who state that top-ranked athletes tend to turn to professionals on the topic of nutrition. The fact that regional coaches (lower level) in Russia influence the athletes and team's coach (higher level) did not have a significant influence, supports this assumption.

The role of education about potential risks

Another important finding was the importance of adequate education for athletes' awareness (or unawareness) of the risks of contamination of nutritional supplements. Both groups had participated in anti-doping courses and demonstrated good habits for checking medications for prohibited substances. Two of the Norwegian athletes mention that they even check medicines prescribed by the team doctor to make sure they are clean. The Norwegian athletes make frequent references to courses directed by Healthy Sport – courses that alerted them to the fact that supplements might contain prohibited ingredients even though these may not be listed on the label. The Norwegian athletes were cautious of buying supplements from unreliable sources like the internet or in stores located abroad. They prefer buying supplements like vitamin C or cod liver oil at pharmacies or grocery stores in their home country. The Norwegians were not only careful about where they buy their supplements, but also what type of supplements they chose. As several participants mention (again, based on what has been taught them by

Healthy Sport), a good rule of thumb is that when a supplement promises significant performance-enhancing effects (e.g. increased energy), it is very likely that it is illegal.

On the Russian side, the athletes describe a completely inverse scenario. To begin with, the concern for contaminated supplements was never even mentioned by any of the participants. The athletes seemed to be very open to experimenting with new products, whether health supporting or performance-enhancing. Several participants reported buying supplements following a friend's advice or simply out of curiosity. Online stores were also chosen based on recommendations. The interviews clearly show that the source of a given supplement is frequently – if not *usually* – ignored. In contrast to the Norwegian athletes, the Russians preferred buying or ordering supplements abroad since they did not trust the quality of the supplements on sale on the Russian market.

A probable explanation for this startling difference between the two groups is the simple availability of information concerning the risks of nutritional supplements. The Norwegian participants repeatedly refer to Healthy Sport when talking about the risks of NS, saying that this is where they received their information. (One should keep in mind that they may have received their information from other sources as well, like from their coach, ADNO, or their sports federation, but these sources were not explicitly mentioned in the interviews). As mentioned earlier, the data suggest that the team doctor is another source of information on NS and medications. Concerning the Russian team then, it can be safely assumed that athletes simply did not receive this information from the doctor – whom one would think possessed the professional qualifications needed to be aware of the various risks related to contaminated NS. In sum, it is clear that education on NS is crucial for increasing awareness about the possible risks associated with NS, so that athletes may develop better habits and understanding. In line with this finding, existing studies show that athletes who are aware of the risks related to NS are more likely to abstain from supplement use (Dascombe et al., 2009). Braun et al. (2009) report that only around one-third (36%) of the athletes are aware of potential contamination risks of NS; a finding that also outlines the need for increasing risk awareness in young athletes.

7.1.3 The role of the social environment and structural factors

Another significant difference between the two groups was the participants' sporting environment. By the word "environment," I here mean the context in which the athletes

train, compete, and socialize. The following environmental factors showed to be important: (1) social environment (athletes' social circle and influence of important people), (2) structural factors ("the system").

(1) Social environment

The Norwegians reported that athletes in their social circle and in their sporting community exhibited similar behaviors and attitudes towards medications and NS as they did. Giving or receiving advice from other athletes regarding NS was seen as highly unusual. Besides, the Norwegian participants reported never experiencing any pressure to compete when they are sick or injured, either from the system or from the support personnel. The athletes perceived their environment as clean and could, somewhat naively, not even imagine how medicines could be used for performance enhancement.

In Russia, the athletes report different practices with NS and medications in their various social circles. Most of the athletes were familiar with the use of "serious" legal medications (referring to medications administrated by drips or injections) within their environment. Athletes reported that it was an existing practice, though not very common, inside their community; this reportedly applies mostly among senior athletes. Moreover, the athletes reported to receive advice from their peers on what type of supplement/medications to use, as well as advice on sources of supply.

When it comes to pressure from the social circle, even though the Russian athletes reported that they have a choice of whether to take substances or not, their replies show that they experience subtle pressure to take the supplements and medications they are given by the team doctor. As several of the aforementioned quotes show, the Russian athletes report the doctor explaining the necessity of supplements and medications. The doctor also warned that bad performance and a shorter career span may result from not taking the required supplements.

One Russian athlete stood out from the rest of the team by his personal unwillingness to take supplements and medications. He said he keeps it in secret from the doctor and the coach, and that he hides the bag with supplements and medications so that nobody notices that he does not take them. He also reports being criticized if he does not drink enough isotonic during training. This kind of information implies that the Russian

athletes really do experience some pressure to use supplementation. This finding is consistent with an already mentioned study by Diehl et al. (2012) which showed that some athletes are required to use NS by their sport organizations.

The concept of the networked athlete (Connor, 2009; Pappa & Kennedy, 2013) disused earlier turns out to be very relevant for the results of my study for describing how athletes are influenced by their social environment. The concept suggests that athletes are induced by their environment into a culture of doping, through people in their social circle – their coaches, doctors, peers, and family. This concept is also useful to explain athletes' attitudes to NS and medications (even though the concept is conventionally used to describe doping). The influence of an athlete's family appears negligible. Some individuals report that their family's authority over them, on questions of NS and medications, decreased with their age and competition level.

The concept of the network athlete suggests peer influence as a central factor for PES use. Peer influence on NS use seemed to be relatively insignificant on the Norwegian side (except for subjective norms in the team), while several Russian athletes reported buying supplements following a friend's advice. One participant reported receiving information about "serious" legal performance enhancement methods from senior athletes. To repeat a finding that has already been elucidated above, the most influential individual in the athletes' social network in terms of NS and medications is, for both groups, the team doctor.

The fact that young athletes are being socialized into the culture of PES by senior athletes is supported by the literature. Ohl et al. (2015) and Lentillon-Kaestner and Carstairs (2010) who studied young cyclists and the culture of doping, reported a similar finding of young athletes being introduced to PES substances and methods by more experienced athletes. There are echoes of this finding in my data, but it should be emphasized that it was only voiced by one athlete.

The theory of the networked athlete takes the coach to be an important factor in shaping athletes' doping behaviors, together with the doctor. However, when it comes to NS and medications, my study reveals that the role of the team coach is minor – at least on the elite level.

Backhouse et al. (2018) suggest that the first step to defeat the 'dopogenic environment' in sport is to urge "physicians to forge coalitions to challenge any practices that feed the dopogenic environment" (p. 1486). Sports physicians are encouraged to contribute to a new, clean culture through value-based communication with athletes. This acknowledgment of the role of the team doctor seems to be very relevant for my research, which showed that the role of the doctor in molding the teams' culture of NS and medication use cannot be underestimated.

(2) Structural factors

Like the Norwegian group, athletes in the Russian team did not experience any pressure to take part in competitions when sick or injured and disapproved of using medication to alleviate symptoms of ill-health. However, when they described their perceptions of the norms in their sporting community, they reported that it is possible for other athletes to compete when sick. They reported that it was a common existing in the regions and that athletes in the regions might experience pressure either from "the system" in general or from their own coaches.

Athletes reported that individuals competing at lower levels were likely to experience pressure from their surroundings to increase their performance and rise in the sporting hierarchy. The topic of the selection system seems to be highly relevant to the findings of a study conducted by Aubel and Ohl (2014), who looked into the doping culture in cycling using the "risk environment" approach. Aubel and Ohl (2014) concluded that team organization and employment conditions make up "structural drivers of doping practices." (p. 1094). The same seems to be the case for NS and medications, as the Russian athletes state that the new selection process in their country can push athletes towards the use of NS or medications either to peak form prior to selection or camouflage pain and symptoms of cold during these competitions. These pressures were especially relevant on the lower levels where athletes sometimes had to compete despite sickness or injury to secure their position and salary. Aubel and Ohl (2014) also claim that structural pressures are strongest and most harmful in the lower-ranked teams of cyclists because these are often in precarious financial situations and are therefore dependent upon delivering results in order to maintain their sponsors.

7.2 Findings viewed through the ABC-model of attitudes

The ABC model, which is often claimed to constitute the "anatomy of an attitude," was chosen to give a better understanding of what factors influence athletes' attitudes on NS and medications. To remind the reader, according to the ABC model an attitude consists of an affective component (feelings), behavioral component (past and present behaviors), and a cognitive component (beliefs). This theory suggests that the strength or influence of each component on the final attitude can vary in different cases (Fabrigar et al., 2005). I will now discuss how each of these components was present in the interviews.

According to Fabrigar et al. (2005), it is common to let the affective component be overlooked or undervalued in attitude research. It may seem like this has been an issue in my research as well, since the participants did not express their feelings towards NS or medications directly during the course of the interviews. Nobody made any explicit statements on whether they "like" or "dislike", "love" or "hate" NS and medications. However, what I managed to uncover in the interviews were positive and negative comments related to the taste of sport nutrition (like isotonic, proteins, etc.); a feeling of unease and suspicion was expressed by two Norwegian participants about how supplements could be contaminated with prohibited substances; as well as several comments about how the athletes feel after taking supplements and what they feel about the whole idea of taking medications. Overall, the athletes did not express many sentiments towards NS and medications, and based on the data, I can conclude that the affectional component had a minor role to play in the forming of athletes' attitudes towards NS and medications.

The second component of the model is the behavioral component. This component stands for whether an individual is *approaching* the object of their attitudes or *avoiding* it, and whether an athlete has past experiences with the object. (According to the model, behavior in the past determines behavior in the present). The Norwegian athletes seemed not to have much past experience with supplements, and no one reported high consumption of NS in the present. Moreover, the Norwegian athletes were not actively "approaching" the substances (except for cod liver oil, vitamin C and sport nutrition). These athletes all expressed an avoidance behavior by not taking supplements or medications unless it is seen as absolutely necessary – like in cases when the

supplement or medication is recommended by a doctor or when an ailment does not go over by itself. The Russian athletes, on the other hand, seemed to be very much in the habit of “approaching” supplements (apart from one notable exception), by buying supplements privately, experimenting with new supplements, and using various medications when sick. These athletes reportedly turn quickly to medications if they sense the onset of a cold or some other sickness – medications which they tend to buy themselves, with or without their doctor’s advice. Interestingly, the athletes' past experience with NS and medications (the behavioral component) does not seem to be of any particular importance for the behavior of the Russian athletes. Several athletes reported no or low usage of supplements in the past, as well as negative experiences with supplements (like pain in the liver, bloating, diarrhea, not liking the taste). However, they tended to change their behaviors when they got into the team because their beliefs were changed. This is what brings me to the next point, which seem to play a vital role in shaping athletes’ attitudes.

The cognitive component (beliefs) stood out as *the* key component when determining an athlete’s attitudes – and consequently, their intentions and behavior towards NS and medications. To remind the reader, cognition should be read as the perception of the attitude object based on knowledge, information processing and learning processes (Eagly & Chaiken, 1993). The Norwegian athletes had clear knowledge of the fact that NS are frequently unnecessary and that they come with various risks. This knowledge was communicated to them through educational courses and doctors. Based on this knowledge, the athletes formed beliefs – which again led to them reasoning and acting in accordance with these beliefs. The Russian athletes, in contrast, were taught that NS and medications are perfectly necessary, and that not taking them might result in worse performance and shorter career span. They were also unaware of many of the potential risks of NS. Their actions seemed to be very much aligned with their beliefs – beliefs that are based on the information they receive from the team doctor.

In sum, based on the data in the present study, it can be concluded that the cognitive component of the ABC model has the biggest influence on athletes’ attitudes to NS and medications, with the behavioral component acting as a secondary influence, and the affective component being the least significant. However, it must be stressed that this theoretical model (as indeed, any theoretical model) paints a simplified version of

reality and that critics have pointed out that the relationship between the three components can be disputed (Fabrigar et al., 2005).

7.3 Findings viewed in relation to the context

The findings uncovered by this thesis show a great discrepancy in athletes' beliefs, experiences and subjective norms regarding medications and NS. However, one should not be tempted to make broad conclusions based on this data, nor forget about the broader contexts in which all the interviewed athletes exist. One should also not exclude alternative explanations of the findings – explanations that may well lie beyond the topics and questions dealt with in my interviews.

A person's social environment influences him or her on a variety of different levels (Bronfenbrenner, 1994). An athlete's team makes up the closest and most influential micro-level when it comes to forming attitudes towards NS and medications, and this is the level that I looked at in my research. From a broader perspective, an athlete's attitudes are also greatly influenced by values, laws, and the general culture of their societies. An alternative explanation for why athletes' beliefs and experiences with NS and medications vary so much is the obvious fact that athletes come from, and operate within, two different societies.

The literature on transcultural nursing suggests that Russian patients, especially those who grew up in the Soviet Union, often demonstrate a reliance on folk medicine, governmental health services and medications (Giger & Haddad, 2020). Moreover, a common practice among Russian people is self-diagnosing and self-treatment, often with self-prescribed medications, or medications prescribed by a local pharmacist (Indukaeva, Makarov, Gruzdeva, Zhilyaeva, & Strokolskaya, 2017). The fact that many medications in Russian pharmacies are available without any prescriptions required, is a major health concern in the country. Moreover, according to the advertising law in Russia (Federal Law on Advertising, 2006, No. 38-FZ), over the counter products can be advertised directly to the public.

Concerning cultural norms in Norway, related to the same set of issues, some striking differences with the Russians should already have been made evident. Firstly, the fact that a majority of medical supplements are likely to be unobtainable without a doctor's prescription. Secondly, that there are strict laws against the marketing of such

substances. The most significant difference, however, is found – or perhaps one should rather say *experienced* – on that societal level referenced above. As a nation, Norway has long demonstrated strong anti-doping views (Gilberg et al., 2006), and most Norwegians – and athletes in particular – appear to be highly conscious of the ethical problems related to the use of doping. These and similar views were on clear display in all the interviews conducted with the Norwegian athletes. Something in the Norwegian sporting environment is plainly responsible for a widespread conviction that the whole idea of chemically assisted performance enhancement is not only wrong but shameful. This appears to be the case even when the supplements/medications are legal.

Russia, on the other hand, has had a long history of doping use – both in the former Soviet era and in recent years. Several big doping scandals have surfaced during the last decade alone, the most significant being the Sochi Olympics. Even though Russia appears to be working on changing this culture, this is clearly a process that involves significant, structural change; and such things take time. Today, even though there is no cultural acceptance for doping, there is still seem to be a great deal of tolerance for legal performance enhancement. This latter acceptance appears to be a direct precursor to the fact that Russian athletes are more open to experimenting with medications compared with, in this instance, Norwegians.

Another important fact to take note of is the possibility that the Norwegian athletes, being a part of a strong anti-doping culture which makes them highly aware of ethical discussions about performance enhancement, may have been able to answer in accordance with what they knew to be the "correct" or "politically correct way." The Russians on the other hand, who live in a culture that accepts and encourages legal performance-enhancement, seemed largely unaware of the ethical issues in question and thus came across as much more open to discussing their practices. Unlike the Norwegians, they did not think that the topic of legal performance enhancement was controversial. The Norwegians both spoke less than the Russians and seemed less open to discussing the issue; the fact which reminds of a study that states that Norwegian athletes are reluctant to discuss the issue of PES (Sandvik, Strandbu, & Loland, 2017). The interviews with the Norwegian athletes lasted from 45 to 60 min, while the interviews with the Russian athletes lasted from 50 to 90 minutes, with Russians speaking more and being more open. I am not suggesting that the Norwegians were

hiding their practices, but they definitely came across as being less willing and relaxed about sharing their experiences.

Another feature of the interviews that may have influenced the data was the way they were set up. In Norway, I got access to the athletes through their sport federation, which made the whole interviewing process more “formal.” In Russia, I had to make use of my existing contacts and went in as an insider. This difference in circumstances may have impacted how the different groups viewed me and responded to my questions.

Lastly, the interviewer bias could have had an influence here – I speak Norwegian with a faint accent, while Russian is my mother tongue. This also may have had an impact on the trust and openness coming from the participants.

8. Conclusion

The aim of this study has been to understand how athletes form their attitudes towards NS and medications. This was done by looking at the question through the lens of experiences, beliefs and subjective norms. The existing literature on attitudes towards NS and medications is predominantly quantitative, mainly providing statistical information on the prevalence of use, the types of supplements consumed, motives for consumption and the sources of information for the athletes. In contrast, this study offers a qualitative and comparative perspective that attempts to give a detailed picture of how athletes' attitudes are formed and how athletes reason and make choices related to the use of legal substances.

8.1 Answering the research question

To answer the research question:

> *How do junior elite Norwegian and Russian endurance athletes form attitudes to nutritional supplements and medications?*

As I showed in chapter 6 and 7, there are significant differences between the different athletes' experiences, beliefs and subjective norms connected with NS and medications. Nevertheless, the study shows that the athletes' *beliefs* (cognitive component in the ABC model) about NS and medications form the strongest contribution to attitude formation, as compared to the other factors considered. Both groups of subjects seem to form attitudes in accordance with their beliefs, and to act and reason accordingly to those beliefs.

This ties into what was said in the previous section about the relationship between beliefs and knowledge. I discovered that athletes' beliefs about supplement-related practices are closely connected with their knowledge about it. Educational courses and the team doctor were the most influential and authoritative sources of knowledge on NS and medications. The more knowledge and risk awareness athletes possessed about supplementation, the less likely they were to approach the various substances. This finding provides insight into how the chain of phenomena is linked, which, in simplified form, may be construed as follows: Doctors and educational courses provide information about NS and medications; then the athletes digest this information and

form beliefs based on it; beliefs are a major influence on attitudes; as a consequence, attitudes influence behavior.

The responses of the Norwegian team show how important it is that informational sources are consistent in their message. The contradictions in the informational sources in the Russian team (team's doctor versus regional coach) cause contradicting beliefs in athletes which seems to make the athletes' attitudes to NS and medications more complex and confused. In contrast to the existing quantitative research, the team's coach does not seem to provide any significant information and advice to the athletes regarding supplementation (apart from sport nutrition), a feature that can be explained by the fact that athletes on the elite level tend to seek advice on nutrition from professionals like sport physicians.

Another important factor in shaping athletes' attitudes towards legal substances were subjective norms within their team. Athletes tend to act in accordance with these norms and thus to follow the thinking and behaviors of their peers. What this means, is that if it is a common practice within the team, athletes would use NS and justify it based on the behavior of others. The Russian interviews show that subjective norms outside of the team seem to carry less weight. This is in line with the existing literature on subjective norms, which states that the most proxime reference group has most influence on the attitudes (Vogel & Wänke, 2016).

Environmental features like structural factors ("the system") and social environment (athletes' social circle and influence of important people) also showed to be important to promote or discourage athletes' NS and medication use.

8.2 Research contribution and recommendations

The paper provides qualitative insight into how athletes form attitudes towards NS and medications – a field of study where the majority of work is quantitative. This feature alone indicates that my research provides a contribution to the existing qualitative knowledge base. It adds in-depth explanations to existing quantitative findings in the field, as discussed under heading 7.1. In addition to this, it should be added that there are very few papers on athletes' use of medications, and qualitative studies on this topic are particularly scarce. Another complementing feature of this study is tied to the fact that athletes' attitudes towards supplements are often defined simply as "positive" or

"negative". However, my research shows that the process of attitude formation is highly complex. There are various factors to take into account and an athlete's beliefs concerning legal supplements may sometimes even be self-contradicting (e.g. NS and medications are believed to support health, but at the same time seen as health sacrifice in the long term). Besides this, my research sheds light on the critical role played by education, as related to the topic of NS and medications, seeing as education and knowledge was revealed to have such a strong influence over the athletes' beliefs.

Having uncovered the evidence of the fact that knowledge about sport nutrition can be an effective tool against excessive NS use (and consequently, against potential doping behavior), my study firmly reminds of the necessity of comprehensive education on nutritional supplements and medication use (especially in Russia). Educational programs should be available for all members of athlete support personnel and athletes. This is especially true for doctors and coaches, and even more so for coaches on the lower levels of competition; seeing as coaches, according to both existing and present research, are the athletes' primary sources of information on NS until they enter the elite level.

In contrast with the existing evidence, the present study showed that the doctor, at the junior elite level, is the person who is the most responsible for setting the internal "rules" for use of supplements and medications. For the most part, the coach seem to echo the opinion of the doctor. This is a fact which the doctors, who may not be fully conscious of their influence, should become aware of. The present research also shows that all the members of an athlete's support personnel, but primarily doctors and coaches, should be mindful about what type of signals they send about NS and medication use, and of the fact that these signals should be aligned with the norms they and the team would like to establish.

ADNO and the Norwegian Confederation of Sports[38] (who initiated Healthy sport) should continue working on shaping the values of young athletes, thus shielding them against the logic of both legal and illegal performance enhancement in the Norwegian sporting community. It seems like NIF and ADNO are meeting their goals for creating a culture of clean sports, (at least in the endurance sport that was studied in this paper).

[38] In Norwegian – Norges Idrettsforbund (NIF)

My research stresses the importance and effectiveness of educating elite athletes, as well as coaches and athletes on the lower levels, seeing as younger athletes generally do not have access to professional nutritionists or physicians.

On the Russian side, however, the research indicates that more profound, structural work related to values and attitude-formation is required to change a culture that encourages the use of chemically assisted performance enhancement. Such an aim would make Russian sports more aligned with anti-doping ideals. The interviews also indicate that the organizational mechanism of Russian sport push athletes towards the use of non-prohibited performance-enhancing substances and methods, as well as excessive medication use. It is not realistic to hope that Russians will change their organizational system (which is widely criticized by the athletes) anytime soon, but a natural and logical first step towards such change would be to start educating sport physicians to make them aware of their role in molding athletes beliefs and behavior, and to encourage them to participate in value-based communication.

8.3 Limitations and future research

The purpose of my study has been to provide new knowledge on how junior athletes form their attitudes towards NS and medications. I have done this by looking at the topic through the lens of experiences, beliefs and subjective norms. Qualitative interviews are particularly effective in exposing human beliefs, perceptions and experiences, which explains why I chose this approach and why it has provided me with so much interesting data. That said – and this is of course true with all research – the results of this study are framed by a series of limitations. Firstly, the findings are based on the contents of a series of conversational interviews, which, by their very nature are subjective. I cannot guarantee complete honesty on the part of its participants – which would be the case for any self-reported data. Besides, the analysis of the data was carried out by a single researcher, which increases the study's subjectivity.

Even though the research aims at so-called "naturalistic generalizability" (Smith, 2018), it should be acknowledged that the Norwegian and Russian sport systems, team organization, and practices are all very different. Since it has been proved (both by existing research and by the present study) that the sport environment and the broader context in which the athletes operate has significant power over an athlete's attitudes

and behaviors, the findings may have limited generalizability compared to other contexts. Another argument against its generalizability is that the present study is limited to a specific group of people (junior elite endurance athletes), and that the results are therefore likely to be less relevant for athletes in different sports, ages, or competition levels. Also, as mentioned earlier, data saturation was not fully achieved with the Russian athletes, so interviewing more athletes on the Russian side would have made the study more compelling. Moreover, nine male athletes, compared with only one female athlete, were interviewed during the course of the research. The inclusion of more female participants would have provided the study with a richer pool of data. Despite all these limitations, however, I am still convinced that I have given a clear illustration of the value of letting the athletes speak for themselves to learn about the formation of attitudes towards various substances.

Currently, there seems to be a disproportionately high number of quantitative studies looking into athletes' use and perceptions of NS and medications. I therefore believe it would be highly worthwhile to conduct a more comprehensive study making use of the qualitative approach. Also, since many existing studies show a gateway relationship between an athlete's use of NS and doping, it would be interesting to look closer at athletes' attitudes towards NS and doping to see how they reason "on the border" between legal and illegal supplements. (This was, in fact, the initial plan of this study, but it was later abandoned due to reasons related to scope). Another intriguing topic that broached in the Russian interviews, but which went mostly undiscussed, is the relationship between the coach, the doctor, and the athlete. It would be interesting to study the attitudes, as well as the power dynamics that exist between the three actors in this relationship, and how this affects an athlete's interactions with NS and medications.

References

Aavikko, A., Helenius, I., Vasankari, T., & Alaranta, A. (2013). Physician-prescribed medication use by the Finnish Paralympic and Olympic athletes. *Clinical journal of sport medicine, 23*(6), 478-482.

ADNO. (2017). Doping og Folkehelse. Retrieved from https://s3.eu-west-1.amazonaws.com/anitidoping/ADNO_Book_antidoping_NO_online.pdf?mtime=20190618122410

Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior.

Allen, H., Backhouse, S. H., Hull, J. H., & Price, O. J. (2019). Anti-doping policy, therapeutic use exemption and medication use in athletes with asthma: a narrative review and critical appraisal of current regulations. *Sports medicine, 49*(5), 659-668.

American Academy of Pediatrics. (2005). Use of performance-enhancing substances. *Pediatrics, 115*(4), 1103-1106.

Aubel, O., & Ohl, F. (2014). An alternative approach to the prevention of doping in cycling. *International Journal of Drug Policy, 25*(6), 1094-1102.

Backhouse, Griffiths, & McKenna. (2018). Tackling doping in sport: a call to take action on the dopogenic environment. In: BMJ Publishing Group Ltd and British Association of Sport and Exercise Medicine.

Backhouse, Whitaker, L., Patterson, L., Erickson, K., & McKenna, J. (2016). Social psychology of doping in sport: A mixed studies narrative synthesis.

Backhouse, Whitaker, L., & Petróczi, A. (2013). Gateway to doping? Supplement use in the context of preferred competitive situations, doping attitude, beliefs, and norms. *Scandinavian journal of medicine & science in sports, 23*(2), 244-252.

Barkoukis, V., Lazuras, L., Lucidi, F., & Tsorbatzoudis, H. (2015). Nutritional supplement and doping use in sport: possible underlying social cognitive processes. *Scandinavian journal of medicine & science in sports, 25*(6), e582-e588.

Barkoukis, V., Lazuras, L., Ourda, D., & Tsorbatzoudis, H. (2020). Are nutritional supplements a gateway to doping use in competitive team sports? The roles of

achievement goals and motivational regulations. *Journal of Science and Medicine in Sport, 23*(6), 625-632.

Bartholomew, K., & Ntoumanis, N. (2009). Thøgersen-Ntoumani, C. A review of controlling motivation strategies from a self-determination theory perspective: Implications for coaches. *International Review of Sport and Exercise Psychology, 2*, 215-233.

Beamish, R., & Ritchie, I. (2006). *Fastest, highest, strongest: A critique of high-performance sport*: Routledge.

Bellenger, D. N., Bernhardt, K. L., & Goldstucker, J. L. (2011). *Qualitative Research In Marketing. Amerikan Marketing Association.* USA: Marketing classics press.

Bolter, N. D., & Weiss, M. R. (2013). Coaching behaviors and adolescent athletes' sportspersonship outcomes: Further validation of the Sportsmanship Coaching Behaviors Scale (SCBS). *Sport, Exercise, and Performance Psychology, 2*(1), 32.

Braun, & Clarke. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101.

Braun, Clarke, & Weate. (2016). Using thematic analysis in sport and exercise research. *Routledge handbook of qualitative research in sport and exercise*, 191-205.

Braun, Koehler, K., Geyer, H., Kleinert, J., Mester, J., & Schänzer, W. (2009). Dietary supplement use among elite young German athletes. *International Journal of Sport Nutrition and Exercise Metabolism, 19*(1), 97-109.

Bronfenbrenner, U. (1994). Ecological models of human development. *Readings on the development of children, 2*(1), 37-43.

Chaiklin, H. (2011). Attitudes, behavior, and social practice. *J. Soc. & Soc. Welfare, 38*, 31.

Ciocca, M. (2005). Medication and supplement use by athletes. *Clinics in sports medicine, 24*(3), 719-738.

Collins, C. S., & Stockton, C. M. (2018). The central role of theory in qualitative research. *International Journal of Qualitative Methods, 17*(1), 1609406918797475.

Conca, A. J., & Worthen, D. R. (2012). Nonprescription drug abuse. *Journal of pharmacy practice, 25*(1), 13-21.

Connor, J. M. (2009). Towards a sociology of drugs in sport. *Sport in society, 12*(3), 327-328.

Conrad, P. (2007). *The medicalization of society: On the transformation of human conditions into treatable disorders*: JHU Press.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.

Dascombe, B., Karunaratna, M., Cartoon, J., Fergie, B., & Goodman, C. (2010). Nutritional supplementation habits and perceptions of elite athletes within a state-based sporting institute. *Journal of Science and Medicine in Sport, 13*(2), 274-280.

De Hon, O., Kuipers, H., & van Bottenburg, M. (2015). Prevalence of doping use in elite sports: a review of numbers and methods. *Sports medicine, 45*(1), 57-69.

De nasjonale forskningsetiske komiteene. (2016). Hensyn til personer. Retrieved from https://www.etikkom.no/forskningsetiske-retningslinjer/Samfunnsvitenskap-jus-og-humaniora/b.-hensyn-til-personer-5---18/

Diehl, K., Thiel, A., Zipfel, S., Mayer, J., Schnell, A., & Schneider, S. (2012). Elite adolescent athletes' use of dietary supplements: characteristics, opinions, and sources of supply and information. *International Journal of Sport Nutrition and Exercise Metabolism, 22*(3), 165-174.

Duncan, L. R., Hallward, L., & Alexander, D. (2018). Portraits of adolescent athletes facing personal and situational risk factors for doping initiation. *Psychology of Sport and Exercise, 39*, 163-170.

Dunn, M., Eddy, J., Wang, M., Nagy, S., Perko, M., & Bartee, T. (2001). The influence of significant others on attitudes, subjective norms and intentions regarding dietary supplements use among adolescent athletes. . *Adolescence, 36*(143), 583-591.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*: Harcourt brace Jovanovich college publishers.

Erdman, K., Fung, T., Doyle-Baker, P., & Verhoef, M. (2007). Dietary Supplementation of High-performance Canadian Athletes by Age and Gender. *Clinical Journal of Sport Medicine, 17*, 458-464. doi:https://doi.org/10.1097/JSM.0b013e31815aed33

Erickson, K., Backhouse, S. H., & Carless, D. (2017). Doping in sport: Do parents matter? *Sport, Exercise, and Performance Psychology, 6*(2), 115.

Fabrigar, L., MacDonald, T., & Wegener, D. (2005). The Structure of Attitudes. In D. Albarracin, B. Johnson, & M. Zanna (Eds.), *The Handbook of Attitudes* (1st ed.). Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc., Publishers.

Federal Law on Advertising. (2006). *Federation Council*

State Duma (No. 38-FZ ed.): Latest ammendment and addition 21.07.2014.

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. . *International Journal of Qualitative Methods*, 80-92. doi:https://doi.org/10.1177/160940690600500107

Fryer, C. E. (2019). An Approach to Conducting Cross-Language Qualitative Research with People from Multiple Language Groups.

Garthe, I., & Maughan, R. J. (2018). Athletes and supplements: prevalence and perspectives. *International Journal of Sport Nutrition and Exercise Metabolism, 28*(2), 126-138.

Geyer, Braun, H., Burke, L., Stear, S., & Castell, L. (2011). A–Z of nutritional supplements: dietary supplements, sports nutrition foods and ergogenic aids for health and performance—Part 22. *British journal of sports medicine, 45*(9), 752-754.

Geyer, Parr, M. K., Koehler, K., Mareck, U., Schänzer, W., & Thevis, M. (2008). Nutritional supplements cross-contaminated and faked with doping substances. *Journal of mass spectrometry, 43*(7), 892-902.

Giger, J. N., & Haddad, L. (2020). *Transcultural Nursing-E-Book: Assessment and Intervention*: Elsevier Health Sciences.

Gilberg, R., Breivik, G., & Loland, S. (2006). Anti-doping in sport: The Norwegian perspective. *Sport in society, 9*(2), 334-353.

Grossbard, J., Hummer, J., LaBrie, J., Pederson, E., & Neighbors, C. (2009). Is substance use a team sport? Attraction to team, perceived norms, and alcohol and marijuana use among male and female intercollegiate athletes. *Journal of Applied Sport Psychology, 21*(3), 247-261.

Guba, E. G., & Lincoln, Y. S. (1989). *Fourth Generation Evaluation* (1st ed.). Newbury Park, CA: Sage.

Guyer, J., & Fabrigar, L. (2015). The attitude-behavior link: A review of the history. In.

Hainline, B., Derman, W., Vernec, A., Budgett, R., Deie, M., Dvořák, J., . . . Meeuwisse, W. (2017). International Olympic Committee consensus statement on pain management in elite athletes. *British journal of sports medicine, 51*(17), 1245-1258.

Harle, C. A., Danielson, E. C., Derman, W., Stuart, M., Dvorak, J., Smith, L., & Hainline, B. (2018). Analgesic management of pain in elite athletes: a systematic review. *Clinical journal of sport medicine, 28*(5), 417-426.

Heikkinen, A., Alaranta, A., Helenius, I., & Vasankari, T. (2011). Use of dietary supplements in Olympic athletes is decreasing: a follow-up study between 2002 and 2009. *Journal of the International Society of Sports Nutrition, 8*(1), 1.

Hoel, Y. S. (2016). Sundby utestengt på grunn av feil bruk av astmamedisin - mister Tour de Ski-seier. *NRK*. Retrieved from https://www.nrk.no/sport/sundby-utestengt-etter-for-hoye-doser-av-astmamedisin-1.13050825

Hoffman, J. R. (2010). Caffeine and energy drinks. *Strength & Conditioning Journal, 32*(1), 15-20.

Hostrup, M., Kalsen, A., Auchenberg, M., Bangsbo, J., & Backer, V. (2016). Effects of acute and 2-week administration of oral salbutamol on exercise performance and muscle strength in athletes. *Scandinavian journal of medicine & science in sports, 26*(1), 8-16.

Houlihan, B. (2002). Managing compliance in international anti-doping policy: The world anti-doping code. *European sport management quarterly, 2*(3), 188-208.

Huang, S.-H. S., Johnson, K., & Pipe, A. L. (2006). The use of dietary supplements and medications by Canadian athletes at the Atlanta and Sydney Olympic Games. *Clinical journal of sport medicine, 16*(1), 27-33.

Hurst, P., Kavussanu, M., Boardley, I., & Ring, C. (2019). Sport supplement use predicts doping attitudes and likelihood via sport supplement beliefs. *Journal of sports sciences, 37*(15), 1734-1740.

Indukaeva, Makarov, Gruzdeva, Zhilyaeva, & Strokolskaya. (2017). Life quality, psychological state, treatment and prevention adherence evaluation in local polyclinic patients *Cardiovascular Therapy and Prevention. , 16*(4).

Jedlicka, S. (2014). The normative discourse of anti-doping policy. *International journal of sport policy and politics, 6*(3), 429-442.

Johnson. (2012). A systemic social-cognitive perspective on doping. *Psychology of Sport and Exercise, 13*(3), 317-323.

Johnson, Sacks, D. N., & Edmonds, W. A. (2010). Counseling athletes who use performance-enhancing drugs: A new conceptual framework linked to clinical practice. *Journal of Social, Behavioral, and Health Sciences, 4*(1), 1.

Jovanov, P., Đorđić, V., Obradović, B., Barak, O., Pezo, L., Marić, A., & Sakač, M. (2019). Prevalence, knowledge and attitudes towards using sports supplements among young athletes. *Journal of the International Society of Sports Nutrition, 16*(1), 27.

Kirby, K., Guerin, S., Moran, A. P., & Matthews, J. (2016). Doping in elite sport: linking behaviour, attitudes and psychological theory. In *Barkoukis, V., Lazuras, L. and Tsorbatzoudis, H.(eds.). The Psychology of Doping in Sport*: Routledge.

Knapik, J. J., Steelman, R. A., Hoedebecke, S. S., Austin, K. G., Farina, E. K., & Lieberman, H. R. (2016). Prevalence of dietary supplement use by athletes: systematic review and meta-analysis. *Sports medicine, 46*(1), 103-123.

Kohler, M., Thomas, A., Geyer, H., Petrou, M., Schänzer, W., & Thevis, M. (2010). Confiscated black market products and nutritional supplements with non-approved ingredients analyzed in the Cologne Doping Control Laboratory 2009. *Drug testing and analysis, 2*(11-12), 533-537.

Kuczmarski, K. (2008). Do supplements benefit exercise? *American Journal of Lifestyle Medicine, 2*(4), 293-295.

Kvale, S., & Brinkmann, S. (2009). *Det kvalitative forskningsintervju.* . Oslo: Gyldendal Norsk Forlag.

LaBotz, M., & Griesemer, B. A. (2016). Use of performance-enhancing substances. *Pediatrics, 138*(1).

Lazuras, L., Barkoukis, V., Rodafinos, A., & Tzorbatzoudis, H. (2010). Predictors of doping intentions in elite-level athletes: a social cognition approach. *Journal of Sport and Exercise Psychology, 32*(5), 694-710.

Lentillon-Kaestner, V., & Carstairs, C. (2010). Doping use among young elite cyclists: a qualitative psychosociological approach. *Scandinavian journal of medicine & science in sports, 20*(2), 336-345.

Lentillon-Kaestner, V., Hagger, M. S., & Hardcastle, S. (2012). Health and doping in elite-level cycling. *Scandinavian journal of medicine & science in sports, 22*(5), 596-606.

Lessenger, J. E., & Feinberg, S. D. (2008). Abuse of prescription and over-the-counter medications. *The Journal of the American Board of Family Medicine, 21*(1), 45-54.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2018). Paradigmatic controversies, contradictions, and emerging confluences revisited. In N. K. D. Y.S.Lincoln (Ed.), *The Sage handbook of qualitative research)* (pp. pp. 108-150). Thousand Oaks, CA: Sage.

Lindsay, S. (2019). Five approaches to qualitative comparison groups in health research: a scoping review. *Qualitative health research, 29*(3), 455-468.

Ljungqvist, A. (2017). Brief history of anti-doping. In *Acute Topics in Anti-Doping* (Vol. 62, pp. 1-10): Karger Publishers.

Loraschi, A., Galli, N., & Cosentino, M. (2014). Dietary supplement and drug use and doping knowledge and attitudes in Italian young elite cyclists. *Clinical journal of sport medicine, 24*(3), 238-244.

Lun, V., Erdman, K. A., Fung, T. S., & Reimer, R. A. (2012). Dietary supplementation practices in Canadian high-performance athletes. *International Journal of Sport Nutrition and Exercise Metabolism, 22*(1), 31-37.

Lundberg, T. R., & Howatson, G. (2018). Analgesic and anti-inflammatory drugs in sports: Implications for exercise performance and training adaptations. *Scandinavian journal of medicine & science in sports, 28*(11), 2252-2262.

Macnamara, J. (2003). Media content analysis: Its uses; benefits and best practice methodology. . *Asia Pacific Public Relations Journal, 6*(1), 1–34.

Malcolm, D. (2016). *Sport, medicine and health: The medicalization of sport?* : Taylor & Francis.

Massad, S. J., Shier, N. W., Koceja, D. M., & Ellis, N. T. (1995). High school athletes and nutritional supplements: a study of knowledge and use. *International Journal of Sport Nutrition and Exercise Metabolism, 5*(3), 232-245.

Maughan, R. J. (2018). IOC Medical and Scientific Commission reviews its position on the use of dietary supplements by elite athletes. In: BMJ Publishing Group Ltd and British Association of Sport and Exercise Medicine.

Maughan, R. J., Burke, L. M., Dvorak, J., Larson-Meyer, D. E., Peeling, P., Phillips, S. M., . . . Geyer, H. (2018). IOC consensus statement: dietary supplements and the high-performance athlete. *International Journal of Sport Nutrition and Exercise Metabolism, 28*(2), 104-125.

Mazanov, J. (2009). Towards a social science of drugs in sport. *Sport in society, 12*(3), 423-430.

Mazanov, J., & Huybers, T. (2010). An empirical model of athlete decisions to use performance-enhancing drugs: qualitative evidence. *Qualitative research in sport and exercise, 2*(3), 385-402.

Mazanov, J., & McDermott, V. (2009). The case for a social science of drugs in sport. *Sport in society, 12*(3), 276-295.

Medication. (Ed.) (2007) The American Heritage Medical Dictionary.

Møller, V. (2016). The road to hell is paved with good intentions—A critical evaluation of WADA’s anti-doping campaign. *Performance Enhancement & Health, 4*(3-4), 111-115.

Møller, V., Waddington, I., & Hoberman, J. M. (2015). *Routledge handbook of drugs and sport*: Routledge.

Nieper, A. (2005). Nutritional supplement practices in UK junior national track and field athletes. *British journal of sports medicine, 39*(9), 645-649.

Ntoumanis, N., Ng, J. Y., Barkoukis, V., & Backhouse, S. (2014). Personal and psychosocial predictors of doping use in physical activity settings: a meta-analysis. *Sports medicine, 44*(11), 1603-1624.

Ohl, F., Fincoeur, B., Lentillon-Kaestner, V., Defrance, J., & Brissonneau, C. (2015). The socialization of young cyclists and the culture of doping. *International Review for the Sociology of Sport, 50*(7), 865-882.

Overbye, M., & Wagner, U. (2013). Between medical treatment and performance enhancement: An investigation of how elite athletes experience therapeutic use exemptions.. *International Journal of Drug Policy, 24*(6), 579-588.

Papadopoulos, F. C., Skalkidis, I., Parkkari, J., & Petridou, E. (2006). Doping use among tertiary education students in six developed countries. *European journal of epidemiology, 21*(4), 307-313.

Pappa, E., & Kennedy, E. (2013). 'It was my thought… he made it a reality': Normalization and responsibility in athletes' accounts of performance-enhancing drug use. *International Review for the Sociology of Sport, 48*(3), 277-294.

Parnell, J. A., Wiens, K. P., & Erdman, K. A. (2016). Dietary intakes and supplement use in pre-adolescent and adolescent Canadian athletes. *Nutrients, 8*(9), 526.

Petróczi, A. (2013). The doping mindset—Part I: Implications of the functional use theory on mental representations of doping. *Performance Enhancement & Health, 2*(4), 153-163.

Petróczi, A., Naughton, D. P., Pearce, G., Bailey, R., Bloodworth, A., & McNamee, M. (2008). Nutritional supplement use by elite young UK athletes: fallacies of advice regarding efficacy. *Journal of the International Society of Sports Nutrition, 5*(1), 22.

Robson, C. (2002). *Real world research: a resource for social scientists and practitioner-researchers.* . Oxford, UK: Blackwell Publishers.

Ronsen, O., Sundgot-Borgen, J., & Maehlum, S. (1999). Supplement use and nutritional habits in Norwegian elite athletes. *Scandinavian journal of medicine & science in sports, 9*(1), 28-35.

Roulston, K. (2010). Considering quality in qualitative interviewing. . *Qualitative Research, 10*(2), 199–228. . doi:https://doi.org/10.1177/1468794109356739

Rubin, H. J., & Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Rushall, B. S., & Jones, M. (2007). Drugs in sport: A cure worse than the disease? *International Journal of Sports Science & Coaching, 2*(4), 335-361.

Salter, S., Librizzi, B., Ngu, L., Ricciardello, M., Street, A., Clifford, R., . . . Peeling, P. (2018). Medication information and supply behaviours of elite athletes in pharmacy. *Research in Social and Administrative Pharmacy, 14*(8), e49.

Sandvik, M. R. (2015). Samfunnsvitenskapelig og humanistisk forskning på doping–status og utfordringer. In: Oslo: Norges idrettshøgskole.

Sandvik, M. R., Strandbu, Å., & Loland, S. (2017). Talking doping: a frame analysis of communication about doping among talented, young, Norwegian road cyclists. *Sociology of sport journal, 34*(2), 195-204.

Shaw, G., Slater, G., & Burke, L. M. (2016). Supplement use of elite Australian swimmers. *International Journal of Sport Nutrition and Exercise Metabolism, 26*(3), 249-258.

Skarstein, S., Lagerløv, P., Kvarme, L. G., & Helseth, S. (2016). High use of over-the-counter analgesic; possible warnings of reduced quality of life in adolescents-a qualitative study. *BMC nursing, 15*(1), 16.

Skjerdingstad, A., & Jørnholt, M. (2020). Avslører: Kortisonsprøyte utløste skaden som knuste OL-drømmen. *NRK*. Retrieved from https://www.nrk.no/sport/ingvill-makestad-bovim-avslorer_-kortisonsproyte-utloste-skaden-som-knuste-ol-drommen-1.15001386

Slater, G., Tan, B., & Teh, K. C. (2003). Dietary supplementation practices of Singaporean athletes. *International Journal of Sport Nutrition and Exercise Metabolism, 13*(3), 320-332.

Smith. (2018). Generalizability in qualitative research: Misunderstandings, opportunities and recommendations for the sport and exercise sciences. *Qualitative research in sport, exercise and health, 10*(1), 137-149.

Smith, Stewart, B., Oliver-Bennetts, S., McDonald, S., Ingerson, L., Anderson, A., . . . Graetz, F. (2010). Contextual influences and athlete attitudes to drugs in sport. *Sport management review, 13*(3), 181-197.

Smith, B., & Sparkes, A. C. (2016). Qualitative interviewing in the sport and exercise sciences. *Routledge handbook of qualitative research in sport and exercise*, 103-123.

Smith-Rockwell, M., Nickols-Richardson, S., & Thye, F. (2001). Nutrition knowledge, opinions, and practices of coaches and athletic trainers at a division 1 university. *International Journal of Sport Nutrition and Exercise Metabolism, 11*(2), 174.

Solheim, S. A., Nordsborg, N. B., Ritz, C., Berget, J., Kristensen, A., & Mørkeberg, J. (2017). Use of nutritional supplements by Danish elite athletes and fitness customers. *Scandinavian journal of medicine & science in sports, 27*(8), 801-808.

Stake, R. (2005). Qualitative case studies. . In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. pp. 443-466). Thousand Oaks, CA: SAGE.

Sundgot-Borgen, Berglund, & Torstveit. (2003). Nutritional Supplements in Norwegian elite athletes - impact of international ranking and advisors. *Scandinavian journal of medicine & science in sports, 13*, 138-144.

The European Parlament and the Council of the European Union. (2002). *Directive 2002/46/EC of the European Parlament and the Council*. Official Journal of the European Communities Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32002L0046&from=EN

Thomas, J. O., Dunn, M., Swift, W., & Burns, L. (2011). Illicit drug knowledge and information-seeking behaviours among elite athletes. *Journal of Science and Medicine in Sport, 14*(4), 278-282.

Tingve, P. M., & Skaug, T. R. (2016). Johaug tatt for doping. Slik hevder Johaug å ha fått i seg det forbudte stoffet. *Dagbladet*. Retrieved from https://www.dagbladet.no/sport/slik-hevder-johaug-a-ha-fatt-i-seg-det-forbudte-stoffet/63962006

Torres-McGehee, T. M., Pritchett, K. L., Zippel, D., Minton, D. M., Cellamare, A., & Sibilia, M. (2012). Sports nutrition knowledge among collegiate athletes, coaches, athletic trainers, and strength and conditioning specialists. *Journal of Athletic Training, 47*(2), 205-211.

Tscholl, P., Junge, A., & Dvorak, J. (2008). The use of medication and nutritional supplements during FIFA World Cups 2002 and 2006. *British journal of sports medicine, 42*(9), 725-730.

Tsitsimpikou, C., Tsiokanos, A., Tsarouhas, K., Schamasch, P., Fitch, K. D., Valasiadis, D., & Jamurtas, A. (2009). Medication use by athletes at the Athens 2004 Summer Olympic Games. *Clinical journal of sport medicine, 19*(1), 33-38.

Van Thuyne, W., Van Eenoo, P., & Delbeke, F. (2006). Nutritional supplements: prevalence of use and contamination with doping agents. *Nutrition research reviews, 19*(1), 147-158.

Vogel, T., & Wänke. (2016). *Attitudes and Attitude Change* (2nd edition ed.). New York: Routledge.

WADA. (2016). WADA Publishes Anti-Doping Research Project of Current Social Science Literature. Retrieved from https://www.wada-ama.org/en/media/news/2016-12/wada-publishes-anti-doping-research-project-of-current-social-science-literature

WADA. (n.d.). Strict Liability in Anti-doping. Retrieved from https://www.wada-ama.org/en/questions-answers/strict-liability-in-anti-doping

Waddington, I. (1996). The development of sports medicine. *Sociology of sport journal, 13*(2), 176-196.

Waddington, I. (2016). 2 Social and behavioural science perspectives on drug use in sport. *Doping and Public Health*, 22.

Waddington, I., & Møller, V. (2019). WADA at twenty: old problems and old thinking? *International journal of sport policy and politics, 11*(2), 219-231.

Waddington, I., & Smith, A. (2009). *An introduction to drugs in sport: Addicted to winning?* : Routledge.

Wiens, K., Erdman, K. A., Stadnyk, M., & Parnell, J. A. (2014). Dietary supplement usage, motivation, and education in young Canadian athletes. *International Journal of Sport Nutrition and Exercise Metabolism, 24*(6), 613-622.

Zelli, A., Mallia, L., & Lucidi, F. (2015). 'I am not sure what you mean...': the possible contribution of interpersonal appraisals to social-cognitive accounts of doping use. *The Psychology of Doping in Sport*, 18-32.

Zideman, D. A., Derman, W., Hainline, B., Moseley, G. L., Orchard, J., Pluim, B. M., . . . Turner, J. A. (2018). Management of pain in elite athletes: identified gaps in

knowledge and future research directions. *Clinical journal of sport medicine, 28*(5), 485-489.

Zourdos, M. C., Sanchez-Gonzalez, M. A., & Mahoney, S. E. (2015). A brief review: the implications of iron supplementation for marathon runners on health and performance. *The Journal of Strength & Conditioning Research, 29*(2), 559-565.

Tables and figures

Figure 1. *The networked athlete, p.38*

Figure 2. *The ABC model of attitudes, p.43*

Figure 3. *Thematic network based on interviews with the Norwegian athletes,* p. 66

Figure 4. *Thematic network based on interviews with the Russian athletes, p. 75*

Table 1: *Summary of comparison points based on interviews with the Norwegian and the Russian athletes, p. 91-93*